JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM
Version 01 - in effect as of: 15 June 2006

CONTENTS

SECTION A. General description of the project

A.1. Title of the project:

Construction of new energy unit at Novosibirsk HPS 5

Sectoral scope: 1 - Energy industries (renewable/non-renewable sources)
Version №: 02
Date: May 05, 2012

A.2. Description of the project:

The project objectives:

- Increase in efficiency of electricity production
- Improving environmental conditions
- Reduction of greenhouse gas emissions

The project tasks:

- The introduction of turbine T-180/210 130 and generator TGV-200-2MUZ.
- Introduction of the boiler E-670-13,8-545
- Construction of tower number 3
- Construction of civil engineering infrastructure

The situation before the project

Before the project implementation Novosibirsk HPS 5 consist of 5 power units and two towers. Installed electric capacity was 900 MW, installed heat capacity was 2590 Gcal/h.

The baseline scenario

The baseline scenario is based on the assumption that if the project is not implemented (i.e. additional electricity will not be supplied to the grid) third parties will cover the energy demand. The energy companies within the same regional energy system (UPS "Siberia") can increase electricity generation at the existing capacities by delaying decommissioning of outdated capacity and/or installing new energy units. Additional heat generation will be covered by existing facilities and new facilities at CHPs and new coal boiler houses with high efficiency (85%).

Baseline emission will be equal to 7 907 504 t CO_2 for the period 2008-2012.

Project

The project scenario assumed construction of new energy unit № 6 at Novosibirsk HPS-5, which includes a steam-dust coal boiler type TPE-214 Taganrog factory "Krasniy kotel'shik," LMZ turbine T-180/210-130, generator type TGV-200-2 Municipal Kharkov plant "Electrotyazhmash" and a full set of auxiliary equipment.

Project emission will be equal to **6 533 683 t CO_2 in 2008-2012 .**

The project implementation will result in a reduction of greenhouse gas emissions of **1 374 357 t CO_2 in 2008-2012.**

Project history
In 1994 power unit № 5 was input into operation and installation of power unit № 6 was started , but due to the economic crisis in the country this work was suspended.
In early 2003, when an investment program of OJSC "Novosibirskenergo" was forming the resumption of the installation and commissioning of power unit 6th was considered. The estimation of economic efficiency of the project resumption was made and results have demonstrated the economic unattractiveness of the project. As a result, it was decided to implement the project, taking into account the additional carbon finance in the frame of Kyoto protocol. In July 2004, installation works were completed and cooling tower number 3 was put into operation. Without this cooling tower number 3 the power unit № 6 would not be effective. The cooling tower has reduced the installed capacity of the station limits.
On January 24, 2005 power unit № 6 was put into operation and installed capacity of Novosibirsk HPS 5 has amounted 1080 MW.
From the moment of decision making till JI project development real actions was taken to secure JI status. These actions are reflected in the number of protocols of meeting about given JI project realization from 2003 till 2011.

A.3. Project participants:

Party involved	Legal entity project participant (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Party A - Russian Federation (Host Party)	OJSC «Novosibirskenergo»	No
Party B – no	-	-

OJSC “Novosibirskenergo”
On February 1993, OJSC "Novosibirskenergo” was formed at the base of Novosibirsk Production Association of Energy and Electrification." In 2006, in accordance with the all-Russian power sector reform plan, the company was divided into generating - "Novosibirskenergo" and supply company - "Sibirenergo."
On July 1, 2011 OJSC "SIBECO" became the legal successor of OJSC "Novosibirskenergo". OJSC "SIBEKO" the largest producer of electric and heat energy in Siberia. The structure of power generation facilities includes six HPS: HPS-2, HPS-3, HPS-4 and HPS-5 in Novosibirsk and Barabinskaya HPS and Biyskaya HPS (OJSC "Biyskenergo") Biysk.
Installed electricity capacity of OJSC “SIBECO” is equal to 3089 MW, installed heat capacity - 7 897 Gcal/hour.

A.4. Technical description of the project:

A.4.1. Location of the project:

The project shall be implemented at the Novosibirsk HPS 5 in Octyabr'skiy district of the city of Novosibirsk of Novosibirsk region.

A.4.1.1. Host Party(ies):

The Russian Federation

Figure A.1. Russia on the world map

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

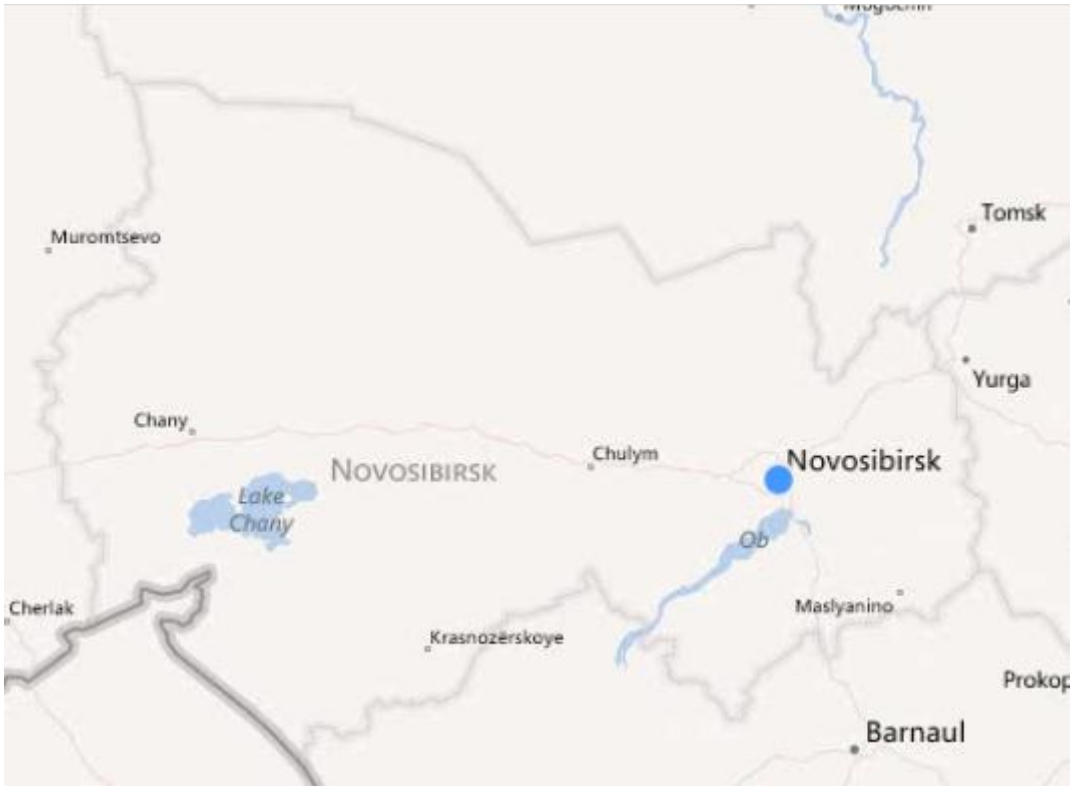
The Novosibirsk region is located in the central part of the Russian Federation in the south-east of the West Siberian Plain.

Figure A.2. Novosibirsk region on the map of Russian Federation

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

City of Novosibirsk.

Figure A.3. Novosibirsk on the map of the Novosibirsk region

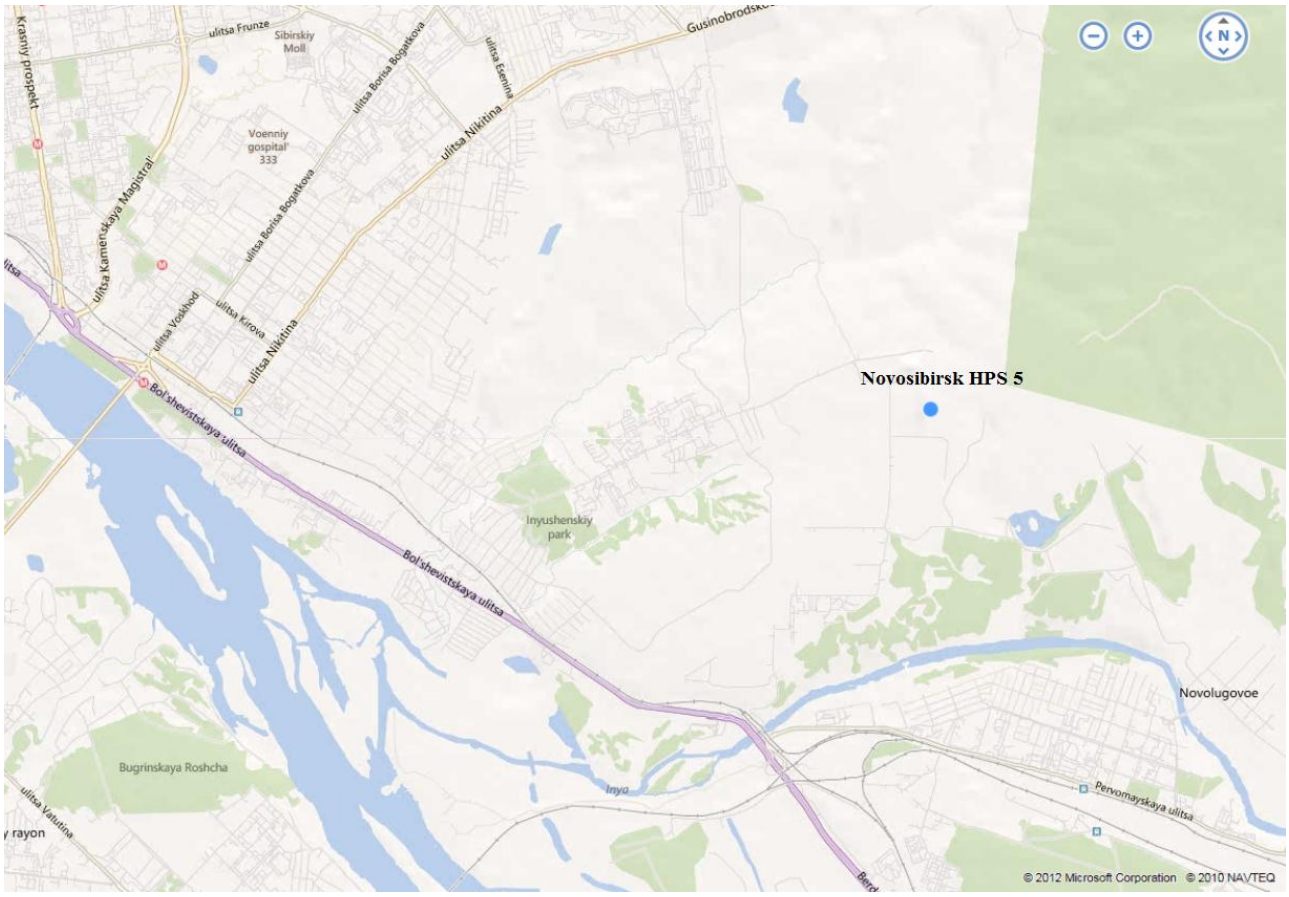


A.4.1.4. Detail of physical location, including information allowing the unique identification of the project (maximum one page):

The project is implemented in the production area of the Novosibirsk HPS 5 OJSC "Novosibirskenergo":

Novosibirsk HPS 5 situated in Octyabr'skiy district of Novosibirsk – Vibornaya str. - 201,
55° 0′ 20″ N, 83° 3′ 38″ E

Figure A.4.1.4 Project location



A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project:

The project provides an input of new unit 6 on the Novosibirsk HPS 5.

The main technical solutions

The composition of the main equipment of unit №6 of Novosibirsk HPS 5:

- Turbine T-180/200 130 of the Leningrad Metal Works;
- Generator type TGV-200-2MUZ Kharkov plant "Electrotyazhmash";
- Boiler E-670-13,8-545 QD (model TPE-214B), 670 t steam / h Taganrog Boiler Plant.

Table A.1 Indicators ofoperation of init № 6

Indicator	Unit of measurment	Value
Fuel		Coal
Specific fuel consumption for electricity output	g/kWh	292.60
Specific fuel consumption for heat output	Kg/Gcal	142.42

Turbines T-180/210-130-1, in accordance with the specifications, steam, condensation with two adjustable steam extraction, one intermediate steam reheat, intended for direct drive generator and a heat supply for heating. The index of -1 means the designation of the turbine, the turbine is made to design cooling water temperature 27 ° C (for HPS with cooling towers).

The nominal total heat load of heating extractions, equal to 260 Gcal / h, is provided at the nominal parameters of the steam, cooling water flow through the condenser to its design temperature at the inlet of at least 11,000 m3 / h, fully-enabled regeneration, the amount of feed water, heated to high-pressure heaters of 100% steam flow to turbine work turbine scheme the company - the manufacturer, with a step-heating network water heaters in the network at full capacity of the turbine and the minimum pass steam condenser.

The maximum electric power of turbine - 210 MW is provided at the nominal parameters of fresh steam and reheat steam, fully-enabled regeneration, switched off the heating and additional steam extraction, clean running part of the cooling water flow rate equal to 22 000 m3 / h and the calculated cooling water temperature of 27 °.

The turbines are designed to work with the following main parameters:

№	Parameter		Value
1.	Capacity, MW	Nominal	180
2.		Maximal	210
3.	Nominal heat load, Gkal/h		260
4.	Nominal parameters of fresh steam before stop valves	Pressure, MPa (kgs/sm^2)	12,75 (130)
5		Temperature, ^{o}C	540
6.	Nominal temperature of steam after overheating before stop valves of CSD, ^{o}C		540
7.	Consumption of steam, т/ч	Nominal	656
8.		Maximal	670
9.	The nominal cooling water flow through the condenser, m^3 /h		22 000
10.	The estimated temperature of the cooling water inlet to the condenser, o C		27
11	Consumption of steam in the condenser, t/h	Minimal	30
12		Maximal	461

Drum-type boilers E-670-140-545 (model TPE-214), Taganrog factory "Red boilermaker" are designed to work with a steam turbine T-180/210-130 -1.

Boilers are designed for burning of Kuznetsk coal grades D and E. The boiler is suspended construction, single-hull, U-shaped configuration, the furnace consists of a rectangular cross-section in the light of 12 480 x 13 520 mm, the transition duct, and standpipe convective shafts with two additional duct.

In the transition flue of the boiler there are primary and secondary superheaters. In the course of the movement of gases in the transition there are duct screens of the 1st and 2nd stage, superheater. On the side and front walls of the furnace wall there are panels of radiation superheater. In the standpipe convective mine there is a water economizer and an air heater. In the corners of the combustion chamber tangentially to the axis of the furnace there are eight blocks of ramjet burners installed.

The main parameters of the boiler:

№	Parameter		Value
1.	Nominal steam generate capacity,t/h		670
2.	Maximal steam generate capacity,t/h		711
3.	Nominal parameters of fresh steam behind the boiler:	Pressure, MPa (kgs/sm^2)	13,75 (140)

4.		Temperature, °C	545
5.	Overheated steam consumption,t/h		570
6.	Nominal parameters of overheated steam behind the boiler	Temperature, °C	545
7.		Pressure, MPa (kgs/sm^2)	2,53 (25,8)
8.	The temperature of feed water before the boiler, o C		244

Electrical part

Power output from the HPS 5 is provided on 110 and 220 kV circuit on the generator-transformer-line on the substation "Vostochnaya"
The generator № 6 is switched in the unit with a transformers with capacity of 250 MVA at 110 kV substation " Vostochnaya "
There is switchyard expansion of 110 kV of substation "Vostochnaya" to one section, reconstruction of existing units and installation of the third (to the existing two) autotransformers due ORU-110 kV and 220 kV capacity of 220 MVA.
Power tires own needs 6 kV by using 40 MVA transformers, voltage 15.75 / 6,3-6,3 kW installed in branches of the blocks.
The central control room is situated in a separate building and connected with transitional bridge to the main building, engineering and domestic housing.

Table A.2 Shedule of project realization

Main stages	Date
Decision making about project renewal	December 2002
Implementation of CMP	03.2003-08.2004
Pre-commissioning works	07.2004-09.2004
Date of commissioning	09.2004

A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances:

The project implementation will result in the generation of additional electricity and heat energy at the Novosibirsk HPS 5 OJSC "Novosibirskenergo" by installing of new power unit №6. Unit №6 will annually supply on average 1 215 million kWh with the specific fuel consumption to supply electricity equal to on average 292.6 grammes of equivalent fuel/ KWh, which corresponds to greenhouse gas emissions of 0.811 tons CO_2/MWh. The electricity produced by the unit №6 will replace the electricity which in the absence of the project would have been produced at the existing and new facilities of power stations of the UPS Siberia. The emissions of greenhouse gases at the UPS Siberia are on average 0.995 tons of CO_2/MWh. Also, the heat energy generated from the unit №6, which is on average 811 ths.Gcal, will replace less efficient, in comparison with the project, existence and new facilities of HPS UPS Siberia and regional coal boiler houses.

Thus, at the expense of lower fuel combustion efficiency at power stations of the UPS Siberia and regional coal boiler houses (compared to the fuel combustion efficiency of the unit №6 ща Novosibirak HPS 5) for the generation of electricity and heat energy it will be necessary to burn a larger amount of fuel. The result of the project is a reduction of greenhouse gas emissions due to the fact that less fossil fuel will be burnt at the UPS Siberia and the regional coal boiler houses.

A.4.3.1. Estimated amount of emission reductions over the crediting period:

	Years
Length of the crediting period	5
Year	Estimate of annual emission reductions in tonnes of CO_2equivalent
2008	**265 799**
2009	**323 505**
2010	**290 860**
2011	**253 643**
2012	**240 549**
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	**1 374 357**
Annual average of emission reductions over the crediting period (tonnes of CO_2 equivalent)	**274 871**

Table A.4.3-1. Estimated amount of emission reductions after the first commitment period.

	Years
Length of the crediting period	8
Year	Estimate of annual emission reductions in tonnes of CO_2equivalent
2013	**240 549**
2014	**240 549**
2015	**240 549**
2016	**240 549**
2017	**240 549**
2018	**240 549**
2019	**240 549**
2020	**240 549**
Total estimated emission reductions after the crediting period (tonnes of CO_2 equivalent)	**1 924 392**
Annual average of emission reductions after the crediting period (tonnes of CO_2 equivalent)	**240 549**

A.5. Project approval by the Parties involved:

On September 15, 2011 the Resolution of the Government of the Russian Federation "Concerning the measures on the implementation of Article 6 of the Kyoto protocol to the UN FCCC concerning climate changes" was adopted. This document approves the Regulations concerning the implementation of Article 6 of the Kyoto protocol. In accordance with item 8 of the Regulations Projects shall be approved by the ministry of Economic Development of the Russian Federation based on the results of the competitive selection of applications. The competitive selection of applications is made by the operator of carbon units (Sberbank of Russia) in accordance with item 5 of the Resolution of the Government of the Russian Federation No.780.

The application should contain "a positive expert opinion regarding the project documentation,

prepared in accordance with international requirements by an independent body, chosen by the applicant". Thus, in accordance with the applicable laws of the Russian Federation in the implementation of CO projects, Project approval is possible only after a positive opinion is received from the determining company.

The project approval by a Party involved other than the host Party is absent at the time of the determination. The party involved other than the host Party will be determined after the approved by the Ministry of Economic Development and Trade of the Russian Federation.

SECTION B. Baseline

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

As appropriate, project participants may, but are not obliged to, apply approved clean development mechanism (CDM) baseline and monitoring methodologies. Based on that a JI specific approach regarding baseline setting is used. This approach is based on the provisions of Guidelines for users of the JI PDD Form (Version 04) and Guidance on criteria for baseline setting and monitoring (Version 3) and includes the following steps:

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

The following is a detailed presentation of the two steps:

Step. 1. Indication and Description of the Approach Chosen Regarding the Baseline Setting

The baseline is determined on the basis of considering various alternatives for the development of the situation, including the proposed project. The key factors will be determined as the criteria for the selection of the baseline scenario. All alternatives will be considered based on the impact of these factors on them. The alternative scenario in which the key factors have the least negative impact will be selected as the baseline.

Thus, the steps for determining the baseline are as follows:

a) Identification of alternative scenarios.
b) Description of the key factors.
c) Analysis of the influence of the key factors on the alternatives.
d) Choosing the most plausible alternative scenario.

Step. 2. Application of the Scenario Chosen

Identification of alternative scenarios

At this stage the alternative scenarios are defined and checked for compliance with the applicable law.

There are two alternative scenarios:

Alternative scenario 1. The electricity to be generated by project is provided by the other existing plants and the other new energy units of UPS Siberia. The heat to be generated by project is provided by newly constructed boilers and by increasing the load on the existing boiler equipment of power-supplyers of the Novosibirsk region.

Alternative scenario 2. Realization of the project without it being registered as a joint implementation project - Construction of new energy unit at Novosibirsk HPS 5 to generate additional power on coal.

The project involves the installation of unit №6 at Novosibirsk HPS 5 OJSC "Novosibirskenergo" which will allow additional electricity and heat energy to be generated on an annual basis. The Unit №6 have good operational performance indicators, the specific fuel consumption for the electric supply is on average 292.6 grammes of equivalent fuel/ KWh. Additional electricity generated at the unit №6 at Novosibirsk HPS 5 will replace the electricity generated at the UPS Siberia, which has the worst performance indicators and, therefore, consumes more fuel when generating electricity. Also, it will replace the heat energy generated at regional boiler houses, which are less efficient in comparison with the project

Table B 1.1. Electric and heat energy supply from the unit № 6 according to alternative scenario 2

	2008	2009	2010	2011	2012
Electricity output (mln. kWh)	1 243 414	1 118 462	1 346 728	1 063 990	1 302 783
Heat energy output (ths. Gcal.)	711 053	888 238	776 123	824 334	858 167

Alternative scenario 3. Construction of new energy unit at Novosibirsk HPS 5 to generate additional power on natural gas, fuel oil, biomass e.t.c – on the fuel other than coal.
This alternative assumes increasing of Novosibirsk HPS 5 capacities with equipment working on the other fuel than coal.

None of the stated alternatives contradict the applicable law and may be considered in the proceeding analysis

Description of the key factors and analysis of the impact of the key factors on these alternatives.

The baseline will be created taking into account the specific circumstances of the energy industry in Russia and the development of the energy sector. On the base of following documents there is evidence that energy sector will be develop and installed capacity of UPS Siberia will increase:
- The concept of long-term social and economic development of the Russian Federation until 2020 (confirms the task of overcome the shortage of generating capacity in the generation of electrical energy and network industries)
- Energy strategy of Russia until the 2020,2030.
So, all alternative scenarios correspond to the national and sectoral policies.

The baseline will be created taking into account following key factors that influence the selection of the situation development scenarios in the field of electricity and heat generation at the unit №6 of Novosibirsk HPS 5 of OJSC "Novosibirskenergo":
- Economic situation and availability of funds (including investment barrier);
- Local availability of technologies, equipment, experience and know-how;
- Price and availability of fuel

The impact of the key factors on these alternative scenarios is determined using a factor analysis.

Table B1.2. Factor analysis.

Factor	Alternative 1	Alternative 2	Alternative 3
Local availability of technologies, equipment, experience and know-how	An insignificant impact The use of the existing equipment for the generation of energy at the Novosibirsk HPS 5 of OJSC "Novosibirskenergo" is general practice in Russia and does not require upgrading and training of personnel.	A significant impact Three-stage combustion system wasn't realized at plants in Russia. Additional training of personnel to operate the project equipment will be required.	A significant impact Novosibirsk region is coal oriented region. There is no gas infrastructure to provide project capacities with natural gas. There are no such technologies in the region to provide the project capacities on biomass. There are no enough fuel oil infrastructures at Novosibirsk HPS 5 to
Economic situation and availability of	An insignificant impact	A significant impact	

funds (including investment barrier)	This alternative does not require any investment. Accordingly, there is no need for additional capital.	Given project is economically unattractive for realization. So, there is investment barrier exist for realization of alternative 2. (Detailed investment analysis is presented in section B 2)	provide such capacities with enough amount of fuel oil. Moreover, fuel oil prices are much higher than coal and gas prices. There are lots of technological and supplying difficulties to provide such big capacities with biomass. Huge investment will be necessary to provide this alternative. Additional training of personnel to operate the project equipment will be required.
Price and availability of fuel	An insignificant impact For the operation of the Novosibirsk HPS 5 in the current conditions no increase in fuel consumption is required and, consequently, fuel costs will remain at the same level.	A significant impact As a result of the implementation of this alternative, there is an increase in fuel consumption. Additional coal supplies are necessary for Novosibirsk HPS 5. Rate of growth for coal prices significantly exceed of growth of inflation in the country. Fuel costs will substantially increase.	

Conclusion:

Based on the analysis it is clear that the key factors contribute to the implementation of Alternative Scenario 1 and have a negative impact on Alternative Scenario 2 and Alternative Scenario 3. Therefore, Alternative Scenario 1 is **the baseline**.

Key information and data to establish baseline

$$\mathbf{BE_y = BE_{el} + BE_{heat}} \qquad \textbf{(formula B.1-1)}$$

where:
$\mathbf{BE_{el}}$ – emissions from electricity generation at the UPS Siberia according to the baseline scenario, t CO_2;
$\mathbf{BE_{heat}}$ – emissions from the generation of heat energy at the regional heating stations according to the baseline scenario, t CO_2

$$\mathbf{BE_{el} = EO_{el} * EF_{grid}}, \qquad \textbf{(formula B.1-2)}$$

where:
$\mathbf{EF_{grid}}$ – greenhouse gas emissions during electricity generation at the UPS Siberia, tons of CO_2/MWh
$\mathbf{EO_{el}}$ – electric output from the unit №6 of Novosibirsk HPS 5, MWh;

$$\mathbf{EO_{el} = EG_{Unit\ №6} - EC_{aux\ Unit\ №6}} \qquad \textbf{(formula B.1-3)}$$

where:
$\mathbf{EG_{Unit\ №6}}$ - electricity generation at the unit №6 of Novosibirsk HPS 5, MWh
$\mathbf{EC_{aux\ Unit\ №6}}$ – electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries, MWh

$$\mathbf{BE_{heat} = (HO_{Unit\ №6} * 4.1868*10^{-6} * EF_{coal}) / \eta_{coal\ boiler}} \qquad \textbf{(formula B.1-4)}$$

where:

HO $_{\text{Unit №6}}$ – heat output from the unit №6 of Novosibirsk HPS 5, Gcal
EF$_{\text{Coal}}$ – CO2 emission factor for coal, tons of CO_2/ TJ.
$\eta_{\text{coal boiler}}$ – efficiency of coal boiler-house, %
4.1868*10^{-6} – conversion factor from Gcal to TJ

Tables with the key indicators and variables used for determining the baseline are given below:

Data/Parameter 1	**EG** $_{\text{Unit №6}}$
Data unit	MWh
Description	electricity generation at the unit №6 of Novosibirsk HPS 5
Time of determination/monitoring	Yearly
Source of data (to be) used	Technical reports for 2008-2011, forecast for 2012
Value of data applied (for ex ante calculations/determinations)	2008 – 1 362 414 MWh 2009 – 1 231 462 MWh 20010– 1 472 728 MWh 2011 - 1 227 000 MWh 2012 – 1 425 783 MWh
Justification of the choice of data or description of measurement methods and procedures (to be) applied	It is measured using electrical meters, and all data from the meters is automatically sent to the "Automated information and measuring system of commercial energy metering."
QA/QC procedures (to be) applied	All measurements are made by the calibrated measuring devices in accordance with the standards in the energy industry.
Any comment	

Data/Parameter 2	**EC**$_{\text{aux Unit №6}}$
Data unit	MWh
Description	electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries
Time of determination/monitoring	Yearly
Source of data (to be) used	Technical reports for 2008-2011, forecast for 2012
Value of data applied (for ex ante calculations/determinations)	2008 – 119 000 MWh 2009 – 113 000 MWh 2010 – 126 000 MWh 2011 - 101 000 MWh 2012 – 123 000 MWh
Justification of the choice of data or description of measurement methods and procedures (to be) applied	It is measured using electrical meters
QA/QC procedures (to be) applied	All measurements are made by the calibrated measuring devices in accordance with the standards in the energy industry.
Any comment	

Data/Parameter 3	**HO** $_{\text{Unit №6}}$

Data unit	Gcal
Description	heat output from the unit №6 of Novosibirsk HPS 5
Time of determination/monitoring	Yearly
Source of data (to be) used	Technical reports for 2008-2011, forecast for 2012
Value of data applied (for ex ante calculations/determinations)	2008 –711 053 Gcal 2009 - 888 238 Gcal 2010 –776 123 Gcal 2011 –824 334 Gcal 2012 –858 167 Gcal
Justification of the choice of data or description of measurement methods and procedures (to be) applied	It is calculated automatically by Automated measuring and information system for heat power fiscal accounting.
QA/QC procedures (to be) applied	All calculations are performed on the basis of the measured data. All measurements are made by the calibrated measuring devices in accordance with the standards in the energy industry.
Any comment	

Data/Parameter 4	$\mathbf{EF_{grid}}$
Data unit	tCO_2/MWh
Description	Greenhouse gas emissions during the generation of energy at the UPS Siberia.
Time of determination/monitoring	It is determined once
Source of data (to be) used	Research conducted by Lahmeyer International: "Dynamics of the development of the carbon emission factor during the generation of electric energy in Russia" http://www.ebrd.com/downloads/sector/eecc/Baseline_Study_Russia.pdf (page 5.2, table 5.1) http://www.ebrd.com/downloads/sector/eecc/Validation_report_Russia.pdf
Value of data applied (for ex ante calculations/determinations)	2008 – 1.003 t CO_2/MWh 2009 – 1.003 t CO_2/MWh 2010 – 1.006 t CO_2/MWh 2011 – 0.993 t CO_2/MWh 2012 – 0.949 t CO_2/MWh
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The emission factor was estimated by Lahmeyer International in accordance with the approved methodology of the Clean Development Mechanism "Guidance for the assessment of the emission factor during the generation of energy in the network" (version 02)
QA/QC procedures (to be) applied	The research passed the validation procedure of the independent expert company - TUV SUD.
Any comment	

Data/Parameter 5	$\eta_{\text{coal boiler}}$
Data unit	%
Description	Efficiency of the coal boiler houses

Time of determination/monitoring	It is determined once
Source of data (to be) used	AM 0058, version 03.1
Value of data applied (for ex ante calculations/determinations)	85%
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The data is taken from approved CDM methodology. This value of efficiency corresponds to New natural gas fired boiler (w/o condenser). This way is conservative.
QA/QC procedures (to be) applied	Correspond to international requirements.
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 JI project:

The analysis presented in Section B.1. clearly shows that the proposed project is not the baseline.

To prove additionality a JI specific approach was selected for social accountability projects.
For this purpose a provision was selected a) as defined in section 2 of Annex I to " Guidance on criteria for baseline setting and monitoring" (version 03.1), i.e. the provision of traceable and transparent information showing that the baseline is identified on the basis of conservative assumptions, that the project is not part of the identified baseline scenario and that the project will result in a reduction of anthropogenic emissions from the sources of greenhouse gases.
This section shows that the project provides a reduction in emissions from the sources that are additional to the emissions that would occur otherwise, using the following stepwise approach:

- At the first step the applicable approach is determined and described to prove additionality.
- At the second step the selected approach is applied.
- At the third step the additionality is proven.

In conclusion, explanations of the achieved reductions of greenhouse gas emissions are provided.

Below a detailed outline of this approach is presented.

Step 1. Indication and description of the applied approach to prove additionality.

A JI specific approach is based on the explanation that in any case the project could not happen due to the presence of the financial barrier, and that this activity is not common practice.

1. Financial barrier

Description of the financial barrier is given with the investment analysis.
The investment analysis includes a cost effectiveness analysis, from which a conclusion can be made about the attractiveness of the project if implemented without it being registered as a social accountability project.
The result of the investment analysis is a quantitative determination of economic efficiency indicators such as NPV, IRR and the discounted payback period.
As part of the investment analysis a sensitivity analysis is performed on variables such as electricity tariffs, the cost of natural gas and capital investments.
The project is additional if it is not economically attractive without the sales of Emission Reduction Units.

2. Common practice analysis

This stage corroborates the research conducted at the previous stage by analyzing the prevalence of the technology used in the Project and in the region. The project is additional if it is not common practice.

Step 2. Application of the selected approach

1. Investment analysis

The Investment analysis is performed for alternative scenario 2 in order to prove the additionality of the implemented project.
Following indicators of project efficiency are determined in calculations:

- Net present value
- Discount payback period
- Internal rate of return

The results of investment analysis for project scenario, determined on the base of economic and financial parameters of 2002 are presented below.

Table B.2.2. Economic efficiency indicators

Indicator	Unit of measurement	The project values without taking into account the sales of Emission Reduction Units
Investments (without VAT)	million roubles/ year	1 241
Average annual income	million roubles/ year	1 012
Average annual operating expenses	million roubles/ year	971
Average annual fuel costs	million roubles/ year	40
Average annual depreciation	million roubles/ year	0
Discounted payback period	years	Not compensated
Internal rate of return	%	9.5%
Net present value	million roubles	- 460

Sensitivity analysis:

The sensitivity analysis is performed for the project scenario, for alternative scenario 2. The impact of indicators such as the volume of investments, the price of coal, and electricity and heating tariffs are considered. The table below shows the results of the sensitivity analysis.

Investments		+10%	-10%
		Alternative scenario 2	
Discounted payback period	Years	-	-
Internal rate of return	%	- 533	- 387
Net present value	million roubles	8.58%	10.62%

Electricity tariffs	+10%	-10%

		Alternative scenario 2	
Discounted payback period	Years	-	-
Internal rate of return	%	- 331	- 588
Net present value	million roubles	15.22%	N/A

Heating tariffs		+10%	-10%
		Alternative scenario 2	
Discounted payback period	Years	-	-
Internal rate of return	%	- 428	- 491
Net present value	million roubles	11.17%	7.56%

Coal prices		+10%	-10%
		Alternative scenario 2	
Discounted payback period	Years	-	-
Internal rate of return	%	- 514	- 406
Net present value	million roubles	5,33%	12,41%

The sensitivity analysis shows that the electricity tariffs have the greatest impact on the project performance indicators.

2. Common practice analysis

This section provides an analysis of the prevalence of the technology used in the Project in 2002.

Current Project uses a system of three-stage combustion for the first time. The boiler of unit № 6 is equipped with an experimental system of fuel combustion: in the boiler furnace there are three combustion zone, gradually reducing the concentration of harmful products of combustion. The first zone - the main combustion burner includes the basic upper and lower tiers. In the first zone at the lower tier of burners mounted side air blast nozzle with a horizontal organization staging combustion of the fuel.

The second zone - reductive. In this zone, the gas nozzle is supplied natural gas and flue gas of recirculation. In the process of natural gas combustion in an area with a lack of oxygen the are products of incomplete combustion are produced, which interacts with the nitrogen oxides from the first zone are reduced to neutral molecular nitrogen.

The third zone - zone of afterburning. In this area through the tertiary blast nozzles hot air with high speed is introduced for providing of good mixing in the firebox and secondary combustion products of incomplete combustion of the previous zones.

Implemented at the unit 6 of the Novosibirsk HPS 5 three-stage combustion scheme with fuel gas recovery is provided the concentration of NOx in the flue gases are not bigger than 350 mg/Nm3, which is 2-3 times lower than conventional combustion of coal.

The project also has a unique developed and implemented Automated measuring and information system for heat power (AMISHP). Its uniqueness lies in the following:
• the first time in Russia power unit with a boiler with coal combusting is equipped with a full-scale AMISHP.
• automation of not only the thermo-covered, but all the electrical equipment unit, with fully satisfied all of the control, information and service functions required for trouble-free operation of the object in all operational modes.
• integration into AMISHP of unit № 6 number of other sub-systems: the local monitoring of MPD power generator-transformer stationб monitoring system of the generator, microprocessor terminals of electrical protection 6 kV switchgear, control subsystem of pyrometric flame in the boiler furnace, etc.
• its technical capabilities and characteristics of embedded AMISHP at Unit exceeds the number of foreign counterparts, based on a modern microprocessor-based components and open international standards that take into account the peculiarities of Russian industrial facilities and is fully compliant with Russian regulations.

Conclusion: The performed analysis shows that the project is not economically attractive without the sales of Emission Reduction Units. The analysis of common practice shows that the project is not common practice. Thus, the project activity is additional.

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

The boundaries of the project include the sources of greenhouse gas emissions related to the project.

It is only those sources are taken into account emissions from which are above (1%) in the overall quantity of GHG emissions.

The boundaries of the project include unit №6 of Novosibirsk HPS 5.

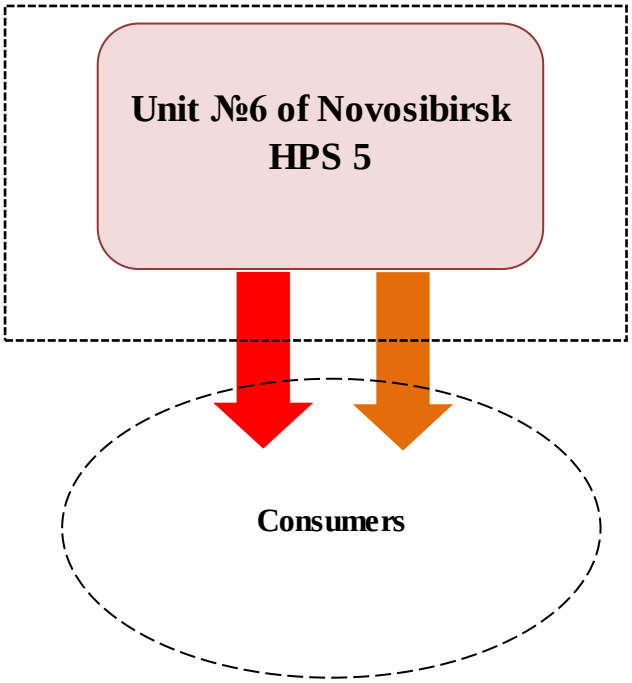
Table B 3.1: Sources of emissions within the baseline scenario and the project

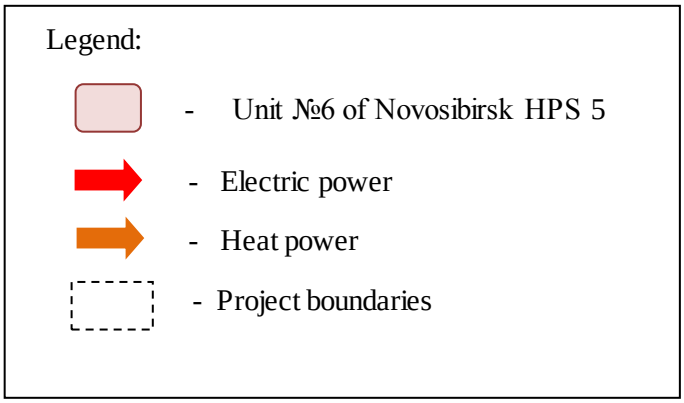
	Source	GHG	Included/ Not included	Comments
Baseline	Combustion of fuel for the generation of energy in the UPS Siberia	CO_2	Included	Major source of emissions
		N_2O	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary combustion of fuel in the energy industry for N2O is very insignificant
		CH_4	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary combustion of fuel in the energy industry for CH4 is very insignificant
Baseline	Combustion of fuel at the regional coal boiler houses	CO_2	Included	Major source of emissions
		CH_4	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary combustion of fuel in the energy industry for CH4 is very insignificant
		N_2O	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary combustion of fuel in the energy industry for N2O is very insignificant
Project	Combustion of fuel at the unit №6 of Novosibirsk HPS 5	CO_2	Included	Major source of emissions
		CH_4	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary

				combustion of fuel in the energy industry for CH4 is very insignificant
		N_2O	Not included	Emissions are very insignificant. In accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 2, Chapter 2, Table 2.2 the emission factor for the stationary combustion of fuel in the energy industry for N2O is very insignificant

On the basis of the performed analysis the boundaries of the project are presented in graphic form as follows:

Diagram B 3.1: Boundaries of the project





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

Date of baseline setting: 16/04/2012

The baseline was developed by:
Closed Joint-Stock Company "National Carbon Sequestration Foundation" (Moscow);

Contact: Evgeniya Baydakova, Senior Expert of the Project Development Department;
Phone: 8 499 788 78 35 ext. 104
Fax: 8 499 788 78 35 ext. 107
e-mail: BaydakovaEV@ncsf.ru

Closed Joint-Stock Company "National Carbon Sequestration Foundation" is not the project participant.

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

24.01.2005

C.2. Expected operational lifetime of the project:

25 years or 300 month: 24.01.2005 – 23.01.2030

C.3. Length of the crediting period:

5 years or 60 months 01.01.2008 - 31.12.2012

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

1. Indication and description of the monitoring approach applied

In accordance with "Guidelines for users of the JI PDD form" version 04 for monitoring of the project it is necessary to apply either approved CDM methodology or the JI Specific approach approach.

Monitoring plan of the given project based on the JI Specific approach in accordance with following regulations:

- Guidelines for the implementation of Article 6 of the Kyoto Protocol (Appendix B. Criteria for baseline setting and monitoring, II. Monitoring
- Guidance on criteria for baseline setting and monitoring, Version 03 (D. Guidance on monitoring) .

In accordance with "Guidelines for users of the JI PDD form" version 04, in section D it is necessary explicitly and clearly distinguish:

a) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination regarding the PDD;

b) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination regarding the PDD;

c) Data and parameters that are monitored throughout the crediting period.

1. Application of the approach chosen

Monitoring plan involves energy flow connected with unit №6 – fuel combustion, electric and heat power generation.
Thus, the reduction of greenhouse gas emissions is calculated by comparing the fuel consumption to supply the same amount of electric and heat energy according to the baseline scenario and as a result of the Project.

For project emission calculation following parameters are needed: volume of coal consumed at unit №6 of Novosibirsk HPS 5. For the baseline emission calculation: Volume of electric and heat power output from unit №6 of Novosibirsk HPS 5.

For the purpose of monitoring, the following data will be measured and calculated:

1. not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available
   - Emission factor for electric power plant of the UPS Siberia
   - Efficiency of coal boiler houses
   - Emission factor from the combustion of fuel

2. not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination regarding the PDD:

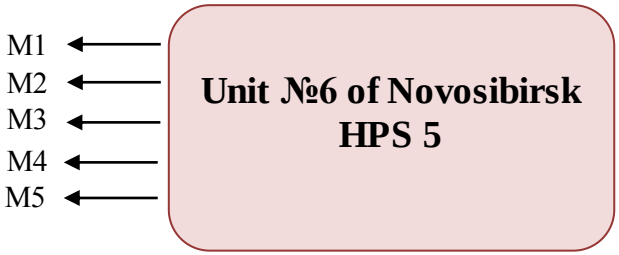
   - there is no such data

3. monitored throughout the crediting period:

- Coal consumption at unit №6 of Novosibirsk HPS 5;

- NCV of coal;
- Heat output from unit №6 of Novosibirsk HPS 5
- Electricity generation at unit №6 of Novosibirsk HPS 5
- Electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries.

Scheme D.1-1: Monitoring points



Legend:

M1 – point of monitoring

D.1.1. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario:

D.1.1.1.	**Data to be collected in order to monitor emissions from the project, and how these data will be archived:**							
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
измеряются в течение кредитного периода								
M-1	**$FC_{Unit №6}$** Fuel consumption by unit №6 of Novosibirsk HPS 5	Belt-conveyer weigher, type «Kurs-2Z-8»,	t	m	Monthly	100%	Electronic/paper	Model 15506
M-2	**NCV_{Coal}** NCV of coal	Reports of chemical laboratory	Kcal/t	m	Monthly	100%	Electronic/paper	Summary form M-7t
не измеряются во время кредитного периода, детерминируются один раз, доступны на стадии детерминации ПДД								
	$EF_{CO2, coal}$ emission factor for coal	IPCC 2006 "Guidelines for National Greenhouse Gas Inventories", Volume 2, Ch1, Table 1.4	t CO2/TJ	e	Determined once	100%	Electronic/Paper	94.6 t CO2 per TJ

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO2 equivalent):

$$PE_y = PE_{fuel,y} = FC_{Unit №6} * NCV_{Coal} * 4{,}1868 * 10^{-6} * EF_{CO2, Coal}$$ **(formula D.1-1)**

где:

PE_y - project emissions, t CO2

$PE_{fuel,y}$ - project emissions due to fuel consumption, t CO2

FC $_{\text{Unit №6}}$ - fuel consumption under the project, t
EF $_{\text{CO2, Coal}}$ - CO2 emission factor when combusting coal, t CO2/TJ
NCV $_{\text{Coal}}$ - net calorific value of the coal consumed, kcal/t
4,1868*10^{-6} - factor of conversion from Kcal to TJ

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
M-3	**EG**$_{\text{Unit6}}$ Electicity generation by unit №6 of Novosibirsk HPS 5	Automated information and measuring system of commercial energy metering.	MWh	(m)	Constantly	100%	Electronic	Model 15506
M-4	**EC**$_{\text{aux Unit№6}}$ Electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries	Automated information and measuring system of commercial energy metering.	MWh	(m)	Constantly	100%	Electronic	Model 15506
M-5	**HO**$_{\text{Unit №6}}$ Heat output from the unit №6 of Novosibirsk HPS 5	Automated measuring and information system for heat power accounting	Gcal	(m)	Constantly	100%	Electronic	Model 15506
не Data and parameters that are not monitored throughout the crediting period, but are determined only once								
	η $_{\text{coal boiler}}$ coefficient efficiency of coal	AM 0058, version 03.1, Table 2, data for new coal fired boiler	%	e	Determined once	100%	Electronic/Paper	85%

	boiler							
	EF_{grid} Emission factor for electric power plant of the UPS Siberia	Research conducted by Lahmeyer International: "Dynamics of the development of the carbon emission factor during the generation of electric energy in Russia" http://www.ebrd.com/downloads/sector/eecc/Baseline_Study_Russia.pdf (page 5.2, table 5.1)	tCO_2/MWh	(o)	Determined once	100%	Electronic/Paper	2008-1.003; 2009-1.003; 2010-1.006; 2011-0.993; 2012-0.949.

D.1.1.4. Description of formulae used to estimate baseline emissions (for each gas, source etc.; emissions in units of CO2 equivalent):

$$\mathbf{BE_y = BE_{el} + BE_{heat}} \qquad \textbf{(formula D.1-2)}$$

BE_{el} – emissions from the generation of energy at the UPS Siberia according to the baseline scenario,t CO_2;
BE_{heat} – emissions from the generation of heat energy according to the baseline scenario, t CO_2

$$\mathbf{BE_{el} = EO_{el} * EF_{grid}}, \qquad \textbf{(formula D.1-3)}$$

where:
EF_{grid} – greenhouse gas emission factor during the generation of energy at the UPS Siberia, $t.CO_2/MWh$;
EO_{el} – Electricity output from the unit №6 of Novosibirsk HPS 5, MWh;

$$\mathbf{EO_{el} = EG_{Unit\ №6} - EC_{aux\ Unit\ №6}} \qquad \textbf{(formula D.1-4)}$$

where:

$EG_{Unit №6}$ - Electicity generation by unit №6 of Novosibirsk HPS 5,
$EC_{aux\ Unit №6}$ – Electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries, MWh

$$BE_{heat} = (HO_{CCGT} * 4.1868*10^{-3} * EF_{coal}) / \eta_{coal\ boiler} \quad \textbf{(formula D.1-5)}$$

where:
$HO_{Unit №6}$ – Heat output from the unit №6 of Novosibirsk HPS 5, Gcal
EF_{Coal} – emission factor for coal , t CO_2/TJ
$\eta_{coal\ boiler}$ – coefficient efficiency of coal boiler-house, %.
$4.1868*10^{-3}$ – factor of conversion from Gcal to TJ

D. 1.2. Option 2 – Direct monitoring of emission reductions from the project (values should be consistent with those in section E.):

Not applicable

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

D.1.2.2. Description of formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

D.1.3. Treatment of leakage in the monitoring plan:

Leakage under the project is CH_4 emissions related to the extraction, processing, transportation and distribution of coal and other fuels. Fuel consumption under the baseline is higher than under the project, so that, leakage under the baseline higher than leakage under the project Thus, following the conservative way leakage are taken to be zero.

D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO_2 equivalent):

D.1.4. Description of formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

$$ER_y = BE_y - PE_y - LE$$

D.1.5. Where applicable, in accordance with procedures as required by the host Party, information on the collection and archiving of information on the environmental impacts of the project:

According to the decision of the Federal State Statistics Service No.157 dated April 30, 2004 "On the approval of statistical tools for the organization of the statistical observation of production and consumer wastes by the Russian Federal Service for Ecological, Technical and Atomic Supervision" and the order of the Federal State Statistics Service No.166 dated August 10, 2009 "On the approval of statistical tools for the organization of federal statistical observation of agriculture and the environment" the Novosibirsk HPS 5 annually submit reports to the Office of the Federal Service for Supervision in the field of Natural Resources for the Central Federal District (Federal Service for the Supervision of Natural Resource Usage), as follows:

2 tp (air) – Information about the protection of the atmosphere

2 tp (wastes) – Information about the formation, decontamination, transportation and disposal of production and consumer wastes, in natural units

2 tp (water resources) – Information on water use, in natural units

To develop the "Draft regulations on the emissions of harmful substances (pollutants) into the atmosphere and the harmful physical impact on it" a specialized organization is involved. Every 5 years an "inventory of stationary sources of pollutant emissions" is performed at the Novosibirsk HPS 5. The inventory results are approved by the Federal Service for the Supervision of Natural Resource Usage and the "Draft regulations on the emissions of harmful substances (pollutants) into the atmosphere and the harmful physical impact on it" are developed. These draft regulations are sent to the Federal Service for the Supervision of Natural Resource Usage. On the basis of the conclusion approved by the Federal Service for the Supervision of Natural Resource Usage a "permit to emit pollutants into the atmosphere for a period of five years" is issued.

Once a year the requirements for the maximum permissible emissions of pollutants are monitored, a report on the emission of pollutants into the atmosphere is drawn up and sent to the Federal Service for the Supervision of Natural Resource Usage. Every month an environmental engineer calculates the

emissions released into the atmosphere. To confirm the calculations, pollutant emissions from stationary sources are measured every quarter, and the results are recorded in the Registration book of measurements.

D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:		
Data *(Indicate table and ID number)*	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
M-1 (table D1.1.1)	low	Measured by Belt-conveyer weigher, type «Kurs-2Z-8». Calibration is carried out verification officers FBU "National Centre for Standardization, Metrology and Testing in the Novosibirsk region," according to GOST 8.005-2002. Grade of accuracy – 0,5%.
M-2 (table D1.1.1.)	low	Measured by the fuel express laboratory of fuel supply shop by calorimeter LECO AC 500. Calibration is performed every year by the specialist agency of the Federal Budget, "National Center for Standardization, Metrology and Testing in the Novosibirsk region," according to the calibration procedure 2414-0039-2009 MP. Grade of accuracy – 0,05%.
M-3, M-4 (table D1.1.3.)	low	Measured by the electric meters, that included into Automated information and measuring system of commercial energy metering. Calibration interval – 120 month.
M-5 (table D1.1.3.)	low	Calculated automatically by the Automated measuring and information system for heat power accounting on the base of measured parameters from measuring devices included in Automated measuring and information system for heat power accounting. Calibration interval– 24 month

The implementation of the monitoring procedures and the quality of the abovementioned parameters are guaranteed by meeting the requirements of the Federal law 26.6.2008 N 102-FZ “On ensuring the uniformity of measurements”;
The project monitoring is a part of the Novosibirsk HPS-5 entire monitoring system, i.e. all parameters are monitored by the plant due to relevant laws or other obligations.
All measure devices have duplicate analogue on the case of fall out of measurement devices and data unavailable.

D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan:

The Project operation structure refers to the data collection, transfer and storage system existing at a plan. All data required for determination will be stored for two years after the last transfer of the Emission Reduction Units under the project. Reporting on fuel consumption, electric and heat power production - the responsibility of production and technical department (PTD) of Novosibirsk HPS 5.

When implementing the monitoring plan, the scheme presented in Fig. D.3. will be applied to prepare verification reports.

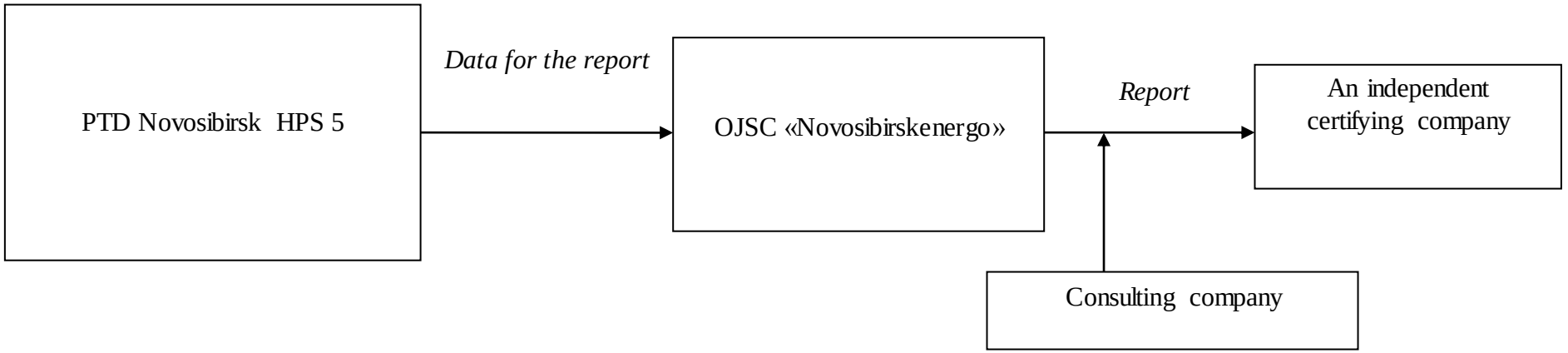


Figure D.3. Operating and management scheme of the Project

For the implementation of the Project and the operational activity under the Project it is necessary to attract 17 additional operating personnel, and also conduct additional training. This is done under contract with the general contractor.

Table D.3-1 Data collection

Index	Data collection
Electricity generation at the unit №6 of Novosibirsk HPS 5	Data from the electric meters automatically go to Automated information and measuring system of commercial energy metering(AIMSCEM), monthly Senior Engineer of PTD unloads data from AIMSCEM for importation into the technical report
Electricity consumption for the unit №6 of Novosibirsk HPS 5 auxiliaries	
Heat output from the unit №6 of Novosibirsk HPS 5	Data from measuring devices go to Automated measuring and information system for heat power accounting. Heat output is calculated automatically by Automated measuring and information system for heat power accounting (AMISHP) on the base of these data. Monthly Senior Engineer of PTD unloads data from AMISHP for importation into the technical report
Coal consumption by unit №6 of Novosibirsk HPS 5	Specialist of 2 category of fuel supply shop puts data from Belt-conveyer weigher into a form M-7. Monthly Engineer pretenzionist composes monthly form M-7. Monthly Senior Engineer of PTD unloads data from form M-7 for importation into the technical report.

NCV of coal	Laboratory technician sends data on the fuel analysis to specialist II category, who put the parameters to "Table of measurements comparison and calculation of the fuel mass supplied the technological needs of the HPS" and send by e-mail to PTD of Novosibirsk HPS 5.Monthly Senior Engineer of PTD put the data to the technical department.

D.4. Name of person(s)/entity(ies) establishing the monitoring plan:

The monitoring plan was developed by:
Closed Joint-Stock Company "National Carbon Sequestration Foundation" (Moscow);

Contact: Evgeniya Baydakova, Senior Expert of the Project Development Department;
Phone: 8 499 788 78 35 ext. 104
Fax: 8 499 788 78 35 ext. 107
e-mail: BaydakovaEV@ncsf.ru

Closed Joint-Stock Company "National Carbon Sequestration Foundation" is not the project participant.

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions:

Project emissions is an emissions from coal consumption

Table E 1.1

№ of the line	Parameter	Units	Year				
			2008	2009	2010	2011	2012
1	Fuel consumtion by unit №6 of Novosibirsk HPS 5	t.f.e	473 462	437 223	514 192	428 137	503 397
2	Emission factor for coal	tCO_2/TJ	94.6				
3	Project GHG emission	tCO_2	**1 312 672**	**1 212 201**	**1 425 596**	**1 187 010**	**1 395 668**

[3] = [1] * [2] *7000*4,1868*10^{-6}

E.2. Estimated leakage:

Table E.2.1

	2008	2009	2010	2011	2012
tCO_2	0	0	0	0	0

E.3. The sum of E.1. and E.2.:

Table E.3.1

Year	**Estimated GHG project emissions**	**Estimated leakage**	**The sum of project and leakages**
2008	1 312 672	0	1 312 672
2009	1 212 201	0	1 212 201
2010	1 425 596	0	1 425 596
2011	1 187 010	0	1 187 010
2012	1 395 668	0	1 395 668
Total in 2008-2012	**6 533 148**	**0**	**6 533 148**

E.4. Estimated baseline emissions:

Baseline emissions are determined in according with formulas presented in Section D 1.1.4.

Таблица E.4.1

№ of the line	Parameter	Units	Year				
			2008	2009	2010	2011	2012
1	Electricity output	MWh	1 243 414	1 118 462	1 346 728	1 063 990	1 302 783

	from the unit №6 of Novosibirsk HPS 5						
2	Heat output from the unit №6 of Novosibirsk HPS 5	Gcal	711 053	888 238	776 123	824 334	858 167
3	Emission factor for electric power plant of the UPS Siberia	tCO_2/MWh	1,003	1,003	1,006	0,993	0,949
4	Coefficient efficiency of coal boiler	%	85				
5	Emission factor for coal	tCO_2/TJ	94.6				
6	Baseline GHG emissions	tCO_2	**1 578 471**	**1 535 706**	**1 716 455**	**1 440 654**	**1 636 218**

[6] = [1] * [3] + ([2] * [5] * 4,1868*10^{-3} / [4])

Detailed calculation is presented in excel tables.

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

Table E.5.1

	2008	2009	2010	2011	2012
tCO_2	265 799	323 505	290 860	253 643	240 549
Total (2008-2012)	**1 374 357**				

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

Table E.6.1

Year	**Estimated project emissions (tonnes of CO2 equivalent)**	**Estimated leakage (tonnes of CO2 equivalent)**	**Estimated baseline emissions (tonnes of CO2 equivalent)**	**Estimated emission reductions (tonnes of CO2 equivalent)**
1	2	3	4	5
2008	1 312 672	0	1 578 471	265 799
2009	1 212 201	0	1 535 706	323 505
2010	1 425 596	0	1 716 455	290 860
2011	1 187 010	0	1 440 654	253 643
2012	1 395 668	0	1 636 218	240 549
Total (tonnes of CO2 equivalent)	**6 533 148**	**0**	**7 907 504**	**1 374 357**

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:

The materials of the environmental impact assessment (EIA) are a mandatory section of the project documentation and they describe the results of the impact assessment on the natural and social environment and the technogenic medium, and substantiate the admissibility of the planned activity.

An analysis of the impact of the project "Construction of unit №6 at Novosibirsk HPS " on the environment was performed during the preparation of the project documentation.

According to the opinion of the expert committee on the project materials of the Novosibirsk HPS 5, the project to construct the unit №6 at the Novosibirsk HPS 5complies with the environmental requirements established by the legislation of the Russian Federation in the field of environmental protection.

Total volume of pollutant emissions with the introduction of unit № 6 at the Novosibirsk HPS 5 T will increase by 6627 t/year. Water consumption from the river will increase by 3.1 mln m3/year and drinking water consumption will reduce by 0.12 mln m3/year. The level of impact on the environment is recognized as valid. The project is considered feasible.

The level of environmental impact considered acceptable. Project realization is possible.

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

"General administration of Natural Resources and Environment of Ministry of Natural Resources of Russia in Novosibirsk Region" issued conclusion № 482 on the project "start-up complex of the power unit 6 of the Novosibirsk HPS 5": The level of environmental impact is acceptable. The implementation of design solutions is possible.

SECTION G. Stakeholders' comments

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

Public hearings on the construction of construction on Novosibirsk HPS 5 consisting of the 6 power units with the development of heat system were held in the frame of approved scheme of heating supply in 1976 (Scheme was approved in Ministry of energy USSR 09.06.78 № 72 PS)

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

Organisation:	OJSC "SIBECO"
Street/P.O.Box:	Sverdlova
Building:	5
City:	Novosibirsk
State/Region:	Novosibirsk region
Postal code:	630007
Country:	Russian Federation
Phone:	+7 383 289 01 99
Fax:	+7 383 289 01 88
E-mail:	Brazhnik@sibeco.su
URL:	www.sibeco.su
Represented by:	
Title:	The Head of department of innovations
Salutation:	
Last name:	Brazhnik
Middle name:	Vadimovich
First name:	Dmitriy
Department:	Technical directorate, Administration by new technologies
Phone (direct):	+7 383 289 01 99
Fax (direct):	
Mobile:	
Personal e-mail:	

Annex 2

BASELINE INFORMATION

Key information and data to establish baseline are presented in section B1 of the PDD.

Annex 3

MONITORING PLAN

Detailed description of the monitoring plan is presented in section D of the PDD.

Annex 4

Excel tables with initial data and calculations of emission reduction and financial/economic indicators and sensitivity analysis (attached in a separate excel file)

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