

Conserving Resources

Engaging Employees in Conservation

Boeing has implemented multiple approaches to encourage the workforce to **support conservation by fostering sustainable behaviors**. Employees are a source of innovation; champions of projects and their combined actions contribute to achieving Boeing’s goals.

The programs that Boeing utilizes to get employees involved and contribute to the enterprise sustainability goals are designed to reach all aspects of the workforce (**Page 12**). Elements of sustainability are embedded within the Boeing Production system content and linked to Lean methodologies that **eliminate waste and promote more efficient, sustainable practices within operations**.

Additionally, Boeing provides behavior change training and encourages recognition programs to help employees develop sustainable habits and reward them for their efforts.

The approaches used include elements of gamification, which involves turning sustainable behaviors into fun and engaging programs. Key employee engagement avenues include:

- **The Conservation Best Practices program**, which is deployed across the enterprise to prioritize **reducing energy, water and waste** at our largest areas of operation.
- **The Energy Star Battle of the Buildings** competition to encourage employees to work together toward our sustainability goals and promote a culture of environmental stewardship.
- **Aerospace Sustainability Foundations Training**, an internal credential **training that allows employees to learn more about sustainable aerospace and practices** and how they can incorporate them into their work.

By emphasizing employee engagement throughout the sustainability programs, Boeing is benefiting local communities and utilizing the capabilities of its diverse workforce to achieve its operational sustainability goals.

Earth Month photo contest winners

Boeing’s Earth Month celebrations included a photo contest. Participants had the opportunity to submit a photograph with a description of what sustainability means to them.



Winner: Kaitlin Brush Brevig, BCA, Interiors Responsibility Center

For Kaitlin, sustainability means being able to find secret beauty in nature, without negatively affecting it. Photo entitled “Fog Camano,” located in the Puget Sound.



Runner-Up: Katie Ziegler, 777 Fleet Chief Office

For Katie, sustainability includes protecting the honey bees that pollinate plants, sustaining food sources for humans and animals. Factors threatening honey bees include pesticides, disease and their natural predators like the giant hornet. Making honey bees a regulatory and lifestyle priority is critical.

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Employees more than double goal in annual conservation competition

While Boeing focuses on conservation every day, the company hosts an annual competition starting on Earth Day in April to encourage Boeing employees to take daily actions that advance sustainable operations.

Employees across the globe took more than 231,000 60-second actions for the environment from Earth Day on April 22 to May 31, 2022. This was the equivalent of

reducing carbon emissions by not driving 7.8 million miles (12.6 million kilometers). Top 60-second actions included **using refillable water bottles, recycling and turning off equipment not in use.**

Winners from across the globe:
The Battle of the Buildings competition among sites was based on the number of actions per capita and the winners in each category were:

- BGS
- Everett, Washington
- San Antonio
- Winnipeg, Canada
- Seattle Spares Distribution Center
- Berlin

“When employees engage in taking 60 seconds for the environment, we know it cuts costs, helps protect the environment and gives employees a sense of belonging, drive and purpose.”

Steve Shestag, director, Sustainable Operations, Global Enterprise Sustainability



Always with quality and pride, the Boeing Spares Distribution Center employees in SeaTac, Washington, step up as Battle of the Buildings winners, including (left to right): April Nelson, Steven Yaummarath, Jo Dollente, Brandon Stanfield, Justin Roberts, Brett Nichols and AJ Flores. (Boeing photo)

Reducing Waste

Boeing is making strides to protect the land, water and air in our communities by **reducing waste from work sites and our supply chain**. Waste streams are as complex as our facilities, which range from office space to part fabrication to assembly of aircraft and space vehicles. Solid waste includes material that has been **discarded or abandoned or that is no longer useful or usable and has been designated for removal**. Items that are reused or reclaimed are excluded from solid waste. Boeing has dedicated teams working to prevent waste from going to landfills and to assess opportunities to return or reuse packaging for parts.

Boeing generates hazardous waste primarily from a variety of research, manufacturing and facilities maintenance processes. **Hazardous waste may be recycled upstream or downstream, as on-site or off-site reclamation and avoided generation through processes that extend useful life** of consumable chemicals to avoid hazardous waste. We look **to reduce hazardous waste in upstream activities by preventing or reducing the amount of hazardous waste generated through extending system life through contaminant removal**. Downstream, we look at hazardous waste generated from site operations. We implement **several recycling and recovery activities to reduce the need for new chemicals**.

Progress Toward 2025 Hazardous and Nonhazardous Waste Goals

- **Solid Waste – 40%** reduction compared to 2017. The continued trend of increased remote working conditions influences the overall reduction in solid waste. Conservation initiatives and vendor management continue to be opportunities to drive further reductions.
- **Hazardous Waste – 9%** reduction compared to 2017. Hazardous waste was 1% higher than anticipated during the year. Benefits from implementing conservation initiatives were outweighed by key events across the enterprise, including a historical flood event in St. Louis, which caused an unplanned increase in hazardous waste disposal from a water treatment system.

The Stingray gets Lean

As the U.S. Navy’s uncrewed aerial refueler, the MQ-25 Stingray is a model of efficiency, in the air and on the production line.

The digitally engineered aircraft features a **highly efficient engine and lightweight composite skin**, allowing it to stay in the air much longer, **using little fuel itself to complete its mission**.

Within the factory setting, robotic automation and advanced assembly techniques eliminate the need for drilling during aircraft assembly.

Now, the futuristic aircraft is setting new standards for efficiency with a renewed focus on **reducing waste through Lean manufacturing**.

Across Boeing’s production system, teams are building momentum with Lean principles. The MQ-25 is the first program within Boeing Defense, Space & Security to undergo a renewed focus on Lean.

A focus on the customer: “We know what Lean means to our Navy customer — operational excellence, stability and execution,” Troy Rutherford, MQ-25 vice president and program manager. “When we focus on removing waste from the system and listening to those who do the work, then production, innovation and creativity all take a huge leap forward. We’re excited to be the first program to engage with the Lean workshops.”

What is Lean? Lean is a way of thinking and acting that enables us to solve problems and continually improve. It is the foundation of Boeing’s production system and embraces just-in-time delivery, error-free production and continuous flow. Lean helps spot and **eliminate waste, wherever it is found, which also reduces costs**.

The MQ-25 Stingray is an uncrewed aircraft system, designed for the U.S. Navy, providing robust refueling capability. (Boeing photo)



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Facilities & Asset Management Reclamation team member Jon Kelley is Boeing’s 2022 Environment Champion. (Boeing photo)

Boeing Recognizes 2022 Environment Champion

Jon Kelley, Facilities & Asset Management Reclamation team member, brings heart, commitment and skill to reduce waste to landfill, conserve valuable resources and ensure the company is compliant with regulations that protect the environment and the public.

In 2022, Kelley was recognized as the Environment Champion for his environmental passion and 40 years of commitment to Boeing. Throughout his career, Kelley has done more than his job required for conservation and protection of the environment and public safety. By doing this, he has helped Boeing’s Puget Sound sites maximize the conservation of materials and properly handle regulated materials, while providing guidance to business partners.

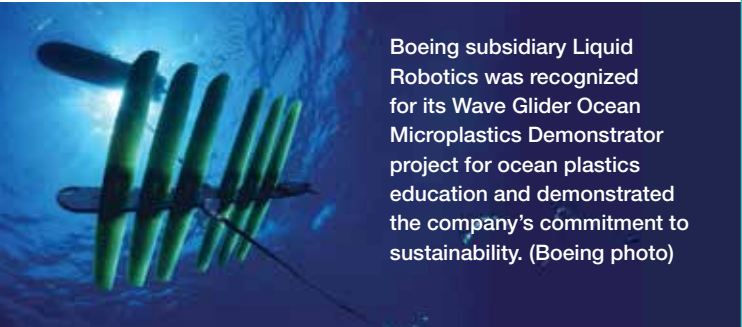
Kelley constantly redefines his job by raising the bar of efficiency and standard of quality. Leaning on his decades of experience, Kelley has helped to develop tools and training methods to increase his team’s efficiency without compromising safety or quality. He further demonstrates his commitment to sustainability by training and inspiring employees to prioritize conservation and cross-functional collaboration.

Kelley humbly describes his work as simply: “Doing the right thing to keep things out of the landfill.”

Boeing honors employees who embrace environment

Employee innovation recognized: Below is a sampling of the 15 environmental leader winners in six categories that focused on reducing waste, energy and water use.

- **In Everett, Washington,** 260 Boeing employees from 40 organizations generated 1,800 sustainability ideas to consider for future products in a “sustainability lab.”
- **Seattle** employees reclaimed about 2,500 gallons of water per day at the Seattle Developmental Center by reconfiguring piping and installing a more efficient system.
- **Winnipeg** employees conserved electricity equivalent to 60 homes’ annual use by installing occupancy sensors and upgrading LED lights, saving almost 720,000 kWh yearly.
- **A Mesa team** worked with the local utility company to lessen demand on high peak utility days during summer months by programming the Building Automation System to improve processes and generate 5,400 kWh, which earned rebates of \$30,000 annually.
- **An Everett team** reduced the amount of solvents required to flush paint pumps by removing filter housing. The result cut solvent use by 12 gallons per airplane and more than 10,000 pounds per year, saving almost \$19,000.
- **In Chennai, India,** employees reduced GHG emissions by consolidating shipments and transitioning from air to sea shipments for India suppliers.



Boeing subsidiary Liquid Robotics was recognized for its Wave Glider Ocean Microplastics Demonstrator project for ocean plastics education and demonstrated the company’s commitment to sustainability. (Boeing photo)

Reducing water consumption

Boeing sets rigorous water use reduction targets at our manufacturing sites to preserve this natural resource for the environment and our communities. Boeing’s water is sourced from local public utilities (surface, ground and reclaimed water) and company generation (on-site well, on-site reclamation and rain capture). This sourced water supports manufacturing, sanitation, drinking water, cooling and irrigation across the company. The majority of our water is from public water supply systems, and most consumption measurement is from water system revenue-grade meters. Water used within our facilities is discharged to public sanitary sewer systems. In some cases, Boeing pre-treats wastewater before discharging it to public sanitary sewer systems, in compliance with regulatory requirements. Boeing does not set voluntary effluent discharge standards beyond those set by regulation.

Boeing specialists work to identify efficiencies, best practices and new technologies to reduce water use and identify alternatives. We monitor irregularities that may require action and created a Conservation Best Practice program to minimize water use, applying many water management techniques endorsed by the U.S. Environmental Protection Agency.

In 2022, we achieved a 19% reduction compared to consumption in 2017. Water consumption was 7% lower than anticipated with sites implementing conservation initiatives to increase water intake efficiencies and with production activity remaining low. Building off the reductions seen by 2025, Boeing will transition to an absolute reduction goal to focus on the most water-intensive processes across the company.

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Biodiversity and Environmental Compliance

Boeing owns thousands of acres of habitat across five locations that are being protected or restored. Each habitat is actively managed and maintained by site employees, nonprofit organizations or contract biologists. For some locations, additional agreements and monitoring are in place to ensure all legal, contractual and certification requirements are met.

Each habitat is certified by the Wildlife Habitat Council (WHC), with three certified at the Gold level. The WHC's certification program is the only voluntary sustainability standard designed for broad-based biodiversity enhancement and conservation education activities on corporate landholdings.



- **Avian Project Award:** Awarded to Boeing for monitoring targeted species and food sources — and being managed by adapting to the environment. The Grasshopper Sparrow is also a happy recipient.
- **Grasslands Project Award:** Awarded to Boeing for monitoring of vegetation, wildlife use of vegetation, wildlife use and evaluation to create next steps for the project.
- **Pollinator Project Award:** Awarded to Boeing for monitoring targeted species and food sources yearly, and recognizes a policy integrated into overall site operations to minimize, eliminate or apply responsible use practices of pesticides and herbicides.

Sustaining biodiversity from Seattle to Charleston

The big picture: The WHC helps companies like Boeing **advance biodiversity, sustainability, employee engagement and community relations goals with programs that translate sustainability goals and objectives into tangible and measurable on-the-ground actions.** WHC Awards recognize programs and projects that demonstrate excellence in corporate conservation. Boeing's restored Emery Landfill in Wichita, Kansas, was recognized with three awards in 2022 (see left column for details).



5.85 acres of marine habitat,
Boeing Plant 2, Seattle, Washington



1.5 acres of pollinator
gardens, Pollinator Prairie,
Olathe, Kansas



2,668 acres of diverse habitat,
Santa Susana, Canoga Park, California



3,923 acres, Keystone/Fairlawn
Project, North Charleston, Boeing South
Carolina (including 2,025 acres of wetland)



82 acres, Emery Landfill, Wichita,
Kansas (including 56.5 acres of grassland)