CARBON NEUTRALITY AND NET ZERO INTERNAL CO2 EMISSIONS ROADMAP

BASED ON 2019 COMMITMENTS
UPDATE SCHEDULED IN 2022, AS PART OF FUTURE ENVIRONMENTAL POLICY

PREAMBLE

- **The climate roadmap** presented in the following slides has been **established following net zero internal CO_2 emissions commitments taken by ADP in 2019.**

- The following **updates** have been applied since, and are taken into account in the document:
  - **COVID crisis**
  - The consequences of the latter on **capacity assumptions**
  - **Additional commitments** (net zero internal CO2 emissions in 2050 for Paris-Le Bourget airport) taken in 2021

- **This roadmap does not include major updates foreseen in 2022**, as part of the future environmental policy of Groupe ADP. Expected updates will cover:
  - **Revision and anticipation of the target year to reach net zero internal CO_2 emissions**
  - **Commitments on scope 3 emissions**, which are of an utmost importance

- **Future investments** required to achieve the roadmap are **subject to the adoption of the next investment plans, and will require discussions with airlines and civil aviation authorities.**

- **« New constructions »** presented in this roadmap **are provisional**, subject to the discussions on the future investment plans. **Any additional emission associated with further capacity development would be strictly limited thanks to the performance of the building, and offset by either additional energy efficiency or renewable energy projects.**

INTRODUCTION

- **Air transport represents 2 to 3% of global CO_2 emissions**, and airports about 5% of the latter, i.e., **0.15% of global CO_2 emissions. In France, air transport emissions represent** 2.8% of transport emissions and **0.8% of total greenhouse gas emissions** (1) (2)

- **Aéroports de Paris SA internal CO_2 emissions** (related to thermal power plants, electricity purchase and service vehicles) **accounted for 3% of total CO_2 emissions** (69,701 t out of 2,056,377 t) **in 2019.**

- **As part of the Paris Climate Agreement,** which aims to limit global warming to below 2°C**, France has committed to carbon neutrality by 2050.** In line with this objective of reducing CO_2 emissions**, the air transport sector has committed to carbon neutral growth from 2020 and to halve its CO_2 emissions in 2050** compared to 2005.

- **In line with the Paris Agreement and particularly with the commitment of the aviation sector, Aéroports de Paris SA has made a voluntary commitment to be carbon neutral by 2030 for its internal CO_2 emissions (scope 1 and 2).**

- **In line with the 1.5°C scenario, the three Parisian airports (Paris-Charles de Gaulle, Paris-Orly and Paris-Le Bourget) have committed to net zero CO_2 emissions (without offsetting) by 2050 at the latest for their internal emissions.**

- **This document aims to present the carbon neutrality roadmaps by 2030 and net zero CO_2 emissions by 2050 (without carbon offsetting) roadmaps for the three Parisian airports (Paris-Charles de Gaulle, Paris-Orly and Paris-Le Bourget).**

Sources:
(1) Ministère de la transition écologique et solidaire – Service Technique de l'aviation civile
(2) Ministère de la transition écologique et solidaire – Les émissions gazeuses du secteur aérien

AÉROPORTS DE PARIS S.A. IS COMMITTED TO CARBON NEUTRALITY BY 2030 AND NET ZERO EMISSIONS BY 2050 (WITHOUT OFFSETTING): THE ASSOCIATED CLIMATE ROADMAP IS BASED ON 4 LEVERS

1 Improve energy performance

- **Monitoring and control of energy consumption**
- **Investment in energy efficient infrastructures**

2 Decrease the carbon content of consumed energy

- **Development of on-site renewable energy production assets**
- **Use of contractual market mechanisms to develop renewable energies**: Corporate PPA, Green certificate

→ Purchasing 100% renewable electricity since 2021

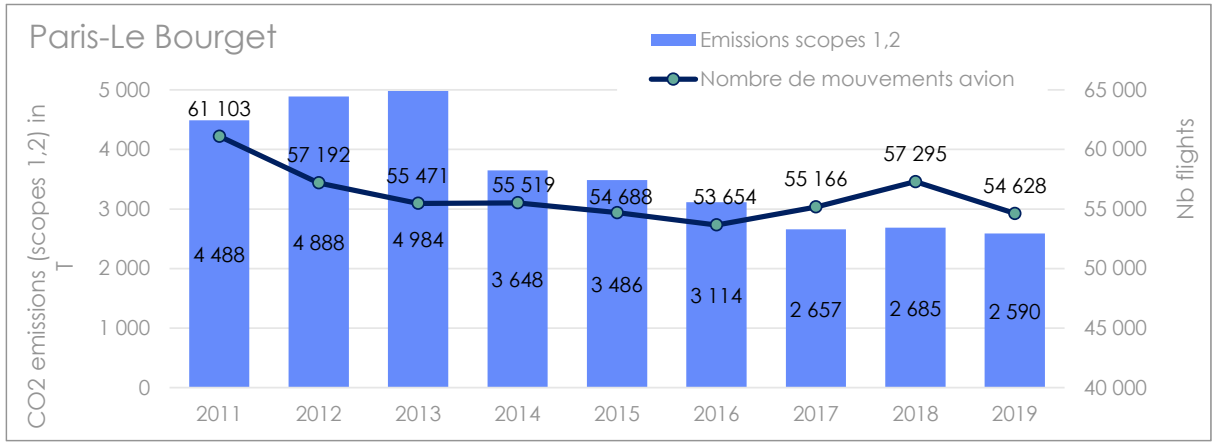
3 Greening the vehicle fleet

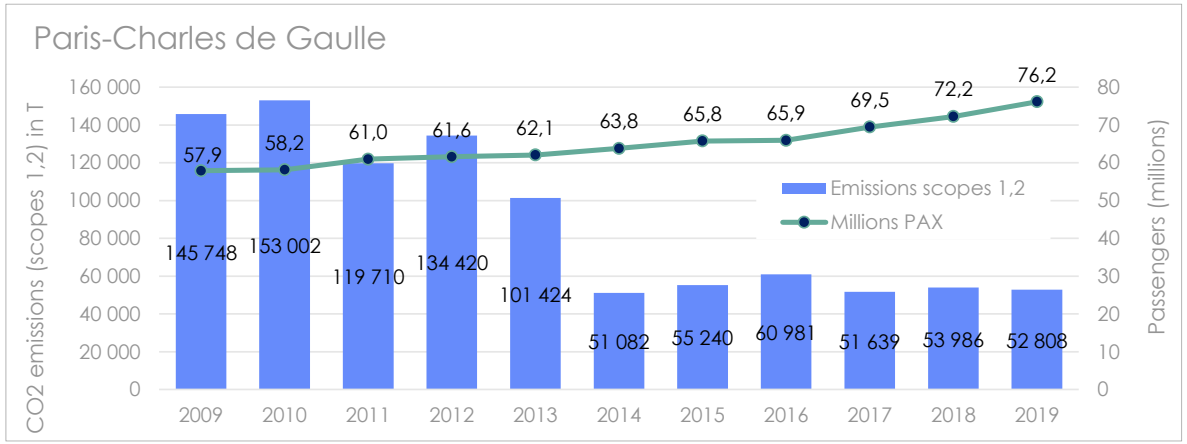
- **Electromobility**
- **Alternative fuels**

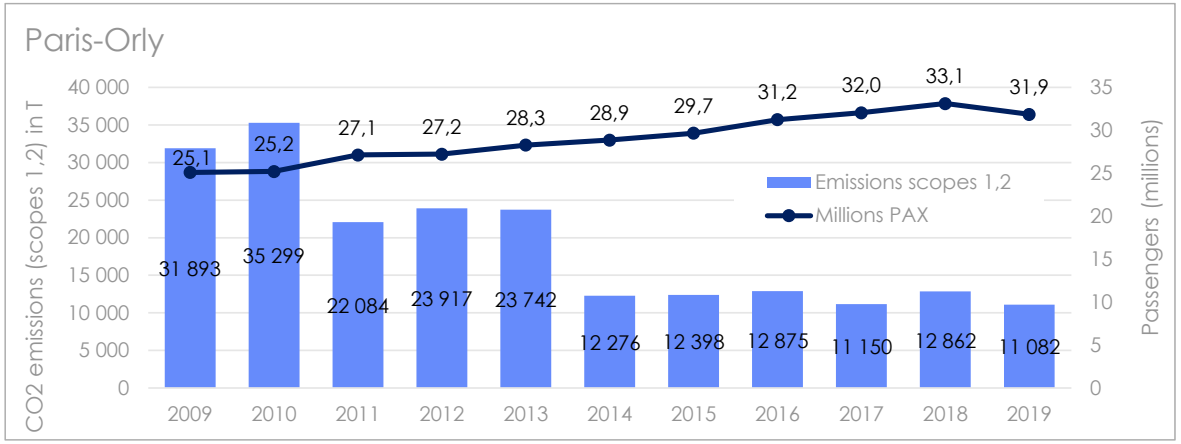
4 Eliminate residual CO_2 emissions

- **Residual carbon emission offsetting to achieve carbon neutrality by 2030**
- **Combination of industrial projects to remove residual CO_2 from the atmosphere** (carbon capture & use or storage), **market mechanisms** (green gas certificates, biogas PPA...) and **investments in bio-sequestration** projects **to reach net zero emissions by 2050**

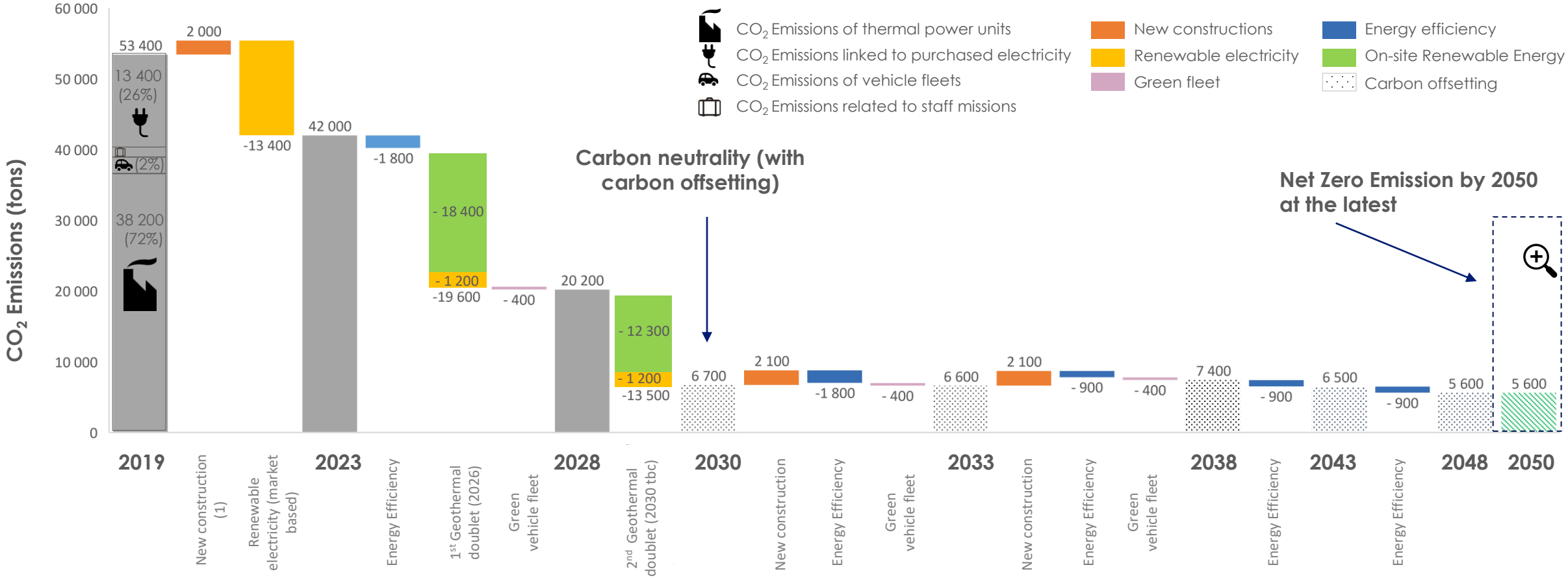
CO2 EMISSIONS: WHERE DO WE COME FROM?







RESIDUAL EMISSIONS OF LESS THAN 7,000 TONS OF CO_2 ARE TO BE DECARBONIZED AFTER 2030 TO ACHIEVE NET ZERO EMISSION IN PARIS-CHARLES DE GAULLE AIRPORT



OPTIONS UNDER INVESTIGATION TO OFFSET RESIDUAL EMISSIONS IN 2030 AND ERASE RESIDUAL EMISSIONS BY 2050 AT PARIS-CHARLES DE GAULLE AIRPORT

Carbon Neutrality in 2030

Residual CO_2 emissions in 2030 = ~ 6 500 tons

Carbon offsetting of residual CO_2 emissions

Use of market mechanisms: green gas certificates

Net Zero Emission in 2050

Residual CO_2 emissions in 2050 = ~ 5 500 tons

Options under investigation to achieve net zero emissions by 2050

Development of on-site renewable assets: Replacement in 2032 of the current biomass power plant (historical annual production of about 60 GWh/year) by another unit allowing an annual heat production exceeding 60 GWh/year

Use of market mechanisms: Purchase of green gas certificates

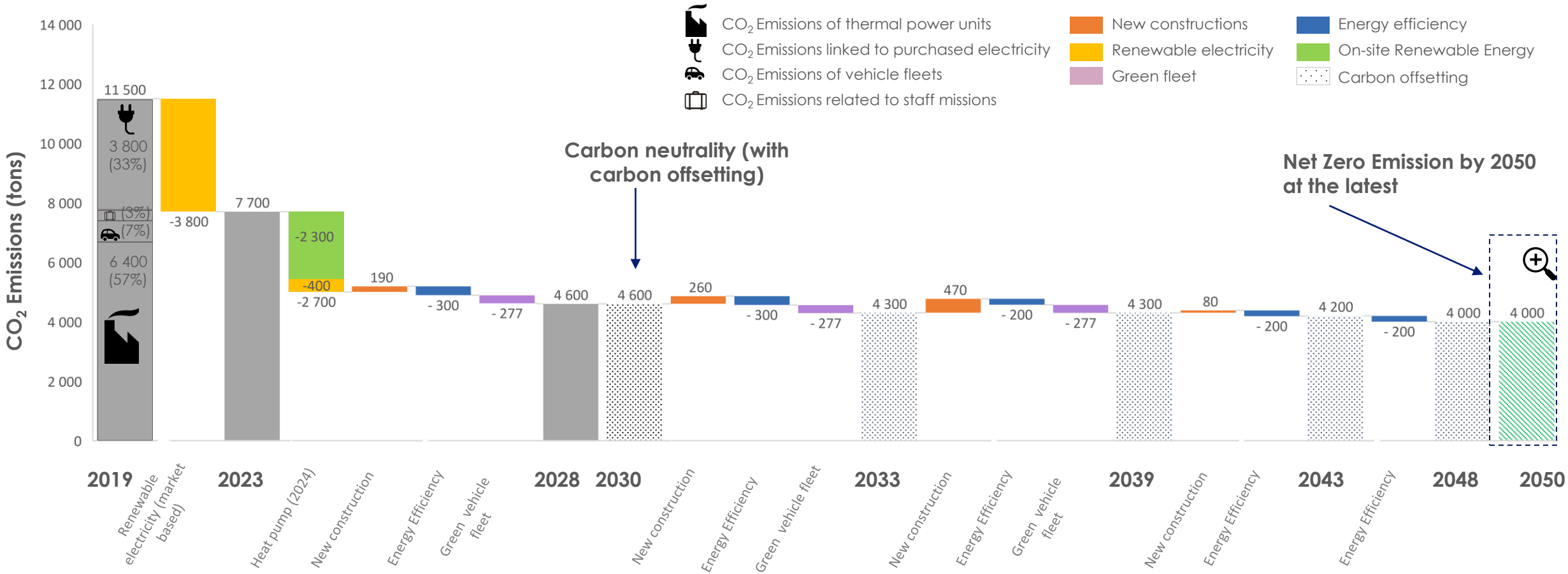
Replacement of remaining natural gas by hydrogen

Use of bio-fuel to replace back up fuel oil

CO_2 capture and storage/use (for instance: CO_2 capture and storage underground in dissolved form via the geothermal doublet to be commissioned in 2026)

Bio-sequestration projects: Bio-sequestration projects allowing the capture of atmospheric CO_2 (e.g., green roofs, etc.) / planting of trees or hedgerows in Ile de France region

RESIDUAL EMISSIONS OF LESS THAN 5,000 TONS OF CO_2 ARE TO BE DECARBONIZED AFTER 2025 TO ACHIEVE NET ZERO EMISSION IN ORLY AIRPORT



OPTIONS UNDER INVESTIGATION TO OFFSET RESIDUAL EMISSIONS IN 2030 AND ERASE RESIDUAL EMISSIONS BY 2050 AT PARIS-ORLY AIRPORT

Carbon neutrality in 2030

Residual CO_2 emissions in 2050 = ~ 4 500 tons

- **Carbon offsetting of residual CO_2 emissions**
- **Use of market mechanisms: green gas certificates**

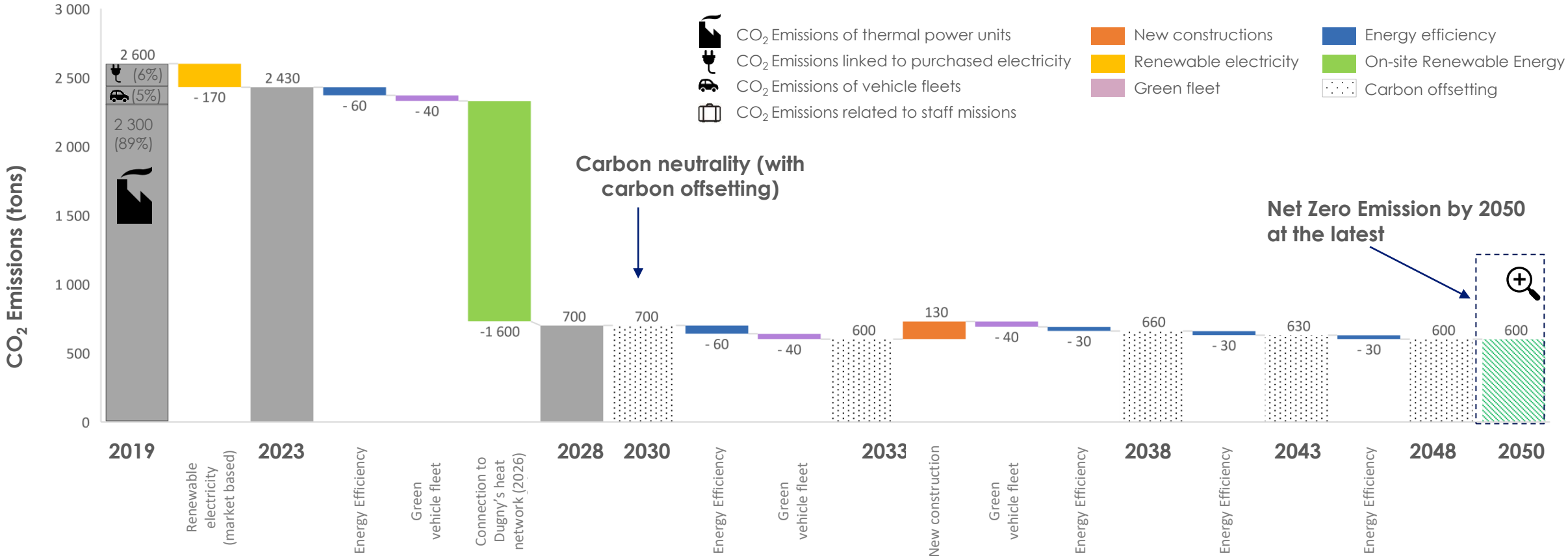
Net Zero emission in 2050

Residual CO_2 emissions in 2050 = ~ 4 000 tons

Ways to be explored to achieve net zero emissions in 2050

- **Use of market mechanisms: Purchase of green gas certificates**
- **Replacement of remaining natural gas by hydrogen**
- **Use of bio-fuel to replace back up fuel oil**
- **CO_2 capture and storage/use** (for instance: CO_2 capture and storage underground in dissolved form via the existing geothermal doublet)
- **Bio-sequestration projects:** Bio-sequestration projects allowing the capture of atmospheric CO_2 (e.g., green roofs, etc.) / planting of trees or hedgerows in Ile de France region

RESIDUAL EMISSIONS OF LESS THAN 1,000 TONS OF CO_2 ARE TO BE DECARBONIZED AFTER 2030 TO ACHIEVE NET ZERO EMISSION IN LE BOURGET AIRPORT



OPTIONS UNDER INVESTIGATION TO OFFSET RESIDUAL EMISSIONS IN 2030 AND ERASE RESIDUAL EMISSIONS BY 2050 AT PARIS-LE BOURGET AIRPORT

Carbon Neutrality in 2030

Residual CO_2 emissions in 2030 = ~ 700 tons

Carbon offsetting of residual CO_2 emissions

Use of market mechanisms: green gas certificates

Net Zero Emission in 2050

Residual CO_2 emissions in 2050 = ~ 600 tons

Ways to be explored to achieve net zero emissions in 2050

Use of market mechanisms: Purchase of green gas certificates

Use of bio-fuel to replace back up fuel oil

Bio-sequestration projects: Bio-sequestration projects allowing the capture of atmospheric CO_2(e.g., green roofs, etc.) / planting of trees or hedgerows in Ile de France region