

**Public**  
**Key Decision – Yes**

## **HUNTINGDONSHIRE DISTRICT COUNCIL**

**Title/Subject Matter:** Hydrotreated Vegetable Oil (HVO) Trial

**Meeting/Date:** O&S (Environment, Communities & Partnerships) 6 February 2025  
Cabinet – 11 February 2025.

**Executive Portfolio:** Executive Councillor for Parks and Countryside, Waste and Street Scene  
Cllr Simone Taylor

**Report by:** Andrew Rogan- Head of Operational Services

**Wards affected:** All Wards

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### **Executive Summary:**

In 2023, Huntingdonshire District Council approved a Climate Strategy and action plan with the aim of tackling some of the key issues identified. (Appendix 1)

A Greenhouse Gas (GHG) emissions report produced by Local Partnership identified the Carbon (CO<sub>2</sub>) emissions from the combined Councils' fleet of vehicles represent 36.7% of the organisation's total CO<sub>2</sub> emissions, with a total of 1,347 tonnes. It is the single largest emitter after heating and electricity and decarbonising the fleet was listed as the number one key priority for the Council.

A pilot project was agreed upon, and in November 2023, HDC began a medium-term trial using Hydrotreated Vegetable Oil or HVO as an alternative to standard road diesel in a controlled group of vehicles, plant and machinery. These were representative of the fleet's overall makeup, and included refuse collection vehicles, vans, mowers and streets sweepers.

This project not only underscored HDCs commitment to sustainability and improving the quality of life for local people as set out the Corporate Plan 2023-2028, but it also enabled us to explore new technologies and ways of thinking, with the aim of creating an organisation-wide ethos of continuous improvement.

The trial was comprehensive and designed to evaluate the performance of HVO in terms of engine efficiency, power output, fuel consumption and overall vehicle operation. In addition, the project explored potential gaps in the supply chain, production capacity limitations, transportation, and infrastructure.

Emergency response capability and compatibility were also tested during the project, and in the spirit of ongoing collaboration, the emergency services were

invited to join the trial, which resulted in Cambridgeshire Fire and Rescue and Cambridgeshire Constabulary providing a variety of their operational vehicles to be included in the project. The vehicles were refuelled at the Eastfield House operational depot where twenty-four-hour access was arranged. This collaboration worked extremely well, with all partners eager to continue working in partnership beyond the trial and into full implementation.

HVO is an accredited sustainable product and the carbon emissions from the use-phase of HVO is considered to amount to zero as the amount of bio-based carbon dioxide released upon combustion equals the amount that renewable raw material absorbed in an earlier stage.

However, there are some emissions that need to be included for the production and transportation of the fuel. For this reason, the calculations of the reduced emissions from the use of HVO have been based on 82% and not 100%.

Transferring from standard road diesel to HVO would reduce the vehicle fleet emissions by around 1,100 tonnes of CO<sub>2</sub> annually compared with standard road diesel, this would reduce the current level of over 1,300 tco<sub>2</sub>e to approx. 200 CO<sub>2</sub> annually and would reduce HDC's overall CO<sub>2</sub> footprint by around 30%. HVO would be viewed as a stepping stone to net zero, and we would continue to explore alternative fuel technologies that could be adopted once they have reached maturity.

The trial concluded at the end of June 2024, and during the trial, HVO has performed exceptional well, with no impact on engine efficiency, power output, fuel consumption, vehicle operational performance, or emergency response capability. In addition to fuel testing, the increased engagement of emergency service partners has led to wider discussions on options for closer collaboration across a variety of areas, including seeking alternative funding opportunities from them.

The purpose of this report is to update Cabinet on the outcomes of the project, and for Cabinet to consider the recommendations set out in this report.

### **Recommendation(s):**

It is recommended that Cabinet:

- agree to adopt the use of Hydrotreated Vegetable Oil across the Council's fleet based on the successful trial;
- approve delegated authority to the Corporate Director for Place and Section 151 Officer, in consultation with the Executive Councillor for Finance & Resources and the Executive Councillor for Parks and Countryside, Waste and Streets to take operational decisions regarding the implementation and ongoing management of the HVO initiative;
- authorise HDC officers to engage with neighbouring authorities to explore the wider HVO adoption across Cambridgeshire and Peterborough;
- endorse continued collaboration with Cambridgeshire Fire and Rescue Service and Cambridgeshire Constabulary on HVO usage and other partnership opportunities; and

- endorse HDC's engagement with the Cambridgeshire and Peterborough Combined Authority to explore potential funding for HVO implementation and ongoing usage and opportunities for wider HVO adoption among Cambridgeshire partners.

## **1. PURPOSE OF THE REPORT**

- 1.1 The purpose of this report is to update Cabinet on the outcomes of the trial of using HVO as an alternative to standard road diesel, and for Cabinet to consider the recommendations in this report.

## **2. BACKGROUND**

- 2.1 Greenhouse Gas (GHG) emissions report produced by Local Partnership identified the Carbon (CO<sub>2</sub>) emissions from the combined Councils' fleet of vehicles represent 36.7% of the organisations total CO<sub>2</sub> emissions, with a total of 1,347 tonnes. It is the single largest emitter after heating and electricity and decarbonising the fleet was listed as the number one key priority.
- 2.2 In response to this, a pilot project was agreed, and in November 2023, HDC began a medium-term trail using Hydrotreated Vegetable Oil or HVO as an alternative to standard road diesel in a controlled group of vehicles and plant machinery that were representative of the fleet's overall makeup.
- 2.3 The trial was designed to evaluate the performance of HVO in terms of engine efficiency, power output, fuel consumption and overall vehicle operation. In addition, the project explored potential gaps in the supply chain, production capacity limitations, transportation, and infrastructure.
- 2.4 Emergency response capability and compatibility were also assessed during the project, and in the spirit of ongoing collaboration, the emergency response services were invited to join the trial, which resulted in Cambridgeshire Fire and Rescue, and Cambridgeshire Constabulary providing a variety of their operational vehicles to access HVO from the Eastfield House Operational Depot as part of the project. This was designed to not only test the fuel, but also site access and current infrastructure limitations.
- 2.5 HDC currently has two 45,000 litre fuels tanks, located at the Eastfield House Operational Depot. During the last several years, global and domestic events have raised concerns regarding fuel security on multiple occasions.
- 2.6 The two tanks, with a combined capacity of 90,000 litres of bunkered fuel have insulated the organisation from some of this turbulence and have also been central to emergency response planning. It was a priority for HDC to ensure involvement of the emergency response partners to explore the impacts of switching to HVO. Although HVO is a fuel the emergency services have been testing individually as a way to reduce the CO<sub>2</sub> emissions.
- 2.7 HVO is classed as drop-in alternative fuel to regular diesel meaning it can be mixed with standard road diesel in any quantity. The project had three phases designed to evaluate this, phase one looked at transitioning vehicles using standard road diesel over to using HVO, second phase was the continued running solely on HVO, with the final phase transitioning vehicles back to using standard road diesel.



- 2.8 In terms of vehicle warranty, HVO is approved by the leading original equipment manufacturers (OEMs) and engine manufacturers, which cover all the current vehicles owned and operated by HDC.
- 2.9 HVO is chemically similar to conventional fossil fuel diesel and complies with European Fuel Standard EN1590, however, it is not biodiesel, which is chemically different than HVO.
- 2.10 It is a renewable energy source, International Sustainability & Carbon Certification (ISCC) approved and is produced from 100% sustainable renewable waste feedstocks coming from waste cooking oil, residues etc, - reducing CO<sub>2</sub> by up to 90% through its life cycle. HVO is also a much cleaner fuel and delivers significant reductions in harmful tailpipe emissions, which helps to improve air quality.
- 2.11 There have been some concerns raised regarding the sustainability of the feed stock used in the production of HVO, however, it should be noted that ISCC is a globally recognised, stringent system, it is recognised by the European Commission and complies with the sustainability criteria of the Renewable Energy Directive (RED II). Furthermore, The ISCC certification process involves thorough audits conducted by independent third-party certification bodies. These audits assess various aspects, including land use, feedstock origin, greenhouse gas emissions, labour conditions, and traceability.
- 2.12 Some concerns have also been raised with HVO and its connection with Palm Oil production and deforestation. Neste, the Global leading producer of HVO, and where the majority of HVO in the UK originates, has a clear stand against actions that would cause deforestation and are fully committed to preventing deforestation in its supply chains. Neste reduced its refinery inputs of conventional palm oil to zero at the end of 2023. There is no palm oil in the product, there may be traces of POME, which is palm oil mill effluent, which is already a waste product, which is used instead of it being put in landfill.
- 2.13 For a local authority in England to measure and verify the sustainability claims of HVO fuel can be challenging to have complete certainty. However, ISCC certification provides a high level of assurance that the HVO fuel meets strict sustainability criteria throughout its supply chain.
- 2.14 Currently, HVO is not manufactured in the UK, although several UK companies import (Neste) and distribute HVO in the UK.
- <https://www.neste.com/sustainability/biodiversity/forests>
- 2.15 HVO is an accredited sustainable product and carbon emissions from the use-phase of renewable diesel are considered to amount to zero as the amount of bio-based carbon dioxide released upon combustion equals the amount that renewable raw material absorbed in an earlier stage.
- 2.16 However, there are some emissions that need to be included for the production and transportation of the fuel. For this reason, the calculations of the reduced emissions have been based on 82% and not 100%

2.17 HVO would be viewed as a stepping stone to net zero, and we would continue to explore zero emission technologies as they mature and become operationally viable.

### 3. FINDINGS OF THE TRIAL.

3.1 HVO was tested over a wide range of areas to ensure it was fully usable. Table 1 shows the areas of testing and outcomes.

Table 1

<b>Supply Chain</b>	<b>Outcome</b>
Availability of fuel	HVO availability is comparable with standard road diesel. We have not encountered any supply chain issues during this project. The main production of HVO is based in Europe (Finland and the Netherlands) which is increasing to meet increasing demand. It is readily available to order through procurement frameworks.
Lead time for delivery	Lead times were shown to be 2-3 days. This matches standard road diesel.
Compatibility of delivery to tank	The equipment, infrastructure and process to deliver HVO is exactly the same as standard road diesel, with no issues encountered.
Dispensing of fuel	No issues were encountered. The equipment, infrastructure and process to dispense HVO exactly matched standard road diesel. We only need to recalibrate the pump due to minor volumetric differences; pumps are calibrated annually as a matter of course.
Fuel tank compatibility	The fuel tanks required no modifications and performed exactly the same as standard road diesel.
Affordability	HVO currently tracks around £0.18ppl above the price of standard road diesel. This is within the envelope of the current MTSF spend for fuel as standard road diesel prices are low. Moving to HVO would cost the council more than should it remain on standard road diesel. However, this is a relatively low cost, high impact spend, with the additional spend reducing the fleets co2e emissions by 82% extremely quickly. Not implementing or deferring to a later date may cost the council significantly more. (See section 5 for further details).
<b>Fuel Usage</b>	<b>Outcome</b>
Litres used	54,000 litres of HVO used during the pilot project. <ul style="list-style-type: none"> <li>• HDC used 49,816 litres</li> <li>• Fire service 3.613 litres</li> <li>• Police service 571 litres</li> </ul>
Transition-To	All vehicles were tested for 'Drop-Fuel' compatibility. HVO was mixed directly with standard road diesel already in the vehicle fuel tanks at various ratios. No initial preparation or cleaning of vehicle fuel tanks was conducted prior to the mixing. There was no noticeable change in the vehicle's performance.

Transition-From	All vehicles were transitioned back to using standard road diesel, without any prior preparation or cleaning of vehicle fuel tanks.
Engine performance	There was no noticeable difference in engine performance across the full range of vehicles involved in this project. It was noted by Cambridgeshire Constabulary, that one of their vehicles was involved in high-speed pursuits with no noticeable difference in vehicle performance under heavy load. Cambridge Fire and Rescue vehicles were also involved in high-speed driving, again, no noticeable difference in engine performance were reported.
Cold weather performance	The project ran through the winter months specifically to test it in a range of weather conditions. There was no noticeable difference in cold weather performance.
MPG or hour worked	All vehicles mpg while operating on HVO were comparable with standard road diesel +/- 2%
Overall vehicle operation	There was no noticeable difference reported across all vehicles
Vehicle servicing-Maintenance	There was no impact on servicing or routine maintenance. Vehicle running on HVO were serviced in line with current service scheduling. No breakdowns were reported where HVO was the cause. No vehicles were withdrawn from the project due to being incompatible with the fuel. There were no increases in serviceable parts being changes more frequently etc.

3.2 In conclusion, we did not encounter any issues with using HVO during the project. Availability of HVO is good, with main production based in Europe (Finland and the Netherlands) which has ongoing plans and capacity for increasing production. It is readily available to order through procurement frameworks.

3.3 There are no operational barriers to using HVO in terms of overall vehicle performance, mpg, power outputs, or maintenance.

3.4 It is fully compatible with our current infrastructure, processes and procedures, and fully compatible with the emergency service requirements.

#### **4. ALTERNATIVES FUELS CONSIDERED**

4.1 Other alternatives for this pilot project to de-carbonise the fleet were researched; electric, Hydrogen, biodiesel, were also considered.

##### **4.2 Electric**

- i. There are limited models of electric RCV commercially available. The costs of the vehicles are anywhere from 80%-120% greater than a conventional diesel engine version.
- ii. Electricity costs to power the vehicles have increased significantly over recent years, although it still remains slightly less than fossil fuels costs.
- iii. There are currently no models of electric RCVs that would complete the full operational demands across the entire district.

- iv. Historically, EV's would have had additional savings in the form of zero road fund licence, however, Government has since added additional tariffs for EVs. In addition, there would be additional costs in the form of suitable electric vehicle charging points and associated infrastructure at the Eastfield House depot.
- v. Electric refuse collection vehicles (RCVs) and associated technology is still in their infancy. There are some authorities that are early adopters, notably the City of London, however, they are predominantly in urban areas, and all have had varying degrees of success.

#### 4.3 Biodiesel

- i. Otherwise known as Fatty Acid Methyl Ester (FAME) is a diesel fuel replacement produced from plant and vegetable oils. Such oils cannot be blended directly with conventional diesel and so a chemical reaction using methanol and sodium hydroxide as a catalyst is used to convert vegetable/plant oils into their constituent methyl esters.
- ii. These can then be blended with diesel at levels of up to 10%. However, the standard norm in the UK is to blend biofuels to a maximum of 7% of the total fuel.
- iii. Biodiesels also have their own issues: Palm oil-based fuels block the vehicle's filters; Biodiesel can oxidise if left too long in a storage tank and it goes rancid; and Biodiesel has a corrosive effect on vehicle engine's rubber components.

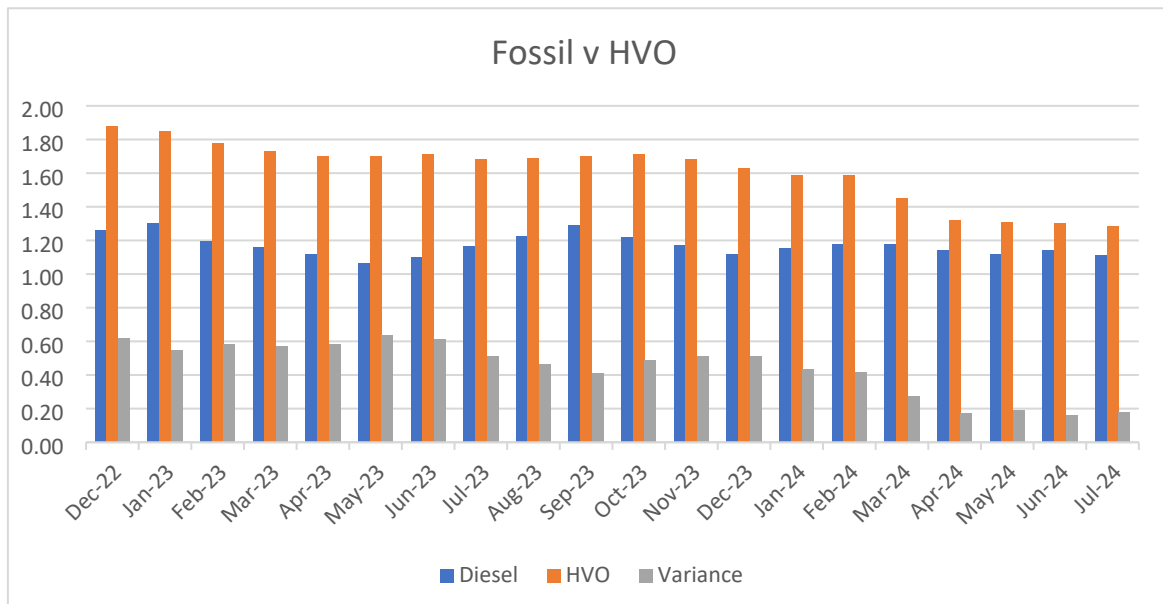
#### 4.4 Hydrogen

- i. Although lots of progress has been made regarding hydrogen technology, the options of hydrogen powered refuse collection vehicles are extremely limited. The cost of the vehicles is anywhere from 300%-400% greater than a diesel-powered version.
- ii. Most are still in the prototype phase, with even less options around hydrogen supply and infrastructure.
- iii. Therefore, for the above reasons, EVs, biodiesel and hydrogen technologies have not been considered as a suitable alternative fuel in this trial.

### 5. FINANCIAL

- 5.1 HVO is more expensive to purchase than standard road diesel. Over a period from December 2022 to July 2024, the price per litre tracked anywhere between £0.62p to £0.18p. higher than standard road diesel. Table 2. Shows the cost difference between standard road diesel and HVO.

Table 2



5.2 Based on HDC’s average annual fuel usage of approx. 550,000 litres moving to HVO could increase costs on fuel anywhere from £100k at £0.18ppl to £340k at £0.62ppl, based on the price differences we have tracked.

5.3 However, this is a high carbon saving Impact for relatively low cost. It is an easier option to implement than many other potential carbon impact saving proposals and does not require any additional capital expenditure or changes to current infrastructure or operational delivery.

5.4 In terms of cost per ton of CO<sub>2</sub> saved, this project offers exceptional value even at £0.62ppl costing approx. £309 per ton of CO<sub>2</sub> saved, as a comparator, two recent HDC capital decarbonisation projects, had a total cost of £8,636 per ton of CO<sub>2</sub> saved.

5.5 There are options to agree a fixed quantity and price per litre of HVO over a period of between 12 and 24 months. This would give HDC more certainty and mitigate potential spikes in prices, although, prices may drop and HDC could be paying more than market rate.

5.6 As the trial has shown, moving from standard road diesel to HVO then back again is easy to implement with no impact on operational delivery of the services. Should the cost of HVO become unsustainable we could have the option to transition back to standard road diesel, although this would be seen as a step backwards.

5.7 Adopting any new technologies to reduce CO<sub>2</sub> emissions from the council’s fleet will require investment. However, HDC is firmly committed to reducing fleet emissions, and this project offers exceptional value for money, achieving CO<sub>2</sub> savings at a lower cost per unit compared to alternative technologies.

## 6. COMMENTS OF OVERVIEW & SCRUTINY

6.1 The comments of the relevant Overview and Scrutiny Panel will be circulated in advance of the Cabinet's meeting.

## **7. KEY IMPACTS / RISKS**

7.1 This is a relatively low cost but high Carbon Impact Saving initiative which will substantially reduce the overall CO2 emissions from the fleet by 82%. There is no impact on current infrastructure with no impact on resource to implement.

7.2 If the change to alternative fuels does not go ahead then deeper Carbon Impact Savings and potentially even higher costs to achieve them will have to be made within other areas of the Councils to deliver the aspiration of being Zero Carbon by 2040.

7.3 Adopting Hydrotreated Vegetable Oil (HVO) can significantly enhance fuel security for HDC by diversifying its energy sources and reducing dependence on traditional fossil fuels. HVO's extended shelf life, reportedly up to 10 years, allows for larger fuel reserves to be maintained without risk of degradation, ensuring a stable supply during potential shortages or emergencies.

7.4 Furthermore, as a drop-in fuel compatible with existing diesel infrastructure, HVO enables HDC to enhance its fuel security without significant investment in new equipment or systems, offering a flexible and resilient approach to fuel management.

7.5 The fuel would be purchased through an appropriate framework, and although extremely difficult to forecast, we could agree a fixed cost over a defined period or pay a spot price as we do with standard road diesel. We would continually monitor the cost of HVO, and should it become financially unsustainable we could take the decision to cease using HVO and move back to standard road diesel.

7.6 There has been a clear focus of collaborative working on this project, failure to progress may hamper future partnership working opportunities.

## **8. LINK TO THE CORPORATE PLAN, STRATEGIC PRIORITIES AND/OR CORPORATE OBJECTIVES**

8.1 This project aligns with all three key priorities within the Corporate Plan  
Priority 1 - Improving quality of life for local people.  
Priority 2 - Creating a better Huntingdonshire for future generations.  
Priority 3 - Doing our core work well.

8.2 This project aligns fully with the organisation's environmental strategy and net zero 2024 targets.

## **9. LEGAL IMPLICATIONS**

9.1 There are no known legal implications.

## **10. RESOURCE IMPLICATIONS**

10.1 There would be a resource requirement from the procurement team supporting the procurement of the fuel.

## **11. ENVIRONMENT AND CLIMATE CHANGE IMPLICATIONS**

11.1 The use of HVO across the HDC fleet will significantly reduce the CO2 emissions by around 1,100 tonnes of CO2 annually. This would reduce the councils' overall emissions by approx. 30% and significantly contribute to the council's ambition of Net Zero by 2040.

11.2 HVO is a much cleaner fuel during the burning phase in comparison with standard road diesel and produces less harmful tailpipe emissions, contributing to improved air quality.

## **12. REASONS FOR THE RECOMMENDED DECISIONS**

12.1 The implementation of HVO across HDCs fleet will contribute directly to the ambitions of the environmental strategy and support all three key priorities set out in the Corporate Plan 2023-2028.

## **13. LIST OF APPENDICES INCLUDED**

Appendix 1 – Climate Strategy

Appendix 2 – Neste – A Guide to Making a Change

## **CONTACT OFFICER**

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Email: [andrew.rogan@huntingdonshire.gov.uk](mailto:andrew.rogan@huntingdonshire.gov.uk)



# Climate Strategy ◀



# Foreword

As global temperatures rise and extreme weather events become more frequent, the most vulnerable suffer and are least able to adapt. Huntingdonshire's residents and wildlife already feel the effects and more dramatic changes are likely in the decades to come. This Council must consider its duty of care and use its position of influence to act. **We therefore declare a Climate and Ecological Emergency.**

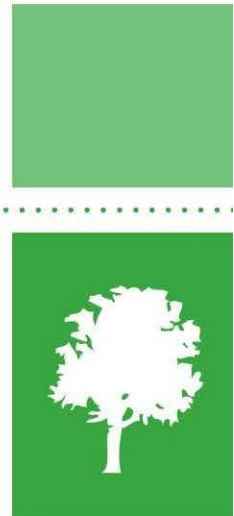
This Climate Strategy outlines the Council's vision for addressing that emergency with an Action Plan designed to lead us to a net zero carbon council by 2040 and to strongly influence district-wide action on emissions and biodiversity. The six objectives reflect the priorities of our residents and the strategic goals of this council.

Actions required by council service areas will be delivered through spending wisely and systemic change. Capital investments will require individual business cases.

The participation of our local communities will be essential. Local people want to take action, but look to this council for leadership. Therefore, we will bring together our parish councils, local businesses and environmental interest groups each year in a Climate Conversation summit. This will provide a platform for knowledge sharing as well as signposting to resources and funding. We will check in with our stakeholders, share our council's progress and review our plans.

Our response to the climate and ecological emergency will be embedded into every action taken and each decision made by this council. Together with the help of local people, we will support the recovery of Huntingdonshire's ecology and play our part in tackling climate change.

**Lara Davenport-Ray**  
Executive Councillor for  
Climate & Environment





We will be a Council that proactively tackles the climate crisis and ecological emergency, working closely with partners, and leading by example



BUILDINGS

The buildings and infrastructure around us shape how we live, our health and our well being. We need to ensure what is built is as environmentally sustainable as possible



ENERGY AND RENEWABLES

We need to reduce emissions caused by our activities and ensure that our energy is from renewable sources



NATURE

We know our residents highly value the open spaces and natural environment in Huntingdonshire. We need to protect, restore and improve our environment, and build resilience to extreme weather events



TRAVEL AND TRANSPORT

We want to see a Huntingdonshire where our residents are able to access what they want locally, with effective lower carbon transport options and safe cycling routes



WASTE, RECYCLING AND RESOURCE MANAGEMENT

We want to see a Huntingdonshire where much less is thrown away



COMMUNITY

Our communities should shape the places they live in to be better adapted to the future climate

The Climate Strategy is the Council’s response to the climate crisis and ecological emergency. It sets out what we will do to play our part in addressing climate change. We will be a **positive example** to others by reducing our own emissions and adapting our service to the changed climate, an **enabler** to support action within our communities and across our partners, and an **encourager** to ensure all efforts help to deliver our ambition of a Carbon Net Zero council by 2040.

ACTIONS



POSITIVE EXAMPLE

Improve the energy efficiency of Council buildings, and by 2040 stop using gas for heating  
  
Adapt our buildings and make our services more resilient to prepare for the impacts of climate change

Look for opportunities to install renewable energy generation on our land and buildings  
  
Implement an Energy Strategy to guide our future decisions on renewable energy supply and resilience

Deliver community developed plans for greater biodiversity gain and more trees on our land

Develop a plan to invest in fleet to reduce emissions from council owned vehicles to zero by 2040  
  
Understand how our staff travel for work, and how we can reduce these emissions

Reduce the carbon impact and waste from our own services and those we commission

Openly share progress against our climate targets  
  
Include climate and biodiversity in our impact assessments to ensure they are embedded in our decision making



ENABLER

Support development of sustainable communities through our Local Plan review to provide lower carbon places for people to live and work

Support schemes that help communities and businesses reduce their emissions and use renewable energy

Engage our communities, partners and businesses in managing their open spaces for nature, sharing opportunities to increase biodiversity

Seek partnerships and funding to enhance our electric vehicle charging infrastructure  
  
Work with partners to expand the infrastructure for sustainable and low carbon travel

Improve information, knowledge and advice to increase the recycling rate of municipal waste and reduce the amount of our waste that goes to landfill

Host Huntingdonshire’s annual Climate Conversation for sharing of best practice, concerns and priorities



ENCOURAGER

Use Sustainable Business Awards to recognise and promote great practice  
  
Work with our partners and communities to adapt to the needs of climate change

Support the sharing of guidance and advice to residents and businesses on measures they can take to improve energy efficiency, insulation, switch to low carbon heating, and install renewables

Work with communities and businesses to help them look after the natural environment, including delivering community litter picking/river cleaning projects

Promote the health benefits of active travel and alternative travel choices

Support and celebrate re-use and recycling schemes to reduce the use of disposable products

Work with communities and partners to support climate action across the district



# Vision and Objectives



"77% OF RESPONDENTS\* SAID IT IS 'VERY IMPORTANT' OR 'ESSENTIAL' THAT WE TAKE ACTION ON CLIMATE CHANGE"

\* Of those responding to the Council's 2022 Climate Survey.

# Why? – Evidenced Priorities

Impacts of the climate crisis and ecological emergency are visible across the world and within Huntingdonshire. All of us need to take action. This Council has an important role in leading this action. This strategy sets out what we will do to improve our own operations, but also how we will work with others to ensure district-wide change. Our approach will also reflect the importance of supporting our residents and businesses at a time of increasing cost of living.

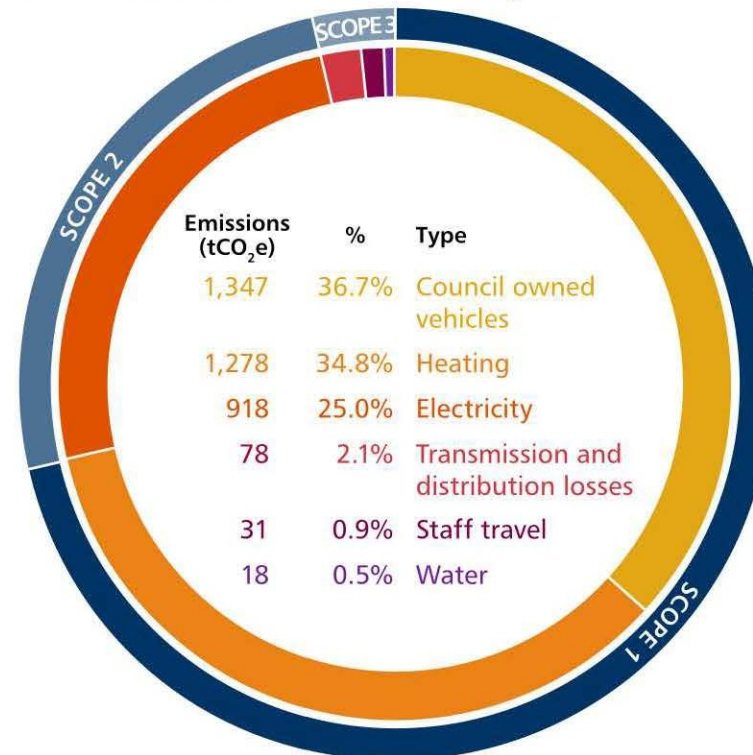
## Council Key Priorities

1  
Decarbonise Fleet

2  
Reduce energy use,  
shift to renewables

3  
Procure wisely

## What Causes the Council's Greenhouse Gas Emissions of 3,670 tCO<sub>2</sub>e?



**SCOPE 1 EMISSIONS**  
Direct emissions from the Council's owned or controlled sources. This includes on-site energy, e.g. natural gas and fuel

**SCOPE 2 EMISSIONS**  
Indirect emissions from purchased or acquired energy, e.g. electricity, steam, heat, or cooling

**SCOPE 3 EMISSIONS**  
All indirect emissions that occur in the value chain e.g. the emissions resulting from staff travelling to work

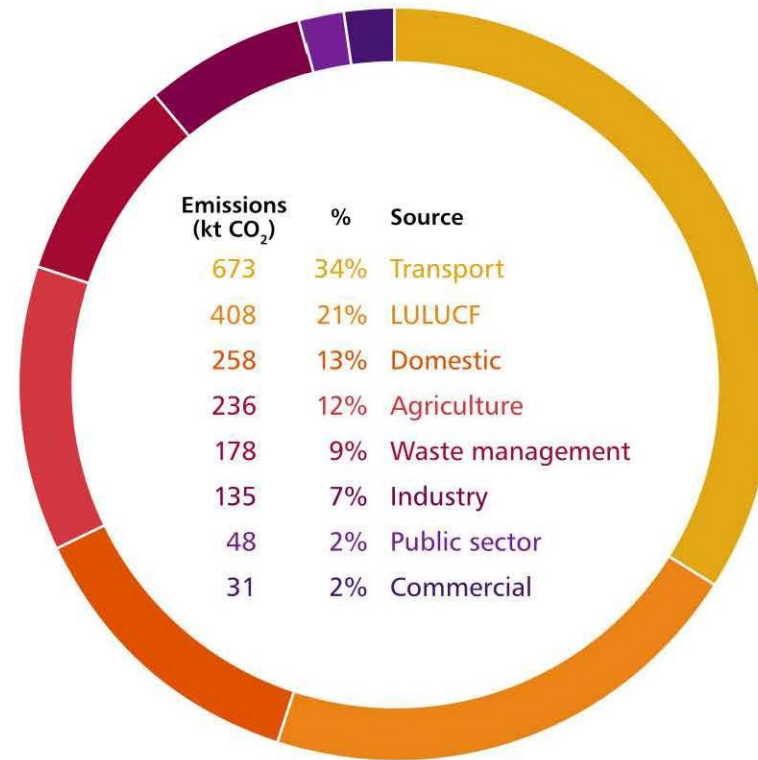
"32% OF RESPONDENTS\* SAID THE COUNCIL'S HIGHEST PRIORITY SHOULD BE TAKING ACTION TO REDUCE ITS OWN EMISSIONS"

\* Of those responding to the Council's 2022 Climate Survey.





### What Causes Huntingdonshire’s Greenhouse Gas Emissions of 1,966 kt CO<sub>2</sub>?



“40% OF RESPONDENTS\* SAID THE COUNCIL’S HIGHEST PRIORITY SHOULD BE ENCOURAGING OTHERS TO REDUCE THEIR EMISSIONS”

### District-wide Key Priorities

- 1 Sustainable travel with low emissions
- 2 Reduce energy use, shift to renewables
- 3 Increase biodiversity and natural capital

\* Of those responding to the Council’s 2022 Climate Survey.

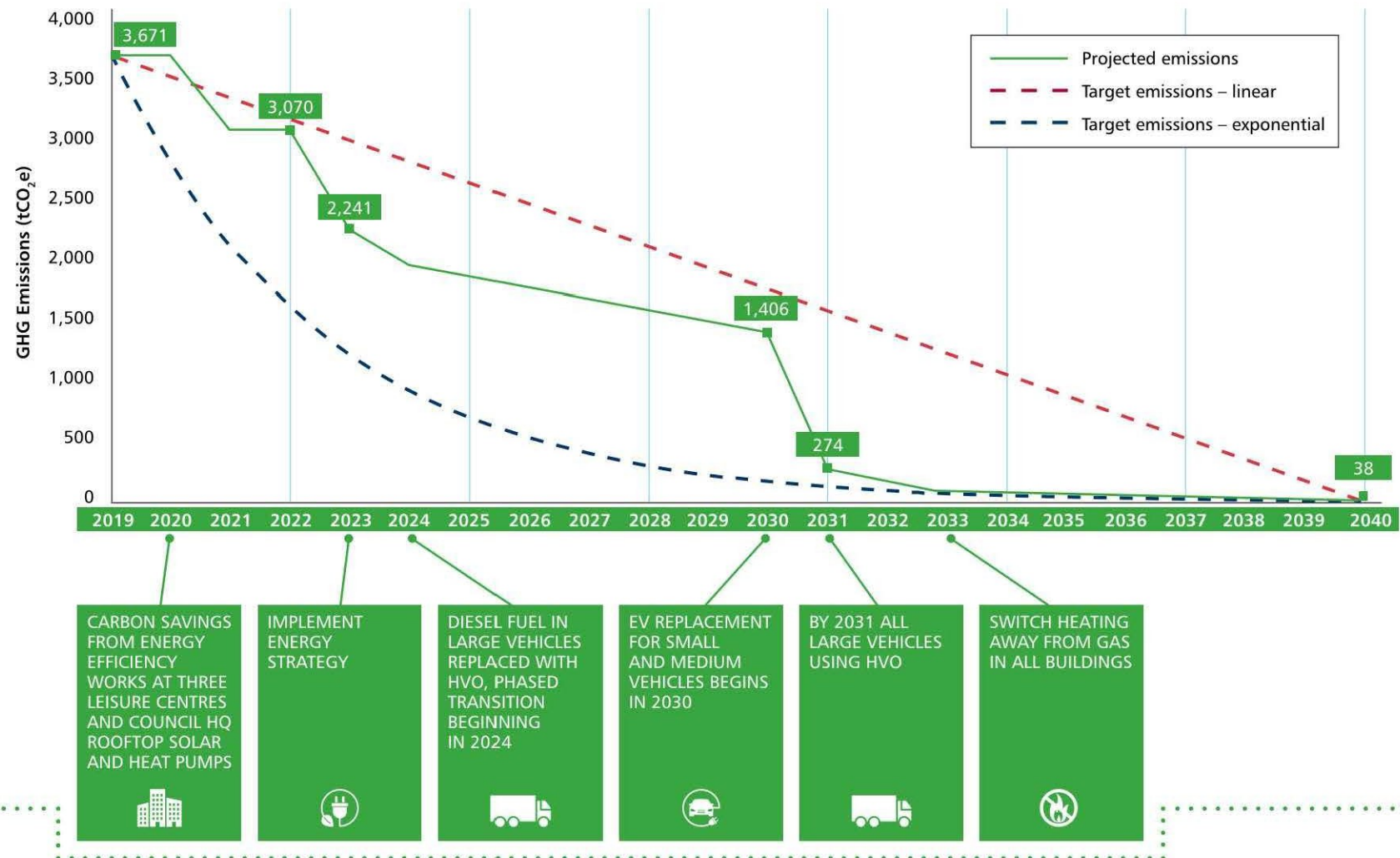
# Our Pathway to Carbon Net Zero 2040

The red and blue show two target lines we could follow.

Green shows the impact of the changes we expect to make through our current action plan to reduce emissions, based on what is currently known about improving technology.

Our action plan will be revisited annually, if opportunities arise that improve the business case for action, we will reduce our carbon emissions earlier.

## Carbon Pathway Scenarios to 2040





# Our Priority Actions

**We will be a Positive Example:**

**Key  
Climate  
Actions**



Review our assets to understand opportunities to improve the building fabric, energy efficiency and carbon impact of our buildings

Undertake a fleet review to determine when our vehicles should be switched from petrol/diesel to low carbon alternatives

Define a pathway for the council to move to 100% renewable energy usage

**We will Enable and Encourage:**



Enhance environmental aspects of the Local Plan where possible to do so

Deliver programme of biodiversity with the CPCA to include Community and Council Open Spaces

Work with partners to promote and support more active and net zero carbon travel

# How we will Achieve our Objectives?

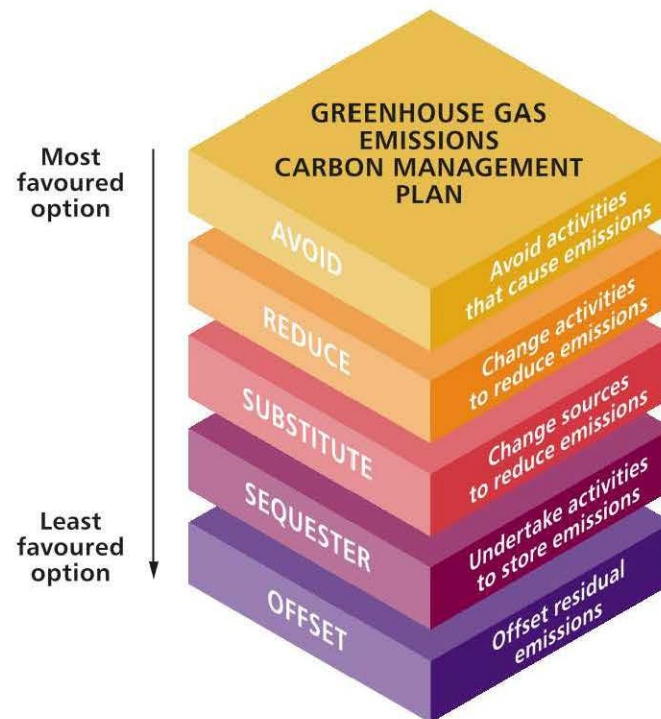
The Council will be a positive example in its approach to making decisions with due regard to the impact on climate and environment.

By focussing on our key actions we will make progress towards our Carbon Net Zero council 2040 target. We will track progress against our pathway, calculated using the Greenhouse Gas emissions calculating tool, developed by Local Partnerships and the Local Government Association. This will be updated and shared with our community and partners at Huntingdonshire's annual Climate Conversation summit.

Actions required by council service areas will be delivered through spending wisely and systemic change. These will be included in the budget for each service area and be subject to the annual budget-setting of the Council.

Capital investments will require individual business cases to ensure prioritised and economically sustainable investment.

The Council will follow a hierarchy of action, prioritising reduction in emissions through changing activity and demand for energy



and fossil fuels, then replacing fossil fuels. Recognising the importance of carbon sequestration and the high value placed on our natural and biodiverse environment, the Council will increase the natural capture of carbon through changed land management regimes and tree canopy enlargement. The Council will only consider carbon offset as a very last resort as this does not address the need to reduce and adapt consumption that the Climate Crisis and Ecological Emergency require.





# Priority Actions by Theme



## Buildings

The buildings and infrastructure around us shape how we live, our health and our well being. They are also a significant source of GHG emissions. For the Council 60% of our emissions come from heating and using electricity in our buildings.

### ★ Positive Example

Improve the energy efficiency of Council buildings and by 2040 stop using gas for heating.

Adapt our buildings and make our services more resilient to prepare for the impacts of climate change.

### 🔌 Enabler

Support development of sustainable communities through our Local Plan review to provide lower carbon places for people to live and work.

### 👍 Encourager

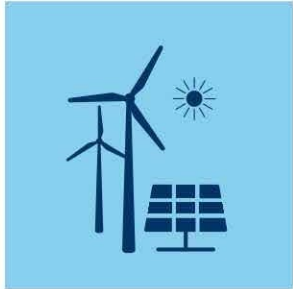
Use the Sustainable Business Awards to recognise and promote great practice.

Work with our partners and communities to adapt to the needs of climate change.

“78% OF RESPONDENTS\* SAID THE COUNCIL SHOULD USE PLANNING RULES SO NEW DEVELOPMENTS MEET SUSTAINABILITY STANDARDS”

\* Of those responding to the Council's 2022 Climate Survey.

# Priority Actions by Theme



## Energy and Renewables

Energy is one of the most significant contributors to our emissions. Factors outside of our control, such as recent energy prices rises and the war in Ukraine, highlight the need for us to increase the resilience of our local energy supply, and reduce our consumption.

### ★ Positive Example

Look for opportunities to install renewable energy generation on our land and buildings.

Implement an Energy Strategy to guide our future decisions on renewable energy supply and resilience.

### 🔌 Enabler

Support schemes that help communities and businesses reduce their emissions and use renewable energy.

### 👍 Encourager

Support the sharing of guidance and advice to residents and businesses on measures that they can take to improve energy efficiency, insulation, switch to low carbon heating, and install renewables.

“88% OF RESPONDENTS\* SAID THEY HAVE REDUCED THEIR ELECTRICITY USE WITH ENERGY EFFICIENCY MEASURES”

“73% OF RESPONDENTS\* SAID THE COUNCIL SHOULD FOCUS ON RENEWABLE ENERGY”

\* Of those responding to the Council's 2022 Climate Survey.



# Priority Actions by Theme



## Nature

Nature benefits health, as well as being a haven of biodiversity, and important natural processes. Huntingdonshire has a wealth of green spaces and natural assets, rich in biodiversity providing a home for many native species and a link to the natural environment for our residents.

### ★ Positive Example

Deliver community developed plans for greater biodiversity gain and more trees on our land.

### 🔌 Enabler

Engage our communities, partners and businesses in managing their open spaces for nature, sharing opportunities to increase biodiversity.

### 👍 Encourager

Work with communities and businesses to help them look after the natural environment, including delivering community litter picking/river cleaning projects.

“83% OF RESPONDENTS\* SAID THE COUNCIL SHOULD RESTORE NATURE AND PLANT TREES”

“20% OF RESPONDENTS\* SAID THEIR HOME OR BUSINESS HAD BEEN DAMAGED BY EXTREME WEATHER”

\* Of those responding to the Council's 2022 Climate Survey.

# Priority Actions by Theme



## Travel and Transport

In response to climate change we need to consider how we travel and how the food we eat and the products we buy reach us.

We will work with our partners and our transport authorities to support more environmentally sustainable choices through the infrastructure they provide.

### ★ Positive Example

Develop a plan to invest in fleet to reduce emissions from council owned vehicles to zero by 2040.

Understand how our staff travel for work, and how we can reduce these emissions.

### 🔌 Enabler

Seek partnerships and funding to enhance our electric vehicle charging infrastructure.

Work with partners to expand the infrastructure for sustainable and low carbon travel.

### 👍 Encourager

Promote the health benefits of active travel and alternative travel choices.

"46% OF RESPONDENTS\* SAID THAT THE COUNCIL SHOULD SWITCH TO ELECTRIC VEHICLES"

\* Of those responding to the Council's 2022 Climate Survey.

# Priority Actions by Theme



## Waste, Recycling and Resource Management

We generate waste as a by-product of almost all of our activities. Resource management describes how we can work together to consume less, reduce waste and recycle the valuable resources we have. Huntingdonshire residents already recycle more than 50% of their waste, but the recycling rate has plateaued.



### Positive Example

Reduce the carbon impact and waste from our own services and those we commission.



### Enabler

Improve information, knowledge and advice to increase the recycling rate of municipal waste and reduce the amount of our waste that goes to landfill.



### Encourager

Support and celebrate re-use and recycling schemes to reduce the use of disposable products.

"80% OF RESPONDENTS\* SAID THE COUNCIL SHOULD IMPROVE RECYCLING RATES"

"93.6% OF RESPONDENTS\* SAID THEY WERE MAXIMISING THEIR OWN RECYCLING"

\* Of those responding to the Council's 2022 Climate Survey.



# Priority Actions by Theme



## Community

The many communities of Huntingdonshire have a significant role in responding to climate change. The Council must work with our communities to build resilience to future extreme weather events, support community initiatives to benefit the climate and ecology whilst enabling more positive impact to achieve Carbon Net Zero.



### Positive Example

Openly share progress against our climate targets.

Include climate and biodiversity in our impact assessments to ensure they are embedded in our decision making.



### Enabler

Host Huntingdonshire's annual Climate Conversation for sharing of best practice, concerns and priorities.



### Encourager

Work with communities and partners to support climate action across the district.

"12% OF RESPONDENTS\* THINK THE COUNCIL SHOULD PROVIDE ADVICE AND GUIDANCE ON ACCESS TO INFORMATION AND FUNDING FOR RESIDENTS AND BUSINESSES TO HELP THEM ADDRESS CLIMATE CHANGE"

\* Of those responding to the Council's 2022 Climate Survey.

# Monitoring Progress Together

We will **enable** our communities, businesses and partners through an Annual Climate Conversation event to showcase their efforts, share what has worked, challenges and priorities.

We will continue to **encourage** action through the event and sharing the positive impacts for Huntingdonshire's climate and environment.

We will openly share our own progress in this conversation, but also to listen to changing challenges and priorities which may need to be reflected in revised actions.

The inaugural event will be an opportunity to share progress and seek input on our priority actions:

- Biodiversity for All Programme
- Local Plan Revision
- Sustainable Travel

Feedback from the Climate Conversation will be captured in an annual report. This will sit alongside formal annual reporting of the Council's achievements against its action plan and any revisions that are recommended.



# Further Information



## Huntingdonshire District Council

Pathfinder House, St Mary's Street, Huntingdon PE29 3TN

T 01480 388388

E [climateconversation@huntingdonshire.gov.uk](mailto:climateconversation@huntingdonshire.gov.uk)

W [huntingdonshire.gov.uk](http://huntingdonshire.gov.uk)

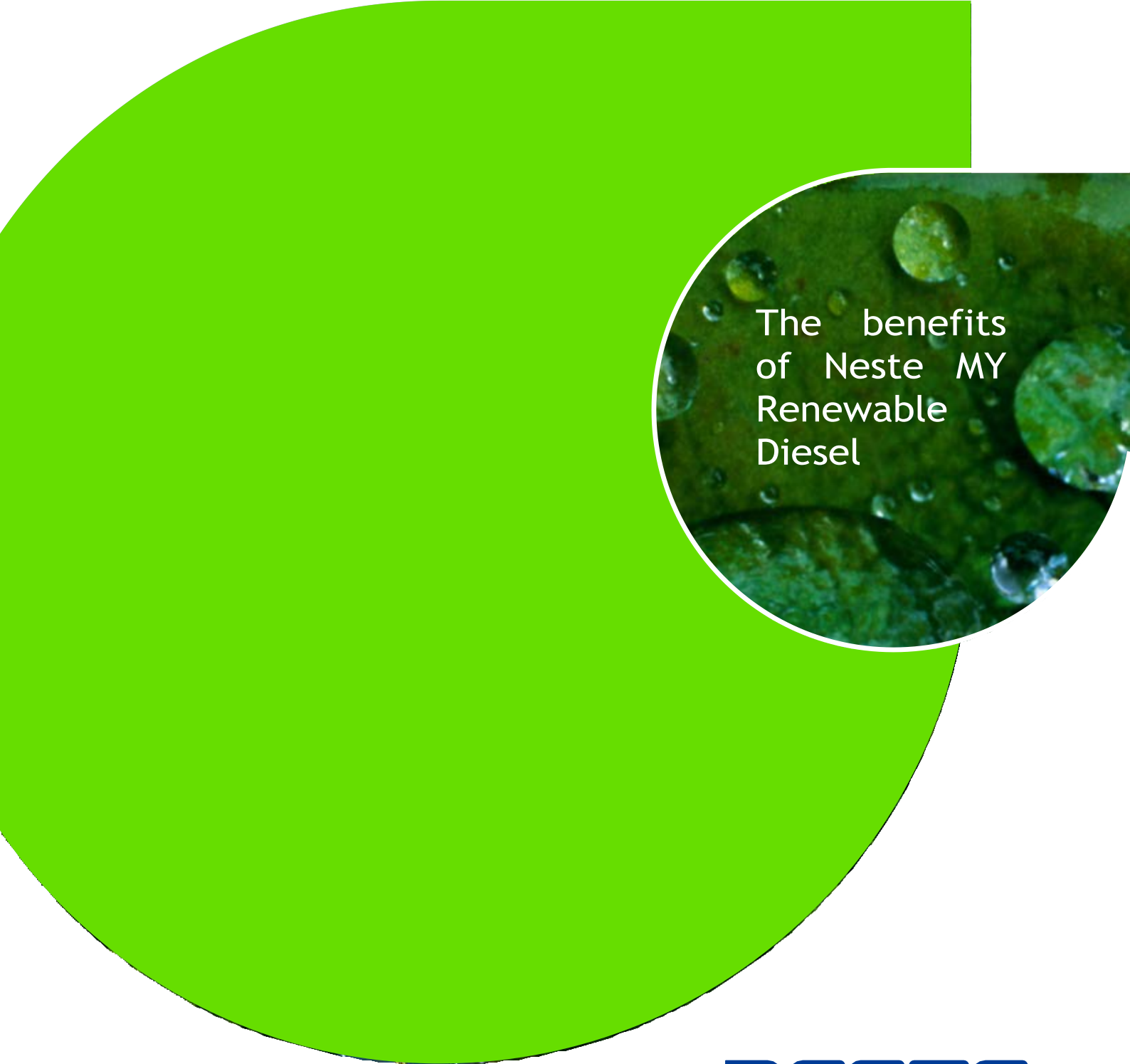
f Huntingdonshire

t huntscd



A GUIDE FOR MAKING A CHANGE

# Choose a renewable fuel for your future



The benefits  
of Neste MY  
Renewable  
Diesel

**NESTE**

## 14. THIS GUIDE IS FOR YOU, CHANGE-MAKER

*It is time to make a choice for the future. The fight against global warming is ongoing, and a growing number of people are joining it. Customers demand commitment to reducing emissions and are asking for proof - not just words. Political decision-makers define new legislation which makes it clear: fossil fuels are no longer an option.*

Some tough decisions will need to be made, but we have tried to make this one easier for you. With Neste MY Renewable Diesel we provide a solution that is easy to apply and does not compromise performance. In this guide we have gathered the tools for you to start the change in your organisation.



## 15. WHY NESTE MY RENEWABLE DIESEL?

*Globally, 100% renewable diesel sales are increasing for both private and public fleets. More and more renewable diesel is used by customers that are especially aware and keen on bioenergy or reduced tailpipe emissions.*

The decade-long experience has proven that Neste MY Renewable Diesel™ meets the fuel standards. It is a safe, high-quality fuel option that does not require any changes to your existing fleet, maintenance infrastructure, or fuel logistics process.

Waste and residue account for 83% of Neste's total raw material usage to produce renewable products. Our current efforts are focused on the utilization of even lower quality waste and residue materials as well as on the development of promising new, materials, such as algae and microbial oils.

Neste MY Renewable Diesel is fully suitable and beneficial also for older diesel vehicles.

Laboratory tests and field trials show that Neste MY Renewable Diesel has behaved similarly to fossil fuels regarding issues that could appear in the logistic chain, e.g., corrosion, storage stability, microbiological growth, water separation, elastomeric materials, delivery pump filters etc.



### **Neste MY - An easy step for more sustainable transport**

- All year round including severe winters
- No modifications to vehicles
- No modifications to fuel logistics or service stations
- Trouble-free logistics and operation



## Transport industry transformation is here:

### Customers demand lower emissions

Global trends in the transport sector indicate that transport and logistics companies are now actively seeking to reduce greenhouse gas (GHG) emissions created by their fleets.

One of the most prominent factors driving the change towards more sustainable attitude in the transportation industry is customer demand. Both consumer and corporate customers appreciate transport companies' commitment to reducing emissions – increasingly often even demand it.

Just as in other markets, customers are now actively seeking proof that transportation and logistics companies take environmental action and make more sustainable choices.

According to IPC Cross-border e-Commerce Shopping Survey (2018), up to 47% of e-commerce customers would like a carbon-neutral delivery for products they order online.

The changes in legislation around the world also push the change towards renewables. For example, the EU Biofuels Directive requires that the share of renewable energy to be used in transport should be 10 % in every member state by 2020. According to the European Environment Agency, this target is expected to be met primarily through biofuels.

Many transportation companies have already switched into alternative renewable fuels, and the pressure for more sustainable choices is growing across the industry. The potential benefits of reducing emissions, both in terms of cost savings and brand equity, are clearly understood – even in a somewhat traditional industry such as logistics and transport.

Transportation industry can move forward fast on sustainability, should their customers so desire, as the last few years have shown us.

A woman with her hair in a bun, wearing sunglasses and a patterned sweater, is seen from the side, looking out over a vast blue ocean under a cloudy sky. She is leaning against the side of a dark-colored car.

“Just as in other markets, customers are now actively seeking proof that transportation and logistics companies take environmental action and make more sustainable choices.”

Salla Ahonen,  
Vice President  
Sustainability

## Fossil fuels are no longer an option for the future

*Amidst the ongoing transformation towards renewable fuels, many companies have a lot of questions and reservations around the cost of switching to renewable diesel.*

As the pressure for fighting climate change is becoming more and more critical, also the transport and logistics industry will have to adjust and make more sustainable choices.

The early adopters have shown that the extra cost of renewable diesel can be carried over to the customer. The consumers and business buyers alike are already willing to pay for more sustainable products and services, and this trend is growing as we move forward.



**“The consumers and business buyers alike are already willing to pay for more sustainable products and services, and this trend is growing as we move forward.”**

Seppo Mikkonen,  
R&D Fellow

Soon, using fossil fuels will no longer be an option. Therefore, the cost of Neste MY Renewable Diesel should not be compared to the current prices of fossil diesel.

The comparison should be done within alternative fuels and vehicle technologies, such as biogas and electrical vehicles.

In this guide we aim to address the most common questions and considerations related to switching renewable fuels in professional transport. We hope it will help you fast-forward your business towards a future with reduced GHG emissions.



## 16. NESTE MY RENEWABLE DIESEL BENEFITS

### Safe & sustainable fuel

- Significantly lower emissions
- Cleaner fuel, cleaner combustion
- Clear sustainability
- No odour



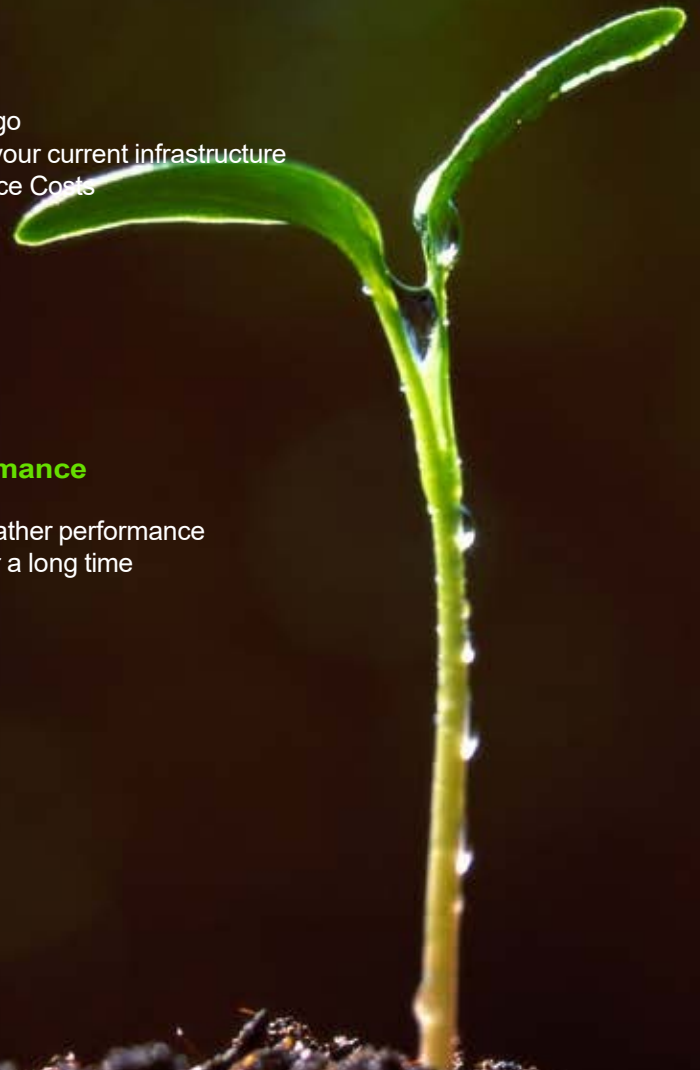
### Easy to switch

- Just drop in and go
- Compatible with your current infrastructure
- Lower Maintenance Costs



### Superior performance

- Serious power
- Superior cold-weather performance
- Can be stored for a long time



## SUSTAINABILITY

*90% less greenhouse gas emissions than fossil fuels – how is it possible?*

Neste MY Renewable Diesel is produced by hydrotreatment from waste and residue fat fractions originating from food, fish, and slaughterhouse industries as well as from non-food grade vegetable oil fractions.

Because it is made from waste and bio-based materials, using Neste MY does not release any new carbon dioxide (CO<sub>2</sub>) into the atmosphere.



As plants and trees grow, they bind carbon dioxide onto themselves through photosynthesis. When Neste MY burns in a vehicle engine, the carbon dioxide simply returns to the atmosphere. This is considered zero net emitting, as the CO<sub>2</sub> would have existed free in the atmosphere regardless of the fuel manufacturing and consumption process.

Fossil fuels are also part of the carbon circulation cycle, but the carbon bound in oil or coal has been out of the circulation for thousands or even millions of years. Therefore, burning fossil fuels is considered to increase the amount of carbon dioxide in the atmosphere. The CO<sub>2</sub> released from fossil fuels builds up in the atmosphere and speeds up the climate change.

## FLEXIBILITY

*No need to tie yourself to one option*

For transport companies, any new fuel or energy solution with only one supplier is often an unendurable commitment. With several companies supplying paraffinic renewable diesel, the possibility to tender and change suppliers is an option if needed.

You can always also change back to fossil diesel – either partly or fully – with no cost or alternations to fuel logistics, fleet, or maintenance setup. Instead with other options that require different vehicles, fuel logistic systems or maintenance practices (such as gas, high ethanol blend or electrical vehicles), the change back to old fuel solution or supplier is often too costly even to remain a consideration.

## FAST SWITCH

*Neste MY - A fast switch solution to renewable fuel*

Switching to a new fuel will often create extra work or training needs for your maintenance crew.

If a fleet is converted to run on gas, the vehicles need to be converted, new fuel supply logistics to be built and gas detectors installed into vehicle depots and repair





shops. When switching to electrical vehicles, the entire fleet needs to be updated and charging stations installed.

As Neste MY can be used in normal diesel vehicles, switching to it will not require investments in conversion or new equipment. The same applies for fuel logistic systems: just order Neste MY into the existing diesel fuel storage tanks and begin to run your fleet with renewable fuel. The maintenance staff can carry out their work as before, and the need for maintenance may possibly even reduce as a result of switching to a cleaner, high-quality fuel product with very little or no impurities.

#### Hydrotreating gives Neste MY Renewable Diesel corresponding composition as traditional diesel

The hydrotreating of vegetable oils as well as suitable waste and residue fat fractions to produce renewable diesel is a quite new but already mature manufacturing process of a commercial scale.

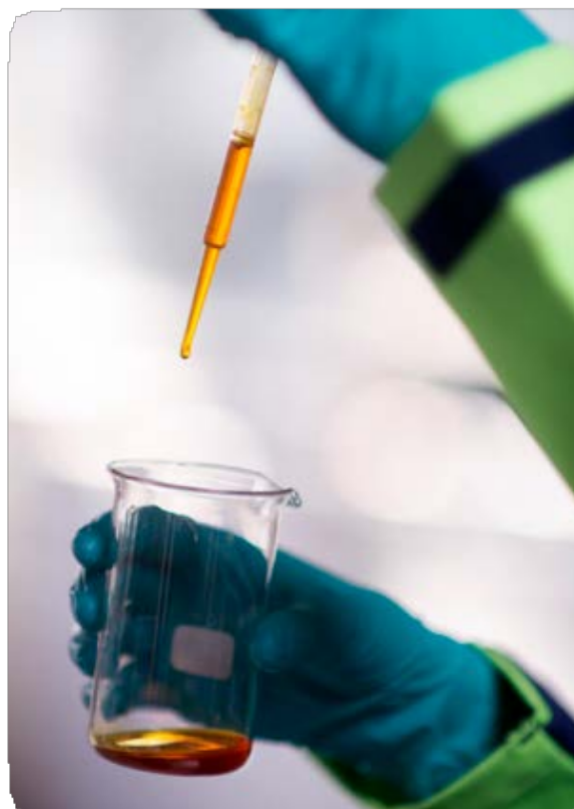
Neste's renewable fuel manufacturing process is based on the company's vast oil refining know-how. In the process, hydrogen is used to remove oxygen from the triglyceride vegetable oil molecules and to split the triglyceride into three separate chains, thus creating hydrocarbons similar to those already existing in diesel fuel.

This allows blending in flexible ratios without any concerns regarding fuel quality.

Properties of Neste MY have much more similarities with high-quality Sulphur free fossil diesel fuel than with fuels containing ester type biodiesel (FAME). As a matter of fact, the properties of renewable diesel are very similar to the synthetic gas-to-

liquids (GTL) diesel fuel, which was earlier considered to be the best diesel fuel for engines and regarding tailpipe emissions.

Now Neste MY offers the same compositional benefits as GTL but with remarkably lower greenhouse gas emissions.



#### HIGH QUALITY, GREAT PERFORMANCE

##### *Neste MY Renewable Diesel Properties*

- Highest heating value among current biofuels
- Very high cetane number (>70) - low density (~780 kg/m<sup>3</sup>)
- Sulphur-free (<5 mg/kg)
- Very low aromatics (<1 wt-%)
- Reasonable distillation range, not exceeding 90% and 95% distillation points

If used for blending diesel fuels at refineries or terminals, cetane number, density, sulphur, and aromatics offer economic and technical benefits to be utilized.



### Lowest fuel consumption of current biofuels

Neste MY's heating value is higher than that of FAME, which means that a smaller amount of Neste MY than FAME is required for meeting a fixed bioenergy mandate. Neste MY's fuel consumption rate is slightly lower with Neste MY blends compared to FAME blends at the same bioenergy level.



100% Neste MY consumption is only about 3% higher than that of summer grade fossil fuel but about 5% lower than with 100% FAME.

### Engine performance equal to EN 590

In modern engines, the maximum power output of the engine is related to the efficiency of the engine, injector energizing time, fuel pressure, and energy content of the fuel. In some modern common rail injection systems, it has been seen that with the same indicated injection duration, more paraffinic fuel is injected. With this type of injection system, Neste MY produces the

same engine power and torque as EN 590 diesel. If compared to winter grade diesel, the maximum power of the engine can be even higher.

### CARE-FREE MAINTENANCE

*Neste MY Renewable Diesel keeps the engine and exhaust aftertreatment system cleaner than other biodiesels*

- Similar or better engine oil condition due to reasonable distillation range and hydrocarbon type chemistry
- Low tendency for injector fouling as neat and in diesel fuel blends

### Clean combustion

Ash-free combustion guarantees long lifetime for exhaust catalysts and particulate filters.

Distillation characteristics influence how fuel is evaporated when it is sprayed into the combustion chamber. Fractions boiling at too high temperatures may not burn completely, or they may wet cylinder walls. As a result, engine oil will be diluted reducing viscosity of the oil, which is a well-known challenge related to FAME use as a blending component. Neste MY does not cause additional engine oil dilution due to its distillation range.

### No harmful reactions with engine oil

Ester-based FAME may cause harmful chemical reactions with engine oil if it enters the crankcase. Neste MY consists of hydrocarbons which is not incompatible with the oil and does not risk engine durability. Therefore, it does not require additional maintenance measures, such as changing the engine oil more frequently than traditional high-quality fossil diesel fuels.

### Low risk for injector fouling

In tests, Neste MY showed cleaner injectors than a high-quality standard diesel fuel both with 100% renewable diesel and as a 30% blend.





Performance additive packages that contain detergent, corrosion inhibitor and antifoam agents, for example, are used commonly in high-quality diesel fuels. Although Neste MY performs well in injector fouling tests, an additive package should be considered for corrosion protection if fuel systems are exposed to water condensation.

### **COLD PROPERTIES**

*Neste MY can deliver high performance in any weather*

- Excellent cold properties: cloud points down to  $-40\text{ }^{\circ}\text{C}$  ( $-40\text{ }^{\circ}\text{F}$ ) can be reached
- Severe winter and arctic grades available thanks to the isomerization process
- High bio mandate blending ratios possible all year round
- No risk for impurity precipitation temperatures above cloud point
- Density remains the same regardless of cloud point

In professional use, it is essential that diesel fuels suit the purpose around the year. The cold properties of Neste MY can be improved to satisfy severe and arctic climate

grades down to  $-40\text{ }^{\circ}\text{C}$  ( $-40\text{ }^{\circ}\text{F}$ ). Unlike with FAME, the cold properties of Neste MY can be adjusted in the isomerization unit with all feedstocks. This means that a high bio mandate content can be met by using Neste MY all year round without risking cold operability or encountering problems with fuel logistics. However, due to economic and yield challenges excellent cold properties should be produced only when needed.

Viscosity may also affect cold operability in some applications. Viscosity of Neste MY at  $-15\text{ }^{\circ}\text{C}$  ( $5\text{ }^{\circ}\text{F}$ ) is about  $15\text{ mm}^2/\text{s}$  which is around the same as of fossil diesel fuels and only half of FAME's viscosity.

### **Neste MY keeps auxiliary heaters clean**

Auxiliary heaters Neste MY operates in fuel burning auxiliary heaters as well as or even better than fossil diesel. As opposed to FAME, Neste MY does not have any problems with cold properties; therefore, it operates without trouble also in cold conditions.



## STABILITY

*Fuel properties allow trouble-free logistics and safe long-term storing*

- Behaves in logistics like fossil diesel fuel, i.e. no issues with: stability: no need for “use before” date
  - water separation - microbiological growth
  - impurities causing precipitation above cloud point

Neste MY's stability is at the same level of conventional fossil diesel, which means that there is no need to apply a “use before” date. There is no risk of problems if vehicles or stationary engines are out of use for extended periods.

Neste MY may be safely left in the tank in seasonally used equipment, such as agricultural machines, boats, or emergency generator sets.

Since Neste MY consists of only hydrocarbons, the traditional stability methods used for fossil diesel fuel are applicable. Because of this, the methods developed for FAME do not apply for Neste MY Renewable Diesel.

### **Sulphur content - Neste MY can be used to bring down the Sulphur content of fossil diesels**

The Sulphur content of Neste MY coming out from the production process is <1 mg/kg. Due to possible contaminants within normal diesel fuel logistics, Sulphur content within Neste MY fuel specification is set to ≤5.0 mg/kg.

If the Sulphur content of the base diesel fuel or blending component is slightly above the legal specification, blending of Neste MY can bring the blend to meet the requirements set by the most modern exhaust aftertreatment systems.

### **Ash and metals content - Ash-free combustion**

Ash content of Neste MY is very low, <0.001%. Because of its ash-free combustion, Neste MY offers at least as long lifetime in current and future vehicles as high quality fossil diesel fuel for exhaust aftertreatment systems.

### **Filterability - No risk of filter blocking**

A lot of fuel filter blocking issues have occurred in Europe over the last few years due to poor diesel fuel quality. This is not the case with Neste MY. The filter blocking tendency (FBT) of Neste MY is usually around 1.0-1.1 with no risk of filter blocking when using 100% Neste MY.

### **Water content - No water issues in logistics**

The solubility of water into Neste MY is similar to fossil diesel fuels or even lower. This means that water issues do not require any additional measures in fuel logistics compared to fossil diesel fuels.

### **Microbial growth**

In special applications, such as marine fuels and extended parking periods, ester type biodiesel (FAME) used in diesel fuel has been found to sometimes promote microbial growth. Test results show that Neste MY as such or used as a blending component in diesel fuels does not require any additional precautions compared to fully fossil diesel fuels.

### **Appearance and Oduor**

In temperatures above the cloud point, Neste MY is clear and bright, its colour is almost water-like and it does not have an unpleasant diesel fuel type odor. There are no impurities that precipitate in temperatures above the cloud point in neat Neste MY and FAME free diesel fuel blends. Below cloud point, paraffins make Neste MY cloudy. Crystallized paraffins may also settle during an extended storage, which is a known phenomenon also for fossil fuels.





# FIELD TRIALS

## Neste MY Renewable Diesel

- Extensive trials in many countries
- Fleets up to 300 vehicles
- Mileages as high as over 300,000 km/vehicle
- All year round - including severe winters

Extensive field trials have been carried out with Neste MY Renewable Diesel in Finland, Sweden, Germany, and Canada. The fuel has performed excellently in these trials, both at 100% content and a variety of blending ratios.

The trials have conclusively cleared the product for any operability issues or need for extra maintenance for fuel filters, fuel systems, fuel hoses, seals in fuel systems, engines, or exhaust aftertreatment devices. The same applies to fuel logistics: the trial uses did not reveal any differences compared to fossil diesel fuel use regarding water, microbiological growth, storage stability and material issues.

“We found absolutely no disruption to any aspects of our operation, from fuelling procedures and maintenance intervals to vessel performance and costs. The greatest operational benefit has been the reduction of soot, which is a benefit to both our riders and our machinery.”

Joe Bugard,  
Executive Vice President  
Red and White Fleet



## Case Study:

A 3-year trial with 300 buses

# confirmed the high quality of Neste MY Renewable Diesel

In a field trial in Finland, about 300 buses were driving in the Helsinki Metropolitan Area from 2007 to 2010 all year round down to ambient temperatures below -25 °C (-13 °F). The goal of the study was to improve the urban air quality and to promote the use advanced biofuels in public transport.

Most of the buses used a fuel blend containing up to 30% of Neste MY Renewable Diesel in EN 590 fuel, and 11 buses were running with 100% Neste MY Renewable Diesel.

Both old and modern buses from several manufacturers representing Euro II to EEV emission levels were included in the test fleet as well as some retrofit exhaust aftertreatment systems.

A total of 22 million litres of blended fuel and 1 million litres of 100% Neste MY Renewable Diesel were consumed during the trial. The buses ran a total of 50 million kilometres with the fuel blend and 1.5 million kilometres with the neat Neste MY Renewable Diesel. This gives an average distance of 170,000 km per bus, with

some of them driving considerably further. Analyses of used engine oils did not show any extra maintenance requirements, or any other differences compared to running with standard diesel fuel.

100% Neste MY Renewable Diesel was left in a refuelling storage tank for 8 months after the test was completed. The fuel was clear and free from microbiological growth after the storage time.

**“Changing to renewable diesel allowed us to immediately reduce emissions from our entire fleet, rather than making a series of small improvements as we replace one vehicle at a time.”**

Charles Anderson,  
General Manager  
Westcat



## NESTE HAS DECADES OF EXPERIENCE IN DEVELOPING FUELS

Today, we invest the majority of our annual R&D expenditure to research and testing future raw materials. At our engine laboratory, we study and test the quality of our products so that they function reliably, saving vehicle engines from wear and gathering dirt. Our high-quality Neste MY Renewable Diesel is developed in Finland and manufactured in our refineries in Porvoo (Finland), Singapore and Rotterdam (the Netherlands).



### About Neste

- Neste (NESTE, Nasdaq Helsinki) creates sustainable solutions for transport, business, and consumer needs.
- Our wide range of renewable products enable our customers to reduce climate emissions.
- World's largest producer of renewable diesel refined from waste and residues, introducing renewable solutions also to the aviation and plastics industries.
- A technologically advanced refiner of high-quality oil products with over 10 years of solid experience in Hydrotreated Vegetable Oil (HVO) production
- A reliable partner with widely valued expertise, research, and sustainable operations.
- In 2019, Neste placed 3rd on the Global 100 list of the most sustainable companies in the world.





# NESTE

## Make a choice for the future

The future of fuel can be bright, and with Neste MY Renewable Diesel green decisions become easier to make. And the best way to ensure the brightest future is to take the steps toward it together.

Our team is here to help you drive the change.

### CONTACT OUR SALES

tel. +41 22 561 8000

We are happy to help you.

#### Neste in brief

Neste (NESTE, Nasdaq Helsinki) creates sustainable solutions for transport, business, and consumer needs. Our wide range of renewable products enable our customers to reduce climate emissions. We are the world's largest producer of renewable diesel refined from waste and residues, introducing renewable solutions also to the aviation and plastics industries. We are also a technologically advanced refiner of high-quality oil products. We want to be a reliable partner with widely valued expertise, research, and sustainable operations. In 2018, Neste's revenue stood at EUR 14.9 billion. In 2019, Neste placed 3rd on the Global 100 list of the most sustainable companies in the world.

Read more: [neste.com](https://neste.com)

