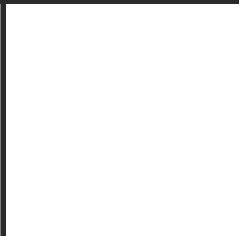
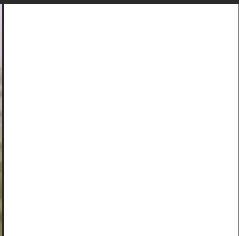
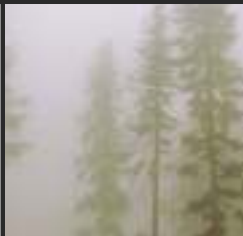
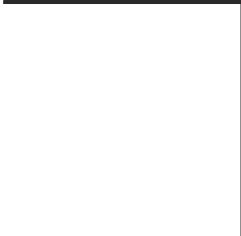


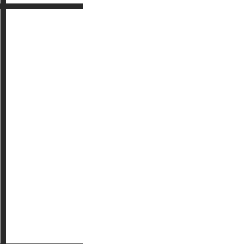
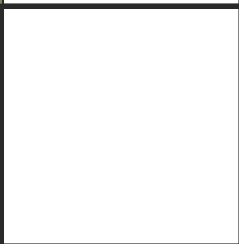
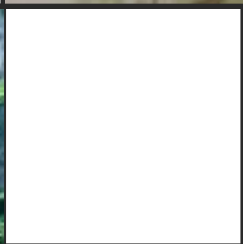
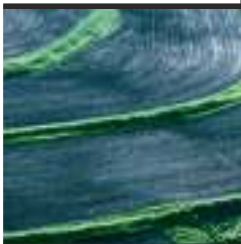


Reporting GHG Information

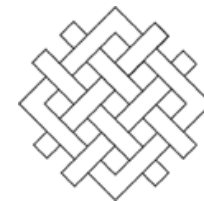
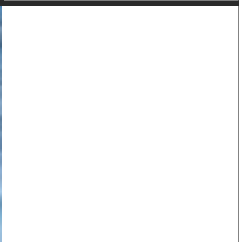
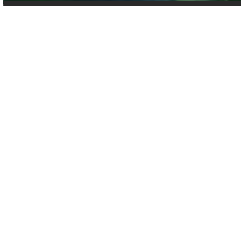


UNEP

September 8, 2008

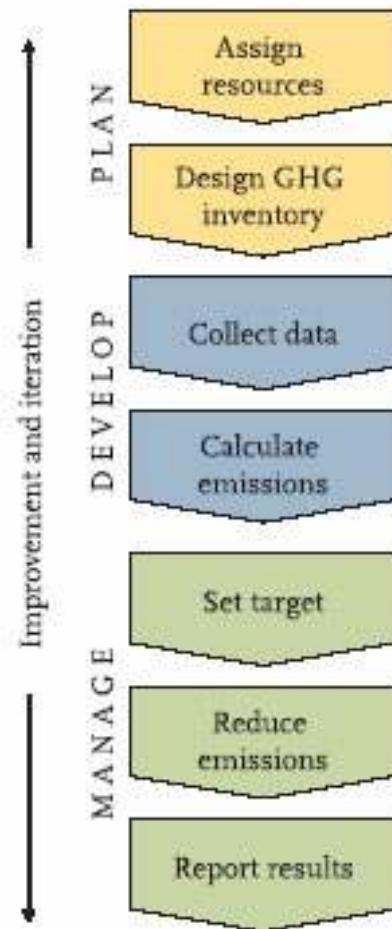


Taryn Fransen, WRI



WORLD
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INSTITUTE

Creating a GHG Inventory





Overview

- GHG Protocol reporting requirements
- Sample reports
- Sample reporting systems
- Balance sheet reporting for “carbon neutrality”



Report GHG emissions – Required info

RELEVANT • COMPLETE • CONSISTENT • TRANSPARENT • ACCURATE

- Description of company and inventory boundaries:
 - Outline of organizational boundaries according to operational control
 - Operational boundaries
 - Reporting period



Report GHG emissions – Required info

RELEVANT • COMPLETE • CONSISTENT • TRANSPARENT • ACCURATE

- Emissions data, aggregated to corporate level:
 - Scope 1 emissions
 - Scope 2 emissions
 - Sum of Scope 1 and 2 emissions independent of any GHG trades
 - Emissions data for all 6 GHGs separately, both in metric tons of the gas and CO2 equivalent



Report GHG emissions – Required info

RELEVANT • COMPLETE • CONSISTENT • TRANSPARENT • ACCURATE

- Base year
- Emissions profile over time
- Context for changes that trigger base year recalculation



Report GHG emissions – Required info

RELEVANT • COMPLETE • CONSISTENT • TRANSPARENT • ACCURATE

- Direct CO₂ emissions for biologically sequestered carbon
- Calculation methodologies, with reference
- Exclusions

Sample reports

Emissões de CO₂ equivalente

	2005	2006	2007
Total de emissões (toneladas) ¹	n.d.	179.589	183.619
Emissões relativas (Kg de CO ₂ e / Kg de produto)	n.d.	4,39	4,09

¹ CO₂e (ou CO₂ equivalente): medida utilizada para comparar as emissões de gases de efeito estufa baseada no potencial de aquecimento global de cada um.

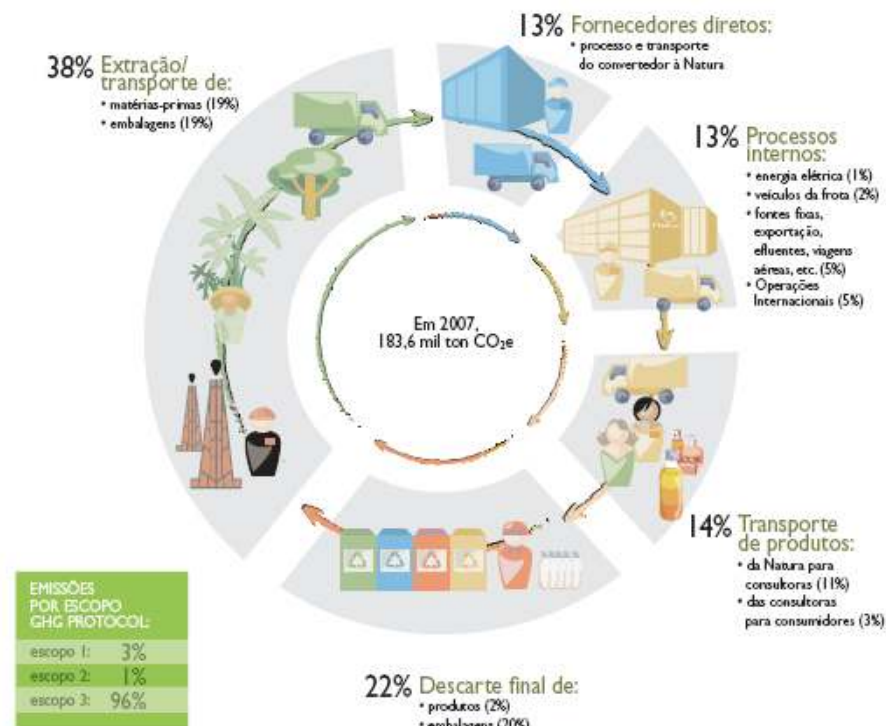
Emissões de CO₂e por atividade (toneladas)

	2005 ²	2006	2007
Extração de matérias-primas e materiais de embalagens	n.d.	64.619	68.869
Fornecedores diretos	n.d.	22.453	24.078
Energia adquirida	n.d.	3.288	2.032
Fontes móveis	n.d.	3.594	3.340
Transporte de produtos (até o consumidor final)	n.d.	25.417	25.630
Descarte final do produto e embalagem	n.d.	45.768	40.744
Outros ¹	n.d.	14.449	18.926
Total	n.d.	179.589	183.619

¹ Fontes fixas, exportação, viagens de negócio, tratamento de efluentes, operações internacionais, outros transportes.

² Devido às melhorias implementadas no inventário de 2007, recalculamos o inventário de 2006, permitindo assim uma base de comparação de nossas emissões ao longo dos anos. O inventário de 2005 não foi revisado.

Natura Ciclo do Carbono (% de Emissões)



Direct and Indirect greenhouse gas emissions:

Direct and Indirect greenhouse gas emissions

Direct carbon dioxide emissions:

By business segment

Direct methane emissions:

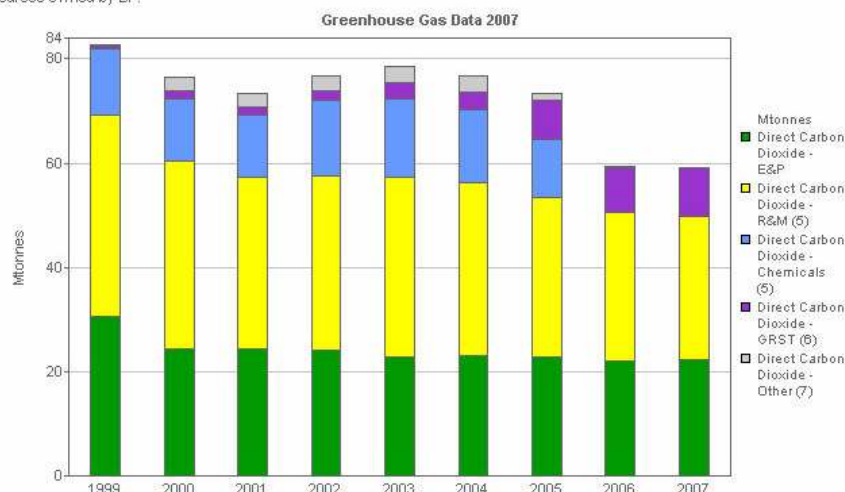
By business segment

Indirect greenhouse gas emissions:

By business segment

Direct carbon dioxide emissions: By business segment

This stacked bar chart shows direct carbon dioxide emissions, analyzed by business segment. Direct emissions result from sources owned by BP.



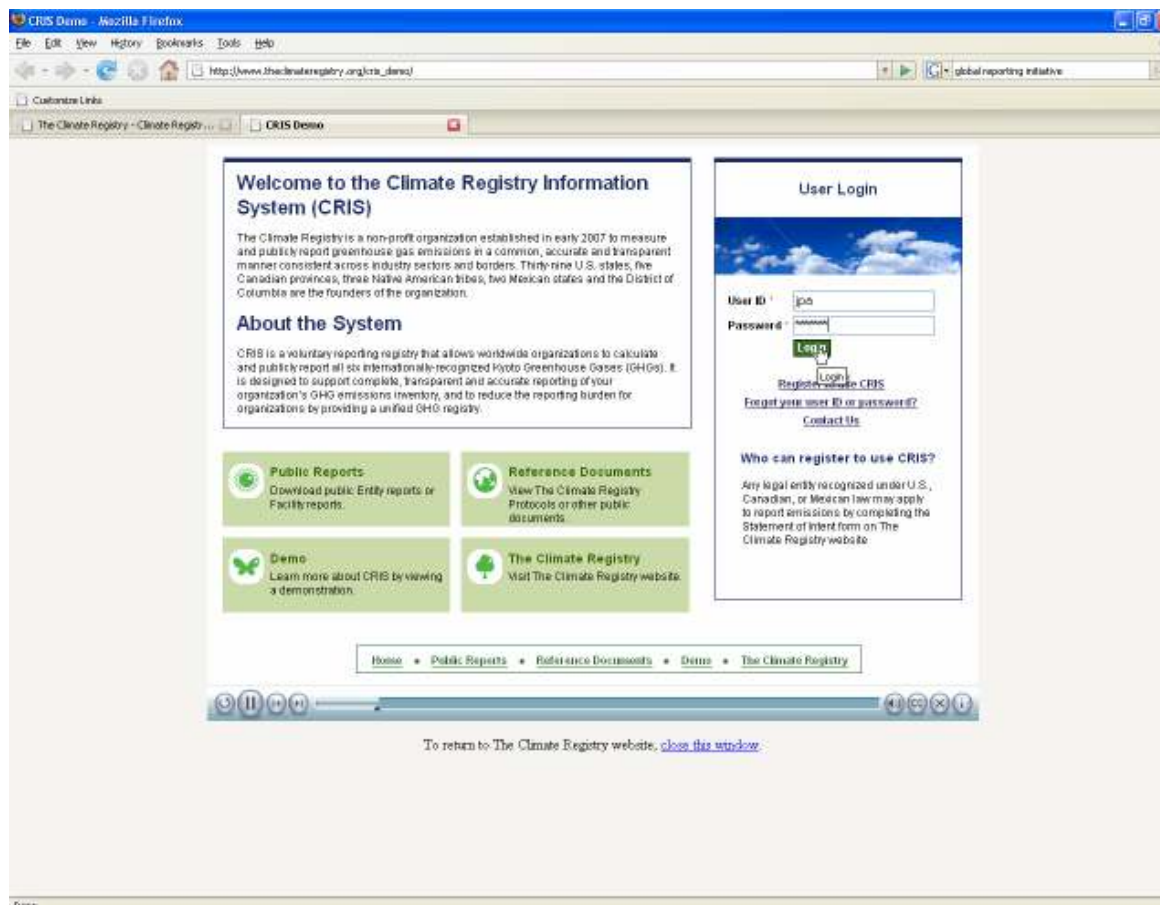
	Units	1999	2000	2001	2002	2003	2004	2005	2006	2007
Direct Carbon Dioxide - Group (1,3,8)	Mtonnes	82.81	76.56	73.42	76.7	78.49	76.84	73.25	59.28	59.17
Direct Carbon Dioxide - E&P	Mtonnes	30.67	24.33	24.25	24.04	22.91	23.1	22.84	21.98	22.22
Direct Carbon Dioxide - R&M (5)	Mtonnes	38.48	36.08	32.97	33.64	34.44	33.25	30.61	28.66	27.64
Direct Carbon Dioxide - Chemicals (5)	Mtonnes	12.83	12.01	11.92	14.34	15.04	13.85	11.12		
Direct Carbon Dioxide - GRST (6)	Mtonnes	0.58	1.39	1.56	1.76	3.07	3.54	7.43	8.52	9.20
Direct Carbon Dioxide - Other (7)	Mtonnes	0.25	2.74	2.72	2.92	3.03	3.1	1.24	0.11	0.11

(5) In 2005 Chemicals became the entity known as Innovene. This does not include Aromatics and Acetyls which from 2005 were included with Refining and Marketing.

(6) GRST - Gas, Power and Renewables included renewables business operations (including BP Solar) from 2002 onwards. From 2005 this included BP Shipping.

(7) Other' business - from 2002 onwards this included shipping, aluminum and corporate functions/offices. From 2005 this category included WIngles, SECCO, PEMSB and Pasadena which were previously part of Chemicals. From 2005 shipping was included in GRST.

Reporting systems



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CRIS: Climate Registry Information System

The Climate Registry



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Entity | Facility | Emissions Reporting | Search Reports

Getting Started

To report emissions to CRIS, users typically follow the steps below. Each of these steps is explained in detail in the Help files provided throughout the application.

1. Maintain entity details.
2. Define facilities and enter facility details.
3. Define emitting activities for each facility.
4. Report emissions for each emitting activity entered.

Use the above horizontal menu bar to access the functional areas within the application. The functional areas displayed in the menu depend on the user group assigned. After selecting a menu option, the available submenu options will be added to the display of menu options.

Key Concepts and General Tips


Learn more about the CRIS application. Review recommended steps and key concepts, read about general tips, data entry conversions, and [more](#).

My Profile

Welcome back: Janelle Atkinson

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Announcements



Meeting of the Board of Directors

January 15-16, 2008 Board of Directors Meeting in Santa Monica, CA
[More...](#)

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Emissions Reporting

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[Entity](#) | [Facility](#) | [Emissions Reporting](#) | [Search Reports](#)

[Home](#) > [Emissions Reporting](#) > [Report Draft Emissions](#)

Step 1: Identify Reporting Year

[Help](#)

Reporting Year ^{*} 2008 ▼

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Entity | Facility | Emissions Reporting | Search Reports

Home > Emissions Reporting > Report Draft Emissions

Step 2: Select Facility

Help

Reporting Frequency: Annually
Reporting Year: 2008

1. Select Facility using radio button.
2. Click **Continue** to move to Step 3.
3. Click **Add** to create a new Facility.

Search Existing Records ▼

Facility Name:
City:
State/Province:

Filter Clear

Select Facility

	Facility Number	Facility Name	City	State/Province
<input type="radio"/>	F-2344	Green Energy Corp. Corporate Offices	San Francisco	California
<input type="radio"/>	F-2356	Green Energy Corp Syracuse Plant	Syracuse	New York

1 - 2 of 2

Back Add Continue

Let's calculate and report emissions for the new facility

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[Entity](#) | [Facility](#) | [Emissions Reporting](#) | [Search Reports](#)

[Home](#) > [Emissions Reporting](#) > [Report Draft Emissions](#)

Step 3: Select Emitting Activity [Help](#)

1. To add a new activity, use the **Add Emitting Activity** button.
2. Select an activity using the radio button.
3. Click **Continue** to move to Step 4.

Reporting Frequency


Annually
2008

Facility Number F-2356
Facility Name Green Energy Corp Syracuse Plant

Let's calculate the emissions from our boilers

Emitting Activities	Scope	Activity Type	Emissions Reported	Parameters Reported
<input type="radio"/> Boilers	Scope 1 - Combustion (Stationary)	Boilers (Normal Firing Boilers)	No	
<input type="radio"/> Purchased Electricity	Scope 2 - Indirect	Use Of Purchased Electricity	No	

[Back](#)
[Add Emitting Activity](#)
[Continue](#)



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Step 4: Select GHG(s) and Reporting Method

1. Select the GHG(s) and Reporting Method for which you are ready to report.
2. Click **Continue** to move to Step 5.

Reporting Frequency	Annually	Facility Number	F-2356
Reporting Year	2008	Facility Name	Green Energy Corp Syracuse Plant
		Emitting Activity	Boilers
		Scope	Scope 1 - Combustion (Stationary)
		Activity Type	Boilers (Normal Firing Boilers)

Select greenhouse gases and reporting method

Select Greenhouse Gases to Report

Greenhouse Gas	Reporting Method	Formula
<input checked="" type="checkbox"/> CH4 (Methane)	Calculation Tool (Quantity in units of volume e.g. barrels)	$[Quantity] * [Heat Content] * [Emission Factor] / 1000000$
<input checked="" type="checkbox"/> CO2 (Carbon Dioxide)	Calculation Tool (Quantity in units of volume e.g. barrels)	$[Quantity] * [Heat Content] * [Emission Factor] * [Oxidation Factor] / 1000$
<input checked="" type="checkbox"/> N2O (Nitrous Oxide)	Calculation Tool (Quantity in units of volume e.g. barrels)	$[Quantity] * [Heat Content] * [Emission Factor] / 1000000$

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Enter Activity Values

Fuel Consumed ^{*}

Quantity ^{*}

Heat Content

Oxidation Factor

Calculate

CH4 (Methane) CO2 (Carbon Dioxide) N2O (Nitrous Oxide)

Greenhouse Gas N2O (Nitrous Oxide)

Formula Source Calculation Tool (Quantity in units of volume e.g. barrels)

Default Formula $[Quantity] * [Heat Content] * [Emission Factor] / 1000000$

Do you wish to customize these values? ☐

Estimated Emissions ☐

CH4 (Methane)	<input type="text"/>	<input type="text"/>
CO2 (Carbon Dioxide)	<input type="text"/>	<input type="text"/>
N2O (Nitrous Oxide)	<input type="text"/>	<input type="text"/>

Back Save Draft Emissions

First, enter your fuel and quantity

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Enter Activity Values

Fuel Consumed * Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4) ▾

Quantity * 12700000 barrels ▾

Heat Content * Then, click Calculate MMBtu / Barrel

Oxidation Factor 1

Calculate

CH4 (Methane) CO2 (Carbon Dioxide) N2O (Nitrous Oxide)

Greenhouse Gas N2O (Nitrous Oxide)

Formula Source Calculation Tool (Quantity in units of volume e.g. barrels)

Default Formula $[Quantity] * [Heat Content] * [Emission Factor] / 1000000$

Do you wish to customize these values? ☐

Estimated Emissions ☐

CH4 (Methane)		
CO2 (Carbon Dioxide)		
N2O (Nitrous Oxide)		

Back Save Draft Emissions

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Enter Activity Values

Fuel Consumed * Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4) ▾

Quantity * 1270000 barrels ▾

Heat Content 5.825 MMBtu / Barrel

Oxidation Factor 1

Calculate

CH4 (Methane) CO2 (Carbon Dioxide) N2O (Nitrous Oxide)

Greenhouse Gas N2O (Nitrous Oxide)

Formula Source Calculation Tool (Quantity in units of volume e.g. barrels)

Default Formula $[1270000 \text{ barrels}] * [5.825 \text{ MMBtu / Barrel}] * [0.4 \text{ g N2O / MMBtu}] / 1000000$

Default Total Emissions 2.9591 metric tons

CO2e 917.321 CO2e metric tons

Do you wish to customize these values? ☐

Estimated Emissions ☐

CH4 (Methane)	6.657975 metric tons = 153.133425 metric tons	Tier C
CO2 (Carbon Dioxide)	541145.4125 metric tons	Tier C
N2O (Nitrous Oxide)	2.9591 metric tons = 917.321 metric tons	Tier C

Back Save Draft Emissions

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3. To continue with the submission, click **Review Draft Submission**.

Submission ID	231	Facility Number	F-2356
Submission Status	Draft	Facility Name	Green Energy Corp Syracuse Plant
Reporting Frequency	Annually	Emitting Activity	Boilers
Reporting Year	2008	Scope	Scope 1 - Combustion (Stationary)
		Activity Type	Boilers (Normal Firing Boilers)

Emissions Data Detail

Reporting Method	Quantity	Fuel	Greenhouse Gas	Total Emissions	Emission Factor	Combustion Factor	Heat Content	Estimate Emission
Calculated	1270000.000 barrels	Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4)	CH4 (Methane)	6.657975 metric tons	0.9	1	5.825	N
Calculated	1270000.000 barrels	Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4)	CO2 (Carbon Dioxide)	541145.412500 metric tons	73.15	1	5.825	N
Calculated	1270000.000 barrels	Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4)	N2O (Nitrous Oxide)	2.959100 metric tons	0.4	1	5.825	N

[Continue Adding Emissions](#) [Review Draft Submission](#)

Click to calculate additional emissions or review draft submissions

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Review Submission Emissions Records

For submissions with a status of Draft, you may:

1. Delete the submissions by clicking **Delete**.
2. Submit emissions records for review.

Submission ID	231	Facility Number	F-2356
Submission Status	Draft	Facility Name	Green Energy Corp Syracuse Plant
Reporting Frequency	Annually		
Reporting Year	2008		

Emissions Data Detail

Review your draft submission data

	Reporting Method	Emitting Activity Number	Scope	Activity Type	Quantity	Fuel	Greenhouse Gas	Total Emissions	Emission Factor	Combustion Factor
<input type="radio"/>	Calculated		Scope 1 - Combustion (Stationary)	Boilers (Normal Firing Boilers)	1270000.000 barrels	Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4)	CH4 (Methane)	6.657975 metric tons	0.9	1
<input type="radio"/>	Calculated		Scope 1 - Combustion (Stationary)	Boilers (Normal Firing Boilers)	1270000.000 barrels	Diesel Fuel / Distillate Fuel Oil (#1, 2 & 4)	CO2 (Carbon Dioxide)	541145.412500 metric tons	73.15	1

[Back](#) [Delete](#) [Submit Emissions for Review](#)

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Entity Emissions Summary Report

01/11/2008 11:20:41

General Entity Information

Entity Name	Green Energy Corp
Address	3754 Washington Ave New York, New York 10990 United States
Website	Greenenergycorp.org
Phone Number	(434) 979-3700
Email Address	jpa@corphq.com
Entity Contact	Atkinson, Janelle
Entity Type	Commercial / Industrial
Description	Small utility

VERIFIED EMISSIONS INFORMATION

Reporting Protocol	General Reporting Protocol (January 2008)
Reporting Year	2008
Consolidation Methodology	Operational Control and Equity Share
Base Year	2008

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Operational Control

Direct Emissions (metric tons)	CO2e	CO2	CH4	N2O	HFCs	PFCs	SF6
Mobile Combustion	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stationary Combustion	542,174.43	541,145.41	6.66	2.96	0.00	0.00	0.00
Process Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DIRECT	542,174.43	541,145.41	6.66	2.96	0.00	0.00	0.00

Indirect Emissions (metric tons)	CO2e	CO2	CH4	N2O
Purchased Electricity	227.80	227.14	0.01	0.00
Purchased Heating	0.00	0.00	0.00	0.00
Purchased Cooling	0.00	0.00	0.00	0.00
Purchased Steam	0.00	0.00	0.00	0.00
TOTAL INDIRECT	227.80	227.14	0.01	0.00

Estimated Emissions (metric tons)	CO2e	CO2	CH4	N2O	HFCs	PFCs	SF6
TOTAL ESTIMATED EMISSIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Optional Emissions (metric tons)	CO2e	CO2	CH4	N2O	HFCs	PFCs	SF6
TOTAL OPTIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* HFCs and PFCs are classes of greenhouse gases that include many compounds. These columns may reflect the total emissions of multiple HFC and PFC compounds, each of which has a unique Global Warming Potential (GWP). Emissions of each gas are first multiplied by their respective GWP and then summed in the total CO2-equivalent column.

Page 1 of 2

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Balance sheet issues

- Need for credible framework for reporting offset and neutrality claims
- Emissions: Liabilities
- Reduction Instruments: Assets
- $[\text{Net GHG Emissions}] = [\text{Gross GHG emissions}] - [\text{GHG Reduction Instruments}]$



Reduction Instruments

- Allowances
- Offset credits (from mandatory or voluntary schemes)
- RECs
- White tags



Issues

- Framing reduction targets
- Double counting of reductions
- Count RIs across scopes vs. within scopes
- Common currencies (energy vs GHGs)



Preliminary recommendations

Objective	Solutions
Prevent double-counting by seller & purchaser	Report both acquisitions and sales of any traded RI
Prevent double-counting between voluntary & mandatory targets	Report in separate line items Do not count surrendered RIs towards targets
Resolve REC issues	Report REC purchases separately



Preliminary recommendations, cont.

Objective	Solutions
Ensure transparency in reporting of RI use	Report different types of RIs in different lines Report additional info such as verification of RIs
Ensure RIs can only be claimed once toward a voluntary target	Recognize allowances and offsets as contributing toward a target only when they are retired



Questions?

- Contact:
 - Taryn Fransen (tfransen@wri.org)

- Visit GHG Protocol at www.ghgprotocol.org