JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM FOR SMALL-SCALE PROJECTS
Version 01.1 - in effect as of: 27 October 2006

CONTENTS

A. General description of the small-scale project

B. Baseline

C. Duration of the small-scale project / crediting period

D. Monitoring plan

E. Estimation of greenhouse gas emission reductions

F. Environmental impacts

G. Stakeholders' comments

Annexes

Annex 1: Contact information on project participants

Annex 2: Baseline information

Annex 3: Monitoring plan

Annex 4: Budget and social facilities of Yenakiive Town where ICLs have been replaced with CFLs

SECTION A. General description of the small-scale project

A.1. Title of the small-scale project:

Implementation of energy-efficient lighting system in the Donetsk Region with the use of Kyoto Protocol mechanism: replacement of incandescent lamps with energy-efficient ones at budget financed and social entities in the Yenakiive town (under Track 2)

Sectoral scope 3: Energy demand

Version 03.3
15/06/2012

A.2. Description of the small-scale project:

The proposed project aims to replace traditional incandescent lamps (ICLs) with up-to-date compact florescent lamps (CFLs) in budget and social facilities of Yenakiive Town, i.e. schools, kindergartens, hospitals, health centers, etc. Please see the detailed list in Annex 4.

Situation before the project implementation

Despite CFLs proved their energy efficiency, ICLs had been used for lighting in budget and social facilities of Yenakiive Town before the project started. The reason for ICLs usage was insufficient funding, the established practice, and other issues related to unauthorized removal of CFLs, etc.

Baseline scenario

Further operation of 100 to 150W ICLs (light flux is about 1,350 Lm and 2,180 Lm respectively) is considered as the baseline scenario. Electric power required for ICL functioning is supplied from the Ukrainian power grid.

Project scenario

The project stipulates replacement of 100 W and 150 W ICLs with 20 W and 32 W CFLs which are energy saving lamps compared to ICLs, since they consume four-five times less power with similar lighting. CFLs are to be installed instead of the 100 W and 150 W ICLs and will provide the minimum light flux of 1,350 Lm and 2,180 Lm respectively. Service life of CFLs proposed for replacement under the project reaches 8,000 hours, i.e. 8 times higher than the service life of typical ICLs. CFLs are fully compatible with standard ICL holders, as well as provide white and soft lighting. The project covers replacement of 100 to 150W ICLs.

If within the project lifecycle light-emitting diode (LED) lamps become more affordable from the economic standpoint, they will be used instead of ICLs, since they consume about ten times less power than ICLs, while providing the same lighting level.

The total variable number of ICLs makes up:
- 13,414 pieces, 100 W;
- 30 pieces, 150 W.

Greenhouse gas (GHG) emission reduction in project scenario is reached by reduction of electricity consuming from Ukrainian power grid. In case of reduction of electricity consuming from Ukrainian

power grid the need of combusting of fossil fuels on Ukrainian power stations decreases. As a result, level of direct emissions of GHG decreases.

Small-scale project development

To implement this small-scale JI project for improving energy efficiency in budget and social facilities of Yenakiive Town, the Innovation Center "Ecosystem" and the project investor Carbon Futures LLP signed the Project Implementation Agreement on 02/08/2010. The project is financed according to agreement between the Innovation Center "Ecosystem" and Carbon Futures LLP. The Innovation Center "Ecosystem" shall coordinate implementation of the project in Yenakiive Town and provide engineering, logistical, and organizational support. The Innovation Centre “Ecosystem” has committed to distribute CFLs among defined facilities and ensure effective replacement of ICLs with CFLs, collect, and dispose of ICLs (according to the current environmental safety requirements), and replace non-operational CFLs. Carbon Futures LLP has committed to procure and deliver CFLs to facilities.

GHG emission reduction resulting from the project scenario is reached by reduction of electricity consumption from the Ukrainian power grid. Carbon Futures LLP is the final owner of the ERUs generated by the project. This fact is proved by relevant agreements with the Innovation Centre “Ecosystem” and local administration.

The Project Idea Note (PIN) was submitted to the National Environmental Investment Agency of Ukraine for a review. As a result, the National Environmental Investment Agency of Ukraine issued a Letter of Endorsement # 2145/23/6 on 13/12/2010 for this project.

Since 07/02/2011 all CFLs have been installed, and their operation is being monitored according to the monitoring plan.

A.3. Project participants:

Table A.1. Project participants

Party involved	Legal entity project participants (as applicable)	Please indicate if the Party involved wishes to be considered a project participant (Yes/No)
The Netherlands	• Carbon Futures LLP	No
Ukraine (host Party)	• Yenakiive Town Council	No

A.4. Technical description of the small-scale project:

A.4.1. Location of the small-scale project:

Yenakiive Town, Donetsk Region, Ukraine. The Project covers budget and social facilities in the town.

A.4.1.1. Host Party(ies):

Ukraine

A.4.1.2. Region/State/Province etc.:

Donetsk Region

A.4.1.3. City/Town/Community etc.:

Yenakiive Town

A.4.1.4. Detail of physical location, including information allowing the unique identification of the small-scale project:

This project is implemented within Yenakiive Town in Donetska oblast of Ukraine.

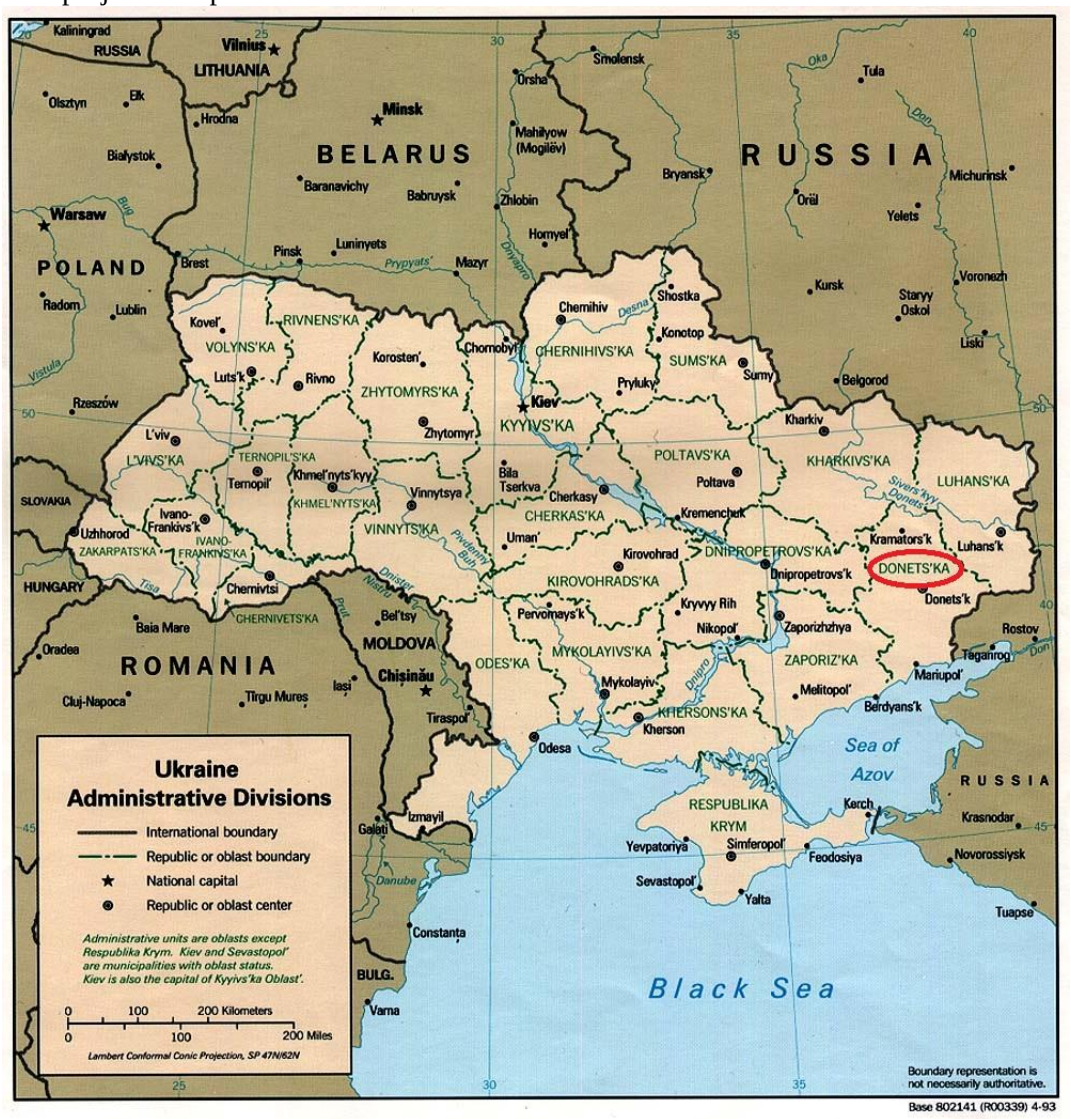

Figure A.1. Map of Ukraine (Administrative Divisions)

Yenakiive Town is located in the east of Donetska oblast. It is situated at the following coordinates: 48°13'59"N, 38°12'40"E.

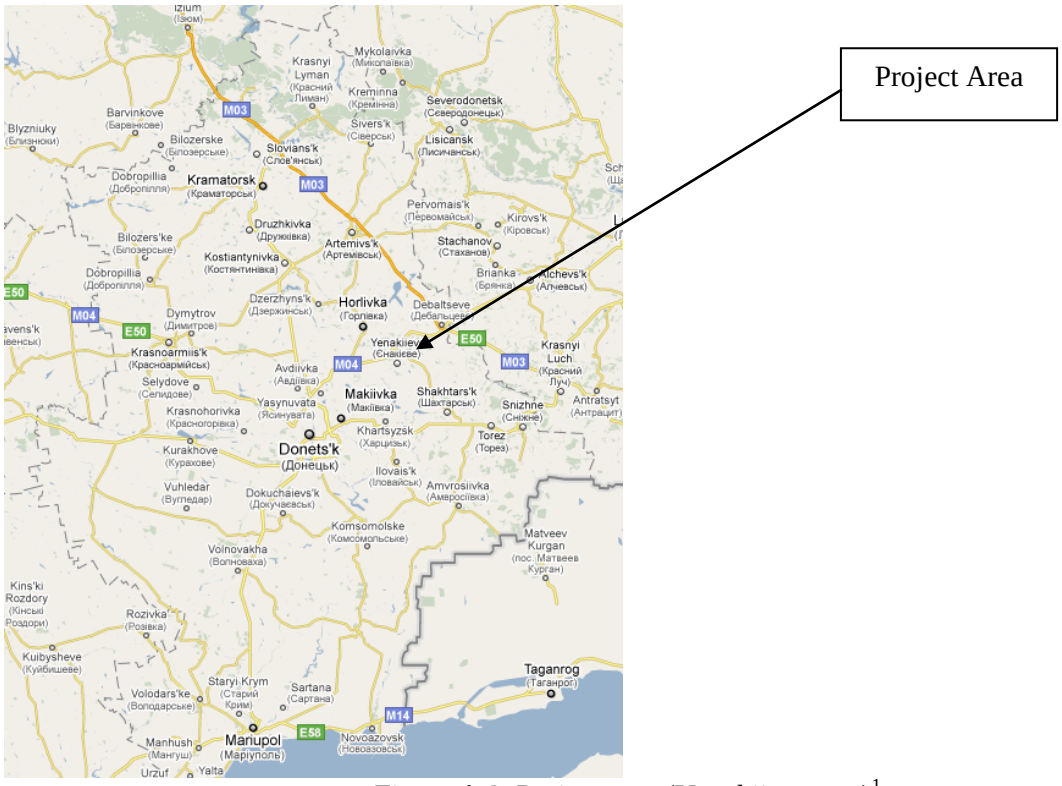

Figure A.2. Project area (Yenakiive town)[1]

The full list of budget and social facilities of Yenakiive covered by the project can be found in Annex 4.

A.4.2. Small-scale project type(s) and category(ies):

According to paragraphs 7 and 8 of Provisions for JI SSC Projects (version 3)[2], type of small-scale project activity is II (Energy efficiency improvement projects which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 60 GWh per year). The project category is II.J (Demand-side activities for efficient lighting technologies)[3].

The proposed project has following features:

1. The proposed project is a demand-side energy efficiency activity, which eventually leads to the reduction of electricity consumption.
2. The activity includes energy-efficient measures.
3. The project activity is to be carried out in Public Buildings.
4. The annual energy savings of the project activity is estimated to be about 3.1 GWh/year.

A.4.3. Technology(ies) to be employed, or measures, operations or actions to be implemented by the small-scale project:

Technical aspects of the project to replace ICLs with CFLs comprise of two stages:

1) The first stage is simple and requires the minimum professional background. Under the project lamps subject to replacement are only 100 W and 150 W (light flux is about 1,350 Lm and 2,180

[1] Source: Google map

[2] http://ji.unfccc.int/Ref/Documents/Provisions_for_JI_SSC_projects.pdf

[3] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved

Lm respectively), they operate for about 7.96 hours per day in average in budget and social facilities (This figure is average calculated value). 20 W and 32 W CFLs are to be installed instead of the 100W and 150W ICLs and will provide the minimum light flux of 1,350 Lm and 2,180 Lm , respectively, during their operation period. CFL lifecycle indicated by the manufacturer is 8,000 hours.

2) The second technical aspect of the project, namely, replacement of failed CFLs with new CFLs lamps requires the minimum professional background too.

Though monitoring of the project activity requires additional training and continuous supervision by the project participants. Requirements for training and continuous supervision are indicated in sections D.3 and D.4.

CFLs that have to replace ICLs under the project should be specifically labeled (in addition to standard specification of the manufacturer). Additional labeling will allow proving the fact of CFLs installation under the project and facilitate the project monitoring and verification of its results. Replaced ICLs is utilized in an environmentally safe manner at landfill of Yenakiive Town. With aim to prevent from any carbon leaks utilization was done under the supervision of responsible persons, and it is confirmed by the report of incandescent lamp utilization (SD-2).

Today, usage of CFLs lamps in the budget and social facilities is not a common practice because of insufficient funding. While CFLs installed under the project consume 4-5 times less power upon preservation of similar lighting, LED lamps, which may be installed under the project in the future, consume 10 times less electricity than under the same conditions. Please see Table A.2. for the project implementation activities.

Table A.2. Project activities

Activity	Period
Investment Phase	02/08/2010-31/12/2020
Replacement Phase	05/01/2011-06/02/2011
Operational Phase (replacement of failed lamps; monitoring)	07/02/2011-31/12/2020

A.4.4. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed small-scale project, including why the emission reductions would not occur in the absence of the proposed small-scale project, taking into account national and/or sectoral policies and circumstances:

GHG emission reduction following the project scenario is achieved due to reduced electricity consumption and decreased fuel combustion for electric power generation followed by GHG emission reduction.

Budget financed and social entities in ukrainian towns have to replace ICLs according to the Ordinance of the Cabinet of Ministers of Ukraine No. 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions"[4] (hereinafter Ordinance) that calls for the gradual replacement of common ICLs with up-to-date energy efficient light sources requiring no change of lighting fixtures. This document binds only central executive bodies to convert subordinate state-financed institutions to energy efficient devices and lighting systems in compliance with sanitary mandated lighting norms. It was supposed to make energy efficient lighting devices mandatory since November, 1, 2008, while phasing out ICLs after expiry of their lifetime. Starting from January, 1, 2009 capital and maintenance home repairs should be supplemented with the installation of energy efficient lighting devices.

[4] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1337-2008-%F0

Yenakiive town council is a body of local authorities. According to clause 2 of Ordinance measures outlined in this document are non-binding (advisory in nature) for Yenakiive town council. The state funding for large-scale replacement of ICLs with CFLs in the public sector is not sufficient (for details please refer to section B.2. below). The Ordinance of the Cabinet of Ministers of Ukraine No. 1337-r which covers large-scale replacement ICLs with CFLs in budget and social facilities is fulfilled on low level.

Small-scale JI project covers replacement of ICLs that are operational, in working condition and caused greenhouse gas emissions. Respectively, in interventions within the frames of the small-scale JI project, those are additional to the baseline, led to the reduction of power consumption and to measurable reductions of GHG emissions.

A.4.4.1. Estimated amount of emission reductions over the crediting period:

Table A.3 Emission reduction levels for crediting period under the Kyoto Protocol

	Years
Length of the crediting period	2
Year	Estimate of annual emission reductions in tonnes of CO_2 equivalent
2011	3,439
2012	3,838
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	7,277
Annual average of estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	3,796

Table A.4 Emission reduction levels for late crediting period after 2012

	Years
Length of the crediting period	8
Year	Estimate of annual emission reductions, tonnes of CO_2 equivalent
2013	3,838
2014	3,838
2015	3,838
2016	3,838
2017	3,838
2018	3,838
2019	3,838
2020	3,838
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	30,704
Annual average of estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	3,838

A.4.5. Confirmation that the proposed small-scale project is not a debundled component of a larger project:

Yenakiive Town Council confirms that the proposed small-scale project is not a separate component of a larger project since there is not registered small-scale JI project or application for registration of other small-scale JI project, where:

- Existing JI SSC project has completed the determination process involving the same participants;
- The same project category and technology/measure are used;
- Determination of the project has been made publicly available in accordance with paragraph 34 of the JI guidelines within the previous 2 years;
- Project boundary of other project is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

A.5. Project approval by the Parties involved:

The Project Idea Note had been submitted for review of the National Environmental Investment Agency of Ukraine. Subsequently, the National Environmental Investment Agency of Ukraine issued a Letter of Endorsement for this project # 2145/23/6 on 13/12/2010.
Further on, Letter of Approval #3151/23/6 by the Ukraine (host Party) was issued on 28/10/2011.
Written project approval by a Party involved in JI small-scale project, other than the host Party was obtained – Declaration of Approval reference #2011JI57 on 02/02/2012, issued by "NL Agency" Ministry of Economic Affairs, Agriculture and Innovations.

SECTION B. Baseline

B.1. Description and justification of the baseline chosen:

Description and justification of the baseline chosen is provided in accordance with "Guidance on criteria for baseline setting and monitoring", (Version 03)[5] and in accordance with "Guidelines for users of the joint implementation project PDD form for small-scale projects and the form for submission of bundled joint implementation small-scale projects " (version 04)[6].

The **JI specific approach** is used for description and justification of the baseline chosen that includes the following steps:

1. Indication and description of the approach chosen regarding baseline setting;
2. Application of the approach chosen.

Step 1. Indication and description of the approach chosen regarding baseline setting

A special approach to JI[7] with elements of AMS-II.J methodology (Demand-side activities for efficient lighting technologies), version 04[8], chosen for setting the baseline, includes the following stages:

1) Identifying plausible alternative scenarios to the project.
At this project stage, possible alternative scenarios and their implementation opportunities are identified.

2) Analysis of the key factors that affect the implementation of the alternative scenarios.
This stage includes analysis of key factor and attractive alternative scenarios. As the result of analysis, the conclusion on the opportunity of implementation of alternative scenarios is made.

3) Choice of the most plausible scenario
This stage results in determination of the baseline scenario based on key factors. An acceptable and most possible alternative is the baseline scenario.

1. Identifying plausible alternative scenarios to the project

The following criteria are set for identification of alternative scenarios:
- the scenario should be possible for implementation by the project participants;
- the scenario should ensure the same level of lighting in the facilities;
- the scenario can not result from force major.

According to terms of scenario establishment, the following alternatives were proposed:

- Alternative scenario 1: usage of ICLs in the project period;
- Alternative scenario 2: Town Administration is to replace ICLs with CFLs;
- Alternative scenario 3: Town Administration is to replace ICLs with LED lamps.

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

[6] http://ji.unfccc.int/Ref/Documents/Guidlines_users_JISC_PDD_Form.pdf

[7] In accordance with item 9(a) of "Guidance on criteria for baseline setting and monitoring", (Version 03).

[8] http://cdm.unfccc.int/methodologies/DB/5RMYBVTQ83H9CJA99M2392TSNO9IUJ

2) Analysis of the key factors that affect the implementation of the alternative scenarios.

Key factors are the factors having a significant impact upon the alternative scenario implementation.

Key factors include:

1) Key factor 1 is the financing the alternative scenario;
2) Key factor 2 is fulfillment of regulatory instruments (Ordinance of the Cabinet of Ministers of Ukraine # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions"[9] stipulates gradual change of ordinary CFLs with up-to-date energy efficient sources of light)
3) Key factor 3 is fulfillment of sanitary regulations and rules with CFLs kept (according to state sanitary rules and regulations "Hygienic requirements to industrial waste management and determination of population health hazard class" (DSanPiN 2.2.7.029-99)"[10], CFLs should be kept in special conditions listed in section F).

3) Choice of the most plausible scenario – baseline

Table B.1 represents the analysis of key factors' impact on alternative scenarios.

Table B.1. Analysis of key factors' impact on alternative scenarios.

Key factor / Alternative scenario	Key factor 1	Key factor 2	Key factor 3
Alternative scenario 1	This scenario is the continuation of the existing situation (the Town Council would have the same level of financing).	Ordinance of the Cabinet of Ministers of Ukraine # 1337-r stipulates replacement of failed lamps that are out of order after using the stocks	No contradictions
Alternative scenario 2	Despite of decreasing of consumption of electricity in case of installation modern lighting sources, CFLs have not being installed.		It's necessary to provide training on CFL management and storage, and keep CFLs in accordance with regulations.
Alternative scenario 3	Despite of decreasing of consumption of electricity in case of installation modern lighting sources, LED lamps have not being installed.		No contradictions

The Ordinance of the Cabinet of Ministers of Ukraine No. 1337-r aimed for the replacement of common ICLs that are out of order, and replacement of ICLs while capital repairs and maintenance while small-scale JI project aimed to replace ICLs which were functioned in budget and social facilities. Besides

[9] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1337-2008-%F0

[10] http://3umf.com/doc/5421/

measures outlined in the Ordinance of the Cabinet of Ministers of Ukraine No. 1337-r are non-binding (advisory in nature) for Yenakiive town council according to clause 2 of this document[11].

Taking into account impact of key factors on alternative scenarios, one may come to the conclusion that Alternative scenario 1, which stipulates usage of ICLs in the project period, is the most plausible and conservative one. Therefore, the project scenario is not a part of the baseline scenario.

Step 2. Application of the approach chosen

The following parameters are used **to establish the baseline** (estimation of greenhouse gas emissions according to the baseline):
- Number of ICLs installed in the budget and social facilities in the Town of Yenakiive ($Q_{BL,i}$);
- Rated Power of ICLs installed in budget and social facilities in the Town of Yenakiive ($P_{i,BL}$);
- Average daily operating hours of ICLs (O_i);
- Fraction of CFLs in local public buildings within budget funding ($F_{CFL,y}$);
- Demand-Side Carbon Emission Factor ($EF_{CO2,ELEC}$).

Data / Parameter	$Q_{BL,i}$
Data unit	Number
Description	The number of installed ICLs , type 'i'; ICL power rating makes 100W or 150W.
Time of determination/monitoring	During the replacement phase.
Source of data (to be) used	Real amount of ICLs which were collected on the replacement phase.
Value of data applied (for ex ante calculations/determinations)	100W: 13,414 150W: 30
Justification of the choice of data or description of measurement methods and procedures (to be) applied	This is a constant. Its value not depends on the year 'y' of the project activity.
QA/QC procedures (to be) applied	Standardised forms will be used for the data collection during the survey and the people responsible for conducting the survey on ground will be reasonably educated about the project. Additionally, there will be experts and reliable personnel to oversee the overall process.
Any comment	

Data / Parameter	$P_{i, BL}$
Data unit	Watts
Description	Rated power of the baseline lighting devices of the group of "i" lighting devices (Watts)
Time of determination/monitoring	During the replacement phase.
Source of data (to be) used	Weighted Average Power Rating of the baseline ICLs as recorded during lamp distribution
Value of data applied (for ex ante calculations/determinations)	ICL of following two power rating would be replaced as part of the project activity. These are 100W (13,414 pieces) and 150W (30 pieces).
Justification of the choice	The power rating recorded on each ICL will be considered as the primary

[11] Ordinance of the Cabinet of Ministers of Ukraine # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions" translated in English is presented in Annex 2 to the PDD.

of data or description of measurement methods and procedures (to be) applied	source of this data. In cases where the wattage label is not visible, a portable power meter will be used to determine the rating on the spot.
QA/QC procedures (to be) applied	Standardised forms will be used for the data collection during the distribution and the people responsible for distribution on ground will be reasonably educated about the project. Additionally, there will be experts and reliable personnel to oversee the overall process.
Any comment	This data may be verified during the ICL utilization.

Data / Parameter	O_i
Data unit	Hours
Description	Average daily operating hours of the devices of the group of "i" baseline Devices
Time of determination/monitoring	Monitoring during credit period
Source of data (to be) used	The number of operation hours of lamps is fixed in the operation hours' log. Example of the operation hours' log can be found in supporting documents (SD-3).
Value of data applied (for ex ante calculations/determinations)	It's of 7.96 hours per day according to the monitoring in February, 2011. During the monitoring, this value will be updated in accordance with real operating hours.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The number of operation hours within a day is determined by continuous measuring of ICL usage hours within 120 days of representation period of lighting instrument operation (in February, April, July, and October). Paper operation hours' logs are used for these measurements. To obtain the total number of operation hours, these records will be processed and extrapolated for the entire project. Healthcare and educational institutions are different groups of facilities within the project. Therefore, for estimation of achieved final value of emission reduction units (ERUs), the average weighted value of operation hours will be used.
QA/QC procedures (to be) applied	To control the quality of data records by local authorities, inspections will be initiated. The Example can be found in supporting documents (SD-4).
Any comment	

Data / Parameter	$F_{CFL,y}$
Data unit	Fraction
Description	Fraction of CFLs in local public buildings within budget funding
Time of determination/monitoring	Annually
Source of data (to be) used	According to the information obtained from state bodies responsible for the formation and implementation of unified state policy on energy saving and/or from state statistics
Value of data applied (for ex ante calculations/determinations)	0
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Despite the gradual penetration of energy efficient lamps in the Ukrainian market, state funding of the large-scale replacement of ICLs with CFLs in the public sector is not sufficient. Information concerning the enforcement of the Ordinance # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions" in other cities of Ukraine

	during the crediting period will be monitored annually by project participants in order to justify that the project continue to be not a common practice
QA/QC procedures (to be) applied	Data will be obtained on the request of project coordinator, Innovation Center "Ecosystem" from state bodies responsible for the formation and implementation of unified state policy on energy saving and/or from state statistics.
Any comment	The value of this parameter represents the penetration rate of CFLs in local public buildings within budget funding

Data / Parameter	$EF_{CO2,ELEC,y}$
Data unit	kg CO_2/kW·h
Description	Specific indirect carbon dioxide emissions from electric power consumption by the 2nd voltage class consumers[12] in 'y' year. It shows emission of GHG in CO_2 equivalent for production and transportation electricity for consumers.
Time of determination/monitoring	Monitoring during credit period
Source of data (to be) used	National Environmental Investment Agency of Ukraine.
Value of data applied (for ex ante calculations/determinations)	For 2011, the value is 1.227[13]. During the monitoring, this value will be updated in accordance with orders of the State Environmental Investment Agency of Ukraine. For preliminary estimates, the value for 2011 is used.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	No measurement required
QA/QC procedures (to be) applied	Data will be obtained from orders of the State Environmental Investment Agency of Ukraine.
Any comment	

B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the small-scale project:

JI specific approach is used for demonstration of additionality of the project in accordance with the paragraph 44(a) of the Annex I to the "Guidance on criteria for baseline setting and monitoring", (Version 03)[14] and in accordance with "Guidelines for users of the joint implementation project PDD form for small-scale projects and the form for submission of bundled joint implementation small-scale projects " (version 04)[15].

The demonstration that the project provides reductions in emissions by sources that are additional to any that would otherwise occur, is provided using the following step-wise approach:
1. Indication and description of the approach applied
2. Application of the approach chosen
3. Provision of additionality proofs

[12] For 2nd voltage class consumers belongs costumers and subcostumers which buy electricity in grid with voltage 27.5 kV and lower (http://www.nerc.gov.ua/control/uk/publish/article/main?art_id=84231&cat_id=34446).

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

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

[15] http://ji.unfccc.int/Ref/Documents/Guidlines_users_JISC_PDD_Form.pdf

Step 1. Indication and description of the approach applied

A JI-specific approach is chosen for justification of additionality. JISC's "Guidance on criteria for baseline setting and monitoring", (Version 03)[16] prescribes in this case to provide traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of anthropogenic emissions by sources or enhancements of net anthropogenic removals by sinks of GHGs.

Step 2. Application of the approach chosen

Analysis provided in Section B.1 demonstrates that the baseline scenario covers usage of ICLs in the project period.

The project is not a part of the baseline scenario since it can be shown based on the analysis of barriers affecting the project implementation.

Step 3. Provision of additionality proofs

Proofs of the abovementioned assumptions include the description of barriers to the project activity according to the "Information on additionality (Attachment A to Appendix B of 4/CMP.1 Annex II)"[17]. Below you will find three basic barriers:

(a) Investment barrier. Yenakiive town council is a body of local authorities. According to clause 2 of Ordinance of the Cabinet of Ministers of Ukraine # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions"[18], measures outlined in this Ordinance are non-binding (advisory in nature) for Yenakiive town council. According to "Combined tool to identify the baseline scenario and demonstrate additionality"[19], version 04.0.0 consistency with applicable laws and regulations should not be considered when these regulations do not have legally-binding status.

State funding of the large-scale replacement of ICLs with fluorescent lamps in the public sector is not sufficient since the initial cost of CFLs is ten times higher than the cost of ICLs. According to the Letter # 01-17-1313/02 dated 14 May 2012[20] obtained from Yenakiive town council, budget deficit has not provided for and allowed short-term funding of the measures recommended by the Ordinance because of funding the priority directions and also because of the high price of energy-efficient lamps compared to incandescent lamps. "Yenakiive energy saving program for 2011-2015" does not include measures on replacing ICLs with energy-efficient lamps. The lack of budget financing of these measures in Yenakiive town local budgets for 2008, 2009 and 2010[21] years demonstrates the continuation of the ICLs usage in the budget financed and social entities.

The costs savings induced by the reduction of energy consumption and the lifetime of the energy-saving lamps can not be spend on replacing the standart lamps with energy-efficient lamps in budget institutions of the town as the current budget deficit prohibits adequate financing even for the top-priority Yenakiive

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

[17] Source: https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid05.pdf

[18] Ordinance of the Cabinet of Ministers of Ukraine # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions" translated in English is presented in Annex 2 to the PDD

[19] Source: http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v4.0.0.pdf

[20] The Letter # 01-17-1313/02 dated 14 May 2012 obtained from Yenakiive town council is provided in Annex 2 to the PDD (translation from Ukrainian into English).

[21] Yenakiive town local budgets for 2008, 2009 and 2010 years were presented to the AIE

town areas (according to the Letter # 01-17-1313/02 dated 14 May 2012 obtained from Yenakiive town council).

The reasons that the current practice of using ICLs remains the common practice and most economically attractive scenario are more finance priority areas for Yenakiive town and the high cost of CFLs compared to ICLs.

(b) Technological barrier. The current practice shows a very low use of CFLs in public and social facilities due to lack of public funding. Therefore, the managers of the facilities are not very familiar with CFL based lighting technology (despite its simplicity). An additional technological barrier is related to the need for proper utilization of expired CFLs, which is handled appropriately within the current JI project. The point is that collection of non-operating CFLs will be centrally managed, and these lamps will be utilized by lamps owner (Carbon Futures LLP) in accordance with effective regulations (Detailed information is indicated in sections D.1 and F.1 of PDD).

(c) Other barriers: Unauthorised removal (theft) of CFLs. Due to high cost of CFLs, they are not widely used in the residential sector of the region. Installation of CFLs in facilities without proper supervision and monitoring is likely to lead to unauthorised removal (theft) of CFL for the re-sale or personal use. Special CFL supervision, in particular, appointment of responsible persons, and monitoring of installed CFLs under the current JI project effectively removes this barrier.

Thus, emission reductions achieved during the project implementation are additional to the baseline scenario. Emission of GHG in baseline scenario is higher than emission of GHG in small-scaled project because rated power of CFLs less than rated power of ICLs with similar light power.

B.3. Description of how the definition of the project boundary is applied to the small-scale project:

The project activity involves a set of measures to improve energy efficiency in lighting systems of budget and social facilities of the town (the full list of facilities is provided in Annex 4). The project boundary is the physical, geographical location of each measure (each CFL) installed. Meanwhile, the project aims to reduce indirect GHG emissions.

GHG emission sources taken into account in the project activity are shown in the table B.2.

For both "Baseline Scenario" and "Project Scenario", CO_2 emissions should be included in the baseline and project scenarios. At the same time the project reduces emissions of CH_4 and N_2O from fuel consumption. However, these emissions are much smaller in comparison with than emissions of CO_2 and are excluded from the project to ensure that emission reductions are estimated in a conservative manner.

Table B.2. GHG emission sources related to the project activity

		Inside project boundary	Outside project boundary
Baseline Scenario	Included in the project	CO_2 emissions from electricity consumption of existing facilities	No GHG emissions related to business as usual activities
	Excluded from the project	CH_4 and N_2O emissions from electricity consumption of existing facilities	No GHG emissions related to business as usual activities
Project Scenario	Included in the project	CO_2 emissions from electricity consumption of facilities after applying energy-efficiency improvement measures	No GHG emissions related to the project activities
	Excluded from the project	CH_4 and N_2O emissions from electricity consumption of facilities after applying energy-efficiency improvement measures	No GHG emissions related to the project activities

Figure B.1 shows project boundaries and emission sources.

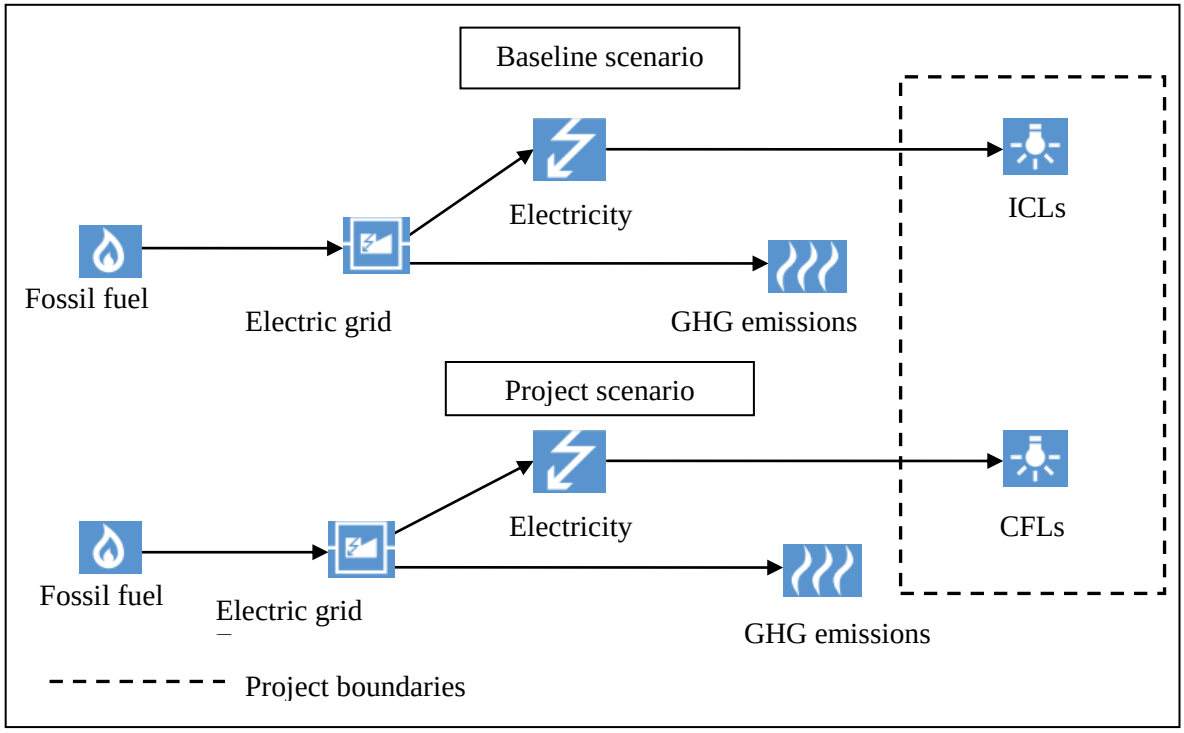

Figure B.1. Project boundaries and GHG emission sources

Table B.3 – Determination of the project boundaries

№	Project boundaries criteria	Comment
1	Controlled by the project parties	All lamps are controlled by the project participants as they are installed at budget and social facilities that are indicated in Annex 4. Emission sources are affected (controlled) while GHG emissions decrease upon reduced electricity generation in the Ukrainian power grid.
2	Reasonably belong to the project	GHG emission sources depend on the project activity as the reduction of electricity consumption cause the reduction of GHG emissions, therefore, project implementation reduces GHG emissions.
3	Scale of emissions from the GHG sources	Emissions from sources are significant - they exceed the level of 2,000 tCO_2-e (see section E).[22]

Emissions outside the project are caused by fossil fuel usage (extraction, processing, transportation, etc.). Since project implementation will lead to reduced electricity consumption related to decreased fossil fuel usage, reduction of GHG emissions outside the project is expected, but these emissions are insignificant and are not taken into account for conservative estimation of emission reduction.

[22] In accordance with item 14(a) of "Guidance on criteria for baseline setting and monitoring", (Version 03).

B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline:

The baseline emissions for the project activity will be calculated from the available information on the replaced number of CFL and its usage during the project lifetime.

Date of completion of the baseline study: 15/03/2011.

Name of the person/entity determination of the baseline:

ICF Consulting – Project's Consultant

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ICF Consulting and Agency for Rational Energy Use and Ecology (ARENA-ECO) is not a project participant listed in Annex 1.

SECTION C. Duration of the small-scale project / crediting period

C.1. Starting date of the small-scale project:

The project operational phase started on 07/02/2011 after replacement of ICLs with CFLs and initiated maintenance of the operation hours' log (examples of these logs are provided in the supporting documents).

C.2. Expected operational lifetime of the small-scale project:

The expected project period will last for about 10 years (120 months) until 31/12/2020.

C.3. Length of the crediting period:

Emission reduction units (ERUs) will be transferred to the Investor during the period from 07/02/2011 to 31/12/2012 (the total length of the crediting period is 1.9 years or 23 month). The transfer of emissions reduction units from 01/01/2013 till 31/12/2020 (the total length of the crediting period is 8 years or 96 month) will be made in compliance with forthcoming international agreements and Ukrainian legislation.

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

To provide a detailed description of the selected monitoring plan, step-by-step approach was chosen:

Step 1. Definition and description of the approach chosen for monitoring

Monitoring plan of the GHG emissions in the project and baseline scenarios and the GHG emissions reduction is elaborated on the basis of requirements of the "Guidance on criteria for baseline setting and monitoring", (Version 03)[23].

The monitoring plan employs the following is based on specific JI approach and partly on methodology AMS II.J - Demand-side activities for efficient lighting technologies (Version 04)[24] approaches to the determination of the GHG emissions in the project and baseline scenarios.

Step 2. Usage of the chosen approach

Since there are no direct CO_2 emissions in the project, the emission estimate (and further emission monitoring) is based on electricity consumption from the power grid and specific indirect emissions of carbon dioxide.

Parameters required for estimation in accordance with abovementioned approaches include:

1. Parameters continuously monitored within the entire crediting period:

- Number of operating hours of lighting instruments within a day (O_i);
- Specific indirect carbon dioxide emissions from electricity consumption ($EF_{CO2,ELEC}$).
- Fraction of CFLs in local public buildings within budget funding ($F_{CFL,y}$).

2. Parameters which are determined once and are taken as constants for the whole monitoring period. They are available at the stage of determination:

- Number of ICLs replaced ($Q_{BL,i}$);
- Power rating of replaced ICLs ($P_{BL,i}$);
- Power rating of CFLs installed (being installed, $P_{PJ,i}$);

3. Parameters which are determined once and are taken as constants during monitoring but are not available at the stage of determination:

Absent.

The chosen monitoring approach includes monitoring and estimation of baseline emissions, project scenario emissions and leakages. GHG emission estimation and monitoring are provided as follows:

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

[24] http://cdm.unfccc.int/methodologies/DB/5RMYBVTQ83H9CJA99M2392TSNO9IUJ

Stage1. Baseline emission calculation

Step1. The electricity consumption in baseline scenario in year 'y' is calculated as follows:

$$EC_{BL,y} = \sum_{i=1}^{n} Q_{BL,i} \cdot P_{i,BL} \cdot O_i \cdot 365/1000 \quad (1)$$

Table D.1. Description for baseline electricity consumption calculation

Symbol	Parameter Definition	Ex-ante value Applied	Rationale for value applied
EC_{BL}	Baseline electricity consumption in year y (kWh)	Calculated based on Equation (1)	-
$\sum_i$	Sum over the group of "i" devices (i.e. 100W and 150W incandescent bulb)	-	-
$Q_{BL,i}$	Number (quantity) of devices of the group of "i" devices (i.e. 100W and 150W incandescent bulb)	100W: 13,414 pieces 150W: 30 pieces	-
$P_{BL,i}$	Power of the devices of the group of "i" baseline devices	100W and 150W	-
O_i	Average daily operating hours of the devices of the group of "i" baseline devices	7.96 hours	-

Step 2. The emission in baseline scenario in year 'y' is calculated as follows:

$$BE_y = EC_{BL,y} \cdot (1 - F_{CFL,y}) \cdot EF_{CO2,ELEC,y} \cdot 10^{-3} \quad (2)$$

Table D.2. Description for baseline emission calculation

Symbol	Parameter Definition	Ex-ante value Applied	Rationale for value applied
BE_y	Emission in year t CO_2	Calculated based on Equation (2)	
EC_{BL}	Electricity consumption in year y (kWh)	Calculated based on Equation (1)	
$F_{CFL,y}$	Fraction of CFLs in local public buildings within budget funding	0	State Agency on Energy Efficiency and Energy Saving of Ukraine, as an executive body responsible for the formation and implementation of unified state policy on energy saving, in its letter # 774-01/13/4-12 dated 18 May 2012[25] confirmed that the transition to the use of

[25] The letter # 774-01/13/4-12 dated 18 May 2012 obtained from State Agency on Energy Efficiency and Energy Saving of Ukraine was presented to the AIE.

			energy efficient lighting in budgetary institutions are made depending on the availability of budget funding for these purposes. The lack of budget financing of these measures is discussed in section B.2. aboe.
$EF_{CO2,ELEC,y}$	Electricity consumption carbon emission factor for Ukraine, kgCO_2/kWh	1.227	According to the order of the National Environmental Investment Agency of Ukraine, this value for 2011 makes 1.227[26]. During the monitoring, this value will be updated in accordance with orders of the State Environmental Investment Agency of Ukraine. The 2011 value is used for preliminary estimates.

Stage2. Project emission calculation

Step1. The electricity consumption by the project activity in year 'y' is calculated as follows:

$$EC_{PJ,y} = \sum_{i=1}^{n} Q_{PJ,i} \cdot P_{i,PJ} \cdot O_i \cdot 365/1000 \quad (3)$$

Table D.3. Description for project electricity consumption calculation

Symbol	Parameter Definition	Ex-ante value Applied	Rationale for value applied
$EC_{PJ,y}$	Project electricity consumption in year y (kWh)	Calculated based on Equation (3)	-
$\sum_i$	Sum over the group of "i" devices (i.e. 20W and 32W CFLs)	-	-
$Q_{PJ,i}$	Number (quantity) of devices of the group of "i" devices (i.e. 20W and 32W CFLs)	20W: 13,414 pcs. 32W: 30 pcs.	-
$P_{PJ,i}$	Power of the devices of the group of "i" project devices	20W or 32W	-
O_i	Average daily operating hours of the devices of the group of "i" baseline devices	7.96 hours.	-

Step 2. The emission by the project activity in year 'y' is calculated as follows:

$$PE_y = EC_{PJ,y} \cdot EF_{CO2,ELEC,y} \cdot 10^{-3} \quad (4)$$

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

Table D.4. Description for project emission calculation

Symbol	Parameter Definition	Ex-ante value Applied	Rationale for value applied
PE_y	Emission in year t CO_2	Calculated based on Equation (4)	
EC_{PJ}	electricity Consumption in year y (kWh)	Calculated based on Equation (3)	
$EF_{CO2,ELEC,y}$	Electricity consumption carbon emission factor for Ukraine, $kgCO_2/kWh$	1.227	According to the order of the National Environmental Investment Agency of Ukraine, this value for 2011 makes 1.227[27]. During the monitoring, this value will be updated in accordance with orders of the State Environmental Investment Agency of Ukraine. The 2011 value is used for preliminary estimates.

Stage 3. Leakages

There is no leakage in the project on either installation side or disposal side, due to the following reasons:

- Project leakage (indirect effects) may be incurred due to improper storage and partial re-use of ICLs that are replaced with CFLs. Leakage may occur, for example, either when undestroyed 100W lamps are used instead of expired 60W or 75W ICLs in buildings outside of the project boundary or when such lamps are installed in locations with no illumination prior to project initiation. To prevent project leakage, implementing organizations will properly replace ICLs with CFLs, store and dispose those ICLs being replaced.

- Replaced ICLs will be collected from facilities and kept till their destruction. It will be assumed that the amount of collected ICLs will be higher or equivalent to the number of installed CFLs. It can be accurately checked only by manual counting of ICLs collected in each facility and comparison of their amount with the amount of CFLs delivered to the same facility. These two values are confirmed by transfer certificates. Collected ICLs shall be transported to the utilization site and utilized/destroyed (the certificate of completed work on ICL destruction is provided in the supporting documentation SD-2).

Possible other leakage:

- In the course of operation certain lamps will fail which might result in decreased emission reductions. However, the project provides for the immediate replacement of failed CFLs with new CFLs. In the course of monitoring the replacement date will be recorded and the operating hours of the lamp will be corrected as needed (e.g., during the replacement the time when the lamp is not functioning will be subtracted from the daily number of operational hours).

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

- As it was mentioned before, CFLs are expensive. Therefore, unauthorized removal (theft) is possible for resale or personal use. But monitoring conditions for CFLs installed under the current project require a supervision which effectively reduces the possibility of unauthorized removal. Also, the project stipulates immediate installation of new CFLs in case of detected unauthorized removal.

To provide the opportunity of installation of new CFLs (or ICLs) in case of their failure or unauthorized removal, a reserve of 1% working lamps is provided in each facility. According to the practice, this amount of reserve lamps is enough for immediate replacement/installation of working CFLs.

In case of a lamp failure (or determined lamp removal), a responsible person shall install a new lamp and fill in the form "Accounting of Philips failed lamps". All failed and newly installed lamps shall be included in this form.

CFL (containing mercury) collection, storage and utilization procedures are performed in accordance with state sanitary rules and regulations "Hygienic requirements to industrial waste management and determination of population health hazard class" (DSanPiN 2.2.7.029-99)"[28].

Stage 4. GHG emission reductions in year 'y' (ERy) are estimated by the following formula:

ERy = (BEy – PEy) - LEy (5)

Where:

ERy – Emission reductions in year y (tCO_2e)

BEy – baseline GHG emissions in year 'y' (tCO_2e)

PEy- project GHG emissions in year 'y' (tCO_2e)

LEy – Leakage emissions in year y (tCO_2e)

Monitoring surveys

First actual monitoring survey

The goal of the first monitoring survey is determining the amount and power of replaced ICLs; power of installed CFLs; number of operation hours of lighting instruments during a day and specific indirect carbon dioxide emissions.

Periodic monitoring surveys

The goal of periodic monitoring survey is monitoring of the amount of operation hours of lighting instruments during a day; fraction of CFLs in local public buildings within budget funding; specific indirect carbon dioxide emissions.

Average daily operating hours of the devices of the group of "i" baseline devices (O_i)
The table below shows the plan of monitoring of the number of operation hours of lighting instruments during a day.

[28] http://3umf.com/doc/5421/

Table D.5. O_i parameter survey plan

#	Attribute	Project plan
1	Goal	The goal is estimating the average number of lighting instrument operation hours.
2	Goal of operational measuring and data to be collected	The operation hours' logs (please see SD-3 for an example) will be used for daily record of operation hours of lighting instruments in all facilities within 120 days per year. This data will be used for calculation of average weighed value of daily operation hours. The average weighed values will be effective within the whole crediting period.
3	Data collection period	Because of different duration of the light day, monitoring is conducted for 4 months per year. Months chosen for estimation of operation hours depend on annual variation of the light day. To ensure a conservative approach, April, July, October, and February were chosen for monitoring. April, July, and October were chosen since these months are representative (mid-season) for spring, summer, and autumn. February was chosen as the winter representative month since this month has the longest light day duration in winter which allows making conservative estimation of GHG emission reduction. Also, January is not representative month because of high number of days off. After data receipt for each data collection month (April, July, October, and February), the value of the day duration will be extrapolated for the whole season.
4	Data collection method	Within the monitoring period, data is collected in the operation hours' logs by inputting lamp operation hours during each day. In the post-monitoring period, notes on lamp serviceability and operation are input in the logs.

Fraction of CFLs in local public buildings within budget funding ($F_{CFL,y}$)

Despite the gradual penetration of energy efficient lamps in the Ukrainian market, state funding of the large-scale replacement of ICLs with CFLs in the public sector is not sufficient. Fraction of CFLs in public buildings within budget funding (F_{CFL}) will be monitored annually by project participants according to the information obtained from executive bodies responsible for the formation and implementation of unified state policy on energy saving and/or state statistics. In the case of sufficient budget funding of the large-scale replacement of ICLs with CFLs in the public sector, the baseline emissions will be calculated by taking into account the penetration rate of CFLs in local public buildings within budget funding.

Data storage.

All data will be stored at least 2 years after the end of the crediting period in a paper (at facilities) and electronically (at the Special Workgroup and Innovation Center "Ecosystem") to ensure safe storage of information. Detailed information is given in Section D.4.

D.2. Data to be monitored:

Data / Parameter	$Q_{PJ,i}$
Data unit	Number
Description	Number (quantity) pieces of equipment of type 'i' distributed or installed under the project activity (units) instead of ICLs; the power rating of the CFL would be 20W or 32W.
Time of determination/monitoring	During the replacement phase.
Source of data (to be) used	Actual CFL distribution during the project.
Value of data applied (for ex ante calculations/determinations)	20W CFLs: 13,414 pcs. 32W CFLs: 30 pcs.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	This number is a constant value once all of the project's CFLs are distributed.
QA/QC procedures (to be) applied	Standardised forms will be used for the data collection during the survey and the people responsible for conducting the survey on ground will be reasonably educated about the project. Additionally, there will be experts and reliable personnel from the project participants to oversee the overall process.
Any comment	

Data / Parameter	$P_{i, BL}$
Data unit	Watts
Description	Rated power of the baseline lighting devices of the group of "i" lighting devices (Watts)
Time of determination/monitoring	During the replacement phase.
Source of data (to be) used	Weighted Average Power Rating of the baseline ICLs as recorded during lamp distribution
Value of data applied (for ex ante calculations/determinations)	ICL of following two power rating would be replaced as part of the project activity. These are 100W (13,414 pieces) and 150W (30 pieces).
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The power rating recorded on each ICL will be considered as the primary source of this data. In cases where the wattage label is not visible, a portable power meter will be used to determine the rating on the spot.
QA/QC procedures (to be) applied	Standardised forms will be used for the data collection during the distribution and the people responsible for distribution on ground will be reasonably educated about the project. Additionally, there will be experts and reliable personnel from the project participants to oversee the overall process.
Any comment	This data may be verified during the ICL utilization.

Data / Parameter	$P_{i, PJ}$
Data unit	Watts
Description	Rated power of the project lighting devices of the group of "i" lighting devices (Watts)
Time of determination/monitoring	During the replacement phase.

Source of data (to be) used	CFL power rating recorded during distribution.
Value of data applied (for ex ante calculations/determinations)	Project activity envisages distribution of 2 type power rating CFLs. They are 20W (13,414 pcs.) for replacement of 100W and 32W ICLs (30 pcs.) for replacement of 150W ICLs.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The power rating mentioned on the CFLs will be recorded during the lamp distribution.
QA/QC procedures (to be) applied	Standardised forms will be used for the data collection during the distribution and the people responsible for distribution on ground will be reasonably educated about the project. Additionally, there will be experts and reliable personnel from the project participants to oversee the overall process.
Any comment	This data has been checked upon CFL transfer (in accordance with the CFL transfer certificate).

Data / Parameter	O_i
Data unit	Hours
Description	Average daily operating hours of the devices of the group of "i" baseline Devices
Time of determination/monitoring	Monitoring during credit periods
Source of data (to be) used	The number of operation hours of lamps is fixed in the operation hours' log. Example of the operation hours' log can be found in supporting documents (SD-3).
Value of data applied (for ex ante calculations/determinations)	It's of 7.96 hours per day according to the monitoring in February, 2011. During the monitoring, this value will be updated in accordance with real operating hours.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The number of operation hours within a day is determined by continuous measuring of ICL usage hours within 120 days of representation period of lighting instrument operation (in February, April, July, and October). Paper operation hours' logs are used for these measurements. To obtain the total number of operation hours, these records will be processed and extrapolated for the entire project. Healthcare and educational institutions are different groups of facilities within the project. Therefore, for estimation of achieved final value of emission reduction units (ERUs), the average weighted value of operation hours will be used.
QA/QC procedures (to be) applied	To control the quality of data records by local authorities, inspections will be initiated. (The example is provided in supporting documentation SD-4).
Any comment	

Data / Parameter	$F_{CFL,y}$
Data unit	Fraction
Description	Fraction of CFLs in local public buildings within budget funding
Time of determination/monitoring	Annually
Source of data (to be) used	According to the information obtained from state bodies responsible for the formation and implementation of unified state policy on energy saving and/or from state statistics
Value of data applied	0

(for ex ante calculations/determinations)	
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Despite the gradual penetration of energy efficient lamps in the Ukrainian market, state funding of the large-scale replacement of ICLs with CFLs in the public sector is not sufficient. Information concerning the enforcement of the Ordinance # 1337-r "On Implementation of Measures to Reduce Electricity Consumption by Budget Institutions" in other cities of Ukraine during the crediting period will be monitored annually by project participants in order to justify that the project continue to be not a common practice
QA/QC procedures (to be) applied	Data will be obtained on the request of project coordinator, Innovation Center "Ecosystem" from state bodies responsible for the formation and implementation of unified state policy on energy saving and/or from state statistics.
Any comment	The value of this parameter represents the penetration rate of CFLs in local public buildings within budget funding

Data / Parameter	$EF_{CO2,ELEC,y}$
Data unit	kg CO_2/kW·h
Description	Specific indirect carbon dioxide emissions from electric power consumption by the 2nd voltage class consumers[29] in 'y' year. It shows emission of GHG in CO_2 equivalent for production and transportation electricity for consumers.
Time of determination/monitoring	Monitoring during credit periods.
Source of data (to be) used	National Environmental Investment Agency of Ukraine.
Value of data applied (for ex ante calculations/determinations)	For 2011, the value is 1.227[30]. During the monitoring, this value will be updated in accordance with orders of the State Environmental Investment Agency of Ukraine. For preliminary estimates, the value for 2011 is used.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	No measurement required.
QA/QC procedures (to be) applied	Data will be obtained from orders of the State Environmental Investment Agency of Ukraine.
Any comment	

Ecological impact of the small-scale JI project is absent under condition of compliance of rules of handling and storage of CFLs that are indicated in section F.

D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:

Data/Parameter	**QA/QC procedures to be applied:**
$Q_{PJ,i}$	Power of replaced ICLs and their amount are confirmed by relevant certificates of completed works.
$P_{i, BL}$	
$P_{i, PJ}$	Power of installed ICLs is confirmed by certificates of completed works.

[29] For 2nd voltage class consumers belongs costumers and subcostumers which buy electricity in grid with voltage 27.5 kV and lower (http://www.nerc.gov.ua/control/uk/publish/article/main?art_id=84231&cat_id=34446).

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

	Power of ICLs to be installed will be confirmed by certificates of completed works.
O_i	To ensure proper quality of records in the operation hours' logs (SD-3), the personnel responsible for operation time logging, lamp keeping and removal has been trained. To ensure quality control, a special working group performs log maintenance inspections. Please see supporting materials for inspection examples (SD-4).
$F_{CFL,y}$	This parameter will be monitored annually by project participants according to the information obtained from state bodies responsible for the formation and implementation of unified state policy on energy saving and/or state statistics.
$EF_{CO2,ELEC,y}$	Data will be obtained following orders of the State Environmental Investment Agency of Ukraine.

D.4. Brief description of the operational and management structure that will be applied in implementing the monitoring plan:

The project coordinator "Ecosystem" is in charge of data collection and reporting. The Yenakiive administration has assembled the special working group (SWG) to oversee the project implementation. Each building supervisor/manager will have a separate task of monitoring and safeguarding the project implementation. Random inspections will be conducted by SWG in the buildings to ensure proper project implementation.

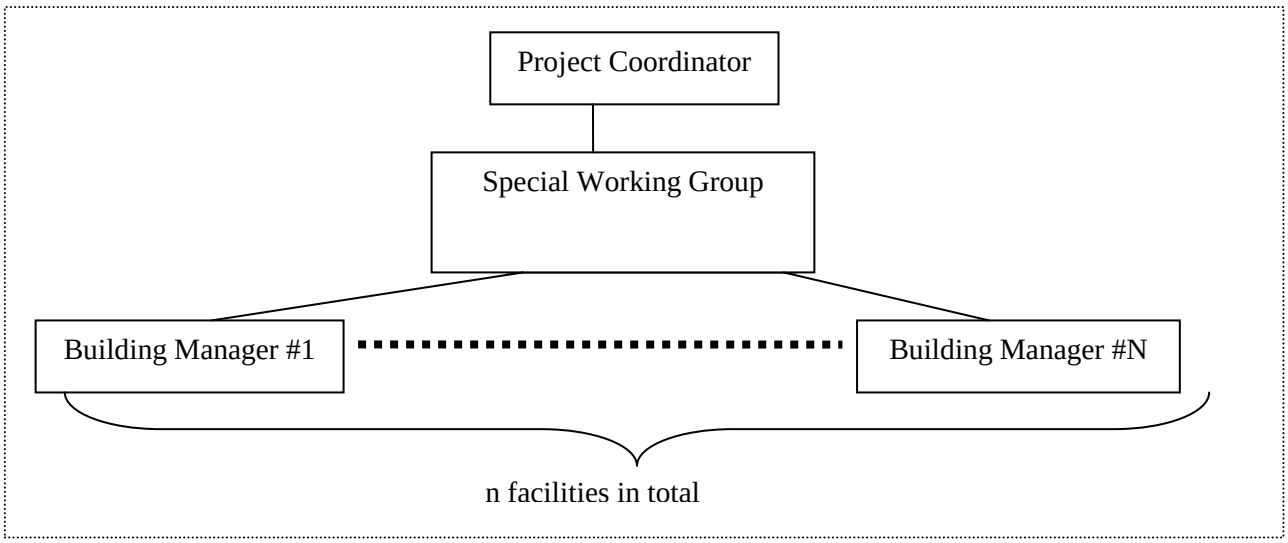

Figure D.1. Management structure

[redacted]

The monitoring plan and existing operational structure allow tracking GHG emission reduction by each facility, which is the advanced practice for such type projects.

A. Training and calibration

Staff involved in the project implementation and checks will be (was) trained according to the guidelines, and the training facts are fixed in the training protocols (see the supporting documentation).

B. Data storage

Monitoring data (original logs and relevant acts) will be collected in paper format and kept for at least 2 years after the crediting period. Aggregated information in Microsoft Excel format will be saved on a hard drive and kept for at least 2 years by a representative of Ecosystem after the crediting period. To ensure reliability of information storage in the electronic format, files are backed up and saved on DVD kept in the office of Ecosystem for at least 2 years after the crediting period.

D.5. Name of person(s)/entity(ies) establishing the monitoring plan:

Name of the person/entity establishing the monitoring plan:

ICF Consulting – Project's Consultant

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Name of the person/entity responsible for the monitoring:
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Fax: +38 044 248-70-72
Contact person: Dmitriy Danilkin
Email: dmitriy.danilkin@ic-ecosystem.com

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions and formulae used in the estimation:

Please see Section D for the project GHG emissions calculation formula. In addition, supporting documentation (SD-1) includes estimates of the project GHG emissions.

Table E.1. Result for project emission for crediting period under the Kyoto Protocol

Year	Project Emissions, t CO_2
2011	860
2012	960
Total	1,820

Table E.2. Result for project emission for late crediting period after 2012

Year	Project Emissions, t CO_2
2013	960
2014	960
2015	960
2016	960
2017	960
2018	960
2019	960
2020	960
Total	7,680

E.2. Estimated leakage and formulae used in the estimation, if applicable:

No leakage.

E.3. Sum of E.1. and E.2.:

Since there in no applicable leakage to this project, the sum of E.1. and E.2. is equal to the value estimated in the section E.1.

E.4. Estimated baseline emissions and formulae used in the estimation:

Please see Section D for the baseline GHG emissions calculation formula. In addition, supporting documentation (SD-1) includes estimates of the baseline GHG emissions.

Table E.3. Result for baseline emission calculation for crediting period under the Kyoto Protocol

Year	Baseline Emission, t CO_2
2011	4,299
2012	4,798
Total	9,097

Table E.4. Result for baseline emission calculation for late crediting period after 2012

Year	Baseline Emission, t CO_2
2013	4,798
2014	4,798
2015	4,798

2016	4,798
2017	4,798
2018	4,798
2019	4,798
2020	4,798
Total	38,384

E.5. Difference between E.4. and E.3. representing the emission reductions of the project:

Table E.5. Result for Emission Reduction for crediting period under the Kyoto Protocol

Year	Emission Reduction, t CO_2
2011	3,439
2012	3,838
Total	7,277

Table E.6. Result for Emission Reduction for late crediting period after 2012

Year	Emission Reduction, t CO_2
2013	3,838
2014	3,838
2015	3,838
2016	3,838
2017	3,838
2018	3,838
2019	3,838
2020	3,838
Total	30,704

E.6. Table providing values obtained when applying formulae above:

Table E.7. Emission reductions for crediting period under the Kyoto Protocol

Year	Estimated project emissions (tonnes of CO_2 equivalent)	Estimated leakage (tonnes of CO_2 equivalent)	Estimated baseline emissions (tonnes of CO_2 equivalent)	Estimated emission reductions (tonnes of CO_2 equivalent)
2011	860	0	4,299	3,439
2012	960	0	4,798	3,838
Total (tonnes of CO_2 equivalent)	1,820	0	9,097	7,277

Table E.8. Emission reductions for late crediting period after 2012

Year	Estimated project emissions (tonnes of CO_2 equivalent)	Estimated leakage (tonnes of CO_2 equivalent)	Estimated baseline emissions (tonnes of CO_2 equivalent)	Estimated emission reductions (tonnes of CO_2 equivalent)
2013	960	0	4,798	3,838
2014	960	0	4,798	3,838
2015	960	0	4,798	3,838

2016	960	0	4,798	3,838
2017	960	0	4,798	3,838
2018	960	0	4,798	3,838
2019	960	0	4,798	3,838
2020	960	0	4,798	3,838
Total (tonnes of CO_2 equivalent)	7,680	0	38,384	30,704

SECTION F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party:

On average every CFL contains about 5 mg of mercury that may have undesirable ecological effect if it is emitted into the environment. CFLs should be used and kept according to state sanitary rules and regulations "Hygienic requirements to industrial waste management and determination of population health hazard class" (DSanPiN 2.2.7.029-99)"[31]. At the same time, the Project participants will manage facilities where lamps are installed and adhere to current standards to prevent from environmental pollution with mercury.

The Project participants will support the efficient collection and disposal of failed CFLs in accordance with the current environmental standards, namely, keep CFLs in an iron air-proof box which can be accessed only by a person responsible for keeping. Failed CFLs will be delivered from facilities to departments of education or healthcare of town council and than to the owner, Carbon Futures, for proper utilization. Innovation Center "Ecosystem" will coordinate whole process of utilization.

Transboundary impacts are absent because the project aims to reduce electricity consumption and direct emissions of GHG are absent.

F.2. If environmental impacts are considered significant by the project participants or the host Party, provision of conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

The project participants are not required to perform the Environmental Impact Assessment (EIA) according to the Ukrainian law, in particular, Article 27 of the Law of Ukraine On Environmental Protection[32], Article 14 of the Law of Ukraine On Environmental Expertise[33], DBN A.2.2.-1-2003 Content and Structure of the Environmental Impact Assessment (EIA) Materials upon Designing and Construction of Enterprises, Buildings and Facilities[34]**,** DBN A.2.2.-3-2004 Content, Development Procedure, Agreement and Approval of Construction Project Documentation[35]**.**

This project complies with requirements of Articles 1, 3, 40, and 51 of the Law of Ukraine On Environmental Protection[36], and as a result, requirements of the environmental legislation of Ukraine.

[31] http://3umf.com/doc/5421/

[32] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1264-12

[33] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=45%2F95-%E2%F0

[34] http://www.proxima.com.ua/dbn/articles.php?clause=6

[35] http://www.proxima.com.ua/dbn/articles.php?clause=22

[36] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1264-12

SECTION G. Stakeholders' comments

G.1. Information on stakeholders' comments on the project, as appropriate:

The project information was published on the web-site of the Innovation Center "Ecosystem" [37]. Currently, on the stage of determination comments of stakeholders are not received.

[37] www.ic-ecosystem.com

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

Organisation:	Yenakiive Town Council
Street/P.O.Box:	Lenina sq.
Building:	7
City:	Yenakiive
State/Region:	Donetska oblast
Postal code:	86400
Country:	Ukraine
Phone:	+380 06252 5 13 72
Fax:	+380 06252 5 16 51
E-mail:	ispolkom@wn.dn.ua
URL:	
Represented by:	Mr. Sergiy Rykhadze
Title:	Mayor
Salutation:	Mr.
Last name:	Rykhadze
Middle name:	Zhorzhovych
First name:	Sergiy
Department:	
Phone (direct):	
Fax (direct):	
Mobile:	
Direct e-mail:	

Organisation:	Carbon Futures LLP
Street/P.O.Box:	Ruskin House, Museum Street
Building:	40/41
City:	London
State/Region:	
Postal code:	WC1A 1LT
Country:	United Kingdom
Phone:	+44 (0) 20 7193 3935
Fax:	+44 20 7831 4476
E-mail:	ukrCFL@carbon-futures.org
URL:	www.carbon-futures.org
Represented by:	
Title:	Managing Director
Salutation:	Mr.
Last name:	Arman
Middle name:	
First name:	Anthony
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Phone (direct):	+44 20 7193 3935
Fax (direct):	
Mobile:	+44 7889 116 009
Direct e-mail:	tony@carbon-futures.org

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Annex 2

BASELINE INFORMATION

Translation from Ukrainian into English

/Coat of Arms of Ukraine/

CABINET OF MINISTERS OF UKRAINE

ORDINANCE
of the Cabinet of Ministers of Ukraine
of 16 October 2008 No.1337-r

"On implementation of measures to reduce electricity consumption by budget institutions"

1. To transfer budgetary institutions to use energy efficient lighting equipment of mainly domestic production in buildings and areas of their location, in compliance with illumination sanitary standards the ministries, other central executive bodies, the Council of Ministers of the Autonomous Republic of Crimea, state regional administrations, Kyiv and Sebastopol City State Administrations shall provide:

obligatory usage of energy efficient lighting equipment on replacing the faulty incandescent bulbs (after completing the previously purchased stock) from 01 November 2008;

during the capital and maintenance repair of power management buildings and structures, install only energy efficient lighting approved by the State Sanitary and Epidemiological Service from 01 January 2009.

2. To recommend to the local governments to take measures outlined in this Ordinance so as to ensure a smooth transition during 2008-2009 for institutions funded from local budgets to the use of energy efficient lighting in buildings and areas of their location.

3. State Inspection on Energy Efficiency shall control the transfer of budget institutions to use energy efficient lighting in buildings and areas of their location.

Prime Minister of Ukraine Y. TYMOSHENKO

Ind. 37

15 травня 2012 року
Переклад даного документу з української мови на англійську виконано в Бюро перекладів «Альфа-Груп».
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Контактний номер телефону: (+38 044) 229 6239
Перекладач _____ Ткаченко Тетяна Олегівна
Диплом серії КВ № 37385644, виданий Приватним вищим навчальним закладом "Українським інститутом лінгвістики і менеджменту" 14.07.2009.

May 15, 2012
This document is translated from Ukrainian into English in "Alpha-Group", Translation and Interpreting Agency.
Address: 01601 Ukraine, Kyiv, Pecherskyi uzviz, 3, office 204.
Phone number: (+38 044) 229 6239
Translator _____ Tkachenko Tetiana Olegivna
Diploma Series KB No. 37385644 issued by Private higher education institution "Ukrainian Institute of Linguistics and Management" on July 14, 2009.

Translation from Ukrainian into English

/Coat of Arms of Ukraine/
UKRAINE

EXECUTIVE COMMITTEE OF YENAKIIVE TOWN COUNCIL

7 Lenin sq., Yenakiive, Donetsk region, 86430. Phone No. +38(06252) 2-21-03
Fax No.+38 (06252) 5-16-51. E-mail: ispolkom@wn.dn.ua

Dated *14 May 2012* No.*01-17-1313/02*
as per No. *20-12/ES* dated *07 May 2012*

ATTN: General Director
of Innovation Center "Ecosystem"
Kurulenko S.S.

Dear Svyatoslav Sergiiovich!

According to your letter on implementation of the joint implementation project "Implementation of energy-efficient lighting system in the Donetsk Region with the use of Kyoto Protocol mechanism: replacement of incandescent lamps with energy-efficient ones at budget financed and social entities in the Yenakiive town" (hereinafter referred to as the Project), we would like to provide the following information:

Ordinance of the Cabinet of Ministers of Ukraine No.1337-r dated 16 October 2008 "On implementation of measures to reduce electricity consumption by budget institutions" is a recommendation for local authorities regarding the transfer of budget institutions to use energy-efficient illumination. Yenakiive budget deficit has not provided for and allowed short-term funding of the measures recommended by the Ordinance because we have to fund the priority directions and also because of the high price of energy-efficient bulbs compared to traditional bulbs.

Within 2011 the Project implementation resulted in savings stipulated in the appropriate budget item. However, such savings can not be spend on replacing the standard bulbs with energy-efficient bulbs in budget institutions of the city as the current budget deficit prohibits adequate financing even for the top-priority Yenakiive areas such as wage payment, nutrition and medication supply, capital repairs in education and health institutions.

The city runs "Yenakiive energy saving program for 2011-2015", which does not include measures on replacing standard bulbs with energy-efficient bulbs.

The project, implemented by our joint efforts, is a pivotal project. The project is possible only because of investors' funds attracted to the project.

We are looking forward to successful completion of all procedures linked to registration of the Project and sustainable supply of energy-efficient bulbs for Yenakiive budget and social institutions within the project.

We sincerely thank you and Carbon Futures for cooperation and, in turn, reaffirm our commitment to the diligent performance within the Project.

Sincerely yours,
First Deputy Mayor /***Signature***/ I.G. Sylvanskyi

Executed by Lukianova Olena Oleksandrivna. Phone No.+38(06252)2-23-32

15 травня 2012 року
Переклад даного документу з української мови на англійську виконано в Бюро перекладів «Альфа-Груп».
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Контактний номер телефону: (+38 044) 229 6239
Перекладач _____ Ткаченко Тетяна Олегівна
Диплом серії КВ № 37385644, виданий Приватним вищим навчальним закладом "Українським інститутом лінгвістики і менеджменту" 14.07.2009.

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Annex 3

MONITORING PLAN

Please see Section D for the monitoring plan.

Annex 4

BUDGET AND SOCIAL FACILITIES OF YENAKIIVE TOWN WHERE ICLS HAVE BEEN REPLACED WITH CFLS

#	Name of Facility	Address of Facility
Medical Facilities:		
1	Health Care Department	128 Tiunova Str.
2	City Hospital # 1	2 Girnikiv Str.
3	City Hospital # 2	4 Furmanova Str.
4	City Hospital # 3	50 Mayakovsogo Str., Bulavynske
5	Polyclinic # 4	2 Illucha Str., Yunokomunarsk
6	City Hospital # 5	1 Akademika Pavlova Str., Karlo-Marksove
7	Polyclinic # 6	22 Druzhby Str., Vuglegirsk
8	City Hospital # 7	37 60-rokiv-SRSR Str.
9	Children City Hospital	121 Blukhera Str.
10	Ambulance Station	21 Krasnukh Zor Str.
11	Clinic of Family Medicine	17 Pionerska Str., Olkhovatka
12	Dental Clinic # 1	128 Blukhera Str.
13	City Health Care Center	1 Kalinina Str.
Educational Facilities:		
14	Educational Complex # 1	3 Peredovykiv Str.
15	Educational Complex # 2	84A Shevchenko avenue.
16	Educational Complex # 3	1 Yermishina Str.
17	Educational Complex # 4	12 Pravdy Str., Karlo-Marksove
18	Educational Complex # 5	107 Bronenosets Potomkin Str.
19	Educational Complex # 6	1 Wilyamsa Str.
20	Educational Complex # 7	68 50-let-Oktyabrya Str.
21	Educational Complex # 8	50 Wilyamsa Str.
22	Educational Complex # 9	1113 Turutina Str.
23	Educational Complex # 10	1 Chkalova Str., Bulavynske
24	Educational Complex # 11	2B Tyumenska Str., Yunokomunarsk
25	Educational Complex # 12	230A Turutina Str.
26	Educational Complex # 13	13 Yuvileyna Str., Yunokomunarsk
27	Educational Complex # 14	30 Utina Str., Oleksandrivske
28	Educational Complex # 15	81 XX-Partzyizdy Str.
29	Educational Complex # 16	1 Shkilna Str., Olkhovatka
30	Educational Complex # 17	14 Suvorova Str., Vuglegirsk

31	Educational Complex # 18	113 Krasoflotska Str.
32	Educational Complex # 19	1 Trofimova Str., Korsun
33	Educational Complex # 20	1 Radisheva Str.
34	Educational Complex # 21	20 Druzhby Str., Vuglegirsk
35	Educational Complex # 22	15 Mayakovskogo Str., Karlo-Marksove
36	School # 3	26 50-let-Oktyabrya avenue.
37	School # 34	31 60-rokiv-SRSR Str.

Owner of all indicated facilities is Yenakiive Town Council. Contacts are provided below:
EDRPOU: 33984581
KVED: 75.11.4 managing of districts, towns, districts in towns
Address: Yenakiive, Donetska oblast, 7 Lenina sq., 86400
Contact: Rykhadze Sergiy Zhorzhovych
Contact person position: Mayor
Tel: +380 06252 5 13 72
Fax: +380 06252 5 16 51
Email: ispolkom@wn.dn.ua