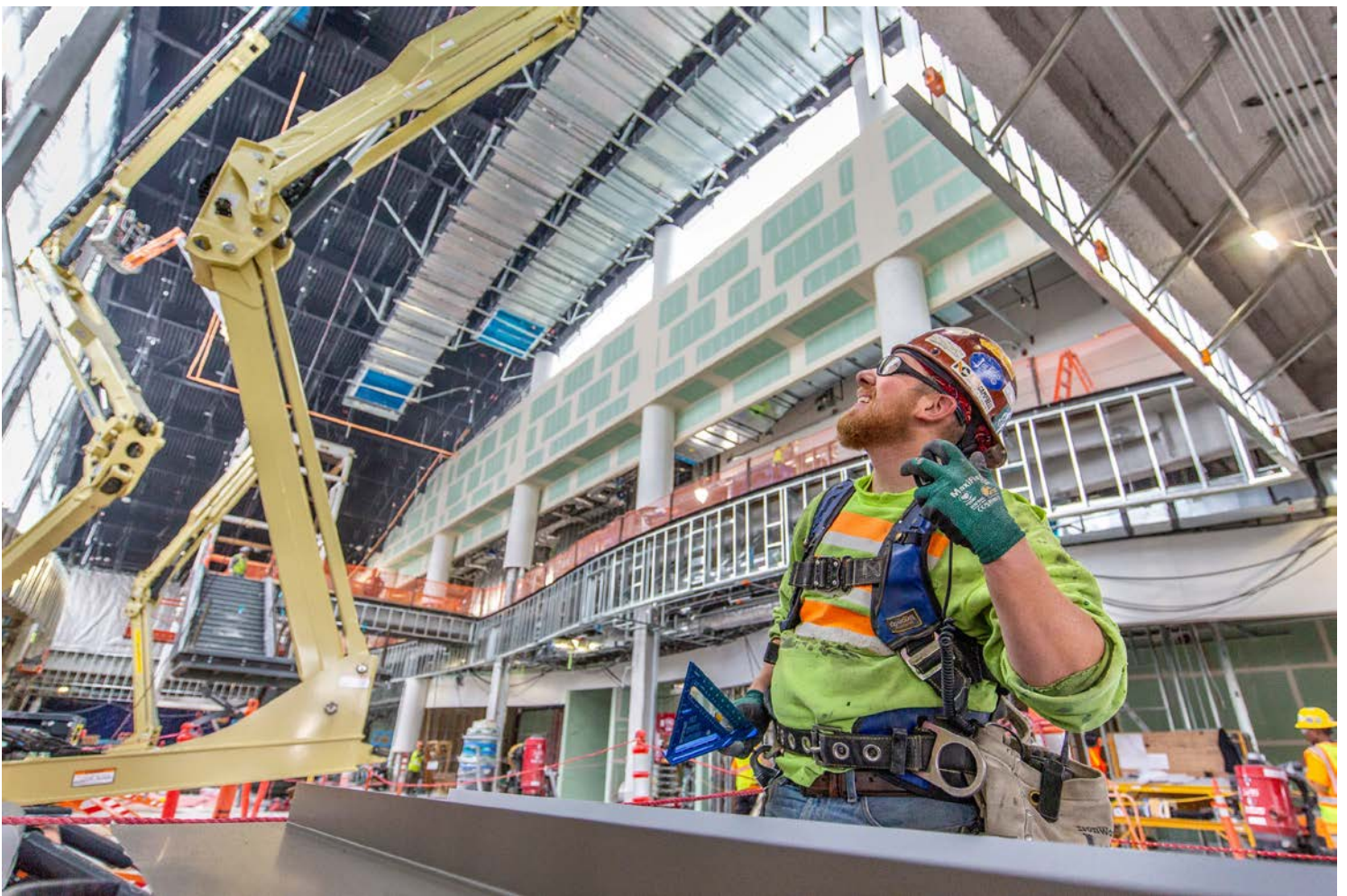


2017 ENVIRONMENTAL PROGRESS REPORT

Seattle-Tacoma International Airport

Strategy for a Sustainable Sea-Tac

December 2018



2009 2010 2011 2012 2013 2014 2015 2016 **2017**

Message from the Director

Welcome to our **2017 Progress Report** under our *Strategy for a Sustainable SeaTac or S3*.

We continue to find new and innovative ways to integrate environmental sustainability throughout our airport. Our 2017 accomplishments include:

- ✓ Becoming the first U.S. airport to obtain Salmon-Safe Certification
- ✓ Publishing the Innovative Financing for Sustainable Aviation Fuels (SAF) report to assess funding options that support a regional SAF market
- ✓ Signing onto Puget Sound Energy's GreenDirect program to purchase renewable wind power
- ✓ Granting more than \$85,000 to community organizations for ecological projects
- ✓ Achieving six credits under the USGBC's LEED Master Site program to support certifying green building projects at the Airport
- ✓ Launching a publicly accessible portal that provides data on aircraft noise.

We also continued our progress in other areas including:

- ✓ Converted over 10 acres of the former Tyee Valley Golf Course to ecologically valuable pollinator habitat
- ✓ Developed airport Climate Adaptation and Risk Mitigation recommendations to help plan future development
- ✓ Implemented new recycling and food service ware requirements for all airport food and beverage concessionaires
- ✓ Enhanced our Environmental Excellence Awards program by expanding eligibility and award publicity

I would like to thank Managing Director Lance Lyttle. Lance "gets" sustainability and supports all three aspects of the triple bottom line. His leadership will help us advance our sustainability initiatives while planning for major growth.

I hope that you find this report useful and that it helps you to see the many ways in which sustainability can be achieved.

Arlyn Purcell

Director, Aviation Environment and Sustainability



Director, Environment and Sustainability
Arlyn Purcell



Airport Managing Director
Lance Lyttle

Port of Seattle Commissioners

Tom Albro
Stephanie Bowman
John Creighton
Fred Felleman
Courtney Gregoire

Interim Executive Director
Dave Soike

HIGHLIGHTED ACHIEVEMENTS

Sustainable Aviation Fuels – Published the Innovative Financing for Sustainable Aviation Fuel report, led by RMI/SkyNRG.

Salmon Safe Certification – Became the first U.S. airport to achieve Salmon Safe Certification, demonstrating our commitment to salmon habitat protection and conservation for this iconic Northwest native. This third-party certification requires specific stormwater management and construction practices, habitat protections, and water conservation and integrated pest management. Annual reviews ensure ongoing compliance.

Habitat Conservation - Converted over 10 acres of the former Tyee Valley Golf Course to wildflower covered pollinator habitat in a partnership with local conservation group, The Common Acre. Converted Auburn wetland mitigation site interior roads to forested habitat.

Airport Community Ecology Fund - Granted more than \$85,000 from the fund to surrounding community organizations supporting local ecological projects enabling local resource conservation, public education, and habitat restoration

Energy & Sustainability Committee – Began new initiative to review and update capital development processes, and integrate sustainability throughout Port projects using more rigorous and transparent approaches.

Sustainable Development – Achieved US Green Building Council's Master Site designation and 6 pre-approved credits, making project certification easier and more efficient. Continued to evaluate opportunities and integrate Leadership in Energy and Environmental Design (LEED®) or other "green" building practices into all aviation building projects.

Sustainable In-Sights – Installed suspended origami sculptures and other sustainability messages in public view on Concourse A, highlighting airport sustainability initiatives and benefits. Message content was also integrated into airport website and mobile app to increase exposure for today's connected travelers.

Raptor Relocation Efforts – Continued to protect both migratory birds and airport passengers by relocating raptors that nest near our airport runways. Sea-Tac Airport tags all captured birds and releases them in forested areas over 100 miles north of the airport.


Sustainable Airport Master Plan – Finalized alternative analysis and began planning for formal public review process.

MORE ABOUT OUR SUSTAINABLE AVIATION FUELS (SAF) PROGRAM

- The Innovative Financing for Sustainable Aviation Fuels report completed in 2017 evaluated potential mechanisms to secure SAF co-benefits (enhanced air quality, carbon reductions, and regional economic development) and facilitate infrastructure development. Key findings include:
 - Determined the Port cannot pay for SAF but can pay for SAF co-benefits. These funding mechanisms could help reduce financial barriers and send a market signal to potential supply chain investors
 - Identified potentially viable funding strategies to procure SAF co-benefits such as corporate support and/or Port tax authority
 - Continued support through investments in infrastructure will be still be needed to jump-start regional SAF production.
- The Port will work with its business and community partners on the following next steps:
 - Explore and develop the most viable co-benefit funding mechanisms to reduce the economic hurdle for SAF uptake
 - Agree to pay for SAF co-benefits such as cleaner air and carbon reductions
 - Build the business case for a local SAF supply chain including feedstock, production synergies, coordination with applicable authorities, and exploring partnerships with other SAF demand centers
 - Promote policy/regulation at state and regional levels and advancing airport leadership model with international and national policy makers.



Air Quality and Climate Change

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 1a: Century Agenda Objective: Greenhouse Gas Emissions Sea-Tac will reduce airport owned and controlled greenhouse gas emissions by: <ul style="list-style-type: none"> • 15% below 2005 levels by 2020. • 50% below 2005 levels by 2030 • Carbon neutral or carbon negative by 2050 		2017 Port greenhouse gas emissions were similar to 2005 levels due to the loss of our renewable natural gas supply, and overall increased use of energy. Assessed the availability of renewable natural gas throughout the Pacific Northwest. Signed onto PSE's GreenDirect program to substitute all PSE electricity purchased at airport with renewable wind power.	Continue to evaluate opportunities to procure renewable natural gas for airport-owned and operated vehicles, and as a heating fuel. Continue to monitor carbon footprint of electricity purchased by airport. Purchase renewable diesel where possible for the airport's fleet vehicles.
Goal 1b: Century Agenda Objective: Greenhouse Gas Emissions Reduce Port-influenced greenhouse gas emissions: <ul style="list-style-type: none"> • 50% below 2005 levels by 2030 • 80% below 2007 levels by 2050 		Deployed more electric GSE in partnership with airlines. Published Innovative Financing for Sustainable Aviation Fuel report, led by RMI/SkyNRG.	Develop a Sustainable Aviation Fuel Strategic Plan. Continue to install eGSE charging infrastructure at Concourses A, B and South Satellite. Continue to optimize operation of Pre-Conditioned Air (PCAir) and ground power systems, and encourage airline use.
Goal 2: Transportation Increase the percentage of passengers accessing the airport via environmentally-preferred modes transportation from 60% in 2014 to 70% in 2020.		Developed and evaluated potential airport Ground Transportation Access Plan (GTAP) strategies to reduce carbon and congestion from passenger and employee motor vehicles traveling to and from the Airport. Piloted Re-match with TNCs to reduce vehicle miles traveled.	Complete and present GTAP strategies to Port Commission.
Goal 3: Adaptation planning Sea-Tac will complete a risk analysis of potential climate change impacts and implications for the Airport, and develop a strategy plan for avoiding/mitigating risks.		Completed list of recommendations for airport's adaptation strategy plan to mitigate risks.	Present Port-wide climate adaptation evaluation and strategy plan with recommendations to Commission.
Goal 4: Century Agenda Objective: Air Quality Reduce air pollutant emissions by 50% from 2005 levels by 2037.		Airport fleet use of gasoline and diesel remained fairly steady compared with recent years.	Purchase renewable diesel for use in airport fleet diesel vehicles. Continue to optimize operation of PCAir and ground power systems, and encourage airline use of system.

 = Goal Achieved
  = Significant progress
  = Progress toward goal
  = No progress

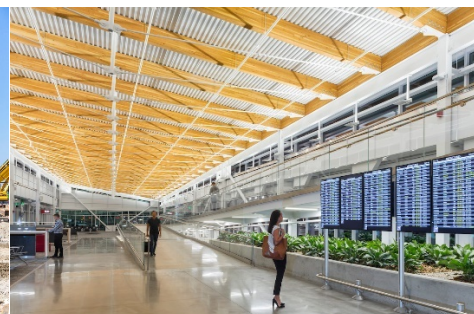
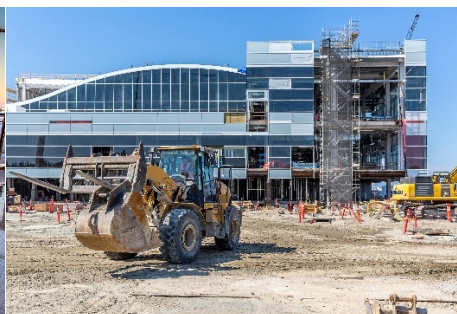
Energy Use and Conservation

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 5: Century Agenda Objective: Energy Use Sea-Tac will meet all increased energy needs through conservation and renewable sources.	●	Signed onto PSE's GreenDirect program to substitute all PSE electricity purchased at airport with renewable wind power. Evaluated options for on-site renewable electricity production at airport. Obtained approval to implement Stage 3 Mechanical project to further increase airport mechanical system efficiency	Continue to upgrade the efficiency of the HVAC system in the airport's main terminal Continue to improve airport cooling system efficiency (chilled water system). Evaluate opportunities to invest in more off-site renewable electricity projects.

Buildings and Infrastructure

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 6: Sustainable Buildings Seek the following for all buildings, or portions of buildings, owned by, operated by, leased by, and are also financed through the Port: United States Green Building Council's (USGBC) Leadership for Energy and Environmental Design (LEED) Silver Certification for new construction, additions, and major renovations; and LEED Silver Certification for minor renovations that involve substantial modifications to mechanical, electrical, and plumbing systems.	●	Obtained USGBC approval for 6 credits to qualify under the LEED Master Site program. Continued to work integrate sustainability attributes such as biophilic design into major new construction projects including a green wall into Phase 1 of the North Satellite major renovation. Port Commission passed Motion directing staff to develop a sustainability evaluation framework to ensure that sustainability is fully integrated into all capital projects.	Complete LEED review for design phase of the North Satellite project. Obtain LEED Silver certification for Concourse D Annex. Continue LEED Master Site evaluation process with a goal to obtain up to 12 - 15 pre-approved credits to support current and future LEED projects. Update architectural standards to enhance environmentally preferable material selection opportunities under LEED (v4). Complete comprehensive evaluation of Port procedures for including sustainability in capital projects throughout the Port. Research potential options, develop new approaches, and propose new procedures.

★ = Goal Achieved ● = Significant progress ● = Progress towards goal ● = No progress





Water Resources and Wildlife

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 7: Water Quality Sea-Tac will achieve and maintain Best Management Practices for water quality treatment and flow control over 100% of airport industrial areas.	★	Completed stormwater site plans for all new and redevelopment projects in accordance with Washington State guidance. Implemented water quality and flow control BMPs as appropriate on redevelopment projects. Updated the Airport's stormwater manual design standards to align with renewed NPDES and revised Ecology stormwater manual. Became first U.S. airport to achieve Salmon-Safe Certification.	Integrate Airfield Green Stormwater Infrastructure (GSI) guidance and Infiltration Feasibility Assessment into a programmatic guide to implement GSI on airport properties. Complete stormwater site plans for all new and redevelopment projects. Develop templates to provide consistent deliverables. Assess alternative means to achieve GSI standards at an industrial facility. Maintain airport Salmon-Safe Certification by conducting temperature study and continue assessment of water use and potential for water harvesting. Evaluate current methods of managing aircraft deicer runoff and assess need for additional measures to comply with future secondary treatment limitations.
Goal 8: Fish & Wildlife Habitat Sea-Tac will monitor, protect, and enhance fish and wildlife habitat while maintaining air transportation safety.	●	Converted over 10 acres of the former Tye Valley Golf Course to wildflower pollinator habitat. Met or exceeded all performance standards at stream and wetland mitigation sites (167 acres), including converting interior roads at the Auburn mitigation site to forested habitat. Granted more than \$85,000 to surrounding community organizations for ecological projects. Conducted a regional data-sharing initiative to improve management practices for red-tailed hawks.	Continue to meet or exceed performance standards at stream and wetland mitigation sites and maintain wildflower pollinator habitat (167 acres). Provide grant funding to community organizations through the Airport Community Ecology Fund in support of ecological projects in surrounding communities. Complete a Land Stewardship Plan to identify ecological enhancement opportunities on airport properties and ensure the airport applies consistent assessment, management, and reporting tools from across the region. Through the Airport Community Ecology Fund, conduct a forest canopy assessment to support developing Urban Forest Management Plans for neighboring communities. Create a field guide brochure to serve as a public educational outreach tool highlighting airport wildlife species.
Goal 9: Water Conservation Sea-Tac will reduce the potable water consumption rate 5% below 2008 levels by 2015.	★	Continued to implement existing water conservation measures. These measures include: Expanded piping (purple pipe) system in anticipation of connecting Airport restrooms to a centralized non-potable water source. Began construction on rainwater harvesting system as part of the North Satellite terminal renovation. Implemented landscaping standards that require native drought tolerant plants. Installed EPA WaterSense labeled water efficient equipment in tenant improvements. Continued developing leak detection program.	Complete rainwater harvesting system. Begin exploring other traditional water conservation measures including pipe lining and replacement, landscaping standards, and metering.



= Goal Achieved



= Significant progress



= Progress towards goal



= No progress



Materials Use and Recycling

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 10: Waste Reduction and Recycling Sea-Tac will divert 60% of the solid waste generated in the Terminal and 15% of the solid waste generated on the airfield.	●	Terminal waste diversion rate increased to 37%, and Airfield waste diversion rate stalled at 8%. Airport concessionaires donated 37,514 meals (721 per week) to the local food bank and airport USO. Implemented new recycling and food service ware requirements for ADR concessions and food service operators. Developed new recycling program education media for tenants including brochure, signage and decals, rules flyer, and email template. Supported solid waste utility capacity planning efforts including infrastructure and operational Participated in Strawless September to raise awareness of plastic pollution in Marine ecosystems Continued implementing green cleaning and waste reduction initiatives through airport custodial services contracts.	Continue implementing new recycling and food service ware requirements with onboarding ADR tenants. Support airport solid waste infrastructure capacity enhancement projects and Utility Master Plan development. Evaluate advanced material recovery (or mixed waste processing) opportunities through a King County partnership or conceptual analysis of an Airport Consolidated Resource Recovery Facility. Ensure green cleaning and sustainability requirements remain in custodial contracts during transition to multi-zone contracting strategy. Conduct an airfield waste audit and airline survey to identify waste diversion opportunities, provide education and outreach, and update the Airfield recycling plan with airline input. Join EPA's Food Recovery Challenge Program. Monitor global and local recycling industry impacts of China's "National Sword" and "Blue Sky" policies and collaborate with municipal and industry leaders to chart a path through recycling market turmoil.
Goal 11: Construction Debris(CD) Divert 85% of construction and demolition waste by 2020; 90% by 2025 and reach Zero Waste by 2035	●	Diverted 47% of construction waste from landfills in 2017 ¹ .	Continue to review project designs and identify opportunities to recycle CD such as carpet and other building materials. Work with construction teams to ensure construction waste efforts meet requirements for LEED® certification credit. Continue to review contractor submittals for compliance with CD specification and track performance.
Goal 12: Hazardous Materials and Waste Reduce the volume of hazardous waste generated from Port maintenance and operations to meet requirements for Small Quantity Generator (SQG) status by 2020.	★	Achieved Small quantity generator (SQG) status generating 1,075 pounds of hazardous waste. Generated less than 220 pounds of hazardous waste per month.	Implement Standard Operating Guidelines for all waste generation processes. Continue to identify list of frequently used hazardous materials and recommend less toxic substitutes. Meet with all Port Maintenance trades to identify opportunities to substitute products or implement procedures to reduce hazardous wastes. Begin working with Washington Dept of Ecology on Action Plan for per- and polyfluoroalkyl substances (PFAS).

★ = Goal Achieved ● = Significant progress ● = Progress towards goal ● = No progress

¹ The 2016 and 2017 Fuel System Modification projects (both completed in 2017) disposed of 4,600 tons of impacted soil via an approved landfill facility in Oregon, and recycled 3,100 tons of concrete. Without the impacted soil being hauled to a landfill, the diversion rate for 2017 would be 99.8%.

(((Noise

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 13: Noise Mitigation Increase the number of noise compatible parcels within the noise remedy boundary to 95% through the year 2030	★	<p>Successfully procured a consultant for design and acoustical testing & construction oversight for the new Single Family Sound Insulation program. Obtained FAA approval for contracting. Program is free of charge and consists of installing new doors and windows to reduce interior noise levels.</p> <p>Began the process of procuring a Job Order Contractor (JOC) that will directly manage the subcontractors who will perform the Single-family Sound Insulation construction work.</p> <p>Produced a 65 Day Night Level (DNL) noise exposure contour using actual 2016 operations data and compared to current Noise remedy Boundary.</p> <p>Performed noise testing at 2 eligible schools in the Highline School District – Des Moines Elementary and Highline High School.</p> <p>Began to define the sound insulation program for condominium complexes located within the Noise Remedy Boundary.</p> <p>Publicly recognized three airlines, Southwest, Spirit and SkyWest for their efforts in reducing noise as part of the Fly Quiet Program.</p>	<p>Single-Family Residential Sound Insulation - Procure a Job Order Construction (JOC) firm that will directly manage construction projects, obtain FAA approval, and begin sound insulation program process.</p> <p>Contact all potentially eligible homeowners who have submitted applications and begin performing FAA required noise testing to determine further eligibility. Eligible homeowners will begin the sound insulation process. Complete construction on the first group of homes.</p> <p>Continue to work with the FAA to obtain Airport Improvement Program (AIP) Grant Funding for the Highline School District reconstruction projects for Highline High School and Des Moines Elementary Schools.</p> <p>Continue to define the scope and costs of a sound insulation program for eligible condominiums within the noise remedy boundary. Obtain Commission approval for the design phase of the program, and then procure a consultant that will oversee the design and program management.</p> <p>Continue to enhance and refine the capabilities of the community online noise tool with more detailed information available for viewing</p> <p>Continue to monitor operations of the Required Navigation Performance procedures developed through the Greener Skies Project.</p> <p>Introduce an online tool for citizens to access noise monitor data from the Port's 24 noise monitoring locations.</p> <p>Convene the Sea-Tac Advisory Round Table (StART) noise working group to develop strategies that reduce aircraft noise in nearby communities.</p>



= Goal Achieved



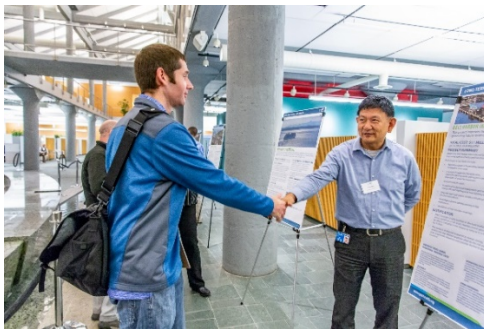
= Significant progress



= Progress towards goal



= No progress





Education and Integration

GOALS	STATUS	2017 PROGRESS	2018 ACTIONS
Goal 14: Education and Community Outreach Institute environmental education campaigns that use contemporary and emerging communication strategies to raise awareness of sustainability initiatives and promote environmental stewardship among our passengers, tenants and employees.	●	Conducted the 2017 Environmental Challenge with Raisbeck Aviation High School with a challenge to sustainably develop various airport properties. Installed suspended origami and additional sustainability messaging on Concourse A including column wraps and window clings. Integrated sustainability messaging into Port website map and airport mobile app. Initiated procurement for a living-wall within the North Satellite renovation project. Recognized United Airlines, HMSHost, and The Common Acre under an expanded Environmental Excellence awards program in coordination with Maritime division.	Conduct the annual Environmental Challenge program with Raisbeck Aviation High School to raise awareness of environmental careers and help develop the workforce within the aviation industry. Install new Sustainable In-Sights campaigns focusing on Bicycle Facilities, the Airport's Salmon Safe Certification, or The Good Traveler carbon offset program. Continue implementing the Environmental Excellence Awards Program and incorporate program recommendations from the Energy & Sustainability Committee. Confirm NSAT living wall procurement plan and system installation requirements targeting a phase 1 construction completion schedule of 2020 Q1. Integrate Sustainability messaging content into mobile platforms by using geo-located ibeacon technology.



= Goal Achieved



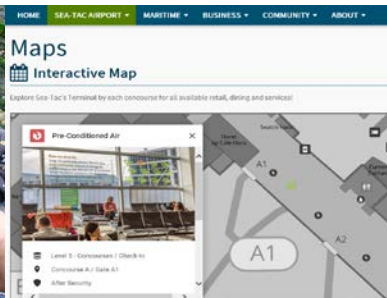
= Significant progress



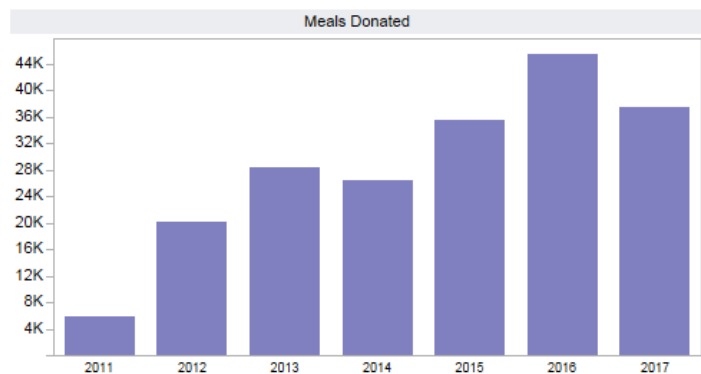
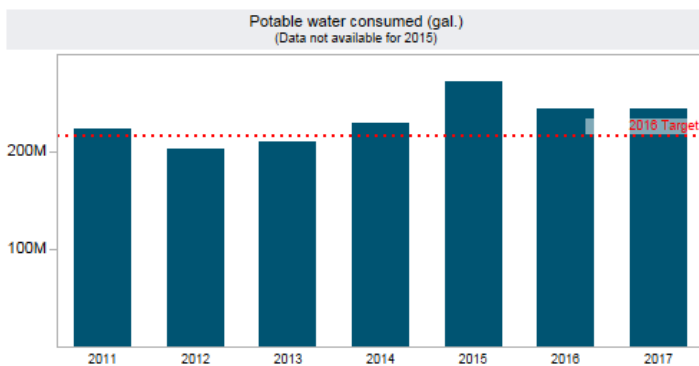
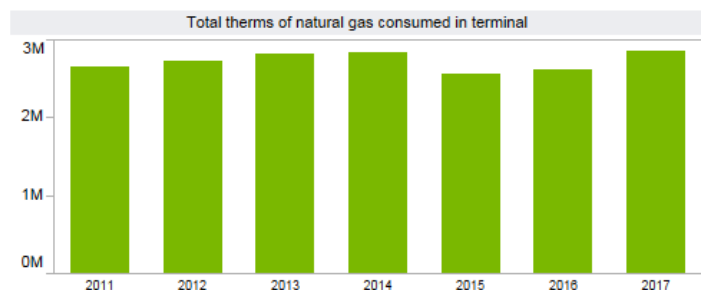
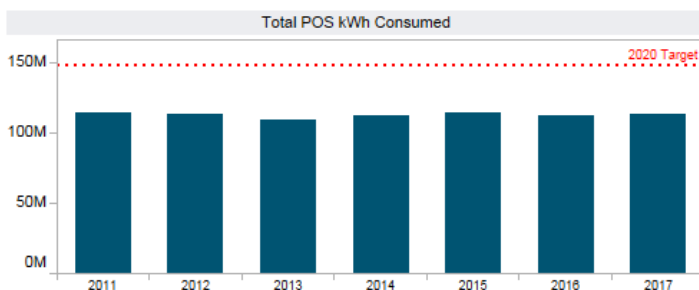
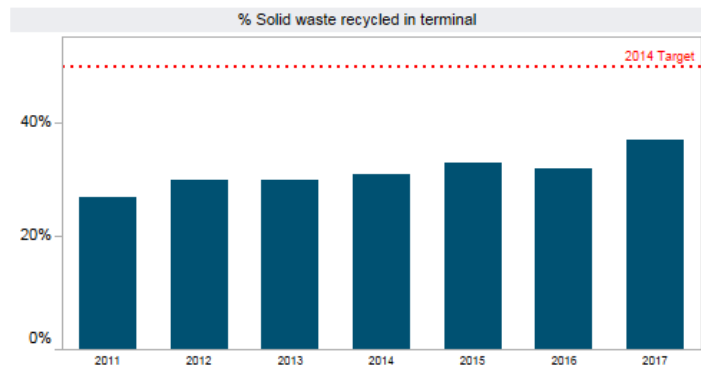
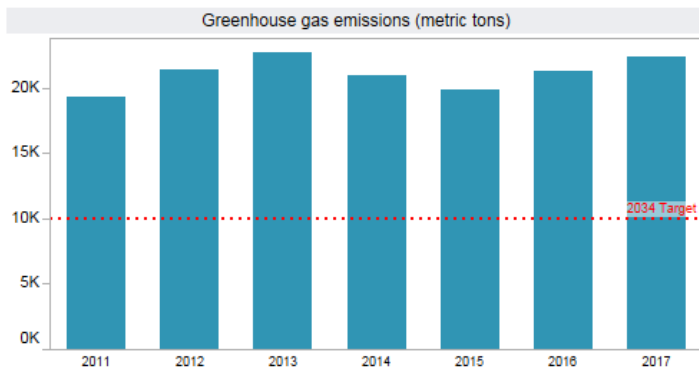
= Progress towards goal



= No progress



Seattle-Tacoma International Airport: Summary Environmental Metrics



Seattle-Tacoma International Airport Environmental Metrics

Waste & Recycling

Year	Terminal Solid waste generated (tons)	Terminal Solid waste landfilled (tons)	Terminal Solid waste recycled (tons)	Terminal Recycling rate (%)	Haz waste generated (lbs)
2011	5,704	4,180	1,524	27%	2,535
2012	5,665	3,960	1,705	30%	1,558
2013	5,762	4,021	1,741	30%	2,607
2014	6,144	4,238	1,907	31%	2,670
2015	6,692	4,477	2,215	33%	2,411
2016	7,328	5,003	2,325	32%	1,057
2017	8,223	5,204	3,018	37%	1,075

Energy Use

Year	Total POS kWh used	kWh per passenger	Total therms of natural gas used in terminal	Therms per passenger	Therms per sq ft of terminal
2011	114,259,552	3.5	2,661,720	0.081	0.84
2012	113,511,095	3.4	2,723,127	0.082	0.86
2013	109,694,138	3.1	2,822,765	0.081	0.89
2014	112,028,795	3.0	2,831,209	0.076	0.89
2015	114,498,340	2.7	2,555,579	0.060	0.81
2016	112,697,013	2.5	2,610,907	0.057	0.82
2017	113,407,327	2.4	2,860,025	0.061	0.90

Stormwater & Runoff

Year	Area w/ Flow Control BMPs	Area w/ Water Quality BMPs	NPDES permit exceedances
2011	100%	100%	24
2012	100%	100%	18
2013	100%	100%	8
2014	100%	100%	6
2015	100%	100%	22
2016	100%	100%	7
2017	100%	100%	9

Meals Donated

Year	Number of meals
2011	5,896
2012	20,049
2013	28,278
2014	26,357
2015	35,528
2016	45,578
2017	37,514

Water Consumption

Year	Potable Water use (gallons)	Potable Water Use / passenger
2011	223,496,221	6.8
2012	201,657,593	6.1
2013	210,272,166	6.0
2014	229,009,371	6.1
2015	270,688,582	6.4
2016	243,682,410	5.3
2017	242,576,790	5.2

Fuel Consumption

Year	Gas used (gal)	Diesel used (gal) - does not incl gen...	CNG used (GGE)
2011	121,716	14,362	121,656
2012	124,127	30,499	330,089
2013	115,430	24,548	380,084
2014	121,776	25,973	366,484
2015	123,408	23,734	368,811
2016	119,702	27,091	362,969
2017	121,048	37,415	371,896

Environmentally Preferable Products

Year	% Green Office Supplies Purchased	% Green Paper Products Purchased
2011	41%	82%
2012	39%	85%
2013	40%	77%
2014	40%	68%
2015	35%	64%
2016	32%	67%
2017	42%	72%

Greenhouse Gas Emissions

Year	Airport-owned emissions (metric tons)	Airport-owned emissions per passenger
2011	19,330	0.05
2012	21,351	0.06
2013	22,685	0.06
2014	20,980	0.06
2015	19,904	0.05
2016	21,240	0.06
2017	22,422	0.06

Buildings & Infrastructure

Year	Green/LEED-certified bldgs (mil. sq. ft.)	Projects attempting LEED certification
2011	4,887	1
2012	1,697,834	2
2013	1,855,234	3
2014	1,855,234	5
2015	1,855,234	5
2016	1,855,234	5
2017	1,855,234	6