



A Zero Waste Super Bowl and The First  
LEED v4.1 O+M Platinum Sports Stadium  
Sustainability at U.S. Bank Stadium





# Presenters

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# Learning Objectives

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Learn and understand how U.S. Bank Stadium built upon a previous LEED Gold certification effort (LEED BD+C: New Construction v2009 in 2017) to improve its LEED certification level to LEED Platinum through Arc and LEED v4.1 O+M in 2019, becoming the first professional sports stadium to achieve LEED Platinum via LEED v4.1 O+M and Arc.

Explore U.S. Bank Stadium's LEED BD+C: New Construction v2009 Gold certification effort in 2017, and how elements of the sustainable design and construction of the facility facilitated sustainable operations within the LEED v4.1 O+M Platinum effort – specifically, the Base Score, Energy Performance Score, and Transportation Performance Score.

Examine U.S. Bank Stadium's recycling and waste diversion programs, culminating in a Zero Waste Super Bowl, and how the culture of waste reduction at U.S. Bank Stadium impacted the LEED v4.1 O+M and Arc Waste Performance Score.

Understand how LEED v4.1 O+M Performance Scores at U.S. Bank Stadium operate as tools to benchmark performance and set strategic targets for continued improvement and sustainable operations.



# Outline

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Sustainability & LEED at U.S. Bank Stadium

LEED v3 BD+C: New Construction Gold certification – 2017

Overview + Credit Highlights

Integration with Arc

U.S. Bank Stadium Sustainability Program

Beyond LEED

Zero Waste Super Bowl

Highlights + Metrics

Video: The Makings of a Zero Waste Super Bowl (Rush2Recycle)

LEED v4.1 O+M Platinum certification – 2019

Overview

Highlights & Successes

Q&A



# LEED Timeline

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LEED v3 BD+C: NC  
November 20, 2017

Super Bowl LII  
February 4, 2018

LEED v4.1 O+M  
July 12, 2019



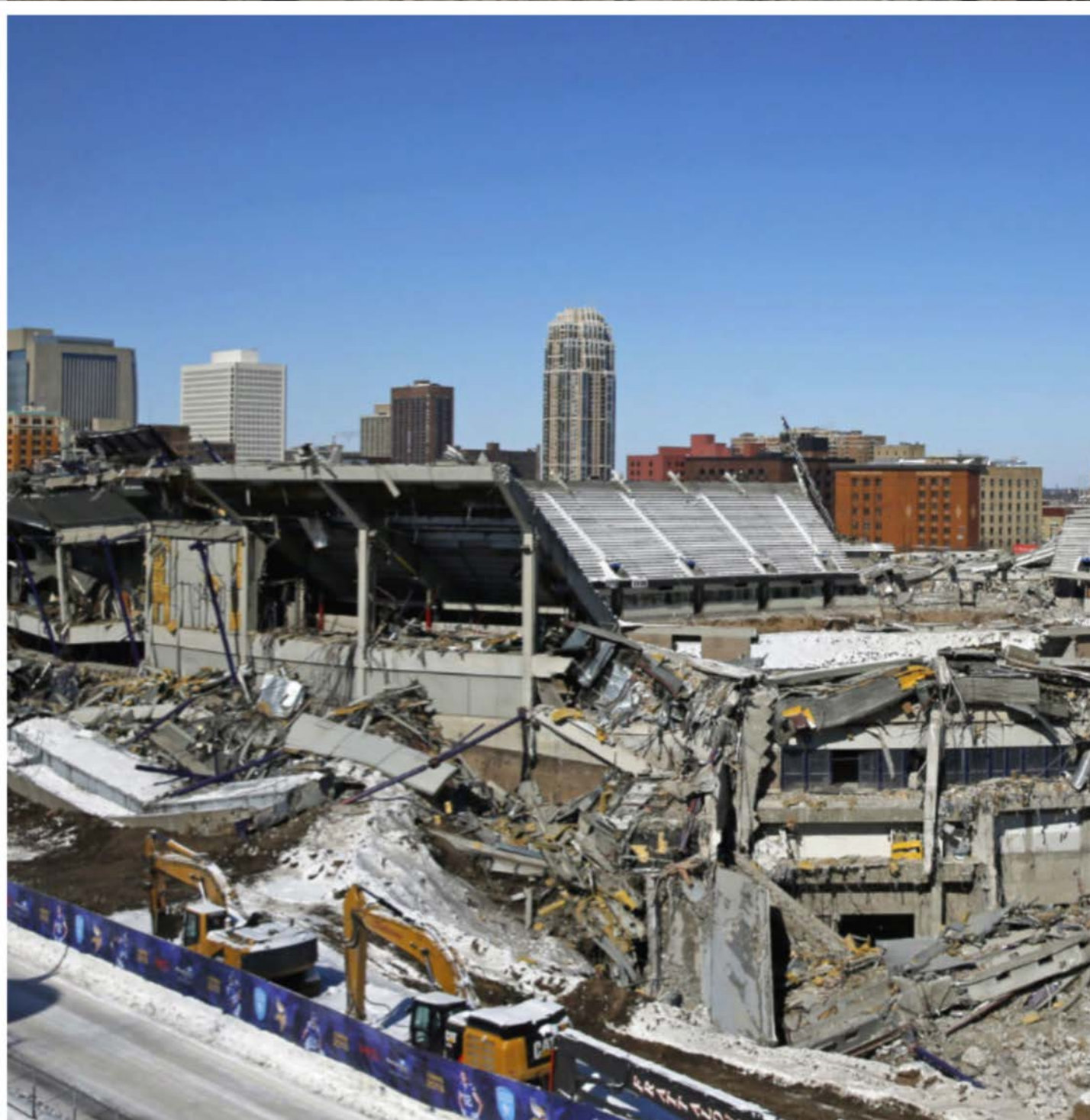
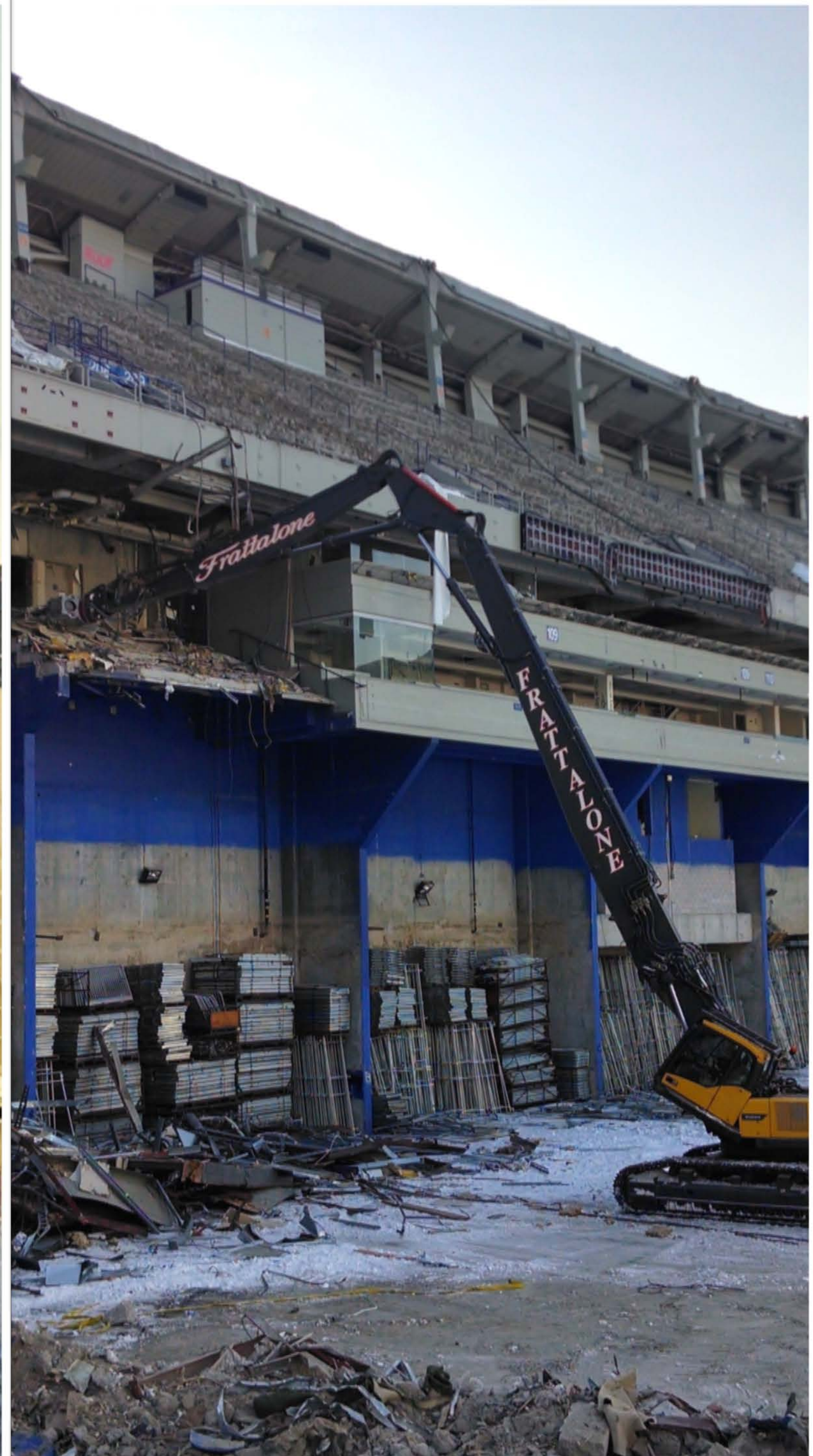
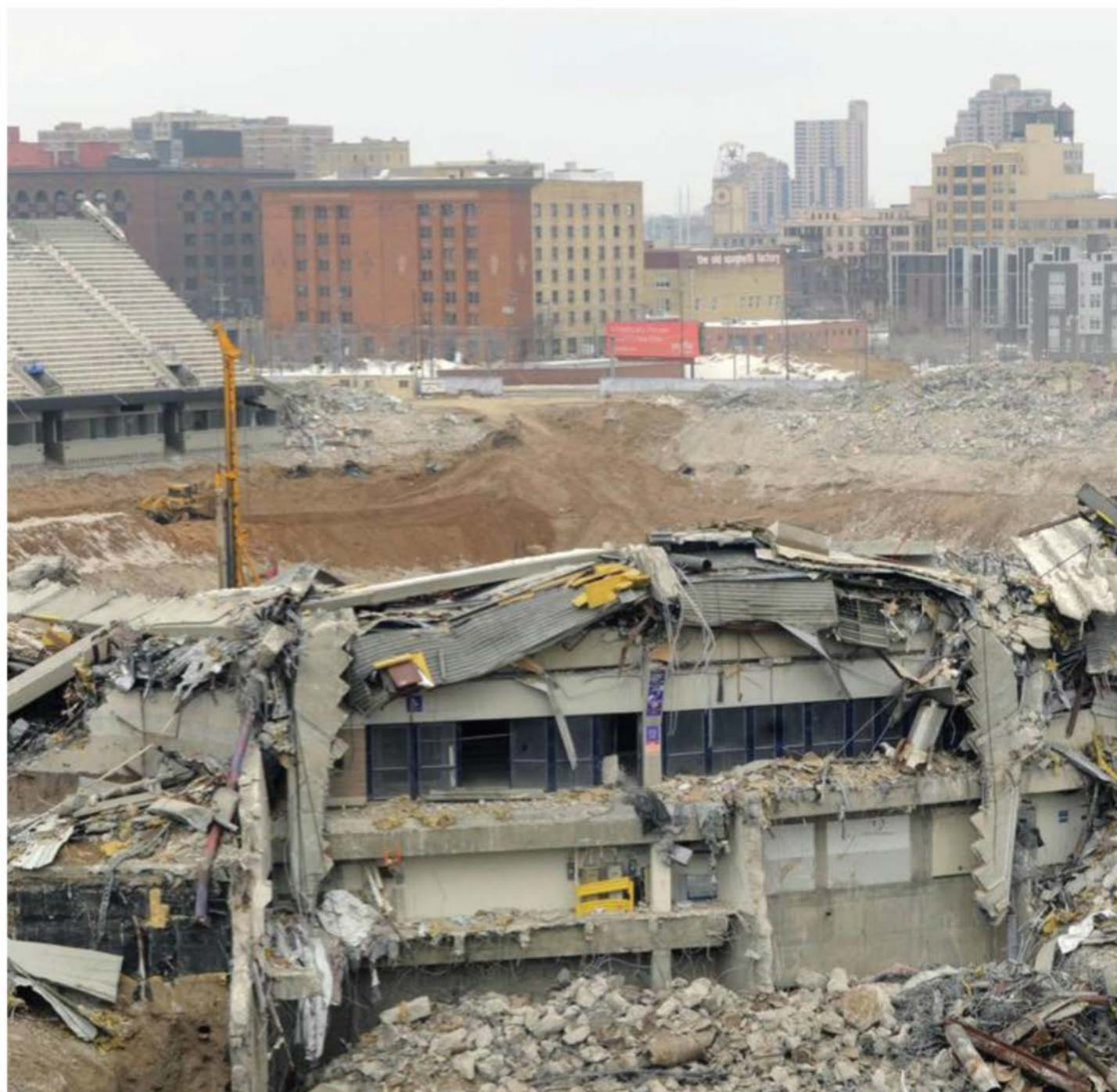


An aerial photograph of the US Bank Stadium in Minneapolis, Minnesota, during its construction phase. The stadium's distinctive, angular, and translucent facade is visible, reflecting the surrounding city and sky. The text "US Bank Stadium" is prominently displayed on the upper part of the building. The image is overlaid with a semi-transparent blue filter. Centered over the image is the text "LEED v3 BD+C: New Construction" in a large, white, sans-serif font, with a thin white horizontal line underneath it. Below this, the word "Construction" is written in a smaller, white, sans-serif font.

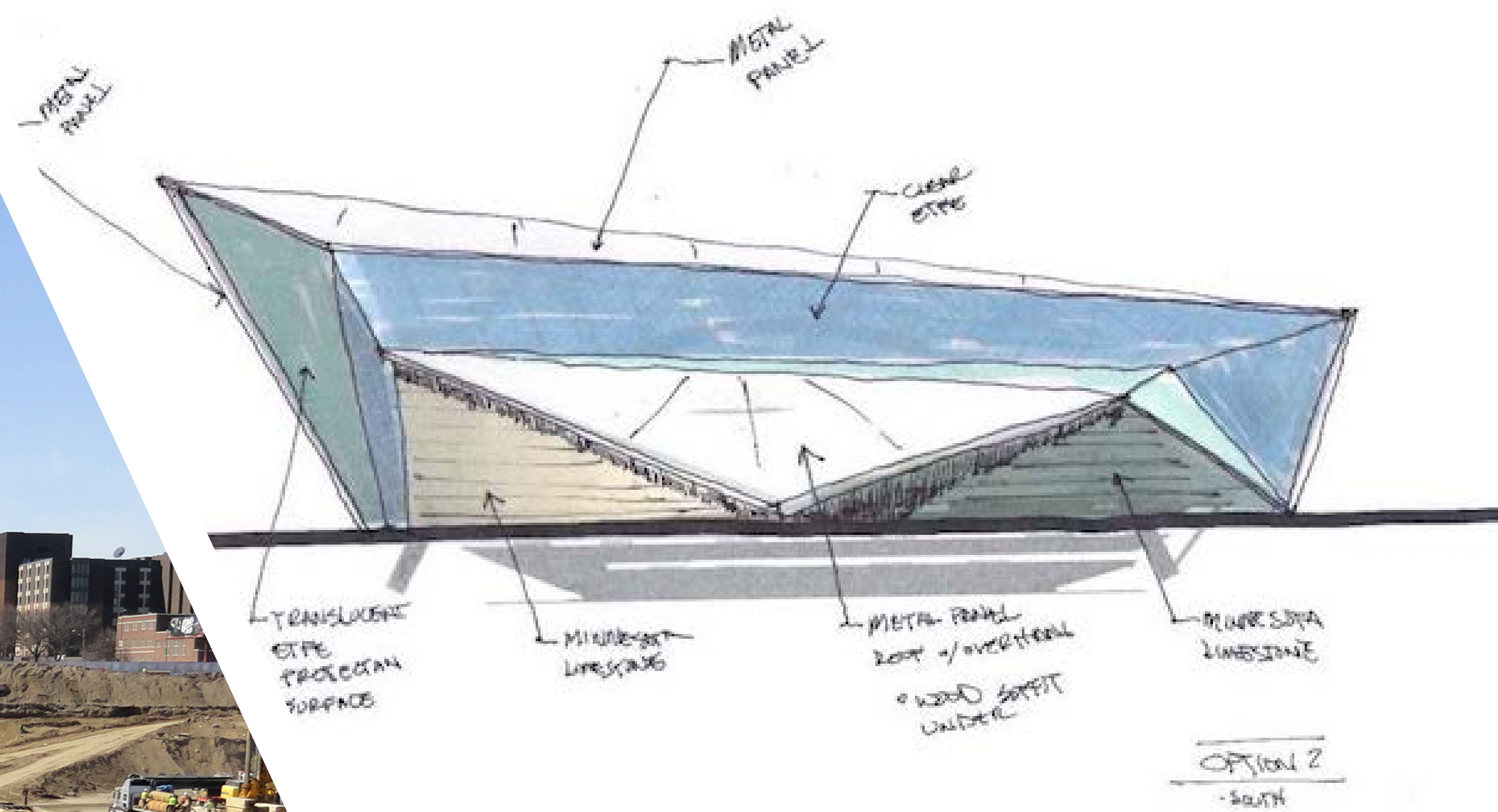
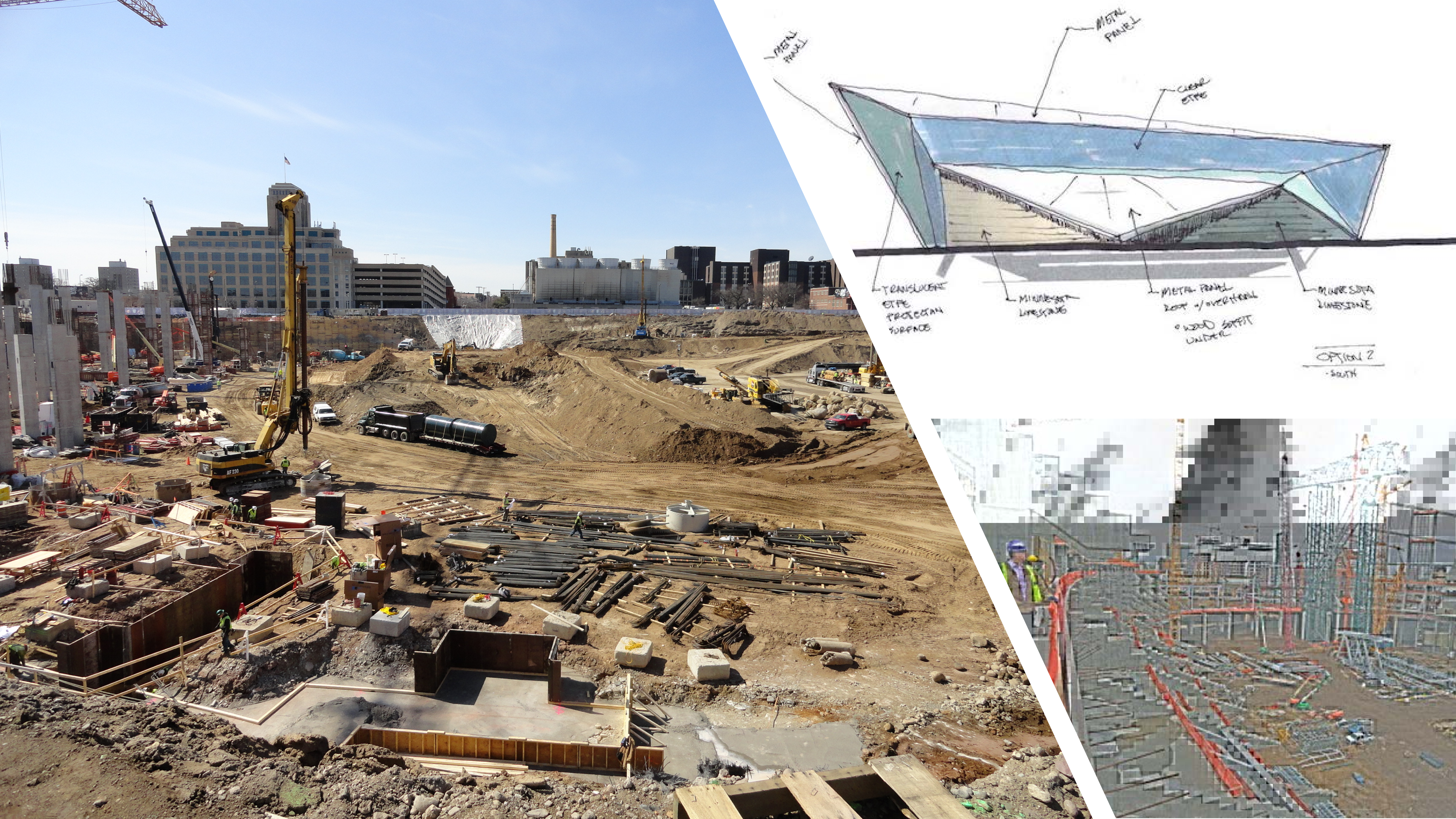
# LEED v3 BD+C: New Construction

Construction

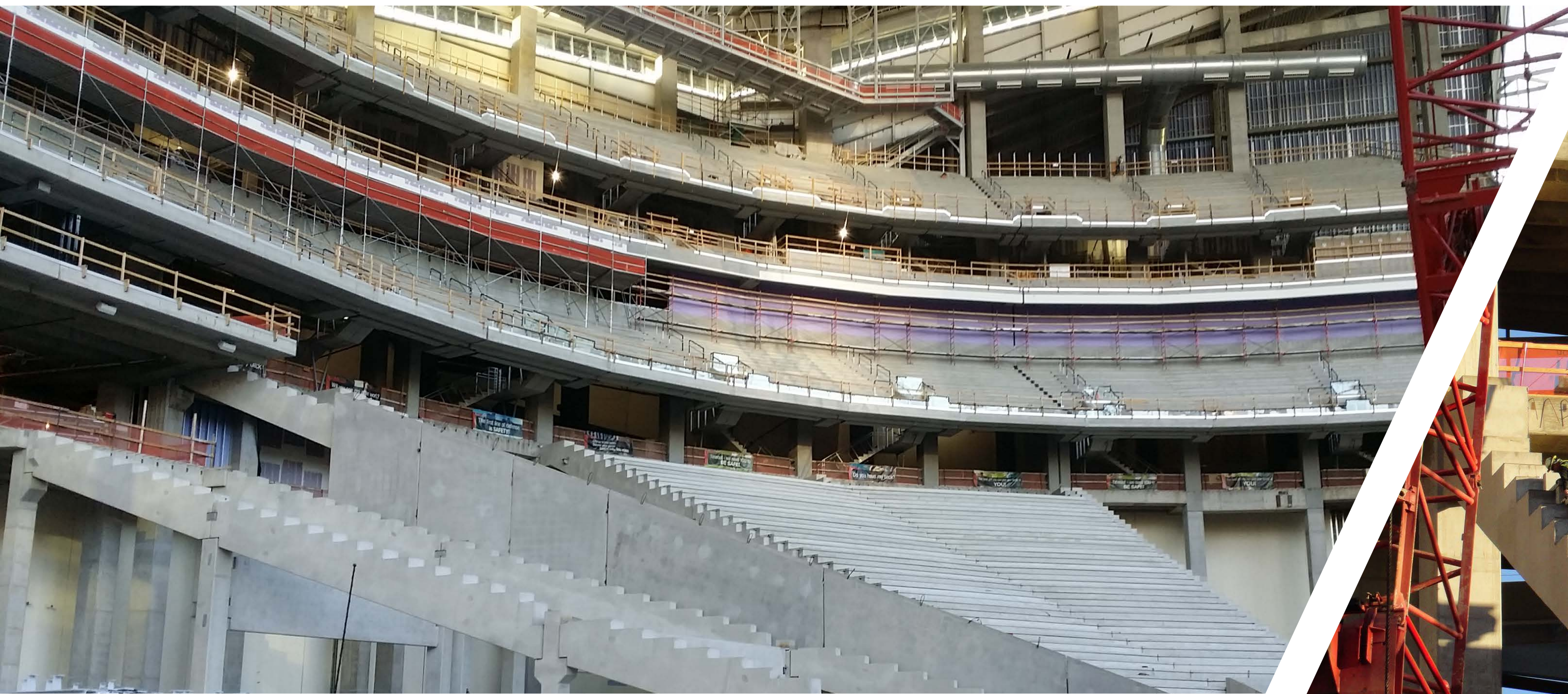




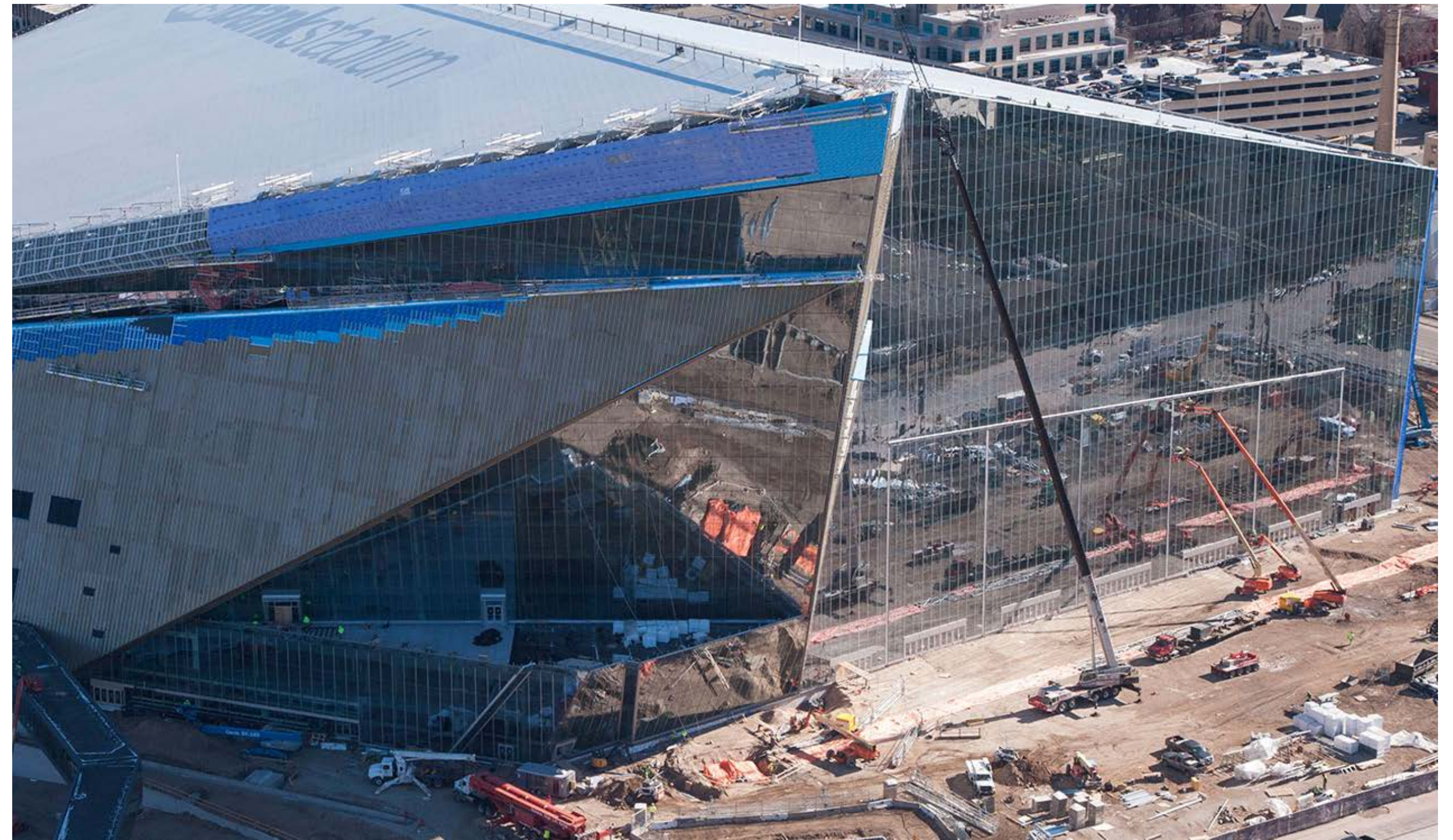
















# Opening

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July 22, 2016



# LEED v3 BD+C: New Construction

Official certification date:  
November 20, 2017

LEED Gold – 60 points



GOLD

SUSTAINABLE SITES 23 OF 26		
SSp1	Construction Activity Pollution Prevention	Y
SSc1	Site Selection	1 / 1
SSc2	Development Density and Community Connectivity	5 / 5
SSc3	Brownfield Redevelopment	1 / 1
SSc4.1	Alternative Transportation-Public Transportation Access	6 / 6
SSc4.2	Alternative Transportation-Bicycle Storage and Changing Rooms	1 / 1
SSc4.3	Alternative Transportation-Low-Emitting and Fuel-Efficient Vehicles	3 / 3
SSc4.4	Alternative Transportation-Parking Capacity	2 / 2
SSc5.1	Site Development-Protect or Restore Habitat	0 / 1
SSc5.2	Site Development-Maximize Open Space	0 / 1
SSc6.1	Stormwater Design-Quantity Control	1 / 1
SSc6.2	Stormwater Design-Quality Control	1 / 1
SSc7.1	Heat Island Effect, Non-Roof	1 / 1
SSc7.2	Heat Island Effect-Roof	1 / 1
SSc8	Light Pollution Reduction	0 / 1

WATER EFFICIENCY 5 OF 10		
WEp1	Water Use Reduction-20% Reduction	Y
WEc1	Water Efficient Landscaping	2 / 4
WEc2	Innovative Wastewater Technologies	0 / 2
WEc3	Water Use Reduction	3 / 4

ENERGY AND ATMOSPHERE 12 OF 35		
EAp1	Fundamental Commissioning of the Building Energy Systems	Y
EAp2	Minimum Energy Performance	Y
EAp3	Fundamental Refrigerant Mgmt	Y
EAc1	Optimize Energy Performance	5 / 19
EAc2	On-Site Renewable Energy	0 / 7
EAc3	Enhanced Commissioning	2 / 2
EAc4	Enhanced Refrigerant Mgmt	0 / 2
EAc5	Measurement and Verification	3 / 3
EAc6	Green Power	2 / 2

MATERIALS AND RESOURCES 4 OF 14		
MRp1	Storage and Collection of Recyclables	Y
MRC1.1	Building Reuse-Maintain Existing Walls, Floors and Roof	0 / 3
MRC1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements	0 / 1
MRC2	Construction Waste Mgmt	2 / 2
MRC3	Materials Reuse	0 / 2
MRC4	Recycled Content	2 / 2
MRC5	Regional Materials	0 / 2
MRC6	Rapidly Renewable Materials	0 / 1
MRC7	Certified Wood	0 / 1

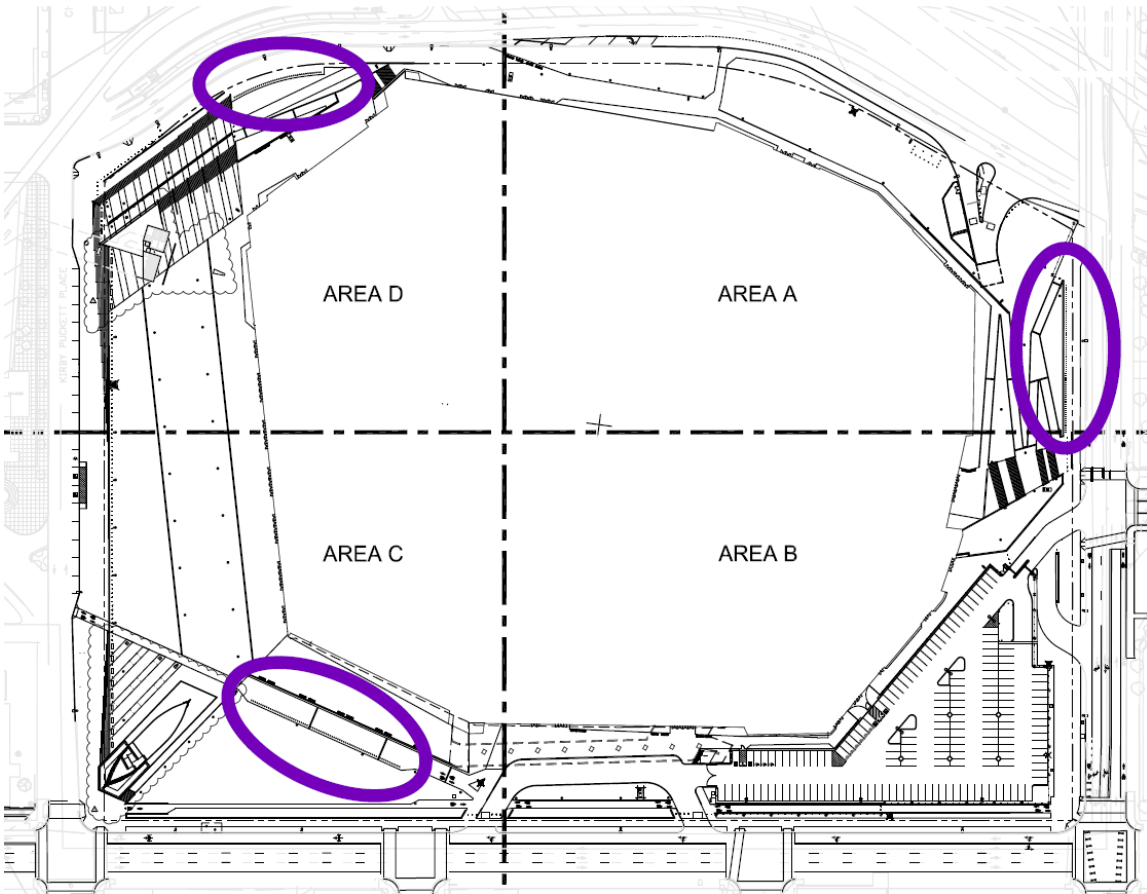
INDOOR ENVIRONMENTAL QUALITY 7 OF 15		
IEQp1	Minimum IAQ Performance	Y
IEQp2	Environmental Tobacco Smoke (ETS) Control	Y
IEQc1	Outdoor Air Delivery Monitoring	0 / 1
IEQc2	Increased Ventilation	0 / 1
IEQc3.1	Construction IAQ Mgmt Plan-During Construction	1 / 1
IEQc3.2	Construction IAQ Mgmt Plan-Before Occupancy	0 / 1
IEQc4.1	Low-Emitting Materials-Adhesives and Sealants	1 / 1
IEQc4.2	Low-Emitting Materials-Paints and Coatings	1 / 1
IEQc4.3	Low-Emitting Materials-Flooring Systems	1 / 1
IEQc4.4	Low-Emitting Materials-Composite Wood and Agrifiber Products	1 / 1
IEQc5	Indoor Chemical and Pollutant Source Control	0 / 1
IEQc6.1	Controllability of Systems-Lighting	0 / 1
IEQc6.2	Controllability of Systems-Thermal Comfort	0 / 1
IEQc7.1	Thermal Comfort-Design	1 / 1
IEQc7.2	Thermal Comfort-Verification	1 / 1
IEQc8.1	Daylight and Views-Daylight	0 / 1
IEQc8.2	Daylight and Views-Views	0 / 1

INNOVATION IN DESIGN 6 OF 6		
IDc1.1	Innovation in Design	0 / 1
IDc1.1	Green Cleaning	1 / 1
IDc1.2	Innovation in Design	0 / 1
IDc1.2	Integrated Pest Mgmt	1 / 1
IDc1.3	Innovation in Design	0 / 1
IDc1.3	SS4.1 Alternative Transportation: Public Transportation	1 / 1
IDc1.4	Innovation in Design	0 / 1
IDc1.4	Green Power	1 / 1
IDc1.5	Innovation in Design	0 / 1
IDc1.5	Green Education	1 / 1
IDc2	LEED® Accredited Professional	1 / 1

REGIONAL PRIORITY CREDITS 3 OF 4		
SSc6.1	Stormwater Design-Quantity Control	1 / 1
SSc6.2	Stormwater Design-Quality Control	1 / 1
MRC2	Construction Waste Mgmt	1 / 1

**TOTAL 60 OF 110**





- |                                                         |                                                                           |
|---------------------------------------------------------|---------------------------------------------------------------------------|
| <span style="color: yellow;">■</span> Taxi              | <span style="color: blue;">■</span> ADA Pick-Up & Drop-Off                |
| <span style="color: red;">■</span> Metro Transit        | <span style="color: lightblue;">■</span> SKOL Service Team Member Shuttle |
| <span style="color: orange;">■</span> Charter Bus       | <span style="color: lightgreen;">■</span> Charter Bus Overflow            |
| <span style="color: pink;">■</span> Uber, Shuttle & Bus | <span style="color: darkgreen;">■</span> U.S. Bank Stadium Station        |
| <span style="color: purple;">■</span> Limo              |                                                                           |





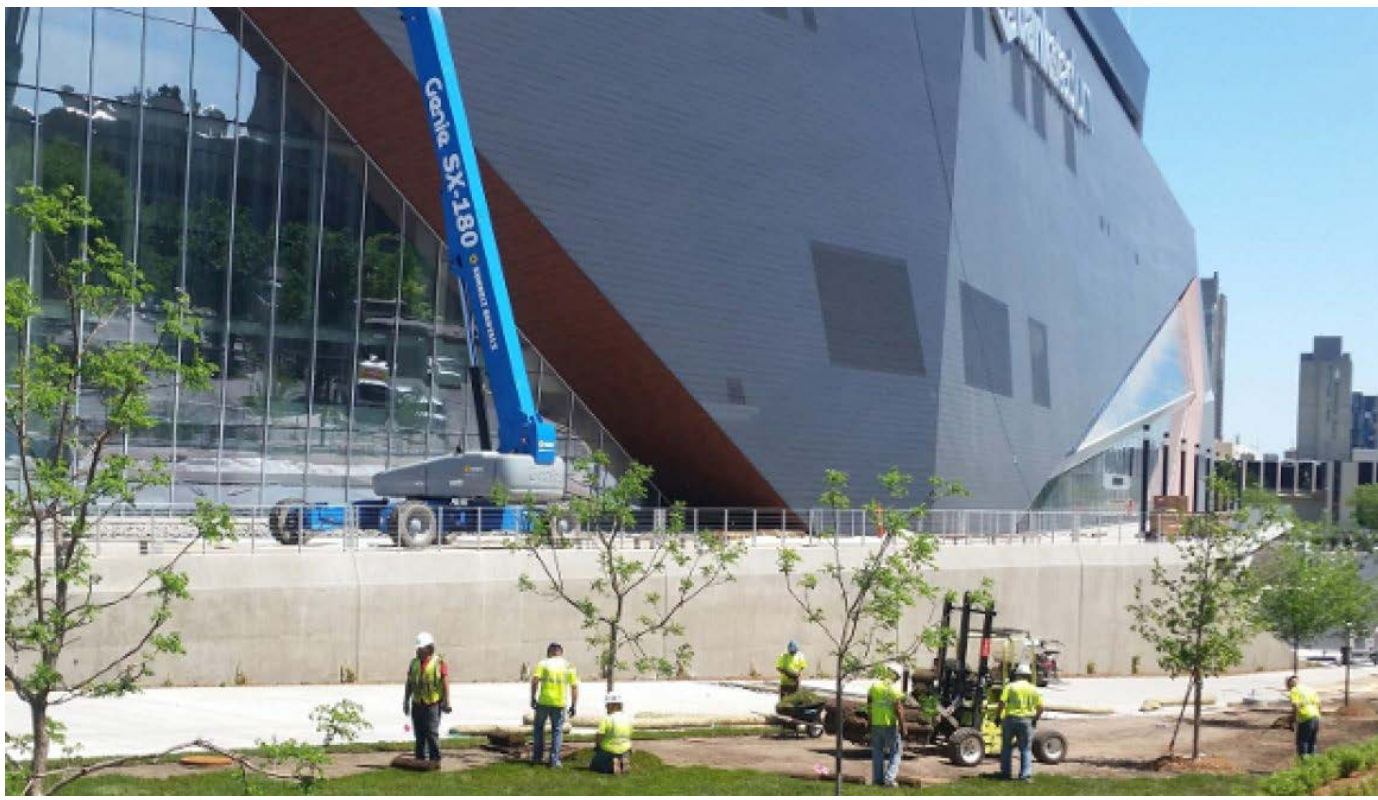




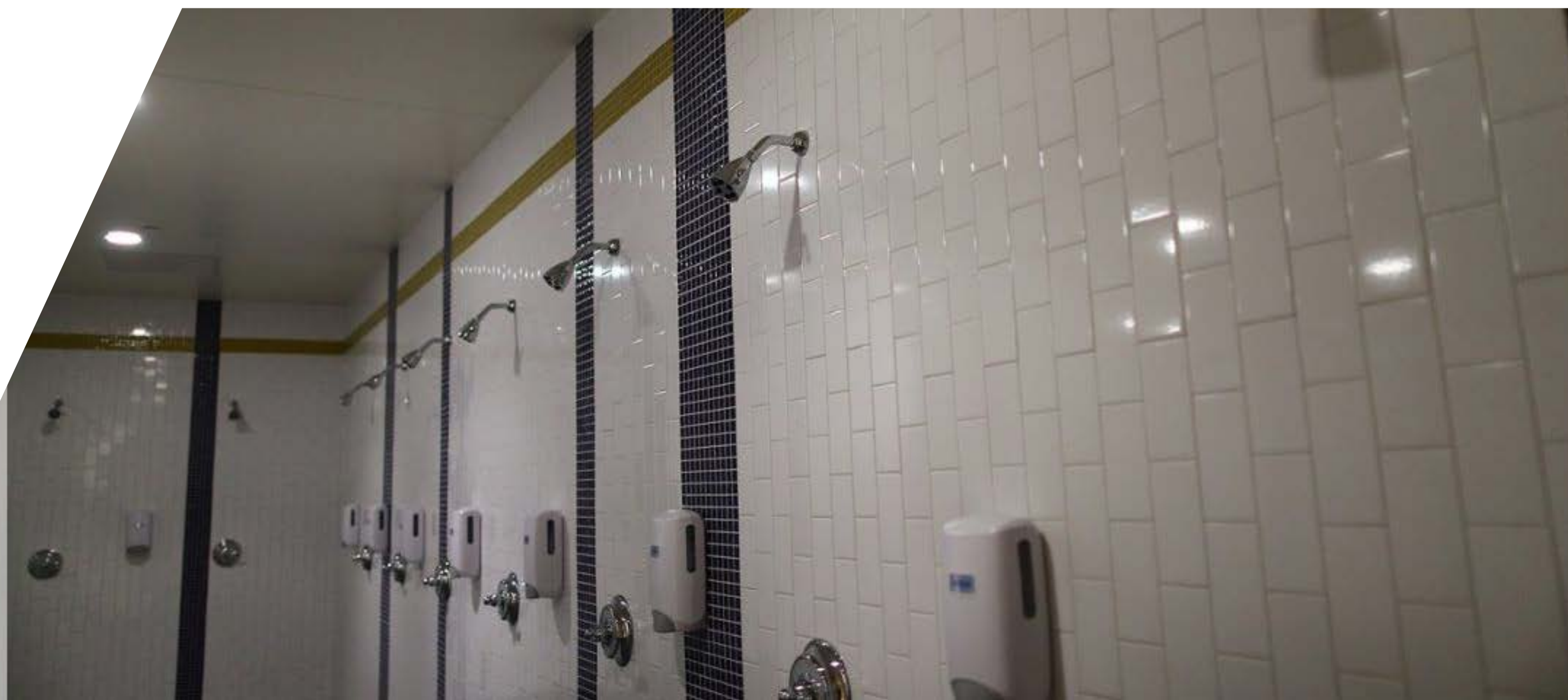


Ethylene  
Tetrafluoroethylene  
(ETFE)

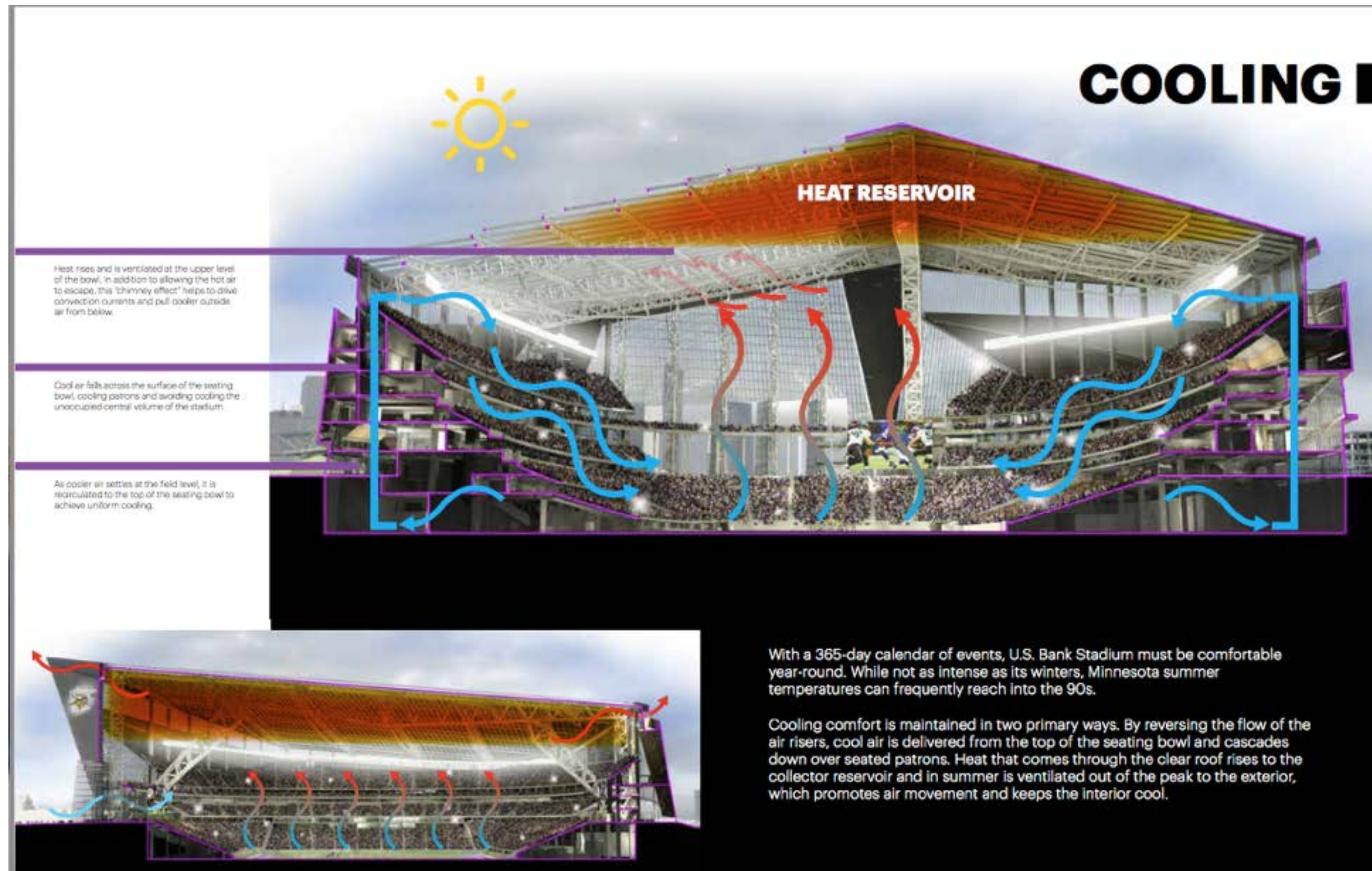






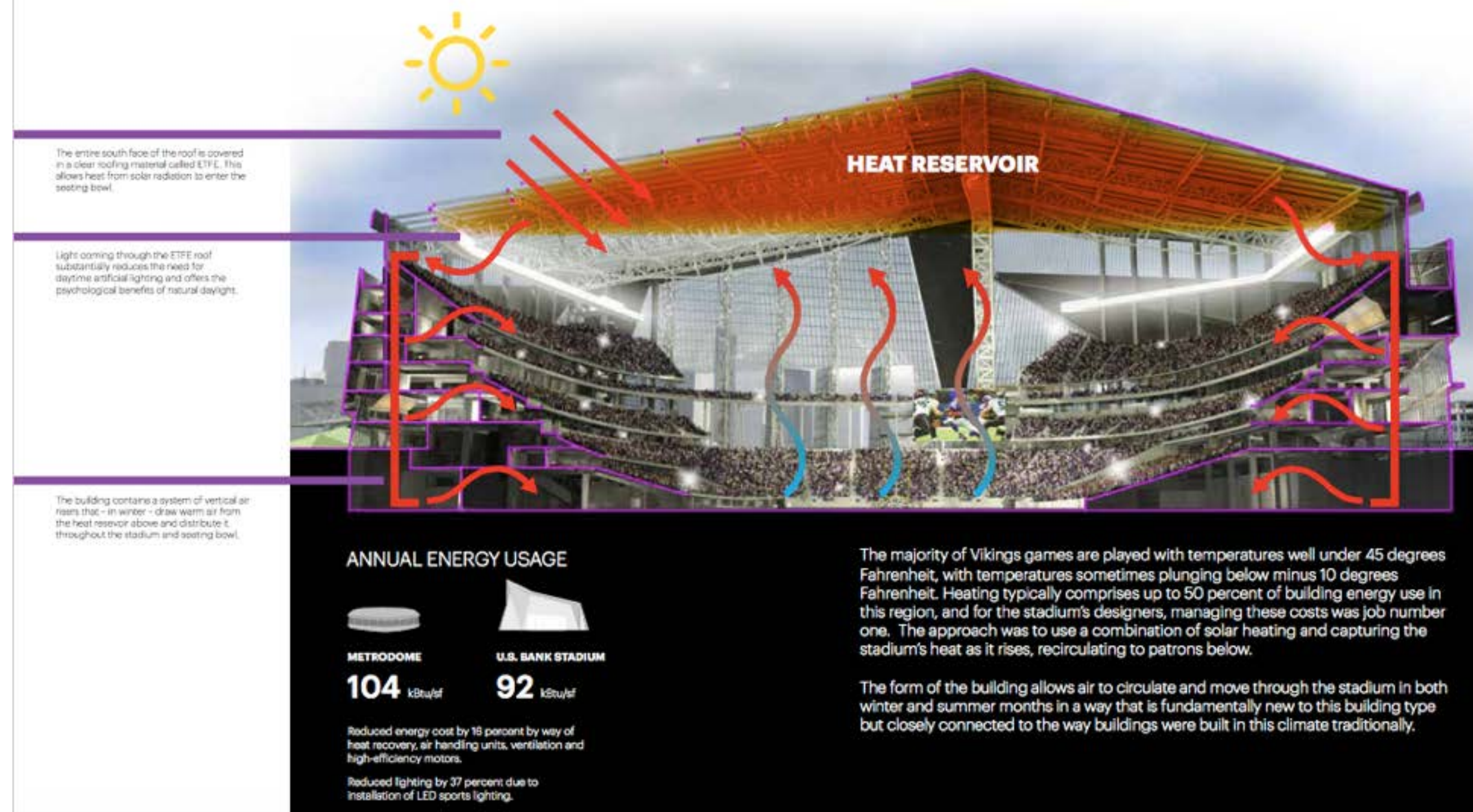








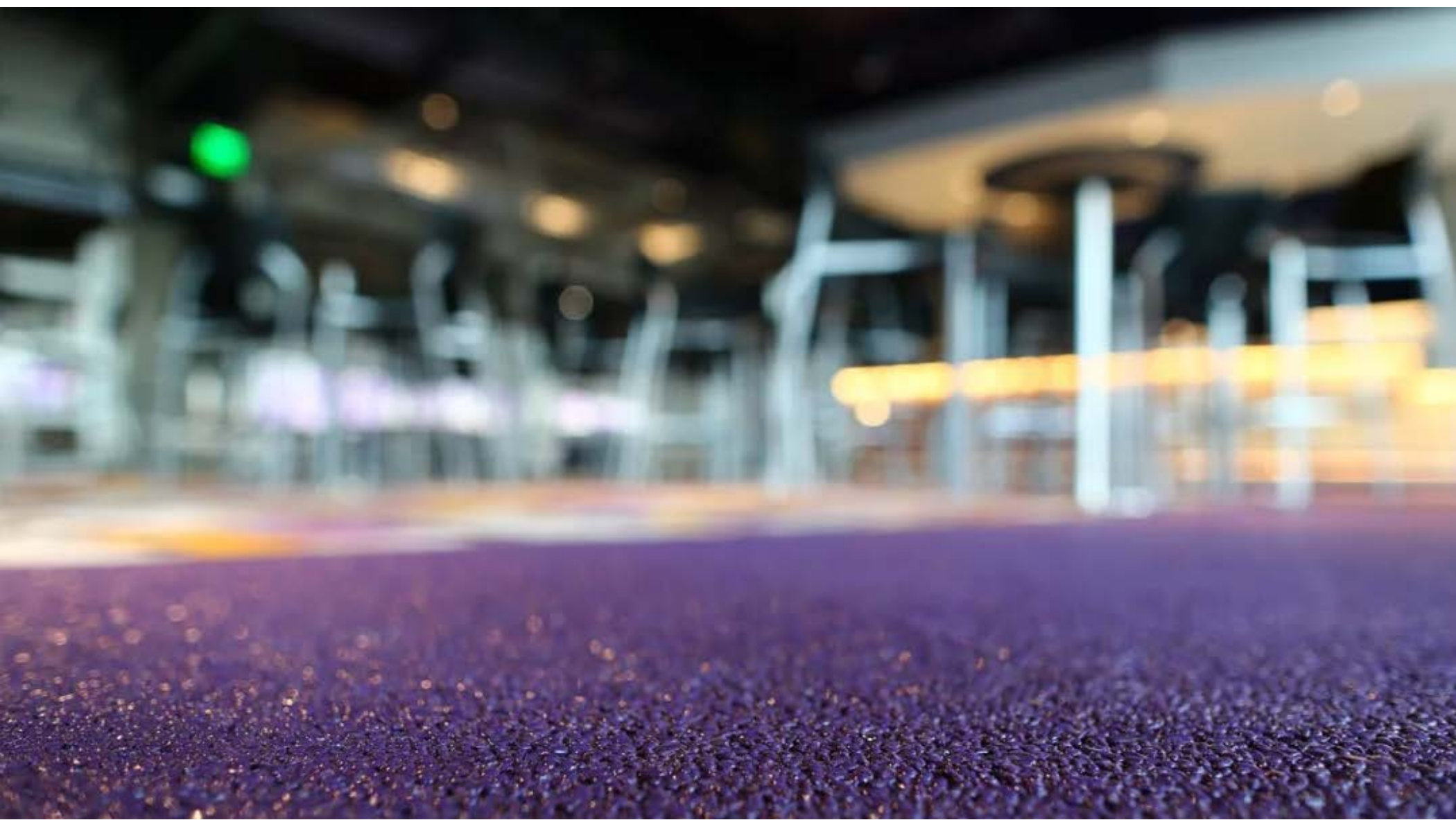
## HEATING ■





















The background of the slide is a photograph of a purple stadium seat, viewed from a low angle. The seat is part of a larger structure, and the number '36' is visible on a dark blue or black panel in the lower right corner. The image is slightly blurred and has a dark, muted color palette.

# Sustainability at US. Bank Stadium

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Beyond LEED

36



# Sustainability at U.S. Bank Stadium

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U.S. Bank Stadium aims to reduce its carbon footprint in all areas of operations including but not limited to water reduction, waste reduction/diversion, energy efficiency, sustainable purchasing, and the promotion of alternative transportation. U.S. Bank Stadium aims to become a zero-waste facility, where 90% of all waste is either compostable, recyclable, reused, or donated. As a LEED certified stadium, much of the innovation is based on smart technology and providing efficient and sustainable solutions that make the event experience overwhelmingly excellent.



**U.S. BANK STADIUM**  
**SUSTAINABILITY PROGRAM**  
LET'S MAKE LESS OF AN IMPRESSION



## U.S. Bank Stadium Sustainable Facts

- Nearly all food packaging that comes from concessions, premium areas, and suites are made to be composted. The stadium offers compost collection to collect these products. Since June 2016, **1.3 million pounds** of compost has been sent to a local compost facility.
- In 2019, **73%** of all waste was recycled or composted. (***15%** in 2016, **47%** in 2017, **70%** in 2018*).
- Administrative offices use **100%** post-consumer copy paper, reusable service ware, and utilizes filtered water coolers to eliminate plastic bottle use.
- The first stadium to receive a Bike Friendly Business certification; has over 180 bike racks. Staff participates in an annual bike to work challenge every May.











# usbankstadium #EARTHDAY

## LEED Certification

The use of ETFE in the design of the roof displaced the use of 2,000 tons of steel.



82% of demolition waste from the Metrodome was diverted from landfill.



In 2017, U.S. Bank Stadium was certified LEED Gold by USGBC for Building Design and Construction.

## Energy Reduction

U.S. Bank Stadium is 100% powered by renewable wind energy.



U.S. Bank Stadium is the first NFL stadium to be build with LED sports lighting.

## Transportation

The light rail service brings up to 30% of Vikings fans to the stadium on game day.



The stadium has 180 bike racks and is certified as a Bike Friendly Business.

## Super Bowl Waste Diversion

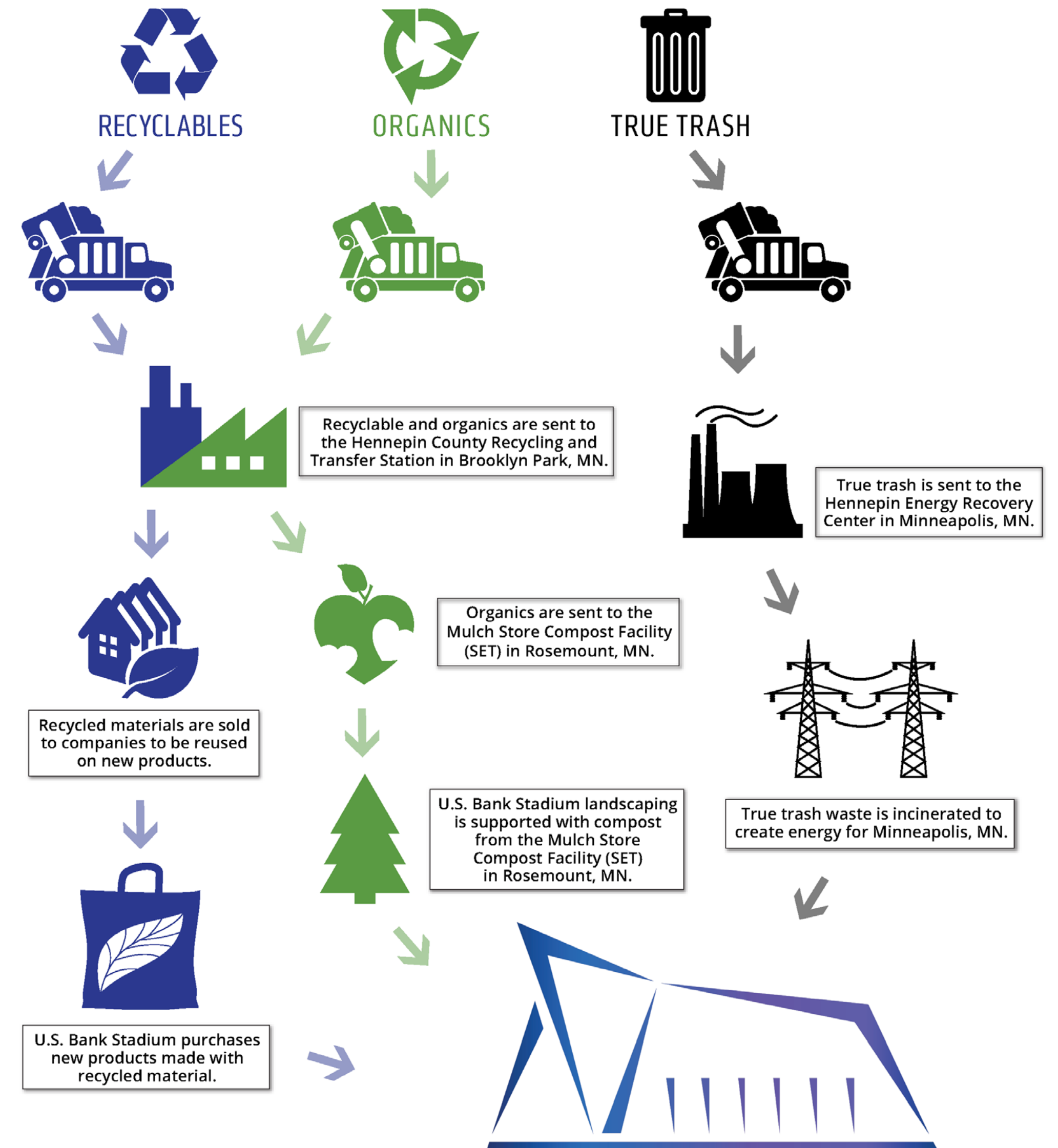
The stadium diverted 91% of all game day waste from landfill at Super Bowl LII.



Waste diversion amounted to 63 tons; equivalent to 18,000 Lombardi trophies.

Sources: U.S. Green Building Council, MSFA, Ephesis Lighting, Metro Transit, League of American Bicyclists, U.S. Bank Stadium, NFL

# usbankstadium Waste Diversion Flow Chart







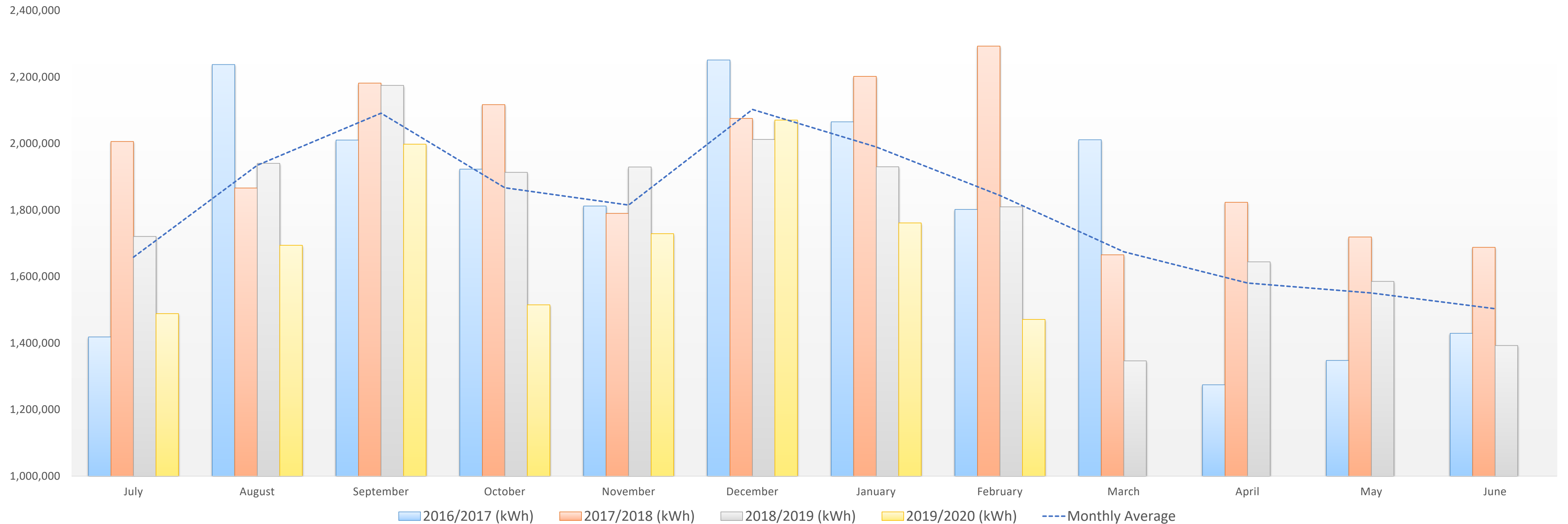
# HVAC Management

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# Electricity Management

Monthly Electricity Use (FY)





An aerial photograph of a football field during the Super Bowl. The field is covered in a thick layer of white confetti. Numerous people are scattered across the field, some standing and some walking. In the background, the stadium seating is visible, and the words "SUPER BOWL CHAMPIONS" are repeated across the top of the stands. The "us bank stadium" logo is also visible on the field's edge.

# Zero Waste Super Bowl

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February 4, 2018



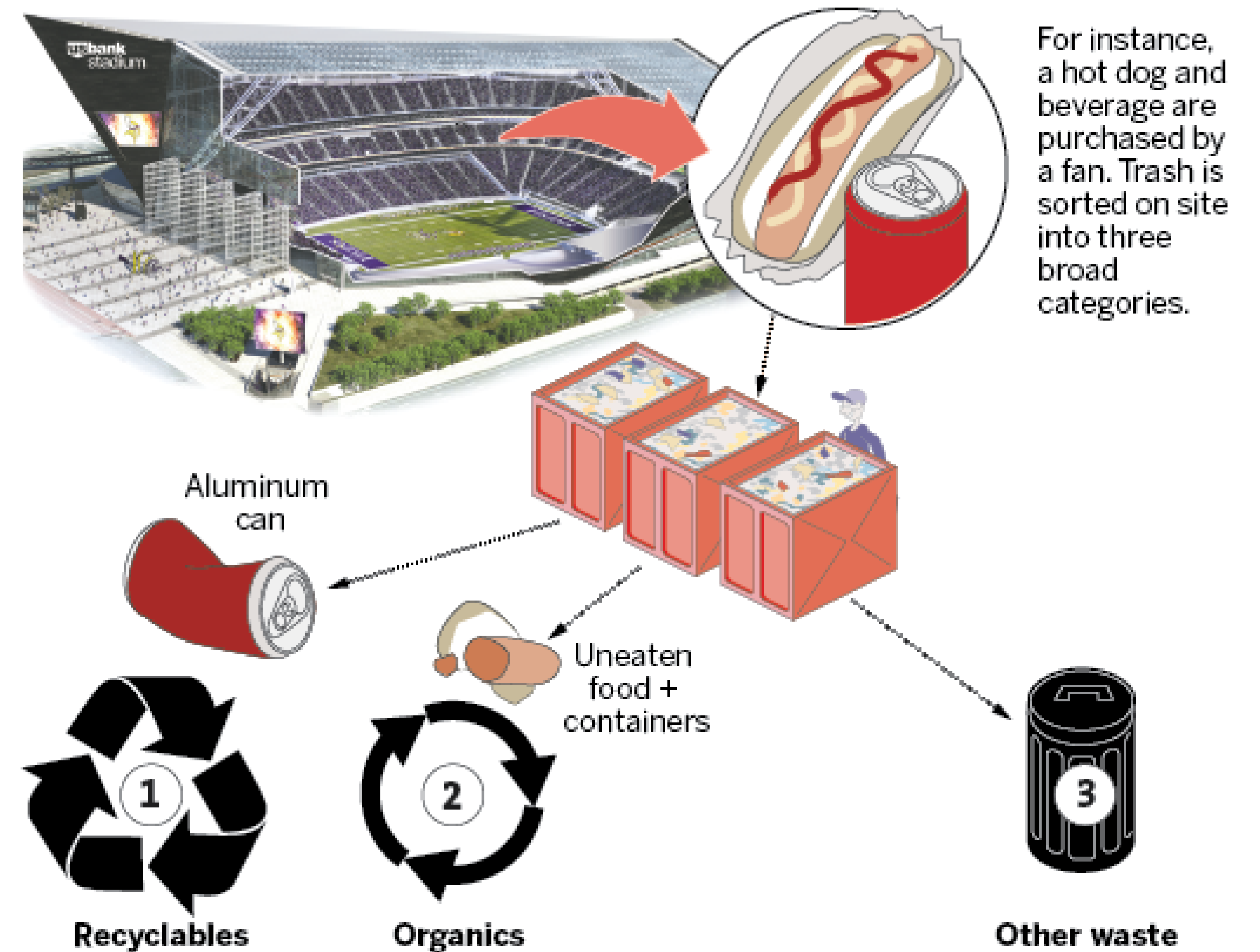






## WHERE DOES THAT HOT DOG WRAPPER GO?

The NFL hopes Feb. 4th's football game will be the nation's first zero-waste Super Bowl and U.S. Bank will be the first zero-waste stadium. That means up to 40 tons of trash will have to find the right bin and recycling center.



Recyclables and organics are trucked to the Hennepin County Recycling and Transfer Station in Brooklyn Park. Organics are sent to the Mulch Store Compost Facility in Rosemount.

U.S. Bank Stadium will purchase new products made from recycled materials and landscaping mulch from the compost facility.

Non recyclables are sent to the Hennepin Energy Recovery Center near Target Field and incinerated to produce electricity.

Source: National Football League, U.S. Bank Stadium

MARK BOSWELL • Star Tribune



## The Super Bowl of recycling? NFL aims to keep over 40 tons of waste out of landfills.



"The Minnesota Sports Facilities Authority is proud of the hard work and dedication put forth by all stadium partners to build a sustainable, zero-waste program for U.S. Bank Stadium," a spokesman said. (Matt Slocum/Associated Press)

By [Des Bieler](#)

Jan. 31, 2018 at 9:57 p.m. EST



## NFL, PepsiCo, U.S. Bank Stadium, Set Goal for Zero Waste Super Bowl

The NFL will attempt to recover more than 40 tons of stadium waste from Super Bowl LII.

[Hunter Kuffel](#) | Feb 02, 2018

## How this year's Super Bowl stadium managed to dramatically reduce waste

By [Bill Kirkos](#), CNN

🕒 Updated 1:28 PM ET, Tue February 6, 2018



NFL, PepsiCo And U.S. Bank Stadium Partners Including Aramark, SMG And The MSFA Team Up To Score First Zero Waste Legacy Project At Super Bowl LII

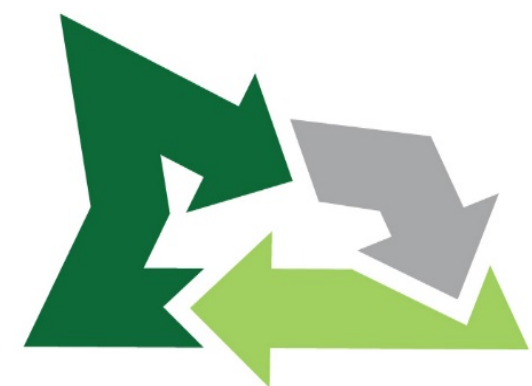


Minneapolis wants a 'Zero Waste' Super Bowl 01:08



*“The NFL is a responsible steward of the environment in all areas of our business. For 25 years, the NFL has strived to reduce the environmental impact of its events and leave a positive green legacy in host communities. Through this project, the League and its partners hope to set a new standard of environmental sustainability at the Super Bowl.”*

Roger Goodell, NFL Commissioner



**U.S. BANK STADIUM**  
**SUSTAINABILITY PROGRAM**  
LET'S MAKE LESS OF AN IMPRESSION



The background of the image is a photograph of the US Bank Stadium, featuring its distinctive white, ribbed, tent-like roof. A large, semi-transparent blue overlay covers the entire image, creating a monochromatic effect. In the upper left, the 'usbank stadium' logo is visible in white. In the center, a white rectangular box contains the main title in large, bold, white capital letters. Below the title, the Medtronic logo and tagline are also visible in white.

usbank  
stadium

# THE MAKING OF A ZERO-WASTE SUPER BOWL

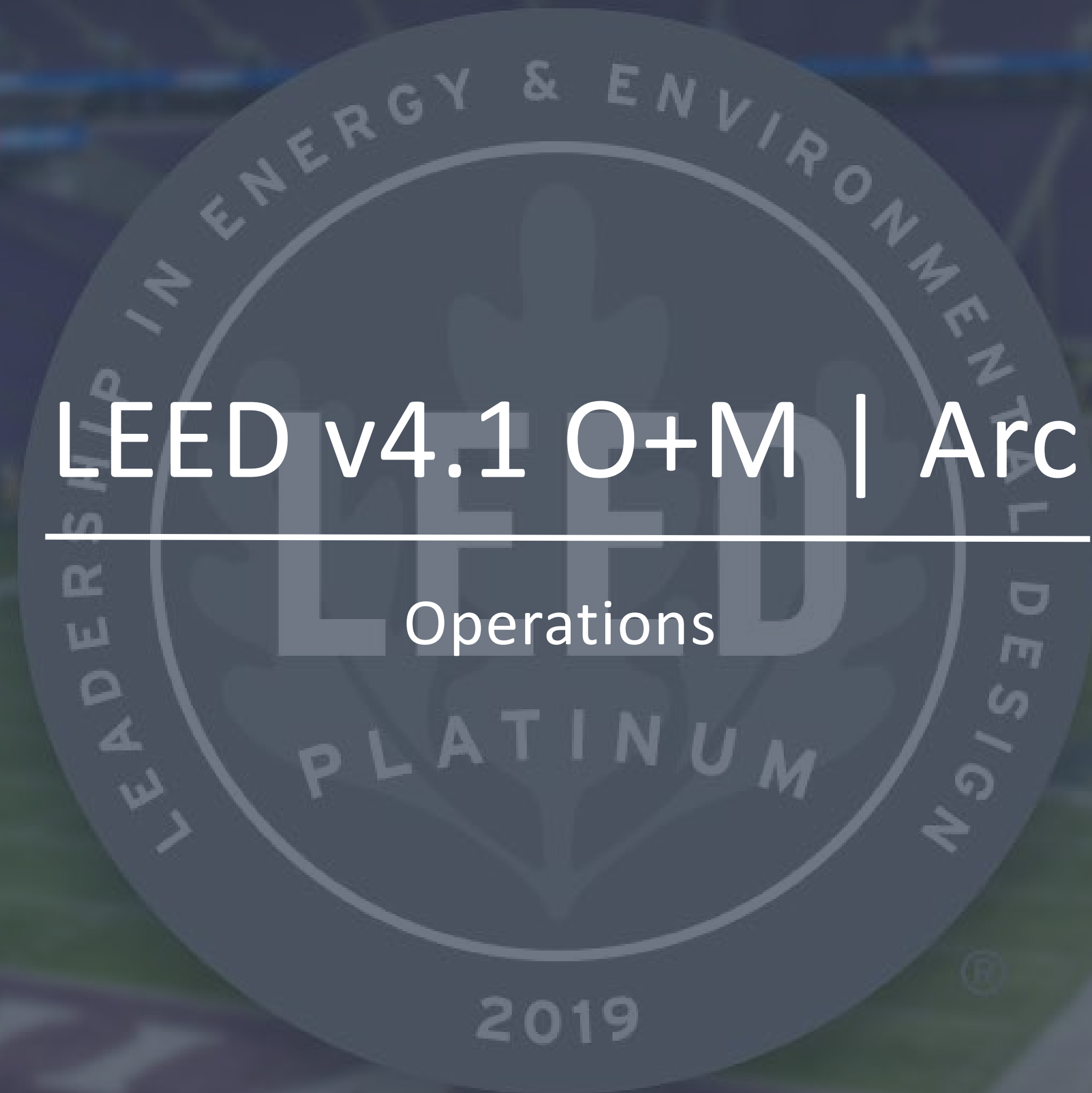
Medtronic  
Further Together



LEED v4.1 O+M | Arc

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Operations



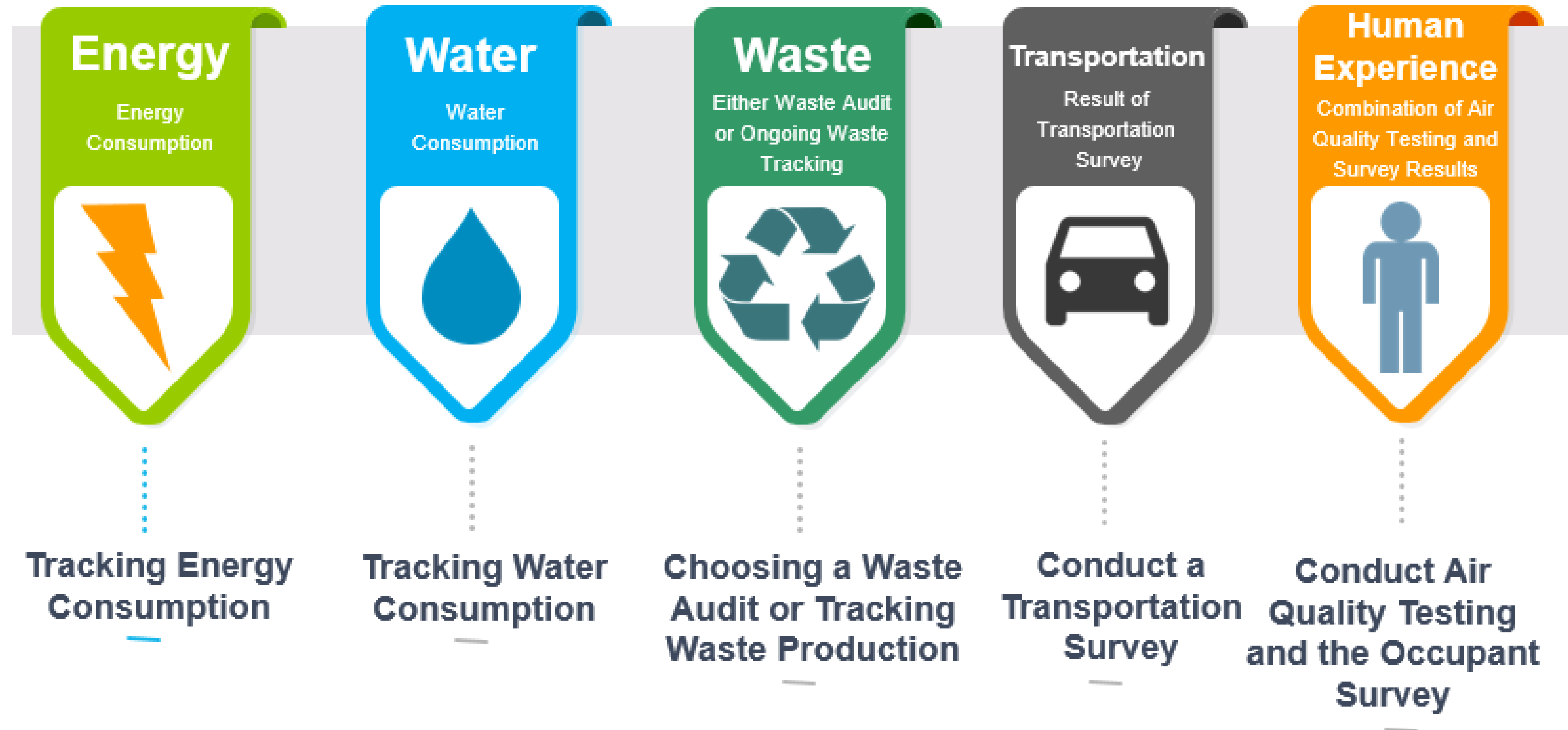
us bank  
stadium



# LEED v4.1 O+M

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## Overview



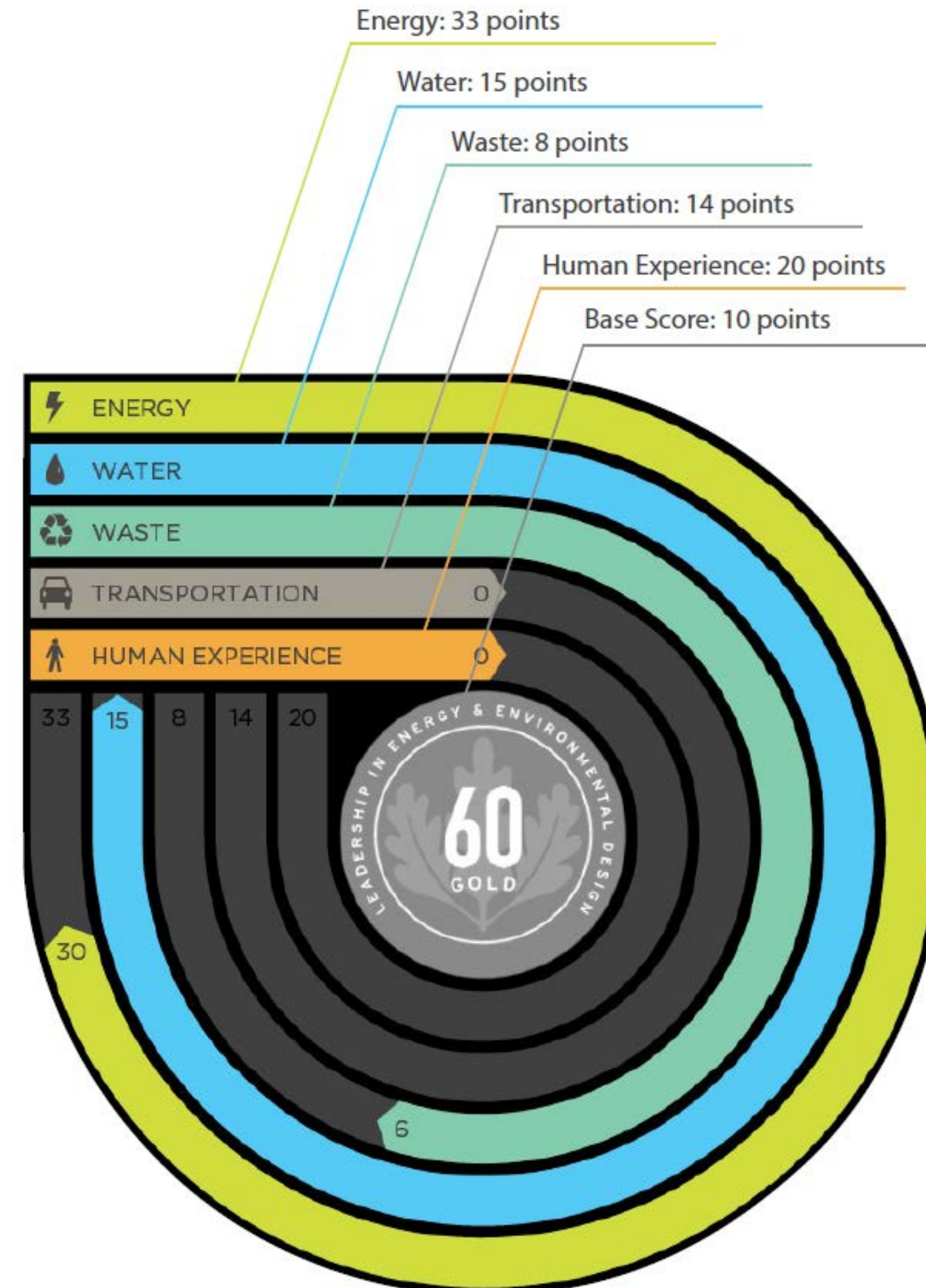


# LEED v4.1 O+M

## Points

### 5 Key Performance Metrics

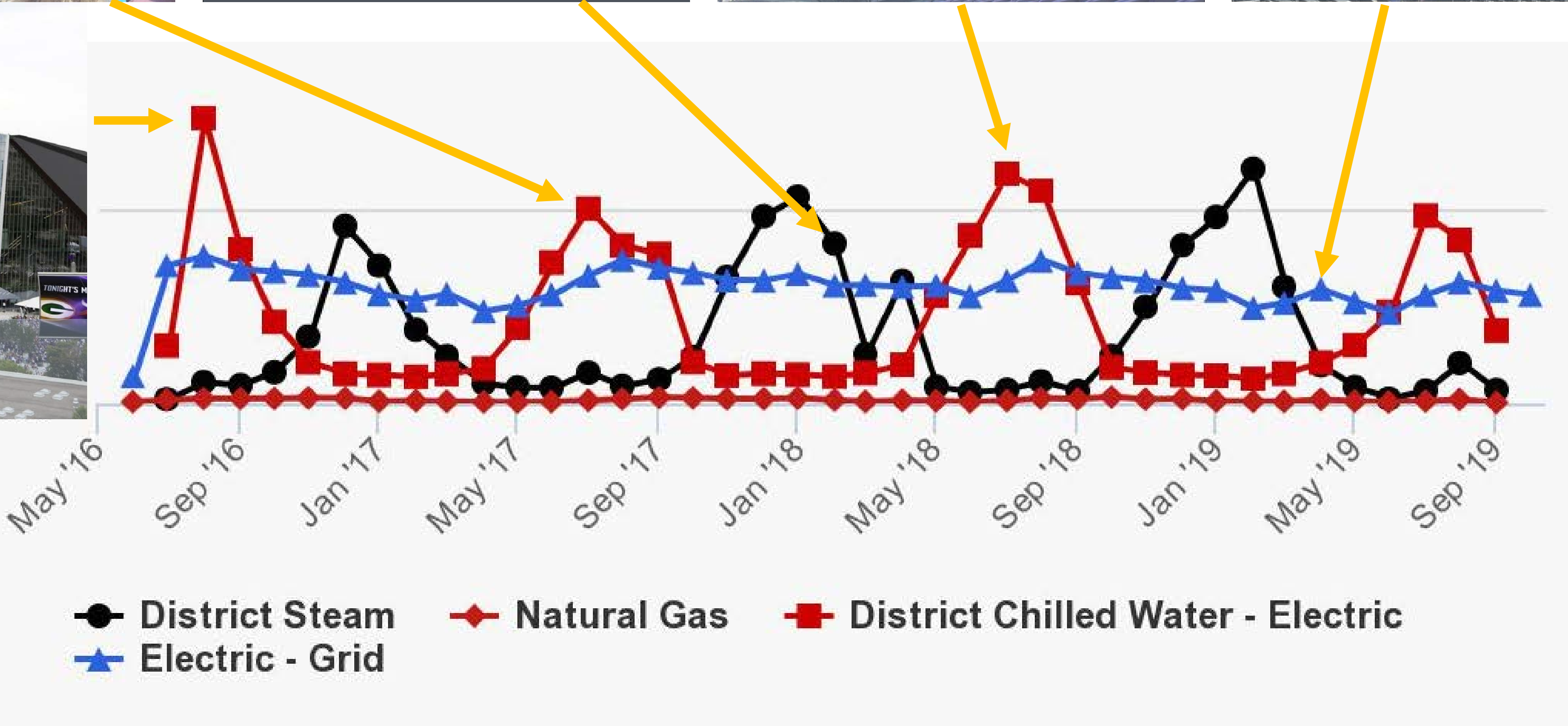
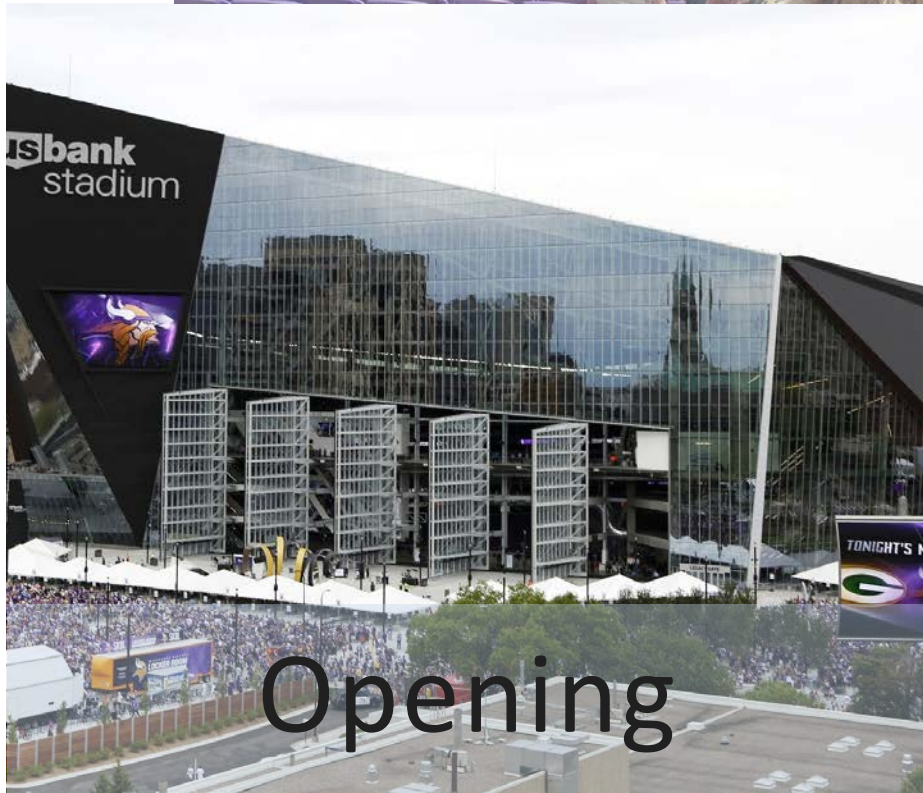
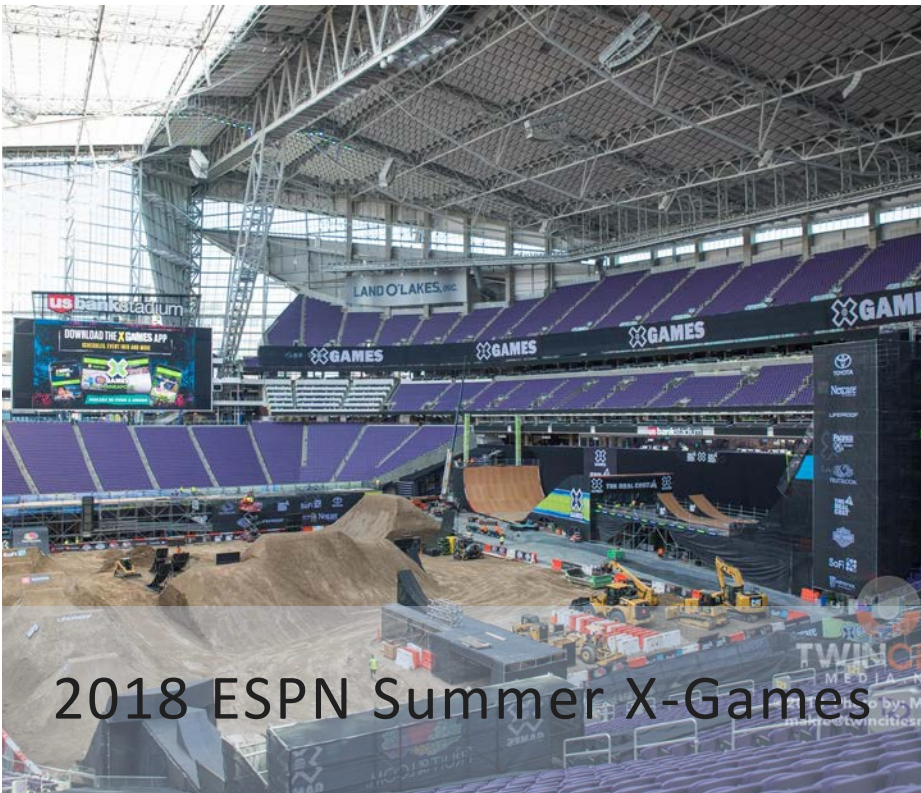
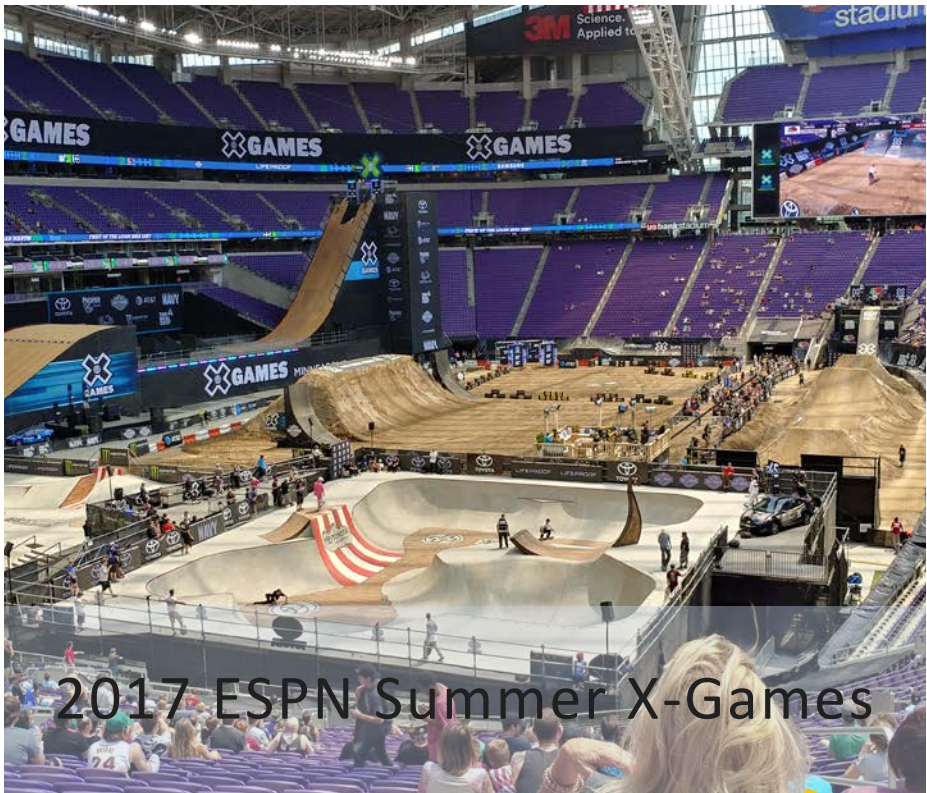
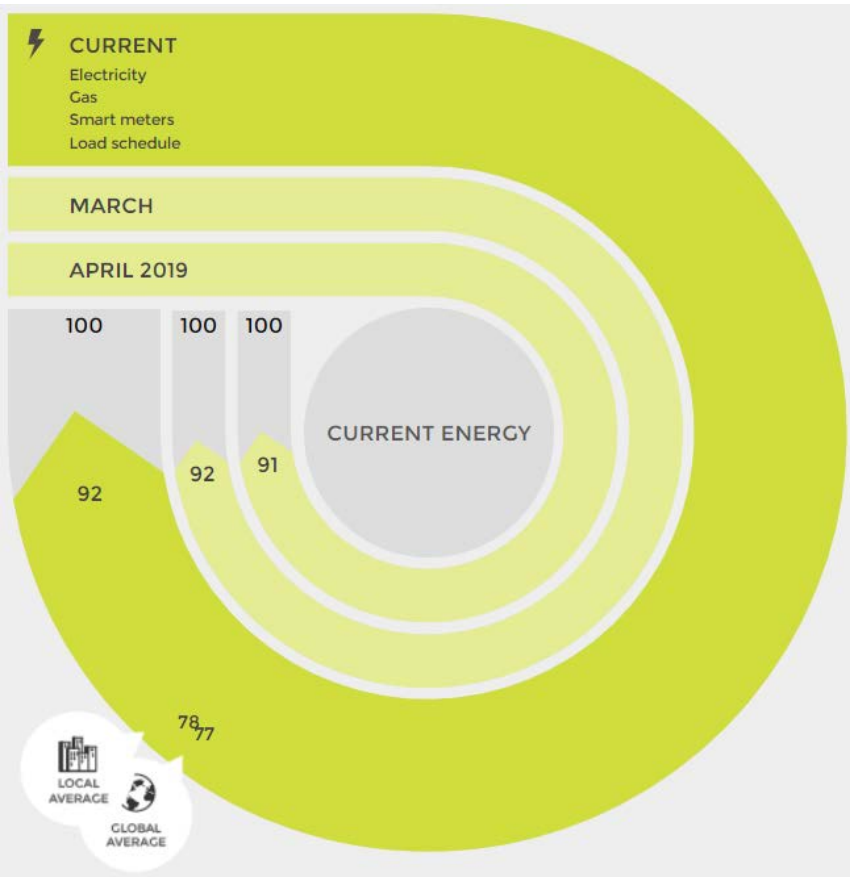
- > Flexible Reporting
- > Annual Recertification
- > Continuous Feedback
- > Streamlined Documentation
- > Innovative Software & Hardware





# LEED v4.1 O+M

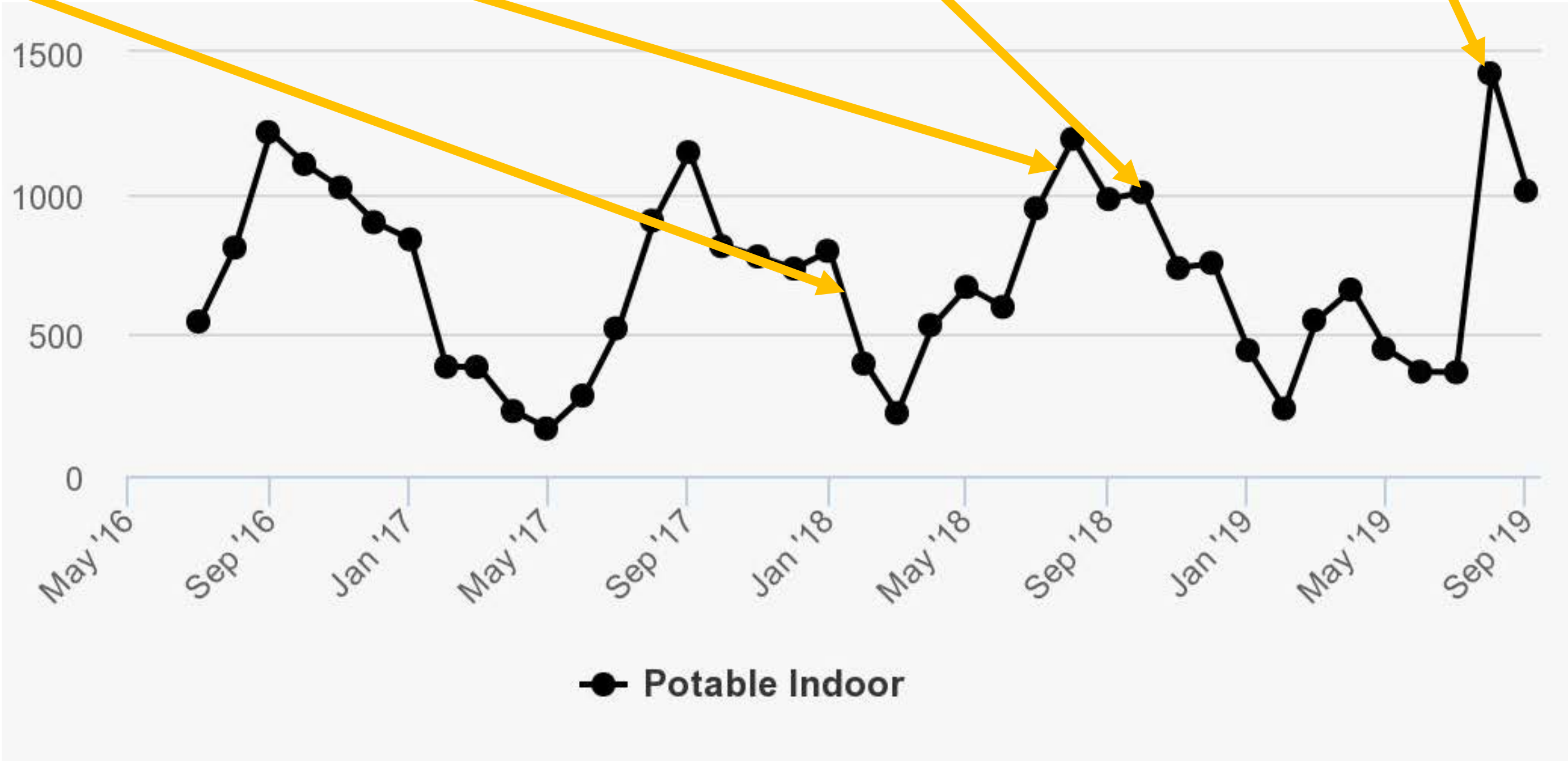
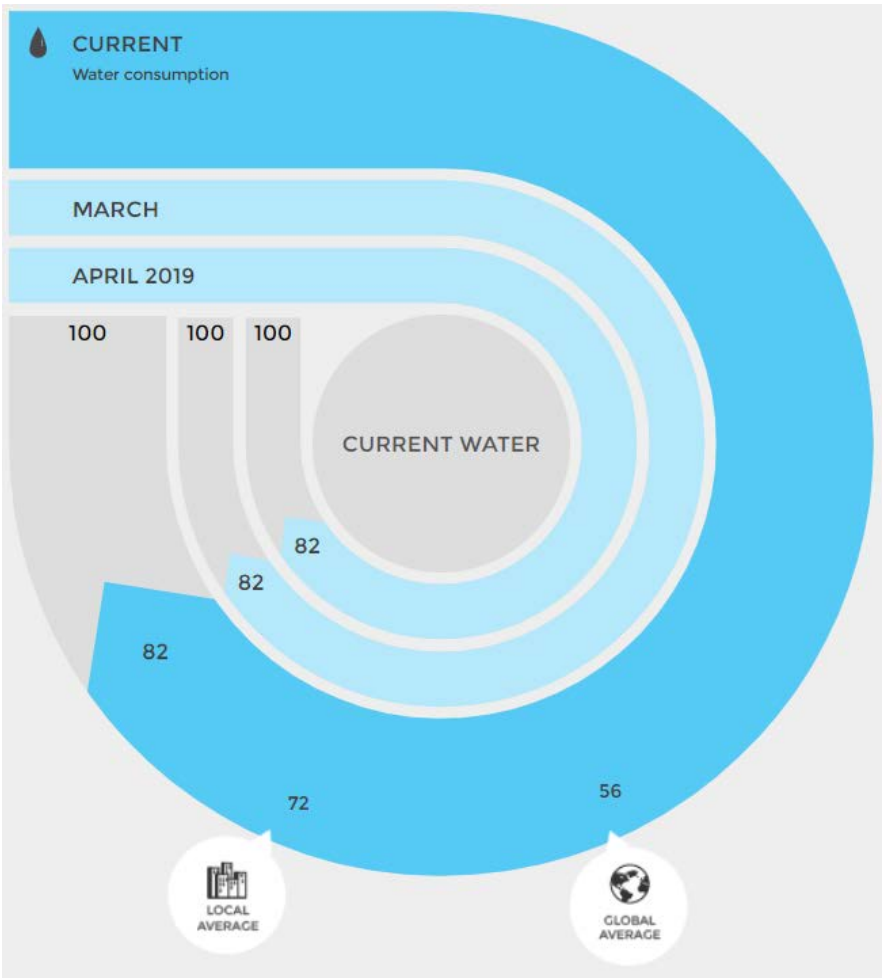
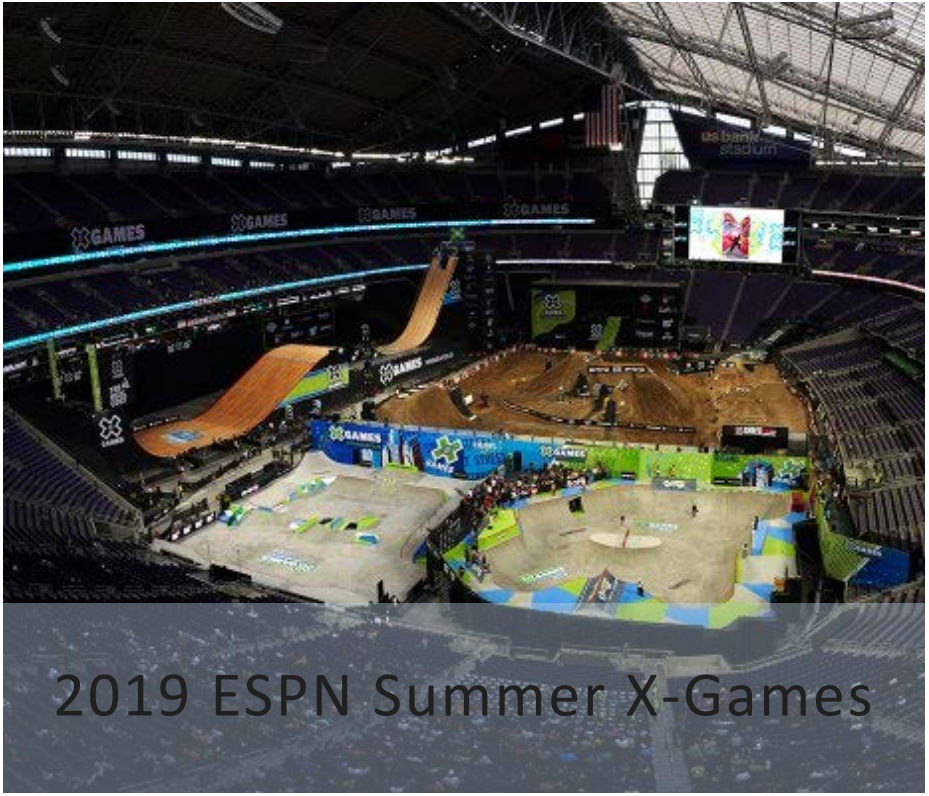
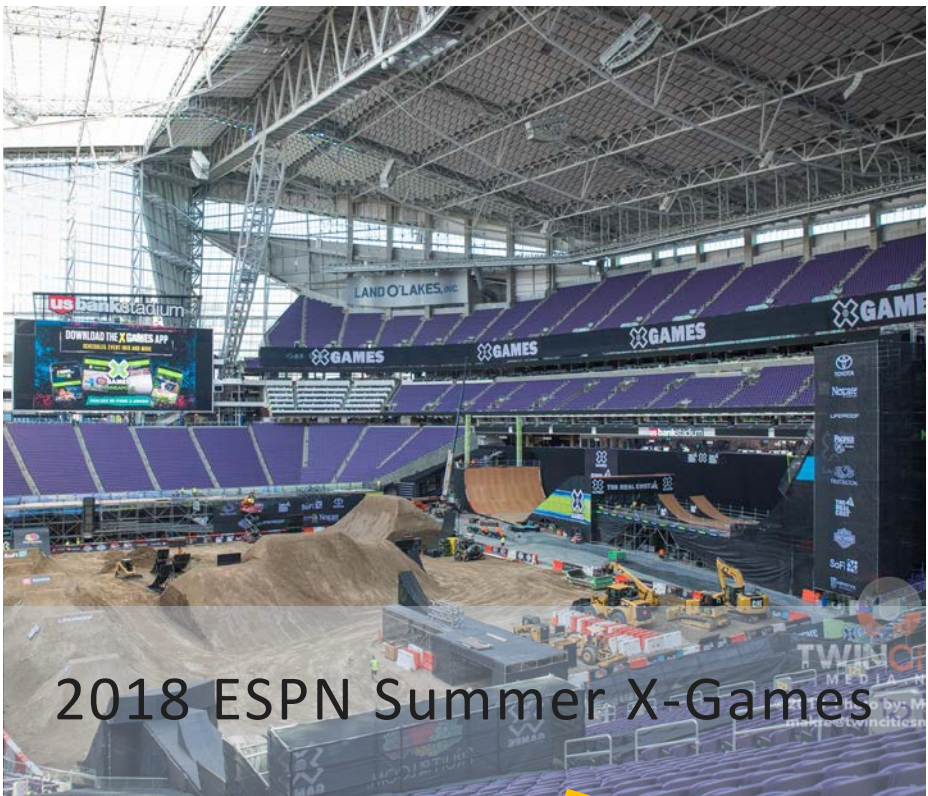
## Energy





# LEED v4.1 O+M

Water





# LEED v4.1 O+M

## Waste





# LEED v4.1 O+M

## Transportation

### Transport

On a typical day, how do you get to this building?  
"one day, one way"

Route 1

Miles

Walk, bike, telecommute



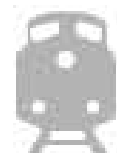
Bus



Tram or light rail



Heavy rail



Motorcycle or scooter



Car: solo



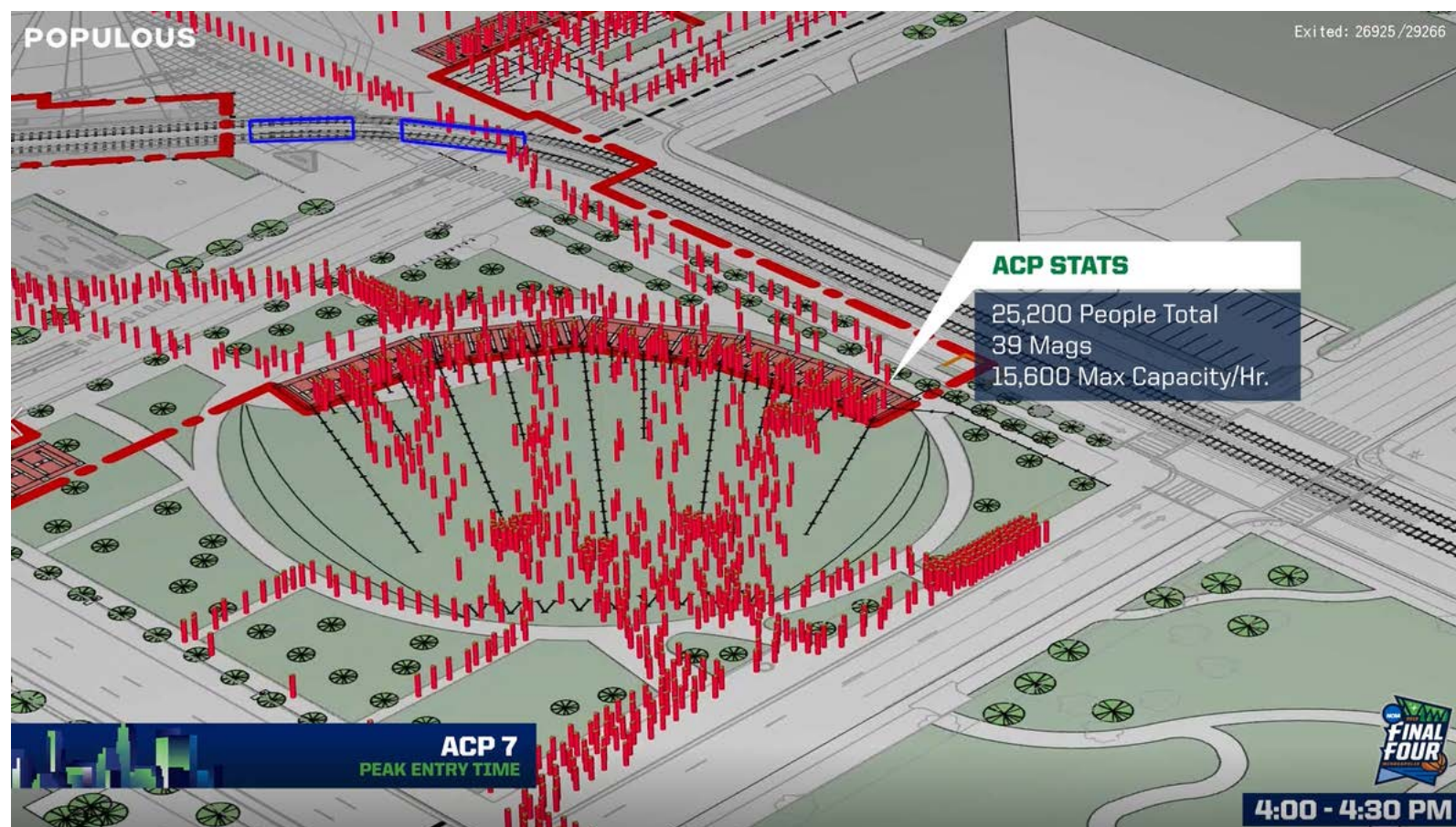
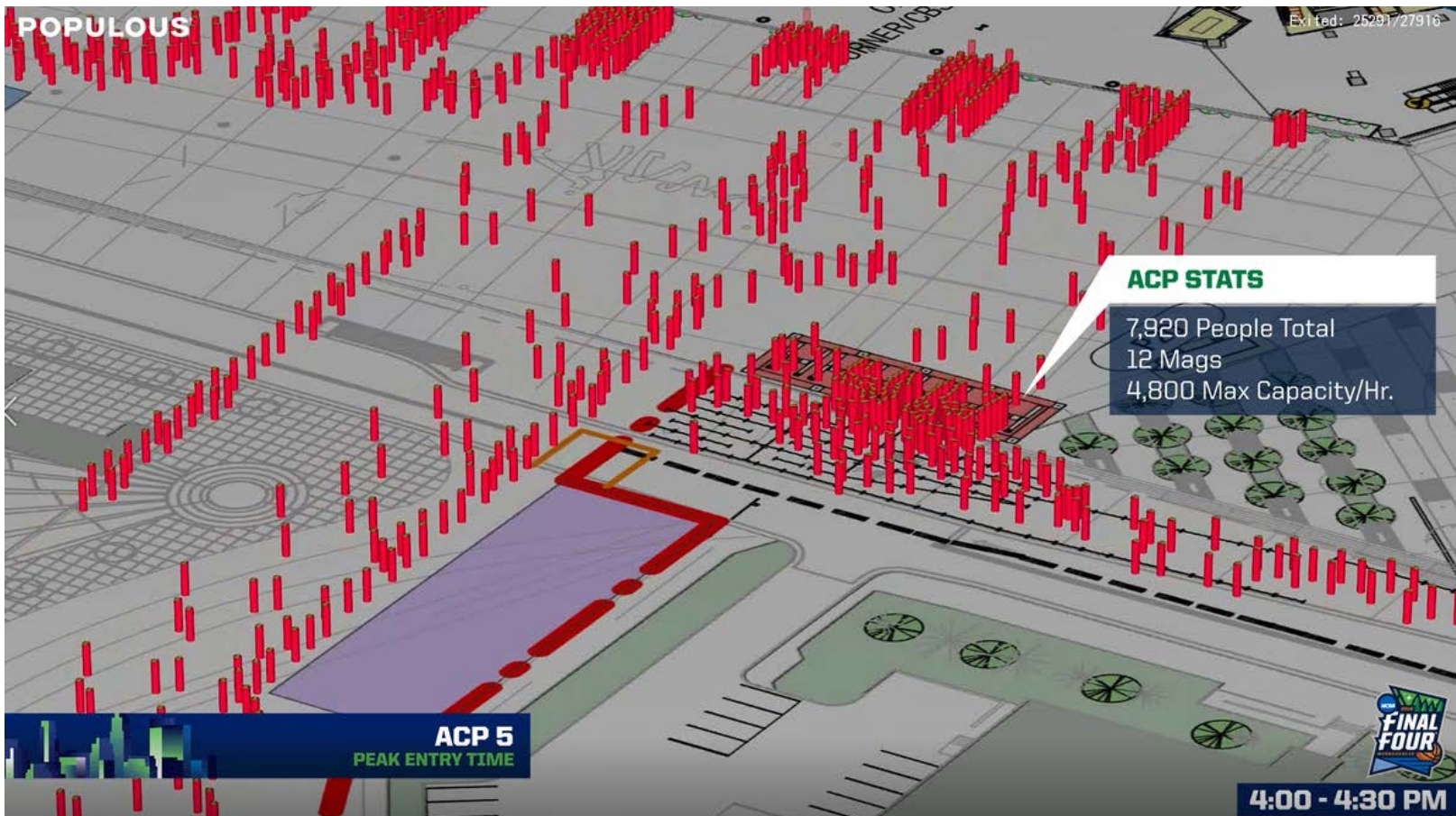
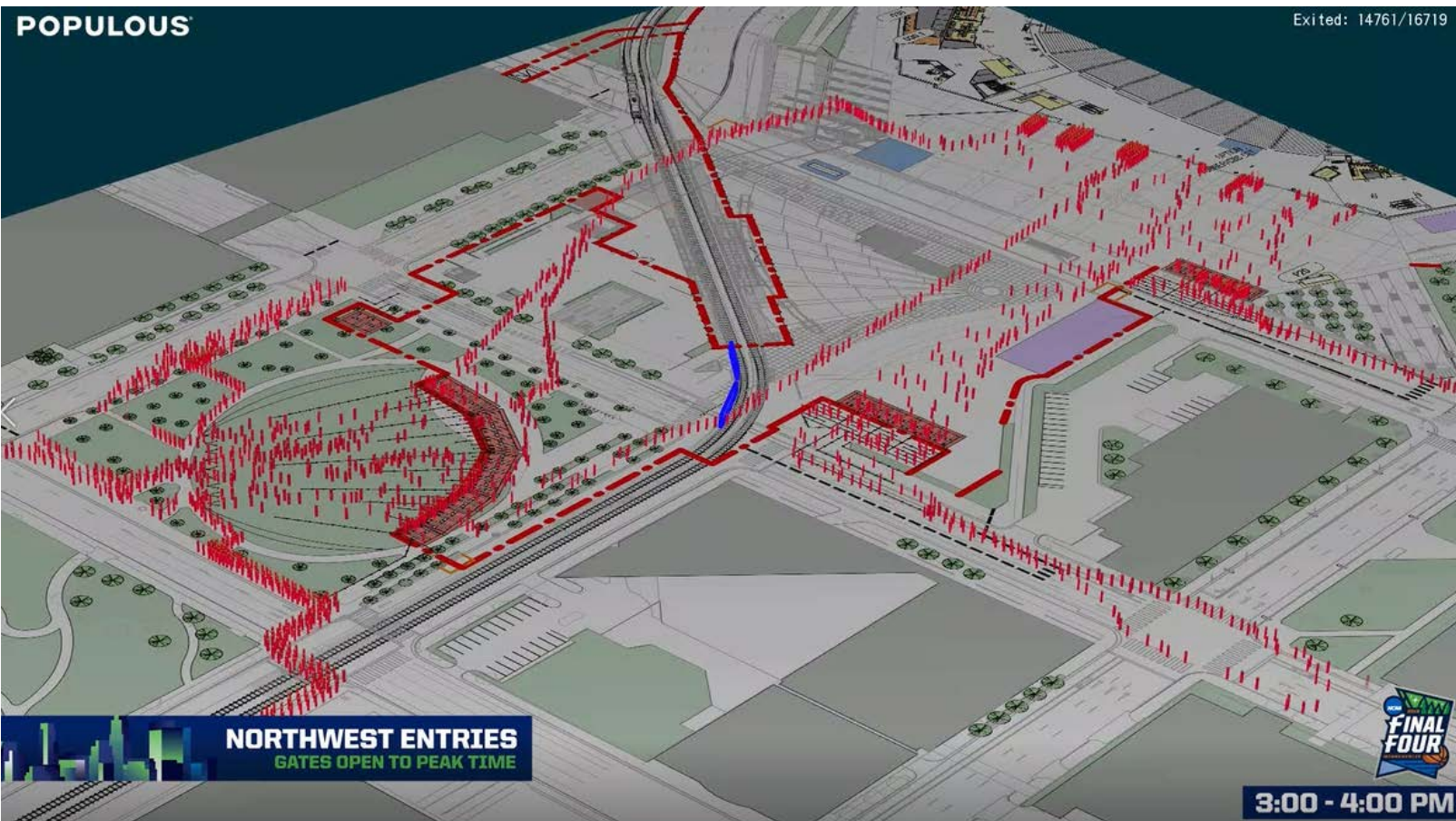
Carpool: 2-3 people



Car: alternative fuel



Add another route





# LEED v4.1 O+M

## Human Experience

### Satisfaction

How satisfied are you with the environment in this building?



Extremely  
Unsatisfied

Extremely  
Satisfied

Name (Optional)







ENERGY

30/33

WATER

12/15

WASTE

7/8

TRANSPORTATION

10/14

HUMAN EXPERIENCE

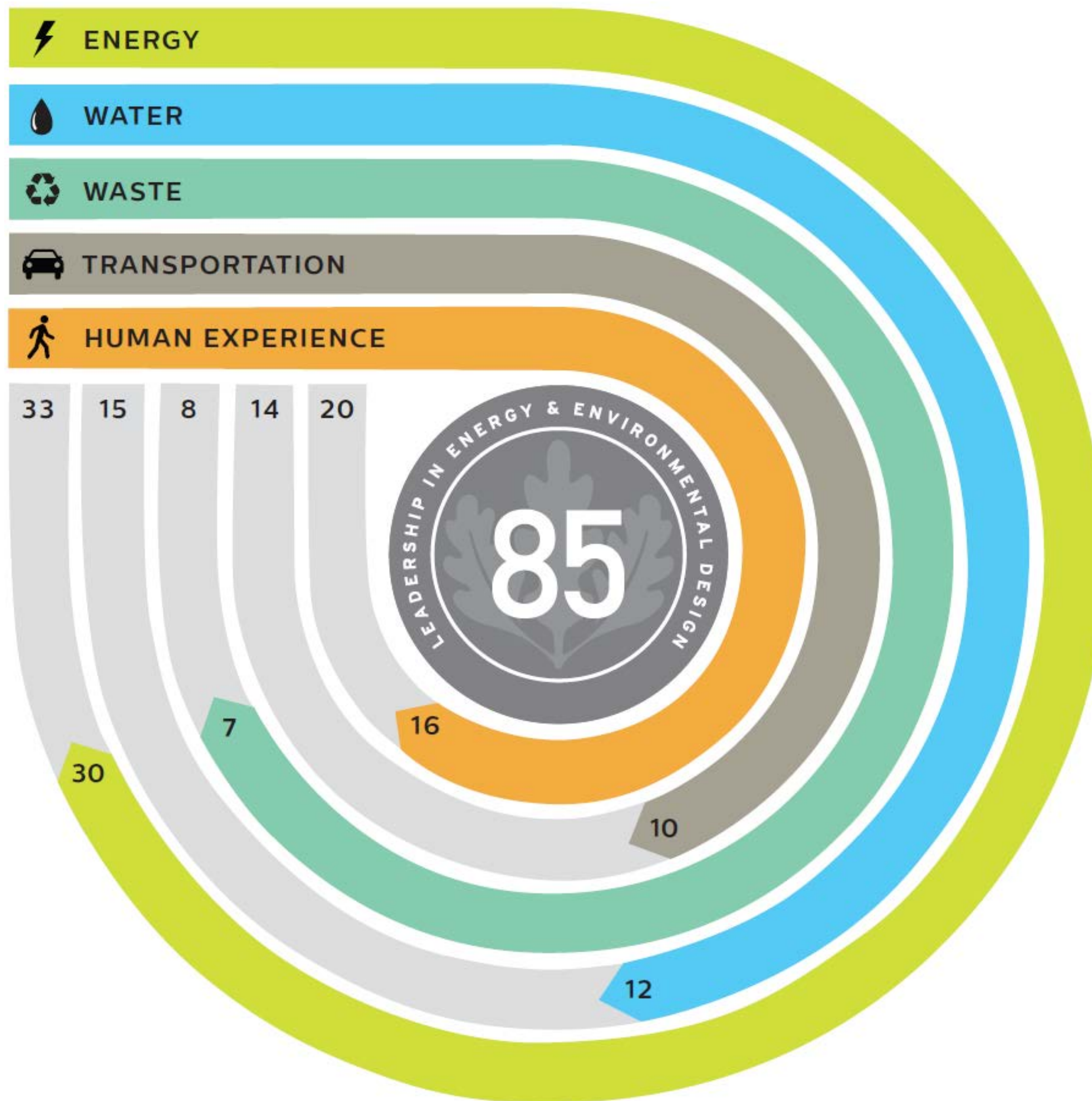
16/20

BASE POINTS

10/10

Total Reporting Period Score: 85











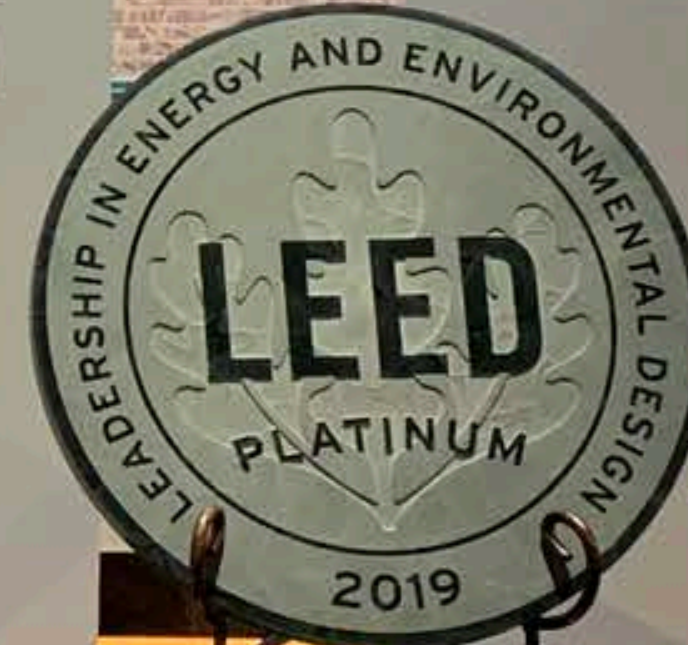


**BUILDING  
DESIGN  
+  
CONSTRUCTION**

**usbankstadium**



**U.S. BANK STADIUM  
SUSTAINABILITY PROGRAM**  
LET'S MAKE LESS OF AN IMPRESSION



**BUILDING  
OPERATIONS  
+  
MAINTENANCE**

**usbankstadium**



















**BUILDING DESIGN + CONSTRUCTION**



**BUILDING OPERATIONS + MAINTENANCE**



# Accolades

Thursday, Aug 08, 2019 10:15 AM



## U.S. Bank Stadium Becomes the First Professional Sports Stadium to Earn LEED Platinum Using the Arc Performance Platform



MINNEAPOLIS – Just following its three-year anniversary, U.S. Bank Stadium has been designated as the first professional sports stadium to achieve LEED Platinum certification using the Arc performance platform. The stadium earned the designation using the Building Operations and Maintenance (O+M) rating system for existing buildings. LEED Platinum is the highest rating level offered through the Leadership in Energy and Environmental Design (LEED) program, created by the U.S. Green Building Council (USGBC). This prestigious recognition signifies

MINNEAPOLIS

## U.S. Bank Stadium becomes first pro sports venue to achieve top sustainability status

By Rochelle Olson Star Tribune | AUGUST 9, 2019 — 7:00PM



AARON LAVINSKY - STAR TRIBUNE FILE

Fans took in the scene April at U.S. Bank Stadium when the NCAA Final Four was in Minneapolis.

U.S. Bank Stadium has become the first professional sports stadium to achieve Leadership in Energy and Environmental Design (LEED) Platinum status for building operations and maintenance.

The stadium, which opened Aug. 3, 2016, received the award under a scoring system that looks at waste reduction, energy efficiency and promotion of alternative transportation. Platinum is the highest of the four LEED ratings.

In a news release Thursday, stadium operators said the “prestigious recognition signifies achievements in sustainability for the ongoing, daily operations of U.S. Bank Stadium.”

Michael Vekich, chairman of the Minnesota Sports Facilities Authority, the public body that oversees the building, said, “As stewards of this facility, it is our responsibility to be on the forefront of sustainable operations.”

Mahesh Ramanujam, CEO of the U.S. Green Building Council, which granted the designation, said the stadium is a “healthy, green and high performing” venue.



# Resources

<https://www.arcskoru.com/>

<http://www.gbci.org/press-kit-arc>

<https://www.vikings.com/news/us-bank-stadium-earns-leed-platform>

<https://www.usbankstadium.com/stadium-info/sustainability>

<https://www.usbankstadium.com/stadium-info/skol-service-sustainability>

<https://www.sigeearth.com/leed-performance-path-arc/>

<https://www.xcelenergy.com/staticfiles/xe-responsive/Programs%20and%20Rebates/Business/U.S.-Bank-Stadium-Case-Study-LEED-Gold.pdf>

Star Tribune

Dronegenuity

Tiffany Daniels

Steve Bergerson

HKS | Populous

Rush2Recycle

U.S. Bank Stadium Marketing Team

usbank  
Stadium

X GAMES  
MAY 15-17  
GAMES

TICKETS ON SALE NOW!





## Q&A?

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Asa Posner, LEED AP BD+C, O+M  
Senior Sustainability Manager  
Sustainable Investment Group (SIG)



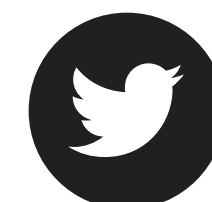
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