

# Using waste as a resource to fight climate change:

Dallas Fort Worth International Airport, Mahoney Environmental and Neste recycle used cooking oil into renewable Fuels, and AvFuel Corporation is delivering it back as sustainable aviation Fuel

As a leader in sustainability, Dallas Fort Worth International Airport (DFW) has made big strides to lower their environmental impact.

In 2016, DFW Airport was recognized as the first and largest airport in the Americas to achieve carbon neutral accreditation. This distinction was achieved through the purchase of 100% renewable electricity, use of renewable fuels in fleet vehicles, and implementation of energy efficiency and optimization initiatives. As the Airport continues to explore new ways to incorporate sustainable practices into its day-to-day operations, it remains a leading example for other airports around the globe.

DFW Airport has now set a more ambitious goal to reduce carbon emissions to net zero by 2030.



**DFW Airport's strategic goal is to reduce CO<sub>2</sub> emissions per passenger by 15 percent by 2020. Thus far, the Airport:**

- 1** Achieved their goal (15% reduction in emissions per passenger) two years ahead of schedule
- 2** Drove more efficient operations, offset the impact of their growth, and reduced emissions per passenger
- 3** Collected 385,000 gross pounds of waste per year

Some of the solutions put in place to reach these goals were hidden in plain sight—and they were not so easily seen at first.

## Background

DFW Airport uses the United Nations Sustainable Development Goals and the EONS approach to create their sustainability strategy, evaluating projects' Economic viability, Operational efficiency, impact on Natural resources and Social responsibility. Recycling waste cooking oil has positive benefits in all 4 areas of the EONS framework: this process provided a cost neutral (economic) solution that reduced waste (impact on natural resources), improved employee safety (social responsibility) with an efficient solution (operational efficiency).

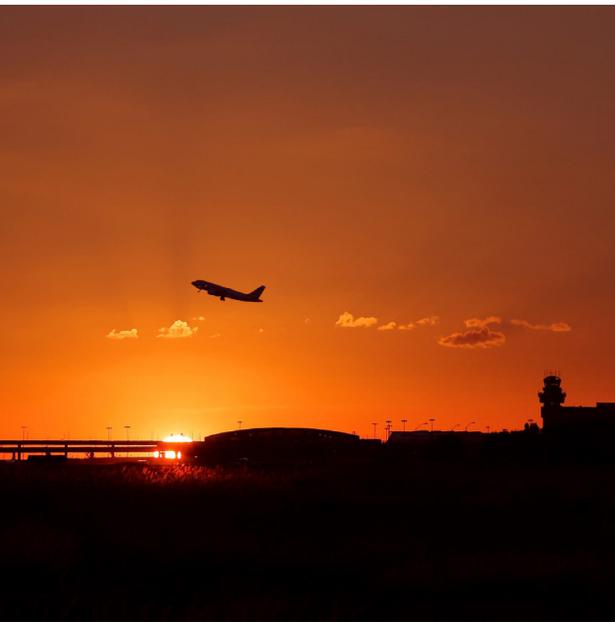
With more than 200 concessionaires located throughout the Airport's six million square feet of terminal space, collecting waste — specifically used cooking oil — was complex and inefficient. In fact, each concessionaire had its own waste collecting process and schedule. This lack of cohesion negatively impacted the customer experience, since the used cooking oil collection process was visible to airport travelers. Drums of used oil were hauled through the terminal creating noise, odors, spills, and congestion.

Mahoney Environmental, one of the leading providers of back-end services to industrial kitchens across North America, was enlisted to offer DFW Airport's restaurants with a safer cooking oil collection process that is easy and streamlined for all concessionaires, and less disruptive for patrons. Mahoney provides the leftover waste oil to Neste, which would convert it into renewable diesel or sustainable aviation fuel. Then, to complete the circle, Avfuel Corporation, a global supplier of aviation fuels, delivers SAF to the Airport as part of a first-of-its kind collaborative circular economy project in the aviation sector.

Suddenly, DFW Airport's waste management challenge became a sustainability and cost-reduction opportunity. The new program offered immediate greenhouse gas emissions reductions and operational savings by creating a closed-loop system.

# A Win-Win Solution:

Streamline the Process, Enhance Customer Experience, Fight Climate Change



Mahoney Environmental, a wholly-owned subsidiary of Neste, implemented a new-and-improved used cooking oil collection operation at DFW Airport. Over a three-year period, Mahoney Environmental worked with DFW Airport and its network of concessionaires to enhance the Airport's used cooking oil collection and management system.

Mahoney Environmental is a licensed EPA recycler of used fryer oil, waste cooking oil, and grease trap material, turning these waste products into raw material that can be used to manufacture new products, namely advanced biofuels like renewable diesel and sustainable aviation fuel.

Beyond this, Mahoney's relationship with Neste offered DFW Airport something more. Together, Mahoney Environmental and Neste provided DFW Airport with a "one-stop shop" solution to manage a large, challenging waste stream with a safer and more efficient process (with a co-benefit of contributing to reduction in carbon emissions). Often called a closed-loop system or circular economy, DFW Airport's used cooking oil is now being upcycled to create low-emission renewable fuels that can immediately replace fossil fuels.

For passengers travelling through DFW Airport, that means transactions for food are now directly helping create a more sustainable future. By chowing down on a chicken sandwich and fries from Chick-fil-A™, chips and queso from Pappasito's Cantina™, or a burger from Whataburger™, passengers and restaurants are, together, creating a resource that is used to make renewable fuels to fight climate change.

So, how are Mahoney and Neste working with DFW Airport to create viable solutions for both business and the planet?

## A PERSONALIZED APPROACH

To reduce disruptions to passengers from the used cooking oil removal process, Mahoney provided a whole new back-of-house operation for all restaurants and kiosks. There are now dedicated holding tanks at five locations across the Airport (one at each terminal). Concessionaires are equipped with the proper tools and training to drop off the cooking oil at their respective location, which is a simple, safer, and quicker process.

Mahoney then comes once a week to collect the used cooking oil, where it is sent to one of the companies' pre-treatment facilities. At the facility, Mahoney removes any impurities from the used cooking oil.

**“When transporting oil from the restaurant to a proper storage facility, there is no room for error, such as a spill in a public area,”** said Nate Goodman, project manager at Mahoney for the DFW Airport project. **“From personnel to permitting, Mahoney works with businesses to ensure the process is up to par for all parties involved. Centralizing the oil-collection process enhances business operations, and, with our experience, we can replicate a similar system that is right for any entity in any state.”**

The process Mahoney Environmental implemented at DFW Airport is a concept that has proven successful throughout the country, including at Chicago O'Hare International Airport — one that Mahoney customizes for individual businesses by building programs that work best for their operations.



**New storage tanks at each terminal**



**Safer environment for personnel and customers, eliminating risk from possible spills & burns**



**Custom training program for employees**



**No capital expense because DFW Airport used the value of the UCO to pay for the equipment and installation**

## A LASTING IMPACT

Once Mahoney Environmental has removed impurities from the used cooking oil, it enters Neste's supply chain. From humble beginnings in a fryer at DFW Airport, the used cooking oil will be transported to one of Neste's renewable product facilities to be converted into renewable diesel, sustainable aviation fuel, and other renewable products.

The renewable diesel and sustainable aviation fuel is then distributed globally, with nearly 30% of Neste's total renewable products volume coming into North America. In the U.S. and Canada, these fuels play a big role in reducing emissions from hard-to-abate vehicles, like big

rigs, planes, cement mixers, and first responder vehicles. Renewable diesel and SAF are drop-in solutions that are fully compatible with existing engines and infrastructure. So, all it takes is a forward-thinking business or city to make the choice of kicking the oil habit for good.

Neste's renewable products are delivering a real, immediate impact in society's fight against climate change. In 2019, the company's renewable products prevented more than 9.6 million tons of CO<sub>2</sub> equivalent from entering the atmosphere.

### By the Numbers: Breakdown of DFW Airport Collection Impacts

**200+**

restaurants and kiosks participating

**32,000**

pounds of waste collected per month and **413,000 pounds of waste** collected to-date.

**42,200**

gallons of renewable fuel produced to-date

**Nearly 340**

metric tons of CO<sub>2</sub> equivalent prevented from entering the atmosphere — roughly the same as planting more than 5,600 trees.



# Creating a closed-loop system

Collecting the Airport's waste and converting it into renewable fuel was the first step in creating a closed-loop system. The final step is fueling the Airport's aircraft with sustainable aviation fuel, and that is exactly what is being done at DFW Airport for its business aviation customers. Upon receiving its first delivery of SAF, DFW Airport, in collaboration with Avfuel Corporation and Neste, became the first airport to test a circular economy for aviation powered by SAF.

**"The introduction of sustainable aviation fuel to DFW Airport marks a major milestone in our effort to reduce our sector's overall carbon footprint,"** said Robert Horton, vice president of environmental affairs at DFW Airport. **"We recognize our future success depends on our ability to protect our natural resources and we are committed to continuing to serve as an industry leader in sustainable practices."**

The first successful delivery of an 8,000-gallon demonstrative load of SAF further reduces the Airport's carbon emissions by 19 metric tons - a reduction that could significantly grow if more SAF enters the

Airport's fuel pool. This could potentially include making the fuel available to commercial and cargo airlines.

**"DFW and Neste have laid an excellent foundation for sustainability and provide a shining example of how organizations can work together to increase sustainability and promote renewability,"** said Keith Sawyer, Avfuel's manager of alternative fuels. **"The Avfuel team is honored to have played a role in closing the loop, demonstrating that SAF is available for use now and circular solutions are feasible through industry collaboration."**

Together, this collaboration is charting a bold new flight path that shows airports how they can achieve their climate goals faster and ultimately enable flight operators, businesses and passengers to fly with a smaller carbon footprint. With all parts of the SAF value chain coming together - the airport, the fuel supplier and the producer - it leads the way toward a sustainable future for air travel and fighting climate change.

## The Neste Circular Economy Model



**"Any business or city that generates used cooking oil, grease or a number of other waste materials already has the foundation for creating a circular economy,"** said Jeremy Baines, president of Neste US and chairperson of Neste Canada. **"To take the next step only requires thinking about waste as a resource, a willingness to explore innovative new partnerships and a willingness to fight climate change."**



## The Future is Bright

DFW Airport is one of the busiest airports in the world and showcases the immense potential of collecting and using waste to help fuel society's transport system. A conservative estimate puts the volume of used cooking oil generated by the largest 25 airports in North America at 9,600,000 pounds per year — enough waste to generate nearly 1 million gallons of advanced biofuels and, ultimately, prevent more than 7,831 metric tons of CO<sub>2</sub> equivalent from entering the atmosphere.

This amount of CO<sub>2</sub> removal is equivalent to:



Making 1.6K passenger cars zero emission per year



Taking 756,000 gallons of oil out of our transport system



The amount of CO<sub>2</sub> that 10,200 acres of U.S. forests can sequester for one year

**“As we transition away from fossil fuels to renewables and lower our carbon footprint, partnering with Neste has allowed us to close the loop,”** said Kris Russell, Environmental Program Manager at DFW Airport. **“The best part is the ease: this is a drop-in solution.”**

As more investors, employees and customers demand action on climate change, choosing to use waste as a resource and contributing to a closed-loop system offers a simple, cost-effective way to achieve carbon neutral growth.

Any business, city, or other entity that generates waste — like airports, hotels, corporate offices, movie theaters, restaurants, universities, and stadiums — can help fight climate change by contributing to a closed-loop system. Importantly, they can choose to go further and create a circular economy. Mahoney and Neste can collect and turn used cooking oil from any entity into renewable products, the next natural step is for Neste to provide those same renewable fuels back to that same entity to power their operations.

For more information, please visit <https://www.neste.us/>