Annex

Guidelines for Accounting and Reporting Greenhouse Gas Emissions

China Public Building Operation Units (Enterprises)

(Trial)

Instructions

I. Significance and necessity of the Guidelines

In order to carry out the goal of reducing CO_2 emissions per unit of GDP by 40% to 45% based on the level of 2005, the *Outline of the 12th Five-Year Plan* has proposed the task of "establishing and perfecting greenhouse gas accounting system and gradually setting up a carbon emission trading market". The *Work Plan for Greenhouse Gas Emission Control during the 12th Five-Year Plan* (GF [2011] No. 41) has also proposed to implement the requirements of "building greenhouse gas emission accounting system at the national, local and enterprise levels and carrying out the system of direct energy and greenhouse gas emission data reporting by key enterprises".

To fulfill the above tasks and requirements, the imperative task currently is to formulate the accounting methods and report format of greenhouse gas emissions at the corporate level and help enterprises account and report their own greenhouse gas emissions in a scientific and standard way, formulate the greenhouse gas emissions control plan and actively participate in carbon emissions trading, thus strengthening the social responsibility of enterprises. Meanwhile, this can also provide sound data support for relevant authorities to learn about the greenhouse gas emissions of enterprises in key industries, establish and implement the greenhouse gas report system among key enterprises and build a carbon trading market at an early date.

II. Preparation Process

Through cooperation with the United Nations Development Programme, the Department of Climate Change of the National Development and Reform Commission(NDRC) and the Institute of Energy, Environment and Economy, Tsinghua University have included the research findings and practical experiences of relevant domestic and overseas enterprises in greenhouse gas accounting and reporting, referred to relevant state guidelines on greenhouse gas inventory and good practices, and the *Guideline for Preparation of Provincial Greenhouse Gas List (Trial)* issued by the NDRC Office, and based on field survey, in depth research and case studies, formulated the *Guidelines for Accounting and Reporting Greenhouse Gas Emissions from China Public Building Operation Units (Enterprises) (Trial)* (the Guidelines), so as to make the greenhouse gas emissions accounting and reporting of public building operation units (enterprises) in China more scientific, standard and practical. The Guidelines aim at providing guidance for the greenhouse gas emissions reporting of enterprises that lead to scientific compilation methods, transparent data, consistent format and comparable results. In the Guidelines development process, the Department of Climate Change of the NDRC has organized experts from industrial associations and relevant research institutes for several times for discussion and revision, and on the scientific and rational basis, try to keep the Guidelines simple and practical.

III. Main Contents

The Guidelines apply to all independent accounting enterprises as legal persons and independent

accounting enterprises that are considered as legal persons engaged in public building operation. The Guidelines include seven sections: the application scope, references, used terms, accounting boundary, accounting methods, quality assurance, filing, contents and format. The two appendices provide the reporting format of greenhouse gas emissions of enterprises and recommended values of relevant parameters needed by accounting.

IV. Issues that NeedClarification

The emissions accounted by the Guidelines refer to emissions in the operation of public buildings, not including the emissions of public building operation units (enterprises) outside the boundary, such as the emissions of enterprises in production activities outside the boundary of public buildings.

For fuels of different batches used by enterprises, their quality and calorific value shall be measured based on batches, to conduct annual statistics, rather than using their annual average values.

Public building operation units (enterprises) that apply the Guidelines shall acquire the data of activity levels according to the methods provided by the Guidelines in a scientific and objective manner. If enterprises acquire relevant parameters needed by accounting through actual measurement, they shall strictly comply with the standard way provided by the Guidelines by conducting measurement and proving the measurement report.

As enterprise greenhouse gas emissions accounting and reporting are a completely new work, the Guidelines may have their own limitations during actual use, and it is hoped that those application units may provide their individual feedback in a timely manner, all aimed at making further revision and improvement in the future.

The Guidelines are published by the National Development and Reform Commission, which is responsible for their interpretation and revision when appropriate.

Contents

1. Application Scope

The Guidelines apply to the accounting and reporting of greenhouse gas emissions from the operation of China public buildings. Public building include office buildings (for companies and government departments), commercial buildings (shopping malls and financial buildings), tourism buildings (hotels, entertainment venues), buildings for science, education, culture and health care (including cultural, educational, scientific research, medical, health care and sports buildings), telecommunications buildings (post and telecommunications, communication, broadcasting buildings), transportation buildings (airports, stations) and other operating units (enterprises). Public building operation units (enterprises) within Chinese territory may use the methods provided in the Guidelines to account and report greenhouse gas emissions of public building operation.

2. References

The following documents are referred to in the Guidelines:

Guideline for Preparation of Provincial Greenhouse Gas Inventories (Trial); and

China Energy Statistical Yearbook 2013.

The following documents may be referred to in the development of the Guidelines:

The People's Republic of China National Greenhouse Gas Inventory 1996;

Energy Auditing Guideline for Office Buildings of State Organs and Large Public Buildings;

Energy Statistical Work Book 2010;

GB/T2589-2008Norm for the Calculation of Comprehensive Energy Consumption;

GB/T17167-2006General Principle for Equipping and Managing of the Measuring Instrument of Energy in Energy Using Organization;

Methods of Greenhouse Gas Emission Accounting and Reporting for Tourism Hotels, Malls, Real Estate and Office Buildings in the Financial Industry in Shanghai 2012;

The Quantification and Reporting Norm and Guideline of Greenhouse Gas Emission in Buildings (Trial) (Housing and Construction Bureau of Shenzhen Municipality, 2013); and

Tokyo Cap-and-Trade Program for Large Facilities (Bureau of Environment，Tokyo Metropolitan Government，2012).

3.Terminology and Definitions

For the purpose of the Guidelines, the following terminology and definitions apply.

3.1 Greenhouse gases (GHGs)

A greenhouse gas is natural or man-made atmospheric component in gaseous state that absorbs and emits radiation within the thermal infrared range. The GHGs addressed in the Guidelines refer to the six types of GHGs which are listed in Annex A of the Kyoto Protocol: carbon dioxide (CO_2), carbon tetrachloride (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluoro-carbon (PFCs), and sulfur hexafluoride (SF_6).

3.2 Accounting entity

A reporting entity shall be an enterprise with a legal person status or an independently accounted unit that can be deemed a legal person, which has performed as a GHG emissions actor and therefore should calculate and report its GHG emissions.

3.3 Public buildings

Public buildings include office buildings (for companies and government departments), commercial buildings (malls and financial buildings), tourism buildings (hotels, entertainment venues), buildings for science, education, culture and health care (including cultural, educational, scientific research, medical, health care and sports buildings), telecommunications buildings (post and telecommunications, communication, broadcasting buildings), transportation buildings (airports, stations), etc.

3.4 Emissions from fossil fuel combustion

Emissions from fossil fuel combustion mainly include the emissions from the combustion of fossil fuels, such as coal, fuel oil and natural gas, in the operation of public buildings.

3.5 Fugitive emissions

Fugitive emissions refer to emissions from fugitive sources in the operation of public buildings, such as refrigerators, air-conditioners, fire extinguishers and septic tanks.

3.6 Emissions offset of newly-planted trees

Trees help absorb greenhouse gases in the atmosphere. The offset emissions amount of newly-planted trees are equivalent to the annual amount of CO_2 absorbed by trees, and the product of the number of newly-planted trees after the construction of relevant buildings and the annual absorption parameter of CO_2.

3.7 Emissions from net purchased electricity and heat

Emissions from net purchased electricity and heat refer to emissions of CO_2 produced from the combustion of fossil fuels in the production of net purchased electricity and heat used in the operation of public buildings.

3.8 Activity level

Activity level refers to basic data used to account the emissions of various greenhouse gases in the operation of public buildings, including the consumption amount of various fuels, and the amount of net purchased electricity and heat.

3.9 Emission factor

Emission factor refers to the amount of greenhouse gas emissions per unit of activity level.

3.10 Coal oxidation rate

Coal oxidation rate refers to the rate of carbon oxidized in the process of coal combustion. It represents the combustion efficiency of coal.

3.11 Operation units (enterprises) of public buildings

Operation units (enterprises) of public buildings refer to the reporting units (enterprises) of the greenhouse gas emissions of public buildings, usually the property owners (proprietors) of public buildings, or the agents of property owners, such a property management companies or agent companies.

3.12 Using units (enterprises) of public buildings

Using units (enterprises) of public buildings refer to the property owners (proprietors) of public buildings, or the tenants of public buildings. If a public building is rented, the tenant has the obligation of cooperating with the operation unit (enterprise) of the public building in reporting the greenhouse gas emissions from the operation of the building.

3.13 Default value

Default value refers to the parameter provided by competent authorities for calculating the activity level or emission factor when units (enterprises) are unable to provide reliable detected data.

4.Accounting Boundary

4.1 Reporting entity

The accounting boundary refers to the greenhouse gas emissions in the operation of public

buildings within the Chinese territory.

The reporting entity of emissions in the operation of public buildings refers to public building operation units (enterprises), usually the property owners (proprietors) of public buildings, or the agents of property owners, such a property management companies or agent companies.

The using units (enterprises) of public buildings refer to the property owners (proprietors) of public buildings, or the tenants of public buildings.

If a public building is rented, the tenant has the obligation of cooperating with the operation unit (enterprise) of the public building in reporting the greenhouse gas emissions in the operation of the building; the lessor of the public building, the proprietor of the building or property management company, has the right to ask the tenant to undertake due responsibility.

The lessor and the tenant shall build an energy consumption account. If the energy use of the tenant cannot be accounted separately, the lessor shall report the total energy used and total emissions of all tenants of the public building.

If the energy use amount of the tenant can be accounted separately, the lessor shall report the total energy used and total emissions of all tenants of this public building and provide the information on the energy use amount and emissions amount of all tenants in the report.

If the lessor of a public building is also the user, s/he shall report the total emissions amount of all tenants and his/her own and provide information on the energy use amount and emissions amount of all users of the public building, i.e. the lessor and all tenants, in the report.

In the report, if the energy consumption of all tenants of the public building is calculated in the energy consumption of the lessor, then the lessor may use this accounting boundary when reporting his/her historical emissions amounts, and specify this in the emissions report. Meanwhile, the lessor shall also use the same accounting boundary when reporting his/her annual CO_2 emissions in the future.

4.2 Emissions source and types of gases

The emissions in the operation of public buildings can be divided into direct emissions and indirect emissions according to the types of emissions sources. Direct emissions refer to the CO_2 emissions produced from the combustion of fossil fuels, the emissions from the sources owned or controlled by the using units (enterprises) of public buildings; indirect emissions refers to emissions caused by the generation of electricity and heat purchased by the using units (enterprises) of public buildings, and the emissions sources are actually the enterprises that produce electricity and heat.

In the operation of public buildings, the emissions sources of CO_2 mainly include:

4.2.1 Emissions from fixed combustion sources

Fixed combustion sources burn fossil fuels and produce emissions, and they include for example boilers, cooking stoves, drying machines and standby electric generators.

4.2.2 Emissions from mobile combustion sources

Emissions produced from mobile combustion sources, such as vehicles.

4.2.3 Emissions from fugitive sources

Emissions from fugitive sources, such as refrigerators, air-conditioners, fire extinguishers and septic-tanks. The emissions from fugitive sources are usually not considered due to their small magnitude.

4.2.4 Emissions offset of newly-planted trees

Emissions offset of newly-planted trees refers to the offset of greenhouse gas emissions by newly-planted trees around buildings. The greenhouse gas offset of newly-planted trees around buildings is usually not considered due to small amount.

4.2.5 Emissions from net purchased electricity and heat

Emissions from net purchased electricity and heat refer to emissions produced from the production of electric power, steam and hot water purchased by the using units (enterprises) of public buildings in their operation. They are brought by the production activities of using units (enterprises) in the operation of buildings, but the actual emissions sources belong to the producing enterprise of electric and heating power, the indirect emissions brought by the economic activities of using units (enterprises) in the operation of public buildings to other units (enterprises).

4.2.6 Emissions from commissioned transportation

Emissions from commissioned transportation refer to emissions produced in the transportation commissioned to a third party. It is difficult to account such emissions because it can easily lead to double counting, and thus this source of emissions is usually not considered.

The emissions produced in the operation of public buildings are mainly from the use of energy and parts of them are due to the emissions from fugitive sources and the emissions offset of newly-planted trees, which are usually not considered due to their small size.

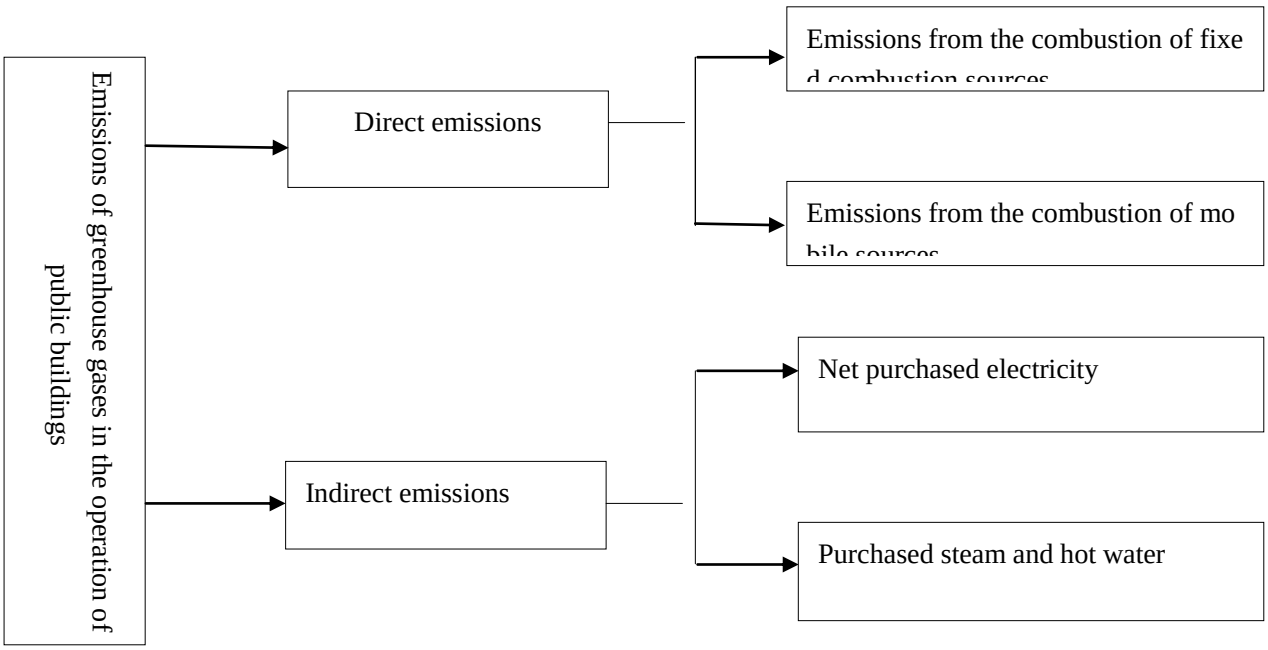

Figure1 Emissions sources in the operation of public buildings

The energy consumption in the operation of public buildings mainly includes regular energy consumption and the energy consumption of special areas.

Regular energy consumption includes that of the ventilation system of air-conditioners, the heating system, the lighting system, and indoor equipment system and the comprehensive service system.

The energy consumption of special areas mainly refers to the electric power in special areas, the power consumption of equipment that does not belong to the regular functions of buildings. The features of special power use are high concentration of energy consumption, and areas and equipment that accounts for a large part of total power consumption. Special power use areas include the information center, laundry room, kitchen, dining hall, swimming pool, gym and others.

The energy consumption in public buildings includes coal, oil, natural gas, liquefied petroleum gas, electric power, and municipal hot water and steam.

For emissions in the operation of public buildings, the emissions sources to be accounted are indicated in Figure 1.

The emissions in the operation of public buildings are usually accounted based on the annual greenhouse gas emissions.

The types of gases to be accounted refer to CO_2 only.

5. Accounting Methodology

The Guidelines examine public buildings under operation as a whole and account the amount of greenhouse gas emissions in the operation of public buildings according to the following contents.

The complete workflows for corporate greenhouse gas emissions accounting and reporting of the reporting entity shall include the following:

(1) Determine the accounting boundary;

(2) Identify and determine the emissions sources;

(3) Collect activity level data;

(4) Select and acquire emission factor data;

(5) Calculate the emissions from fossil fuel combustion and the emissions equivalent to net purchased power and heat respectively;

(6) Summarize the total greenhouse gas emissions of the enterprise.

The total CO_2 emissions in the operation of public buildings are equivalent to the total amount of CO_2 emissions from the emissions from the combustion of fuel combustion and that equivalent to purchased electricity and heat of all users. The total emissions amount of greenhouse gases in the operation of public buildings is calculated according to Equation (1).

$$E_{\mathrm{total}} = E_{fuel} + \mathrm{E}_{\mathrm{power}} + \mathrm{E}_{heat} \quad (1)$$

where,

E_{total} refers to the total greenhouse gas emissions in operation and is expressed in unit ton (tCO_2);

E_{fuel} refers to the CO_2 emissions produced from fuel combustion and is expressed in unit ton (tCO_2);

E_{power} refers to the CO_2emissions from net purchased electricity and is expressed in unit ton (tCO_2); and

E_{heat} refers to the CO_2 emissions from net purchased heat and is expressed in unit ton (tCO_2).

5.1 Emissions from fossil fuel combustion

In the operation of public buildings, used fossil fuels mainly include coal, fuel oil, natural gas, liquefied petroleum gas, etc. The CO_2 emissions produced from fossil fuel combustion are calculated according to Equations (2), (3) and (4).

$$E_{\text{fuel}} = \sum_{i=1}^{n} (AD_i \times EF_i) \quad (2)$$

where,

E_{fuel} refers to the CO_2 emissions in the combustion of consumed fossil fuels and is expressed in unit tCO_2;

AD_i refers to the activity level of the i^{th} fossil fuel that is consumed, the number of combusted fossil fuels and is expressed in unit GJ. The activity level of the emissions from fossil fuel combustion is the product of the annual consumption of various types of fossil energy and the average lower heating value of fuels;

EF_i refers to the emission factor of the i^{th} fuel and is expressed in unit tCO_2/GJ; and

i stands for the category of the fossil fuel.

The activity level of consumed fossil fuels, AD_i, and the emission factor of the i^{th} fuel, EF_i, are calculated according to Equations (3) and (4):

$$AD_i = RL_i \times RZ_i \quad (3)$$

where,

RL_i refers to the consumed amount of the i^{th} fossil fuel in the accounting and reporting period (t or 10,000 m^3). The annual consumed amount of fossil energy of various types in the operation of public buildings shall comply with the operation record of the production activities of the using units (enterprises) in public buildings, and relevant calculations shall be in accordance with the requirements of *GB/T17167-2006Distribution and Management Norm for the Energy Calculators of Energy Consumption Units.*

RZ_i refers to the average lower heating value of the i^{th} fossil fuel in the accounting and reporting period and may use the detected data of units (enterprises); see Table 1 in the Appendix for the default value. Units (enterprises) may use the default value of the average lower heating value of fuels. Units (enterprises) with competent measurement capabilities may conduct measurements. In this case, it may be conducted by units (enterprises) themselves, or commissioned to qualified professional institutions; or use the detected value provided in the accounting voucher of

relevant parties. Units (enterprises), in conducting detection themselves, shall comply with *GB/T 213 Detection Methods of the Heat of Coal*, *GB/T 384 Detection Methods of the Heat of Petroleum Products*, and *GB/T 22723 Detection Methods of the Energy of Natural Gas*.

$$EF_i = CC_i \times \alpha_i \times \rho \quad (4)$$

where,

CC_i refers to the carbon content for per unit of heat produced by the fuel, *i*(tC/GJ), and may use the statistical data of units (enterprises); see Table 2.1 in Appendix II for the default value;

α_i refers to the carbon oxidation rate of the fuel, *i*, and is expressed in unit %; the statistical data of units (enterprises) may be used; see Table 2.1 in Appendix II for the default value; and

ρ refers to the molecular ratio of $CO_2$to carbon (44/12).

The emission factor of fossil fuels comes from the carbon content and oxidation rate per unit of heat. Units (enterprises) with measurement capabilities may conduct measurements. In this case, it may be conducted by units (enterprises) themselves, or commissioned to qualified professional institutions; or use the detected value provided in the accounting voucher of relevant parties.

Units (enterprises), in conducting detection themselves, shall comply with *GB/T 476 Methods of Analyzing the Elements of Coal*, *SH/T 0656 Methods of Detecting the Carbon, Hydrogen and Oxygen of Petroleum Products and Lubricants*, and *GB/T 13610 Methods of Analyzing the Components of Natural Gas*.

To detect the oxidation rate of coal-fired equipment, the detection shall comply with *GB/T10190 The Norm of Trialing the Thermal Performance of Industrial Boilers*, the heat balance test of furnaces, and other regulations of the state, industry and localities on various items (such as lab conditions, reagents, materials, equipment, detection steps and result calculation). After the detection of relevant data, the oxidation rate of coal-fired equipment may be calculated according to Equation (5).

Oxidation rate= (the amount of used coal×the carbon content of coal -- the amount of slag×the carbon content in slag – the amount of leaked coal×the carbon amount in leaked coal-- the amount of flying ash×the carbon amount in flying ash)/(the amount of used coal×the carbon content of coal) ×100% (5)

See Table 2.2 in Appendix II for the default value of the concentration of fuel oil.

5.2 CO_2 emissions from net purchased electricity

In the operation of public buildings, net purchased electricity produces CO_2 in its generation. The needed activity level refers to the amount of net purchased electricity measured by all using units (enterprises) in the accounting period. The CO_2emission factor of power consumption isprovided by the state. The amount of CO_2emissions equivalent to purchased power is calculated according toEquation (6).

$$E_{\text{power}} = AC_e \times EF_e \qquad (6)$$

where,

E_{power} refers to the amount of CO_2emissions equivalent to the purchased power of operting units (enterprises) in the accounting period and is expressed in unit ton (tCO_2);

AC_e refers to the purchased power of operating units (enterprises) in the accounting period and is expresssed in unit MWh; and

EF_e refers to the CO_2emission factor of power consumed by areas where operating units (enterprises) are located in the accounting period and is expressed in unit ton/MWh (tCO_2/MWh).

The activity level of purchased power shall be determined from the inflow and outflow record of power suppliers and the operating units (enterprises) of public buildings. And relevant calculators shall comply with *GB/T17167-2006Distribution and Management Norm for the Energy Calculators of Energy Consumption Units.*

The CO_2emission factor of purchased power may use the average emission factor of regional grids. To reflect the features of power structures in different areas and determine the average emission factor of power supplied by regional grids, the boundaries of regional grids are divided in accordance with the current method, i.e. Northeast, North China, South China, Central China, Northwest and South. The average factor of grids is different in different years and released by the authorities annually. Units (enterprises) shall use the average emission factor of regional grids released in recent years.

5.3 CO_2 emissions from net purchased heat

In the operation of public buildings, purchased steam and hot water produce CO_2in their production. The needed activity level is the amount of purchased steam and hot water detected by operating units (enterprises) in the accounting period. The amount of CO_2equivalent to the purchased steam and hot water is calculated according to Equation (7).

$$E_{\text{heat}} = AC_{\text{h}} \times EF_h \qquad (7)$$

where,

E_{heat} refers to the amount of CO_2emissions equivalent to the purchased steam and hot water of operating units (enterprises), and is expressed in unit tCO_2;

AC_h refers to the amount of steam and hot water purchased by operating units (enterprises) and is expressed in unit GJ; and

EF_h refers to the emission factor of the purchased steam and hot water of operating units (enterprises) and is expressed in unit tCO_2/GJ. It is provided by the state and may be assumed to be 0.11 (tCO_2/GJ). See Table 2.3 in Appendix II.

The activity level of net purchased heat shall be aquired from the inflow and outflow record of heat suppliers and the operating units (enterprises) of public buildings. And relevant calculators shall comply with *GB/T17167-2006 Distribution and Management Norm for the Energy Calculators of Energy Consumption Units.*

6. Quality Assurance and Documentation

Operating units (enterprises) shall establish a quality assurance system for the annual accounting and reporting of greenhouse gases, including:

6.1 Establish the rules and regulations for quantification and reporting of greenhouse gases of operating units (enterprises), including institutions and personnel in charge, work procedure and contents, work cycle, etc.; special personnel shall be designated for the quantification and reporting of greenhouse gas emissions.

6.2 Develop the list of main greenhouse gases emissions sources of the enterprise, determine, document, and archive the appropriate quantification method of greenhouse gases.

6.3 Establish a complete account of greenhouse gas emissions and energy consumption.

6.4 Establish a complete monitoring plan for the greenhouse gas emissions parameters. Operation units (enterprises) with detection conditions shall regularly monitor parameters that have relatively large impact on the amount of greenhouse gas emissions, such as the lower heating value of fossil fuels. In principle, the lower heating value of every batch of fuels that enter the enterprise shall be monitored.

6.5 Establish an interior evaluation system for the report of greenhouse gas emissions of enterprises; and

6.6 Stipulate the specifications for document management, and store and maintain the documents and data records of annual report for greenhouse gases.

7. Contents of Report

The reporting contents of the operation units (enterprises) of public buildings include the basic information of operation units (enterprises), amount of greenhouse gas emissions in the operation of public buildings, and activity level and emission factor of emissions produced from the combustion of fossil fuels and purchased power and heat. The reporting entity shall report the following contents as per the format shown in Appendix I.

7.1 Basic information of operation units (enterprises)

The basic information of operation units (enterprises) shall include the name, property, industry involved, reporting year, organization and institution code, legal representative and contact information of operation units (enterprises).

7.2 Emissions of greenhouse gases

The operation units (enterprises) shall report their total emissions of greenhouse gases, emissions from fuel combustion and emissions implied in net amounts of electric power and heating power purchased during the reporting period.

7.3 Activity level data and data sources

Operation units (enterprises) shall report the net consumption amount and lower heating value of various fuels; purchased power; and amount of purchased steam and hot water and sources of the data (detected value or default value) in the reporting period.

7.4 Emission factor data and data sources

Operation units (enterprises) shall report the carbon content for per unit of heat, carbon oxidation rate and other data of various fuels in the reporting period, and specify sources of the data (detected value or default value). Such data also include the CO_2 emission factor of regional power consumption that is used for the accounting ofCO_2emissions; and the CO_2emission factor of purchased steam and hot water.

Appendix I: Report Format Template

Greenhouse Gas Emissions Report f China Public Building Operation Units (Enterprises)

Reporting entity (seal):

Reporting year:

Date of preparation:

According to the *Guidelines for Accounting and Reporting Greenhouse Gas Emissions from China Public Building Operation Units (Enterprises)*, the enterprise calculated its greenhouse gas emissions for the year _____and filled out the related data sheets. The entity herewith reports the relevant information as follows:

I Basic information of the enterprise

II Emissions of greenhouse gases

III Activity level and the data sources

IV Emission factor and the data sources

This report is true and reliable. If the information provided in this report fails to reflect the reality, this enterprise will bear the corresponding legal responsibility.

Legal person (Signature):

Date

Attachments:

Table 1-1: Data Sheet of CO_2 emissions of the Reporting Entity

Table 1-2: Data Sheet of Activity Level of the Reporting Entity

Table 1-3: Data Sheet of Emission Factor and Calculation Coefficient of the Reporting Entity

Table 1-1: Data Sheet of CO_2 emissions of the Reporting Entity in ___

Type	**Amount** **(Unit: tCO_2)**
Total CO_2 emissions of the enterprise	
CO_2 emissions from the combustion of fossil energy	
CO_2emissions from net purchased electricity	
CO_2emissions from net purchased heat	

Table 1-2:Data Sheet of Activity Level

	Type of fuel	Net consumption amount (t/10,000 Nm^3)	Lower heating value[2] (GJ/t, GJ/10,000 Nm^3)
Combustion of fossil fuels*	Anthracite		
	Bitumite		
	Lignite		
	Cleaned coal		
	Other washed coal		
	Other coal products		
	Coke		
	Crude oil		
	Fuel oil		
	Gasoline		
	Diesel		
	Common kerosene		
	Liquefied natural gas		
	Liquefied petroleum gas		
	Coal tar		
	Crude benzene		
	Coke oven gas		
	Blast furnace gas		
	Converter gas		
	Other gas		
	Natural gas		
	Refined dry gas		

Net purchased power and heat		Data	Unit
	Net purchased power		MWh
	Net purchased heat		GJ

* Enterprises shall add other types of energy that are not listed in the table but actually consumed.

Table 1-3: Data Sheet of Emission Factor

	Type of fuel	Carbon content in unit heat value (tC/10,000 Nm^3)	Carbon oxidation rate (%)
Combustion of fossil fuels*	Anthracite		
	Bitumite		
	Lignite		
	Cleaned coal		
	Other washed coal		
	Other coal products		
	Coke		
	Crude oil		
	Fuel oil		
	Gasoline		
	Diesel		
	Common kerosene		
	Liquefied natural gas		
	Liquefied petroleum gas		
	Coal tar		
	Crude benzene		
	Coke oven gas		
	Blast furnace gas		
	Converter gas		
	Other gas		
	Natural gas		
	Refined dry gas		

Net purchased power and heat		Data	Unit
	Net purchased power		MWh
	Net purchased heat		GJ

* Enterprises shall add other types of energy that are not listed in the table but actually consumed.

Appendix II: Relevant Default Values

Table 2-1: Default Values of Parameters of Fossil Fuels in China

Type of fuel	**Carbon content in unit heat value (tC /GJ)**	**Unit of heat value** (GJ/t, or GJ/10,000 Nm^3)	**Oxidation rate (%)**
Natural gas	15.3×10^{-3}	389.3	99
Coke oven gas	13.6×10^{-3}	173.5	99
Pipeline gas	12.2×10^{-3}	158.0	99
Diesel	20.2×10^{-3}	43.3	98
Gasoline	18.9×10^{-3}	44.8	98
Fuel oil	21.1×10^{-3}	40.2	98
Common kerosene	19.6×10^{-3}	44.8	98
Anthracite	27.5×10^{-3}	23.2	89.5
Bitumite	26.1×10^{-3}	22.4	83.6
Lignite	28.0×10^{-3}	14.1	83.6
Liquefied petroleum gas	17.2×10^{-3}	47.3	98
Liquefied natural gas	17.2×10^{-3}	41.9	98

Source: *Guidelines for Provincial Greenhouse Gas Inventories* (Department of Climate Change of the National Development and Reform Commission, 2011); *The People's Republic of China National Greenhouse Gas Inventory* (National Coordination Committee on Climate Change, Energy Research Institute, National Development and Reform Commission, 2007)

Table 2-2: Default Values of Concentration of Fuel Oil

Type of fuel	Concentration（t/Nm^3）
Diesel	0.86
Gasoline	0.73
Fuel oil	0.92
Common kerosene	0.82

Source: ***Energy Statistical Work Book 2010*** **(The Department of Energy, National Bureau of Statistics, 2010)**

Table 2-3: Default Values of Emissions from Purchased Power and Heat

Name	Unit	Default value
Emission factor of power	t CO_2/MWh	It applies the value most recently released by the state.
Emission factor of heat	t CO_2/GJ	0.11