The ULI Greenprint Center is a worldwide alliance of leading real estate owners, investors, financial institutions and other stakeholders committed to improving the environmental performance of the global real estate industry with a focus on emissions and energy reduction. Greenprint is a catalyst for change, taking meaningful and measurable actions to generate solutions that improve the environment through energy efficiency while demonstrating the correlation with increased property values. Greenprint is a member-driven nonprofit organization that achieves its goals through measurement, action, and education. The Greenprint Foundation, founded in 2009, was acquired by Urban Land Institute (ULI) in 2012 to form the ULI Greenprint Center for Building Performance.

Greenprint’s mission is to lead the global real estate community toward value-enhancing carbon reduction strategies that support the Intergovernmental Panel on Climate Change (IPCC) goals for global greenhouse gas stabilization by 2030.¹

Greenprint provides an information platform for individual members to measure and track property-level energy, emissions, water, and waste performance data. Each year Greenprint publishes a consolidated view of participating properties, detailing environmental performance by geography and property type in the Greenprint Performance Report™. Each Greenprint member receives a customized report tailored to their needs and individual portfolios.
Letter from the Chairman

I am pleased to present Volume 3 of the Greenprint Performance Report™. The transformative alliance of the Greenprint Foundation and Urban Land Institute (ULI) to create the ULI Greenprint Center for Building Performance has resulted in many partnership opportunities, including furthering the potential and impact of the Greenprint Performance Report. The report continues to be the largest global collection of transparent, verifiable, and comprehensive data that provides aggregate benchmarks and performance trends. Volume 3 expands on our mission of providing a clear and consistent standard of greenhouse gas emission measurement and energy performance by taking the first steps toward including water and waste metrics to provide a truly comprehensive and useful set of environmental performance benchmarks for the real estate industry.

I would like to acknowledge the outstanding leadership of our membership, which has resulted in a substantial increase in the size and scope of the Greenprint portfolio since Volume 2. This report includes 2,703 properties (66% increase), which represents 65 million square meters of building area (108% increase). We have achieved this growth both from the expanding participation of our initial members and the impressive engagement of our 11 new members.

Now 29 strong, our membership has not only provided us with data on more properties but also provided us with historical data for properties. This allows us to compare data from one year to the next for the same set of properties, creating the foundation for a true “Like for Like” analysis and for useful benchmarking over time. This report covers both a comparison of 2010 to 2011 as well as longer-term performance data, looking at the same property performance from inception in 2009 to the present. I am pleased to report that energy consumption decreased 2.5%, greenhouse gas emissions decreased 5.9%, and water consumption decreased 11.9% on a Like for Like basis from 2009 to 2011. While the Greenprint Performance Report is rich with both information and potential, we still consider ourselves to be in the early stages in terms of data and statistical relevance. Accordingly, the growth of our portfolio continues to be one of our top priorities. The remarkable expansion of our database moves us closer to our goal of creating a useful set of tools for the industry.

The Greenprint Performance Report is unique in that it provides an open standard for measuring, benchmarking and tracking energy usage and resulting emissions on an industry, asset class, portfolio or property level. The Greenprint Performance Committee guided our procurement of a web-enabled platform that allows rigorous data quality controls set forth in Appendix A. Data was provided by professional property and sustainability managers, vetted by senior asset and operations managers, and reviewed by Greenprint to ensure robust and meaningful industry benchmarks. Greenprint plans to lead the industry in transparency by completing an in-depth third party review of our methodology that will be provided publicly in 2013.

Greenprint continues our quest to have a positive impact on our environment in ways that also enhance the long-term value of our investments. We are off to a great start but still need to achieve a more complete adoption by the real estate industry through leadership, commitment and stakeholder collaboration. Thank you to our members, partners and collaborators for your contributions to date. I look forward to working with you in the future, as well as welcoming new members and partners into the Greenprint community.

Sincerely,

Charles B. Leitner III
Chairman, ULI Greenprint Center
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Guide to the Greenprint Performance Report

The results of the Greenprint Performance Report™, Volume 3 are based on 2,703 property submissions representing 65 million square meters across 46 countries.

Greenprint sets the global standard for a common system to measure and benchmark energy, emissions, and water usage across the global property industry. The Greenprint database is built from records of individual properties, and is completely transparent in terms of property characteristics used and calculations applied. The report provides not only current year benchmarks, but also a comparison of data from one year to the next for the same set of properties, “Like for Like”.

Executive Summary provides a snapshot of the Greenprint portfolio’s growth and performance from 2010 to 2011.2

- The 2010–2011 Like for Like portfolio includes 1,628 properties with consistent historical data.
- Changes in occupancy are also calculated on a Like for Like basis and include 964 properties.

Annual Results details current year benchmarks and Like for Like performance for energy, emissions, and water usage. Data is normalized to allow comparison and benchmarking for buildings of different sizes.

- The Energy Profile section provides benchmarks based on geography and property types.
- The Greenhouse Gas Emissions (GHG) section details current year emissions as well as reporting methodology, including emission boundaries and calculations in line with GHG Protocol.

Long-Term Performance provides Greenprint's Historical Performance and the Greenprint Carbon Index™.

- The Historical Performance summarizes Greenprint’s performance since inception. The 2009–2011 Like for Like portfolio includes properties with three years of consecutive data, and is composed of 1,158 properties.
- The Greenprint Carbon Index™ (GCX) is the normalized emissions intensity (kg CO₂e / m²) of Greenprint members’ properties with energy consumption for each year.

Appendix – includes Quality Control & Verifications processes in line with ISO 14064, Glossary of Terms, and Emission Coefficients

As a global organization, Greenprint has decided to present this report in the International System of Units (SI) and Euro currency. Individual member reports are customized to provide local metrics and currency.
1 Executive Summary
EXEcutive Summary

Greenprint At-A-Glance
YEAR OVER YEAR – ABSOLUTE

IN 2011

SQUARE METERS IN 2011
108% increase in square metres

2010
32 million m²
2011
65 million m²

PROPERTIES IN 2011
66% increase in Greenprint properties

2010
1,623 properties
2011
2,703 properties

COUNTRIES IN 2011
5% increase in countries

2010
44 countries
2011
46 countries

ULI and Greenprint Foundation merged in 2012 to form the ULI Greenprint Center for Building Performance.

Greenprint’s goal to reduce overall building emissions in its portfolio by 50% by 2030 compared to the 2009 baseline, is in line with the Intergovernmental Panel on Climate Change (IPCC) greenhouse gas stabilization target.

MISSION

ORGANIZATION AND MEMBERSHIP

2010
18 members
2011
29 members

61% increase in membership

1,623 properties
2,703 properties
44 countries
46 countries
65 million m²
32 million m²
2,703 properties
1,623 properties
46 countries
44 countries
65 million m²
32 million m²

Performance Snapshot
YEAR OVER YEAR – LIKE FOR LIKE

OPERATION

energy
-4.4%
301 million kWh

carbon
-8.2%
454 thousand metric tonnes

DENSITY

occupancy
-1.2%
261 thousand m²

CERTIFIED SOURCES

purchased renewable energy
10.8%
20,000 metric tonnes CO₂e averted

WATER

water
-3.1%
4.9 million kiloliters

cost of energy³
€399m
current year
1,572 properties

2011 EMISSION REDUCTION EQUIVALENTS

1,056,830 barrels of oil not consumed

89,106 cars taken off the road

39,345 homes not consuming energy

11,652,231 trees planted

GREENPRINT PERFORMANCE REPORT
VOLUME 3, 2011 3
The Greenprint portfolio spans the globe, with the largest number of assets located in the Americas and EMEA, and a growing Asia Pacific portfolio. Greenprint members have selected which assets to submit based upon:

**EXECUTIVE SUMMARY**

**Distribution by Geography**

**YEAR OVER YEAR – ABSOLUTE**

The Greenprint portfolio spans the globe, with the largest number of assets located in the Americas and EMEA, and a growing Asia Pacific portfolio. Greenprint members have selected which assets to submit based upon:

**AMERICAS**
- 1,783 assets, 6 countries
- 47.2 million m² (509 MSF)
- +99.9% from 2010

**EMEA**
- 712 assets, 23 countries
- 13.6 million m² (146 MSF)
- +14.7% from 2010
The global Greenprint portfolio increased 108% by floor area and 66% by number of properties.
EXECUTIVE SUMMARY

Distribution by Property Type
YEAR OVER YEAR – ABSOLUTE

The Greenprint Performance Report includes all major property types with an emphasis towards office, followed by multifamily, retail, and industrial.

The Greenprint portfolio is becoming more diversified over time.
2.1 Energy Profile
Energy Consumption
YEAR OVER YEAR – LIKE FOR LIKE

The chart below shows the Like for Like portfolio, which consists of 1,628 properties with data from 2010 to 2011.

The Greenprint portfolio’s energy consumption decreased 4.4%, saving over 140 million kWh.
Energy use intensity is annual energy consumption divided by the floor area of the space. With energy, less is more, so higher efficiency comes from properties with a lower energy intensity.

**Median Office Energy Use Intensity**
- Americas (715 properties): 212 annual kWh / m² rentable area
- EMEA (284 properties): 344 annual kWh / m² rentable area
- Asia Pacific (52 properties): 251 annual kWh / m² rentable area

**Median Industrial Energy Use Intensity**
- Americas (80 properties): 55 annual kWh / m² gross area
- EMEA (60 properties): 86 annual kWh / m² gross area
- Asia Pacific (26 properties): 32 annual kWh / m² gross area

**Median Retail Energy Use Intensity**
- Americas (55 properties): 444 annual kWh / m² common area
- EMEA (76 properties): 444 annual kWh / m² common area
- Asia Pacific (2 properties): 568 annual kWh / m² common area

**Median Multifamily Energy Use Intensity**
- Americas (198 properties): 335 annual kWh / m² common area
- Asia Pacific (36 properties): 83 annual kWh / m² common area
Energy Use Intensity of Office Properties by Country
CURRENT YEAR

The following chart shows the median energy use intensity for Greenprint’s portfolio of office properties in nine countries. The countries displayed represent the markets with the largest number of assets of whole-building energy data submitted for the Greenprint Performance Report.

As the Greenprint database grows and diversifies, we expect that the median energy intensities will become increasingly representative of property subtypes in cities, countries and regions.

Building energy use intensity is impacted by a variety of factors, including base building equipment, tenant energy use, worker density, and weather.
Energy Use Intensity of Office Properties by City
CURRENT YEAR

This chart presents the median energy use intensity for the Greenprint office properties in eight cities across the globe.

- **San Francisco**: 65 properties, 200 annual kWh / m²
- **New York**: 31 properties, 275 annual kWh / m²
- **London**: 165 properties, 398 annual kWh / m²
- **Frankfurt**: 10 properties, 345 annual kWh / m²
- **Seoul**: 4 properties, 420 annual kWh / m²
- **Tokyo**: 21 properties, 190 annual kWh / m²
- **Paris**: 18 properties, 236 annual kWh / m²
- **Washington, D.C.**: 44 properties, 235 annual kWh / m²
Energy Use Intensity Benchmark by Property Type
Whole Building and Common Area

CURRENT YEAR

Members provided whole building energy consumption data for 1,087 properties and common area energy consumption for 460 properties. Below are benchmarks of median energy use intensity for whole building and common areas in office, retail and multifamily properties. Energy use intensity for properties with whole building energy data was calculated by dividing energy by rentable area.

These values are not directly comparable, but offer meaningful property benchmarks.

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Whole Building Energy (kWh) by rentable area (m²)</th>
<th>Common Area Energy (kWh) by common area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE</td>
<td>227 annual kWh / m²</td>
<td>96 annual kWh / m²</td>
</tr>
<tr>
<td></td>
<td>1,050 properties</td>
<td>83 properties</td>
</tr>
<tr>
<td>MULTIFAMILY</td>
<td>228 annual kWh / m²</td>
<td>268 annual kWh / m²</td>
</tr>
<tr>
<td></td>
<td>14 properties</td>
<td>242 properties</td>
</tr>
<tr>
<td>RETAIL</td>
<td>291 annual kWh / m²</td>
<td>469 annual kWh / m²</td>
</tr>
<tr>
<td></td>
<td>23 properties</td>
<td>135 properties</td>
</tr>
</tbody>
</table>
2.2 Greenhouse Gas Emissions (GHGs)
Methodology

The Greenprint Performance Report separates Greenhouse Gas Emissions (GHG) into three categories: Scopes 1, 2 and 3. This reporting system is aligned with the World Resources Institute/WBCSD’s Greenhouse Gas Protocol. Categorizing emissions by Scope enables separate accounting of GHG sources by different related entities, such as landlord and tenants, and also increases transparency.

Organizational Boundary

Greenprint has chosen to use the Operational Control approach, and defines areas under control to include all areas where Greenprint members (landlord or tenant) have full authority to introduce and implement operating policies at the building.

Emissions from transport, building construction or waste disposal are not included within this report’s scope.

Defining Scope

**SCOPE 1**
Covers emissions generated onsite. It includes:

**SCOPE 2**
Covers emissions from purchased electricity and are attributed to the organization paying the energy bill, unless the energy is passed through on a submetered basis to another organization. These emissions are associated with energy (electricity or thermal energy) generated at sources controlled by a third party and consumed at the building.

- **Owner Scope 2**: emissions from purchased energy that is not submetered to tenants.
- **Tenant Scope 2**: emissions from energy accounted for through direct metering from utility or landlord submetering.

**SCOPE 3**
Covers emissions from energy consumption attributable to tenants through direct tenant metering or submetering. It includes:

- **Owner Scope 3**: Energy consumed onsite that is attributable to tenants through direct utility metering or landlord-provided submetering.
- **Tenant Scope 3**: emissions from energy that is paid for on a prorated basis (by floor area).

Scope 1+2+3 = Total Building Emissions

Calculating Greenhouse Gas Emissions

Greenhouse gas emissions are calculated using the following formula:

\[
\text{Energy [kWh]} \times \text{Emissions Factor [kg CO}_2\text{e / kWh]} = \text{Greenhouse Gas Emissions [kg CO}_2\text{e]}\]

Emissions factors are used to calculate the total amount of CO₂e generated. These factors do not account for losses in transmission and distribution. Developing and applying accurate emissions’ factors is critical to reliable GHG emissions reporting. Emissions factors are listed in Appendix B.
Absolute Emissions
CURRENT YEAR – ABSOLUTE

The chart below shows the absolute greenhouse gas emissions by Scope, in line with Greenhouse Gas Protocol. Scope 1 and 2 includes emission that Greenprint members have direct control over. Scope 3 emissions for landlords are associated with directly metered or submetered energy to tenants. For occupiers emissions are associated with energy provided by the landlord on a prorated basis (floor area).

2011 Total Greenprint Emissions

Emissions
YEAR OVER YEAR – LIKE FOR LIKE

The table below shows the change in absolute emissions by property type from 2010 to 2011. Individual member reports will provide greater insight into the comparative performance of their portfolios.

<table>
<thead>
<tr>
<th>Thousand Metric Tonnes CO₂ / year</th>
<th>2010</th>
<th>2011</th>
<th>2010–2011 % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Portfolio (990 properties)</td>
<td>5,120</td>
<td>4,707</td>
<td>-8.1%</td>
</tr>
<tr>
<td>Industrial Portfolio (141 properties)</td>
<td>57</td>
<td>63</td>
<td>11.2%</td>
</tr>
<tr>
<td>Retail Portfolio (124 properties)</td>
<td>148</td>
<td>149</td>
<td>0.3%</td>
</tr>
<tr>
<td>Multifamily Portfolio (371 properties)</td>
<td>193</td>
<td>144</td>
<td>-25.1%</td>
</tr>
<tr>
<td>Hotel / Lodging (2 properties)</td>
<td>1.8</td>
<td>1.5</td>
<td>-18.9%</td>
</tr>
<tr>
<td>GREENPRINT TOTAL</td>
<td>5,517</td>
<td>5,063</td>
<td>-8.2%</td>
</tr>
</tbody>
</table>
This map illustrates the change in emissions (Scopes 1, 2 and 3) from 2010 to 2011 for the Like for Like portfolio for each global region.

- **Americas**
  - 1,247 assets
  - 34.2 million m²
  - 2010: 4,991 thousand metric tonnes CO₂e
  - 2011: 4,536 thousand metric tonnes CO₂e
  - -9.12% decrease

- **EMEA**
  - 269 assets
  - 5.8 million m²
  - 2010: 419 thousand metric tonnes CO₂e
  - 2011: 410 thousand metric tonnes CO₂e
  - -2.36% decrease

- **Asia Pacific**
  - 112 assets
  - 1.2 million m²
  - 2010: 109 thousand metric tonnes CO₂e
  - 2011: 119 thousand metric tonnes CO₂e
  - +9.78% increase

The Greenprint portfolio's emissions decreased 8.2% on a Like for Like portfolio basis from 2010 to 2011.
Emission Equivalencies by Global Region
YEAR OVER YEAR – LIKE FOR LIKE

The chart below details the change in the Greenprint portfolio’s emissions from 2010 to 2011. Properties consuming the same amount of energy can emit different amounts of CO₂e for several reasons, including:

- **Utility Fuel Mix:** Emission factors reflect the type of fuel used at the power source. For instance, Victoria, Australia produces power from coal plants and has a factor of 1.23 while Ontario, Canada relies on hydroelectric power and therefore, has a low factor of 0.17.

- **Government Approach:** Policies and incentives to decarbonize the power supply vary. For example, combined heat and power (CHP) options are widely available in Germany due to government support and three quarters of French electricity is now produced by low carbon nuclear plants.

- **Geographic Location:** The viability and utilization of onsite renewable energy technologies and purchasing renewable energy contracts varies by location according to natural factors, such as water availability and sunlight intensity.

### Emissions by Global Region Comparison

<table>
<thead>
<tr>
<th></th>
<th>Americas 2010</th>
<th>Americas 2011</th>
<th>EMEA 2010</th>
<th>EMEA 2011</th>
<th>Asia Pacific 2010</th>
<th>Asia Pacific 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of properties</td>
<td>1,247</td>
<td>1,247</td>
<td>269</td>
<td>269</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td>Floor Area (million m²)</td>
<td>34.2</td>
<td>34.2</td>
<td>5.8</td>
<td>5.8</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>CO₂e emissions (Thousand metric tonnes) (Scopes 1, 2 and 3)</td>
<td>4,991</td>
<td>4,536</td>
<td>419</td>
<td>410</td>
<td>109</td>
<td>119</td>
</tr>
<tr>
<td>Barrels of oil equivalent to amount of CO₂e emissions</td>
<td>11,607,147</td>
<td>10,548,591</td>
<td>975,437</td>
<td>952,442</td>
<td>252,793</td>
<td>277,516</td>
</tr>
<tr>
<td>Cars on the road in a year equivalent to amount of CO₂e emissions</td>
<td>978,642</td>
<td>889,391</td>
<td>82,243</td>
<td>80,304</td>
<td>21,314</td>
<td>23,398</td>
</tr>
<tr>
<td>Number of trees needed to sequester the equivalent amount of CO₂e emissions</td>
<td>127,976,231</td>
<td>116,304,974</td>
<td>10,754,821</td>
<td>10,501,282</td>
<td>2,787,205</td>
<td>3,059,795</td>
</tr>
<tr>
<td>Number of homes equivalent amount of CO₂e emissions</td>
<td>432,128</td>
<td>392,718</td>
<td>36,315</td>
<td>35,459</td>
<td>9,411</td>
<td>10,332</td>
</tr>
</tbody>
</table>
Greenprint members are committed to increasing the use of onsite renewable energy, such as rooftop photovoltaic panels, as well as the procurement of renewable energy from power suppliers. The chart below shows greenhouse gas emissions averted as a percentage of total emissions emitted by global region.

Many Greenprint members generate onsite renewable energy that is sold to third parties, such as power supply companies. This renewable energy is not included in the chart below because it is not consumed onsite by the property.

EMEA leads the pack in averting emissions through the purchase of renewable energy.
Emissions Profile by Global Region
CURRENT YEAR – ABSOLUTE

The chart below shows each Greenprint's emissions by global region and source of energy for the current year. Greenhouse gas emissions (CO₂e) vary due to:

- Geographic distribution of individual portfolios
- Regional policies and incentives
- Property type allocation
- Corporate sustainability policies

ENERGY STAR Portfolio Manager does not specifically label Combined Heat and Power generation (CHP), therefore properties submitted via Portfolio Manager cannot be categorized as CHP above.
2.3 Water Profile
Water Usage
YEAR OVER YEAR – LIKE FOR LIKE

The table below shows the change in water consumption by property type from 2010 to 2011 on the Like for Like portfolio of 621 properties. In real estate, water may be consumed for indoor use, outdoor use, and irrigation purposes. This report only takes into account water consumption specifically for indoor use (when available) and whole meter data otherwise.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>355</td>
<td>154,826,401</td>
<td>149,947,885</td>
</tr>
<tr>
<td>Retail</td>
<td>37</td>
<td>723,391</td>
<td>757,803</td>
</tr>
<tr>
<td>Industrial</td>
<td>5</td>
<td>27,271</td>
<td>35,721</td>
</tr>
<tr>
<td>Multifamily</td>
<td>224</td>
<td>1,427,432</td>
<td>1,382,263</td>
</tr>
</tbody>
</table>

GREENPRINT TOTAL 621 157,004,495 152,123,673 -3.1%

Water Intensity
CURRENT YEAR

Water intensities for office and industrial properties are based on the number of full-time employees (FTE). Water intensity for multifamily properties is based on the total number of apartment units.

- Office (393 properties): 25,037 kL/FTE
- Multifamily (333 properties): 82,304 kL/Units
- Industrial (5 Properties): 33,950 kL/FTE

Water consumption decreased 3.1% on a Like for Like basis. This is equivalent to saving 4.9 million kL or 1.3 billion gallons per year.
3 Long-Term Performance
The growth of data from new member submissions and existing members resulted in additional historical data. The Greenprint portfolio has been updated to account for new and revised data creating a 2009–2011 Like for Like portfolio composed of 1,156 properties. For the provided data set, energy, emissions and water usage increased from 2009 to 2010, and decreased from 2010 to 2011 for an overall decrease of the Like for Like portfolio from 2009 to 2011.

- **Increase in Greenprint properties:** 349%
- **Increase in square metres:** 536%
- **Increase in countries:** 28%
- **Increase in Greenprint membership:** 93%
Performance Since Inception
2009 – 2011 – LIKE FOR LIKE

**OPERATIONS**

- **energy**
  -2.5%
  141 million kWh

- **carbon**
  -5.9%
  249 thousand metric tonnes

**CERTIFIED SOURCES**

- **purchased renewable energy**
  6.5%
  12,000 metric tonnes CO₂e averted

**DENSITY**

- **occupancy**
  -3.2%
  445 thousand m²

**WATER**

- **water**
  -11.9%
  2.5 million kiloliters

**COST**

- **cost of energy**
  €399 m
  current year
  1,572 properties

**2009 – 2011 EMISSION REDUCTION EQUIVALENTS**

- **600,319** barrels of oil not consumed
- **50,615** cars taken off the road
- **22,349** homes not consuming energy
- **6,618,898** trees planted
Greenprint Carbon Index™ (GCX)
YEAR OVER YEAR

Greenprint’s mission is to lead the global real estate community toward value-enhancing carbon reduction strategies that support global greenhouse gas stabilization by 2030 in line with IPCC goals. The Greenprint Carbon Index™ (GCX) was created to track progress toward this goal. The GCX is calculated as an annual time series of normalized emissions intensity of the Greenprint portfolio.

The GCX is set at 100 starting in 2009. The GCX is based on the total greenhouse gas emissions divided by the associated total floor area for submitted properties, measured in kg CO₂e / m². The GCX is weighted by the same property type proportion for each year of the index. This is done to ensure that the property mix from year to year remains constant. The Greenprint portfolio is becoming more diversified and creates a proxy for a balanced property type allocation. This year, the property type weightings are equivalent to the Distribution by Property Type on page 6 in the Executive Summary of this report.

The GCX will continue to evolve as the size, scope, and accuracy of the data improves over time. The methodology will improve as the real estate industry draws a link between emissions performance and financial performance.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Emissions Intensity (kg CO₂e / m² / yr)</th>
<th>% Change in Emissions Intensity on 2009</th>
<th>Number of Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>116.4</td>
<td></td>
<td>1,283</td>
</tr>
<tr>
<td>2010</td>
<td>120.2</td>
<td>3.2%</td>
<td>1,614</td>
</tr>
<tr>
<td>2011</td>
<td>108.3</td>
<td>- 7.0%</td>
<td>2,214</td>
</tr>
</tbody>
</table>

The historical index is restated due to various reasons:
- As new members join Greenprint, their historical data is put into the database to improve the size and scale of the GCX.
- Properties adjust energy use after the end of the reporting year to reflect updated invoice and meter information.
- Data errors caught after the initial release of the Index. Errors are corrected and documented, and historical data is adjusted to update the GCX. In 2011, Greenprint ran over ten validation routines through a multi-user workflow to check for consistent and accurate data at each property. See Appendix A.
- Measurement of building boundaries are improving as floor area is more accurately defined, allowing for better disaggregation between whole building and tenant emissions.
The Greenprint Office Carbon Index (Office Index) is a subset of the GCX used to measure the long-term emissions performance of the Greenprint office portfolio. Similar to the GCX, the Office Index is based on the total annual greenhouse gas emissions divided by the associated total floor area for office properties. The Office Index provides real estate investors and stakeholders with a new index for research and performance measurement.

As more data becomes available it will be possible to create additional indices for other property types that will provide richer resources to the real estate industry.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Emissions Intensity (kg CO₂e / m² / yr)</th>
<th>% Change in Emissions Intensity on 2009</th>
<th>Thousand Tonnes of CO₂e</th>
<th>Total Denominator Floor Area (millions of m²)</th>
<th>Number of Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>215.2</td>
<td></td>
<td>4,630</td>
<td>22</td>
<td>862</td>
</tr>
<tr>
<td>2010</td>
<td>218.1</td>
<td>1.4%</td>
<td>5,051</td>
<td>23</td>
<td>954</td>
</tr>
<tr>
<td>2011</td>
<td>195.8</td>
<td>- 9.0%</td>
<td>4,746</td>
<td>24</td>
<td>1,074</td>
</tr>
</tbody>
</table>
4 Appendices

A. QUALITY CONTROLS & VERIFICATIONS
B. EMISSIONS COEFFICIENTS
C. GLOSSARY OF TERMS
D. ENDNOTES
Quality Controls & Verifications

Greenprint employs a data collection, verification and calculation process aligned with the Greenhouse Gas Protocol and the principles of ISO 14064.

The Performance Report Committee employs a quality management procedure to ensure accurate and verifiable results adhere to the following steps:

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Role Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identification of Sites</td>
<td>Member Approver</td>
</tr>
<tr>
<td>2. Input of Property Data</td>
<td>Member Respondent</td>
</tr>
<tr>
<td>3. Software Plausibility Checks</td>
<td>Software Platform</td>
</tr>
<tr>
<td>4. Review and Approval of Data</td>
<td>Member Approver</td>
</tr>
<tr>
<td>5. Verification of Data</td>
<td>Greenprint and Software Platform</td>
</tr>
<tr>
<td>6. Calculation of GHG Emissions</td>
<td>Software Platform</td>
</tr>
<tr>
<td>7. Verification of Results</td>
<td>Greenprint</td>
</tr>
</tbody>
</table>

Data is submitted by professional managers, vetted by regional operations professionals at the members, and reviewed by Greenprint with assurances from owners and managers that the data is correct.

Roles:

- **Member Approver**: A senior-level employee from each Greenprint member who selects sites for inclusion in the report and provides oversight of the review process on behalf of the member firm.
- **Member Respondent**: A property-level employee from each Greenprint member that collects property data.
- **Software Platform**: Provided by a GRI Stakeholder and CDP Accredited Provider contractor who administers the web-enabled questionnaire, manages the software plausibility checks and performs GHG emissions calculations.
- **Greenprint**: Greenprint’s team provides oversight review of the software architecture, data collection and results, and creates workflow process with Members’ Approvers.

Data sources include:

- **Property data** based upon the records of building landlords or their building management companies. Occupier space data is based upon tenant records and lease agreements.
- **Energy data** based upon utility bills, invoices, power supply company records or meter readings.
- **Refrigerant data** based upon property maintenance logs.

Greenprint will commission verification of its report by an independent third party. The verification report will be publicly released in 2013.
Emissions Coefficients

Electricity Emissions Factors: kg CO₂ per kWh electricity generated

### Americas
- **Argentina**: 0.3660
- **Brazil**: 0.0889
- **Canada**: 0.1806
- **Alberta**: 0.8800
- **British Columbia**: 0.0200
- **Ontario**: 0.1700
- **Quebec**: 0.0020
- **Chile**: 0.4115
- **Mexico**: 0.4400

### EMEA
- **Austria**: 0.1828
- **Belgium**: 0.2490
- **Czech Republic**: 0.5439
- **Egypt**: 0.4598
- **Finland**: 0.1871
- **France**: 0.0827
- **Germany**: 0.4412
- **Greece**: 0.7312
- **Hungary**: 0.3308
- **Ireland**: 0.4862
- **Italy**: 0.3985
- **Luxembourg**: 0.3148
- **Netherlands**: 0.3921
- **Poland**: 0.6534
- **Portugal**: 0.3835
- **Romania**: 0.4166
- **Russian Federation**: 0.3255
- **Saudi Arabia**: 0.7542
- **Slovakia**: 0.2172
- **Spain**: 0.3259
- **Sweden**: 0.0399
- **Switzerland**: 0.0274
- **Turkey**: 0.4953
- **Ukraine**: 0.3861
- **United Arab Emirates**: 0.8421
- **United Kingdom**: 0.5246

### Asia Pacific
- **Australia**: 0.8833
- **Australian Capital Territory**: 0.9000
- **New South Wales**: 0.9000
- **Queensland**: 0.8900
- **South Australia**: 0.7200
- **Victoria**: 1.2300
- **China**: 0.7450
- **Hong Kong**: 0.7574
- **India**: 0.9682
- **Indonesia**: 0.7261
- **Japan**: 0.4365
- **Korea, Republic Of**: 0.4592
- **Macao**: 0.7509
- **Malaysia**: 0.6559
- **New Zealand**: 0.2135
- **Philippines**: 0.4868
- **Singapore**: 0.5310
- **Taiwan**: 0.6120
- **Thailand**: 0.5291
- **Vietnam**: 0.4130

**Source**

For Canada: http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=EAF0E96A-1
For the USA: US EPA eGRID2010 (2009 data) Version 1.1; http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2010V1_1_year07_SummaryTables.pdf
## Fuel Emissions Factors kg CO₂e per kWh

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>CO₂e per kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>0.2692</td>
</tr>
<tr>
<td>Fuel Oil</td>
<td>0.2845</td>
</tr>
<tr>
<td>LPG</td>
<td>0.2299</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0.2042</td>
</tr>
<tr>
<td>Petrol</td>
<td>0.2545</td>
</tr>
</tbody>
</table>

**Source**
Table 10d of 2011 Guidelines to Defra / DECC’s GHG Conversion Factors for Company Reporting

**Notes**
Within this report, the same fuel emissions factors have been used across countries. This is in keeping with the following:
“… companies reporting on their emissions may need to include emissions resulting from overseas activities. Whilst many of the standard fuel emissions factors are likely to be similar for fuels used in other countries, grid electricity emission factors vary very considerably. It was therefore deemed useful to provide a set of overseas electricity emission factors to aid in reporting where such information is hard to source locally.”

## Thermal Energies Emissions Factors kg CO₂ / kWh

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>CO₂ / kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Steam</td>
<td>0.2695</td>
</tr>
<tr>
<td>District Cooling</td>
<td>0.2269</td>
</tr>
<tr>
<td>District Hot Water</td>
<td>0.2694</td>
</tr>
</tbody>
</table>

**Source**
“Greenhouse Gas Inventory and Tracking in Portfolio Manager August 31, 2009; Table 2 Indirect Greenhouse Gas Emission Factors (District Energy) (page 3); http://www.energystar.gov/ia/business/evaluate_performance/Emissions_Supporting_Doc.pdf”
**Glossary of Terms**

**CO₂e averted as onsite renewable electricity** the amount of GHGs averted from the use of onsite renewable energy, e.g. wind, water, solar and geothermal energy.

**CO₂e averted as certified renewable** the amount of GHGs averted through the purchase of certified renewable electricity from power supply companies.

**CO₂e emitted from onsite thermal energies** the GHGs emitted from the onsite generation of thermal heating and, or cooling.

**CO₂e emitted running onsite CHP** the GHGs emitted from the operation of onsite combined heat and power (CHP) producing thermal energy and electricity (for consumption both onsite and exported).

**CO₂e emitted from all imported fossil fuels** the GHGs emitted from the consumption of fossil fuels purchased by the landlord or tenant(s) from power supply companies.

**CO₂e emitted from non-certified grid electricity** GHGs emitted from the consumption of standard grid electricity purchased by the landlord or tenant(s).

**CO₂e emitted from fugitive emissions** are the GHGs emitted through the intentional or unintentional loss of refrigerants.

**Energy Use Intensity (EUI)** is the annual energy consumption divided by floor area.

**ISO 14064** is a globally recognized standard for quantification, monitoring and reporting of sources of greenhouse gas emissions, as well as the validation of emissions data and assertions.

**Like for Like** is a specific year over year analysis of the current year’s properties that also have data from the previous year.

**Median** is the value lying at the midpoint of a distribution of observed values.

**Normalized** refers to an energy use metric that is independent of the size of the building by dividing energy use by corresponding floor area.

**Occupancy** is the percentage of rentable floor area that is leased.

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**Endnotes**


2. The Greenprint Performance Report Volume 3 primarily consists of member data from calendar year 2011, however, some member data was provided from their fiscal year 2011, ending March 2012.


4. Members have submitted properties for which they have a full 12-month period of energy consumption data.

5. [http://www.epa.gov/cleanenergy/energy-resources/calculator.html](http://www.epa.gov/cleanenergy/energy-resources/calculator.html)
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Greenprint Team

All correspondence related to this report should be directed to:
- Helen Gurfel, Executive Director
- Adam Slakman, Vice President
- Mayra Lujan, Associate

Email: Greenprint@uli.org
Copies of this report may be downloaded from Greenprint’s web site:
http://www.uli.org/greenprint

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