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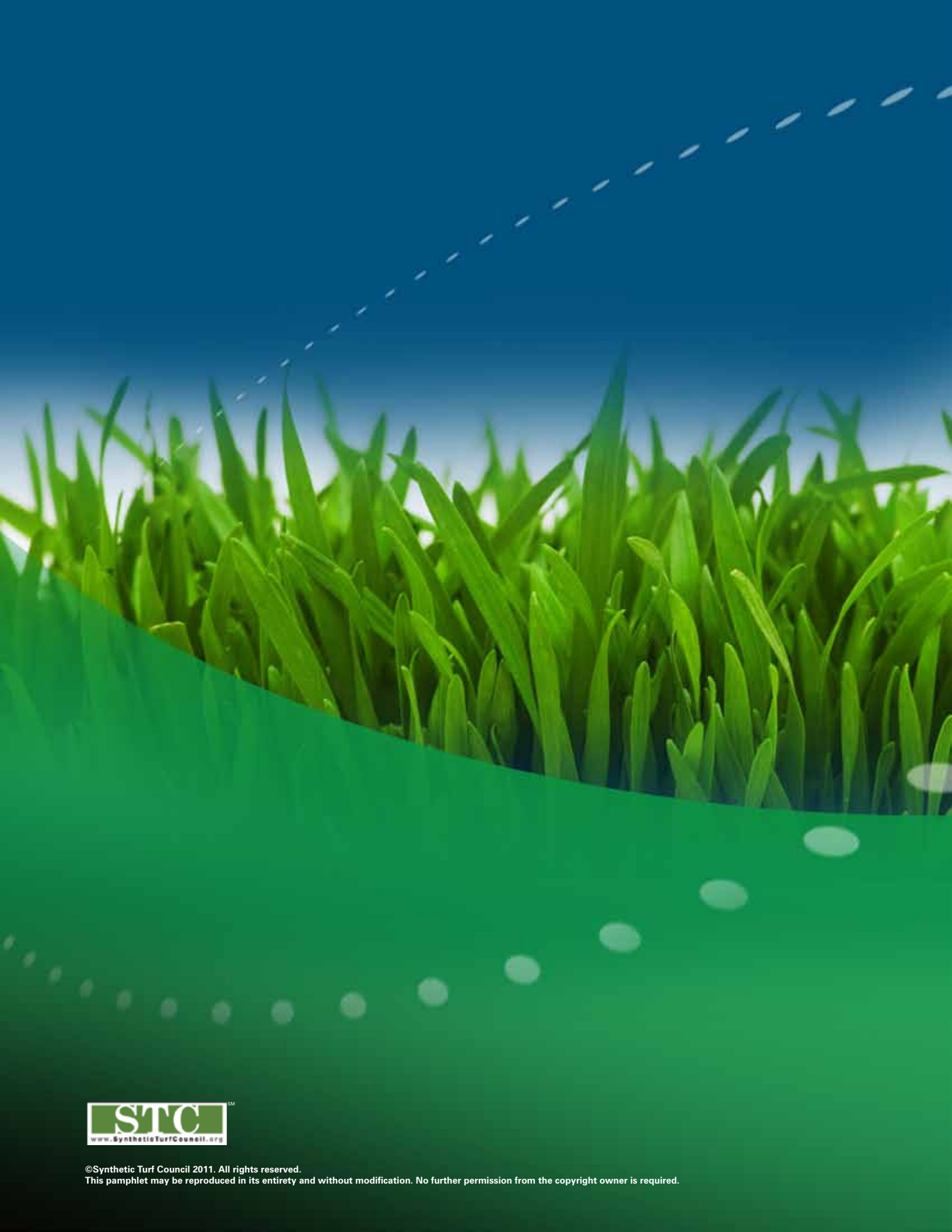
Synthetic Turf 360°

A Guide for Today's Synthetic Turf



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2011

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Why Synthetic Turf?

There are many reasons why synthetic turf has become so popular.

A heightened sense of environmental awareness prompts interest in its ability to conserve billions of gallons of water each year. Increased user requirements and intense competition have given rise to a new generation of synthetic turf systems that replicate the look and playability of natural, lush grass.

Athletes enjoy significantly more playing time without the need for resource-intensive maintenance. Homeowners, businesses, parks, municipalities and government entities use synthetic grass as an attractive landscape solution that saves time, money and water.

The Synthetic Turf Council (STC) created this guide to showcase the numerous uses and benefits of synthetic turf. It features information about athletic fields and the growing landscape and recreation category, which includes parks, playgrounds, homes, businesses, golf courses and more.

If you would like to learn more, we invite you to visit www.syntheticturfcouncil.org.
Thanks for your interest in synthetic turf!

Athletic Fields

Popular, versatile solution

At the beginning of 2011, more than 6,000 synthetic turf fields were being used in North America by a growing number of high school and collegiate athletes playing and practicing football, soccer, hockey, baseball, rugby, lacrosse and many other sports.

About half of all NFL teams currently play their games on synthetic turf and, since 2003, over 70 FIFA U-17 and U-20 World Cup matches have been played on synthetic turf soccer fields.

Significant environmental benefits

Depending on the region of the country, one full-size synthetic turf sports field saves 500,000 to 1,000,000 gallons of water each year. During 2010, between 3 billion and 6 billion gallons of water were conserved through its use. According to the EPA, the average American family of four uses 400 gallons of water a day.[1] Therefore, a savings of 3 billion to 6 billion gallons of water equates to the annual water usage of over 20,000 to 40,000 average American families of four.

For a multi-use field in Texas, where there is little rain, the water savings is much greater. School officials with the El Paso Independent School District stated that their 10 new synthetic turf sports fields will save more than 80 million gallons of water every year, or 8 million gallons of water per field.

The estimated amount of synthetic turf currently installed has eliminated the need for nearly a billion pounds of harmful pesticides and fertilizers, which has significant health and environmental implications.

Example:

In a July 7, 2007, article entitled "Grass Warfare," the Wall Street Journal states, "The pesticides used in lawn-care products found on shelves nationwide are considered legal by government standards. But broader research on health risks from such chemicals has prompted general warnings. The EPA, which regulates pesticide use, notes on its own website that kids are at greater peril from pesticides because their internal organs and immune systems are developing." [2]

According to the North Carolina Department of Environment and Natural Resources polluted storm water run-off is the No. 1 cause of water pollution in their state, with common examples including over-fertilizing lawns and excessive pesticide use.[3]

The EPA has identified run-off of toxic pesticides and fertilizers as a principal cause of water pollution. According to that federal agency, approximately 375,000 acres of lakes, 1,900 miles of rivers and streams and 550 square miles of estuaries in Florida are known to be impaired by nutrient pollution, a primary source of which is excess fertilizer.[4]

[1] WaterSense, an EPA publication, www.epa.gov/watersense/pubs/indoor.html
[2] Gwendolyn Bounds, "Grass Warfare" (Wall Street Journal, July 7, 2007)
[3] Stormwater FAQs, (North Carolina Department of Environment and Natural Resources website)
[4] Public Q&A Index – Florida (EPA website)

Most of the 6,000-plus synthetic turf sports fields in use today use crumb rubber infill recycled from used tires, keeping more than 105 million tires out of landfills.

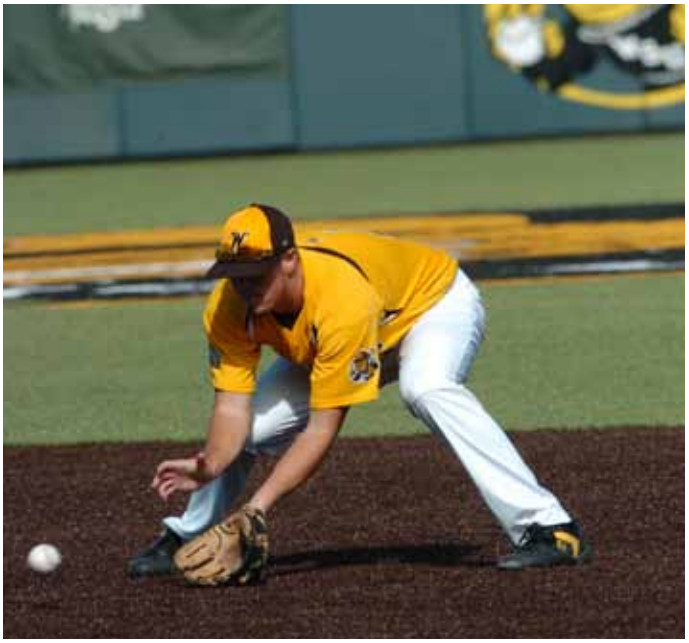
Synthetic turf helps reduce noxious emissions.

According to the EPA, "lawn mowers emit high levels of carbon monoxide, a poisonous gas, as well as hydrocarbons and nitrogen oxides that contribute to the formation of ground level ozone, a noxious pollutant that impairs lung function, inhibits plant growth and is a key ingredient of smog."[5] The EPA also reports that a push mower emits as much pollution in one hour as 11 cars and a riding mower emits as much as 34 cars.[6]

In 2010, a BASF Corporation Eco-Efficiency Analysis, which compared synthetic turf athletic fields with professionally installed and maintained grass alternatives, concluded that synthetic turf can lower consumption of energy and raw materials and generation of solid waste depending on field usage. BASF also found that the average life-cycle costs over 20 years of a natural grass field are 15 percent higher than the synthetic turf alternatives.

A synthetic turf company and STC member has forged a recycling partnership with Yellowstone National Park to divert nearly 300 million plastic bottles from landfills each year. The plastic bottles will be recycled into select synthetic turf products and backing for carpet.

Using synthetic turf can help environmentally conscious builders and specifiers with LEED® (Leadership in Energy and Environmental Design) project certification from the U.S. Green Building Council in the areas of Water Efficient Landscaping, Recycled Content, Rapidly Renewable Material and Innovation in Design.



"With synthetic turf, we use a lot less water. It used to be 3 million gallons of water each year with regular grass and now we probably use a tenth of that amount."

— Bob Sube, Director of Facilities and Construction, Fillmore Unified School District, California

[5] Your Yard and Clean Air, EPA Office of Mobile Sources, (Fact Sheet OMS-19, May 1996)
[6] Small Engine Rule to Bring Big Emissions Cuts, (EPA News Release, April 17, 2007)

Increased playing time and safety

Synthetic turf can be utilized around 3,000 hours per year with no "rest" required, more than three times that of natural grass. This creates increased practice and play time as well as the valuable flexibility to use your field for other events. The opportunity to be active and participate in sports is critical for the fitness, mental health, self-esteem and leadership development of youth.

It is a smart solution for playing fields that have become unsafe from overuse or severe climatic conditions. A grass field simply cannot remain lush and resilient if it is used more than three to four days a week, in the rain, or during months when grass doesn't grow. Rain-outs are eliminated since highly permeable synthetic turf quickly drains excess water off the field.

Made with resilient materials for safety, synthetic turf sports fields provide a uniform and consistent playing surface.

Traction, rotation and slip resistance, surface abrasion and stability meet the rigorous requirements of the most respected sports leagues and federations. Some of the published studies of the comparative safety of synthetic turf include:

- A 2004 NCAA study among schools nationwide comparing injury rates between natural and synthetic turf; the injury rate during practice was 4.4% on natural turf, and 3.5% on synthetic turf.

- An analysis by FIFA's Medical Assessment and Research Centre of the incidence and severity of injuries sustained on grass and synthetic turf during two FIFA U-17 World Championships. According to FIFA, "The research showed that there was very little difference in the incidence, nature and causes of injuries observed during games played on artificial turf compared with those played on grass."[7]

- Three 2010 long-term studies published by researchers from Norway and Sweden comparing acute injuries on synthetic turf and grass. The studies examined the type, location and severity of injuries sustained by hundreds of players during thousands of hours of matches and training over a four-to-five-year period. Many types of acute injuries to men and women soccer players, particularly knee injury, ankle sprain, muscle strains, concussions, MCL tears and fractures were evaluated. The researchers concluded that the injury risk of playing on artificial turf is no greater than playing on natural grass.[8]

These studies and many more, including the FIFA comparative results of its exhaustive research, are posted on the Synthetic Turf Council's website under Research & Latest Thinking.

[7] "Very Positive Medical Research on Artificial Turf" (Turf Roots Magazine 01, pp. 8-10, FIFA)

[8] Bjørneboe J, Bahr R, Andersen TE (2010) Risk of injury on third generation artificial turf in Norwegian professional football. British Journal of Sports Medicine, 44: 794-798.

Ekstrand J, Hägglund M, Fuler CW (2010) Comparison of injuries sustained on artificial turf and grass by male and female elite football players. Scandinavian Journal of Medicine and Science in Sports, DOI: 10.1111/j.1600-0838.2010.01118.x

Soligard T, Bahr R, Andersen TE (2010) Injury risk on artificial turf and grass in youth tournament football. Scandinavian Journal of Medicine and Science in Sports, DOI: 10.1111/j.1600-0838.2010.01174.x

Cost-effectiveness

According to Cory Jenner, a landscape architecture professional in Syracuse, N.Y., the cost of installing and maintaining a synthetic turf sports field over a 20-year period (including one replacement field) is over three times less expensive per event than the cost of a grass field over the same period of time. This is because many more events can be held on a synthetic turf sports field. This cost-per-event advantage is validated by other authorities and field owners.

Because synthetic turf can withstand so much wear and tear, many schools rent their fields to local sports teams and organizations to bring in extra funding. At Cincinnati's Turpin High School, the field is rented 80 percent of the evenings between January and October — raising $40,000/year for the last two years from rental fees.

"The synthetic field completely revolutionized our sports program. We now have a multi-dimensional facility with activities scheduled year-round, nearly around the clock. Along with football, Newman Field now hosts an incredible range of activities — intramural sports, lacrosse sports, lacrosse playoffs, soccer leagues, local high school events, such as sports camps, cheerleading competitions and much more."

— Rob Coleman, Athletic Director, Whittier College, California

Landscape and Recreation

Various applications

Beautifully landscaped synthetic turf can often be installed in places where grass can't grow or be effectively maintained.

Applications include:

- Airport grounds
- Businesses/commercial developments
- Golf courses
- Highway medians
- Homes/residential communities
- Municipalities
- Parklands
- Pet parks
- Playgrounds
- Rooftops
- Tennis courts
- Closed landfills

Closed Landfill

Eco-friendly solution

From Disneyland and the Wynn Hotel to the Twentynine Palms Marine Corps Base and your neighbor's yard, thousands of homes, businesses, golf courses and public spaces have turned to synthetic grass to provide a lush, attractive landscape solution that requires minimal resources and maintenance.

Water conservation is a necessity. In March 2011, Wharton published a report about the growing scarcity of water. It references a prediction by the 2030 Water Resources Group that by 2030 global water requirements will be "a full 40 percent above the current accessible, reliable supply." Further, less than 3 percent of all available water is fresh and drinkable. Underground aquifers hold almost all the potable water available in liquid form, and their rate of depletion more than doubled between 1960 and 2000.[9] Yet, the EPA states that nationwide landscape irrigation is estimated to account for almost one-third of all residential water use, totaling more than 7 billion gallons per day.[10]

Synthetic turf promotes greater utilization of land, as you can do more with the same space surfaced with synthetic turf than with natural grass. Rooftops once deemed unusable for high-rises and residential buildings can now feature inviting green areas. Hotels that had to restrict the use of the lawns for parties and events can now schedule as many functions as they can book.

The Southern Nevada Water Authority estimates that every square foot of natural grass replaced saves 55 gallons of water per year.[11] If an average lawn is 1,800 square feet, then Las Vegas homeowners with synthetic turf could save 99,000 gallons of water each year or about $400 annually. In Atlanta, homeowners could save $715 a year, not including much higher sewer charges.

In its report, "Municipal Solid Waste in the United States, 2009 Facts and Figures," the EPA estimates that 33.2 million tons of yard trimmings were generated in 2009, the third largest component of Municipal Solid Waste in landfills.[12] As yard trimmings decompose, they generate methane gas, an explosive greenhouse gas and acidic leachate.[13]

A June 2008 National Public Radio report called "Water-Thirsty Golf Courses Need to Go Green" reported "Audubon International estimates that the average American golf course uses 312,000 gallons of water per day. In a place like Palm Springs, where 57 golf courses challenge the desert, each course eats up a million gallons a day. That is, each course each day in Palm Springs consumes as much water as an American family of four uses in four years."[14]

Impermeable synthetic turf is being used as an economical and environmentally effective solution for the closure of landfills, mine spoils and hazardous sites. Among the many reasons: it provides a perennially green landscape cover; dramatically reduces construction and long-term maintenance costs; improves stability; prevents erosion; controls gas and odor; and reduces leachate.

"The inclusion of synthetic grass in our landscape has proven to be a smart choice for the resort and Mother Earth. Since the conversion, we are able to accommodate increased capacity and utilize a greater percentage of grassy areas, while providing an enhanced event experience, without damaging the grass. This year, there will be 8 million gallons of water conserved and our new synthetic lawn allows us to eliminate the use of fertilizers, pesticides and herbicides on ground in close proximity to the beach."

— Rodrigo A. Carrillo, Project Manager, Fontainebleau Hotel, Miami Beach, Fla.

[9] "Valuing Water: How Can Businesses Manage the Coming Scarcity?" (Wharton School of the University of Pennsylvania, March 2011)
[10] Outdoor Water Use in the United States, (EPA-832-F-06-005, August 2008)
[11] Water Smart Landscapes Rebate (Southern Nevada Water Authority website)
[12] "Municipal Solid Waste in the United States, 2009 Facts and Figures," (EPA Office of Solid Waste, EPA530-R-10-012, December 2010)
[13] Frequent Questions about Yard Trimmings, (EPA website, December 2010)
[14] Frank Deford, "Water-Thirsty Golf Courses Need to Go Green," (National Public Radio, June 11, 2008)

Saves money

A growing number of tax credits and rebates are available since synthetic turf conserves water. For example, the Central Basin Municipal Water District in California reports that Golden State Water Company customers replacing their irrigated areas with synthetic turf can save $1 per square foot, up to a $1,000 rebate.

Many public spaces, from government grounds and highway medians to airport entrances, are turning to synthetic grass for appealing, water-saving landscape solutions that reduce operating and maintenance expenditures.

Rooftop Garden

Promotes accessibility

Play areas are among the public spaces covered by the Americans with Disabilities Act. The 2010 Standards for Accessible Design (Sections 240, 1008) addresses play areas designed, constructed and altered for children ages 2 and over in a variety of settings, including parks, schools, childcare facilities, shopping centers and public gathering areas. According to the standards, "the surfaces that are universally accessible and go beyond ADA to be actually usable for children with disabilities include artificial grass with rubber underneath. The benefit of these surfaces besides the accessibility is the maintenance. You do not need to do daily maintenance to ensure that safety is maintained."[15]

Making recreation for the disabled as inclusive as possible is a growing priority. "Inclusive recreation is one of the fastest growing needs in more and more parks and recreation agencies across the United States," said Elizabeth Kessler, 2009-2010 National Recreation and Park Association president, during the 11th annual National Institute on Recreation Inclusion conference in November 2010.

Synthetic turf creates more recreation opportunities for people with disabilities and physical challenges. Wheelchairs roll easily and crutches won't sink into park and landscape surfaces, like those used by the Miracle League nationwide to help youth with physical disabilities play baseball.

Many retirement communities use extensive amounts of synthetic turf for landscaping to assist residents with mobility challenges. People using wheelchairs, canes or walkers can easily move across the turf. Because they are easy to maintain, synthetic turf surfaces also offer seniors the beauty of a decorative lawn without the expense, labor and time of weekly yard work during much of the year.

"Our new artificial lawn helps keep the dogs and the facility clean and the yard will be better for people in wheelchairs to use when practicing with their dogs. We are so thankful to have this big improvement."

— Mo Maurer, founder and owner of Hawaii Canines for Independence

[15] Fact Sheet, Adoption of the 2010 Standards for Accessible Design (ADA website)

Promotes safety and security

Local communities need accessible, versatile play surfaces for its youth and people of all ages. Parks and playgrounds that use synthetic turf allow kids to be active year-round on safe and resilient sports surfaces.

With synthetic turf, kids and parents don't have to worry about mildew and bacteria from wet mulch, allergies associated with natural grasses or other potential health irritants.

Owners of second homes that landscape with synthetic turf don't need a lawn maintenance crew that may be tempted by a vacant home.

"In 2009 the City of Lakeland opened Common Ground, our first inclusive playground featuring unique play experiences for children of varying physical and cognitive abilities. We utilized synthetic turf to cover over 25,000 square feet of play zones to connect our barrier free play elements. The surface creates the natural looking green environment so critical to our design, provides barrier free safety fall zones that protect our children, drains almost instantly even after a tropical torrential rain and it remains cooler than other safety surface options. Maximizing our children's outdoor play time, Common Ground is a community dream come true."

— Pam Page, Assistant Director of Parks & Recreation, City of Lakeland Parks & Recreation Department, Lakeland, Fla.

Common Ground Park, Lakeland, Florida

Community and lifestyle enhancement

By making continuous and safe play possible, synthetic turf promotes a healthy lifestyle, which enhances community well-being. It also helps increase childhood fitness, an important objective of the "Let's Move!" program championed by First Lady Michelle Obama, and the NFL's "Play 60" campaign.

Synthetic grass creates low-maintenance, pet-friendly lawns that keep man's best friend safe and healthy while controlling odors.

Homeowners remove the headaches of ongoing lawn care, adding more leisure time back into their already busy lives.

Synthetic turf can come in many colors, like the orange, blue and yellow grass at the Sunflower Preschool Playground at Barnett Family Park in Lakeland, Florida.

Pixie Hollow Fairy Garden, 2011 Epcot International Flower and Garden Festival, Disney World, Orlando, Florida

Ready to get started with synthetic turf?
Visit our Online Buyers Guide and Member Directory at www.syntheticturfcouncil.org.

www.syntheticturfcouncil.org