

BUSCH STADIUM, HOME OF THE ST. LOUIS CARDINALS



BALLPARK STATS

Location: St. Louis, Missouri

Began Construction: January 17, 2004

Opened: April 10, 2006

Seating Capacity: 46,000

Owner: St. Louis Cardinals, LLC

Operator: St. Louis Cardinals, LLC

Venue Uses: MLB baseball games and concerts

Construction Cost: \$421 million (in 2012 dollars)²

THE CARDINALS' GREENING STORY: MOTIVATIONS, CHALLENGES AND LESSONS FROM THE FIELD

The St. Louis Cardinals are one of the most award-winning teams in baseball. Since they joined the National League in 1892, the Cardinals have won 11 World Series Championships, 18 National League Pennants, 8 National League Central Division Titles, 3 National League Eastern Division Titles, and more than 9,300 games.¹

The Cardinals have also been earning accolades for their green efforts, including the St. Louis Green Business Challenge Award of Achievement, the Missouri Waste Coalition Environmental Stewardship Award, and the Downtown St. Louis Community Improvement Sustainability Award. Thanks to the strong commitment of their operations staff and front office team, the Cardinals have achieved a 29 percent waste diversion rate, a 23 percent reduction in overall energy use (and base power demand), and a 10 percent cut in water use across all operations since opening their stadium just five years ago. With a solar array newly installed in 2012, the Cardinals continue to set the bar high on and off the field.

WHY GO GREEN?

The Cardinals see greening and efficiency as an integral part of operating Busch Stadium in an economically and socially responsible way. "Since day one, operating this building in an effective manner has been a prime objective," says Joe Abernathy, vice president of stadium operations at Busch Stadium. "We've always been a proponent of continuous improvement in what we do and how we do it." For the Cardinals, this improvement involves both operational efficiency and the bottom line, as well as being a community and sports-industry role model.

As the former president of the Stadium Managers Association as well as longtime VP of Busch Stadium Operations, Abernathy views greening as an imperative not only for the Cardinals, but also for Major League Baseball (MLB) as a whole. With more than 20,000 fans attending most MLB games, Abernathy sees baseball, our national

"WE LOOK AT [GREENING THE STADIUM] MORE AS A JOURNEY OF CONTINUOUS IMPROVEMENT, RATHER THAN ATTAINING A GOAL OR DESTINATION," Joe Abernathy says.

pastime, as an important mouthpiece for environmental stewardship. "I think collectively we could make a difference," he says.

Abernathy hopes that the Cardinals' green efforts will help spur further action by all 30 MLB teams, and other sports teams in the Midwest, to become more efficient and environmentally intelligent. "If we can get other stadiums measuring their resource use and greening, then we can use that data to start identifying which buildings out there are operating better than others, and maybe there are individual processes or techniques they have that they can teach the rest of us to do too," he explains.

The Cardinals' interest in greening has also been encouraged by the growing green buildings and sustainable operations movement in the United States. "We caught that wave and are continuing to do what we've done all along as far as running an efficient operation." According to Abernathy, efficiency is just as important for Busch Stadium as any building or business that wants to save money on operating costs. "We're just basically running a building that houses baseball games," he says.

WHERE TO START?

"When it comes to stadiums and sustainable operations, reducing energy use is the place to start," says Abernathy. "The cost of energy to run a stadium is typically 15 to 20 percent of our total stadium operations budget. So when we were able to reduce our energy use by 23 percent, it had a significant impact on the bottom line—for us, saving up to \$150,000 annually. It all starts with knowing what your energy consumption is."

One key to the Cardinals' energy success right off the bat was the operation team's initiating data tracking using the EPA's free EnergyStar Portfolio Manager. "Signing up as an EnergyStar Partner and using their Portfolio Manager tool to help us track and better understand our energy consumption was a great start," says Abernathy. "It's a tool in which business operators can keep track or measure their energy use. It takes into account the weather, so it gives you a statistic at the end of the process that can help you gauge how efficiently you're using your energy."

Abernathy explains that the Portfolio Manager helps his team better analyze their data and understand when they've achieved real savings. "I had been tracking my energy use outside of Portfolio Manager, but did not have a way to normalize the data for weather," says Abernathy. "Portfolio Manager can do that and showed that the energy reduction was real—and not just the result of mild weather."³ The Portfolio Manager helped the Cardinals prove that since 2007 they've cut the ballpark's energy use by 23 percent—down to 161.2 kBtu per square-foot from 211.8—after normalizing for weather. This saved the team more than \$300,000 in energy costs between 2007 and 2010. According to EPA EnergyStar, this puts Busch Stadium at an energy performance level that is 39 percent better than the national average for entertainment buildings (265 kBtu/sq. ft./year).⁴

Next the Cardinals worked on "getting the workforce engaged in that process, using their help to identify potentials for our improvement and making that happen," says Abernathy. During the 2008 season, Abernathy's team began by piloting the "4 a Greener Game" green team program where volunteers work in coordination with Cardinals staff to collect recyclables throughout the ballpark during every home game and educate fans about the Cardinals green initiatives.⁵ Their very successful initial two-month pilot project was expanded to a permanent green team program that is now made up of an average of 25 volunteers and continues to grow year by year.

Thanks to this well-established green team, the Cardinals have diverted more than 1,836 tons of recyclables, including more than 575 tons of compostable yard waste, from local landfills. The program also encourages the approximately 3 million fans who come to games each year to use the 550 recycling bins around the ballpark. In addition, the Cardinals have devoted maintenance staff to separating out additional recyclables from garbage bags post-game.

To build on the momentum around their "4 a Greener Game" program and ongoing recycling successes, the Cardinals established a green mission statement and environmental commitment to help direct their green work and educate their fans. The mission statement is posted on the Cardinals' website, which draws more than 32.7 million visitors in season and more than 13 million unique visitors a month. The statement begins: "The St. Louis Cardinals are committed to promoting environmental stewardship and sustainability. Our goal is to put a winning team on the field and create a safe, fun, family friendly environment and entertainment experience for our guests while minimizing the impact on the natural environment."

CARDINALS' GREENING MISSION STATEMENT

"The St. Louis Cardinals are committed to promoting environmental stewardship and sustainability. Our goal is to put a winning team on the field and create a safe, fun, family friendly environment and entertainment experience for our guests while minimizing the impact on the natural environment. Specifically, the Cardinals will:

- ★ Strive to minimize pollution and waste through programs designed to reduce and recycle the consumable materials we use throughout our operations.
- ★ Conserve energy and water, support renewable energy resources, and encourage environmentally sound transportation options for employees and fans.
- ★ Identify and purchase environmentally friendly products and services for all stadium and team operations."

STANDOUT GREENING ACCOMPLISHMENTS

- ★ The Cardinals' "4 A Greener Game" program, launched in 2008, is credited with recycling more than 1,836 tons of solid waste, more than 575 tons of yard waste, and more than 110 tons of composted organic material.
- ★ The team's concessionaire, Delaware North Sportservice, has donated more than \$159,000 worth of food to Operation Food Search, a local food bank, with a waste diversion rate of 29 percent.
- ★ The Cardinals have reduced their energy use by 23 percent and water use by 10 percent since the stadium opened in 2006.

Busch Stadium has instituted several low-cost and no-cost energy-saving measures, including:

- ★ Using compact fluorescent lights throughout the stadium.
- ★ Installing occupancy sensors in several rooms.
- ★ Fine-tuning existing operating systems, such as pumps and blowers in the HVAC system.
- ★ Using a lighting control system.
- ★ Repairing and improving building insulation.

THE GREENING PROGRAMS BEHIND THE CARDINALS' GREEN AWARDS

The Partnership for Downtown St. Louis and the Downtown Community Improvement District—Sustainability Award:

To celebrate the 40th anniversary of Earth Day, the St. Louis Cardinals hosted an e-cycling drive, collecting unwanted electronics in the Ballpark Village Lot. During this first annual two-day event, more than 1,500 people dropped off their unwanted electronics, filling 14 tractor trailers and diverting 158 tons of electronics from the landfill.

St. Louis Green Business Challenge—Award of Achievement:

The St. Louis Green Business Challenge encourages companies to adopt sustainable practices by forming Green Teams, conserving energy and water, reducing waste, improving indoor environmental quality, and providing clean transportation options. The St. Louis Cardinals documented data to help sustain, share, and promote the efforts made through the St. Louis Green Business Challenge.

Missouri Waste Coalition—Environmental Stewardship Award:

The Cardinals reduced pollutant emissions or consumption of natural resources using methods that are both environmentally and economically sustainable and showed documented results both before and after implementation.

WasteWise Partner: The St. Louis Cardinals were given the award for demonstrating commitment to waste reduction by the EPA.

The Bridge—Certificate of Appreciation: This certificate was received in recognition of the St. Louis Cardinals' valuable contribution to reclaiming and providing food for The Bridge, a shelter for homeless and at-risk people in St. Louis.

“THIS IS ALL PART OF THE ST. LOUIS CARDINALS' COMMITMENT TO GREEN ITS GAME,” says Abernathy. **“SINCE THE STADIUM OPENED IN 2006, WE'RE PROUD TO SAY THAT WE'VE BEEN ABLE TO CUT OUR ENERGY USE BY 23 PERCENT AND WATER USE BY 10 PERCENT.” THIS SAVED THE TEAM MORE THAN \$300,000 IN ENERGY COSTS.**

CHALLENGES: OVERCOME AND ONGOING

Given that Busch Stadium opened relatively recently (in 2006), the Cardinals are justifiably proud of having achieved a 23 percent reduction in energy use since that time, and Abernathy's team is working hard to continue the trend. In fact, plumbing, lighting, and HVAC (heating, ventilation, and air conditioning) technologies have improved significantly over the last five years, enabling the Cardinals to upgrade their systems significantly over a short period.

The Cardinals' operations team and Microgrid Energy, Busch Stadium's energy manager, undertook an “investment-grade” energy audit in 2011 to identify additional energy-efficiency measures for the ballpark. They found close to 200 cost-effective energy improvements that formed the basis for the Cardinals' comprehensive energy-efficiency strategy, including no-cost or low-cost controls systems optimization and potential capital upgrades. As of mid-2012, the team is a third of the way through systematically executing their list of energy-efficiency measures, with plans to complete them all. “We looked for simple ways to reduce energy use, like setting back thermostats, turning off lights, and keeping doors closed. Then we moved into investing in lighting retrofits, retro-commissioning, and renewable energy projects. Along the way we took advantage of energy-reduction grants and rebates offered by our local utility and government agencies,” explains Abernathy. “We look at it more as a journey of continuous improvement, rather than attaining a goal or destination,” says Abernathy.⁶

For example, the Cardinals have replaced more than 1,000 traditional spotlights and floodlights with LED lamps to cut lighting power demand in several areas around the ballpark by 90 percent. The team also implemented a ventilation control scheme in electrical rooms to eliminate the year-round use of the equivalent of a hefty 100-ton air conditioner. Abernathy's team has similarly installed smaller, dedicated cooling systems for the scoreboard control room and video coaching room to substitute for very large HVAC units better suited for larger areas.

Additionally, the Cardinals have changed the operation and controls on pumps and installed a new heat exchanger so that the steam plant is now able to recover heat from waste condensate (from the system that brings hot water to the showers and HVAC systems). This reduces the amount of heat that must be generated for other applications and eliminates the need for pumping 5 million gallons of cooling water.

All told, the Cardinals have invested several hundred thousand dollars and are saving that much each year. The return on investment for most of their initiatives is typically less than a year, allowing the team to use the savings to improve their operations and the bottom line in other ways. “This is all part of the St. Louis Cardinals' commitment to green its game,” says Abernathy. “Since the stadium opened in 2006, we're proud to say that we've been able to cut our energy use by 23 percent and water use by 10 percent.”⁷

Most recently, the team unveiled a new 106-panel solar array atop a ticket building and concession area at one major entrance to the ballpark. The U.S.-manufactured array will produce approximately 32,000 kWh of energy annually, enough to power the stadium scoreboards or cook about 4 million hot dogs.

“We’ve installed a 25-kilowatt solar array that gives us the ability to generate enough clean energy to power all of the retail stores at the ballpark. It’s not a whole lot of energy, but every little bit helps,” says Abernathy. “We think it’s a great way to demonstrate how solar works and how renewable energy works in St. Louis. We hope to be a proponent of clean energy and educate our fans about the importance of renewable energy.”⁸

LESSONS FROM THE FIELD

USE EPA’S ENERGYSTAR PORTFOLIO MANAGER TO HELP TRACK AND MANAGE YOUR ENERGY DATA:

Abernathy explains that the Portfolio Manager helps his team better analyze their data and understand when they’ve achieved real savings. “I had been tracking my energy use outside of Portfolio Manager, but did not have a way to normalize the data for weather,” says Abernathy. “Portfolio Manager can do that and showed that the energy reduction was real—and not just the result of mild weather.”

USE AUDITS TO IDENTIFY BOTH SHORT-TERM AND LONG-TERM OPPORTUNITIES TO SAVE: The Cardinals’ operations team and Microgrid Energy, Busch Stadium’s energy manager, invested in an “investment-grade” energy audit in 2011 to identify additional energy efficiency measures for the ballpark. They found close to 200 cost-effective energy improvements that formed the basis for the Cardinals’ comprehensive energy efficiency strategy, including no-cost or low-cost controls systems optimization and potential capital upgrades.

CARDINALS USE GREENING TO BE A COMMUNITY LEADER

In March 2012, the Cardinals teamed up with the Natural Resources Defense Council to host a tour and discussion of the improvements they’ve made to their energy systems at Busch Stadium. About 25 energy leaders from Missouri—including representatives from the local electric utility, state energy regulators, environmental advocates, and the energy management team at Microgrid Energy—had the unique opportunity to hear a first-hand account of the energy efficiency work implemented at Busch Stadium.

**A GREENER
4 GAME** 



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ENDNOTES

- 1 <http://stlouis.cardinals.mlb.com/stl/ballpark/facts/index.jsp>.
- 2 <http://www.ballparks.com/baseball/national/stlbpk.htm>.
- 3 http://www.energystar.gov/ia/business/entertainment/Success_Story_St_Louis_Cardinals.pdf.
- 4 The Energy Information Administration’s Commercial Building Energy Consumption Survey (CBECS) indicates that the average energy intensity of an entertainment facility is 265 kBtu/sq. ft./year; http://www.energystar.gov/ia/business/entertainment/Success_Story_St_Louis_Cardinals.pdf.
- 5 <http://stlouis.cardinals.mlb.com/stl/community/green.jsp>.
- 6 <http://www.businessreviewusa.com/company-reports/busch-stadium>.
- 7 http://www.electricalconnection.org/Busch_Stadium_Solar_Panels.htm.
- 8 http://stlouis.cardinals.mlb.com/video/play.jsp?content_id=20349729&topic_id=16010222&c_id=stl.
- 9 http://www.energystar.gov/ia/business/entertainment/Success_Story_St_Louis_Cardinals.pdf.