



Lightening the Load: The Global Warming Impact of eBay Infrastructure and Transactions

Executive Summary

Over the last decade, eBay has shown how an online peer-to-peer business model changes the global warming impact of commerce. Cooler, a for-profit social venture whose mission is to connect every purchase to a solution for global warming, was commissioned by eBay to study the cumulative global warming impact of eBay's marketplace. *Lightening the Load* is the result of that study, and addresses the following questions:

- *How has eBay's business model changed the environmental impact of commerce?*
- *What are the global warming benefits of extending the useful life of products through increased sales of used, salvaged and out-of-generation products?*
- *What are the global warming benefits of reducing the need for retail and wholesale infrastructure?*

Key Finding #1: eBay's business model reduces the global warming impact of retail by extending the useful life of a wide array of products and encouraging product reuse and recycling.

By establishing a secondary market on a large scale that reduces the costs of buying and selling used and overstock goods, eBay makes purchasing these types of products more attractive to customers, and encourages resale. This delays the production of additional new goods and their associated greenhouse gas emissions (GHGs).

Product reuse avoids emissions today by displacing the production of new goods into the future when the manufacturing of products will likely be less carbon intensive. In order to calculate GHGs reduced through the purchase of used goods, Cooler has developed three approaches to the allocation of emissions among multiple sequential consumers of that product.

To apply this new methodology and to illustrate the global warming benefits of extending the useful life of products, Cooler conducted three case studies on items commonly bought and sold on eBay. For example, Cooler estimates that buying a used golf driver on eBay saves 95% of the emissions associated with buying a new golf driver. The purchase of used golf drivers instead of new ones over the last three years on eBay has the equivalent impact of reducing 120,000 tons of GHGs.

Buying a used Coach handbag on eBay can save up to 90% of the emissions associated with buying a new one. By purchasing used leather handbags instead of new ones over the last three years, the eBay community has reduced 94,000 tons of GHGs.

Buying a used HP Pavilion laptop on eBay saves over half the emissions associated with a new one. The sale of used laptops instead of new ones on eBay in 2007 resulted in a reduction of over 69,000 tons of GHG emissions.

Key Finding #2: eBay's business model avoids the typical greenhouse gas (GHG) emissions of retail stores and warehouses.

eBay's peer-to-peer platform makes it unique in the world of online retail because it substantially reduces the need for stand-alone warehouses and virtually eliminates the need for retail stores.

A typical e-commerce vendor's warehouse measures 770,000 square feet and produces almost 5,000 tons of CO₂e per year. While some larger eBay sellers manage substantial warehouse operations, most eBay sellers house their own goods through the transaction process, producing far fewer emissions

than those associated with wholesale warehousing.

Given eBay's share of e-commerce, Cooler estimates that eBay obviates the need for at least 138 million square feet of retail space, or the equivalent of 735 "Big-Box" stores.

Cooler Methodology

To study the cumulative global warming impact of eBay's trading platform, Cooler, Inc. applied its existing technology, developed new methodologies, submitted work for peer comment, and conducted illustrative case studies.

In analyzing the impact of eBay's infrastructure, Cooler considered variables including the GHGs associated with buildings, transportation, and data centers. Calculations of estimated reductions in GHGs were made based on: revenues; the reduction of traditional brick and mortar storefronts; the reduction of wholesale, distribution, storage, and shipping infrastructure; the elimination of retail space; the reduction in inventories and waste; and the replacement of single purpose shopping trips with multiple package delivery systems such as USPS, UPS and FedEx.

In analyzing the impact of eBay transactions, Cooler considered all four primary phases of a product's life cycle that can produce GHGs: Manufacturing/Production, Wholesale/Retail, Product Use, and Disposal. Analytic variables included: the market for reused, recycled, and salvaged goods; resale behavior and wasted goods; and the macroeconomic effects of consumption. Calculations of estimated reductions in GHGs were made based on a life cycle analysis of goods and services. Cooler also included two key methodological innovations: a GHG emissions allocation framework for reused products, and the concept of a net present emissions value which estimates the global warming impact of displacing the purchase of new products into the future.