Roadmap to Net Zero GHGs by 2050

October 2023
Emerging expectations are influencing climate actions and disclosures

**Emerging disclosure regulation**
- SEC Climate Rule
- EU's Corporate Sustainability Reporting Directive (CSRD)
- CA Climate Corporate Data Accountability Act (SB 253)

**Investor expectations**
- Transparency in transition path
- Net-zero strategy and levers
- Impact from climate risk
- Broad alignment with TCFD

**Customer demand**
- Value chain accounting
- Action beyond commitment
- Reputation management
- Demand aggregation

**Global Ambition**
- ICAO Long Term Aspirational Goal
- Regional constraints
- Policies: Mandates/Incentives

**Evolving science and protocols**
- Industry carbon budget
- GHG Protocol revisions
- Need for third party validation (example: SBTi)

**Corporate strategy**
- Inform progress against climate targets and risks
- Creative financing approaches
- Governance expectations
United’s ambition is to play a key role in making air travel more sustainable.

~3% of global greenhouse gas (GHG) emissions come from aviation

~98% of United’s GHG emissions from jet fuel

100%
We pledge to reduce our GHG emissions by 100% by 2050 without relying on traditional carbon offsets
United’s roadmap to net zero GHG emissions by 2050 requires fuel reduction and replacement of conventional fuel

United Decarbonization Roadmap
(Metric Tons CO2e\(^{1}\))

BAU emissions forecast 2050: 90.7M MTs CO\(_2\)e

2035 intensity goal\(^{4}\)

<table>
<thead>
<tr>
<th>Year</th>
<th>2023</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10M</td>
<td>13.0%</td>
<td>20.4%</td>
<td>8.6%</td>
<td>4.1%</td>
<td>28.2%</td>
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</table>

1. Emissions from aircraft jet fuel combustion (tank-to-wake), other Scope 1 emissions, and Scope 2 emissions. 2. Future Gen: New AC yet to be developed e.g. Future LNB. 3. Includes SAF dependent on carbon removals. 4. Goal validated by Science Based Targets initiative (SBTi): 50% reduction in carbon intensity by 2035 compared to 2019 baseline.
Our fuel reduction includes four key measures that reduce emissions ~45% by 2050

- **Future aircraft technology**: Advancements in aircraft design and engine.
- **Fleet renewal**: Continuation of United Next through replacement of older aircraft with newer, more fuel-efficient models.
- **Operational efficiency**: Operational measures to ensure we are flying the most efficient and direct routes.
- **Alternative propulsion**: Primarily shorter-haul distance, regional aircraft using battery electric or hydrogen propulsion.

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1. Emissions from aircraft jet fuel combustion (tank-to-wake), other Scope 1 emissions, and Scope 2 emissions.
2. Goal validated by Science Based Targets initiative (SBTi): 50% reduction in carbon intensity by 2035 compared to 2019 baseline.
United Next, the largest order by a U.S. carrier in commercial airline history, directly contributes to our climate ambitions

Nearly 800 new narrowbody and widebody aircraft between 2023 and the end of 2032:

- Larger overhead bins
- Entertainment & WiFi for everyone
- Upgraded clubs
- And 20-25% improvement in fuel efficiency and lower carbon emissions per seat compared with the airplanes it replaces

United expects that 75% of its fleet will be new-generation by 2030

1 According to Boeing, the 787 Dreamliner contributes up to a 25% improvement in fuel efficiency and lower carbon emissions per seat compared with the airplanes it replaces and according to Airbus, the A321neo brings a 50% noise reduction and more than 20% fuel savings and CO2 reduction compared to previous generation single-aisle aircraft.
Sustainable aviation fuel (SAF) is a drop-in replacement for conventional jet fuel.

**Conventional jet fuel**
- Releases new carbon into the atmosphere

**Extract**
- Crude oil is extracted from the ground

**Refine**
- Crude is refined into jet fuel, a carbon intensive process

**Consume**
- Finished jet fuel is used to fly aircraft

It can emit up to 85% less greenhouse gas emissions on a lifecycle basis than fossil jet fuel.

**Sustainable aviation fuel**
- Emits up to 85% less carbon on a lifecycle basis

**Process feedstock**
- Renewable materials are collected as SAF feedstock

**Refine**
- Feedstock is converted to fuel through processes using as much renewable energy as possible

**Consume**
- Finished product is tested to prove identical to jet fuel and used to fly aircraft
The most significant contribution – about 55% - to United’s 2050 net zero goal is SAF

United Decarbonization Roadmap
(Metric Tons CO₂e¹)

1Emissions from aircraft jet fuel combustion (tank-to-wake), other Scope 1 emissions, and Scope 2 emissions.
2Goal validated by Science Based Targets initiative (SBTi): 50% reduction in carbon intensity by 2035 compared to 2019 baseline.
We are creatively financing the transition.

United's Sustainable Flight Fund Grows to Nearly $200 Million and Adds Strategic Partners
Through the United Sustainable Flight Fund and United Airlines Ventures, we are investing in technologies aligned to our roadmap.

<table>
<thead>
<tr>
<th>Operational Efficiency</th>
<th>Alternative Propulsion</th>
<th>Today's Commercial SAF</th>
<th>Second Gen SAF</th>
<th>Third Gen SAF</th>
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</thead>
<tbody>
<tr>
<td>Natron Energy</td>
<td>ARCHER</td>
<td>NEXT Renewable Fuels, Inc</td>
<td>ALCHEMY FUELS</td>
<td>DIMENSIONAL ENERGY</td>
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<td>Ground equipment</td>
<td>eVTOL</td>
<td>Fats, oils, greases</td>
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<td>Hydrogen, CO₂</td>
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<td>HEFA Refining</td>
<td>Pyrolysis</td>
<td>Power-to-Liquids</td>
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<td></td>
<td>offered by UA</td>
<td>Captured CO₂</td>
<td>Ethanol</td>
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<td>Algae HEFA feedstock</td>
<td>Alcohol-to-Jet</td>
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<td>Captured CO2, Hydrogen</td>
<td>Municipal Solid Waste</td>
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<td></td>
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<td>Microbial HEFA feedstock</td>
<td>Gasification</td>
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</table>

We aim to invest in technologies that tie back to our roadmap.
Eco-Skies Alliance is a first-of-its-kind program for corporations to advance SAF with United

Eco-Skies Alliance sends an important and timely demand signal for SAF now
• SAF costs are ~2-4x’s the cost of conventional fuel
• Supply from two SAF producers was delivered to LAX, SFO, AMS and LHR
• Eco-Skies Alliance customers fund the ‘green premium’ of SAF in exchange for Scope 3 reductions on United flights

We have achieved industry-leading results
• Partnerships with 39 passenger and cargo customers
• Cross-sector representation with large and small corporations
• In 2023, planning use of 10M gallons of SAF –
  – 3x’s more than 2022 and 10x’s more than in 2019
• Validated and third-party audited results
We are also empowering our travelers through transparency
And we continue to focus on awareness and education about the importance of SAF.

Paired with CTO educational campaign, customers are gaining confidence that SAF is the right solution to support.
Regulations are emerging beyond SAF including Single Use Plastic (SUP) bans

Replacing onboard with sustainable alternatives addresses regulations while demonstrating integrity to customers.
And airports and states are increasingly demanding electric GSE to reduce GHGs and improve air quality.

**SLC:** 100% eGSE

**PANYNJ:** Removal of GSE >40 years

**PANYNJ:** Ban on conventional cargo tractors, belt loaders, narrow body aircraft tractors

**BOS:** Replace gas and diesel GSE with electric

**PANYNJ:** Ban on conventional cargo tractors, belt loaders, narrow body aircraft tractors

**SAN:** Convert 80% of fleet to electric or renewable diesel

**PANYNJ:** Zero emission vehicles for new GSE

**PANYNJ:** 100% eGSE

**California CARB:**
- Off Road Diesel
- Portable Equipment Airborne Toxic Control Measure (ATCM)
- Advanced Clean Fleet

*State mandates in California include phaseouts of equipment at varying years based on equipment types or plans - only final compliance dates are shown*
With effective education, user friendly experience, and demonstrated leadership, customers are showing a willingness to engage.
Good leads the way

Connecting people and uniting the world, more sustainably and responsibly