

# Sample Enterprise Report



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**Analysis Of Sample Client Carbon Emissions  
Associated With January 2009 Air Travel**

# Contents

- > **Executive Summary**
- > **Profile of Sample Client Travel Data**
- > **Specific Findings**
- > **Sample Client Options For Reducing CO2 Emissions**
- > **Appendix**
  - Key Notes and Assumptions
  - Supplemental Information
  - Contacts

# Executive Summary

- 1. Sample Client air travel was associated with 65,000 metric tons of CO2 for its January 2008 air travel program**
- 2. Sample Client CO2 emissions are 32% higher than industry average and 42% over best case**
- 3. Sample Client CO2 emission offset cost would be \$778,000**
  - a. All carbon offset costs in this presentation are based on \$12/metric ton CO2.**  
NOTE: Your cost may be significantly different than this, depending on the type of market in which you participate.
  - b. c. This is an average of \$4.85 per traveler per one-way segment (half of a round trip, including any connections)**
- 4. Sample Client options for reducing CO2 emissions:**
  - a. Reduce travel. A 10% reduction (16,000 segments) will reduce CO2 emissions by 6,500 metric tons (\$78,000)**
  - b. Shift to lower-emission (“greener”) carriers. Reduce CO2 emissions by 19,200 metric tons (\$230,000)**
  - c. Avoid unnecessary connections. Reduce CO2 emissions by 4,150 metric tons CO2 (\$49,800)**
  - d. Shift travel mode to alternatives (primarily rail) in short haul travel (under 750 miles)**

# Profile Of Travel Data For Company XYZ

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- > **Air travel data's timeframe: January 2008**
- > **Total spend: \$52,060,845**
- > **City pairs analyzed: 10,301**
- > **Number of airline segments: 160,383**
- > **Number of regions: 34**
- > **Number of POS countries: 1**

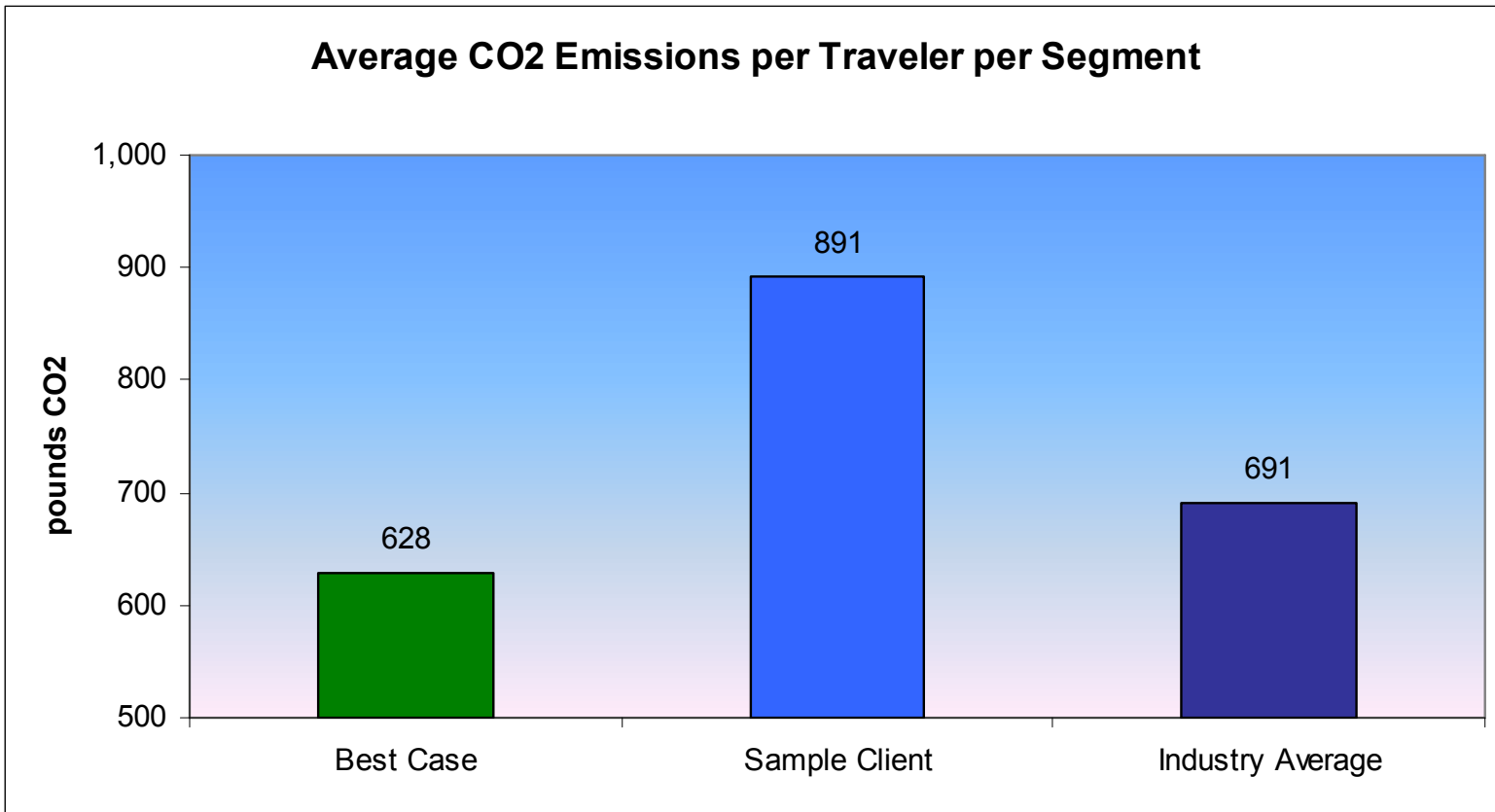
# Specific Findings

# Sample Client Generated About 65,000 Metric Tons Of CO2

| <u>Region</u>           | <u>Metric tons</u> |
|-------------------------|--------------------|
| Intra-US                | 25,957             |
| US <> Asia, Excl. India | 18,097             |
| US <> Europe            | 9,374              |
| US <> India             | 2,205              |
| Intra-Europe            | 1,885              |
| Other                   | 7,300              |

- > **If a carbon offset program were used:**
  - 430 acres of forest would need to be planted and maintained for 40 years
    - equivalent to 51% of size of New York's Central Park

## Sample Client CO2 Emissions Are 32% Higher Than Industry Average And 42% Over Best Case



**A segment is one-half of a roundtrip ticket, regardless of connections**

## Sample Client Carbon Offset Cost Is An Average Of \$4.85 Per Traveler Per Segment, Based On A Cost Of \$12/Ton

|                  | CO2 Cost per Traveler per Segment<br>at various Costs per Metric Ton CO2 |                |                |
|------------------|--------------------------------------------------------------------------|----------------|----------------|
|                  | <u>\$6.00</u>                                                            | <u>\$12.00</u> | <u>\$24.00</u> |
| Best Case        | \$1.71                                                                   | \$3.42         | \$6.83         |
| Sample Client    | \$2.42                                                                   | <b>\$4.85</b>  | \$9.70         |
| Industry Average | \$1.88                                                                   | \$3.76         | \$7.52         |

The average cost per traveler segment could vary between \$2.42 and \$9.70, depending on the underlying cost per ton of CO2

# Sample Client Cost Of Carbon Offsets Would Be \$778,000 For Its January 2008 Air Travel Program

**Cost of CO2 emissions can be reduced by about \$230,000 by using greener carriers**

|                         | Cost Per Metric Ton CO2 |                |                |
|-------------------------|-------------------------|----------------|----------------|
|                         | <u>\$6.00</u>           | <u>\$12.00</u> | <u>\$24.00</u> |
| <b>Best Case</b>        | \$274,000               | \$548,000      | \$1,096,000    |
| <b>Sample Client</b>    | \$389,000               | \$778,000      | \$1,556,000    |
| <b>% of Air Spend</b>   | 0.7%                    | 1.5%           | 3.0%           |
| <b>Industry Average</b> | \$301,000               | \$603,000      | \$1,205,000    |

**Cost of CO2 emissions is about 1.5% of air spend.**

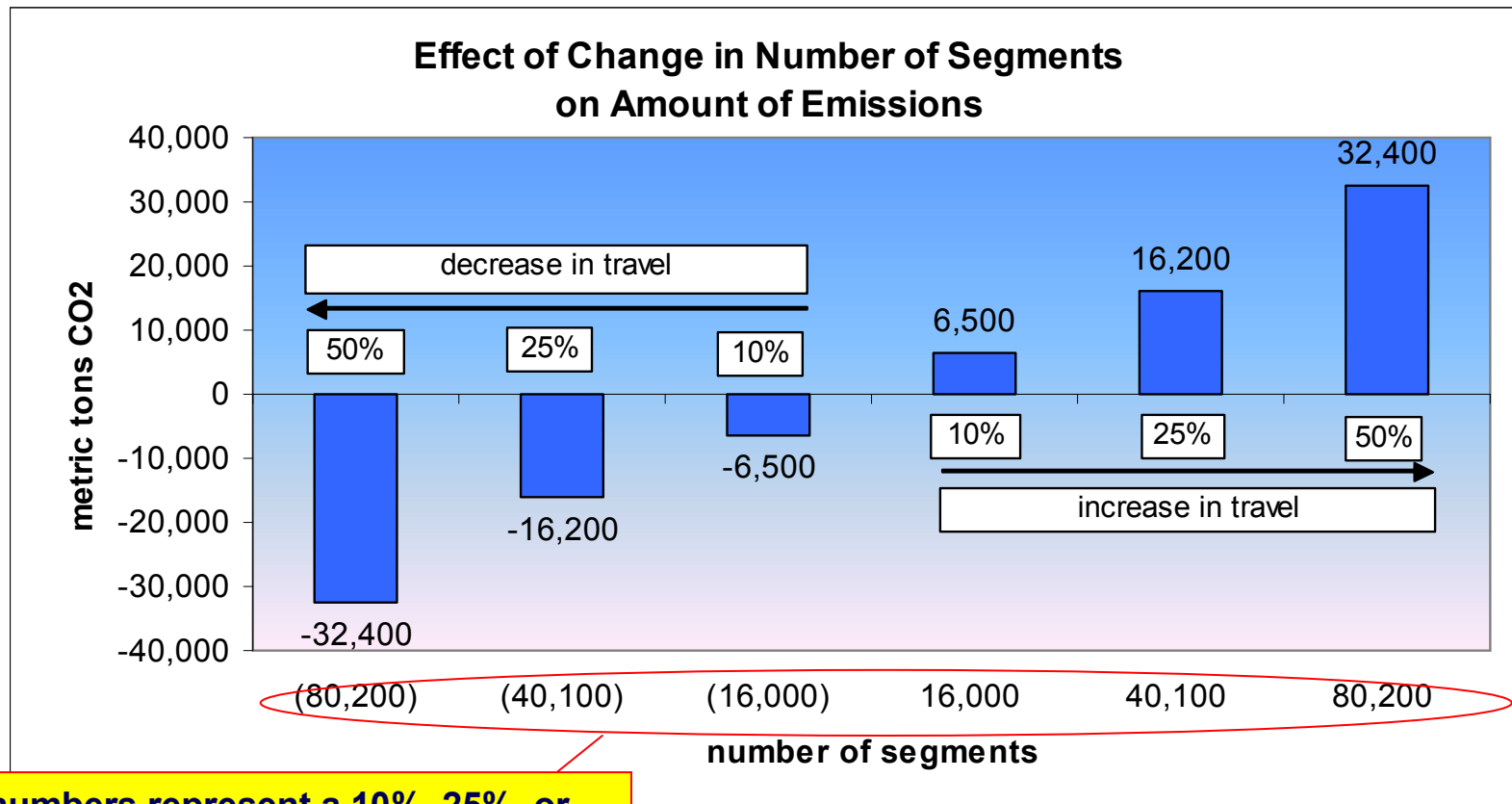
# Sample Client Options for Reducing Co2 Emissions

## Sample Client Has Four Main Options For Reducing Its CO2 Emissions

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- > **Reduce travel**
- > **Shift to lower-emission carriers**
- > **Avoid unnecessary connections**
- > **Shift travel mode to alternatives**

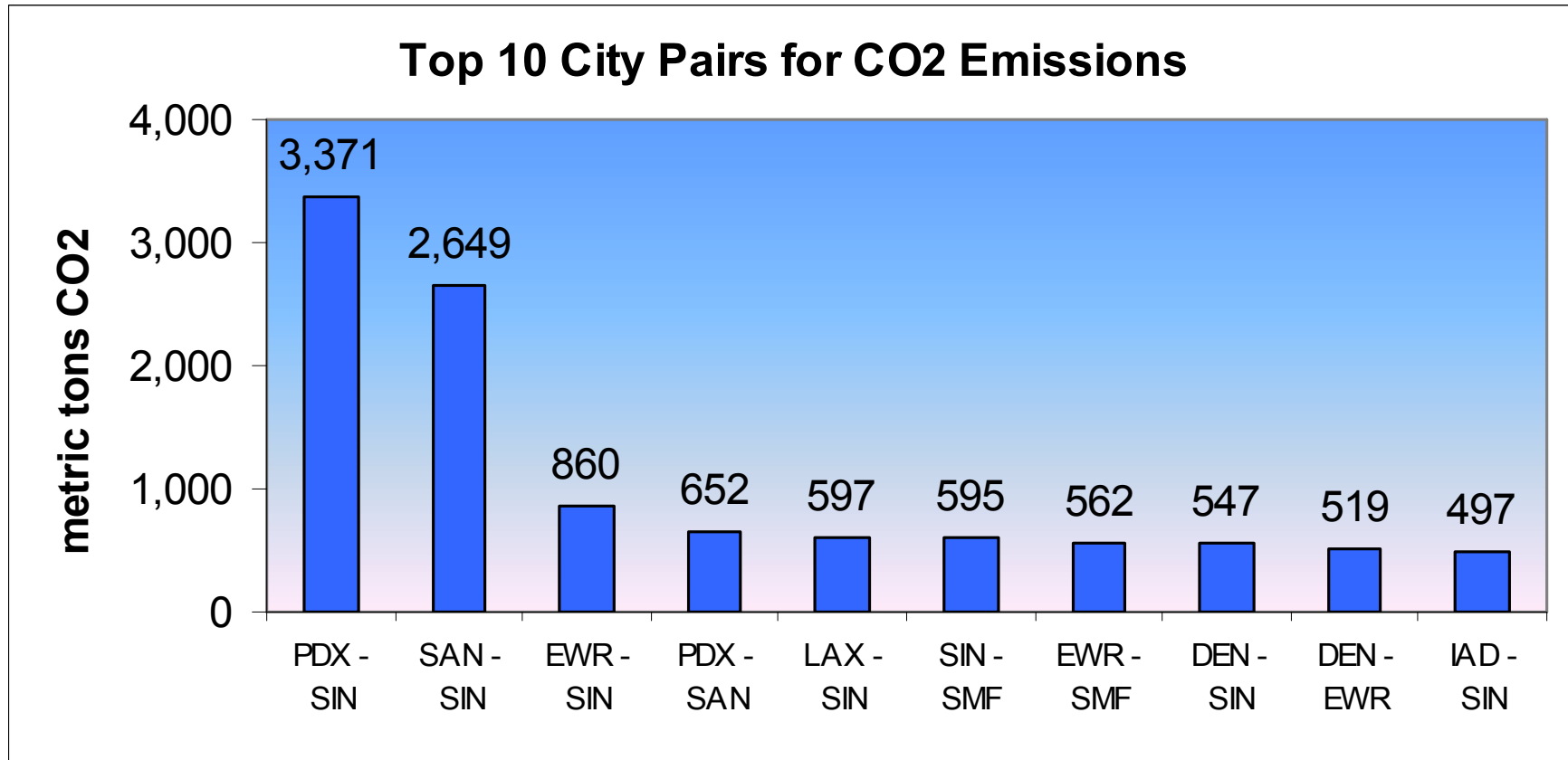
# Sample Client CO2 Emission Costs Will Vary With The Number Of Segments Flown



These numbers represent a 10%, 25%, or 50% change in number of segments flown

**A 10% reduction in segments flown will reduce Sample Client CO2 costs by about 6,500 metric tons (\$78,000)**

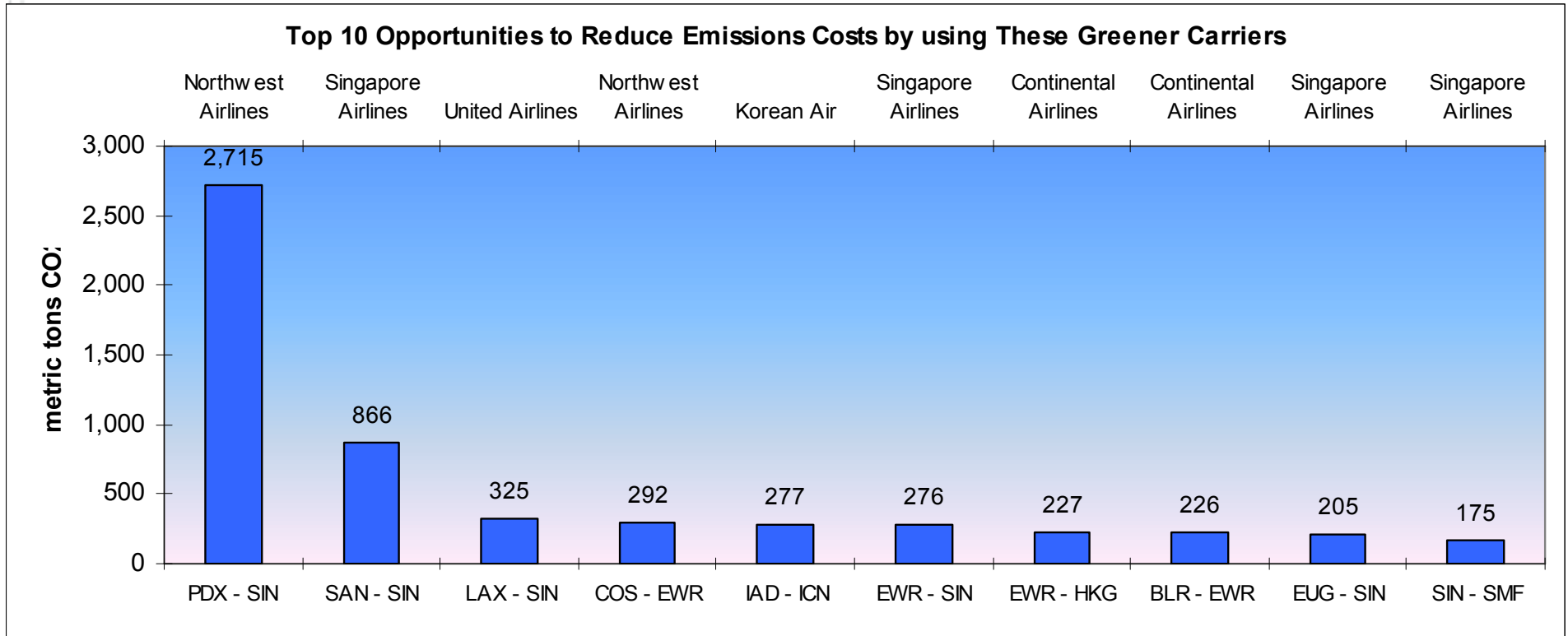
## Top 10 Opportunities For Sample Client To Reduce CO2 Emissions by Traveling Less Often



**Consider if it is feasible to: Reduce travel by using web, video and tele-conferencing, combine or reschedule meetings, send fewer people to the same meeting, choose a better (greener) meeting destination, etc.**

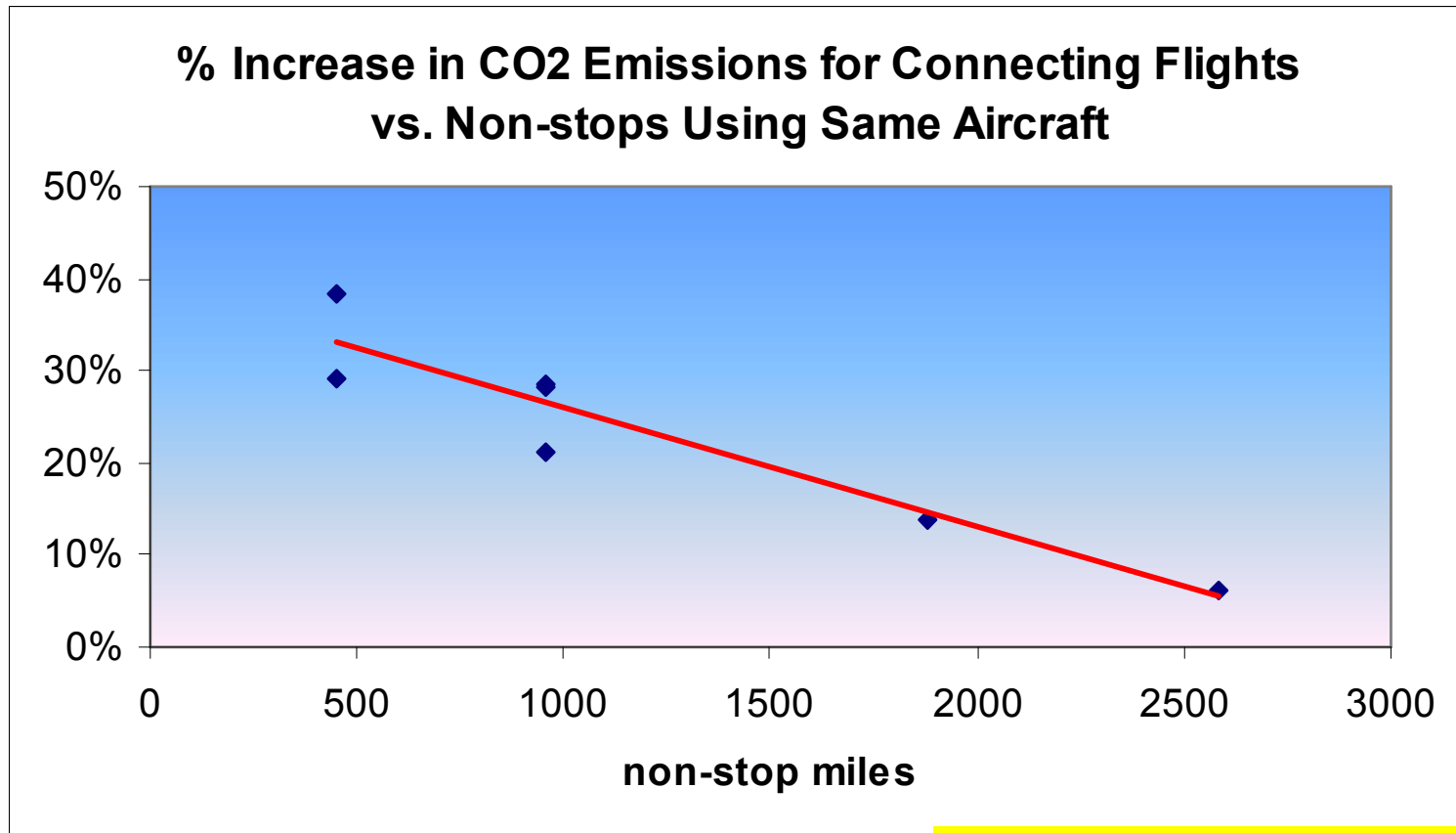
**See decoding of city pairs on next slide.**

# Sample Client CO2 Emission Costs Can Be Reduced By Using The Lowest Emitting Carriers In These Top 10 City Pairs



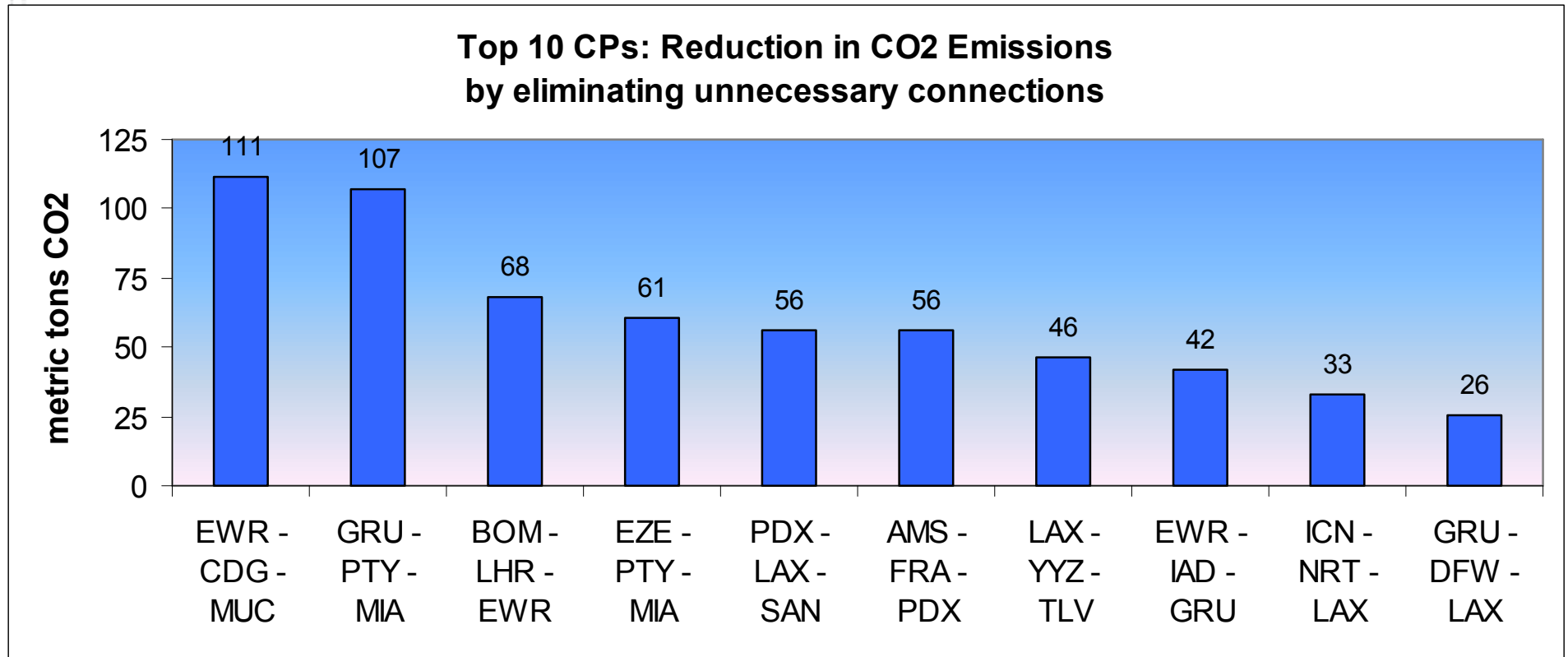
**Total savings potential from using the greenest carrier in each of Sample Client 10,301 city pairs is 19,200 metric tons (\$230,000). See decoding of city pairs on next slide.**

# A 1,000 Mile One-stop Flight Emits Nearly 30% More CO2 Than A Non-stop Flight



**If different aircraft types are used, emissions can more than double on connecting flights**

## Sample Client Can Reduce CO2 Emissions by 4,150 metric tons (\$49,800) By Avoiding Unnecessary Connections



**Each connection city shown above is just one example of an unnecessary connection between the origin and destination city pair. There may be other connection cities for that city pair as well.**

**See decoding of city pairs and connecting cities on next slide.**

# Sample Client Can Reduce CO2 Emissions by 2750 metric tons by using alternate modes of transport

City pairs which logically qualify for alternative modes

LAX-SAN – 2750 tons by air – rail option saves 2455 tons (Pacific Surfliner)



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# Appendix

## Decoding Of City Pairs

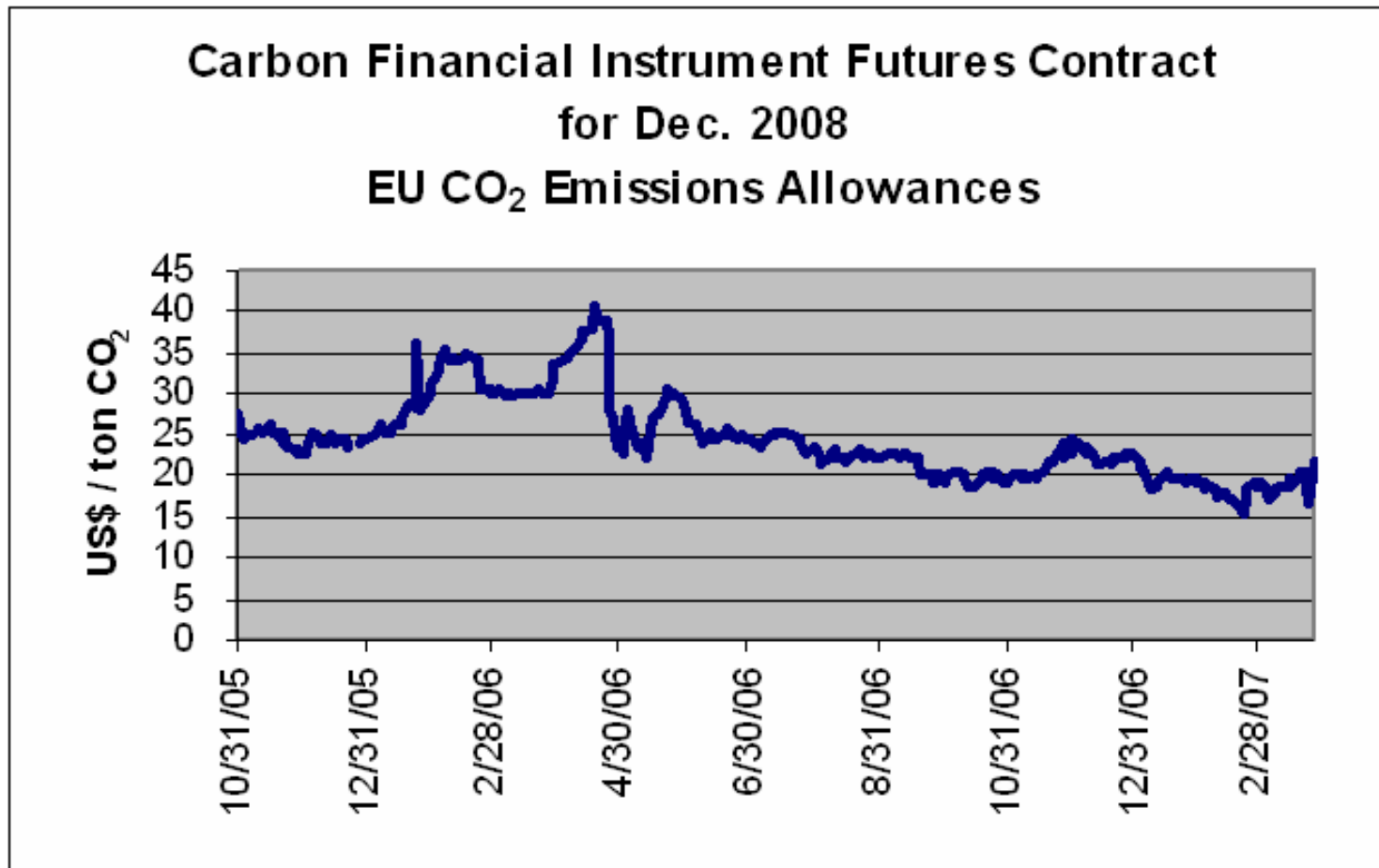
| City Pair       | Description                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------|
| EWR - CDG - MUC | New York (Newark, NJ), NY USA - Paris (C.DeGaulle) France - Munich (Intl) Germany             |
| GRU - PTY - MIA | Sao Paulo (Intl) SP Brazil - Panama City (Intl) Panama - Miami (Intl), FL USA                 |
| BOM - LHR - EWR | Mumbai India - London (Heathrow) England UK - New York (Newark, NJ), NY USA                   |
| EZE - PTY - MIA | Buenos Aires (Pistarini) BA Argentina - Panama City (Intl) Panama - Miami (Intl), FL USA      |
| PDX - LAX - SAN | Portland, OR USA - Los Angeles (Intl), CA USA - San Diego (Intl), CA USA                      |
| AMS - FRA - PDX | Amsterdam Netherlands - Frankfurt Germany - Portland, OR USA                                  |
| LAX - YYZ - TLV | Los Angeles (Intl), CA USA - Toronto (Pearson Intl), ON Canada - Tel Aviv (Ben Gurion) Israel |
| EWR - IAD - GRU | New York (Newark, NJ), NY USA - Washington (Dulles Intl), DC USA - Sao Paulo (Intl) SP Brazil |
| ICN - NRT - LAX | Seoul (Incheon Intl) Korea - Tokyo (Narita) Japan - Los Angeles (Intl), CA USA                |
| GRU - DFW - LAX | Sao Paulo (Intl) SP Brazil - Dallas/Ft. Worth (Intl), TX USA - Los Angeles (Intl), CA USA     |

## Key Notes And Assumptions

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- ◆ **Emissions per passenger reflect carrier-specific load factors**
  - Higher load factors reduce emissions and costs per passenger
- ◆ **Emissions for multi-leg flights are summed for each leg**
- ◆ **Emissions are adjusted for the passenger's cabin; e.g., a business class trip is modeled to emit a higher amount per passenger than an economy trip on the same flight**
- ◆ **Suggestions for “greener” carriers, or for alternate carriers to avoid unnecessary connections, are chosen on the basis that the proposed carrier has at least 10% FMS (Fair Market Share) for that city pair**

## In The EU, Recent Futures Prices For CO2 Reductions Varied Between \$16 And \$42 Per Ton



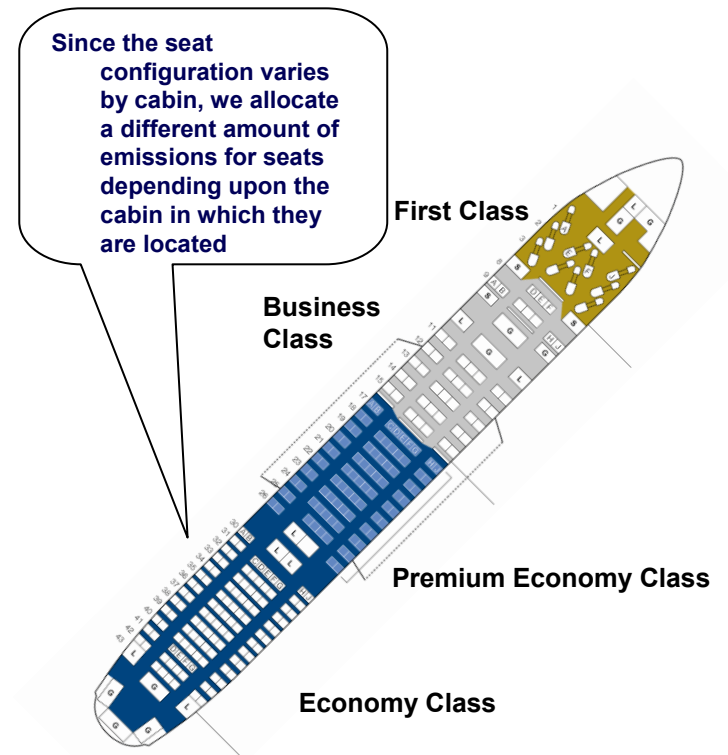
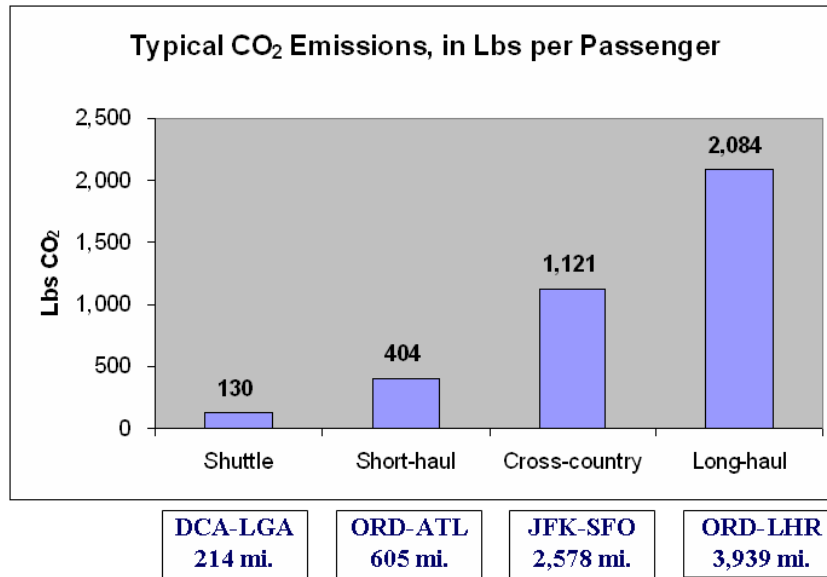
Source: <http://www.ecxeurope.com>. Click on Market Data, ECX Historical Data, Futures.

# Each Aircraft And Flight Have Different Characteristics

- > **Engines – type and number**
  - different fuel efficiency profiles during various phases of flight  
taxi-idle, takeoff, climb out, cruise, approach, taxi-idle
- > **Number of seats**
  - even for same aircraft type
- > **Average aircraft age**
- > **Load Factor – how full is the plane?**
- > **Other efficiency factors, e.g. winglets**

**All of these factors – and more - affect fuel consumption and CO2 emission**

**Airline CO2 Emissions Are Primarily Related To Trip Distance; Other Factors Include Type Of Aircraft, Engines And Loads**



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