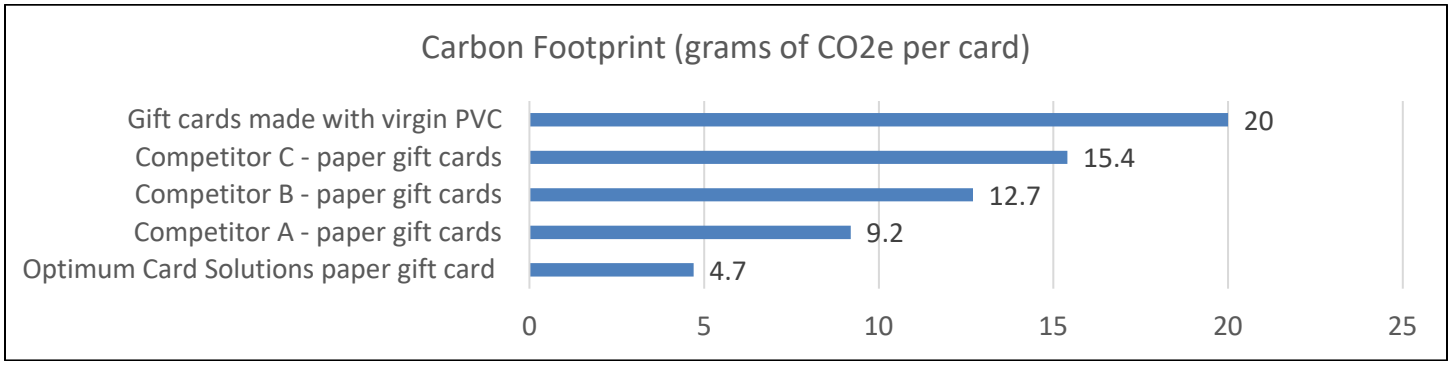
Carbon profile of paper-based gift cards manufactured by Optimum Card Solutions (Summary Report)

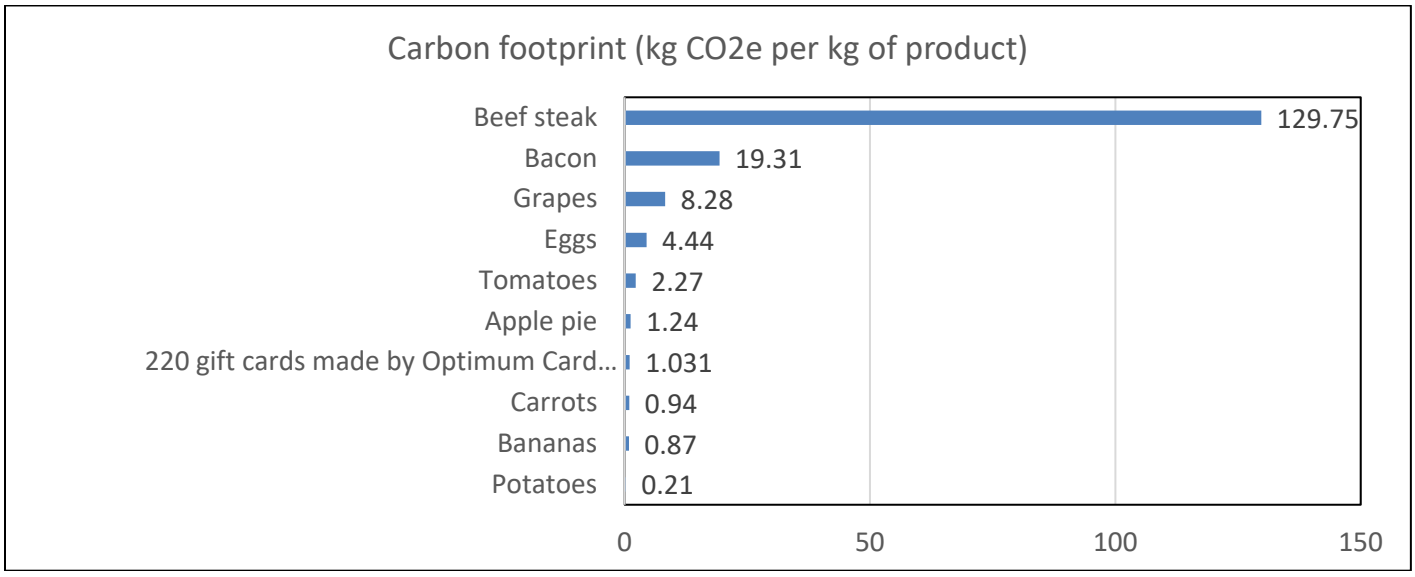
Optimum Card Solutions has completed a study to calculate the carbon footprint of its paper-based gift cards for the 2021 calendar year of operation. Standard published methodology was followed, including the Greenhouse Gas Protocol.[1,2,3]

Results were compared to the carbon footprint of gift cards made using virgin PVC resin and paper-based gift cards manufactured by three North American competitors using the following paper grades: ImageMax by Neenah, Envi by Monadnock and Tango by Westrock. The carbon footprint of the above paper grades and virgin PVC (prior to converting and printing) were also calculated.

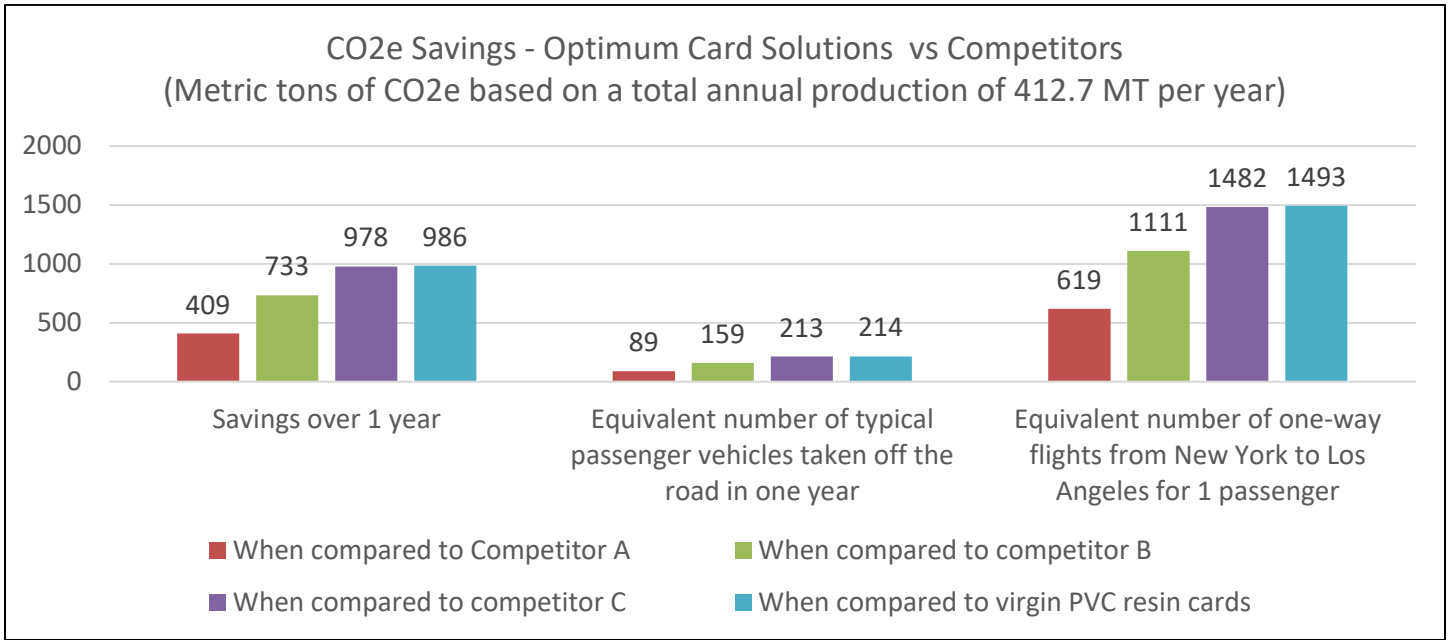
The carbon footprint of cards manufactured by Optimum Card Solutions in 2021 was 1,031 kg CO2e per metric ton of product. The key elements influencing this number are purchased electricity (56% of the carbon footprint), paper (19%) and paper transportation (24%). Results show that gift cards manufactured by Optimum Card Solutions have the lowest carbon footprint when compared to their competitors. The numbers are shown below for one gift card.



To put these numbers in context, the carbon footprint of 220 cards made by Optimum Card Solutions, or 1 kg of cards is less than the carbon footprint of 1 kg of apple pie (1.24 kg CO2e), more than 1 kg of carrots (0.94 kg CO2e) and about 100 times less than 1 kg of steak[4] as shown in the figure below.

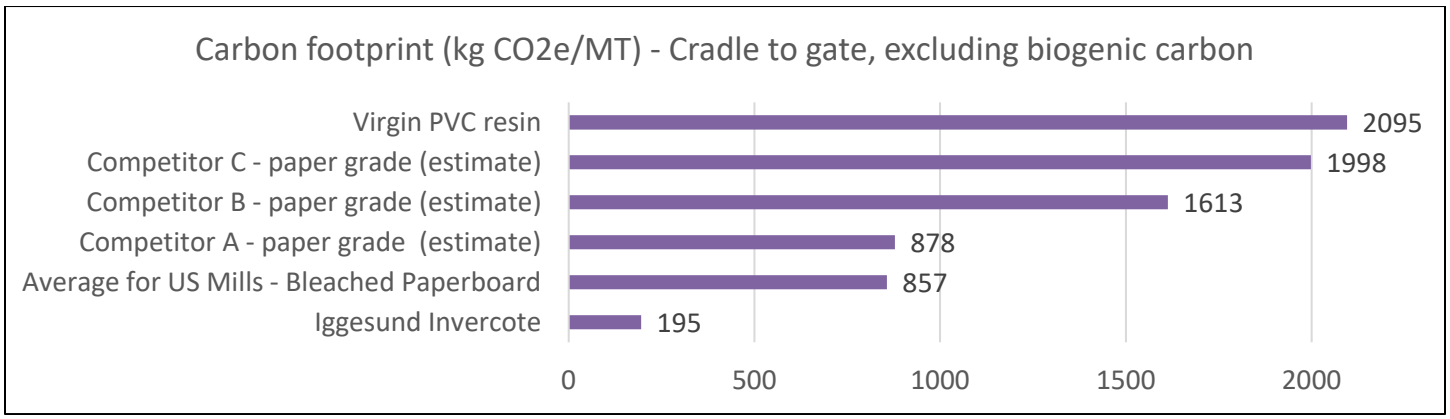


Due to its lower carbon footprint, Optimum Card Solutions can achieve significant savings in CO2e emissions over its competitors (see figure below). For example, CO2e savings over an entire year of card production (412.7 metric tons of cards) can range between 400 and 1,000 metric tons of CO2e less than competing gift cards. This is equivalent to the carbon footprint of 1 passenger taking between 600 and 1,500 one-way flights from New York to Los Angeles (0.660 metric tons of CO2e per flight). Another equivalent would be taking between 85 and 215 typical passenger cars off the road for 1 year.[5]



The are several reasons for the lower carbon footprint of Optimum Card Solutions gift cards.

1- The Iggesund Invercote sheet used as a paper base stock has one of the lowest carbon footprints in the pulp and paper industry at 195 kg CO2e per metric ton. In comparison, competing grades range from 878 to 1998 kg CO2e per metric ton due to more reliance on fossil fuels in the manufacturing life cycle (figure below). Iggesund can achieve a low number due to an energy-efficient mill and high use of renewable energy such as hydro and biomass power. The environmental performance of Iggesund Invercote is also superior to competing paper grades based on international sustainability ranking (Ecovadis).



2- Optimum Card Solutions uses a streamlined process where paper from the Iggesund mill is shipped directly to their printing facility in Addison, IL, and rolls are ready to use on the printing press. This avoids the carbon footprint of converting and laminating at a separate converting plant. Transportation by truck from the paper mill to a converter is also avoided.

3- Optimum Card Solutions has a patented printing process which is energy and cost-efficient because it uses less equipment to produce gift cards, thanks to a fully integrated in-line process. All printing steps, embellishments, die cutting, mag stripe and personalization are carried out inline in a singular process and gift cards are completed from raw material to finished product in about 20 seconds on press. The traditional gift card manufacturing process used by other manufacturers includes several additional and separate steps such as:
   - Printer prints front of card
   - Printer prints back of card
   - Any embellishments (if needed) are applied to cards (foil, spot varnish, embossing, etc.)
   - Die cutting to CR80 size
   - Add magnetic stripe
   - Personalize cards with card number, PIN, encode mag-stripe and add security label

Finally, paper has key environmental advantages over PVC because it is made from renewable wood fiber (from sustainably managed forests) or recycled fiber, as opposed to PVC plastic which is fossil-fuel based and non-renewable. The carbon footprint of paper is generally lower than the carbon footprint published for virgin PVC resin. The recyclability of paper reduces landfill waste. PVC is typically not recyclable in the mainstream recycling infrastructure. It is estimated that each year between 37,500 to 50,000 tons of PVC gift cards end up in landfills. Paper is biodegradable whereas plastic can take hundreds of years to break down into microplastics that can contain carcinogens, toxins, and heavy metals.

Given that more than 10 billion plastic gift cards are manufactured globally every year, the overall environmental impact of this volume of plastic is significant. Therefore, the use of paper-based gift cards with a low carbon footprint has clear environmental benefits.[6]

DISCLAIMER:

All reported numbers are based on publicly available data and assumptions which are documented in the full report. It should be noted that there is a lack of data on product carbon footprints because many companies have not calculated or do not publicly report their carbon footprint or greenhouse gas emissions. Given the lack of publicly available data on many products, estimates and may differ from numbers which are based on measured data. It should be noted that the carbon footprint of a product can vary significantly based on variables within the life cycle of that product. The numbers reported will change over time and with varying conditions.

A - Westrock Tango paper gift cards
B - Monadnock Envi paper gift cards
C - Neenah ImageMax paper gift cards

[1] https://www.wri.org/initiatives/greenhouse-gas-protocol
[2] https://www.intergraf.eu/communications/publications/item/331-intergraf-recommendations-on-co2-emissions-calculation-in-the-printing-industry
[3] CEPI Framework for Carbon Footprints for Paper and Board Products. April 2017. https://www.cepi.org/wp-content/uploads/2021/02/ENV-17-035.pdf
[4] https://ourworldindata.org/environmental-impacts-of-food
[5] Based on CO2e emissions of 4.6 metric tons per average car - US EPA data
[6] https://www.greengiftcards.co.uk/news/top-9-benefits-going-green-your-gift-cards ; https://shanericzu.files.wordpress.com/2017/10/kiind-environmental-impact.pdf