



SUSTAINABILITY:

DRIVING THE U.S. TIRE MANUFACTURING INDUSTRY — — — — —



2018 SUSTAINABILITY REPORT

CONTENTS

Message from USTMA's President & CEO	1
Our vision for a sustainable tire manufacturing industry:	3
Tire safety	5
Occupational safety and health	7
Tire materials	9
Environmental footprint	12
Greenhouse gas emissions	15
Scrap tires	17
Our economic impact	20
Consumer tips for proper tire maintenance	22
About USTMA	23
About this report	23
Endnotes	24

A MESSAGE FROM USTMA'S PRESIDENT & CEO

ANNE FORRISTALL LUKE



On behalf of the U.S. Tire Manufacturers Association (USTMA) and its members, I am proud to present our first-ever sustainability report. As a critical part of our mission, USTMA seeks to advance a sustainable U.S. tire manufacturing industry through thought leadership and a commitment to science-based public policy advocacy.

Sustainability drives our members' business practices and operating principles. From engineering innovations that maximize tire longevity and performance, to ensuring driver and employee safety, to preserving the environment throughout the life cycle of a tire, our members are continually looking for new ways to improve the societal contributions of their products and operations.

As global companies with manufacturing operations in the U.S., many of our members' individual sustainability initiatives extend well beyond what is included in this report. The USTMA 2018 report presents our collective progress and shared vision for a sustainable U.S. tire manufacturing industry, and USTMA members have established six aspirational goals to help them achieve enhanced outcomes in the areas of safety, performance and environmental stewardship.

Our mobile society depends on tires and USTMA is proud to represent our members on our industry's sustainability journey. We are excited to share our sustainability progress and welcome your feedback on our current and ongoing initiatives.

NEARLY

90%

OF U.S. FACILITIES CERTIFIED
UNDER ISO 14001

100%

OF MEMBER COMPANIES SUPPORT
PHILANTHROPIC ACTIVITIES

81%

OF SCRAP TIRES WENT TO
BENEFICIAL END USES IN 2017

NEARLY

53%

OF ENERGY AT U.S. FACILITIES
COMES FROM CLEAN NATURAL GAS

NEARLY

10%

REDUCTION IN CO₂ EMISSIONS
AT U.S. FACILITIES SINCE 2005

50%

REDUCTION IN INJURY/ILLNESS RATE
AT U.S. FACILITIES SINCE 2005

OUR VISION FOR A SUSTAINABLE TIRE MANUFACTURING INDUSTRY

Tires are the only part of a vehicle that touch the road, and that connection is vital in helping to keep motorists safe. Automobile manufacturers are increasingly turning to USTMA member companies to help fine-tune safety, performance and environmental aspects of their vehicles. Tire manufacturers continue to innovate to find the combination of design, materials and advanced engineering required to meet these market demands – including an ever-growing focus on sustainability.

The pages that follow highlight both current accomplishments USTMA's members have made toward sustainable products and processes, and our vision for continued progress. This report also shines a spotlight on the U.S. tire manufacturing industry's contribution to the nation's economy.

THE USTMA SUSTAINABILITY VISION SETS THESE KEY ASPIRATIONAL GOALS:



USTMA members strive to improve the longevity and driving performance of the tires we design, make and sell.



USTMA members strive to have zero workplace injuries and illnesses.



USTMA members strive to increase the use of sustainable materials in the tires we manufacture.



USTMA member facilities strive to reduce our environmental footprints.



USTMA members strive to manufacture tires that reduce greenhouse gas emissions throughout a tire's useful life.



USTMA members have the goal that all scrap tires enter sustainable end use markets.

HISTORY OF KEY INNOVATIONS IN TIRE SAFETY TECHNOLOGY

1839 Charles Goodyear accidentally discovers that the addition of heat and sulphur alters the consistency of rubber, later to be known as the vulcanization process.



1888 John Dunlop develops the first pneumatic, or air-filled, tire.

1903 Paul Litchfield, Goodyear CEO, is granted a patent for the first tubeless automobile tire.

1908 Grooved tires with improved road traction are invented.

1920 Firestone develops balloon (low-pressure) tires.

1947 B.F. Goodrich develops tubeless tire (tires that do not require a separate inner tube) technology.

1948 The first radial tire (a tire with cord plies arranged at 90 degrees to the direction of travel, or radially from the center of the tire) is designed, patented, and commercialized by Michelin.

1963 The first bias-belted tire (a pneumatic tire with a belt of puncture-resistant material, such as steel or fiberglass) is introduced.

1968 Federal Motor Vehicle Safety Standards (FMVSS) are adopted in the United States, establishing regulations to ensure consumer safety.

2000 Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act is passed by Congress requiring that all vehicles sold in the U.S. after September 1, 2007 include a tire pressure monitoring system to warn drivers about under inflated tires.



VISION: TIRE SAFETY

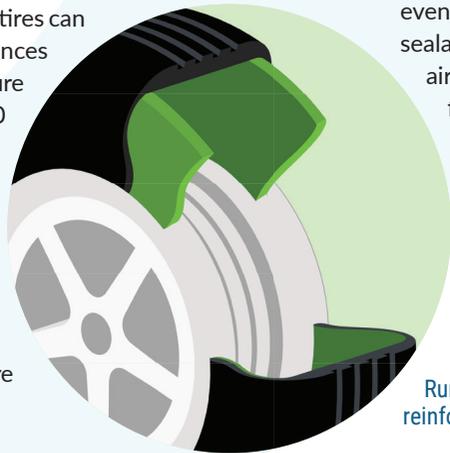


USTMA members strive to improve the longevity and driving performance of the tires we design, make and sell.

Tire safety is our number-one priority. USTMA members are always working to develop new technologies and practices that advance tire performance. Just as important, USTMA and its member companies are committed to educating consumers about their own role in ensuring tire safety on the road.

RUN-FLAT TIRES

As the name suggests, run-flat tires can travel safely for limited distances even after a tire loses pressure due to a puncture – up to 50 miles at 50 miles per hour, depending on manufacturer specifications. This allows drivers to navigate to a safe, convenient location to repair or replace the affected tire. Run-flat tires also eliminate the need for rarely-used spare



Run-flat tire with reinforced sidewall



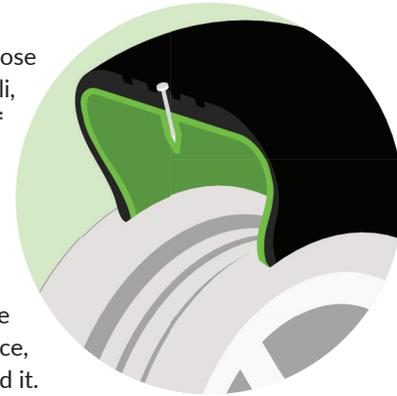
Run-flat tire with support ring

tires and wheels, conserving materials and freeing up trunk space.

USTMA members Bridgestone, Goodyear and Pirelli offer run-flat tires using one of two basic designs: **reinforced sidewalls** or a central **support ring** capable of carrying its share of the vehicle's weight.

SELF-SEALING TIRES

Self-sealing tires, such as those sold by Goodyear and Pirelli, contain an **inner layer of sealant material** that runs under the tread. In the event of a puncture, the sealant prevents loss of air pressure by either filling the hole or, if the object remains in place, forming a seal around it.



Self-sealing tire

AIRLESS TIRES

Airless (or non-pneumatic) tires use **mechanical structures**, rather than air, to support the vehicle's weight. For example, Michelin currently offers a line of airless radial tires for small-scale utility, recreation and construction vehicles, while Goodyear markets airless tires for zero-turn radius mowers.

Looking ahead, Bridgestone, Goodyear, Hankook and Michelin have each introduced concept tires that would bring airless tires to the passenger vehicle market. Additionally, Cooper has been active in the development and evaluation of airless tire technology for military use.

EMBEDDED TIRE SENSORS

To take advantage of the increased use of **wireless connectivity** in automobiles, manufacturers like Bridgestone, Continental, Cooper, Goodyear, Kumho, Michelin and Pirelli are continuing to develop sensors, chips or tags that, integrated in a tire, can wirelessly transmit real-time information — such as tire temperature, pressure and tread wear — for use in fleet and tire life cycle management. Michelin has already introduced an aircraft tire using this technology.

Embedded tire sensor concept

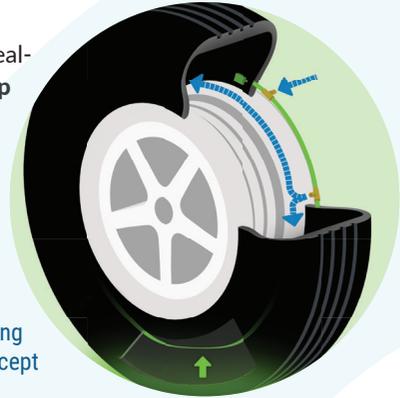
Airless tire concept



SELF-INFLATING TIRES

Goodyear has implemented real-world testing of a **sensor/pump combination** embedded within the structure of a tire itself, which could ultimately eliminate the need for drivers to manually control tire pressure.

Self-inflating tire concept



VISION: OCCUPATIONAL SAFETY AND HEALTH



USTMA members strive to have zero workplace injuries and illnesses.

Our members' commitment to safety and innovation in their products is also visible in the design and operation of their manufacturing facilities:

- USTMA member **proactive efforts** have led to a 50% reduction in serious injury and illness rates from 2005-2017 for USTMA member companies.
- 68% of USTMA member company facilities have **safety and health management systems** currently in place. These comprehensive programs integrate four interdependent elements: Management Leadership and Employee Involvement; Worksite Analysis; Hazard Prevention and Control; and Safety and Health Training. ¹
- 100% of new employees at member facilities receive **safety training**.

THE USTMA SUSTAINABILITY AWARDS: RECOGNIZING A TRADITION OF SAFETY LEADERSHIP

Created in 1981, the USTMA's Safety and Health Improvement (SHIP) Awards have traditionally recognized member companies that exhibit excellence and improvement in worker health and safety. In 2018, USTMA renamed this program the **Sustainability Awards for Safety and Health** to better reflect sustainability efforts associated with our most important resource, our people. We also expanded the awards program to recognize the proactive steps our members have taken to improve the overall corporate culture around workplace safety and health.

In 2018, USTMA recognized Bridgestone, Goodyear and Michelin with USTMA's first annual Leadership Awards for sharing lessons learned to increase workplace safety and health in the tire manufacturing industry.



TIRE COMPONENTS

Today's tires are complex, highly engineered products designed to meet exacting safety and performance requirements. Tires contain, on average, ten components, including:

1 TREAD - The tread rubber compound and tread pattern provide grip and traction. The tread is designed and compounded for a balance of abrasion resistance, traction, low rolling resistance, and protection of the casing.

2 BELTS - The belts are layers of angled rubber-coated cord, made of textile, fiberglass or brass-plated steel, which wrap circumferentially around the tire. The coat compound is normally formulated to provide good adhesion to the cord, stiffness, and tear and fatigue resistance.

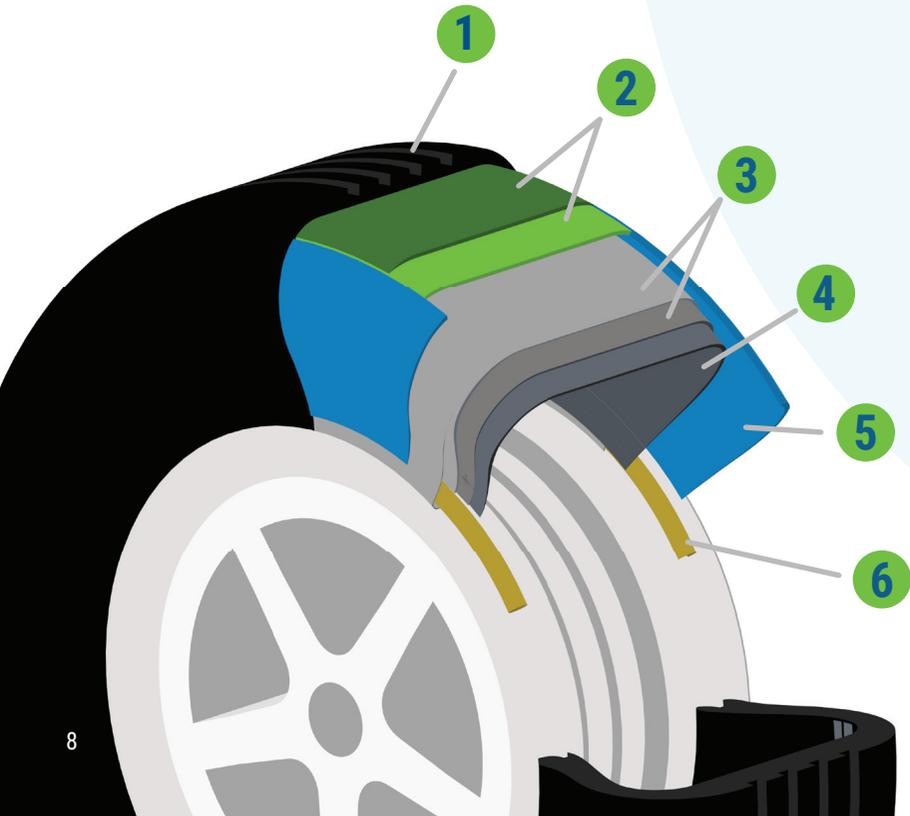
3 BODY PLYS - Body plies function as the structure of the tire and provide the strength to contain the inflation pressure. Body plies also give the tire strength and flexibility.

4 INNER LINER - A rubber compound is used to retain the inflation pressure inside the tire.

5 SIDEWALL - The sidewall compound is formulated for resistance to weathering, ozone, abrasion, tear, radial and circumferential cracking, and for good fatigue life. Tire sidewalls cover the body plies on the sides of the tires, which provide protection from road and curb damage.

6 BEAD - The bead wire assures an air-tight fit to the wheel. The bead usually consists of multiple strands of high tensile, bronze or zinc-plated steel, coated with rubber and formed into hoops to seal the tire against the rim, and to provide hoop tension to prevent air leakage. It acts as a load transfer mechanism between the tire and the rim.

Additional tire components include the under tread, shoulder insert, belt wedge and bead chaffer.



VISION: TIRE MATERIALS



USTMA members strive to increase the use of sustainable materials in the tires we manufacture.

Tire materials provide attributes needed to ensure tire safety and tire performance. Compounding — the process of selecting and combining materials for a specific tire component — is complex. **On average, tires contain 10 components** and each component incorporates materials such as synthetic elastomers, natural rubber, fillers, protection materials, processing aids, steel, textiles, and curing systems. The specific makeup of each tire component is dictated by how and where it will be used within the tire — tread or sidewall, structural plies or stabilizing bead — and the specific safety and performance attributes desired. Improved sustainability performance must complement these essential attributes, an opportunity and a challenge that USTMA members have voluntarily and proactively embraced.

USTMA members — both individually and through partnerships — are working to incorporate **more sustainable materials** into tires, enhancing biodiversity and reducing dependence on non-renewable feedstocks.



ENVIRONMENTAL STEWARDSHIP FROM START TO FINISH... AND BEYOND

USTMA members demonstrate commitment to environmental stewardship throughout a tire's life cycle and seek out opportunities for continuous improvement. These efforts include: conducting research and development to identify new sustainable tire materials; reducing the environmental footprint of manufacturing facilities; improving the rolling efficiency of a tire throughout its life; and ensuring that scrap tires enter sustainable markets after their removal from vehicles.

Examples of these efforts include:

- Bridgestone, Cooper and Pirelli have conducted major research on the commercial potential of **guayule**, a shrub native to the U.S. Southwest that contains natural rubber within its cellular structure. ^{2,3}

Dandelion



- Cooper and Goodyear participate in a consortium known as the Program of Excellence in Natural Rubber Alternatives (PENRA) with several partners, including The Ohio State University, to investigate the potential of alternate rubber plants including *Taraxacum kok-saghyz*, a type of Russian **dandelion**, as a domestic natural rubber source. ⁴
- Continental is working with The Fraunhofer Institute for Molecular Biology and Applied Ecology, Julius Kuehn-Institute, and EKUSA, to produce, test, and develop tires with tread made from 100% dandelion-derived rubber.
- Bridgestone utilizes **soybean** oil to manufacture Firestone brand agriculture tires manufactured with 10% soybean oil.

Soybeans



- Goodyear earned the 2017 Environmental Achievement of the Year award from Tire Technology International for its breakthrough in applying soybean oil in the tread compound of tires as a replacement for traditional petroleum oil.
- Goodyear and Pirelli are using silica derived from **rice husks**, which are inedible and might otherwise be thrown away, to produce tires with improved rolling efficiency.
- Yokohama displaces the use of petroleum in tires with orange oil, derived from **orange peels**. Orange oil reduces rolling resistance, increasing fuel economy, while maintaining good traction.
- Hankook utilizes vegetable oil resin extracted from **conifers** to manufacture tires specifically designed for electric vehicles. The Hankook Kinergy AS EV tire, made with vegetable oil resin, provides electric vehicles improved wet road performance as well as general handling and braking.
- Michelin and Bridgestone incorporate micronized rubber powder derived from **used tires** as a closed-loop sustainable compound in producing new high-performance tires and agricultural and off-the-road applications.

Rice husks



A GLOBAL APPROACH TO TIRE INDUSTRY SUSTAINABILITY

11 of USTMA's 12 member companies are also members of the Tire Industry Project (TIP), a proactive initiative that operates under the umbrella of the World Business Council for Sustainable Development (WBCSD) with the goal of advancing sustainability throughout the industry.

Together, TIP member companies proactively identify and address the potential human health and environmental impacts associated with the life cycle impacts of tires to contribute to a more sustainable future. The TIP member companies are: Bridgestone Corporation, Continental AG, Cooper Tire & Rubber Company, The Goodyear Tire & Rubber Company, Hankook Tire



**Tire Industry
Project.**

Co., Ltd., Kumho Tire Company, Inc., Compagnie Générale des Établissements Michelin, Pirelli & C. S.p.A., Sumitomo Rubber Industries, Ltd., Toyo Tire & Rubber Co., Ltd., and The Yokohama Rubber Co., Ltd.

TIP initiatives include:

- More than a decade's worth of research on the potential health and environmental impacts of tire and road wear particles (TRWP). TRWP are tiny debris generated when tires are used on the road. TIP research to date, of both water- and airborne TRWP, has shown the particles pose no significant risk to humans or the environment.
- With approximately 70% of natural rubber used in tire production, TIP members are working with representatives of the natural rubber supply chain and non-governmental organizations to develop an independent global platform for the sustainable sourcing of natural rubber that will protect biodiversity, manage water, improve yields, prevent land grabbing, respect human rights and improve transparency and traceability. The new Singapore-based, voluntary organization is expected to begin operations in 2019.

VISION: ENVIRONMENTAL FOOTPRINT



USTMA member facilities strive to improve our environmental footprints.

USTMA member facilities have implemented a variety of initiatives and technologies to reduce manufacturing-related emissions, improve energy efficiency, minimize water use and reduce solid waste.⁵

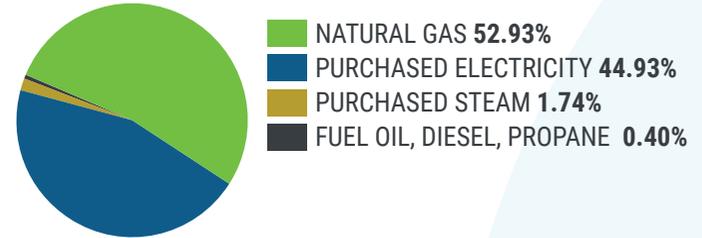
- USTMA tire manufacturing facilities are **powered primarily by natural gas** and, as a result, have a lower greenhouse gas emission footprint compared to other manufacturing sectors.

NEARLY

10%

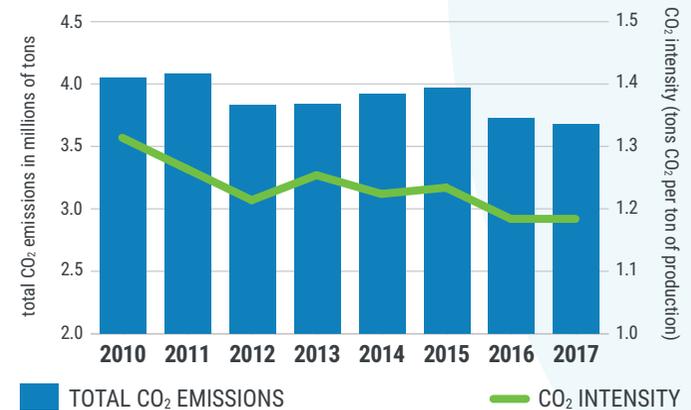
REDUCTION IN CO₂ EMISSIONS SINCE 2005

USTMA MEMBER FUEL MIX FOR 2017



- Since 2010, CO₂ emissions from USTMA member company facilities have **decreased by nearly 10%**.
- Nearly 90% of USTMA facilities in the U.S. are **certified under ISO 14001**, a systematic way of managing a facility's environmental footprint. ISO 14001 requires certified facilities

CO₂ EMISSIONS

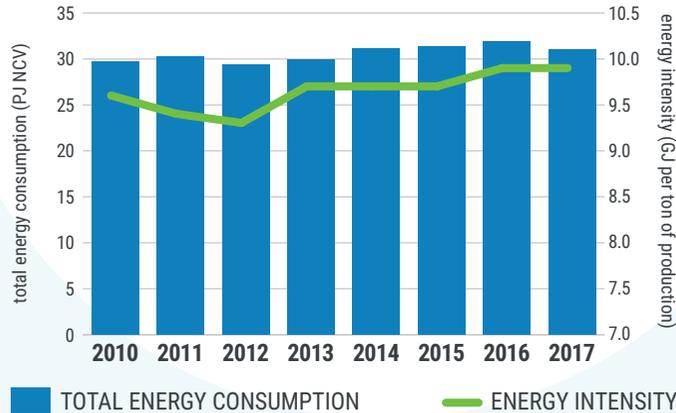




NEARLY
90%
OF U.S. FACILITIES
CERTIFIED UNDER
ISO 14001

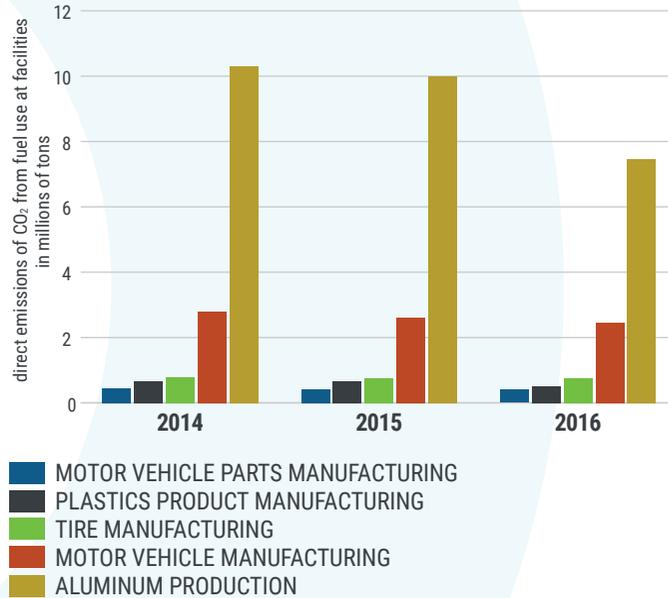
to: identify environmental impacts, set performance objectives, implement the standard through training and work practices, audit implementation of the standard, and take corrective actions when deviations occur. That's why the U.S. Environmental Protection Agency (EPA) has called ISO 14001 a "valuable tool to help organizations improve their environmental performance."⁶ As new USTMA member facilities complete ISO 14001 certification, USTMA expects USTMA's certification rate to increase toward 100%.

ENERGY CONSUMPTION

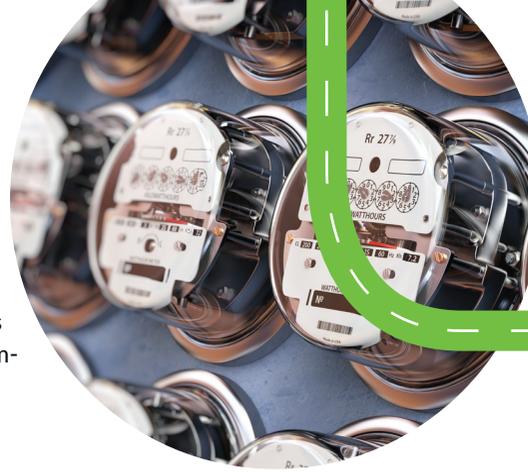


Energy consumption and intensity rose 3-4% from 2010 to 2017, which may be a result of new automation projects, increased production of higher performance tires, and new facilities coming online.

CO₂ COMPARISON TO OTHER INDUSTRIES⁷



- The U.S. Department of Energy has recognized U.S. tire manufacturers for widely adopting currently available energy efficiency technologies to save energy.⁸
- All USTMA members have energy efficiency projects which include LED lighting; steam, condensate, and compressed air leak programs; and fan upgrades.



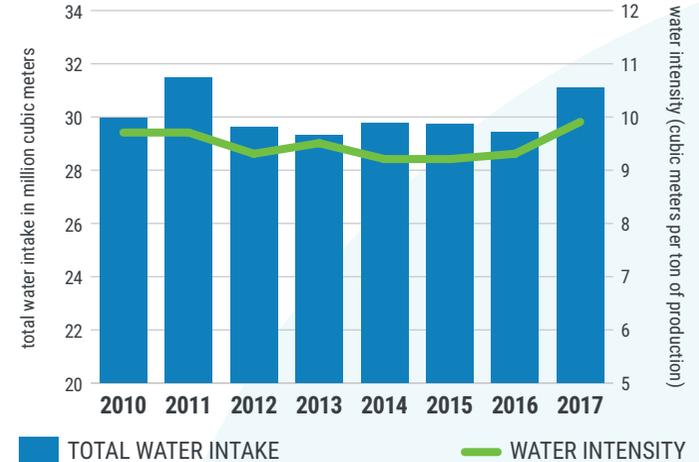
WATER CONSERVATION

All USTMA members have water conservation projects in place, such as systems to capture and return process water and onsite flow meters.

- While water use has slightly increased, USTMA members view this as an opportunity to leverage USTMA's lessons learned program to collect information that can lead to improved future performance. The slight increase in water intake may be a result of new facilities coming online and increased production of higher performance tires.



WATER INTAKE



VISION: GREENHOUSE GAS EMISSIONS



USTMA members strive to manufacture tires that reduce greenhouse gas emissions throughout a tire's useful life.

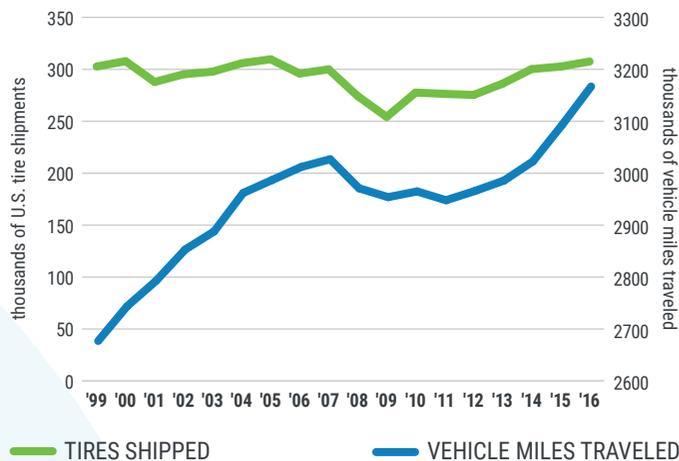
Tire manufacturers recognize they play a role in reducing greenhouse gas (GHG) emissions, both by reducing manufacturing-related emissions — including those from energy production — and by designing tires with greater rolling efficiency, which contributes to improved vehicle fuel economy.

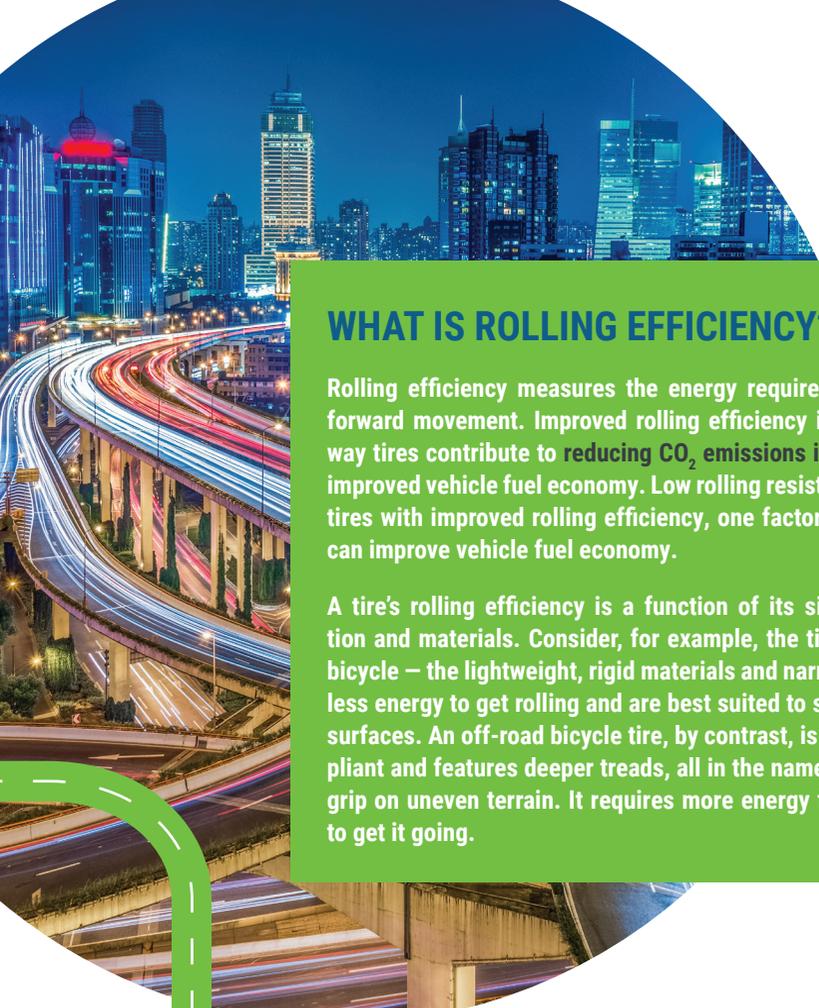
Reduced fuel consumption equates to reductions in vehicle emissions.

- For typical vehicles, a 10% improvement in rolling efficiency can reduce consumer fuel expenditures by 1-2%. This savings is equivalent to 6-12 gallons per year, or \$18-\$36 if fuel is priced at \$3 per gallon.⁹
- All USTMA members manufacture truck tires that meet **EPA's SmartWay™ verification** for class 8, long-haul tractors and trailers. EPA's SmartWay™ program designates certain tires as having superior rolling efficiency. EPA has demonstrated that improved rolling efficiency can reduce both costs and emissions for long-haul class 8 tractor-trailers by 3% or more.

Tires in the U.S. are **lasting longer**. As vehicle miles traveled by U.S. drivers have slowly increased since 1999, the number of tires in use has remained relatively flat, meaning the tires USTMA members produce are lasting longer on vehicles. With Americans traveling farther than ever on today's technically advanced tires, natural resources that otherwise would be needed to produce new tires are now being conserved.

U.S. TIRE SHIPMENTS vs. VEHICLE MILES TRAVELED¹⁰





WHAT IS ROLLING EFFICIENCY?

Rolling efficiency measures the energy required to maintain forward movement. Improved rolling efficiency is the primary way tires contribute to **reducing CO₂ emissions in use** through improved vehicle fuel economy. Low rolling resistance tires are tires with improved rolling efficiency, one factor of many that can improve vehicle fuel economy.

A tire's rolling efficiency is a function of its size, construction and materials. Consider, for example, the tire of a racing bicycle – the lightweight, rigid materials and narrow tread take less energy to get rolling and are best suited to smoother road surfaces. An off-road bicycle tire, by contrast, is heavier, more pliant and features deeper treads, all in the name of improving grip on uneven terrain. It requires more energy from the rider to get it going.

Tire manufacturers work to maximize rolling efficiency while meeting the safety performance, handling and durability demands of the particular application. Maximizing rolling efficiency is more than a manufacturing consideration; the consumer plays a role, as well.

Anyone who has pedaled a bicycle with tires low on air can attest to the added work required to overcome the increase in rolling resistance. However, when the tires on your vehicle are under-inflated you don't notice the increased energy your vehicle must use to overcome the rolling resistance. USTMA and its members work constantly to educate the public on the importance of **proper tire inflation** in both driving performance and environmental performance.



UP TO
10% = 2%
IMPROVEMENT IN ROLLING EFFICIENCY REDUCTION IN FUEL CONSUMPTION

VISION: SCRAP TIRES



USTMA members have the goal that all scrap tires enter sustainable end use markets.

USTMA began its scrap tire program in 1990. The management of scrap tires has been a priority for USTMA members for almost three decades. As part of the program, USTMA works with all stakeholders, including states, U.S. EPA and the industry to incentivize existing markets and uses for scrap tires, develop and identify new uses and markets, and advance federal and state regulations that foster sustainable scrap tire markets.

Scrap tires are **one of the most recycled products** in the U.S.

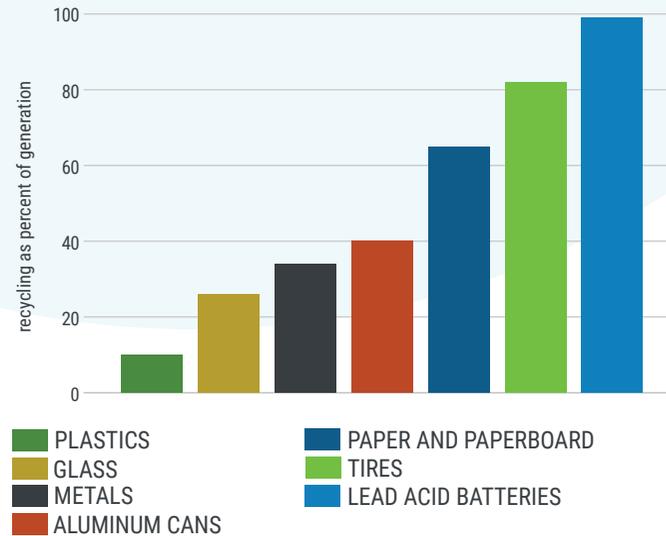
SCRAP TIRE MARKETS

Scrap tires are managed in three primary markets, with numerous smaller markets. The largest markets include:

- **Tire derived fuel (TDF)** is used in cement kilns, pulp and paper mills and utility boilers.
- **Ground tire rubber** is used in rubber modified asphalt, landscaping and playground mulch, athletic surfaces, molded and extruded products, automotive parts and many other applications.
- Scrap tires are used in **civil engineering applications**, such as helping to build road embankments.

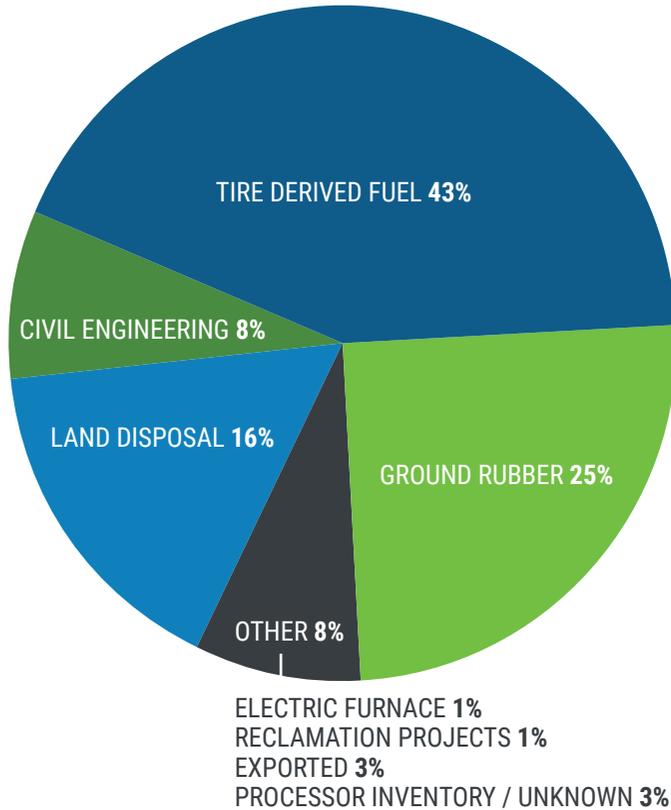


END USE RATES FOR COMMON MATERIALS



SOURCES: USTMA (Beneficial End Use Rate for Tires, 2018); U.S. EPA (all others, 2014)

2017 U.S. SCRAP TIRE DISPOSITION



The annual generation of scrap tires in a given year represents the sum of new replacement tire shipments (passenger, light truck and commercial truck/bus tires) and the estimated number of tires scrapped on vehicles retired from service, less the estimated number of tires removed from the scrap tire stream as used tires.

BUILDING MORE MARKETS FOR SCRAP TIRES

Ensuring scrap tires are used in sustainable markets instead of ending up in piles is a never-ending job. As annual generation increases over time, markets for scrap tires must grow proportionally merely to maintain the beneficial end-use rate. With projected growth in new tire shipments, the U.S. scrap tire market will need to consume an additional 20.3 million tires per year by 2022 to maintain the current beneficial end-use rate.

USTMA and its members help advance legislation and regulations that promote sustainable scrap tire management and market development in states. USTMA sees opportunities to partner with states to advance incentives to promote the use of tire-derived fuel and rubber-modified asphalt:

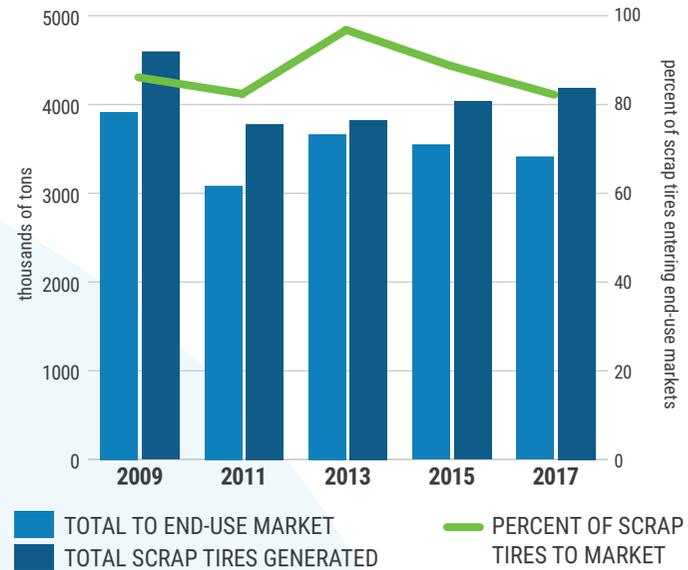
- **Scrap tires being used for fuel are roughly 24% natural rubber** (a natural or biogenic material that is plant based). U.S. EPA rules and policies such as the Greenhouse Gas Reporting Rule and the Biomass Accounting Framework have recognized the biogenic fraction in tires as **carbon neutral**.



- The State of North Carolina has also recognized the natural rubber fraction in tires as renewable biomass eligible for renewable energy credits. USTMA encourages other states to adopt similar programs to recognize biomass.
- **Rubber modified asphalt** has benefits for drivers and neighborhoods: quieter pavement, and better grip and less spray for drivers in wet weather. It also leads to longer lasting roads that crack and rut less than traditional asphalt, leading to better long-term cost effectiveness. Rubber modified asphalt also represents an opportunity for circular economy; asphalt itself is one of the most recycled products in America and rubber modified asphalt can be recycled in the same way.



U.S. SCRAP TIRE MARKET TRENDS 2009-2017



OUR ECONOMIC IMPACT

The U.S. tire manufacturing industry serves as a driver of commerce and a mobile society.

USTMA member facilities support the growth of the U.S. economy through jobs and wages, through the discovery and development of innovative products, and through the support of charitable initiatives in America's communities.

Tires manufactured by USTMA members safely transport millions of Americans and millions of tons of goods each day throughout the United States. In 2017, our companies accounted for **82% of the 317 million passenger, light truck and truck tire shipments in the U.S.**

The U.S. tire manufacturing industry has enjoyed years of sustained growth, expanding our investments across the country. We believe this trend is likely to continue with more and more global tire manufacturers viewing the United States as an attractive location for tire manufacturing operations. Stability and certainty in our supply chain is critical to the competitiveness of U.S. tire manufacturing operations and vital to sustained growth in our domestic operations.

EMPLOYMENT

- The U.S. tire manufacturing industry represents **62,031 manufacturing jobs** and \$4.96 billion in manufacturing-related wages.
- The industry supports another **183,715 supplier jobs** and an additional \$11.74 billion in wages.

CONTRIBUTIONS TO GROSS DOMESTIC PRODUCT (GDP)

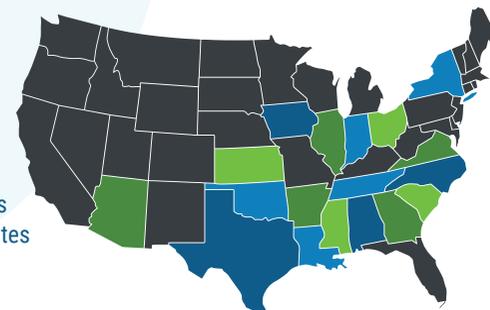
- **\$27 billion** in annual sales.

RESEARCH AND DEVELOPMENT EXPENDITURES

- USTMA member companies invested **\$3.26 billion** in research and development across their global operations in 2017.¹¹

IMPACT ON LOCAL COMMUNITIES

- **56 manufacturing facilities** located in 17 states.
- The tire manufacturing industry generates **\$9.9 billion** in state and local tax revenue.



Member facilities
in 17 states



SUPPORTING THE COMMUNITY AT LARGE

USTMA member commitment to safe, thriving communities doesn't end at the plant gate, and all USTMA members support philanthropic initiatives. Examples include:

- **Bridgestone** made the largest land donation to The Nature Conservancy in Tennessee's history; land connected to 10,000 acres previously donated by Bridgestone.
- **Continental** supported disaster relief in Texas following Hurricane Harvey by donating to the American Red Cross and having employees volunteer in Houston and parts of Southern Texas.
- **Cooper** educates young drivers about tire and vehicle safety through its Tread Wisely program. Tread Wisely has reached hundreds of thousands of teens and young adults since the program's launch in 2016.
- **Giti** collaborates with South Carolina high schools on environmental issues by sponsoring the Giti Math and Science Award Program.
- **Goodyear** held its second annual Global Week of Volunteering in 2018. With 22 Goodyear locations participating, including seven in the U.S., Goodyear associates provided more than 9,000 hours of volunteer service to more than 55 community organizations around the world.
- **Hankook** supports disabled American veterans through generous philanthropic giving as well as sponsoring a veteran mobility vehicle that takes these veterans to medical appointments.
- **Kumho** supported the Susan G. Komen Race for the Cure of Greater Atlanta through a sponsorship donation.
- **Michelin** engages South Carolina high school students interested in mechatronics and electronics through its Youth Apprenticeship program. Participants receive a minimum of 2,000 hours of on-the-job training with a Michelin mentor, plus 240 hours of related instruction at the career center.
- **Pirelli** works with the local Boys & Girls Club in Rome, Georgia, with a volunteer program for mentoring and helping with the robotics program.
- **Sumitomo** volunteers have raised more than \$201,000 for the Make-a-Wish Foundation over the last 12 years through the company's "Ride for Charity" program, a 2-day golf event.
- **Toyo** supports the United Way, disaster relief efforts by the American Red Cross, and various educational institutions in Bartow County, Georgia.
- **Yokohama** planted 500,000 seedlings near production sites in both the U.S. and overseas through its Forever Forest program.



CONSUMER TIPS FOR PROPER TIRE MAINTENANCE

Manufacturers design and build tires for tens of thousands of miles of service. To take full advantage of your tires' potential and ensure optimal safety and performance, take a few minutes each month for tire maintenance, and have tires serviced by a professional at regular intervals.

DO IT YOURSELF



PRESSURE

Check tire pressure monthly and before long trips. Use the vehicle manufacturer's recommended pressure. Under-inflation wastes fuel and can damage tires.



TREAD

All tires have "wear bars" at $\frac{2}{32}$ " tread depth. When tread is worn to that point, tires must be replaced. Worn out tires pose a safety risk.

SERVICED BY PROFESSIONAL



ALIGNMENT

Have wheel alignment checked periodically or if you hit a pothole or road hazard. Misalignment of wheels can cause uneven and rapid tread wear.



ROTATION

Tires wear differently at each wheel position. To promote even tread wear, rotate tires every 5,000-8,000 miles.

ABOUT USTMA

The U.S. Tire Manufacturers Association (USTMA) is the national trade association for tire manufacturers that produce tires in the U.S. Our 12 member companies operate 56 tire-related manufacturing facilities in 17 states and generate over \$27 billion in annual sales. We directly support more than a quarter million tire manufacturing U.S. jobs – totaling almost \$20 billion in wages. USTMA advances a sustainable tire manufacturing industry through thought leadership and a commitment to science-based public policy advocacy. Our member company tires make mobility possible. USTMA members are committed to continuous improvement of the performance of our products, worker and consumer safety and environmental stewardship.

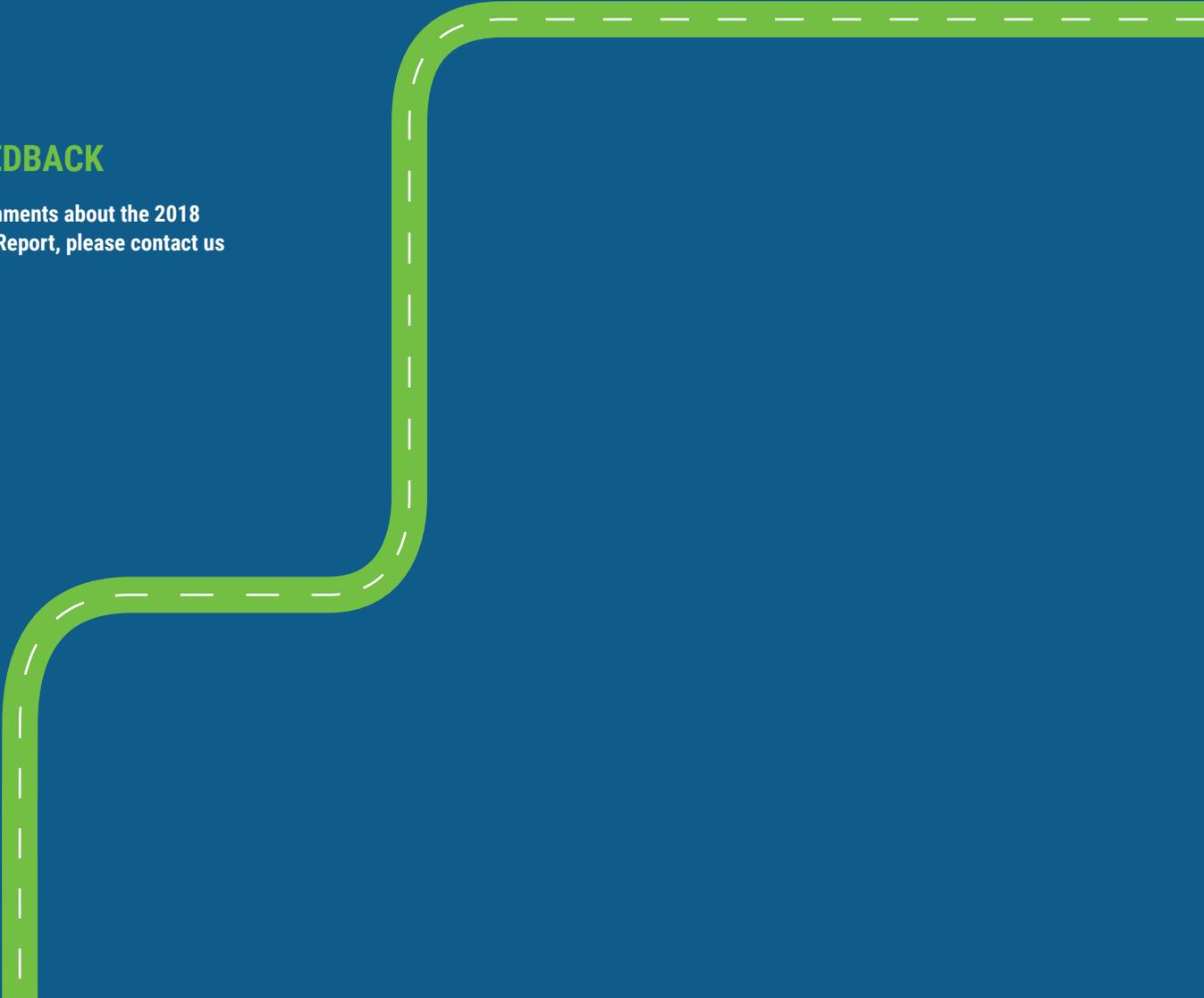
ABOUT THIS REPORT

This document is the U.S. Tire Manufacturers Association's first public Sustainability Report for the U.S. tire manufacturing industry. The scope of this report includes USTMA and industry activities from 2016 to 2018.

The logo for Bridgestone, featuring a stylized 'B' with a red and white diagonal stripe to its left, followed by the word 'BRIDGESTONE' in a bold, black, sans-serif font.The logo for Continental, with the word 'Continental' in a bold, orange, sans-serif font, followed by a small orange silhouette of a horse.The logo for Cooper Tires, featuring a blue oval with a white swoosh inside, above the word 'COOPERTIRES' in a bold, blue, sans-serif font.The logo for Giti, with the word 'Giti' in a bold, black, sans-serif font on a yellow background, followed by a black silhouette of a horse's head.The logo for Goodyear, with the word 'GOODYEAR' in a bold, yellow, sans-serif font, where the 'Y' is stylized to look like a wing.The logo for Hankook, featuring an orange stylized 'H' icon, followed by the word 'Hankook' in a bold, white, sans-serif font on a black background, with the tagline 'driving emotion' in a smaller white font below.The logo for Kumho Tire, with the words 'KUMHO TIRE' in a bold, black, sans-serif font, a red number '7' to the right, and the tagline 'Better, All-Ways' in a smaller, italicized black font below.The logo for Michelin, featuring a white cartoon character (Bibendum) on the left, followed by the word 'MICHELIN' in a bold, blue, sans-serif font, and the tagline 'A BETTER WAY FORWARD' in a smaller blue font below.The logo for Pirelli, with the word 'PIRELLI' in a bold, red, sans-serif font on a yellow background.The logo for Sumitomo Rubber Industries, featuring a blue diamond-shaped icon with a white cross inside, followed by the words 'SUMITOMO RUBBER INDUSTRIES' in a bold, black, sans-serif font.The logo for Toyo Tires, with the words 'TOYO TIRES' in a bold, blue, sans-serif font.The logo for Yokohama, featuring a red stylized 'Y' icon, followed by the word 'YOKOHAMA' in a bold, black, sans-serif font.

ENDNOTES

- ¹ Reflects survey response information from all 12 USTMA member companies.
- ² www.tirebusiness.com/article/20180620/NEWS/180629991
- ³ <https://cen.acs.org/articles/93/i16/Guayule-Rubber-Ready-Hit-Road.html>
- ⁴ <https://u.osu.edu/penra/penra-development-tracks>
- ⁵ Environmental Key Performance Indicator (KPI) data referenced in this section reflects KPI data submitted from nine USTMA member companies: Bridgestone Americas, Inc., Continental Tire the Americas, LLC; Cooper Tire & Rubber Company; The Goodyear Tire & Rubber Company; Michelin North America, Inc.; Pirelli Tire North America; Sumitomo Rubber Industries, Ltd.; Toyo Tire Holdings of Americas Inc. and Yokohama Tire Corporation.
- ⁶ www.epa.gov/ems/frequent-questions-about-environmental-managment-systems
- ⁷ Comparison of Scope 1 Direct CO₂ Emissions, Reflecting On-Site Fossil Fuel Consumption, by NAICS Code based on U.S. EPA Greenhouse Gas Reporting Rule Data. <https://ghgdata.epa.gov/ghgp>
- ⁸ U.S. Department of Energy Study on Energy Use and Potential Energy Savings Opportunities in U.S. Plastics and Rubber Manufacturing (Sept. 2017). www.energy.gov/sites/prod/files/2017/12/f46/Plastics_and_rubber_bandwidth_study_2017.pdf
- ⁹ www.nap.edu/read/11620/chapter/1
- ¹⁰ USTMA tire shipment data is an estimate of the total number of passenger light truck (PLT) and truck bus (TB) tires in a given year shipped from the manufacturer or importer to the first customer for the U.S. market. This data does not include tires imported as part of a vehicle imported into the U.S. Vehicle miles traveled data is an estimate by the Department of Energy that includes light-, medium-, and heavy-duty vehicles. www.afdc.energy.gov/data/10315
- ¹¹ <http://www.tirebusiness.com/article/20180828/NEWS/180829950/tire-makers-commit-75-billion-globally-to-new-plants-capacity-expansions>. Note that USTMA members Giti and Kumho are not included in this total.



WE VALUE YOUR FEEDBACK

**If you have any questions or comments about the 2018
USTMA Sustainability Progress Report, please contact us
at sustainability@ustires.org.**

- [USTIRES.ORG/SUSTAINABILITY](https://ustires.org/sustainability) -



1400 K Street, NW, Suite 900
Washington, DC 20005
202.682.4800

sustainability@ustires.org