

Philadelphia International Airport (PHL) Northeast Philadelphia Airport (PNE)

Department of Aviation Sustainability

Jessica Noon

Airport Sustainability Manager

February 27, 2024



City of Philadelphia,
Department of Aviation

PHL PNE

PHILADELPHIA INTERNATIONAL AIRPORT
NORTHEAST PHILADELPHIA AIRPORT

Airport Sustainability



Federal Aviation Administration:

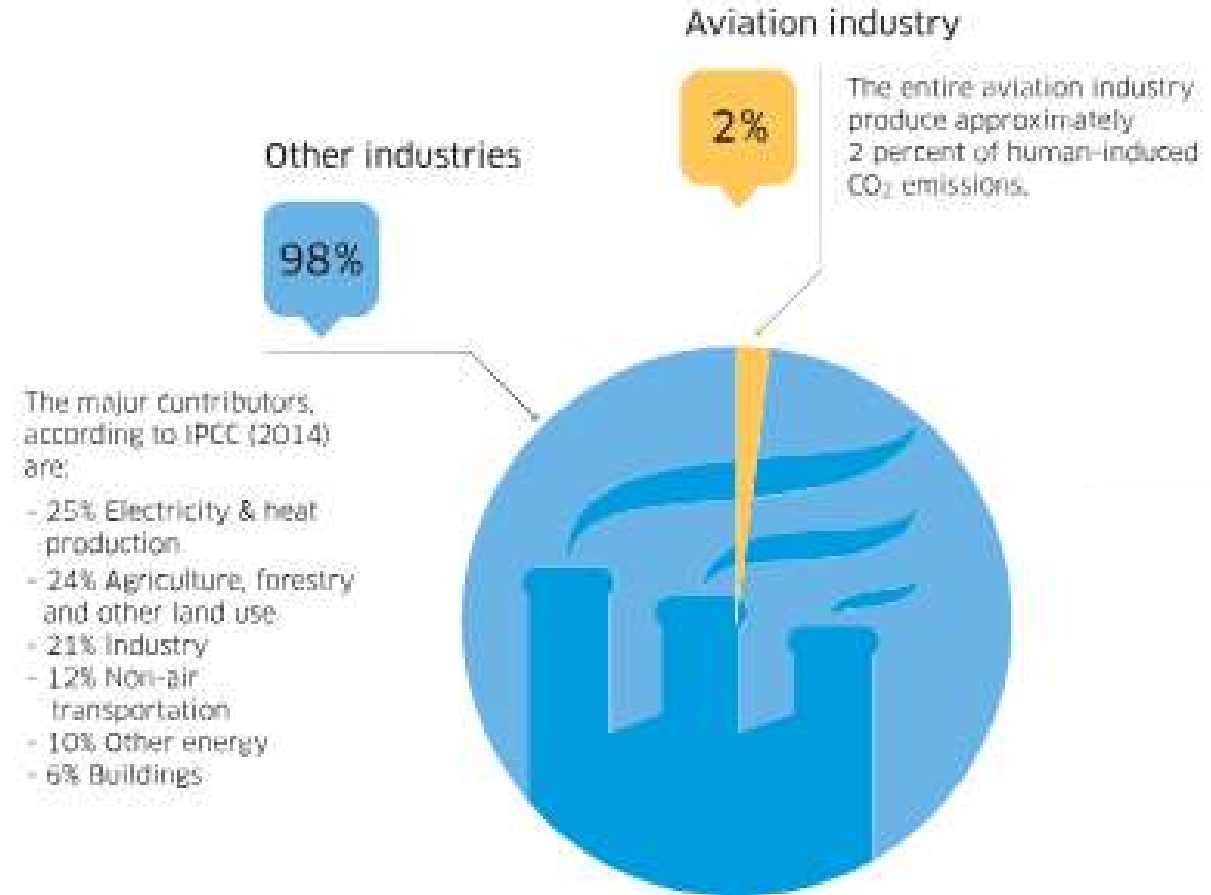
- Reduce environmental impacts
- Maintain high, stable levels of economic growth
- Help achieve “social progress” – broad actions that ensure organizational goals consistent with the needs and value of the local community



Why Airport Sustainability?



- Leadership by public sector
- Federal funding incentives and directives
- Reduce local community impacts
- Passenger interest and support for greener travel
- Aviation industry accounts for 2% of global greenhouse gas emissions



Department of Aviation's Environmental Milestones

2011

First LEED (Leadership in Energy and Environmental Design) Silver certified building – American Airlines GSE maintenance facility (formerly known as US Airways)

2010

First annual recycling report

2009

First greenhouse gas (GHG) emissions inventory

2016

- First sustainability charrette
- Sustainability Committee formed
- CEO signed first sustainability policy
- LEED Gold certification for Terminal F Baggage Claim
- First Environmental Progress Report

2017

- Sustainability program established, with dedicated staff
- Sustainability integration into strategic plan

2018

- Waste Audit & Recycling Plan
- Energy and Emissions Plan
- Integration of sustainability into Capital Project Design Standards

2019

Climate Vulnerability Assessment

2020

Sustainability and resilience integration utilized in the scoring and selection of capital development professional services consultants

2022

- LEED Gold required for all new facilities and major renovations
- Sustainability Management Plan completed
- PHL at Level 2 ACA; PNE enters ACA at Level 1
- Revised Sustainability Policy statement issued with carbon commitment
- Vehicle & Equipment Electrification Strategic Plan
- PHL solar study completed

2021

- PHL enters Airport Carbon Accreditation (ACA) at Level 1
- Envision verification for sustainable infrastructure projects adopted for airside and landside infrastructure
- Airport Sustainability Manager position established

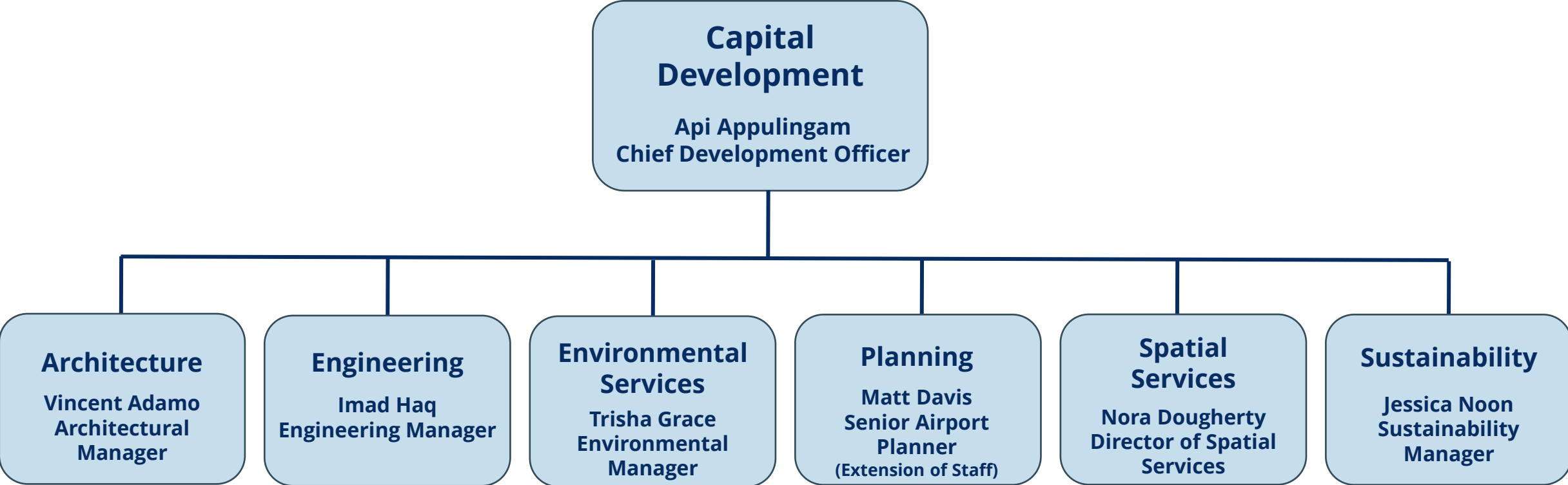
FUTURE (2023-2025)

- Climate Adaptation and Resilience Plan implementation
- Solar and other renewable energy generation at PNE and PHL
- Electrification of light and medium duty fleet vehicles and passenger shuttles
- Engagement with airlines and other tenants to reduce carbon emissions

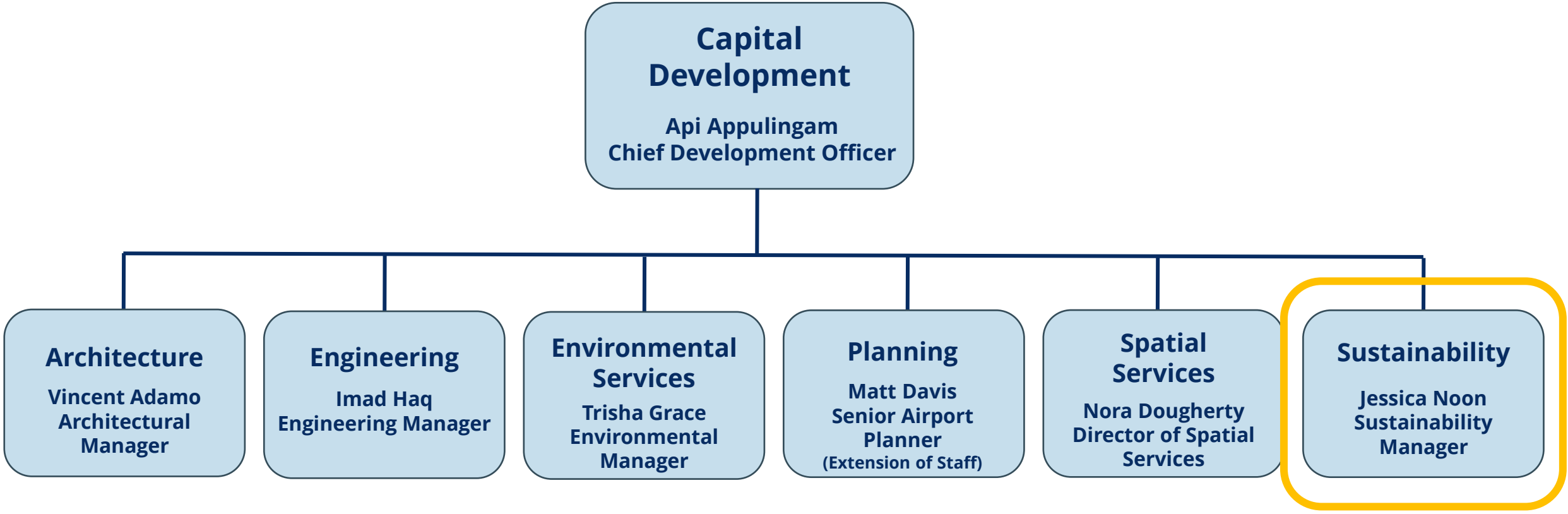
Department of Aviation's Environmental Milestones



Sustainability at DOA



Sustainability at DOA



Sustainability Team



Jessica Noon
Sustainability Manager



Jimmy Clarkin
Energy



Amy Liu
Climate Resilience



Elena Fisher
Envision



Melissa McMullen
Waste & Recycling



Alex Skowron
Energy & Emissions
Data Analyst
(Extension of Staff)



Ben Cromie
Waste & Recycling
(Extension of Staff)

Sustainability at DOA



- Lead plans and studies to develop strategies for sustainability
- Set goals and track progress via data collection and analysis
- Review and lead capital projects
- Identify and pursue funding opportunities
- Collaborate with and support other units on sustainability-related efforts
- Host Earth Day, America Recycles Day and clean up events

Sustainability Team



Energy & Emissions

- Jimmy Clarkin, Energy Supervisor
- Alex Skowron, Energy & Emissions Data Analyst

Sustainable Design

- Elena Fisher: Airside & Landside Infrastructure; Envision, LEED
- Melissa McMullen: Concession & Tenant Projects
- Jimmy Clarkin: Electrical, Mechanical and Architectural Renovation Projects, LEED
- Amy Liu: Climate Resilience Design Standards

Climate Resilience

- Amy Liu, Climate Resilience Supervisor

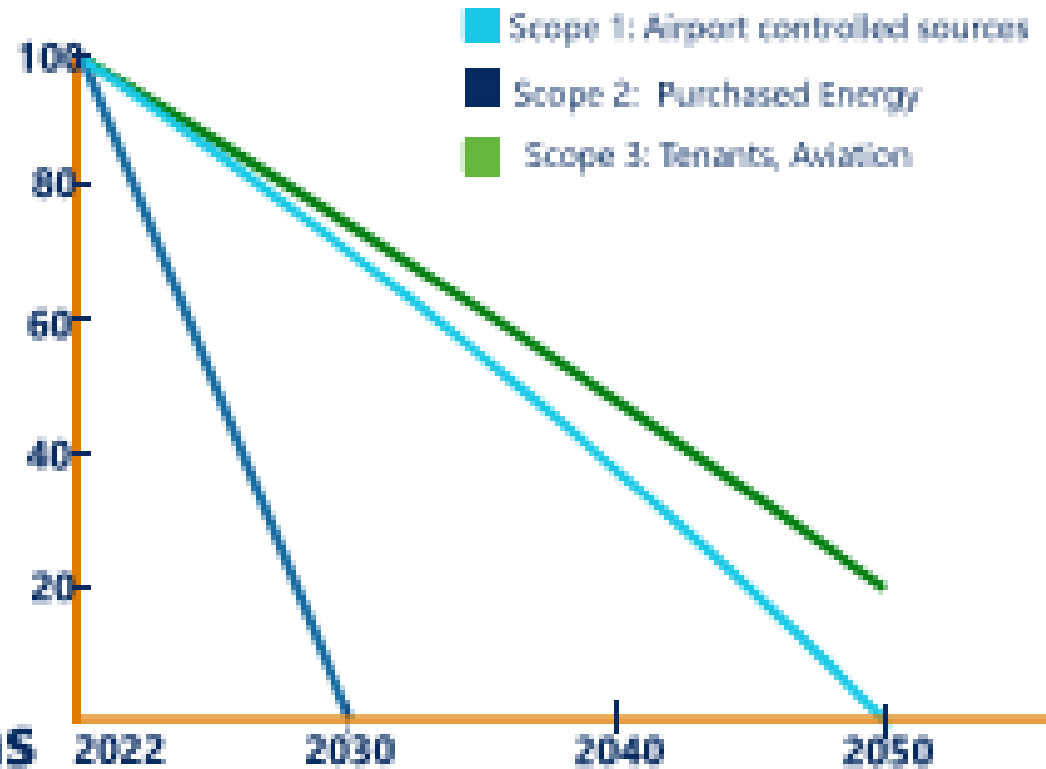
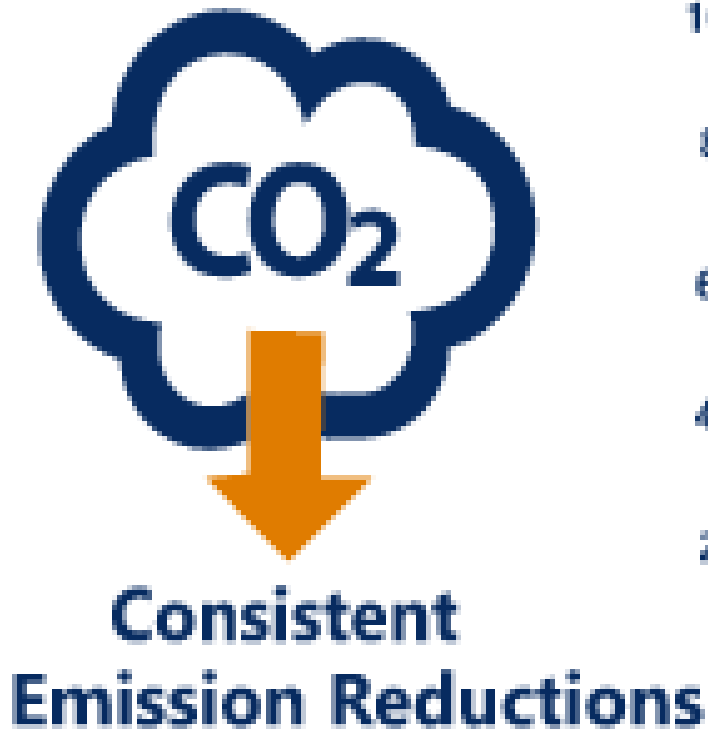
Waste & Recycling

- Melissa McMullen: Recycling Coordinator
- Ben Cromie: Sustainability Planner, Recycling

Energy: Net Zero Carbon Goal



Carbon Neutrality by 2050 for DOA Facilities



Energy: Annual Emissions Inventory



- **Scope 1:**
 - Emissions produced on-site by DOA
 - Fuel for DOA fleet, shuttle buses and generators
 - Refrigerants, De-Icing
 - Heating via natural gas
 - DOA air travel
- **Scope 2:**
 - Energy purchased by DOA
- **Scope 3:**
 - Emissions produced by airlines and other tenants:
 - Jet fuel
 - Vehicle fuel
 - Energy usage
 - Emissions from airport users:
 - Passenger travel
 - TNC travel

PHL Scope 1, 2 & 3

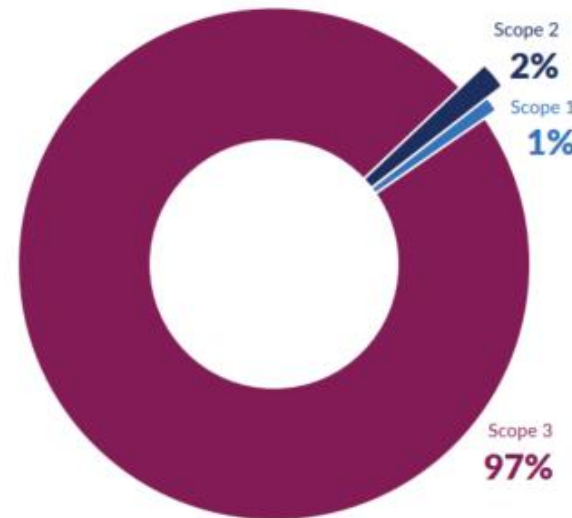


Figure 1: PHL Total GHG Emissions

3,417,234
metric tons CO2

PNE Scope 1&2

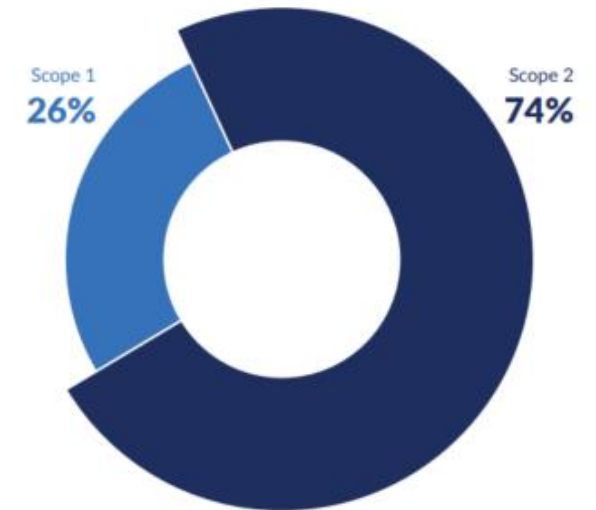


Figure 2: PHL Scopes 1 & 2 Emissions

28,773
metric tons CO2

Energy: Airport Carbon Accreditation



- **Airport Council International (ACI)** standard for airport emissions tracking and reductions
- **Philadelphia International Airport – Level 2**
 - Map and track all emissions
 - Emissions reductions 2019-2022
 - One of 25 airports in U.S. at level 2 or higher
- **Northeast Philadelphia Airport – Level 1**
 - Map and track all emissions
 - One of 42 total accredited airports in U.S.
- **2024: Target Level 3 : Tenant Engagement**
- **2025: Target Level 4 : Path to Decarbonization**



Energy: Energy Efficient Upgrades



■ Building Energy Performance

- Conduct Energy Audits of PNE and PHL facilities
- Develop energy efficiency recommendations
- Work with Engineering to identify energy efficiency capital projects
- Track energy savings
- Process PECO rebates

■ Energy Efficient Upgrades

- 5900 LED bulbs
 - 4.3 million kWh annual energy savings
 - \$150,000 PECO rebate savings
- 77 new HVAC units
 - 1.7 million kWh annual energy savings



Energy: Vehicle Electrification



2022 Vehicle Electrification Strategy:

Prioritize electric models of light and mediumweight vehicles:

- 2 Chevy Bolts
- 4 Ford Mach-Es
- 6 Ford Cargo Vans

EV Charging:

▪ Level 2 Chargers:

- 4 at Intl Plaza 2, 18 more planned
- 1 at Fleet
- 2 planned for Maintenance Service Building

▪ Level 3 Fast Chargers:

- 2 in design for Maintenance Service Building
- 3 in design for A-West (airside)

▪ **Passenger Charging:** Leading analysis of energy capacity of parking garages for EV charger expansion



Energy: Emission Reduction Projects



■ VALE: Voluntary Airport Low Emissions (VALE)

Grant Projects:

- 2011-2023
- Collaboration with Engineering
- 46 Pre-Conditioned Air Units (PCAirS)
- 11 Ground Power Units (GPUUs)
- 129 chargers for electric GSE
- **26% of Ground Support Equipment Electrified**
- **Total Emissions Reductions:**
 - 717 tons Carbon Monoxide
 - 617 tons Nitrogen Oxides (NOX)
 - 67 tons Sulfur Oxides (SOX)
 - 68 tons Particulate Matter 2.5
 - 68 tons Particulate Matter 10
 - 52 tons Volatile Organic Compounds (VOCs)



Energy: Renewable Energy



- **PNE Geothermal:**
 - Heat and cool PNE Administrative Building
- **PNE Solar Farm:**
 - 1.5 MW solar farm
 - Power equivalent to all of DOA PNE usage
 - Partnered with PECO on transformer grid upgrades in 2023
 - RFP to be released 2024
- **PHL Solar Feasibility Study:**
 - 2022-2024: Review opportunities for solar installation at PHL
 - Conceptual design of solar for Employee Lot; potential for battery storage, resilient microgrid
- **Funding Opportunities:**
 - Federal funds
 - Investment Tax Credit >30% Payment



Sustainable Design Standards



- **Apply sustainable design standards to all DOA and tenant capital projects:**
- **New Construction:** LEED Gold
- **Major Renovations:** LEED Gold
- **Airside and Landside Infrastructure Projects:** Envision Verified
- **Minor Renovations:**
 - Lighting/Electrical
 - Mechanical/Plumbing
 - Airside, Landside Infrastructure
 - Architectural Renovations
 - Concession Renovations
- **Parksmart:**
 - New Parking Structures



Climate Resilience: Planning



- **2020 Climate Vulnerability Assessment:** Identify climate change risks at PHL due to climate and sea level rise projections
- **2022 Climate Adaptation and Resilience Plan:** Develop strategies to safeguard existing and future critical infrastructure
- **2023 Hydrologic & Hydraulic Model of PHL:** Model flood potential of past storm pathways in future years considering climate change
- **Regional Coordination:**
 - Lower South Resilience Infrastructure Collaborative
 - City of Philadelphia Climate Resilience and Environmental Justice Working Group
 - Eastwick Intergovernmental Coalition



Climate Resilience: Implementation



- **Climate Resilience Design Standards:**
 - **Floodplain Elevation:** Increase base flood level based on future sea level rise for new development
 - **Stormwater Management:** Increase the design storm utilized when expanding or replacing stormwater conveyance
- **Strategic Planning for Flood and Stormwater Infrastructure Capital Projects:**
 - Fort Mifflin Tide Gate
 - Clean and repair stormwater inlets and outfalls
 - Expand North & South Ponding ditches
 - Expand airfield drainage conveyance



Waste & Recycling: Goal



Zero Waste by 2035



90%

10%

diversion from
landfills by **2035**
remaining will
go to energy
production

Waste & Recycling: Progress



- **Recycling:**
 - Initiated new recycling hauling contract with JP Mascaro in 2021
 - Achieved 25.15% Recycling rate in 2023, a historic high
 - 125 tons terminal carpet recycled from 2011-2022
- **2023 Waste Audit:**
 - Audited recycling program to Ticketing, Baggage Claim and Departures Road, Employee Lot, Cell Phone Lot
 - 25% of the waste stream is recyclables
 - Opportunity to expand recycling program
- **Construction and Demolition Waste Recycling Requirement:**
 - 75% recycling target “flatwork” infrastructure
 - 50% recycling target for all other capital projects



Mission Alignment



Vision

We are a World Class Global Gateway of Choice

Mission

Proudly Connecting Philadelphia with the World

- Sustainability supports the DOA mission by planning for long-term resilience of our airports
- Being sustainable is about taking pride in our airport operations, as we minimize our environmental impact locally and globally
- Being sustainable makes us more competitive for commercial investment as well as federal funds



Collaboration: Capital Development



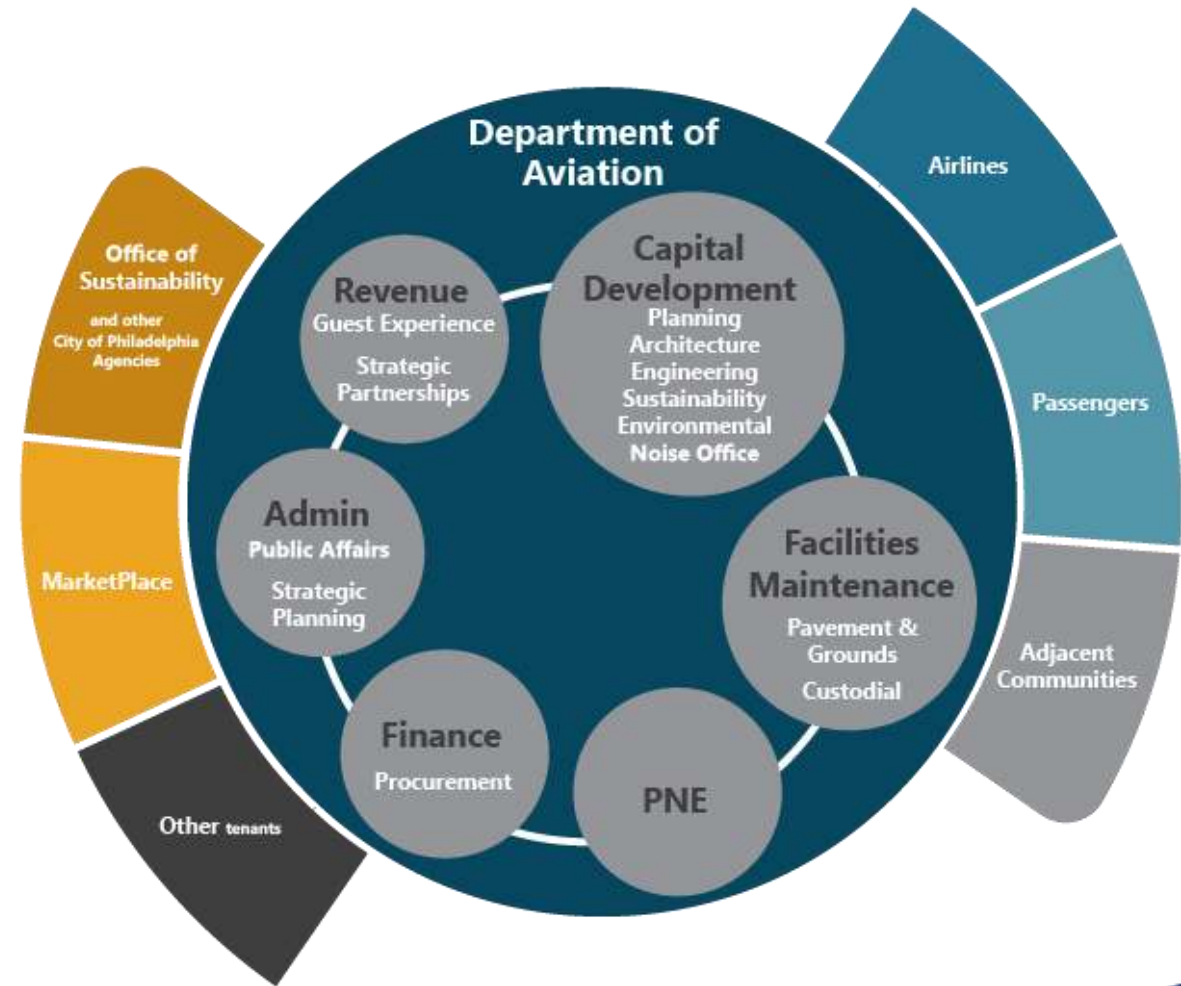
- **Architecture**
 - Sustainable Design Standards
 - LEED Certification
- **Engineering:**
 - Sustainable Design Standards
 - VALE – Voluntary Low Emissions Grant Projects
 - Renewable energy
 - Flood Prevention and stormwater management
 - Energy efficiency
 - EV chargers
 - Airfield Projects
- **Environmental:**
 - Permitting and compliance
 - Air Quality
 - Noise Office
 - Environmental data
- **Planning**
 - Master Plan Update
- **Spatial Services:**
 - GIS Mapping and CAD support



Collaboration: Department of Aviation



- **Commercial Development**
 - Sustainable design
 - Tenant outreach
 - Renewable energy
- **Community Relations**
 - Flooding
 - Noise
- **Finance & Procurement**
 - Grant and budget
 - ESG reporting
- **Government Affairs**
 - Grants
 - Interagency coordination
- **Guest Experience**
 - Event planning
- **Operations**
 - Custodial: Waste & Recycling
 - Fleet: EV purchases
- **Public Affairs**
 - Outreach & publicity



Collaborative Working Groups



1) Climate Resilience Working Group:

- Initiated October 2023
- Engineering, Environmental, Planning, Operations, Commercial Development, Community Relations, Public Affairs

2) Energy & Emissions Working Group:

- Initiated January 2024
- Engineering, Environmental, Planning, Operations, Spatial Systems

Sustainability Committee for Airlines & Cargo Tenants

- To be initiated in 2024
- Topics:
 - GSE electrification
 - GPUs & PCairs
 - Waste & Recycling
 - Sustainable fueling

Waste & Recycling Committee

- To be initiated in 2024



Recent Successes



Taxiway J Reconstruction Achieves First ENVISION Verification at PHL

- Verification by the Institute for Sustainable Infrastructure
- Only 12 Envision Verified airport projects in the U.S.
- DOA's first Envision verified project
- Sustainable approach design, construction, coordination and engagement

TEAM:

- Lee Sutanto, Andre Szumylo from Engineering
- Elena Fisher from Sustainability



Recent Successes



Southwest Airlines Electrifies its Entire Ground Support Equipment Fleet at PHL

- DOA received \$777,000 in Voluntary Airport Low Emission (VALE) funds from the FAA
- DOA install 12 electrical chargers for eGSE
- Southwest transitioned 30 vehicles from diesel to electric

TEAM:

- Tsuefeng Moua from Engineering
- Jim Donnelly, Peter Economu and Lou Fabritis from Finance
- Jimmy Clarkin from Sustainability



Recent Successes



FY 22 Environmental, Social and Governance Report

- DOA is one of only ~15 airports to produce a robust ESG report
- Sustainability & Finance collaborated on a 40-page report highlighting environmental, social and governance achievements
- Track progress through detailed annual data
- DOA's FY23 ESG report is expected to be complete by mid 2024

TEAM:

Cassandra Williams, Christina Saggiomo, Edwin Childs from Finance

- Trisha Grace and Xiao Lin from Environmental Services
- Jessica Noon, Elena Fisher, Jimmy Clarkin, Ben Cromie from Sustainability



Final Draft
December 2022

What's next?



- **EARTH DAY!**
 - Week of April 22, 2024
 - B/C Event Space
- **EARTH DAY AWARDS!**
 - Please provide your nominations for airport employees who incorporate environmental and sustainability considerations into their work
 - Nominations due by March 22
- **EARTH DAY CLEAN UP: TBD!**



What's next?



Upcoming Sustainability Projects:

- Sustainability Committee for Airlines & Other Tenants
- Decarbonization Plan
- Delaware River Long-Term Flood Protection Feasibility Study
- PHL Waste Management Plan
- Zero / Low Emissions Strategy for Shuttle Bus Fleet
- Zero / Low Emissions Strategy for Heavy Duty Vehicles
- Sustainable Aviation Fuel Study (dependent on grant funds)





Thank You!

Jessica Noon



City of Philadelphia,
Department of Aviation



PHLPNE

PHILADELPHIA INTERNATIONAL AIRPORT
NORTHEAST PHILADELPHIA AIRPORT