PORT OF PORTLAND

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Preparing for Take-Off: Examining Efforts to Address Climate Change at U.S. Airports

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Chairman Larsen, Ranking Member Graves, and members of the Subcommittee, thank you for the opportunity to speak with you today about the issue of climate change at U.S. airports. Climate change represents one of the most important challenges for my generation, and for generations to come, and I'm grateful for the opportunity to share with you our work at the Port of Portland.

Introduction

I am the Director of Environmental Operations for the Port of Portland (Port). Established in 1891 by the Oregon Legislature, the Port today owns three airports – Portland International (PDX) and two general aviation airports. We also own and operate four marine terminals that handle imports and exports, business parks that provide industrial and manufacturing jobs, and

operate dredge equipment that helps maintain the navigation channel on the lower Columbia and Willamette rivers. The Port's mission is to build shared prosperity for the region through travel, trade, and economic development.

PDX is the largest commercial airport in Oregon and SW Washington, serving nearly 20 million passengers annually in 2019. Travel levels at PDX are still recovering from the pandemic but we're looking forward to a busy summer travel season, including the recent return of transatlantic flights. PDX is both a beloved local landmark and a perennial favorite of travelers worldwide as well as a source of significant economic value to the region. We're in the midst of a capital construction program at PDX – *PDX Next* – which is designed to allow for significant growth (to accommodate 45 million passengers per year by 2045) while greatly improving the resilience and sustainability of the airport.

We know we need to make infrastructure investments in a way that prepares for and protects us from climate change and natural disasters, and that addresses long-standing inequities regarding who benefits from and who is negatively impacted by our work. For transportation systems to function and have long-term reliability, we must prepare to be more resilient in response to unpredictable disruptions from extreme weather events due to climate change and natural disasters.

The past is no longer a reliable predictor of the future. The evidence of climate change in Oregon is clear. Portland and the region we serve have experienced unprecedented weather events including record heat, cold, and precipitation. For example, Portland is in the midst of the wettest spring on record, and it snowed in mid-April. Last June we experienced 117-degree heat, exceeding the previous all-time record high temperature by nearly 10 degrees.

Unprecedented summer heat waves have spawned wildfires which have burned millions of acres. The summer 2020 wildfires were the most destructive on record in Oregon and triggered five days of "hazardous" air quality for the first time in Portland. It is past time to get serious about this threat to our existence. It is essential to invest more resources in proactive preparation and progress to lessen the magnitude of destruction and associated recovery expenses.

Where We've Been

The Port actively works to implement climate change solutions by measuring our greenhouse gas (GHG) emissions footprint, investing in energy efficiency, and moving away from fossil fuels to cleaner energy and alternative fuels.

The Port of Portland has long had our own emissions reductions goals, reducing GHG emissions by over 60% below 1990 levels at the same time as passenger growth increased by 162%. We achieved this accomplishment via several projects. We've made significant energy efficiency investments, including an airport-wide lighting upgrade. The Port's headquarters building

located at PDX is LEED Platinum-certified and uses about 36 percent less energy than a typical building of its size. We also installed preconditioned air and ground power units on all loading bridges at PDX – eliminating onsite emissions from parked aircraft.

The Port has supported Oregon's Clean Fuels legislation and participates in the Clean Fuels Program for PDX shuttle buses that run on renewable natural gas and for electric vehicle charging. Most diesel-powered vehicles and generators at PDX use R99 renewable diesel made from sustainable feedstocks. PDX also has one of the largest collections of electric vehicle parking spaces among airports in the U.S. with 125 spaces installed. These charging stations serve Port fleet, maintenance, Airport Rescue & Firefighting and employee vehicles as well as passengers and Transportation Network Companies (i.e., Uber, Lyft, taxis.) An additional 38 charging stations are coming soon which will include communications infrastructure for monitoring, analyzing, and evaluating system electricity usage for each charging station to help us maximize use and improve reporting.

Diesel exhaust is one of the most significant contributors of health impacts from air toxics in the Portland region and construction equipment is the largest source of those emissions. In collaboration with other public agencies in the Portland region, the Port created and is implementing a Clean Air Construction Program to reduce diesel emissions on construction projects. Beginning in 2021, the program implemented a standard set of cleaner equipment requirements on job sites and a regional program to verify compliance with the requirements. Many larger construction companies have already transitioned to cleaner

equipment. Small businesses, however, cannot afford to replace their typically older and dirtier diesel construction equipment with new equipment or install costly retrofits. The small businesses can apply for a temporary exemption or meet program requirements through the use of renewable diesel. The Port is working to facilitate small business access to renewable diesel at a reasonable cost, to lessen the continued air toxics impacts from exempted diesel equipment.

Where We're Headed

We know we can do more. We are prioritizing operations with the highest GHG emissions to start and investing in strategies that meaningfully and swiftly reduce our carbon footprint. We are also taking action to prioritize emission reductions that have the greatest benefit to addressing environmental justice inequities. Like a small city, PDX operates around the clock and consequently accounts for over three-quarters of the Port's total GHG emissions. PDX also contributes to air toxic emissions (diesel particulates in particular) impacting airport workers and surrounding historically marginalized communities.

We believe any new, significant investment in infrastructure must prioritize projects that increase the resilience against climate change, extreme weather, and natural disasters while decreasing our dependence on fossil fuels. We recognize that our growth at PDX could result in a higher environmental impact. Sustainability was the focus of the PDX Master Plan developed 10 years ago and that's why we chose to renovate and expand the existing terminal structure

instead of building a new terminal, relying on the use of wood, steel, and other salvaged materials, and incorporating a new efficient heating and cooling system.

Ground Source Heating & Cooling System

The current heating and cooling system at the airport relies on natural gas boilers and chillers with diesel generators as backup. A new energy efficient ground source heat pump system will instead rely on electricity to generate heated and chilled water for building heating and cooling. The system will extract heat from an underground aquifer for heating, and, to cool, it will reject heat back into the same aquifer. Traditional boilers and chillers will be retained as backups, and to augment the ground source system's performance during periods of extreme temperatures. By adding a ground source heat pump system, the terminal's energy use per square foot will be reduced by approximately 54% and 130,000 MMBtu of annual natural gas will be electrified – a major step away from fossil fuel use. GHG emissions will be reduced by a minimum of 6,800 metric tons of CO2e/year, and those emissions reductions will improve over time as the electric grid continues to transition away from coal to renewable sources.

Electrification

The Port is pursuing electrification of ground support equipment as a key strategy to address air toxics that have a direct impact on PDX airport workers and surrounding residential communities while reducing our carbon footprint. We have made significant progress in building out the electrical infrastructure needed for charging ground support equipment. The electrical backbone is in place across the airport and branch conduit and wiring has been

installed to make our two newest concourses -- Concourse B and E -- plug-in ready for charging stations. The remaining infrastructure needed to make Concourses C and D plug-in ready is planned in the capital project queue.

The Port partnered with the California Airport Council and several California airports on development of carbon intensity values needed for electric ground support equipment to qualify for Oregon's Clean Fuels program. Leveraging Oregon Clean Fuels Program financial incentives will be essential to support our airline business partners in advancing the transition to electric ground support equipment at PDX. Additional federal support made available in the Infrastructure Investment and Jobs Act (IIJA) will also be needed to fully electrify the ground support equipment at PDX.

We're also investing over $12 million to increase electrical infrastructure between a substation and the PDX terminal to accommodate future increases in demand/load from electrification of fossil fuel powered equipment and systems.

Sustainable Aviation Fuel (SAF)

Securing a reliable and affordable local or regional supply of SAF is a significant priority for the Port because GHG emissions from jet fuel account for 78% of Port emissions. PDX completed a SAF Infrastructure Study in 2018 to help facilitate discussion on what it would take to implement this technology. Since then, the Port has supported acceleration of SAF supply chain development in the following ways:

- On-going discussions with developers, airlines and other supply chain partners to look at SAF demand and logistics (i.e., transportation, storage and delivery to PDX).
- Co-funded with SkyNRG Americas a Bioeconomic Development Opportunity Zone (BDO Zone) Designation for municipal solid waste supply in Arlington, Oregon. 'A' and 'AA' BDO Zone Ratings identify areas in the country best positioned for low-risk bioeconomy project development and provide much-needed market intelligence to facilitate investment decisions. Arlington's 'A' rating will hopefully lead to increased production of SAF and R99 in Oregon.
- Participation on the Oregon Clean Fuels Program Rulemaking Advisory Committee to advocate for measures to make Oregon competitive with other West Coast fuel markets and attract clean fuels such as renewable diesel, sustainable aviation fuel and renewable natural gas.
- Participation in the federal agency SAF Grand Challenge which is working to develop a roadmap to reduce the cost and expand the production and use of SAF.

Adaptation to Extreme Weather

The Port also recognizes that in the face of climate change we need to adapt how we work, how we build, and how we operate to protect human and environmental health and safety and prolong the life of our capital investments.

Recently, the Port used the Airport Cooperative Research Program's Airport Climate Risk Assessment Tool (ACROS) to evaluate likely climate impacts to PDX. The analysis found, and is

verified by Oregon and national climate assessments, that PDX is likely to experience hotter, drier summers with more high heat days than before. The 2020 heat wave was a public health crisis: more than 60 people in Multnomah County lost their lives. Increasing temperatures and peak heat waves are a critical concern for the aviation industry. In response to the 2020 extreme heat events, Oregon OSHA adopted emergency rules addressing wildfire smoke to protect employee and worker health and safety. PDX convened an internal task force and established a process to alert employees who work outdoors of poor air quality conditions during wildfire events and requires the use of personal protective equipment to protect worker health. PDX is committed to protecting the health and safety of our employees, contractors, and travelers.

In addition to efforts to support worker health and safety, airports need to mitigate harm to building roofs, strain on HVAC systems, reduced water availability, increase in emergency service calls, and loss of integrity of runway pavement. To be more resilient in the face of potable water shortages, the Port has been focusing on water conservation strategies such as installing low flow fixtures throughout the PDX terminal as well as securing municipal water rights to authorize use of non-potable water in place of potable water. The non-potable water can be used for our operations as well as for tenants and other potential commercial and industrial customers within our non-potable water service areas.

For example, the construction of the new rental car ready return facility at PDX includes a non-potable water well, collects rainwater and stores it in an underground cauldron as wash water,

and deploys reverse osmosis for vehicle washing. Leveraging non-potable water for car washing and toilet flushing has reduced potable water use by more than 70% as compared to the LEED baseline for a typical office building. This facility received Envision certification, which provides a consistent, consensus-based framework for assessing sustainability, resiliency, and equity in civil infrastructure.

Climate assessments and the ACROS tool also indicate that PDX should prepare for more heavy precipitation events. Primary vulnerabilities to heavy precipitation include internal and external facility damage, failure of drainage systems, operational disruptions, undermining of pavement and impacts to ground transportation and parking. In order to mitigate the impacts from extreme weather events the Port is focused on the following priorities:

- Upgrading building efficiency to reduce demand and strain on the power system.
- Reducing our reliance on the electricity grid with on-demand renewable power and independent micro-grid infrastructure at PDX.
- Securing funding for on-going asset management to keep pavement, stormwater, HVAC and building systems in good order and extend their useful lives.

Natural Disaster Resilience

The Port is deeply committed to providing public services that meet local and regional resilience needs. Recent examples of our commitment are illustrated by the Port's role in:

- Addressing health and safety of passengers and employees via modified PDX operations in response to COVID-19.

- Partnering with the Oregon Health Sciences University to stand up a drive-through COVID-19 vaccination clinic at PDX, where more than 250,000 doses were administered.
- Sending Port of Portland Firefighters every year to help g communities around Oregon fight deadly wildfires.

Our ability to respond to these types of emergencies is made greater because of our commitment to increasing our resilience to hazards. The Port has been systematically identifying hazards and Port-specific vulnerabilities and developing and implementing plans and projects to improve the strength and flexibility of our facilities and operations. We take a holistic, programmatic approach to resilience; designing the flexibility needed to perform well under a variety of potential disruptions and challenging conditions.

In addition to climate change, we have to prepare for other natural disasters, particularly earthquakes. Given Oregon's geography and the vulnerability of critical infrastructure to earthquake and landslide damage, and the likelihood of a coastal tsunami, Oregon will be isolated following a major earthquake. The planned major response hub for Oregon is located on the east side of the Cascade Mountain range. This means that aid to Oregon's most populous region in the western part of the state will need to be brought in via helicopters and small planes until the mountain passes are cleared and road travel restored. Marine routes will need to be cleared, and maritime support will take some time to arrive. Lack of road and marine transportation, and very limited aviation options will hamper medical evacuations and response and will make it exceedingly difficult to bring in basic aid for days, if not weeks.

PDX has made significant investments to prepare for a Cascadia Subduction Zone catastrophic event. We have a new concourse built on a resilient structural foundation and our PDX communications and emergency operations center has an independent emergency power supply. The Terminal Core expansion project also includes numerous seismic improvements.

The most transformational seismic investment in the Port's resilient infrastructure work is a seismically resilient runway at PDX. A resilient runway, one that can withstand the ground motion caused by a major earthquake will provide an essential lifeline connection to supplies, aid, and support during a catastrophic event. According to an analysis of the National Institute of Building Sciences, the runway could help avoid about $7 billion dollars in losses in today's dollars.

The Port is incredibly grateful to have secured $3.75 million in FY22 Congressionally Directed Spending for a FEMA pre-disaster mitigation grant. This is from FEMA's Building Resilient Infrastructure and Communities (BRIC) program. Combined with additional funding provided by the state of Oregon, the Port will finalize the design of the seismically resilient runway over the next two years. Construction of the runway will require significant additional federal funding support.

<u>How We Continue to Make Progress</u>

Infrastructure Funding

The Port relies upon investments in nearly every kind of infrastructure imaginable: obviously airports, but also waterways, bridges, marine terminals, transportation safety, levees, locks, roads, transit, and rail. So, we were very pleased with the passage of the IIJA last year. We believe the IIJA investments will both address the backlog of infrastructure needs nationwide, while prioritizing investments that reduce reliance on fossil fuels, increase resilience, and mitigate community impacts. We also welcome the law's focus on equity and job creation. In particular, we are deeply grateful for the $25 billion in airport infrastructure investments provided by IIJA.

- We expect PDX to receive approximately $20 million each year for the next five years in Airport Infrastructure Grants, a significant increase in our annual Airport Improvement Program (AIP) grants. It will immediately be applied to address key airfield pavement needs that are essential to maintaining a safe, efficient and resilient airport.
- The Port has also applied for funding for the first year of the Airport Terminal Program (ATP) competitive grant. We're seeking funding for the ground source heating and cooling system at PDX discussed above. The current reality of capital construction projects – significant cost escalations, supply chain limitations and staffing shortages – means difficult choices for capital projects. These federal funds will help ensure the Port can meet its environmental and job creation goals.
- We also know the need for investment at airports far exceeds the funding available. We understand there were more than 650 applications totaling $14 billion for the first $1 billion provided in FY23 for the ATP grants. We know the need is great and we will

continue to work with Congress and the Administration on other funding sources for airports, including an increase in the Passenger Facility Charge (PFC).

Expand Funding for Airport Resiliency Projects

We support a specific expansion of the FAA Airport Improvement Program (AIP) to allow funding to be used for natural disaster and climate resilience. H.R. 2, the Moving Forward Act, included a provision allowing airports to use AIP grant funding for "*critical airport infrastructure*" projects that increase the resiliency of the airport against *"earthquakes, flooding, high water, hurricane, storm surge, tidal wave, tornado, tsunami or wind driven water.''* (H.R. 2, SEC. 10103, Airport Resiliency Projects).

We also believe the FEMA BRIC program should continue to be funded at robust levels. This program is an essential source of funding for communities to invest in advance of disasters and is one of the likely sources of funding for construction of our seismic runway.

SAF Blenders Tax Credit

The Port is committed to being prepared to offer SAF at PDX as the fuel becomes available. We know additional government incentives are required to support growing this industry to scale given the considerable cost difference with conventional jet fuel. We strongly support a new, long-term tax incentive for sustainable aviation fuel. We believe a blender's tax credit specifically aimed at incentivizing the production of sustainable aviation fuel is critical to support the decarbonization of the aviation sector.

SAF Infrastructure Grant Program

We also strongly support a SAF infrastructure grant program to further support the development and deployment of SAF, such as Senator Warnock's Aviation Emissions Reduction Opportunity Act (AERO) and the Alternative Fuel and Low Emissions Aviation Technology Program and related provisions in H.R. 2(Sections 10201- 10204). We are particularly in need of funding mechanisms to help offset the costs of off-airport SAF infrastructure as will be needed at PDX.

Expand the Voluntary Airport Low Emissions Program

The Voluntary Airport Low Emissions (VALE) Program allows airports to use AIP funds and PFC revenue for low emission vehicles, charging stations, and other projects that help improve air quality. More flexibility is needed in this program at airports like PDX that are already in air quality attainment areas, but where federal funding for additional carbon and air toxic emissions reduction programs is needed. We support both increased funding for the VALE program and allowing it to expand airports outside of non-attainment areas to help more airports improve air quality.

Federal Agency Aviation Fuel Usage

Key federal agencies such as the U.S. Department of Defense (DoD) can play a more active role in SAF uptake for their own aviation fuel needs. The House-passed 2021 National Defense Authorization Act (NDAA) included a provision that would require the Defense Department to conduct a pilot program at two or more DoD facilities exploring the use of sustainable aviation

fuel. While this provision was not included in the final 2021 NDAA, we are hopeful that this year will result in successful passage of the program.

Thank you for this opportunity to address you today about our work at PDX to address climate change and natural disaster resilience. I look forward to continuing to work with the Subcommittee on these issues going forward.