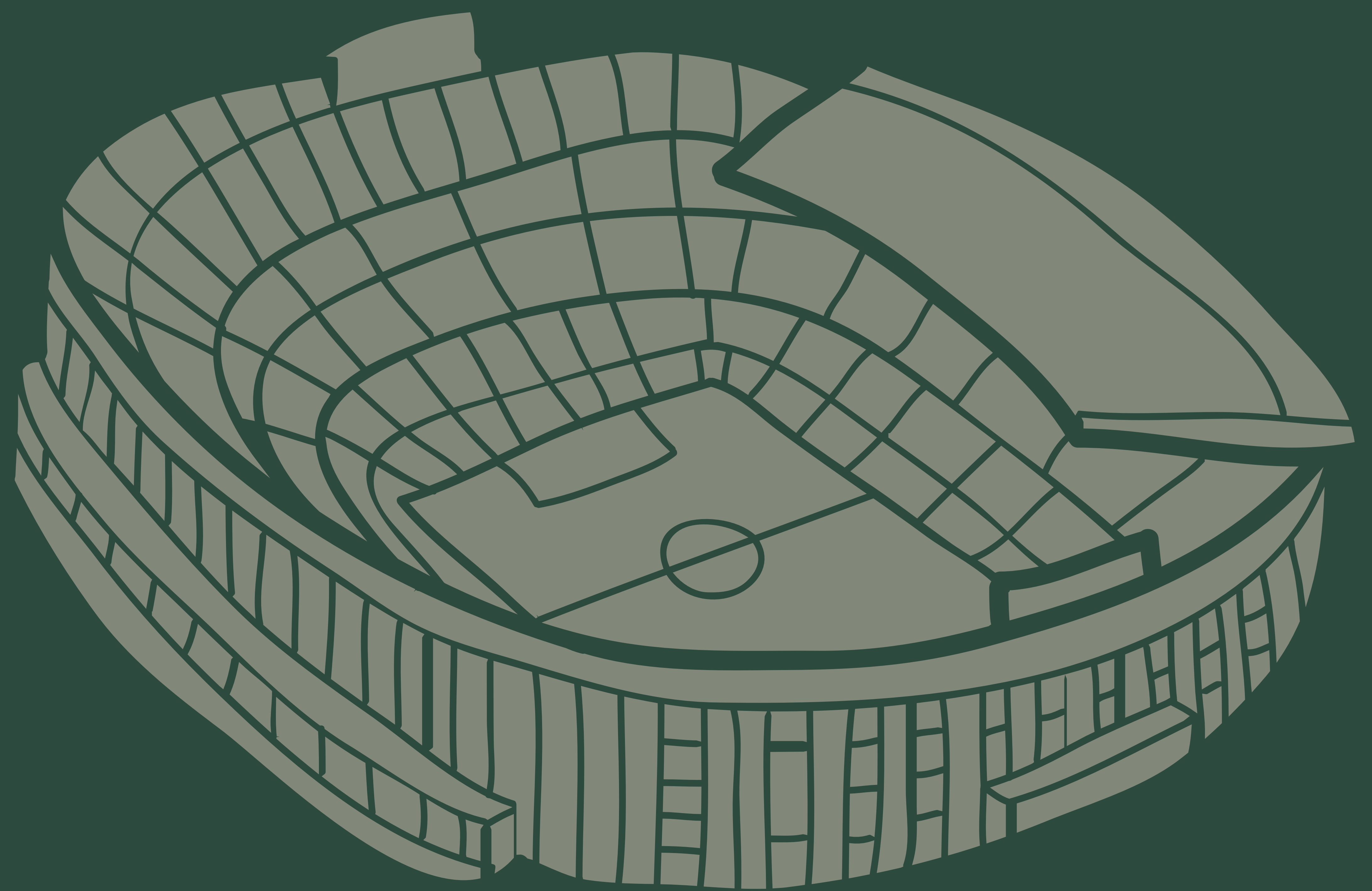


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# Building the Future: Sustainable Sports Infrastructure



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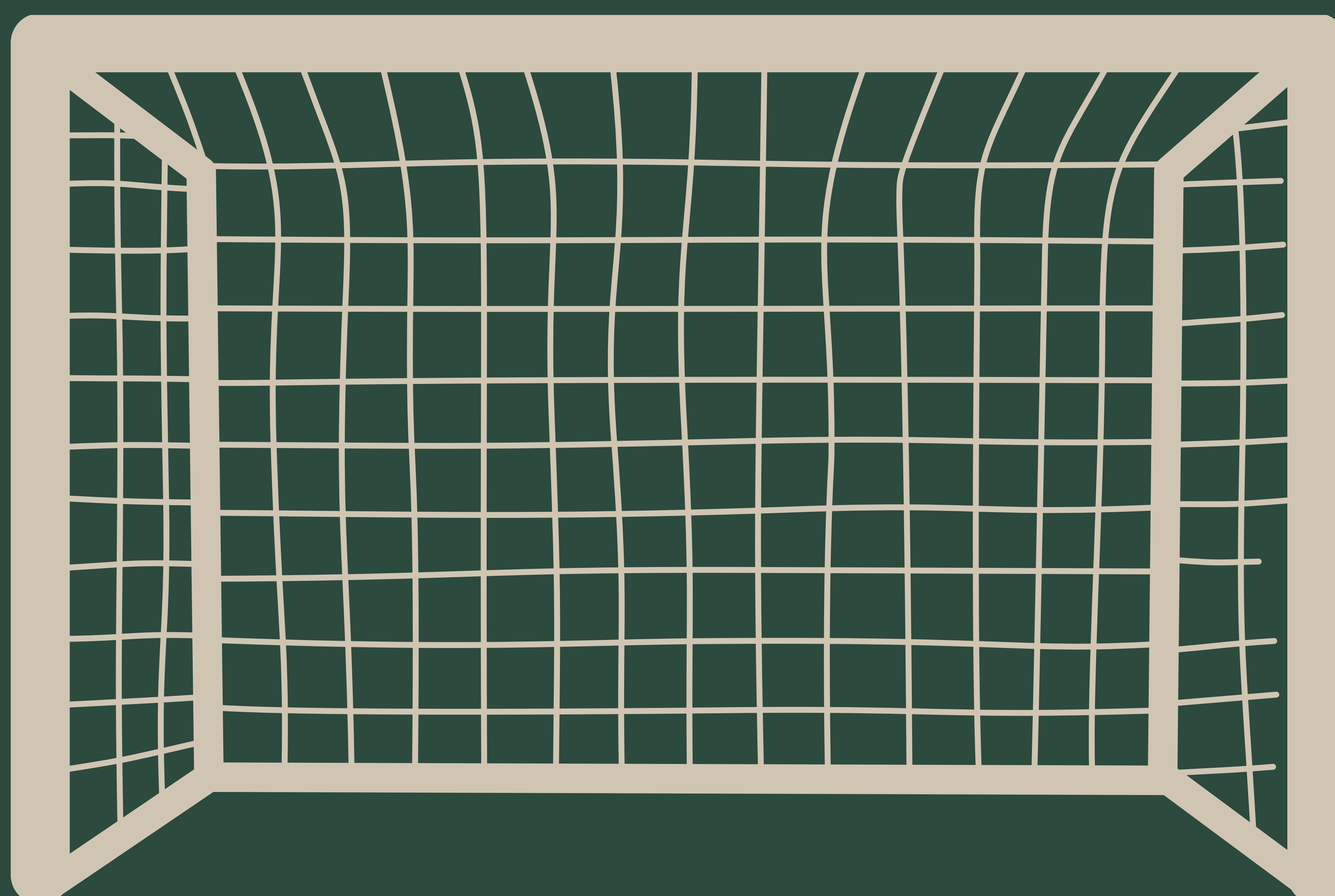
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# Abstract

As cities and organizations invest heavily in sports venues to drive economic growth, community engagement, and global visibility, the environmental and social costs of traditional infrastructure models are becoming increasingly unsustainable. This policy memo examines how governments, leagues, and private developers can transition toward sustainable sports infrastructure that reduces carbon emissions, minimizes resource consumption, and delivers long-term public value.

This memo outlines key challenges, including high construction emissions, energy-intensive operations, underutilization of facilities, and inequitable community impacts. It evaluates emerging best practices such as green building standards, renewable energy integration, circular material use, climate-resilient design, and multi-purpose venue planning. Case examples illustrate how leading projects are balancing financial viability with environmental responsibility.

Ultimately, this memo argues that sustainable sports infrastructure is not only an environmental imperative but also a strategic investment in resilient, inclusive, and economically sound communities.



# Introductory Overview

Sports stadiums have often been at the forefront of technological innovation, as their unique position as forward-facing, publicly invested buildings pushes developers to come up with new ways to “future-proof” their buildings and draw in new fans. Climate innovation is no different, as stadiums across the US and the world at large have made significant strides in addressing their climate impact, from implementing renewable electric power to providing free public transit to their events.



However, even with these significant strides, the approach to sports sustainability is still patchwork in the US, with no uniform regulation on how and where stadiums should be built. They also consume a lot of water, electricity, and other resources to operate smoothly because of their size and the amount of people they serve while operating, making maintaining sustainability standards difficult.



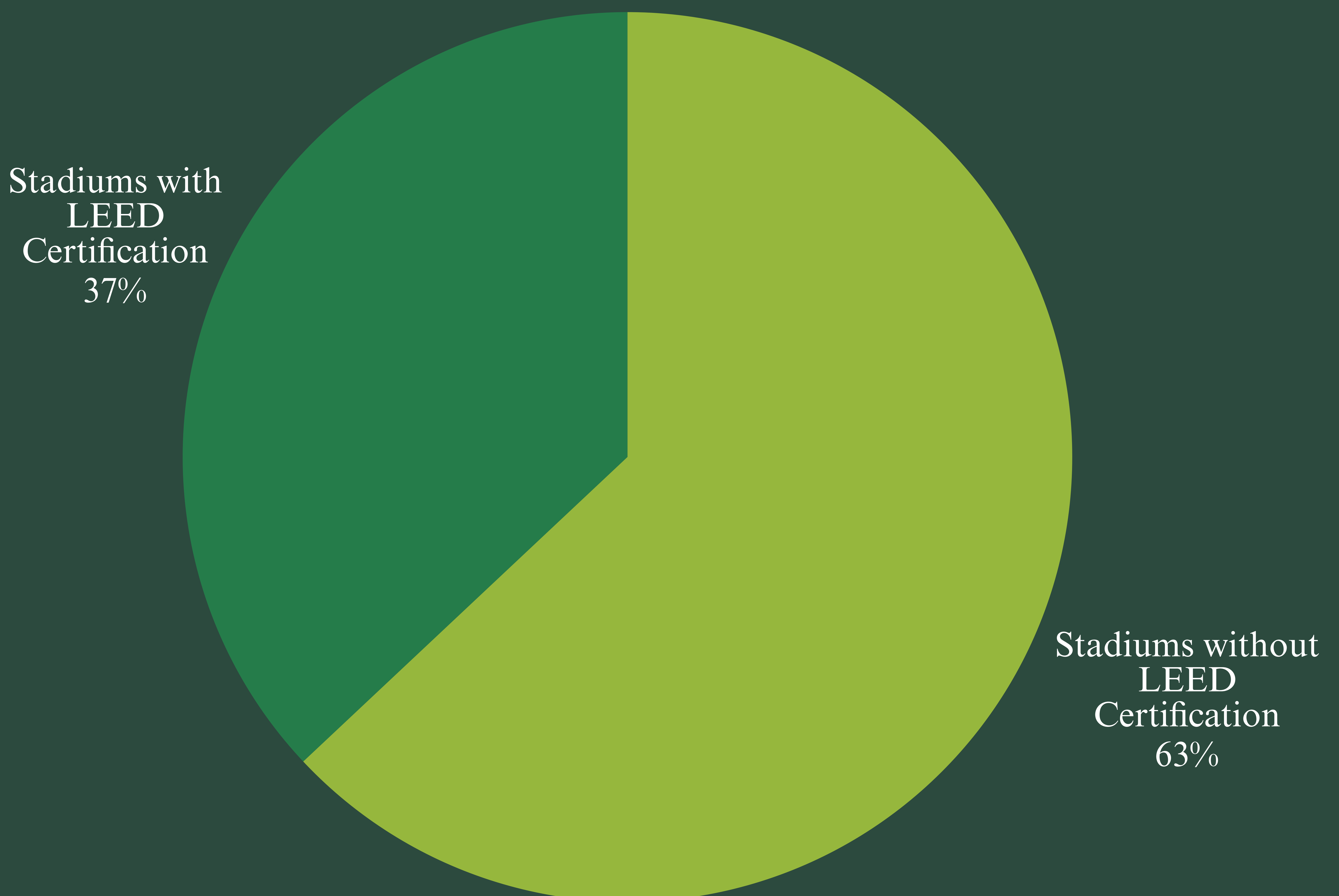
## Environmental Impacts

Waste Generation	A single NFL season can produce 44.6 million pounds of waste, largely from single-use plastics and food, while the 2020 Super Bowl generated 40,000 lbs of food waste alone. (Raskin, 2024)
Transportation and Air	Over 85% of greenhouse gases from sporting events stem from fans traveling to and from venues. Increased traffic and tailgating are linked to higher levels of local air pollution and ozone (Thorogood, 2022).
Energy and Water	Stadiums consume significant energy for lighting, scoreboards, and HVAC systems (approx. 10,000 MWh annually for a medium-sized stadium). They also require immense amounts of water for field maintenance and facilities. (Roswandowicz, 2025)
Turf and Land Use	Plastic-based turf fields create heat islands, reaching temperatures 30–60 degrees hotter than grass, and release microplastics. Stadium construction often destroys green spaces, reduces habitats, and creates impervious surfaces that affect groundwater. (Mederos, 2025) (CHE, 2023)



# Problem Definition

Sports stadiums pose notable sustainability challenges due to their high energy use, significant waste generation, and resource-intensive construction. Although some venues have adopted environmentally friendly practices, these efforts are not consistent across the United States and are often voluntary. The lack of standardized regulations allows many projects to prioritize short-term economic considerations over long-term environmental impacts. As a result, stadiums continue to contribute to carbon emissions and inefficient resource use. This gap in policy highlights the need for more consistent and enforceable sustainability standards in stadium development.



# Policy Proposal

We propose that Congress pass a law mandating that, at the federal level, all major sports venues be required to achieve at least the minimum certification according to Leadership in Energy and Environmental Design, or LEED, standards, offering an incremental tax credit to venues that achieve each rank higher than said minimum. This will solve the issue of patchwork regulation, as it would be a federal rule and not one that is left up to state or local ordinances.

Because LEED implements minimum standards for emissions, water efficiency, renewable electricity, and other factors, it would provide a clear and effective strategy for reducing the environmental impact of stadium construction.

## Policy Actors Include:

- United States Congress: Drafts, debates, and passes legislation that could mandate or incentivize LEED certification for federal buildings or federally funded projects.
- Key committees: House Committee on Transportation and Infrastructure
- Senate Committee on Environment and Public Works
- Individual Members of Congress
  
- Department of Energy (DOE)
- Environmental Protection Agency (EPA).
- Office of Management and Budget (OMB)
- The President / Executive Office
  
- US Green Building Council (USGBC)



# What is LEED Certification?

LEED certification, or the Leadership in Energy and Environmental Design certification, is a system of sustainability certification for buildings of various sizes and purposes, ranging from office spaces to sports venues.

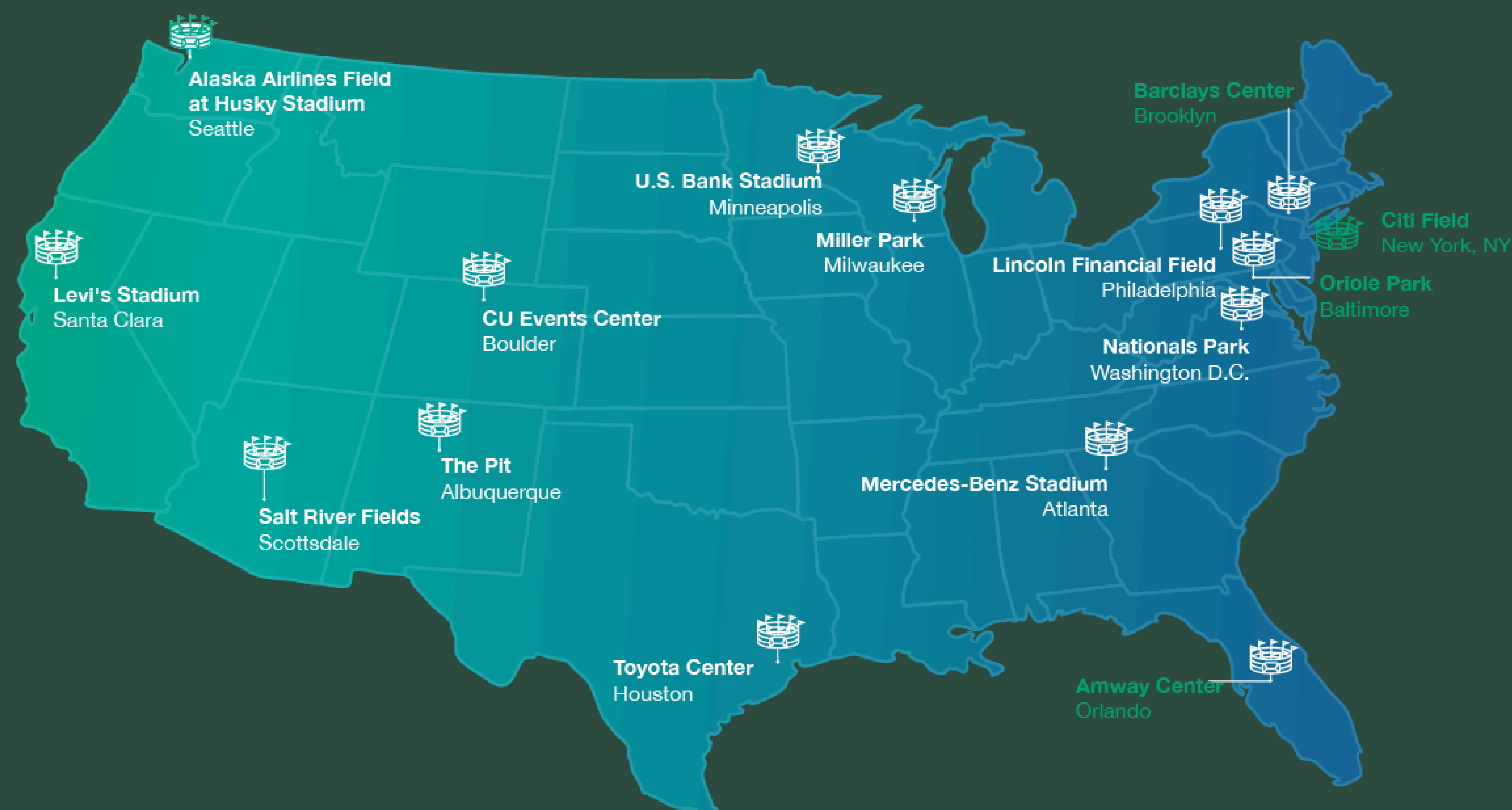
It was created by the United States Green Building Council in 1998 and has gone through multiple iterations, with the most recent version (v.5) focusing in the following categories:

- Integrative Process, Planning, and Assessments;
- Location and Transportation;
- Sustainable Sites;
- Water Efficiency;
- Energy and Atmosphere;
- Materials and Resources;
- Indoor Environmental Quality;
- and Project Priorities

Each LEED Scorecard offers a total of 110 points spread across these categories, with the weight of each category depending on the type of scorecard. There are three types of scorecards, operations and maintenance scorecards, building and construction scorecards, and interior design and construction scorecards.

In order to become certified, a building must meet all the required subcategories and earn a total score of at least 40 points to become certified, with the rank of certification increasing for each 10 additional points earned, with silver being the lowest and platinum being the highest additional tiers.

## Notable stadiums with LEED Certifications



# Case Study: Mercedes-Benz Stadium

This is the most sustainable sports venue in the US and top 5 in the World

Certified Platinum by LEED in 2017, scoring a total of 88 out of 110 points (highest ever for sports venue). Scored perfectly in the following categories: sustainable sites, water efficiency, innovation, and regional priority credits. Implemented tactics like a retractable roof to harness sunlight, and LED lighting system to reduce electricity usage, and a 680,000 gallon cistern to capture and recycle rainwater for irrigation



**COST: 1.6 Billion Dollars**

## What are the benefits?

- Significant Cost Savings
- Operational Efficiency
- Brand Reputation

## Key Pillars of Stadium

- **Water Management & Sustainability:** To address local flooding, a 2 million-gallon cistern and storm water vault manage runoff, reducing water use by 47% through high-efficiency fixtures and rainwater harvesting.
- **Renewable Energy:** The stadium features 4,000 solar PV panels, generating enough renewable energy to power 9 Atlanta Falcons games or 13 Atlanta United matches per year.
- **Zero Waste Goal:** The venue diverts over 90% of waste from landfills through comprehensive recycling and composting programs.
- **Community and Fan Engagement:** The site, located near public transportation, includes an urban garden, electric vehicle charging, and features designed to promote a healthier environment for the surrounding community.

# Conclusion

Sports stadiums occupy a unique position within modern infrastructure. They are highly visible public spaces that symbolize innovation, community identity, and economic development.

However, they also carry high environmental costs, particularly during construction and large-scale events.

Although some stadiums have embraced sustainability initiatives, these efforts remain inconsistent across the United States. Implementing mandatory environmental performance standards, such as minimum energy-efficiency requirements, waste-diversion minimums, and carbon-emissions limits, alongside incentives for LEED certification, would provide a clear and effective strategy for reducing the environmental impact of stadium construction.

By establishing national sustainability expectations for sports infrastructure, policymakers can ensure that future stadiums contribute not only to entertainment and economic growth but also to long-term environmental responsibility.



# References

Raskin, Evan. "Game-Changing Sustainability: How NFL Stadiums Can Go Plastic-Free - Innovation & Tech Today." *Innovation & Tech Today*, 14 Oct. 2024, [innotechtoday.com/game-changing-sustainability-how-nfl-stadiums-can-go-plastic-free/](https://innotechtoday.com/game-changing-sustainability-how-nfl-stadiums-can-go-plastic-free/).

Team, Sancroft. "Keeping a Clean Sheet: Reducing Sports Travel Emissions." *Sancroft*, 18 Oct. 2022, [sancroft.com/keeping-a-clean-sheet-reducing-sports-travel-emissions/](https://sancroft.com/keeping-a-clean-sheet-reducing-sports-travel-emissions/).

Holger Roswandowicz. "Energy Consumption of the World's 10 Largest Sports Stadiums (2020–2024)." *Stromfee.cloud*, 16 Feb. 2025, [www.stromfee.cloud/post/energy-consumption-of-the-world-s-10-largest-sports-stadiums-2020-2024](https://www.stromfee.cloud/post/energy-consumption-of-the-world-s-10-largest-sports-stadiums-2020-2024).

"Playing on Plastic: Artificial Turf Hazards and Safer Alternatives." *Collaborative for Health & Environment*, 2023, [www.healthandenvironment.org/latest-research/blog/playing-on-plastic-artificial-turf-hazards-and-safer-alternatives](https://www.healthandenvironment.org/latest-research/blog/playing-on-plastic-artificial-turf-hazards-and-safer-alternatives).

Mederos, Lourdes. "Scorching Temps from California Turf Raises Questions about Artificial Turf, Xeriscaping in Humid States like Florida - News." *News*, 30 July 2025, [blogs.ifas.ufl.edu/news/2025/07/30/scorching-temps-from-california-turf-raises-questions-about-artificial-turf-xeriscaping-in-humid-states-like-florida/](https://blogs.ifas.ufl.edu/news/2025/07/30/scorching-temps-from-california-turf-raises-questions-about-artificial-turf-xeriscaping-in-humid-states-like-florida/).