

2011 EDF Greenhouse Gas Emissions Inventory

July 2012

Submitted to Peter Accinno, Steven Hamburg, Deborah Baber, Jenny Ahlen

Submitted by Sarah Beth Zisa

Emissions Summary

In our fourth comprehensive GHG inventory, we look across our operations and find that EDF emitted 3,600 metric tons of carbon dioxide (equivalents) in calendar year 2011. This is a 6% reduction in gross emissions over our first comprehensive inventory in 2008.¹ The reductions in energy and paper use from the baseline year compensate for the increase in travel emissions. The overall composition of the 2011 inventory is more similar to those from 2009 and 2010, where nearly half of the 2011 emissions source from employee travel. In 2011, office energy and paper use account for about one fifth and one third of the total emissions, respectively.

2008 - 2011 EDF Greenhouse Gas Emissions				
Source	Metric Tons CO ₂ (e)			
	2008*	2009	2010	2011
Travel	1,300 (35%)	1,800 (51%)	1,800 (48%)	1,700 (48%)
Air		1,500	1,400	1,360
Rail		34	38	33
Rental Cars		--	19	19
Employee Commutes		280	330	220
Hotel Stays**		--	--	70
Office Energy	1,200 (32%)	850 (24%)	1,000 (26%)	720 (20%)
Electricity		730	850	630
Natural Gas		49	46	41
Oil		75	93	43
Paper	1,300 (33%)	860 (25%)	1,000 (26%)	1,100 (32%)
Office Copy Paper		5	9	9
Membership Department Mailings		720	860	1,010
Contracted Projects		140	140	120
Totals	3,800	3,500	3,800	3,600

*Due to differences in data collection, only aggregate totals are available for 2008.

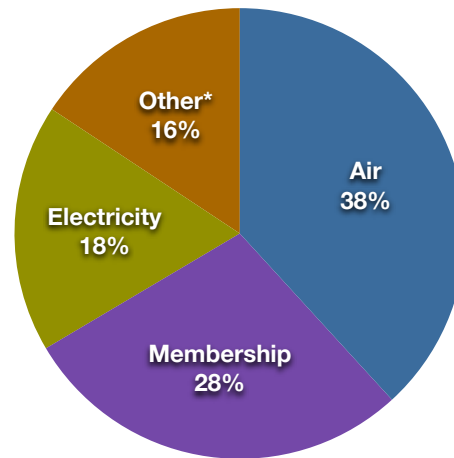
**For the first time, the 2011 inventory includes emissions from hotel stays.

This report is based on both empirical and estimated data using our internal greenhouse gas emissions model, and includes scopes 1, 2, and 3 emission sources.² Each year, we improve our methodology, in terms of both data collection and analysis, in order to capture more accurate figures and to more holistically understand our carbon footprint. This year is no exception. Key improvements include expanding our scope 3 with the inclusion of hotel stays, redesigning the commuter survey, refining travel data, and updating the emissions factors with the most recent statistics. We provide more information about our methodology in the Appendix.

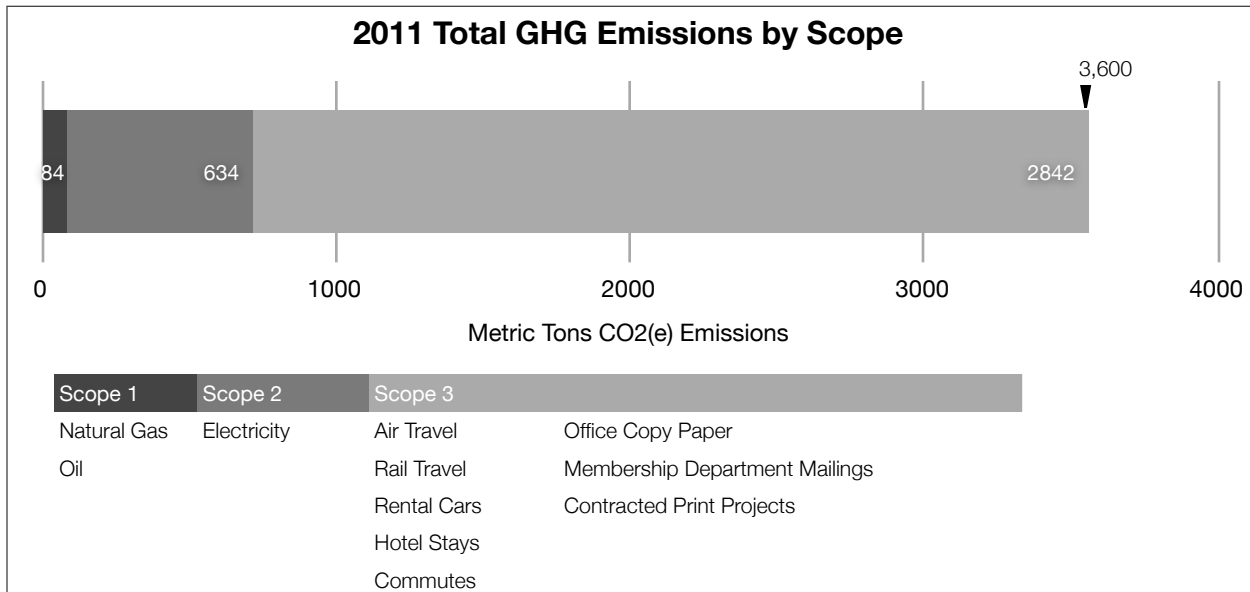
Three emission sources account for 84% of our 2011 greenhouse gas profile: air travel (38%), Membership Department mailings (28%), and office electricity use (18%). The remaining sources together account for 16% of the profile. Armed with this information, we can focus resources on the biggest opportunities for emissions reduction when designing strategies to meet our GHG goal. We are committed to reducing our carbon footprint by more than 20% over our baseline.³

An analysis of our 2011 GHG inventory by scope reinforces the importance of including indirect sources. Scope 3 indirect emissions account for 80% of the profile, followed by scope 2 purchased electricity at 18%. Scope 1 direct emissions from heating our offices with natural gas and fuel oil account for 2% of our total GHG emissions. Only scopes 1 and 2 are typically required by most GHG accounting standards.⁴ Our inventory, however, is consistent with best practices by investigating deep into our upstream and downstream resource uses.

2011 GHG Emissions Profile



*Other includes Employee Commutes, Contracted Print Projects, Hotel, Oil, Natural Gas, Rail, Rental Car, and Office Copy Paper



Travel: Air

Business travel by air is consistently the single biggest contributor to our GHG footprint. In 2011, our 340 EDF employees traveled just over 7.4 million miles by plane. We flew 700 unique segments (legs), 6,000 segments altogether.⁵ See Appendix 2 for maps that depict emissions and a table that provides additional detail about the most heavily traveled routes. Nearly 75% of miles traveled are on flight segments longer than 1,000 miles. Although short haul flights of fewer than 300 miles have higher emissions rates, these segments account for less than 5% of emissions from air travel.

Total Airline Emissions by Flight Type				
Flight Type		Miles Traveled	Metric Tons CO₂(e)	% Metric Tons CO₂(e)
Short Haul:	< 311 mi	260,691	63	5%
Medium Haul:	311-994 mi	1,702,084	327	24%
Long Haul:	> 994 mi	5,477,219	970	71%
Totals from Air Travel		7,439,995	1,360	

Employee air travel by department also helps us understand our air travel emissions. As in previous years, Oceans and Climate programs together account for 50% of EDF's 2011 air travel emissions and nearly one fifth, or 20%, of total 2011 GHG emissions.

Total Airline Emissions by Department			
Program		Metric Tons CO₂(e)	% Air Travel Emissions
Oceans		396	29%
Climate		271	20%
Land, Water, and Wildlife		119	9%
Corporate Partnerships		100	7%
China		103	8%
Development		100	7%
Operations		93	7%
Marketing and Communications		66	5%
Executive Office		58	4%
Office of Chief Scientist		26	2%
Economics		15	1%
Other		5	<1%
Environmental Health		4	<1%
Strategic Partners		3	<1%
Energy		1	<1%
Total Airline Emissions		1,360	

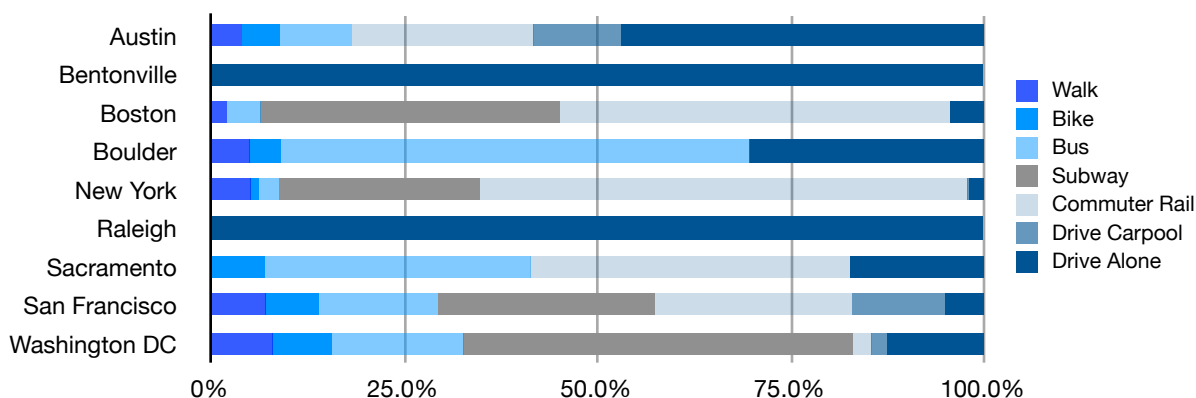
Travel: Employee Commutes

In 2011, EDF employees commuted to and from work 1.2 million miles, accounting for 6% of the overall 2011 emission inventory. Emission-free modes of transport, walking and biking, account for under 10% of all miles traveled. Public transit (bus, subway, commuter rail), though, accounts for nearly 75% of the total annual miles commuted by EDF staff.

Annual Emissions from Employee Commutes by Mode of Transportation			
Mode of Transportation	Annual Employee Commute (miles)	Annual Emissions from Employee Commutes (metric tons CO₂e)	% of Commuting Emissions
Walk	59,681	-	0%
Bike	36,680	-	0%
Bus	105,483	11	5%
Subway	327,383	53	24%
Commuter Rail	448,300	73	33%
Drive Carpool	20,484	4	2%
Drive Alone	202,147	79	36%
Total	1,200,000	220	

Commuting patterns vary across offices. This is a reflection not only of behavior, but also of the office location, city design, and access to alternative transit options. Employees in Bentonville and Raleigh commute only by single-person occupied cars, where alternative transit options are most limited. Employees in other offices, though, use multiple forms of transportation. By percentage of commuting miles, employees in Washington DC and San Francisco walk the most, while employees in those cities, plus those in Sacramento, also bike the most. Bus travel covers 60% of employee commute miles in Boulder, and over one third in Sacramento. Washington DC and Boston employees take the subway for more of their commuting miles than any other cities, while New York and Boston take the Commuter Rail more than other cities.

Percentage of Commuting Miles Traveled in Each Office by Mode of Transportation



Office Energy

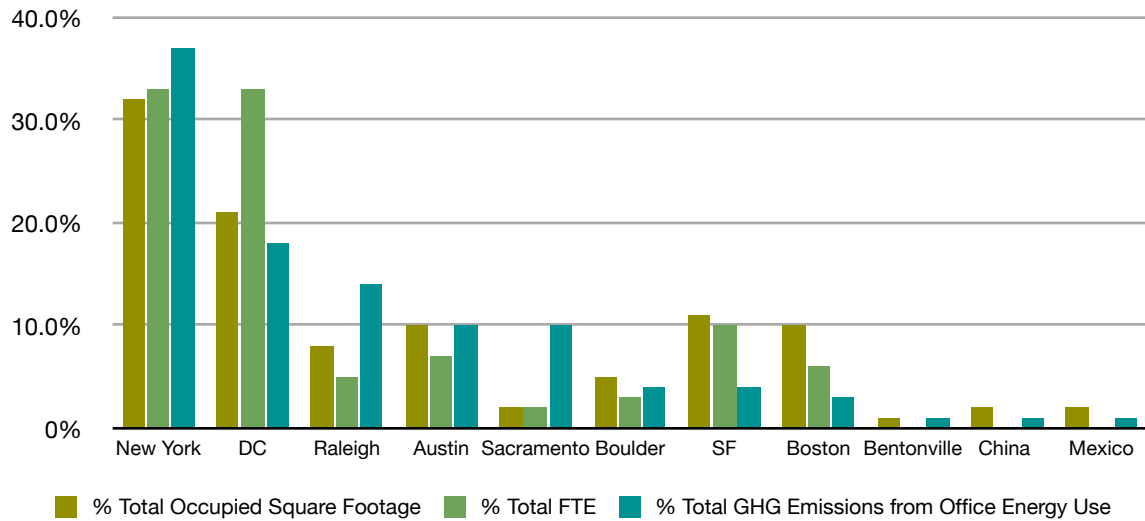
In 2011, EDF emitted 720 metric tons (MT) of carbon dioxide equivalents from lighting, heating, and cooling its offices. This accounts for one fifth of the 2011 GHG inventory. Boston and San Francisco continue to be the most efficient offices, while Sacramento is the least efficient.

Annual Energy Emissions by Office			
Office	Per Square Foot Emissions (Kg CO ₂ e)	Per Capita Emissions - US Offices Only (metric tons CO ₂ e)	Total GHG Emissions (metric tons CO ₂ e)
Sacramento	33	9	71
Bentonville	14	9	9
Raleigh	13	7	107
New York	7	2	234
Austin	7	3	70
Washington, DC	6	1	134
Boulder	6	3	35
San Francisco	2	1	29
Boston	2	1	20
China	2	*	4
Mexico	2	*	4
Total	7	2	720

*Because no FTE data were available for international offices at the time of writing, per capita calculations only include the US offices.

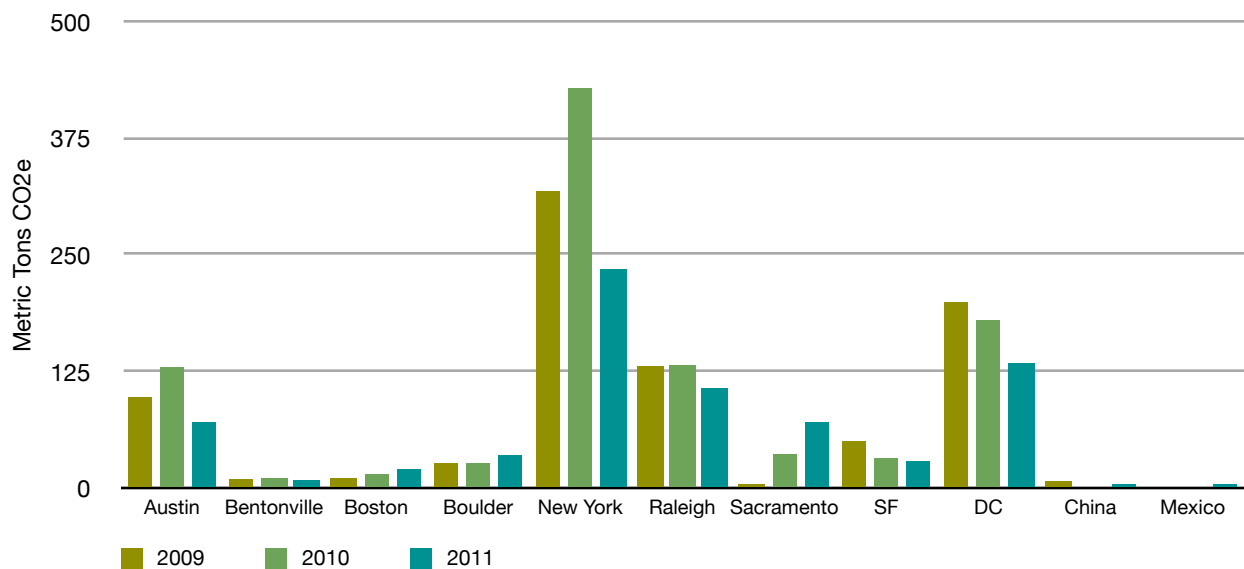
To further evaluate our offices' efficiency performance, we can compare each location's space, staff, and emissions. In a scenario where each office accounts for its exact "fair share" of emissions based on square footage or staff size, then the percentage of GHG emissions from each office would be equal to the percentage of total square footage that office occupies, and equal to the percentage of total staff that office employs. What we see, though, is that Boston, San Francisco, and Washington DC all occupy a higher percentage of square footage and have a higher percentage of full time employees than their "fair share" of emissions. On the other side of the spectrum, New York, Raleigh, and Sacramento account for a greater percentage of office energy emissions than they account for square footage or full time staff.

Relative GHG Emissions by Office



Reviewing office energy data since 2009, we see no dominant trend in energy use across the properties. This, of course, doesn't consider factors such as office relocations or behavior changes that may explain changes. Six of the nine offices netted a decrease in emissions since 2009 (Austin, New York, Raleigh, San Francisco, Washington DC, and China). The remaining offices either stayed consistent or increased.

Energy Use by Office 2009-2011



Paper Use

Paper use accounts for nearly one third of the 2011 GHG inventory, a 5% increase over the previous year. The Membership Department's paper use, in the form of mailings to existing, former, and prospective members, account for 90% of these paper use emissions, and all of the 2011 increase.

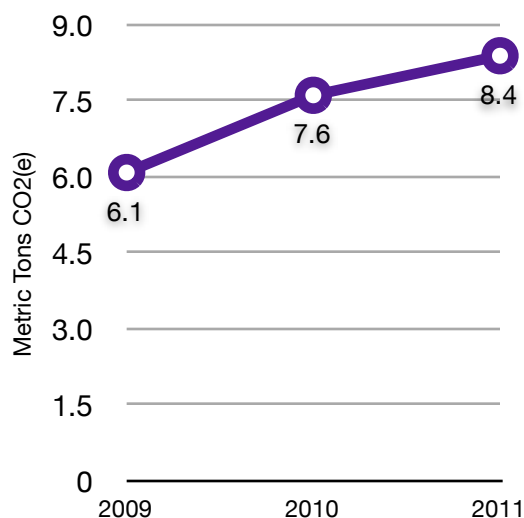
Emissions from Membership Department Mailings			
Mailing Category	Total Weight of Mailing* (metric tons)	Total GHG Emissions (metric tons CO ₂ e)	% Membership Emissions
Acquisition	216	512	51%
Appeals	81	192	19%
Reinstatements	58	138	14%
Solutions Newsletters	39	92	9%
Renewals	27	64	6%
Cultivation	4	9	1%
Total	424	1,010	

*All paper used by the Membership Department is considered the same type, uncoated freesheet.

The Membership Department categorizes its mailings into six primary groups: Acquisition, Appeals, Reinstatements, Solutions Newsletters, Renewals, and Cultivation. More than half of the paper used is for Acquisitions, and as a result, more than half of the emissions. Appeals and Reinstatements together account for another third, while Solutions, Renewals, and Cultivation account for under one fifth.

Membership mailings, a core funding mechanism that makes our global operations possible, are also a big and growing piece of our footprint. For this reason, it's important that we track as best we can how these emissions change over time. Using data from 2009-2011, emissions per dollar raised steadily increase, +1.5 MT per \$100,000 between 2009 and 2010, and +0.8 MT per \$100,000 raised between 2010 and 2011. This means more emissions per dollar raised, a decline in GHG efficiency by the Membership Department. We should note again, however, that the changes in Membership mailings may not represent an actual change in gross emissions but instead are a result of better methodology and processes, which result in a better representation of our true emissions. Nonetheless, this is still a pattern worth tracking over future years.

Memberships Emissions Per \$100,000 Raised*



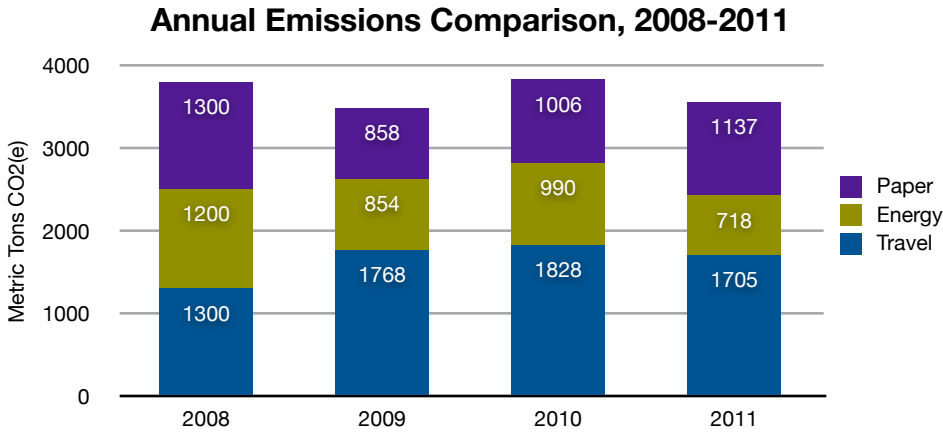
*Dollars raised by Membership per fiscal year, ending September 30th, as published in our annual reports.

2008-2011 Emissions Comparison

Across our domestic operations, EDF emitted 3,600 metric tons of carbon dioxide equivalents in 2011, down 6% from 2008. Per capita emissions, however, increased 10% compared with 2008.

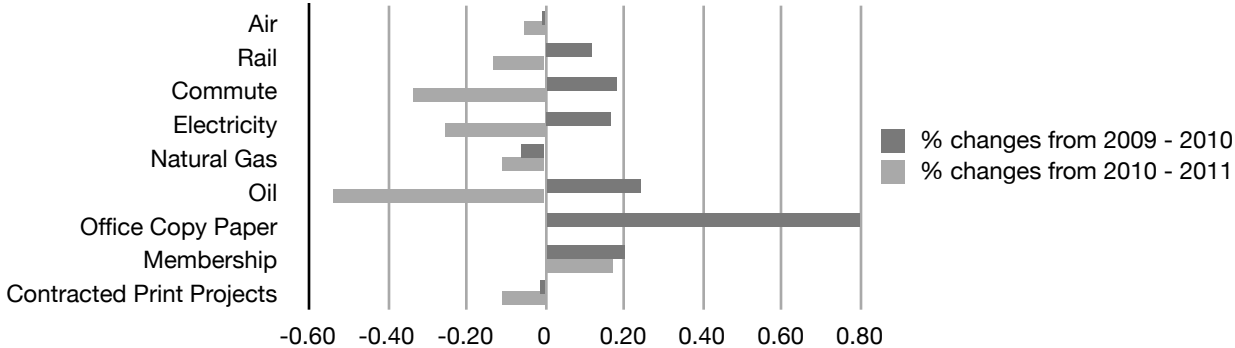
Total Annual Greenhouse Gas Emissions (metric tons CO ₂ e)				
2008	2009	2010	2011	Change 2008 to 2011
3,800	3,500	3,800	3,600	- 6%
10 / FTE	10 / FTE	11 / FTE	11 / FTE	+ 10%

The relative composition from 2008 to 2011, based on the three primary emission categories, yields no clear pattern. Travel increased in 2009 and 2010, then decreased in 2011. Energy fluctuated each year, while paper use decreased initially in 2009, and has increased since.



However, when we contrast changes in gross emissions between 2009 - 2010 with changes between 2010 - 2011, a clear pattern emerges.⁶ From 2009 to 2010, most emission sources increased. The reverse occurred in 2011, where all emission inputs, with the exception of Membership's paper use, decreased.

Change in 2009-2011 in Gross GHG Emissions by Source (%)



Conclusions

In 2011, emissions from all sources declined, except the Membership Department mailings. This increase is the second largest gross change (+150 MT) of any single emission source. This change, plus the first-time inclusion of hotel stays, counterbalance some of the other decreases, producing the net 6% reduction of 200 metric tons of CO₂(e) over 2010.

Gradual and continual improvement is a common thread to all our inventories since the first one completed in 2007. An evaluation of the most changed emission sources in 2011, those with a delta of greater than 100 metric tons CO₂(e) in either direction, demonstrate the importance of refining our methodology because these also represent areas that received additional attention during this year's inventorying process. These are: office electricity (-220 MT), Membership mailings (+150 MT), and employee commutes (-110 MT). This year, the energy data, which includes electricity, was gathered directly from office managers. And in many cases, particularly for two of the biggest offices, New York and Washington DC, figures were cross-checked with property managers, allowing us to identify - and correct - inaccuracies, more so than in previous years. Additionally, the EPA released new 2012 emission factors during the time of writing, and these values were updated in our calculations. Also this year, the Membership Department improved its paper use accounting. It did so by designating one employee to "own" and compile the information, allowing the necessary attention to detail and commitment to the project. A new commuter survey, with a nearly 40% response rate, is the best one we've conducted yet. The redesign responded to employees comments from previous years and produced information that more directly aligned with inventory calculations, requiring fewer estimations. What we find is that the biggest changes in our data are correlated to refinements in our methodology. (See the Appendix for more details on methodology changes.)

These improvements in our methodology not only correlate with meaningful gross changes, but also translate into figures that more accurately reflect our true impact. However, actual changes in consumptive behavior occur simultaneously and also affect emissions. Explaining our emissions as we improve our methodology, therefore, becomes more complex. It is harder to discern which changes result from improving our methodology, and which result from true consumption changes. This is important to consider when evaluating our 2011 and future inventories. Nonetheless, the numbers in 2011 are the strongest to date, and they are the best reflection of our carbon footprint.

Looking Forward

At this stage in our carbon accounting practices, we now have confidence in the scale and profile of our emissions. As such, we're able to design strategies to help us meet our goal. We have the information we need to identify reduction opportunities big and small across EDF.

We can now consider specific reductions like the following:

- If 50% of air travel between Washington DC and New York was teleconferenced instead, that would eliminate 6 MT.
- If Membership replaced 10% of its mailings with electronic communication, we would eliminate 100 MT.
- If half the time, employees in Raleigh carpooled instead of drove alone, that would save roughly 10 MT.

Although this report is far in line with industry best practices, looking forward we will continue to fine-tune our data collection process and consider whether additional elements would add value to the inventory. It proved important in 2011 to schedule sufficient time for cross-checking and analysis, and we will build on this in 2012. We also learned this year that the GHG impact from our international offices is immaterial to our total footprint, but for a complete picture, we will collect paper and travel data from these locations in 2012. With a solid understanding of our inventory, and a small - but meaningful - reduction in gross emissions, we are better positioned than ever before to achieve our strategic GHG goals.

Appendix 1

The table below outlines important notes about various aspects of the 2011 methodology. These details color the 2011 inventory and prepare us to improve our accounting practices moving forward.

Select Notes on 2011 Methodology: Data Collection, Calculation, and Analysis	
Emission Source	Notes
Total	2010 measures domestic emissions only. All other years include energy usage from international offices.
Travel - Air	<p>Data - Inaccuracies were found in the air data provided by our travel service, Ovation. It appeared that in total, 170,000 miles (all short haul flights with the exception of 4,000 miles of medium hauls), were actually rail travel segments, not air. These appeared to be duplicates of trips that were documented in rail travel. Every reasonable effort was made to remove these figures, which ultimately impacted air travel very little. After removing the rail segments from the air travel data, short haul emissions went from 104 MT to 63 MT, a net change of 42 MT. Medium haul flights went from 328 MT to 327, a net change of 1 MT.</p> <p>However, looking back at previous data sets provided by Ovation, it appears duplicate rail travel was provided, but not corrected, in 2010.</p> <p>Calculation - Improvements were made in the equations to automate calculations, thus substantially removing the possibility of human error.</p>
Travel - Rail	Emission factors were updated in 2011.
Travel - Rental Cars	<p>Emission factors were updated in 2011.</p> <p>The 2010 figures were used. Insufficient rental car data was provided for 2011: only daily cost and number of rental days were provided. Extrapolating the necessary information would require unacceptable levels of assumptions and estimations. In 2010, additional data were available, including aggregate numbers of miles traveled per rental car class.</p>
Travel - Employee Commutes	<p>Emission factors were updated in 2011.</p> <p>In previous surveys, 50 weeks of commuting were assumed. In 2011, that number was adjusted to 47, based on 52 weeks per year, where three weeks is EDF's base vacation policy and there are nine paid holidays.</p> <p>A new commuter survey was designed and distributed in Spring 2012. With 126 respondents and 339 FTEs, the response rate is 37%. The responses were evaluated by office, then extrapolated to all staff in that office. Of note, Washington DC's response rate was low (27 of 106 FTE), and because it is one of the biggest offices, this may skew the data. Nonetheless, these are estimates, but much stronger estimates than in previous years.</p>
Energy: Electricity and Heating (natural gas, oil)	<p>Emission factors were updated in 2011.</p> <p>Because of initial inconsistencies in the form submissions by office staff, original documents were collected from the property or office managers, with as little manipulation as possible. The existing form is still confusing to office managers and inaccurate information was reported. Additionally, several offices first reported incorrect square footage, which impacted results. However, by collecting the raw information, and cross-checking square footage with property managers, we reduced human error substantially.</p>

continued on next page

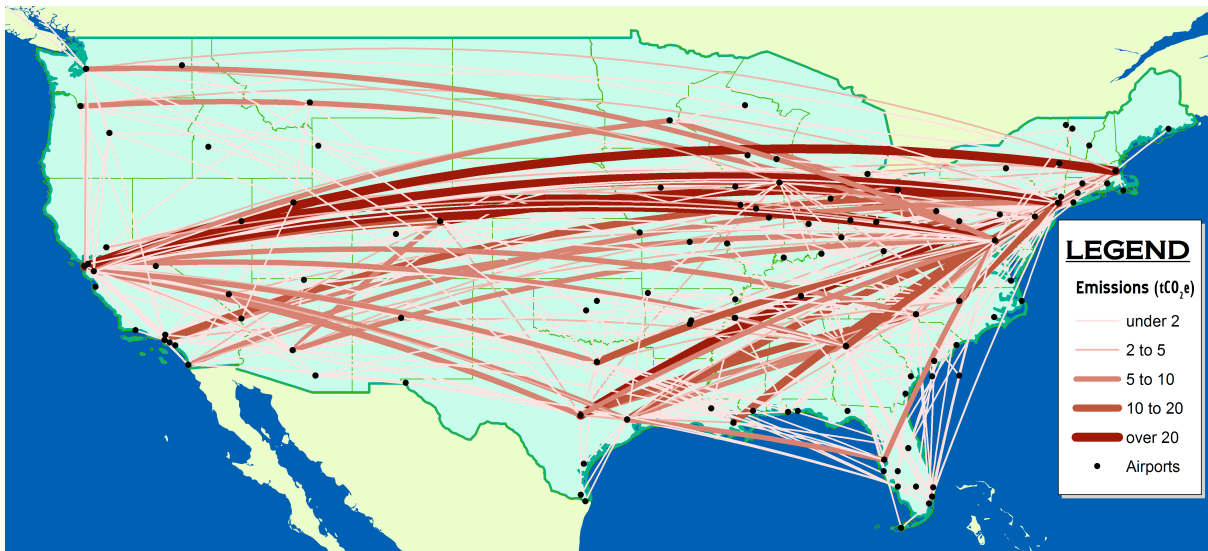
**Paper - Membership
Department Mailings**

The Membership Department groups their mailings into six categories. Within each of these six categories, multiple mailings are sent over the year, each with a different purpose. Every mailing in each of the six categories is broken down into customized packages for a target audience. So every mailing may have ten different targets, effectively making it ten mailings, each with a unique combination of paper types and volumes. As a result, there are hundreds of unique combinations of paper type and volume. Because of this complexity, the Membership Department currently documents only weight, not paper type. All paper was considered the same paper type, uncoated freesheet, which is standard copy paper. Various percentages of recycled content, however, were noted.

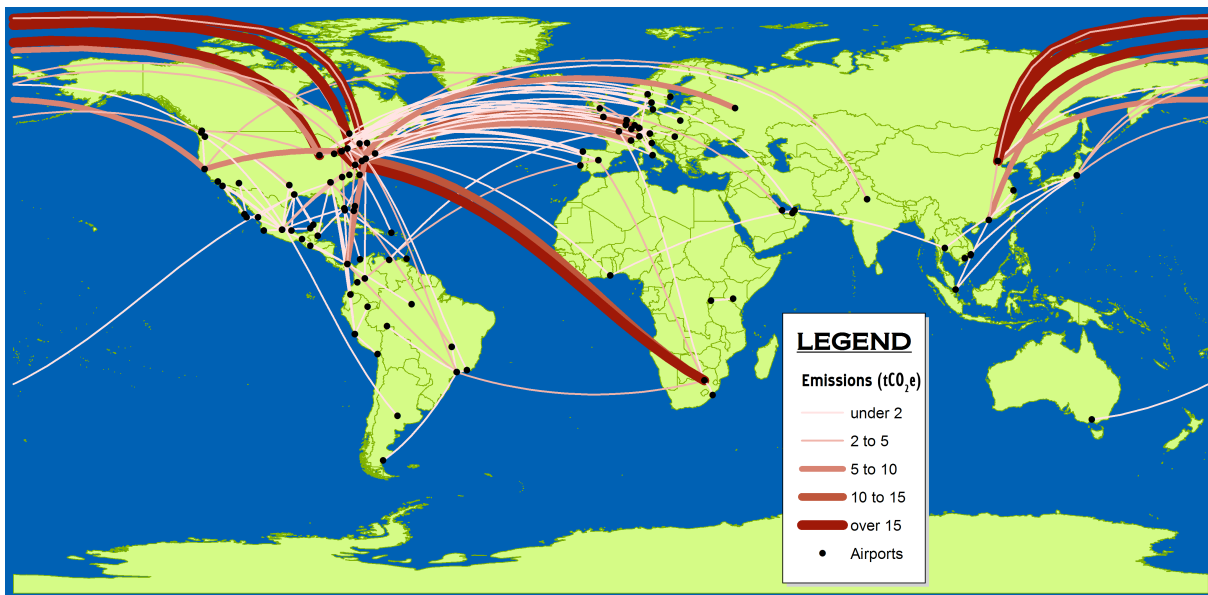
Appendix 2

The images below were generated to visually represent air travel and the associated emissions. Images provided by Jeremy Proville and Ruiwen Lee.

2011 Emissions from Domestic Air Travel



2011 Emissions from International Air Travel



The table below reveals further insights into employee travel by air. Seven of the most common routes are outlined. Together, they account for roughly 17% of the unique segments flown (total 5,800), 17% of the miles traveled, and 17% of emissions from air travel.

Heavily Traveled Routes				
Route (in either direction)		Frequency of Route (trips)	Total Miles	Emissions from Route Metric Tons CO₂(e)
Washington DC	New York City	197	42,000	10
New York City	San Francisco	191	490,000	87
Washington DC	Boston	163	65,000	12
Washington DC	San Francisco	145	350,000	62
San Francisco	Newark	98	251,000	44
New York City	Boston	96	18,000	4
New York City	Raleigh Durham	96	41,000	8

Endnotes

¹ Although our first GHG inventory was conducted in 2007, 2008 was the first comprehensive report.

² As defined the by US Environmental Protection Agency, GHG emission scopes can be defined as follows:

Scope 1 emissions are direct GHG emissions from sources that are owned or controlled by the reporting entity, such as emissions from fossil fuels burned on site, or an owned fleet. Scope 2 emissions are indirect GHG emissions resulting from the generation of electricity, heat, or steam off-site but purchased by the reporting entity. And Scope 3 emissions are indirect GHG emissions from sources not owned or directly controlled by the reporting entity, but related to its activities such as outsourced projects, employee travel and commuting. Source: <http://www.epa.gov/oaintrnt/glossary.htm>

³ As established in our strategic plan, *Leading Transformational Change: Strategic Plan 2010-2014*, available here: www.edf.org/content/leading-transformational-change

⁴ The following GHG accounting standards represent the industry leaders, and only require scopes 1 and 2. These include the California Climate Action Registry, World Resource Institute's Greenhouse Gas Protocol Corporate Standard, the now-dismantled US EPA Climate Leaders, The Climate Registry, WWF Climate Savers, World Economic Forum Global GHG Register, EU GHG Emissions Allowance Trading Scheme.

⁵ A flight segment here is defined as one flight leg. For example, a flight with a layover would have have two segments.

⁶ Excludes rental cars because no new data collected in 2011. Also excludes hotel stays because new input in 2011.