



OUR FUTURE IS IN

MOTION

SUSTAINABILITY REPORT 2018/19



WWW.SUSTAINABILITY.FORD.COM

WELCOME

Welcome to our 2018/19 Sustainability Report, which marks 20 years of annual reporting on our sustainability progress. We see reporting as an ongoing, evolving process and expect our reporting to evolve further still. We invite your feedback on this report, as well as our approach to reporting, at sustaina@ford.com.

ABOUT OUR REPORTING SUITE

This Sustainability Report details our sustainability performance for 2018 and early 2019.

To supplement this report, we publish summary information online, at sustainability.ford.com, and in an [eight-page review](#).

We support and align with the world's leading sustainability reporting frameworks. You can find all our indexes on our [downloads page](#).

- [Global Reporting Initiative \(GRI\) Content Index](#)
- [Climate Change Scenario Report](#)
- [UN Global Compact Communication on Progress Index](#)
- [United Nations Sustainable Development Goals Index](#)
- [UN Guiding Principles Reporting Framework on Human Rights Index](#)
- [Sustainability Accounting Standards Board \(SASB\) Index](#)
- [Task Force on Climate-related Financial Disclosures \(TCFD\) Index](#)

Reporting Scope and Boundaries

The data in this report primarily covers 2018 for operations, and both the 2018 and 2019 model years for vehicles.

Consistent with GRI guidance on boundary setting, the data in this report covers all of Ford Motor Company's wholly and majority-owned operations globally, unless otherwise noted. Boundaries for each material issue are noted in our [GRI Content Index](#).

Where relevant, data measurement techniques, the bases of calculations and changes in the basis for reporting or reclassifications of data previously reported are included as footnotes to tables and charts.

Data Assurance

Data in this report is subject to various forms of assurance, as outlined below and noted in the data tables. The [summary report](#) has been reviewed by Ford's top senior executives, as well as the Sustainability and Innovation Committee of the Board of Directors.

Some of the data in our reports has been subject to internal and third-party verification.

Financial data was audited for disclosure in the [Ford Annual Report on Form 10-K](#).

Verification data is not yet available for Ford's 2018 global facility greenhouse gas (GHG) emissions. As completed for 2017, 100 percent of Ford's 2018 global facility GHG emissions will be third-party verified to limited assurance in accordance with ISO 14064-3. In addition, all of our European facilities impacted by the mandatory EU

Emissions Trading Scheme (EU-ETS) are third-party verified. All EU-ETS verification statements are provided to Ford, by facility, from Lucideon for U.K. facilities, Lloyds for Spain and Intechnica for Germany. European facilities are verified against the EU-ETS rules and guidelines.

Ford reports facility carbon dioxide emissions to national emissions registries or other authorities in the United States, Canada, Mexico, Brazil, China and Taiwan, and the EU (Germany, Spain and the U.K.).

Various environmental data is reported to regulatory authorities. Ford's facility environmental data are managed using our Global Emissions Manager database, which provides a globally consistent approach to measurement and monitoring. The kind of assurance used for each data set is noted in the data charts.

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LETTER FROM WILLIAM CLAY FORD, JR. AND JIM HACKETT



WILLIAM CLAY FORD, JR.



JIM HACKETT

It has been 20 years since we produced our first sustainability report but, for us, moving toward a more sustainable world has been a priority from the very start. We are building a smarter Ford Motor Company, by Creating Tomorrow, Together.

Our 20-year reporting anniversary provides an opportunity to reflect on how far we've already come. At the turn of the millennium, being one of the first companies to publish a sustainability report was a big deal, not just for us but for business as a whole. As well as celebrating our successes, it gave an honest account of where we needed to improve. As our subsequent reports testify, we have continued to do better, time and time again. You will find yet more examples of our progress from the past year in these very pages.

But we have reached a milestone moment: a time to look forward to where we want to go. How can we address a transportation system that grew up around the automobile but has become increasingly unsustainable? What can we do to address climate change, as its scale and urgency come into stark focus? If we are to become the world's most trusted

company, designing and building smart vehicles for a smart world, we need to be part of the solution to such challenges, not part of the problem. So while we still need to make great cars and trucks today, we also need to keep one eye on tomorrow.

That's why we are transforming our culture and innovating right across the business, from the production line to the design studio. We are working to reduce the CO₂ emissions from our facilities and our vehicles, in line with the climate targets outlined in the Paris Climate Accord. The risks and opportunities associated with the changing climate are shaping the way we do business, from offering electrified versions of our popular models, to a global carbon reduction strategy focused on powering our facilities with renewable energy.

We are making great strides toward a more connected, cloud-based and congestion-free world: a better world. We are reimagining what mobility will look like beyond the privately owned, traditionally powered automobile. We foresee clean, smart vehicles communicating with each other, as well as the road infrastructure and public transit systems, orchestrated by open cloud-based

platforms like our Transportation Mobility Cloud. Those all-important first and last miles of a journey will be accomplished on a bike or scooter. And despite growing urbanization, rethinking our cities in these ways could result in cleaner air and less-congested streets, so that everyone can get to work or school, deliver goods, or visit friends and family efficiently, affordably and sustainably.

Of course, we don't have all the answers, but we do have the drive and determination to find them. Working closely with our partners, we will continue to do things the right way – the Ford way – and keep people at the heart of every decision we make.

We are building a smarter Ford Motor Company, by Creating Tomorrow, Together.

William Clay Ford, Jr.
Executive Chairman

Jim Hackett
President and Chief Executive Officer

OUR SUSTAINABILITY STRATEGY

It is our belief that the freedom of movement drives human progress. Shaped by this belief, we aspire to become the world's most trusted company, designing smart vehicles for a smart world. Our future is already in motion – we are moving people more efficiently and sustainably.

OUR BUSINESS MODEL

Our approach positions us to lead in areas with huge potential to revolutionize how people move – more efficiently and sustainably.



Trusted company: To become the world's most trusted company, designing smart vehicles for a smart world



Driving human progress: To provide vehicles and services that help create a better world and facilitate freedom of movement



Positive impact: To not just lower our footprint, but to develop vehicle innovations that have a positive contribution to society

Building on our strengths, we're prioritizing the strengths that differentiate us and help us stand out. That means investing in our **core business** of designing, manufacturing, marketing, financing and servicing our portfolio of cars, SUVs, trucks and commercial vehicles.

We're also pursuing sustainable growth through **emerging opportunities** in key areas such as electrification, self-driving vehicles and mobility services and solutions.

Our Issue-Specific Strategies

Our approach to sustainability involves doing our share to meet the collective challenges the world faces. To address the full range of these material issues, we have developed a number of strategies that are targeted toward specific topics.

- [Climate Change Strategy](#)
- [Sustainable Materials Strategy](#)
- [Renewable Energy Strategy](#)
- [Human Rights Strategy](#)
- [Circular Economy Strategy](#)

Our Aspirational Goals

Our aspiration is to become the world's most trusted company, designing smart vehicles for a smart world.



ACCESS

We aspire to drive human progress by providing mobility and accessibility for all



WATER

We will make zero water withdrawals for manufacturing processes

We aspire to use freshwater for human consumption only



CLIMATE CHANGE

We support CO₂ reductions consistent with the Paris Climate Accord



MATERIALS

We aspire to only use recycled and renewable plastics in our vehicles globally



AIR

We aspire to achieve zero air emissions from our facilities



HUMAN RIGHTS

We aspire to responsibly source all raw materials used within our vehicles globally



ENERGY

We will use 100 percent renewable energy for all manufacturing plants globally by 2035



DIVERSITY

We aspire to become the most inclusive and diverse global company



WASTE

We will achieve true zero waste to landfill across our operations

We will eliminate single-use plastics from our operations by 2030

PRIORITIZING KEY ISSUES

Conducting a formal materiality process enables us to define our reporting priorities, identify emerging sustainability issues, shape our sustainability strategy, set goals and allocate resources appropriately. We capture the resulting priority topics in a matrix, which provides a snapshot of the challenges, opportunities and connections between the sustainability issues of most importance to our business and those of highest concern to our stakeholders.

MATERIALITY RESULTS

Our most recent materiality analysis was carried out in early 2019. The results are reflected in the matrix opposite. The analysis identified our most important issues as:

- Electrification and alternative fuels
- Customer satisfaction, vehicle quality and safety
- Vehicle carbon footprint/fuel economy
- Climate change/resilience strategy/energy future
- Supply chain management/capacity building and performance/responsible sourcing of raw materials

Our Materiality Matrix

The materiality matrix on the right plots each issue and the ratings accorded to it. The y-axis represents the influence on stakeholders and the x-axis represents impact on Ford. Issues found closer to the upper right-hand corner of the matrix are of higher influence and impact to both Ford and stakeholders.

The Definition of Materiality

For the purposes of this report, we consider material information to be that of greatest interest to, and has the potential to affect the perception of, those stakeholders who wish to make informed decisions and judgments about the company's commitment to environmental, social and economic progress.

This definition predates, but is consistent with, the GRI's definition of material topics: "those that reflect the organization's significant economic, environmental and social impacts; or that substantively influence the assessments and decisions of stakeholders."

> [See the GRI Content Index for the definitions of our material issues.](#)

Our Materiality Process

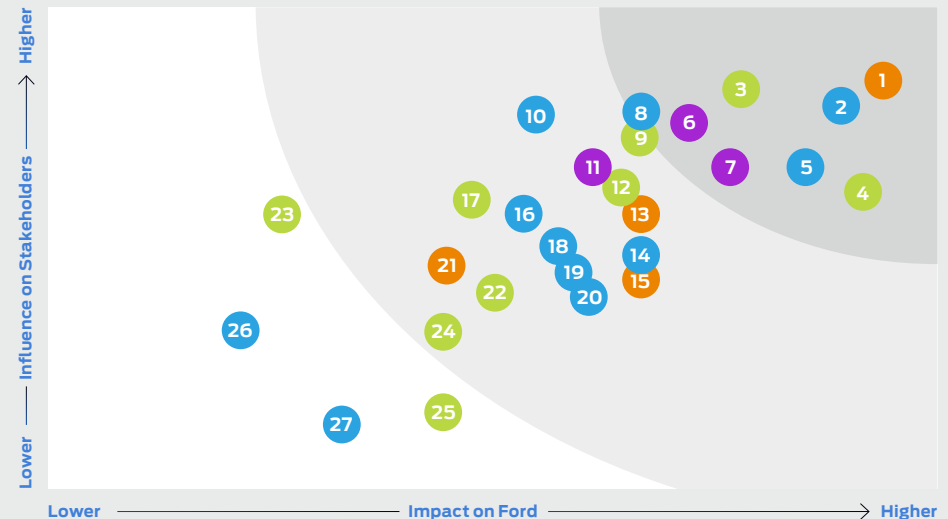
Identification

We created a list of potential issues, grouped by four different types of categories – planet, people, innovation and governance and ethics. Issues were identified through desk-based research, which included a peer review, media scan and review of sustainability thought leadership from industry experts and associations.

Prioritization

An online survey followed by a workshop with external and internal stakeholders aided us in further identifying key challenges and opportunities and prioritizing the issues.

Ford Materiality Results 2018/2019



Lower — Influence on Stakeholders — Higher

Lower — Impact on Ford — Higher

- | | | |
|---|--|--|
| 1 Electrification and alternative fuels | 8 Human rights | 20 Employee wellness, health and safety |
| 2 Customer satisfaction, vehicle quality and safety | 9 Air quality | 21 Smart technology |
| 3 Vehicle carbon footprint/fuel economy | 10 Customer engagement and marketing | 22 Process chemicals |
| 4 Climate change/resilience strategy/energy future | 11 Ethical business practices | 23 Environmental management/process innovation |
| 5 Supply chain management/capacity building and performance/responsible sourcing of raw materials | 12 Sustainable materials | 24 Operations/logistics energy use and GHG emissions |
| 6 Accountable and inclusive governance | 13 Self-driving vehicles | 25 Water use |
| 7 Government regulation, policy and engagement | 14 Changing consumer preferences | 26 Sustainable cities and infrastructure |
| | 15 Financial health, intellectual property protection and brand perception | 27 Socioeconomic contribution and community engagement |
| | 16 Human capital | |
| | 17 Waste management | |
| | 18 Work stoppages | |
| | 19 Mobility solutions | |

Key ● Planet ● People ● Innovation ● Governance and Ethics

Review

The results of the analysis were reviewed internally by Ford's Sustainability & Vehicle Environmental Matters group and regional stakeholders. Revisions were then made to ensure that our process and list of important

issues were complete, well understood and inclusive of the perspectives obtained from stakeholders, and that all feedback was appropriately reflected.

PRIORITIZING KEY ISSUES CONTINUED

STAKEHOLDER REVIEW OF OUR REPORT

As in recent years, a stakeholder team selected by Ceres provided recommendations for this Sustainability Report.

Representing a range of constituencies and expertise, the Ceres Stakeholder Committee convened in March 2019. Ford's responses to their recommendations are summarized below. These recommendations guide our continuous improvement and input to our materiality process.

Addressing Human Capital and Human Rights Issues

Against a backdrop of organizational restructuring at Ford and seismic shifts in the auto sector, we continue to address the human rights issues identified in our saliency assessment. We take a zero-tolerance stance on harassment and discrimination and, by reducing the gender pay gap and providing breastfeeding rooms and changing areas for female employees, we're striving to make our workplaces more gender-equal.

Accountability in Supply Chain Management: Social Issues

The supply chain section of our report demonstrates how we manage key issues within our global supply chain. In monitoring and managing the materials used in our vehicles, we meet all relevant regulations concerning substances of concern and continue to eliminate or reduce our use of hex chrome, lead, mercury and copper. Through an IBM-led pilot project to digitally trace cobalt from a mine in the Democratic Republic of Congo to a U.S. Ford plant using blockchain technology, we aim to show that our material

sourcing aligns with OCED standards and does not contribute to forced or child labor.

Accountability in Supply Chain Management: Environmental Issues

Having achieved our previous operational carbon emissions target eight years early, we have set new aspirational goals for reducing absolute carbon emissions, using renewable energy in our plants, achieving zero water withdrawals in our manufacturing processes and only using freshwater for human consumption. We report thoroughly on the use (and benefits) of renewable and recycled materials in our vehicles and, to reduce the wider impact of our supply chain, we share best practice with 50 of our key suppliers through our industry-leading Partnership for A Cleaner Environment (PACE) program.

Sector Leadership and Policy Advocacy

Acting as a catalyst for transformational change in the transportation sector, we seek to influence areas related to our sustainability objectives through lobbying and policy development. These range from supporting ongoing reductions in absolute tailpipe emissions to advocating for policy measures that improve mobility and accessibility for all. For example, Ford recently joined the CEO Climate Dialogue and the Climate Leadership Council, who are urging Congress to enact legislation that takes an economywide approach to reducing carbon emissions beyond the Paris Climate Accord.

Similarly, our work to advance workplace equality and gender reporting is demonstrated by our inclusion in the 2019 Bloomberg Gender-Equality Index, scoring 100 percent in the Human Rights Campaign's 2018 Corporate Equality Index and our support for CEO Action for Diversity and Inclusion.

OUR GOALS AND PROGRESS

We have summarized our progress against our goals, commitments and targets in relation to our material issues and other important performance areas.

Goal	2018/19 Progress Examples	Status
Respecting Human Rights		
Ensure everything we make or that others make for us is consistent with local laws and our own commitment to respecting human rights	<p>22 high-priority countries, based on an annual human rights risk analysis</p> <p>100 percent of our 114 ABF production suppliers have codes of conduct aligned with our Policy Letter 24</p> <p>Conducted a formal assessment of our salient human rights, in line with the UNGPRF</p> <p>> Human Rights</p> <p>> Environmental Impact of Our Suppliers</p>	In process
Help suppliers build their capacity to manage supply chain sustainability issues	<p>11 training sessions on human rights, working conditions, business ethics and the environment</p> <p>> Environmental Impact of Our Suppliers</p>	In process
Assess Tier 1 suppliers' compliance with local laws and Ford's supply chain sustainability expectations	<p>1,163 supplier audits and 1,564 follow-up assessments</p> <p>30 audits using the RBA Validated Assessment Process methodology (100 percent of which were certified by the RBA)</p> <p>> Auditing Our Suppliers</p>	In process
Health and Safety		
Fatalities target is always zero	<p>In 2018, we had a service contractor fatality at a North America Stamping Plant. The circumstances were analyzed in detail, with actions taken to prevent reoccurrence.</p> <p>> Health and Safety</p>	In process

OUR GOALS AND PROGRESS CONTINUED

Goal	2018/19 Progress Examples	Status
Health and Safety (continued)		
Zero serious injuries, attain industry competitive lost-time and drive continuous improvement	Lost-time case rate (LTCR) increased slightly from 0.38 to 0.41 > Health and Safety	In process
Maintain or improve employee personal health and well-being	We continue to provide programs and services that help employees achieve health and well-being and make informed choices. In 2018, we introduced wearable technology for employees at 15 plants in seven countries. > Health and Safety	In process
Minimizing Our Supply Chain Impact		
Engage with our supply chain to understand its carbon and water footprints	Surveyed 257 production suppliers (81 percent) using the CDP Supply Chain program's questionnaire 214 suppliers (73 percent) responded to the CDP Water questionnaire > Environmental Impact of Our Suppliers	In process
Work with selected suppliers to reduce our collective environmental footprint through PACE	Shared best practice examples with 50 suppliers through PACE > Environmental Impact of Our Suppliers	In process
Improve the transparency of mineral sourcing and improve the capacity of conflict-free smelters	Achieved 100 percent response rate from in-scope suppliers > Responsible Sourcing of Raw Materials	In process
Continue to purchase from veteran-, minority- and women-owned businesses	Purchased goods and services worth \$8.56 billion from minority-owned suppliers; \$2.28 billion from women-owned businesses; \$0.41 billion from veteran-owned companies > Supplier Diversity	In process

Goal	2018/19 Progress Examples	Status
Reducing Our Vehicle Footprint		
Improve fuel economy across our global vehicle lineup, consistent with regulatory requirements and climate stabilization	Combined car and truck fuel economy fell by 2.4 percent in 2018 Award-winning EcoBoost® technology now used in 8 million engines worldwide > Improving Fuel Economy	In process
Continue our lightweighting plans	Taken 200 pounds off the 2018 Lincoln Navigator; 300 pounds off the 2018 Ford Expedition and 350 pounds off the 2017 Ford Super Duty by switching to aluminum Incorporating graphene, a strong but light carbon-based material, to all our vehicles, starting with the Ford F-150 and Mustang > Improving Fuel Economy	In process
Offer alternative fuel vehicles	We offer several models powered by ethanol and biodiesel A wide range of commercial vehicles that run on compressed natural gas (CNG) and liquefied petroleum gas (LPG) is also available in certain passenger vehicles Alternative Fuels and Powertrains > Alternative Fuels and Powertrains	Achieved
Continue to develop and implement our sustainable materials strategy, focusing on sustainable sourcing, lower environmental impacts and equivalent or superior performance	Eight sustainable materials are currently used in our production vehicles. Researching the possible use of tomato skin, bamboo, agave fiber, dandelion roots and algae > Using Sustainable Materials	In process

OUR GOALS AND PROGRESS CONTINUED

Goal	2018/19 Progress Examples	Status
Reducing Our Vehicle Footprint (continued)		
Design and manufacture vehicles that offer innovative driver assist technologies, and meet or exceed all regulatory requirements for safety	<p>Ford Co-Pilot360™ rolling out in key global markets, with a suite of technologies</p> <p>For the 2019 model year, nine Ford and four Lincoln nameplates rated with 5-Star Overall Vehicle Scores in the U.S. NCAP (as of June 2019)</p> <p>> Improving Vehicle Safety</p> <p>> Driver Assist Technologies</p>	In process
Play a leading role in vehicle safety and driver assist research and innovation	<p>Published a safety assessment report, <i>A Matter of Trust</i></p> <p>Founding member of the American Center for Mobility</p> <p>Partner in Automated Driving Applications and Technologies (AdaptIVe), Europe's largest research project on automated driving</p> <p>Partnerships with a range of universities, including Purdue University and Virginia Tech</p> <p>> Driver Assist Technologies</p>	In process
Provide information and educational programs to promote safe driving practices	<p>Ford Driving Skills for Life reached 41,000 participants in 2018 and is currently active in 43 countries.</p> <p>> Encouraging Safer Driving</p>	In process

Sustainable Operations

Reduce absolute facility CO₂ emissions by 18 percent (2019–2023)	<p>1.1 percent reduction in absolute CO₂ emissions between 2017 and 2018</p> <p>> Energy and Emissions</p>	In process
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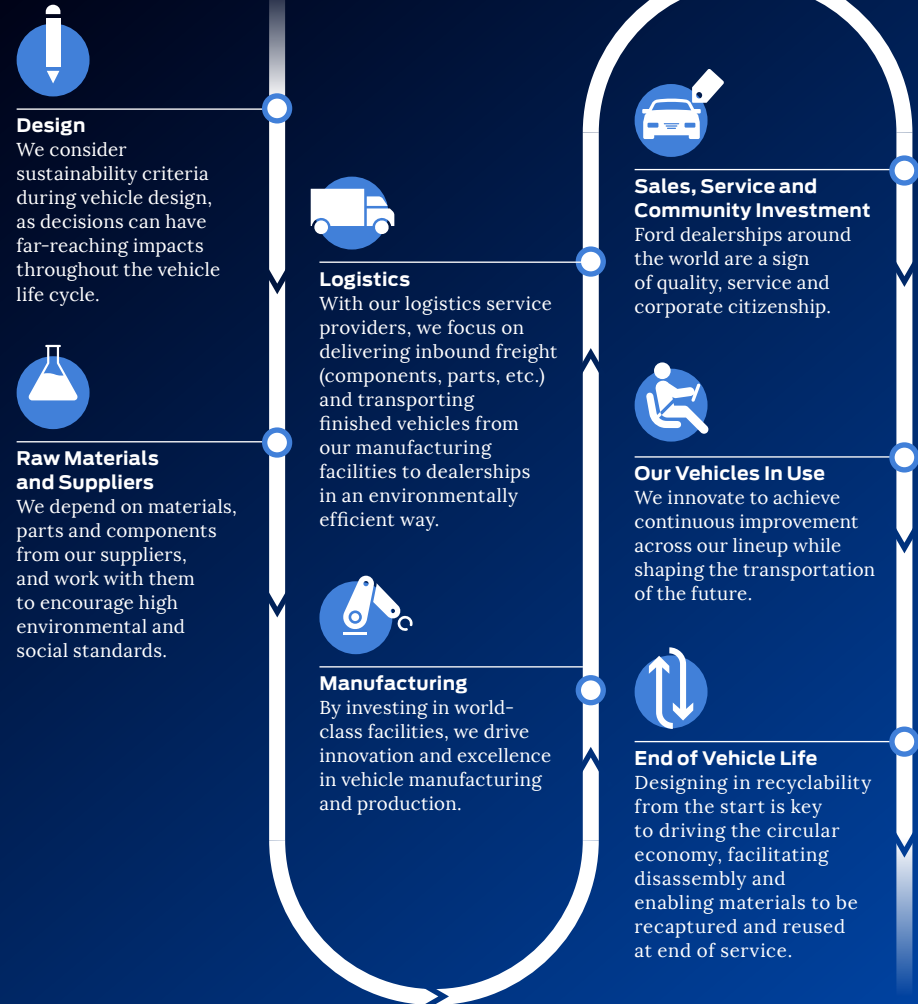
Goal	2018/19 Progress Examples	Status
Sustainable Operations (continued)		
Save an additional 30 percent of water from our manufacturing (2015–2020)	<p>7.8 percent reduction in water use</p> <p>> Water Use</p>	In process
Reduce global waste sent to landfill by 40 percent per vehicle produced (2011–2016)	<p>We reduced waste to landfill on a per-vehicle basis by 65 percent between 2011 and 2016 exceeding our target, and by more than 49 percent over the last five years.</p> <p>> Waste Reduction</p>	Achieved
Technology/Services		
Pursue our electrification strategy	<p>Invested \$11 billion in electrification over five years</p> <p>> Alternative Fuels and Powertrains</p>	In process
Deliver our Ford Smart Mobility plan, with a focus on emerging opportunities in mobility	<p>Acquisitions include Autonomic (transportation solutions), TransLoc (demand-response technology for urban transit systems) and Spin (dockless electric scooters).</p> <p>Developing the Transportation Mobility Cloud, an open software platform allowing vehicles and infrastructure to communicate and improve mobility</p> <p>> Mobility Solutions</p>	In process

CREATING VALUE AT FORD

OUR INPUTS

- 
Financial
 \$11 billion being invested in electrification
 \$4 billion being invested in self-driving vehicles through 2023
- 
Manufactured
 61 manufacturing and assembly plants
 75 percent of our U.S. lineup being refreshed by the end of 2020
- 
Intellectual
 60,000 patents active and pending
 Eight regional engineering, research and development centers
- 
Human
 198,964 people employed
 1,200 Tier 1 suppliers
 11,534 dealerships
- 
Social and Relationship
 \$1.5 billion given in charitable contributions to date
 148,849 hours in volunteering donated
- 
Natural
 1,000 different materials in our vehicles
 13.8 billion kWh of total energy used
 22.3 million gallons of water used

OUR BUSINESS ACTIVITIES



VALUE CREATED (OUTPUTS AND OUTCOMES)

- 
Financial
 \$160 billion revenue generated
 \$3.1 billion distributed to shareholders in 2018
- 
Manufactured
 Affordable fuel economy
 Approximately 5,982,000 vehicles sold
 6.3 percent global market share¹
- 
Intellectual
 A range of hybrid and fully electric models by 2022
 Transportation Mobility Cloud developed
- 
Human
 Safe and healthy work environments
 81 percent employee engagement from our Pulse Survey
- 
Social and Relationship
 More than 1 million drivers trained through Ford Driving Skills for Life to date
- 
Natural
 Lean process innovations, e.g., closed-loop recycling
 Manufacturing processes that use less water and energy, etc.
 88 true zero waste to landfill sites
 7.8 percent reduction in water use
 Operational efficiencies and best practice cascaded to key suppliers through the PACE program

¹ Market share represents reported retail sales of our brands as a percent of total industry volume in the relevant market or region.

GOVERNANCE

Our stakeholders trust us to operate responsibly and transparently. They also expect us to have clear policies and strategies in place to govern our business, manage our performance and help create value ethically.

CORPORATE GOVERNANCE

We want our operations and activities to have a positive impact on the world while remaining a successful business.

Our integrated governance systems and processes help us build sustainability across our company. Our Board of Directors is guided by our Corporate Governance Principles, Code of Ethics and charters for each board committee. These are publicly available in the Corporate Governance section of our corporate website.

> [Read more about corporate governance in our Annual 10-K report.](#)

SUSTAINABILITY GOVERNANCE

We employ a variety of governance systems and processes to manage the different aspects of sustainability across our business, as summarized throughout this report.

Guided by our Creating Value Roadmap, which outlines the management processes we follow to improve our performance, these systems and processes ensure that we act responsibly in the interests of our shareholders and take accountability for our wider impact on society.

Board Committees

Sustainability and Innovation Committee

- Primary responsibility for reviewing strategic sustainability issues
- Evaluates and advises on innovations that improve our environmental and social sustainability and the strategies to bring them to market

Other Board Committees: Audit, Compensation, Nominating and Governance and Finance.

Executive Management

Group Vice President of Sustainability, Environment and Safety Engineering

- Primary responsibility for sustainability issues
- Oversees the Sustainability & Vehicle Environmental Matters group, the Environmental Quality Office, the Vehicle Homologation & Compliance group and the Automotive Safety Office
- Leads a multi-disciplinary senior-level team to oversee our actions in response to our climate change and sustainable mobility strategies

Other executive and group vice presidents across our functional areas also have responsibility for sustainability-related issues.

Function Areas

Sustainability and Vehicle Environmental Matters

- Coordinates our companywide sustainability strategy and activities
- Leads our sustainability reporting and stakeholder engagement
- Collaborates with other functional areas and skill teams to integrate sustainability throughout the company

TRANSPARENCY AND TRUST

We always keep ethics and compliance at the heart of our business practices.

Our Corporate Compliance Office has developed training and communication tools that make it easy for our people to know how to comply with both our policies and the law. These tools include a free mobile app, *The Right Way*, which provides answers to frequently asked questions and the ability to contact the Compliance Office directly.

Available to our global workforce in seven languages, *The Right Way* is also publicly accessible, helping our suppliers and other partners become more familiar with our policies and practices. We have also made it available as “open source” material for other companies and groups.

GOVERNANCE CONTINUED

Investigating the Process for U.S. Emissions Certification

In September 2018, a few employees raised a concern through our Speak Up employee reporting channel regarding the analytical modeling used in our U.S. fuel economy and emissions compliance process.

We believe that trust in our brand is earned by acting with integrity and transparency, and have taken a number of actions in response. These include hiring an external organization to investigate the specifications used in our testing and applications to certify emissions and fuel economy, retaining independent technical experts as part of our investigation team and hiring an independent lab to conduct further testing. We have also shared these potential concerns with the Environmental Protection Agency and California Air Resources Board officials.

> [Read more about our efforts to thoroughly and swiftly complete this investigation.](#)

Ethics and Compliance Training

Our Policy Letters and Directives (see below) formally establish expectations for our employees and others working on our behalf. The most important and relevant are contained within our primary guidance document, our Code of Conduct Handbook, available in 14 languages.

Mandatory online training courses are provided for non-manufacturing employees and other key personnel focus on risk areas. We continuously look to offer shorter, more frequent sessions, such as our latest module, Civility: The High Cost of Bad Behavior, issued in October 2018.

Reporting Violations

Our compliance program encourages and facilitates the reporting of known or potential violations of the law or of Ford policies. Our people can report violations to various individuals, including those in the General Auditors' Office, Human Resources or the Office of the General Counsel, or by using telephone hotlines, websites or email. Some of these mechanisms allow for anonymous reporting.

All allegations are reviewed by a cross-functional committee that also oversees the investigations and corrective or disciplinary actions.

Anti-Bribery and Anti-Corruption

Our many facilities around the world need to comply with a wide range of national laws and governmental enforcement practices with regards to bribery and corruption. We maintain the highest standards wherever we operate and don't accept local norms if they fall below our own standards. To ensure we do this, we have:

- Clear anti-bribery and anti-corruption policies
- Procedures for mandatory reporting of suspected violations of law or policy
- Strengthened the anti-bribery and anti-corruption elements of our Global Terms & Conditions (and other contracts) for our suppliers
- Assessed our operations for risks related to bribery and corruption, and trained individuals who may encounter bribery or corruption issues in their work

PUBLIC POLICY

Every day around the world, governments make decisions that impact our business. As a global company, it is important that we have a voice to help shape those policies.

Supporting the Policy-Making Process

We participate openly and transparently in the political process, to support local, regional, national and international policies that are economically, environmentally and socially sustainable for our company, our customers and their communities. We share our expertise and add our perspective to the policy-making process through our Government Affairs offices around the world.

To leverage our resources more effectively on priority issues, we work with numerous external partners through a broad range of partnerships, coalitions, industry groups and trade associations. This helps us develop and promote policies that could benefit our company, our industry and society as a whole. And when our views do not align with those of the associations to which we belong, we reserve the right to make our own position clear.

Not only is Ford doing its part in reducing the GHG emissions of its vehicles and facilities, but we have also joined the CEO Climate Dialogue and the Climate Leadership Council who are urging Congress to enact legislation that takes an economywide approach to reduce carbon emissions beyond the Paris Climate Accord.

Policy Letters and Directives

We use Policy Letters and Directives to establish a framework of broad, basic principles within which we conduct our business across the world. These materials also provide more in-depth information on certain topics and specific business segments.

ENHANCING PEOPLE'S LIVES

The passion and dedication of our people at Ford helps create a future that's better for everyone. We are redesigning our systems, workplace and culture to become the world's most trusted company.

We are transforming our culture and the way we work.

Getting fit and capitalizing on new opportunities is critical to our future. Our Smart Redesign initiative will help us be more agile, reduce structure and bureaucracy and leverage more efficient ways of working.

We continue to invest in our employees to remain at the forefront of mobility solutions.

Our human-centered approach is vital if we are to remain an employer of choice and attract, develop and retain the leaders and innovators of tomorrow.

We value diversity at every level of our business.

Diversity is a fundamental value at Ford, both as a moral imperative and as a driver of success. We embrace equality and inclusion because it makes us stronger and fosters a welcoming, supportive workplace.

We have a duty to protect workers and create a better, more inclusive workplace.

By respecting human rights, assessing compliance and improving transparency, we are empowering our people and helping them be changemakers for a better world.

Highlights

First

AUTOMOTIVE COMPANY TO HAVE PERFORMED A HUMAN RIGHTS SALIENCY ASSESSMENT

\$67.7m

TOTAL CHARITABLE CONTRIBUTIONS² IN 2018

41,000

PARTICIPANTS IN FORD DRIVING SKILLS FOR LIFE TRAINING IN 2018

Sustainable Development Goals

THROUGH OUR WORK IN ADVANCING PEOPLE'S LIVES WE ARE CONTRIBUTING TO THE FOLLOWING UN SDGS:



Our Aspirational Goals



We aspire to become the most inclusive and diverse global company



We aspire to responsibly source all raw materials used within our vehicles globally

RESPECTING HUMAN RIGHTS

We rely on the skills of thousands of employees and many other people in our supply chain. Everything we make – or that others make for us – needs to be consistent with local laws and our own commitment to protecting and upholding human rights. Our vehicles become integral parts of our customers' lives, so our approach towards vehicle safety, security and data privacy must be as stringent as our efforts to protect our employees.

Everywhere we operate, and throughout our entire supply chain, we work to identify and prioritize the issues that can have the most impact on our business and individuals. We focus our efforts to advance and promote human rights and achieve positive outcomes.

This commitment is embodied in our Policy Letter 24: the Ford Code of Human Rights, Basic Working Conditions and Corporate Responsibility. This code is based on internationally recognized labor standards, including the United Nations' Guiding Principles on Business and Human Rights; the Universal Declaration of Human Rights; International Labour Organization Covenants; the Organization for Economic Co-operation and Development's Guidelines for Multinational Enterprises; and the United Nations' Global Compact Principles.

We have conducted more than 40 human rights assessments, dating back to 2004, evaluating how our facilities around the world align with Policy Letter 24. The reports of recent assessments undertaken are available for [download](#).

Our commitment requires a robust approach to safeguarding against human rights abuses in our supply chain. This includes:

- Analyzing the human rights risks associated with our supply base
- Conducting training to build our suppliers' capability
- Auditing our Tier 1 suppliers in high-priority locations
- Collaborating with others in multi-stakeholder initiatives and partnerships

We identified climate change as one of our salient human rights issues and take the responsibility of our impact very seriously. Read more about [our efforts to address climate change](#).

Nine

SALIENT HUMAN RIGHTS ISSUES IDENTIFIED

11

IN-COUNTRY SUPPLIER TRAINING SESSIONS ON HUMAN RIGHTS, WORKING CONDITIONS, BUSINESS ETHICS AND THE ENVIRONMENT IN 2018, ATTENDED BY 186 SUPPLIER REPRESENTATIVES IN FOUR COUNTRIES

² Total reflects contributions from Ford Fund plus Ford Motor Company contributions administered through Ford Fund.

RESPECTING HUMAN RIGHTS CONTINUED

IDENTIFYING OUR SALIENT HUMAN RIGHTS ISSUES

Conducted in line with the [UN Guiding Principles Reporting Framework \(UNGPRF\)](#), our 2018 formal human rights saliency assessment identified the human rights issues most at risk of having a severe negative impact.

The assessment, conducted in partnership with a third-party consultancy, included:

- Desk-based research to review internal documentation, a peer review and media scan and the identification of potential issues
- Interviews with internal representatives, as well as suppliers, investor representatives and industry experts, to rate the identified issues in terms of severity and likelihood for negative impact throughout our activities and business relationships
- A workshop to validate findings with internal and external stakeholders

We have put together action plans to address and remediate these issues, ensuring we track the effectiveness of our systems and performance, and review and update our human rights policy. We will review our salient issues annually and communicate our progress externally through channels including our annual sustainability report and the [UNGPRF Index](#).

> See the [UNGPRF Index for the definitions of our salient human rights issues](#).

Taking the Lead on Forced Labor and Human Trafficking

In line with our zero-tolerance policy, we safeguard against the threat of forced labor

and child labor (both salient human rights issues) in our supply chain. We do this by maintaining compliance with all global legislative initiatives, acts and regulations designed to increase transparency and promote due diligence, including the California Transparency in Supply Chains Act of 2010 (SB657) and the U.K. Modern Slavery Act (UK-MSA).

For further information, download our [Human Trafficking Disclosure Statement](#) and read our disclosure statement in compliance with the [U.K. Modern Slavery Act](#). We continue to monitor modern slavery legislation as it evolves to ensure ongoing compliance. In 2018, we participated in a cross-industry, multi-stakeholder taskforce led by GRI to develop a toolkit to assist businesses in their modern slavery reporting efforts.

Ethical Recruiting

Having reviewed our internal policies and procedures so they align with the fundamental principles of ethical recruiting, we formalized our expectations for suppliers into Supplier Social Responsibility and Anti-Corruption Requirements web guides. These require suppliers not to:

- Destroy, conceal or otherwise deny access by an employee to the employee's identity or immigration documents, such as passports or driver's licenses, regardless of the issuing authority
- Use misleading or fraudulent practices during the recruitment process
- Charge employees recruitment fees

RESPECTING HUMAN RIGHTS AT FORD

Our commitment to human rights starts with our employees, by maintaining a safe and healthy work environment and taking a zero-tolerance stance on harassment and discrimination. We hope our efforts set an example for our partners and suppliers, encouraging them to implement similar measures.

Our revised values and behaviors, known as "Our Truths," include Doing the Right Thing and Putting People First. This means acting with integrity and transparency, and creating safe, inclusive workplaces so that everyone can perform at their best. Read more about our ongoing [global transformation](#).

Health and Safety

Safety remains a key strategic priority for the company – nothing is more important than the health, safety and well-being of our people. Our co-workers and our families rely on our ability to maintain world-class levels of safety through the application of robust policies and practices.

Reinforcing Our Strong Safety Culture

We continue to drive a robust safety culture to reduce workplace injuries, supported by effective communication, reporting and external benchmarking:

- We hold regular talks and events on key safety issues, including the importance of reporting every injury, hazard or near-miss, so we can take appropriate corrective actions to prevent recurrences
- We participate in multi-industry groups, within and beyond the automotive sector, to exchange information on safety

best practices and trends, and explore collaborations to address common issues

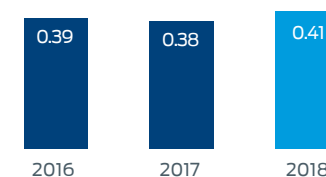
Our Safety Record

Any loss of life or serious injury in the workplace is unacceptable and deeply regretted. In 2018, we had a service contractor fatality at a North America Stamping Plant. As with any workplace incident, the circumstances were analyzed in detail, with actions taken to prevent reoccurrence.

Another key safety indicator, our lost-time case rate (LTCR), provides a measure of time away from work following a work-related injury or illness. In 2018, our LTCR increased slightly to 0.41.

Lost-Time Case Rate (LTCR)

Cases per 200,000 hours worked
Ford global rate



Using Technology to Improve Workplace Safety

Technology is advancing at a rapid rate and is helping us shape workplace safety at Ford.

For example, to combat the strain caused by repetitive assembly line work, we introduced new wearable technology at 15 plants in seven countries. The lightweight EksoVest works by elevating and supporting a worker's arms as they conduct overhead work, reducing the risk of injury.

RESPECTING HUMAN RIGHTS CONTINUED

Also, inspections of high-rise gantries, pipework and roofs have traditionally been performed by workers using extendable platforms and scaffolding, a process that could take up to 12 hours. Workers in our Dagenham plant in the U.K. have started using cameras mounted onto drones, reducing worker risk and also cutting inspection time to just 12 minutes. This means inspections can be performed more frequently, without having to shut down production or erect scaffolding.

Discrimination and Harassment

As a salient human rights issue, we have a strong zero-tolerance policy with regards to harassment and discrimination. We do not allow any form of prejudice based on gender, gender identity, race, color, religion, age, national origin, sexual orientation, disability or veteran status.

We are working to create more gender-equal working conditions and our efforts include reducing the gender pay gap and providing breastfeeding rooms and changing areas for female employees.

COLLABORATIVE ACTION ON HUMAN RIGHTS

We collaborate with all our stakeholders to combat human rights violations, believing that sectorwide forums are vital for providing a common voice and driving change within our industry.

In addition to the policies and procedures through which we protect our employees, we have an International Framework Agreement (IFA) with the International Metalworkers'

Our Human Rights Principles

- We respect employees' right to freedom of association and to collectively bargain
- We do not tolerate harassment or unfair discrimination
- We will not use forced/compulsory or child labor
- We provide compensation and benefits as well as work and vacation hours that are competitive and comply with applicable laws
- We will provide a safe and healthy working environment that meets or exceeds applicable standards for health and safety
- We promote and support appropriate education, training and development
- We respect the natural environment and want to help preserve it for future generations by working to provide environmental solutions and avoid waste
- We will be honest, open and transparent and model the highest standards of corporate integrity
- We encourage business partners and suppliers to adopt and enforce similar policies to those outlined in the above principles

Federation that reiterates our commitments to our global labor community.

The principles outlined in the IFA are based on highly respected labor standards

supported by groups, institutions and documents, such as the UN Universal Declaration of Human Rights and the Global Sullivan Principles of Social Responsibility.

We ensure ongoing compliance with these principles through open dialogue with our union partners and an annual Global Information Sharing Forum, attended by union leaders and senior leaders at Ford. Where compliance issues are identified, we collaborate on solutions to critical issues as they arise.

Forging Human Rights Partnerships

We participate in several organizations and initiatives:

- **United Nations Global Compact (UNGC):** Ford is a signatory of the UNGC, a framework for businesses committed to aligning their operations and strategies with 10 universally accepted principles covering human rights, labor, the environment and anti-corruption. We actively participate in the UNGC Supply Chain Sustainability Advisory Committee
- **Automotive Industry Action Group (AIAG):** Ford is a member of the Corporate Responsibility Steering Committee and the AIAG Board of Directors. We also co-chair the AIAG's Supply Chain Sustainability Committee, helping increase supplier capability for managing human rights and working conditions in the sector
- **Drive Sustainability:** This partnership of 10 automotive original equipment manufacturers (OEMs) commits to increase sustainability and supply chain management efforts in the automotive industry

– Responsible Business Alliance (RBA):

Ford was the first automotive manufacturer to join the RBA, a nonprofit committed to improving social, environmental and ethical conditions in global supply chains. We work with more than 110 electronics companies on issues such as human rights, working conditions, ethical sourcing and environmental responsibility. We currently serve on the RBA's Board of Directors and actively participate in the Responsible Labor Initiative, the Validated Audit Process workgroup and the Tools workgroup

- **University of Michigan:** Ford's partnership with the Erb Institute at the University of Michigan is exploring how companies define and quantify their sustainability impacts. Focused on how mobility will impact humans, the research will inform a sustainability decision-making tool

BUILDING CAPACITY IN OUR SUPPLY CHAIN

Our work to address human rights issues goes beyond our direct operations, extending throughout our entire supply chain. Training on human rights issues is essential to help our suppliers build their capability to responsibly manage working conditions in their facilities.

Prioritizing Our Efforts with Suppliers

Due to the size and complexity of our supply base, we focus on suppliers in countries that pose the highest risk for substandard working conditions. To determine these locations, we conduct an annual risk analysis, incorporating internal and external data and

RESPECTING HUMAN RIGHTS CONTINUED

input from external stakeholders, covering commodities purchased, supplier location, annual spend and any training and audits conducted. Our list of 22 high-priority countries remains unchanged in 2019.

Understanding Our Suppliers' Capacity

Ford suppliers are invited to complete Drive Sustainability's Self-Assessment Questionnaire (SAQ). The SAQ assesses suppliers' social and environmental sustainability performance, business conduct and compliance and supplier management, and allows suppliers to share responses with customers.

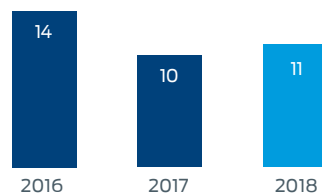
In 2018, more than 500 suppliers completed the SAQ, taking the total to date to more than 1,000. We targeted high-priority countries with fewer suppliers, where face-to-face training opportunities are limited. Suppliers providing commodities, or located in regions, with a high risk of forced labor were also included in our 2018 survey. Combined with our risk analysis, this data helped us prioritize our supplier audit and training engagement for 2019.

Training to Build Capability

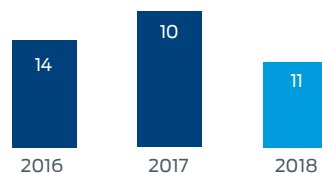
Our approach to training has been developed and launched through the AIAG. This involves:

- An **e-learning module** introducing the Automotive Industry Guiding Principles, and a **knowledge assessment**. Training materials are freely available to OEMs and their suppliers in seven languages

Training sessions conducted
Program total: 196 (cumulative, 2003–2018)



Total sites trained/retrained
Program total: 3,696 (cumulative, 2003–2018)



- **Face-to-face workshop sessions** customized for local laws and conditions. These sessions emphasize the role of human rights in meeting legal obligations, industry guidelines and international best practice. Participants must verify that they have shared the information with their employees and direct suppliers

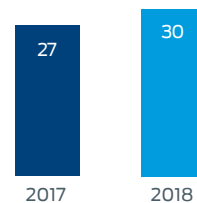
Most of our in-person supplier training is delivered through the AIAG or Drive Sustainability.

Training Results

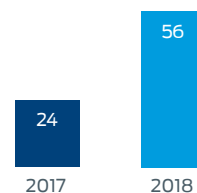
In 2018, the AIAG e-learning module reached 570 participants, 9 percent of which were Ford suppliers. Supplier representatives from 127 direct and indirect supplier sites in four countries (China, Hungary, Mexico and Thailand) attended training sessions covering

Third-Party Social Responsibility Audits: VAP Assessments

Initial assessments (2017–2018)
Total to date: 88



Follow-up assessments
Total to date: 80



human rights, working conditions, business ethics and the environment.

We continue to strengthen internal capacity for identifying and managing human rights issues. In 2018, we trained 773 Ford Purchasing employees on our Policy Letter 24 and Supply Chain Sustainability Program, focusing on identifying and reporting warning indicators for potential human rights violations. We have trained or retrained 4,741 Supplier Technical Assistance personnel to date.

We also conducted *Driving a Better Tomorrow* learning sessions for more than 1,000 purchasing employees during 2018. These focus on the role that purchasing can play in responsible sourcing, business ethics and preventing human trafficking.

Auditing Our Suppliers

Third-party social responsibility audits let suppliers know how well they are meeting their legal requirements and our expectations, and help identify areas for improvement. Since 2003, we've conducted 1,163 supplier audits and 1,564 follow-up assessments worldwide.

Recognizing the value of cross-industry collaboration, we joined the RBA in 2016. We have adopted the RBA's Validated Audit Protocol (VAP), which contains 90 questions spanning labor, health and safety, management systems, ethics and the environment. The audits, conducted by independent external auditors, are scheduled with suppliers in advance.

In 2018, we conducted 30 audits using the VAP methodology, 100 percent of which were externally validated and certified by the RBA. (Read more about our membership in the RBA on [page 16](#)).

Taking Corrective Action

For identified non-conformances, we expect suppliers to develop action plans detailing root causes and planned remediation. For more serious ("priority") non-conformances, the supplier must prepare immediate containment plans and longer-term corrective action plans, which we review and monitor. We engage with suppliers unable or unwilling to do so within our expected timeframe and reserve the right to end our relationship should any supplier fail to comply with our Global Terms. In 2018, we did not end any supplier relationships due to the unacceptable resolution of audit findings.

RESPECTING HUMAN RIGHTS CONTINUED

Audit Findings

In our 2018 RBA audits, approximately 6 percent of identified non-conformances required immediate containment, of which:

- 48 percent related to working hours and consecutive days of work
- 20 percent were health and safety issues
- 15 percent related to discriminatory practices

The remaining priority non-conformances were items concerning fees charged to the employee and not reimbursed within 90 days. Audits also discovered instances of young workers aged 15–18 performing night work.

We direct all suppliers with priority non-conformances to e-learning modules offered by the RBA to support capability building. We assist suppliers in developing effective corrective action plans and regularly monitor their progress according to an established timeline for resolution.

Audit Findings

Non-Conformances 2018



● Labor	34%
● Health and Safety	28%
● Management Systems	23%
● Environment	10%
● Ethics	5%

Frequent Non-Conformances in 2018

	Non-Conformances	Remedial Action
Labor	<p>The most frequent labor issue involved working hours and consecutive days of work. In many instances, corrective actions required installing electronic timekeeping equipment. Suppliers also were asked to complete training on working hours management systems.</p> <p>Our audit did not reveal any instances of child, forced or involuntary labor, although several suppliers' policies and procedures lacked the required robustness to ensure compliance. Where fees were charged to employees, we are working with the suppliers to develop corrective action plans, which include repaying fees and establishing management systems to prevent reoccurrence. Suppliers were also required to take training on recognizing and preventing forced labor.</p> <p>Audits also revealed several instances of discriminatory practices, including pregnancy testing, disclosing military status in the hiring process and insufficient policies and procedures to ensure reasonable accommodation of religious practices.</p>	<p>We continue to expand training and capacity building to equip suppliers with the knowledge, skills and processes to protect employees' rights.</p>
Health and safety	<p>The most frequent health and safety issue in 2018 was inadequate emergency preparedness – specifically the effectiveness of emergency exit plans and fire extinguishers – and instances of missing personal protective equipment.</p>	<p>Occasionally, further discipline is required to ensure adequate training and regular certification of first aid equipment. Most non-conformances are resolved quickly upon discovery through training and minor facility improvements.</p>
Environment	<p>Inadequate hazardous waste disposal was the main environmental issue. Incomplete emissions data are also flagged as non-conformances to the RBA audit protocol.</p>	<p>We continue to work with suppliers through the CDP Supply Chain and Ford PACE programs, providing technical support and best-practice ideas to improve reporting transparency.</p>

RESPECTING HUMAN RIGHTS CONTINUED

RESPONSIBLE SOURCING OF RAW MATERIALS

With around 1,200 Tier 1 production suppliers providing vehicle parts comprised of 1,000 different materials, we recognize the complexity of our supply chain. But responsible sourcing is an important human rights issue. We remain committed to ensuring the materials used in our vehicles are sourced responsibly and are safe to use.

The responsible sourcing of raw materials ensures that we never knowingly procure materials that contribute to human rights abuses, including child and forced labor, bribery and corruption or environmental concerns. Responsible sourcing expectations include compliance with local laws, reporting requirements, customer terms and conditions and respect for indigenous populations, including water and land rights.

To increase transparency and responsibility in raw material sourcing, we participate in studies, workgroups and collaborative discussions to identify ethical, environmental and labor issues. For specific materials, we are incorporating tools to ensure the responsible sourcing of raw materials earlier in the sourcing process. We conduct raw material investigations to determine appropriate action, both internally and with our suppliers. As we identify materials of concern, such as tin, tantalum, tungsten, gold, cobalt, mica and rubber, suppliers may be asked to improve due diligence and transparency to verify that the materials supplied to Ford were sourced responsibly.

Material Change: Reporting on Supply Chain Impacts

The 10 auto manufacturers that form Drive Sustainability have launched the Raw Materials Observatory, to assess how best to mitigate the potential environmental, social and ethical risks associated with the raw materials used in the automotive and electronics sectors. Risk assessments are performed by The Dragonfly Initiative, a specialized sustainability advisory firm.

In July 2018, Drive Sustainability, in collaboration with the Responsible Minerals Initiative (RMI), published a report, Material Change. It details the results of these assessments and how supply chain sustainability for 37 materials can be enhanced. The report profiles 18 priority materials and includes examples of environmental, social and governance issues associated with their procurement.

> Watch a short video about Drive Sustainability's work in this area.

Conflict Minerals Disclosure and Reporting

In August 2012, the U.S. Securities and Exchange Commission (SEC) adopted the final rule to implement reporting and disclosure requirements concerning conflict minerals. Since 2014, under the US Dodd-Frank Act 2010³, public companies must conduct due diligence to determine the origin of conflict minerals in their products and report annually to the SEC in the hope of ending violent

conflict in the Democratic Republic of the Congo (DRC) and adjoining countries.

We are one of several automotive manufacturers obliged to report on conflict minerals in our supply chains in a Specialized Disclosure Report, filed annually with the SEC. Ford's Conflict Minerals Report was the highest-ranked of any auto manufacturer in the Mining the Disclosures 2018 report published by the Responsible Sourcing Network, as well as the fifth highest across all industries. In 2017, we were included, for the third consecutive year, in the Top 100 Conflict Minerals Influence Leaders by Assent.

To comply with this disclosure rule, suppliers that provide us with components containing tin, tungsten, tantalum and gold (3TG) must conduct due diligence to understand the origins of such minerals, source them responsibly and not knowingly provide parts containing minerals that may contribute to conflict. We encourage suppliers to use the Due Diligence Guidance and the associated five-step framework compiled by the Organisation for Economic Co-operation and Development (OECD) to assess the chain of custody of these minerals.

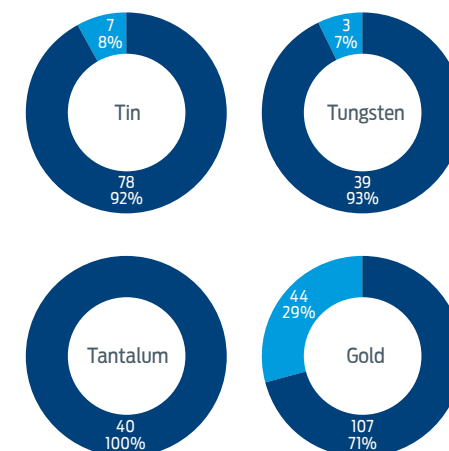
What Are Conflict Minerals?

Conflict minerals include gold, as well as columbite-tantalite (coltan), cassiterite, wolframite or their derivatives, which are limited to tantalum, tin and tungsten. 3TG are used in many auto components, from engine assemblies to airbags.

Ford expects its suppliers to obtain 3TG from smelters that conform to third-party responsible minerals sourcing validation programs, such as the London Bullion Market Association, Responsible Jewelry Council and the Responsible Minerals Assurance Process. Our 2018 assessment of smelter conformance to these programs is shown below.

For additional details on our due diligence and continuous improvement efforts, see our Specialized Disclosure report filed with the SEC.

Reported smelter conformance rates by mineral



- Conformant/active
- Not participating



We aspire to responsibly source all raw materials used within our vehicles globally

³ Specifically, Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010.

RESPECTING HUMAN RIGHTS CONTINUED

Reporting Progress

Suppliers are required to submit an annual Conflict Minerals Reporting Template to Ford. For four consecutive years, we have achieved a 100 percent response rate from in-scope suppliers. In 2018, we continued to work with them to improve the quality of their reports.

> [Read our 2018 Conflict Minerals Disclosure filing and download our Conflict Minerals Policy for more information.](#)

Future Goals

Continuing our conflict minerals journey, we aim to:

- Maintain a 100 percent response rate from in-scope suppliers for annual reporting
- Increase the percentage of suppliers providing smelter lists and using RMI-conformant smelters
- Encourage smelters to participate in the RMI audit process

Going Beyond Conflict Minerals

As our vehicles evolve, so will the materials they contain. Through ongoing investigations and collaborative workgroups, we endeavor to identify materials of concern that fall outside U.S. Dodd-Frank Conflict Minerals legislation. Enhanced contractual requirements, reporting requests and transparent dialogue help our suppliers source materials ethically and responsibly.

Through the Ford Motor Company Supplier Social Responsibility and Anti-Corruption Requirements Web Guide, we've extended our responsible sourcing requirements beyond conflict minerals to additional materials of concern.

Cobalt

Given the high-risk conditions under which cobalt is often mined, we continue to expand our commitment to its responsible sourcing by participating in various initiatives, both internally and externally. In an effort to recognize the importance of this issue at the onset of the sourcing process, we now include cobalt due diligence questions in our Request For Quotation for batteries. In 2018, as part of the RMI cobalt pilot, we requested all battery suppliers to complete the Cobalt Reporting Template to understand sourcing of cobalt and the associated due diligence processes that are in place. As a result of our participation, we provided input to RMI to improve the template and identify opportunities to remove barriers to cobalt supply chain transparency.

In early 2019, along with several other supply chain and technology partners, we launched the Responsible Sourcing Blockchain Network pilot to track responsibly sourced cobalt from the mine to a vehicle battery. The intent of the project is to demonstrate, via blockchain technology, how the materials used in our vehicles are responsibly produced, traded and processed. All participants will be validated against responsible sourcing standards developed by the OECD (see case study opposite).

Mica

We engage in regular dialogue with key coating suppliers to monitor the responsible sourcing of mica. This due diligence includes mapping Tier 1 suppliers, reviewing third-party audits of mica mines and participating in cross-industry investigations.

Rubber

We work with OEMs, tire manufacturers, civil society and consultants to promote the sustainable sourcing of natural rubber, contributing to several multi-stakeholder initiatives and third-party research. In 2018, the Tire Industry Project of the World Business Council for Sustainable Development formally launched an independent platform to improve socioeconomic and environmental performance in the supply chain. Ford became the first automaker and a founding member of the initiative, now titled the Global Platform for Sustainable Natural Rubber. Members, including tire manufacturers, rubber suppliers and processors, vehicle manufacturers and nongovernmental organizations (NGOs), seek to harmonize standards for human rights, prevent land-grabbing and deforestation, protect biodiversity and water resources, improve yields and increase supply chain transparency and traceability.

Rare Earth Elements

Small quantities of the 17 rare earth elements (REEs) are used in internal combustion engines, motor and generator magnets and vehicle tailpipe controls, as well as hybrid electric, plug-in hybrid and battery electric vehicles. REEs are economically and sustainably hard to extract, and we remain actively engaged in reducing their use.

Using Blockchain to Support Responsible Sourcing

Ensuring that every step of our supply chain adheres to ethical standards is of paramount importance to Ford. We have joined an IBM-led project to digitally map cobalt throughout our supply chain.

Using a blockchain platform, the Responsible Sourcing Blockchain Network pilot will track cobalt along a simulated supply chain, from a mine in the DRC, via a refinery in China and a battery factory in South Korea, to a U.S. Ford plant. Recording the journey will give network participants real-time visibility into the supply chain and create a system that accurately records the cobalt used in each batch, battery or car.

The project is then expected to extend to 3TG and other materials.

Forging Relationships to Promote Responsible Sourcing

We also play an active role in several multi-stakeholder groups looking into both conflict minerals and other minerals of concern, including:

- The AIAG's Smelter Engagement and Best Practices teams, which support the development of processes and tools to improve supply chain knowledge and reporting transparency

RESPECTING HUMAN RIGHTS CONTINUED

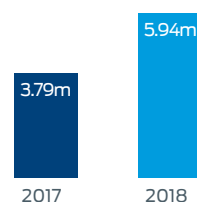
- The Responsible Minerals Initiative (RMI) Steering Committee, Smelter Engagement Team, Mining Engagement Team, Due Diligence Practice Team, Mineral Reporting Template team and the Blockchain workgroup, as well as mineral-specific workgroups for mica, cobalt and gold
- The Public-Private Alliance for Responsible Minerals Trade, through which we contribute to regional solutions for responsibly sourced minerals

VEHICLE SAFETY, QUALITY AND SATISFACTION

Quality is central to everything we do. It drives improvements across all functions while ensuring that we deliver the vehicles our customers want and value. The safety and quality of our vehicles impact people directly, making them paramount considerations for Ford.

Our global Quality Operating System helps ensure that our vehicles meet or exceed competitive and performance targets, as well as customer expectations, throughout their development and manufacture. Once a vehicle concept is finalized and approved, it is brought to market using our Global Product Development System. This combines the best production methods from across our global operations and provides common efficiency and quality metrics.

Passenger vehicle recalls, United States



Improving Vehicle Safety

Safety will always be our highest priority when developing vehicles. Quality is critical to safety and spans design and manufacturing, operator behavior and road infrastructure.

Our corporate safety policy, Policy Letter 7, outlines our commitment to creating vehicles that achieve high levels of safety in a range of real-world conditions. This helps us meet or exceed applicable laws and regulations, as well as our customers' needs and expectations.

Our processes, tools and facilities confirm that our vehicles align with stringent internal guidelines on safety design and Ford-specified levels of performance for Public Domain tests. We regularly re-evaluate and update these guidelines, ensuring continuous improvement.

We observe and evaluate the performance of vehicles and systems at **crash-test facilities** in:

- Dearborn, Michigan
- Merkenich, Germany
- Dunton, U.K.

The **VIRTTX (Virtual Test Track Experiment)** in Dearborn, Michigan, researches human behavior with advanced driver assist features, human-machine interfaces and factors such as drowsy or distracted driving.

We explore and develop new technologies for safety, driver assistance, connectivity, mobility and self-driving vehicles at **Research and Innovation Centers** in:

- Dearborn, Michigan
- Palo Alto, California
- Aachen, Germany

Vehicle Safety Performance

Ford continues to receive high marks and accolades in public and private crash-testing programs. We conduct engineering analyses, computer simulations and component, sub-system and full-vehicle crash tests to evaluate at several sites in the United States and Europe.

Global Safety Ratings

Public Domain programs for rating vehicle safety vary considerably worldwide. They are conducted by a range of consumer advocacy groups, organizations, auto clubs, motoring magazines and insurance-sponsored organizations, each with its own testing protocols and evaluation criteria.

Because of these different programs, and the fact that New Car Assessment Programs (NCAPs) are continually being updated and made more stringent, it is increasingly difficult to achieve the highest ratings across all regions. All global automotive companies face the dilemma that a rating in one region's NCAP does not guarantee the same rating elsewhere. See our latest [ratings data](#).

Our recent safety assessment report, [A Matter of Trust](#), details the steps we are taking to ensure our next generation of smart, self-driving vehicles are safe for drivers, passengers, other road users and pedestrians. Read more about our [driver assist technology](#), [occupant protection](#) and [post-crash response](#) features.

RESPECTING HUMAN RIGHTS CONTINUED

Global Safety Public Domain Organizations

Global	Global NCAP
North America	IIHS
North America	US NCAP (NHTSA)
Latin and South America	Latin NCAP
Europe	Euro NCAP
Russia	ARCAP (website not available in English)
China	C-NACP (website not available in English)
Japan	JNCAP
South Korea	KNCAP
South East Asia	ASEAN NCAP
Australia and New Zealand	ANCAP
India	BNVSAP (program under development)

Our 2018 Vehicle Safety Highlights

U.S. NCAP

- For the 2019 model year, nine Ford and four Lincoln nameplates rated with 5-Star Overall Vehicle Scores (as of June 2019)

Euro NCAP

- Seven Ford models have 5-star ratings by Euro NCAP
- Ford received seven Euro NCAP Advanced Awards for innovative technologies

C-NCAP

- Eight Ford and one Lincoln nameplates achieved a 5-star overall rating (as at May 2019)



WHILE WE'RE PLEASED WITH OUR RESULTS, WE KNOW QUALITY IS A RACE THAT NEVER ENDS – AND WE'LL KEEP PUSHING TO DELIVER EVEN HIGHER-QUALITY VEHICLES FOR OUR CUSTOMERS.

Jim Van Slambrouck,
Director of Quality for the Americas

Monitoring Quality and Satisfaction

We use internal and external measurements of quality and satisfaction to assess how we're doing and where we can improve. Our primary source of information, the Global Quality Research System, tracks customer satisfaction and "Things Gone Wrong". It is conducted throughout the year by consulting firm Ipsos RDA Group.

As well as tracking warranty claims and costs internally, we also subscribe to three annual studies by J.D. Power and Associates: Vehicle Dependability Study; Automotive Performance, Execution and Layout Study; and Initial Quality Study. In June 2018, Ford Motor Company earned its best overall score in the study's 32-year history, with five Ford and Lincoln models earning top honors. We retained our No. 2 ranking among all automakers, having improved our scores for the fifth straight year.

DATA PRIVACY AND SECURITY

The information that customers provide helps us deliver great products, a personalized experience and continued innovation. We respect customer privacy and use the information they share responsibly, as we explore new ways to deliver innovative solutions.

We take our responsibilities concerning the privacy and security of customer data seriously. Our companywide governance infrastructure drives a holistic approach, which includes [policies and directives](#) focused on transparency, responsible data handling and use, and choice where appropriate.

We are a founding member of the Information Sharing and Analysis Center ([Auto-ISAC](#)), which gathers, analyzes and shares information to combat cyber-related threats and weaknesses.

Investing in data science and analytics allows us to harness the potential of technology to deliver great products and services, especially through our emerging businesses of mobility, connectivity and autonomous vehicles. A prime example is the [Transportation Mobility Cloud](#), a new open-source platform designed by Ford-owned Autonomic enabling data and analytics to connect and coordinate smart transportation services.

EMPOWERING OUR PEOPLE

Being an employer of choice wherever we operate requires us to continue to draw on the best elements of our legacy, our passion for mobility and our future aspirations. We believe in providing a collaborative and safe work environment that embraces diversity and inclusion, to ensure we attract, retain and develop the best talent.

Transforming Our Culture and How We Work

Capitalizing on new business opportunities requires us to change the way we work. In 2017, we began to transform our organization through Smart Redesign. Through this initiative we are flattening our organization, reducing bureaucracy, building skills and capability and changing how we work to help us remain competitive.

Smart Redesign is a key enabler of our corporate strategy, Creating Tomorrow, Together. We believe that redesigning the organization through human-centered design, shared leadership and enterprise improvements will help us maximize our value. Our efforts will help make our processes and systems more efficient and effective, improve our corporate fitness and agility, and help us deliver our plan to make smart vehicles for a smart world.

In 2018, we launched our new cultural evolution including "Our Truths." We developed Our Truths by analyzing our 100-year history and leveraging feedback from all levels of Ford employees, about what they want our culture to look like in the future. Our Truths are being rolled out globally and brought to life by:

- Updating our policies and procedures to reduce bureaucracy
- Redesigning our workspaces to encourage collaboration and productivity
- Ensuring our business operates in a way that empowers our people to thrive in their everyday work

Increasing Engagement in the Process

We strive to inspire our employees to be the change that they wish to see. The integration of Our Truths into our policies, practices, employee development curriculum and shifts in the way we work, encourages engagement at all levels. We recently launched a cross-functional, multi-level, multi-regional group called the Culture Cabinet, to represent the voice of global employees as we continue on our transformation journey. The Culture Cabinet also provides a way for our senior leadership team to remain in tune with the needs and expectations of our global employees.

We have also had 6,500 employees globally join our Culture Street Team. These voluntary "change agents" have offered to bring Our Truths to life by sharing information and hosting discussions about our culture transformation. We are proud of our employees for being a part of our grassroots culture evolution and reciprocating Ford's commitment to them through their participation in the transformation.

Our Truths

Put People First: We strive to address the needs and wants of all people, be that our employees, customers, partners or members of the community.

Do the Right Thing: We always work to create safe and inclusive workplaces where employees have the freedom to be themselves and work to their full potential.

Be Curious: We know that there is always more to learn and take the opportunity to grow in every situation, to question actively and to think critically.

Create Tomorrow: We extend our problem solving, creativity and experimental approach to create vehicles for the future.

Build Ford Tough: We take challenges as an opportunity to evolve and strengthen our business.

Play to Win: We are in business to create value and are focused on our competitive fitness, efficiency and agility.

One Ford: We are a family and value, respect and care for everyone in our network, from our employees to our partners. We welcome contributions and work together as one team.

Using AI to Analyze Employee Opinion

Our Talent Analytics team is using artificial intelligence (AI) to analyze the tone of employee sentiment, including comments given in engagement surveys, on our website, through social media or during town hall meetings with senior leadership. This "next practice" allows us to make real-time adjustments to our communications strategy and our responses to employees.

198,964

GLOBAL WORKFORCE (AT END OF 2018)

3,311

ANNUAL DECREASE IN EMPLOYEES IN 2018

61

MANUFACTURING AND ASSEMBLY PLANTS AND EIGHT ENGINEERING, RESEARCH AND DEVELOPMENT CENTERS AROUND THE WORLD

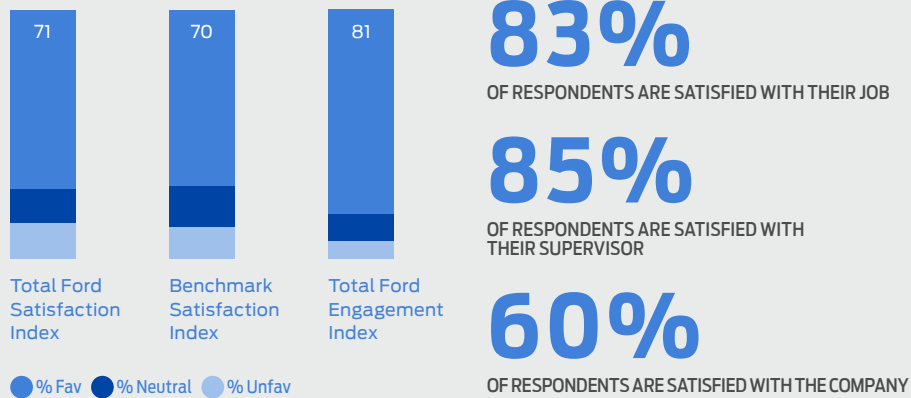
EMPOWERING OUR PEOPLE CONTINUED

2018 Global Pulse Survey Results

Results from our Global Pulse Survey are strong and continue to exceed external benchmarks.

What are employees saying? (2018 results)

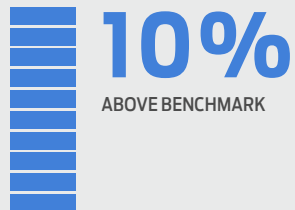
Overall, Ford employees are satisfied and engaged.



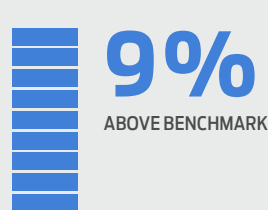
How do we compare?

Ford exceeded external scores on the Employee Satisfaction Index and on 20 questions that are benchmarked.

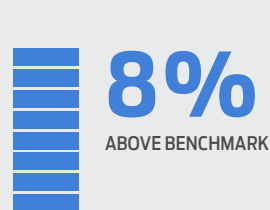
My workgroup has a climate in which diverse perspectives are valued



I can report unethical practices without fear of reprisal



I am given a real opportunity to improve my skills in the company



Employee Engagement and Satisfaction

Effective communication is vital to our ongoing success. We use a wide range of channels to provide opportunities for dialogue with our employees around the world. These include our Intranet site and website; corporate publications and reports; social media; Jim Hackett's video blog, webcasts and executive Q&A sessions with senior management; labor-management committee meetings; "Town Hall" meetings; and Employee Resource Group (ERG) initiatives.

Assessing Satisfaction Levels

Through our annual Global Pulse Survey, we encourage our employees to provide honest feedback about their jobs, workplace and overall satisfaction. Results are shared via online dashboards to inform team discussions and action plans and are benchmarked externally to give our performance a wider context.

We continue to explore new ways to collect information about the employee experience, including quarterly sample surveys, live whiteboards and polling machines in key buildings.



We aspire to become the most inclusive and diverse global company

DIVERSITY, INCLUSION AND EQUALITY

Our people and values underpin our aspiration to become the world's most trusted company, designing smart vehicles for a smart world. We know that people with different backgrounds, opinions, experiences and perspectives make us a stronger and more innovative team, and we invite all employees to bring their uniqueness, passion, inspiration and integrity into the workplace.

Our Areas of Focus

Leading the Way: We are working with our leaders to reinforce the strong connection and value that diversity brings to business results and employee experience.

Diverse Workforce: By attracting, developing and retaining a diverse workforce, we are intentionally developing a leadership pipeline and building diverse groups at all levels of the organization.

Respectful and Inclusive Culture: We are embracing Our Truths to foster an environment where employees can be themselves and have the flexibility to do their best work.

Partnerships within and beyond Ford are the foundation of, and key enablers to, building a diverse workforce.

EMPOWERING OUR PEOPLE CONTINUED

Ford was included in the 2019 Bloomberg Gender-Equality Index for our commitment to transparent gender reporting and workplace equality.



2018 Diversity Performance

Of our global salaried workforce:

- 28.2% were female
- 20.4% of managers⁴ were female

Of our 12-member board of directors:

- three were women
- two identified themselves as members of minority groups

Of our U.S. employees (hourly and salaried):

- 31.5% were members of minority groups
- 23.8% were female

Of our 45 corporate officers:

- nine were women
- eight identified themselves as members of minority groups

Ford CEO Takes Action

In October 2018, Jim Hackett, our President and Chief Executive Officer, joined hundreds of other business leaders in signing the CEO Action for Diversity & Inclusion pledge. Working collectively across organizations and sectors, the “I Act On” pledge aims to rally the business community and outlines actions that participating companies can take to cultivate working environments where diverse perspectives and experiences are welcomed and respected.

Fostering Diversity through Employee Resource Groups

As part of Ford’s ongoing commitment and collaborative effort to embed our diversity and inclusion strategies into every part of our company, we endorse and support Employee Resource Groups (ERGs). These comprise thousands of employees worldwide who share characteristics or life experiences and a desire to use them to create workplace connections, provide professional development and advance business imperatives. Started in the early 1990s, Ford’s ERGs are sponsored by our senior leaders and are open to all our employees. Our ERGs host a range of professional, educational and cultural events as well as supporting our diversity-related efforts in recruitment and community outreach.

Our longstanding commitment to equal opportunity in all aspects of employment includes compensation, which should be fair and equitable in each market, irrespective

Another Perfect Score in the Corporate Equality Index

In December 2018, Ford once again earned 100 percent on the Human Rights Campaign 2018 Corporate Equality Index, repeating the perfect score we have received every year since 2004 in this national benchmarking assessment of lesbian, gay, bisexual, transgender and queer (LGBTQ) equality in the workplace.

of gender, race, age, disability, sexual orientation or other personal characteristics. This applies to all forms of pay, including base salary, incentives and bonuses.

Global Salaried Gender Pay Ratio

Ford’s Global Salaried Gender Pay Ratio, defined as the weighted average ratio of average female salaries to average male salaries within peer groups⁵ worldwide, is 98.2 percent. While this ratio provides a rough measure of pay equity, it does not account for individual circumstances such as job titles, education and experience. Such factors may explain much of the difference between the female and male averages.

We are interested in providing transparency in how well we are doing, as well as reaffirming our long-term commitment to fairly compensating all of our employees.

98.2%

GLOBAL GENDER PAY RATIO

TALENT ATTRACTION AND RETENTION

Our success depends on our ability to attract, engage and retain a diverse group of employees. According to our own research, employees choose Ford because of its rich history, reputation and brand values, career development and training opportunities and commitment to diversity and inclusion.

Finding the Best...

Attracting employees able to help move our company forward requires us to be more creative with our recruiting methods. Our strategy includes working with professional organizations, building relationships with top colleges and universities, engaging with local community partners and harnessing social media to connect with the next generation of creators and innovators.

We recognize, for example, that people who identify as having a disability are significantly underrepresented in the workforce. We aim to correct this while utilizing the unique strengths and insights these valued members of our community offer. Through our FordWorks program, we partner with local nonprofit organizations to offer individuals training and employment opportunities.

...And Keeping Them Onboard

After finding and hiring the right candidates, a strong onboarding experience is essential. For example, in the United States, we have two programs that equip new employees for success:

⁴ Middle management and above.

⁵ A peer group consists of employees in the same region, salary grade and skill team, when available.

EMPOWERING OUR PEOPLE CONTINUED

- Get Started provides 30 days of support services and resources to new employees, helping them navigate the essentials of early onboarding
- An extended program during the first year of employment provides further opportunities to engage new employees, including corporate and skill team orientations, presentations, question-and-answer sessions with leaders and an internal social media platform

Strong, flexible parental policies help Ford families integrate the demands of their work and personal life and support employees during key life moments. U.S. salaried employees, new mothers, fathers, and adoptive parents are eligible for eight weeks of paid parental leave, in addition to six to eight weeks for the birth mother. New parents are also eligible to transition back to work part-time at full-time pay. These policy changes enhance our ability to attract and retain top talent and increase employee morale.

Ford Ranked Among World's Most Attractive Employers

We are proud to have been ranked as an attractive employer in Universum's 2018 [Talent Survey](#), taken by more than 225,000 students across the world's 12 largest economies. The 10th annual survey ranks characteristics like work environment, innovation, future earnings and leadership in development. Ford was ranked 12th by engineering students and 48th among business students.

LEARNING AND DEVELOPMENT

Continuous learning, curiosity and learning agility are key to keeping up with a rapidly evolving world. Our learning culture and systems continuously evolve to lead the way for our employees and our business.

Creating Tomorrow's Workforce, Today

Technological advances create demands for new skills. At Ford, manufacturing technicians are being trained in electrified vehicle diagnostics. Portable training cells integrate robots, controls and vision systems to provide system-level training, and we are experimenting with augmented reality in our manufacturing facilities.

We are envisioning and creating the future. Our engineers and technicians compliment mechanical and software engineering skills, ensuring we can move at the speed of software even as we continue to develop hardware.

Expansion of partnerships with governments, universities and early education systems ensures access to new, diverse and skilled pipelines of talent. Ford is a founding partner with the Consumer Technology Association's (CTA) Apprenticeship Coalition to explore new models for learning on the job and preparing workers in non-traditional ways. With CTA and other partners, we are evaluating more than 15 different apprenticeships for careers in fast-growing fields including software engineering, data science and analytics, cybersecurity, mainframe system administration, creative design and program management.

Ford Founding Member of CTA's Apprenticeship Coalition

CTA Apprentice Coalition's mission is to create a national corps of skilled workers in the United States who will fill millions of open new collar jobs in communities across the country, not just in traditional tech hubs on the coasts. The Coalition's strategic goals include:

- Serving as an industry leader in offering and scaling apprenticeships
- Developing additional employment pathways for students, mid-career professionals and veterans
- Promoting inclusion by providing more Americans with the opportunity to work in the tech industry

In an increasingly online world and with information at our fingertips, employees are taking ever-more ownership of their learning. We provide employees with strategic options to build their capability through the latest learning approaches and partnerships with expert organizations. These include access to massive open online courses (MOOCs) for fast-changing skills like software development, AI, robotics, machine learning and deep learning programs. Partnerships with world-class universities offer opportunities for state-of-the-art research, innovation and technical and leadership skills development.

Building Future-Ready Leaders

Our leadership development approach is evolving to meet the needs of our changing workplace. We have modified our leadership learning experiences and opportunities to prepare future-ready leaders by focusing on:

- Neuroscience-informed learning methods and techniques
- Leading culture change by creating experiences for teams
- Leading through ambiguity and complexity
- Complex, human-centered problem solving and creative leadership
- Rigorous decision making and critical thinking
- Expanding anytime, anywhere learning to help learners at the moment of need

Our cohort-based leadership programs incorporate elements of social and peer learning to provide intense development experiences that focus on the application of training to specific work-related challenges.

- The Global Leadership Summit: For executives and general managers responsible for global projects, departments and budgets
- Global Executive Leadership: Geared toward directors and senior managers associated with a region, but with responsibilities that extend to the global enterprise
- Experienced Leader Program: Aimed at middle management, the program helps grow the capabilities of our skill team leaders running regional large projects and functional departments

EMPOWERING OUR PEOPLE CONTINUED

- Leadership Academy: A recommended curriculum path for new and experienced front-line leaders, which builds foundational leadership skills and includes hands-on applications

Our employees can also build the capacity of others by sharing their subject-matter expertise, knowledge and insights in both technical and non-technical areas. This practice is embedded within leadership programs, providing developing leaders with skill-building opportunities.

INVESTING IN THE NEXT GENERATION

As the world moves forward ever-faster, we're preparing students of all ages to step up to the challenges ahead by inspiring their interest in technology, science and innovation.

Our Support for STEAM Programs

To strengthen our pipeline of potential future talent, our global strategy focuses on developing and delivering STEAM (science, technology, engineering, arts and math) programs. We prioritize programs that nurture technical talent and foster long-lasting partnerships and engagement.

- Our **Powered by Ford STEAM Academies** prepare high school students for life after school. As well as core academic subjects, students undertake engineering, information technology and manufacturing projects. In 2018, we awarded 100 Ford Blue Oval STEAM Scholarships, worth up to \$10,000 each, to support high-achieving college-bound students with their studies
- Our **FIRST® Robotics** program challenges teams of students to fund, build and

program robots to perform set tasks, against tight schedules and with limited resources. We provide grants to 136 elementary and middle schools and 87 high school teams, and more than 240 employees acted as volunteer mentors to Ford-sponsored teams

- As part of the Ford Next Generation Learning program, the Ford STEAM High School Community Challenge empowers students to make a positive difference in their communities. Supported by \$50,000 in grants from Ford and with participation from community partners, students propose technical solutions that address a range of community issues. In 2018, the Academy of Information Technology and Robotics at Spruce Creek High School in Volusia County, Florida, received the grand prize of \$20,000 for their smartphone app, which allows people affected by natural disasters to communicate with emergency responders even when there is no internet or cellular service
- To boost female representation in the tech industry, we provide opportunities for young women interested in STEAM subjects. Our support includes a partnership with Girls Who Code, a nonprofit that equips young women with the skills needed to pursue opportunities in computing. Across the United States, sessions combine robotics, web design and mobile development with mentorship from top engineers at our Ford Research and Innovation Center in Palo Alto, California
- In the U.K., we work with **Primary Engineer**, a nonprofit organization that runs engineering-based courses for schoolchildren. Ford supports a project

where children aged 5–11 are encouraged to build an electric vehicle. Each school is matched with a Ford engineer to support the classroom sessions and bring a real-world context to the learning. So far 42 schools, 72 teachers, 44 Ford volunteers and more than 1,600 children have been engaged

Empowering Through Education

In addition to STEAM programs, Ford Fund supports initiatives that empower young people to take control of their future, improve people's lives and drive upward social mobility.

Research shows that without adequate support, first-generation students are at a greater risk than their peers of dropping out of college. In response, we launched the Ford First Gen program at Spelman

College in Atlanta, Georgia. The program will pair 50 first-generation, first-year students with 10 junior students, also first-generation, who will act as mentors. The new students will also attend regular seminars, monthly outings to meet industry professionals, opportunities to engage with faculty members, and Ford-sponsored summer internships.

Ford Driving Dreams (FDD) empowers students to achieve academic success through scholarships, book donations, leadership programs, college preparedness tools, essay contests and career-building activities. Since 2012, FDD has fueled the academic and career journeys of more than 200,000 students across the United States, Puerto Rico and Latin America.



BUILDING SUSTAINABLE COMMUNITIES

Ford has always been much more than just an employer – we're also a neighbor. From supporting communities where our employees live and work to helping in the aftermath of natural disasters, we continue to work towards making a positive impact on society.

Our support for local communities, as well as for wider society, goes beyond donating money to good causes. It's also about building long-lasting partnerships to address the challenges our neighbors face, helping to achieve a better world.

Ford Motor Company Fund and Community Services – Ford Fund – oversees and coordinates our volunteering efforts and philanthropic investments, supporting initiatives across three key areas:

- **Community life:** Advancing sustainable communities around the world (see opposite)
- **Education:** Building a talent pipeline for tomorrow
- **Driver safety:** Encouraging safer driving

Ford Fund: Coordinating Our Impact on Society

\$67.7 million total charitable contributions in 2018
(Community life: \$43.2 million, Education: \$16.5 million, Driver safety: \$8 million)

More than \$2 billion donated to date to civic organizations to strengthen communities around the world.

COMMUNITY LIFE

Ford Fund's mission is to strengthen communities and make people's lives better. We focus our efforts on programs that support education, promote safe driving, enrich community life and encourage employee volunteering. Working with dealers and nonprofit partners in 63 countries, Ford Fund provides access to opportunities and resources that help people reach their full potential. Whether we are feeding the hungry, mentoring social entrepreneurs, supporting multicultural initiatives or helping communities rebuild in the wake of natural disasters, we connect at a grassroots level with Ford dealers and other partners to help people in need.

Providing Community Support on Our Doorstep

Ford was founded in Detroit in 1903, and we have been investing in the city and surrounding area ever since. Over the past decade, we have invested more than \$166 million in southeast Michigan, and the Ford Volunteer Corps has participated in nearly 10,000 local community service projects. Two Ford Resource and Engagement Centers in Detroit increase access to basic needs and essential services for local people.

Building a Better World

Our global Operation Better World, a grassroots initiative managed by Ford Fund, develops transformational programs focused on safe, Ford Smart Mobility; education; and building sustainable communities. In 2018, Ford Fund awarded 250 grants, worth more than \$12 million, to nonprofits in more than 60 countries. The project is modeled on the

well-established Operation Better World program in the United States, launched in 2008 and now operating across 25 markets throughout the country.

In partnership with the nonprofit Global Giving Foundation, Operation Better World utilizes the expertise of local Ford teams and community leaders to make a world of difference. The project's recent activities include:

- Ford Fund supported the **Argentinatón**, a project created by Ford Argentina and local social enterprise NGO Atomic Lab to travel throughout Argentina, delivering free, 3D-printed prosthetic hands and arms to hundreds of recipients across the country
- The **Ford College Community Challenge (Ford C3)** works in partnership with global NGO Enactus in 11 countries, challenging college student teams to launch social enterprises that address social needs in the local community. Over the past five years, Ford C3 has helped 7,000 students create 185 social enterprises that have impacted more than 230,000 people
- At the 2018 Enactus World Cup, the **Ford Mobility Innovation Challenge** hosted a competition that supports social enterprises that address community needs through mobility-based solutions. Six semi-finalists from four countries presented their projects at the Ford Research and Development Center in San Jose, California, competing for prize funds totaling \$75,000. The winning team, from the Federal University of Pará, has developed sustainable, low-cost rainwater collection systems for homes and agriculture in remote areas of Brazil

- Working with Artemisia, a Brazil nonprofit, Ford Fund provided seed capital and training to 20 startup businesses working on innovative solutions for lower-income families facing mobility and transportation challenges
- **Henry Ford Entrepreneurship Academy** teaches future business leaders to think and act like entrepreneurs. Workshops have been held in the United States, Morocco, Romania and Saudi Arabia, and expanded to the United Arab Emirates in 2018

New Hub for Social Entrepreneurship in Romania

To encourage more young people to contribute to meaningful change in their communities, Ford Fund opened our first Ford Resource and Engagement Center (FREC) in Europe. Based in Craiova, Romania, this new center provides University of Craiova graduates with a social enterprise incubator hub, through which they can meet with nonprofit partners, Ford volunteers, and education and community leaders to drive social and economic progress in their region.

With Ford Fund investments of \$1 million over four years, FREC Craiova is a collaboration with EDUCOL, a nonprofit that promotes training, development and employment opportunities for young people, and the local City Hall.

This new FREC is the fourth of its kind, with two centers already established in Detroit and another in South Africa. We have since opened our fifth in Bangkok in early 2019.

BUILDING SUSTAINABLE COMMUNITIES CONTINUED

Supporting Social Enterprises Through SHE-MOVES

We launched our inaugural SHE-MOVES grants program in May 2019. This will support community ventures that benefit women and children in India, South Africa and Nigeria, while providing “Whole-Person Leadership” development and promoting access to mobility.

Recognizing that women are essential to community resilience and well-being, the projects funded by SHE-MOVES (Strengthen Her: Mobilizing Ventures for Social Innovation) all have women at the heart of social enterprises, either as leaders or beneficiaries.

Administered by nonprofit Global Water Challenge, the initiative combines philanthropy with social enterprise incubation models to drive positive change, in line with five of the UN Sustainable Development Goals: Good Health and Wellbeing (SDG3); Quality Education (SDG4); Gender Equality (SDG5); Clean

Water and Sanitation (SDG6); and Affordable and Clean Energy (SDG7).

Through the concept of Whole-Person Leadership, SHE-MOVES seeks to provide women with opportunities to promote better health, develop tools for critical thinking and activate their ideas within their communities.

This social enterprise model is one of three pillars within Ford's new SHE-MOVES program. The NGO model supports World Vision in India, with Ford vehicles equipped with a mobile library and medical services, while the private business model collaborates with Virginia Commonwealth University to operate a shared fleet service for South African entrepreneurs.



Disaster Relief

Ford has a long history of assisting communities devastated by natural disasters. Ford Fund provides more than \$1 million in grants annually to nationally recognized aid organizations, as well as donating vehicles, supporting employee-matching and volunteer programs and coordinating with dealers to mobilize both immediate and long-term assistance.

Ford Fund is a member of the American Red Cross Annual Disaster Giving Program, allowing the Red Cross to respond immediately with shelter, food and supplies to natural disasters. In addition, Ford Fund delivered \$150,000 in financial assistance to nonprofit agencies helping people impacted by California's devastating wildfires.

Ford Fund continues to extend our reach through the Ford Motor Company Disaster Relief Mobility Challenge, an initiative that challenges U.S. nonprofits to find creative ways to help. In 2018, grants of up to \$70,000 were made to four recipients, to support the purchase of custom-outfitted Ford Transits to reinforce efforts to rebuild damaged communities.

ENCOURAGING SAFER DRIVING

We encourage safer driving behavior through a range of education and awareness programs, including our signature global initiative **Ford Driving Skills for Life (Ford DSFL)**.

Ford DSFL

Ford DSFL was formed 16 years ago by Ford Fund, in partnership with the Governors

Ford DSFL in Numbers

- More than 1 million drivers trained since 2003
- 41,000 participants worldwide in 2018
- More than \$50 million invested in Ford DSFL to date

Highway Safety Association. It aims to reduce the number of people killed in vehicle crashes, the leading cause of death for teenagers in the United States and much of the world.

Ford DSFL teaches newly licensed drivers necessary skills beyond standard driver education programs. Lessons on speed awareness, distracted driving, vehicle handling and the simulated effects of drugs and alcohol are delivered through hands-on courses, classroom sessions and an interactive online training center (“The Academy”).

The program's training sessions are adapted to reflect the unique environments, cultures and driving conditions in different markets around the world. For example, in 2018, we introduced a Ford DSFL “For Her” program in Saudi Arabia, tailored towards female drivers after the ban on women driving was lifted. Ford DSFL is currently active in 43 countries.

Addressing Driver Distraction

In the United States, there were 3,450 people killed in motor vehicle crashes involving distracted drivers in 2016. Of these fatalities, 444 (14 percent) were reported to have involved cell phone use as a distraction. Ford continues to conduct substantial research into driver distraction, both independently and with partners such as the Auto Alliance

BUILDING SUSTAINABLE COMMUNITIES CONTINUED

and various universities. The results from these studies have informed the development of several [driver assist technologies](#).

Our Ford MyKey® is just one of the technologies that help address the distraction problem. It allows parents to encourage their teenagers to drive more safely by staying focused on driving when at the wheel. Available on millions of Ford and Lincoln vehicles, the programmable key can redirect incoming phone calls and text messages until the driver is no longer driving. It can also:

- Limit the vehicle's top speed
- Activate alarms until front occupants have fastened their safety belt
- Limit the volume on the audio system
- Prevent safety and driver assist systems from being disabled

Driving Under the Influence of Drugs and Alcohol

In the U.K., 230 people were killed in drink-drive accidents in 2016 and in the United States, 10,497 people died in alcohol-impaired car crashes – almost 29 fatalities a day. Additionally, a 2013/14 National Highway Traffic Safety Administration study found that about 20 percent of drivers surveyed tested positive for potentially impairing drugs.

To educate teens and new adult drivers about the dangers of driving under the influence, participants at some of our Ford DSFL clinics can try our “Drunk Driving Suits,” “Drugged Driving Suits” and, on some courses in Europe, the “Hangover Suit.” These suits demonstrate the dangers of driving under the influence of drugs or alcohol by recreating

the phenomenon of slower reaction times and compromised vision and coordination that come with impaired driving.

EMPLOYEE VOLUNTEERING

Volunteerism is an integral part of our business. We encourage our employees to participate in programs that strengthen their communities through the Ford Volunteer Corps.

The Ford Volunteer Corps was launched by William Clay Ford, Jr. in 2005 in the aftermath of the devastating Indian Ocean tsunami and deadly hurricanes in the United States. It is now a highly coordinated network of current and retired Ford employees who help feed the hungry, deliver clean water, build homes, renovate schools and mentor young people across six continents.

To maximize the two paid workdays we offer salaried employees each year for volunteering, our “matchmaking” system enables nonprofit partners to let us know when and where they need help, while employees can sign up for opportunities based on their interests, skills and availability.

Our Volunteering Programs

Every year at Ford, September is Ford Global Caring Month. In 2018, more than 13,000 members of the Ford Volunteer Corps participated in 575 projects in 41 countries. Ford Fund also contributed more than \$750,000 for tools and supplies. The highlights included:

- **Brazil:** Building a new kitchen in a cancer center for children

- **China:** Harvesting fruit at a charity farm and distributing the produce to local people in need
- **India:** Restoring ponds and improving water access for 3,500 households in two villages
- **The Philippines:** Constructing community water facilities to serve 240 families
- **South Africa:** Transforming shipping containers into a classroom and daycare center
- **U.K.:** Improving the grounds and renovating facilities at a hospice

Bill Ford Better World Challenge

The Bill Ford Better World Challenge is a global grant program, jointly funded by the company and Executive Chairman William Clay Ford, Jr. Through the initiative, employee volunteers can apply for grants to support community projects that address issues around mobility; basic needs, such as food and shelter; or access to water, sanitation and hygiene. In 2018, we awarded \$450,000 to two projects:

- A project in drought-stricken South Africa will receive \$200,000 to fund a Ford Ranger converted to use moisture from the air to produce up to 156 gallons of drinking water each day
- The Detroit Homeless Network will receive \$250,000 for a Ford Transit to provide vending machines around the city with first aid supplies, hygiene products and clothing

Since it was established in 2015, the program has awarded \$1.4 million to seven projects across Mexico, the United States, Thailand, India and South Africa.

In addition, Ford employees are increasingly involved in skill-based volunteering projects. For example, in 2018, the Office of Tax Counsel partnered with colleagues in the finance, accounting and treasury groups to prepare tax returns for low-income individuals or those with disabilities or limited English skills in the Detroit area. Ford employees completed 577 tax returns, resulting in refunds worth \$628,402 for people who may have otherwise missed out on money they were owed.

SUPPLIER DIVERSITY

We are committed to creating opportunities for diverse suppliers running minority-, women- and veteran-owned businesses that foster innovation, drive profitability and prioritize sustainability.

Our nationally recognized Supplier Diversity Development (SDD) Program has fostered productive business partnerships with diverse entrepreneurs, and developed services for our customers by driving innovative best practices. Our program now includes certifications from the [National LGBT Chambers of Commerce](#), [DisabilityIN](#), the [Small Business Association](#) and [WEConnect International](#), emphasizing our commitment to inclusion and diversity.

In 2018, Ford purchased goods and services worth:

- **\$8.56 billion** from minority-owned suppliers
- **\$2.28 billion** from women-owned businesses
- **\$0.41 billion** from veteran-owned companies
- **\$5.38 billion** from small businesses

BUILDING SUSTAINABLE COMMUNITIES CONTINUED



TO DATE, WE HAVE SOURCED MORE THAN \$140 BILLION IN GOODS AND SERVICES THROUGH OUR SUPPLIER DIVERSITY EFFORTS WITH MINORITY-, WOMEN- AND VETERAN-OWNED BUSINESSES.

Promoting a Diverse Supply Chain

As well as buying from diverse suppliers, we work with business leaders, community organizations and trade associations that represent the interests of diverse businesses. We are members of the Billion Dollar Roundtable (BDR), a group of 29 corporate members across 10 industry sectors that each purchase at least \$1 billion of goods annually from diverse suppliers. The BDR promotes and shares best practices in supply chain diversity excellence through the production of white papers. It also encourages corporate entities to grow their supplier diversity programs by increasing commitment and spending levels each year.



Demonstrating our commitment, we hold Board of Director seats with several advocacy organizations for minorities and women.

Senior Executive Mentoring

Our MentorMe program, launched in 2017, helps develop a diverse range of suppliers by matching them with senior executives from Ford and/or other partner organizations. During the one-day program, mentors assess the suppliers' organizational challenges and opportunities and provide feedback to enhance leadership and communication.

In 2019, we launched MentorWE, helping women-owned businesses by matching them with higher-revenue peers within the same industry. The 12-month program, structured into four modules, places women business owners in cohorts of 10–12. They receive support, input and feedback from mentors, corporate participants and other leading experts in all areas of professional development that is tailored to their needs.

HERImpact DC to Support Female Social Entrepreneurs

In Washington D.C., we have teamed up with 1863 Ventures to help female social entrepreneurs grow their enterprises. The HERImpact project will provide women with educational opportunities, technical assistance, mentoring and financial resources, encouraging them to create successful small businesses and start-ups while improving their communities.

A pitch competition in March 2019 offered workshops and seminars to interested participants, with \$50,000 worth of prizes and investments available to high-potential social enterprises run by women in the area.

“We know that when an investment is made in a women’s future, her family and community also benefit, and the impact of that investment multiplies.”

Yisel Cabrera, Government and Community Relations Manager, Ford Motor Company Fund

Awards and Recognition

Reflecting our ambition to “maintain leadership in supplier diversity,” our SDD Program gained external recognition from a wide range of awards, rankings and rating agencies in 2018. A number of individual Ford employees also received honors and accolades.

- Rainbow Push – Benchmark Award for Diversity
- U.S. Veterans Magazine – Top Supplier Diversity Program Recognition
- Michigan Hispanic Chamber of Commerce – Corporation of the Year Award

Recognition for Our SDD Program

- Women’s Business Enterprise Council – Top Corporation Gold
- Great Lakes Women’s Business Council – Excellence in Supplier Diversity Award
- Great Lakes Women’s Business Council – Hall of Fame
- Michigan Minority Supplier Development Council – Corporation of the Year Award

Individual Awards for Ford Employees

- Michigan Minority Supplier Development Council – President’s Award
- Great Lakes Women’s Business Council – Ambassador Award
- Michigan Hispanic Chamber of Commerce – Advocate of the Year

ADVANCING OUR PLANET

With our planet facing severe sustainability challenges, including urban congestion, population growth and climate change, we believe we must play our part in protecting and conserving it for future generations.

Our founder, Henry Ford, believed in the idea of conservation.

The word sustainability may not have existed back then, but the concept of doing more with less did. This lies at the very core of our company. Sustainability is in our DNA.

We have a responsibility to reduce the GHG emissions from our vehicles and operations to help tackle climate change.

Our 2°C “glide paths” are our long-term roadmap for migrating our vehicle and fuel technologies towards more efficient and lower-carbon options, in line with the Paris Climate Accord.

We continue to research, develop and use renewable and recycled materials in our vehicles.

Our supply chain is complex but we’re committed to ensuring that the materials we use are sourced responsibly and include more sustainable alternatives to petroleum-based plastics.

We have comprehensive programs to help us reduce energy and water use, emissions and waste in our operations, and use more renewable energy.

We have already met our goal to reduce operational GHG emissions per vehicle by 30 percent by 2025, 88 Ford sites have achieved true zero waste to landfill status and Ford was named in the CDP Water Security “A List” for the fourth year in a row.

Highlights

100%

RENEWABLE ENERGY FOR ALL MANUFACTURING PLANTS GLOBALLY BY 2035

5.5%

ABSOLUTE REDUCTION IN GLOBAL WASTE SENT TO LANDFILL IN 2018

7.8%

ABSOLUTE REDUCTION IN GLOBAL WATER USE FOR MANUFACTURING IN 2018

Sustainable Development Goals

THROUGH OUR WORK IN ADVANCING OUR PLANET WE ARE CONTRIBUTING TO THE FOLLOWING UN SDGS:



REDUCING OUR VEHICLE FOOTPRINT

Climate change was identified as one of the most important issues in our recent human rights assessment, due to the impacts of extreme weather events, rising sea levels, droughts and water shortages. We share the responsibility for reducing GHG emissions, starting with those associated with the use of our vehicles.

Climate change is an important concern for our business and our stakeholders. We used the International Energy Agency's (IEA) 2°C scenario and a 1.5°C sensitivity analysis from the Intergovernmental Panel on Climate Change to inform our understanding of the implications of climate change.

Stabilizing atmospheric CO₂ concentrations is extremely challenging and will require a major effort on a global scale. Over the past decade, we have continued to evolve our approach, addressing the issues associated with climate change while pursuing the

opportunities of a changing world. This includes helping limit the global temperature increase to less than 2°C, by delivering CO₂ reductions in line with the [Paris Climate Accord](#).

A Commitment to Transparency

We have published an annual sustainability report for the past 20 years, and regularly provide submissions to several third-party indices and climate change reporting organizations. This year, we have also produced our first [Climate Change Scenario Report](#). It details our vision for new mobility solutions and the transition to a low-carbon economy, and assesses the resilience of our strategies for managing climate risk.

Our Aspirational Goals



We support CO₂ reductions consistent with the Paris Climate Accord



We aspire to achieve zero air emissions from our facilities



We will use 100 percent renewable energy for all manufacturing plants globally by 2035



We will achieve true zero waste to landfill across our operations



We will eliminate single-use plastics from our operations by 2030



We will make zero water withdrawals for manufacturing processes



We aspire to use freshwater for human consumption only



We aspire to only use recycled and renewable plastics in our vehicles globally

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

CLIMATE CHANGE STRATEGY

Doing our share to meet the collective challenge of climate change is a key responsibility and a strategic priority for Ford.

Our Strategy at a Glance

For more than a decade, we have developed a comprehensive approach that helps us address the issues associated with our changing climate. We are focusing on three key areas:

- Electrification including a range of new hybrid and fully electric models by 2022
- The improved efficiency of hybrid and conventional internal combustion engine vehicles
- Efficient, state-of-the-art manufacturing

Our strategy is also shaped by external factors, including government policies, physical risks such as extreme weather and other effects of climate change, market trends and the growing desire among consumers for more sustainable vehicles.

> For further detail on these and other risk factors, see the [Ford Annual Report 2018 \(Form 10-K\), page 14](#).

How We Developed Our Approach

We have assessed what it would take to do our part in efforts to limit global temperature increase to less than 2°C, in line with the Paris Climate Accord, and address the most serious consequences of climate change.

- Based on climate science and modeling by recognized authorities, including the IEA, we developed a model of global and light-duty vehicle (LDV) CO₂ emissions from different regions
- We calculated the 2°C stabilization emission reduction levels for LDVs over time, resulting in “CO₂ glide paths” for the LDV sector, taking into account regional differences in vehicle size and fuel consumption, biofuel availability and market growth
- We then calculated Ford-specific glide paths (CO₂ reduction goals) for our new vehicle lineups across our major operating regions, and applied the methodology to determine reduction targets for our facilities
- To incorporate the latest scientific knowledge, we review our glide path model every year and carry out major updates every five years

Our CO₂ model is not intended to provide the “answer,” but a portfolio of possible vehicle and fuel solutions in a carbon-constrained world.

Our reduction targets are an approximate guide to cumulative CO₂ reduction, rather than a precise limitation of annual emission rates.

Delivering Long-Term Reductions Across Our Lineup

We periodically review our vehicle development plans to assess how they align with our goals to reduce CO₂ emissions over the long term. However, these reductions will vary from year to year, due to market forces that are beyond our control, such as energy price fluctuations, changes in consumer demand and regulatory requirements. We are investing heavily in vehicle electrification and connectivity, which we believe will facilitate long-term reductions in CO₂ emissions.

Refining Our Model

We first developed an LDV path in 2007. Recognizing the long timeframe of climate science, we update our glide path model's assumptions and input data every five years. After our last major revision in 2017, we moved to a 2°C temperature stabilization pathway specific to LDVs.⁶ In 2018, we adjusted the model to account only for the physical CO₂ emissions from our vehicles and decoupled it from regional regulatory requirements. We also evaluated a 1.5°C sensitivity scenario.

Between these major updates, we conduct other assessments to understand how our model is affected by global changes such as economic conditions, biofuel availability and regulations. In 2018, we reviewed the effects of recent LDV regulatory incentives, the phasing out of some car lines in North America and our plans for increased electrification.

As climate science, alternative fuels and technologies advance, we will continue to refine and adjust our science-based CO₂ targets, and explore how best to factor in non-CO₂ emissions.

2°C Scenario Analysis Framework

To evaluate climate change risks and opportunities, investors are leading efforts to establish common strategy and planning assessment tools, such as the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#). Frameworks established for the oil and gas industries evaluate how policies, technology, and market and climate trends could impact their business strategies and capital planning.

In a similar vein, Ford is engaging with Ceres, a nonprofit organization encouraging companies to take stronger action on climate change, to develop and validate a framework for the automotive industry.

> For more information, please download our [Climate Change Scenario Report](#) and our [TCFD index](#).



We support CO₂ reductions consistent with the Paris Climate Accord

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

VEHICLE EMISSIONS

To help reduce the GHG emissions associated with the use of our vehicles, we are committed to making more efficient, lower-impact vehicles and technologies accessible at scale.

There is no single way to improve fuel efficiency or vehicle CO₂ emissions, so we take a portfolio approach, offering smarter choices across three areas:

Vehicles	Fuel	Customer
Affordable, accessible lower-carbon options:	Evaluating, developing and introducing vehicles that use lower-carbon fuels:	Enabling customers to choose different vehicles and fuels, and how those vehicles will be driven and maintained
– Electrified vehicles	– Electricity	
– New engine/transmission technologies	– Biofuels	Promoting “eco-driving” through training, information and vehicle technology
– Electrical system improvements	– Compressed natural gas (CNG)	
– Aerodynamic improvements	– Liquefied petroleum gas (LPG)	
– Weight reductions		
– Advanced powertrain options		

28.9⁷

FORD U.S. CORPORATE AVERAGE FUEL ECONOMY, COMBINED CAR AND TRUCK (MILES PER GALLON)

312⁸

FORD U.S. CO₂ TAILPIPE EMISSIONS PER VEHICLE, COMBINED CAR AND TRUCK (GRAMS PER MILE)

Our Plan for Reducing Vehicle CO₂ Emissions

Our science-based global strategy aims to reduce the GHG emissions from our vehicles, as well as through our operations. Encompassing our Sustainable Technologies and Alternative Fuels Plan, the strategy seeks to deliver high-quality vehicles that meet consumer needs while also responding to the risks presented by climate change.

Our industry currently faces major challenges in this area. As well as regulatory uncertainty in the United States, consumers are switching from cars to trucks and SUVs. In response, we will be scaling back car production in the United States to just the Mustang. In fact, by 2020, 90 percent of our North American portfolio will be pickups or sports utility and commercial vehicles.

We are also electrifying many of our fleet offerings to reduce CO₂ emissions. Ford is investing more than \$11 billion to get electrified vehicles on the road even faster. Our plan is to electrify our most popular vehicles, including launching the all-new Ford Explorer and Ford Escape hybrids this year along with the new F-150 hybrid in 2020 in North America. We are also on track to launch our Mustang-inspired all-new all-electric SUV next year and an all-electric F-150 in the future.

U.S. fuel prices have been low in recent years and customers are placing other vehicle attributes, such as performance, connectivity and infotainment, above fuel efficiency. Nonetheless, we will continue to improve fuel

economy and reduce CO₂ emissions across our vehicle portfolio over the long term.

Internal combustion engine (ICE) vehicles will continue to dominate vehicle sales globally for the foreseeable future. However, they will slowly be displaced by electric and other lower emission options as technologies and infrastructure develop, and as cities like London, Paris, Madrid, Hamburg and Shanghai place restrictions on ICE vehicles.

Understanding that alternative technologies do not meet all consumer needs, at least for now, we continue to design and develop advanced ICE technologies that meet those needs while minimizing impact on the environment.

The transition to more sustainable mobility will be facilitated by an increasingly electrified and connected mobility ecosystem. In 2018, we announced our vision for the Transportation Mobility Cloud (TMC) being developed by Autonomic as a web-based platform for smart connected mobility services. The TMC can provide improved access to mobility and connectivity, reduced congestion and lower GHG emissions associated with vehicle use. We are working with the U.S. Department of Energy's National Renewable Energy Laboratory and the RAND Corporation to quantify the potential sustainability benefits of connected mobility facilitated by services such as the TMC, and plan to discuss the findings in future reports. [Read more about the TMC.](#)

⁷ Includes FFV credits. Does not include A/C or Off-Cycle credits.

⁸ Includes FFV credits and Advanced Technology Multipliers. Does not include A/C or Off-Cycle credits.

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

Global Technology Migration Path

	NOW (<2020)	NEAR (2020–2025)	FAR (2025+)
		<ul style="list-style-type: none"> - Offer existing technologies at high volume - Reduce vehicle weight - Expand electrification 	- Offer electrification and alternative fuels at high volume
Policy/Mobility	Progress cross-industry and government discussions to increase the minimum octane rating Develop self-driving vehicles, connected vehicles (CVs) and smart mobility technologies	Engage in cross-sector GHG mitigation discussions Introduce advanced self-driving vehicles, CVs and smart mobility technologies	Improve sustainability by integrating vehicle technologies, low-carbon/renewable fuels and smart mobility solutions Engage in cross-sector GHG mitigation projects
ICE	Make EcoBoost® engines widely available Continued introduction of advanced engine/after-treatment technology to reduce emissions	Develop advanced technologies to further improve gasoline engine/EcoBoost® powertrain efficiency and performance Expand and optimize gasoline engine/EcoBoost® technologies in conjunction with electrified and alternative fuel applications and improved fuel properties Further develop ICE technology to enhance capability and affordability in key vehicle segments Innovation to meet future local air quality vehicle tailpipe emission standards	Continue optimizing engine technologies and improving engine efficiency for electrified applications Identify and incorporate advanced technologies that are compatible and synergistic with low-carbon/renewable fuels Deliver technology for continued reductions in criteria and particulate emissions
Electrification	Launch a 30+ mile plug-in hybrid electric vehicle (PHEV) Launch all-new, fourth generation front and rear-wheel drive hybrids, including Escape and Explorer in 2019 and F-150 in 2020 Develop Electrification Lifestyle customer solutions Develop all-electric F-150 and global commercial van	Launch additional hybrid and fully electric vehicle models Launch all-electric F-150 and global commercial van Launch all-electric flexible vehicle architecture Launch 300-mile range, Mustang-inspired, all-electric utility Make hybrids and plug-in hybrids available in more than 50 percent of nameplates Expand access to global charging infrastructure Launch Electrification Lifestyle customer solutions	Expand Electrification Lifestyle customer solutions Integrate TMC and electrified vehicle ecosystem to maximize customer value and environmental benefits
Alternative Fuels	Develop spark ignition and compression ignition technologies compatible with low-carbon/renewable fuels Offer flex-fuel vehicles (FFVs) Make CNG-prepared engines available where demand exists	Improve vehicle and powertrain capability to leverage renewable fuels Expand vehicle capability for renewable fuels	Evolve technologies in response to progress in low-carbon/renewable fuels
Energy Management, Electrical Architecture and Efficiency	Make electric power steering widely available Migrate battery management systems globally Make ongoing aerodynamic improvements	Incorporate additional aerodynamic improvements Develop intelligent energy management technologies, e.g., waste heat recovery	Leverage connectivity and advanced driver assistance systems for optimized energy management
Transmission and Driveline	Expand 8- and 10-speed variants to replace 6-speed automatic transmissions	Make advanced conventional driveline technologies widely available Increased advancements in engine/transmission systems optimization Develop electrified transmission and driveline technologies across all platforms and powertrain configurations	Expand the functionality of transmission and driveline technologies in support of next-generation electrified and self-driving vehicles
Weight Reduction	Develop advanced lightweight materials and associated manufacturing processes for significant weight reduction	Optimize vehicle systems for weight and introduce new materials and designs for further weight reduction	Continued focus on weight reduction using advanced materials and processes
Mobility Solutions	Introduce Ford car and Ford bike sharing Invest in scooter sharing for first- and last-mile journeys	Extend sharing in regions Extend FordPass functionalities including parking finder, etc. Roll out intermodal platforms	Devise City of Tomorrow solutions
Hydrogen Fuel Cell Vehicles	Research and development of fuel cell technology and its integration into vehicles	Continued research and development Limited deployment of test fleets as appropriate for market conditions	First commercial fuel cell vehicle applications

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

TAKING A LIFE CYCLE APPROACH

We want to understand the impacts of our vehicles and services over their entire life cycle so that we can manage them more effectively. This holistic view makes us better positioned to reduce our environmental footprint, through the materials and energy we use to make our vehicles, and the emissions they generate during use.

We use a range of analytical tools to identify and measure the potential environmental impacts of our vehicles or services over their lifetime, from the acquisition of raw materials, through vehicle production, distribution and use, to end-of-life disposal or recycling.

GHG Emissions in the Vehicle Life Cycle

In terms of GHG impact, vehicle operation is the main source of emissions. Total GHGs emitted depend on many factors, including the number of vehicles on the road and the way they are driven. We use the GHG Protocol methodology and actual vehicle testing to estimate emissions from vehicle use.

2018 GHG Emissions From Ford Operations and Use of Sold Vehicles

	Metric tons
Ford Facilities	4.38 m
Per Vehicle	0.73
Use of Sold Vehicles	134

Much of our efforts focus on improving tailpipe or tank-to-wheels (TTW) emissions. However, we continue to study well-to-wheels (WTW) impacts, which include the production (well-to-tank, WTT) and consumption (TTW) of fuel during vehicle use. WTW emissions vary with vehicle, engine type and energy source, including electricity.

When comparing vehicles, diesels generally have lower lifetime GHG emissions than their gasoline-powered equivalents and, in vehicles with alternative powertrains, CO₂ emissions vary with the carbon intensity of the fuel production process. Therefore, the emission benefits of lower-carbon options such as battery electric vehicles (BEVs) and PHEVs are maximized when the electricity comes from renewable sources such as wind or solar power.

While WTT impacts are part of the total vehicle life cycle, they are not within our control and are not suitable as key performance indicators for the automotive industry. We look to address these impacts separately, in collaboration with fuel and electricity producers, infrastructure developers and governments.

Applying Our Findings

We use life cycle tools to support our research and development, and assess the environmental and cost impacts of different materials. We are currently studying the energy and GHG emissions associated with producing carbon fiber automotive parts, and comparing them to any fuel savings they



can provide. Life cycle assessment (LCA) is a valuable tool for comparative material and technology assessments, but its complexity excludes a complete vehicle analysis of the Ford portfolio.

In addition, our researchers have contributed to a cradle-to-grave LCA that explores the costs and GHG emissions of current and future technology for LDVs. The analysis provides a life cycle picture of emissions and illustrates the importance of the availability of low-carbon fuels at scale for a sustainable mobility future. The research was published in the journal *Environmental Science & Technology*.

IMPROVING FUEL ECONOMY

We use a variety of approaches to improve the fuel economy of our gasoline- and diesel-powered vehicles, guided by our Sustainable Technologies and Alternative Fuels Plan. Improving fuel economy goes hand in hand with our work on electrification.

Advances in Engine and Transmission Technologies

Gasoline Engines

Thanks to turbocharging and direct fuel injection, our range of EcoBoost® engines lead our efforts to improve fuel efficiency and reduce CO₂ emissions in gasoline-powered vehicles. This award-winning fuel-saving

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

technology is now available on more than 80 percent of our nameplates, and has now been used in 8 million engines worldwide.

We are developing new technologies to improve fuel economy, performance and emissions for multiple powertrain options, such as advanced boosting, reduced friction, and advanced fuel injection and ignition. We also continue to assess how low-carbon renewable fuels can help reduce CO₂ emissions, and we continue to expand electrified and hybrid models into more segments and markets to meet evolving customer requirements.

Reflecting some of the progress we've made in gasoline engines, the 2.0-liter inline four-cylinder gasoline direct injection engine with Auto Start-Stop in the 2018 Transit Connect Cargo Van is E85-compatible.

Advanced Transmissions and Drivelines

We continue to advance our front- and rear-wheel-drive transmissions to increase efficiency and improve vehicle performance while enabling quick, smooth shifts, and we are further developing driveline technologies including low-friction, all-wheel-drive systems.

The 10-speed automatic transmission, first incorporated into the 2017 F-150 4x2 and 4x4 models, is now also used in our new Ford Expedition and Lincoln Navigator, improving powertrain efficiency and vehicle performance.

Diesel Engines

In specific markets, and for segments such as light commercial vehicles and heavy-duty vehicles, diesel engines offer excellent drivability, along with reduced CO₂ emissions and fuel consumption, especially with heavy loads. Modern diesel engines can achieve 20–30 percent better fuel economy than comparable gasoline engines.

In North America, we're offering two new advanced diesel engines: the 1.5-liter EcoBlue® engine in our 2019 Transit Connect and the 3.0-liter Power Stroke, the first diesel engine for an F-150. Both demonstrate the fuel efficiency and performance of progressive diesel engines. As our plans develop further, we will focus on sustainable fuels; our advanced diesel engines are already compatible with biodiesel.

Reducing Vehicle Weight

We use advanced lightweight materials to reduce fuel consumption wherever practicable. For example, when we switched to an aluminum body on the 2015 F-150, it shed 700 pounds. This led to improved fuel economy while providing increased payload and towing capability. Building on this success, we have also taken 200 pounds off the 2018 Lincoln Navigator, 300 pounds off the 2018 Ford Expedition and 350 pounds off the 2017 Ford Super Duty by switching to aluminum.

Further progress has come in the form of graphene, a carbon-based material 200 times stronger than steel but incredibly light. Starting with the Ford F-150 and Mustang, we will eventually add graphene to the fuel rail covers, pump covers and front engine covers in all our vehicles.

In collaboration with Eagle Industries and XQ Sciences, the breakthrough has been to determine how very small amounts of graphene can enhance foam materials to achieve significant improvements. In recent tests, internal noise reduced by 17 percent. Graphene-enhanced foam was also shown to improve mechanical properties by 20 percent and heat endurance by 30 percent.

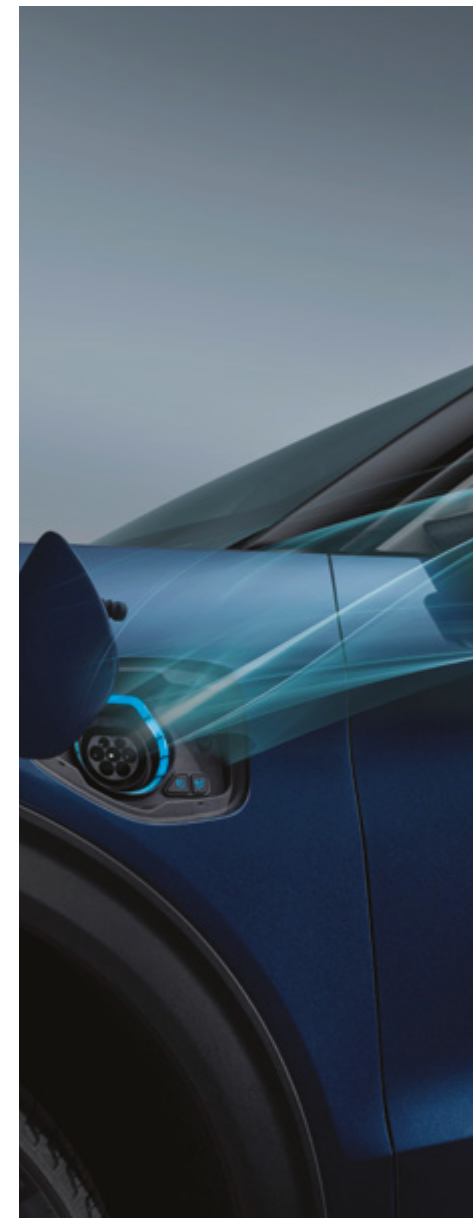
Read more about our long-term goal to only use recycled and renewable plastics in our vehicles.

ALTERNATIVE FUELS AND POWERTRAINS

Our plan to develop sustainable technologies involves researching and developing alternative powertrains and fuel options across all our vehicles, giving customers more choice.

En Route to Lower-Carbon Fuels

To support global climate stabilization, we have developed a roadmap to guide our efforts. This approach informs how we migrate our vehicle, powertrain and fuel options toward lower vehicle CO₂ emissions and improved fuel efficiency.



REDUCING OUR VEHICLE FOOTPRINT CONTINUED

Global Fuels Migration Path

Fuel Option	NOW (<2020)	NEAR (2020–2025)	FAR (2025+)
Gasoline and Diesel	Growth of fossil fuel availability continues with developments in extraction technologies	Gasoline/diesel fuel properties improve	Increasing fraction of liquid renewable hydrocarbons in fuel portfolio Further gasoline/diesel fuel properties improvements to support advanced vehicle technologies
Electricity (HEV, PHEV, BEV) See Scaling Up Electrification [link to Innovation]	Electricity grids start to transition to low-CO ₂ future Implementation of renewable energy, including solar and wind	Electricity grids continue to transition to low-CO ₂ future Fleet programs confirm grid/infrastructure readiness for PHEVs and BEVs Grid/infrastructure and standardization support expansion of PHEVs and BEVs	Clean electricity further enhances the benefit of PHEVs and BEVs
Renewable Biofuels	First generation biofuel production increases along with feedstock growing technique and processing improvements	Renewable fuel capacity expands in select markets Second generation biomass-based fuel production technology matures	Renewable fuel capacity expands in all markets Greater contribution by second generation biomass-based fuels
CNG and LPG	CNG and LPG available in limited markets	CNG expands in commercial fleets Availability increases with demand and production capacity	CNG from alternative/renewable sources
Hydrogen	Steam reforming of natural gas	Increased share of hydrogen from renewable sources	Further increased share of hydrogen from renewable sources

What's New in Alternative Fuels and Powertrains?

Cleaner City Air

Our PHEV Ford Transit Custom van is the centerpiece of a multimillion-dollar project to improve air quality in some of Europe's major cities. A 12-month trial began last year in London, and the project has now been extended to Valencia, Spain and Cologne, Germany. The project will assess how the fleet of prototype vehicles, running solely on electric power, might contribute to cleaner air targets, as well as make some urban journeys more efficient.

In Charge of the Electric Vehicle Network

Along with several other manufacturers, Ford is a founding partner of IONITY, a pan-European joint venture to develop a regional fast-charging network for electric vehicles. Together, we plan to build 400 charging stations in key locations by 2020, with the first ones already appearing in Germany, France, Italy, Switzerland and Denmark.

StreetScooter Work XL Hits the Streets

We're partnering with Deutsche Post DHL Group to produce electric delivery vans. Almost 150 StreetScooter Work XLs – a Ford Transit chassis fitted with a battery-electric drivetrain – were introduced last year to support the group's urban delivery service in Germany. With plans to build 2,500 more, around 1,000 had hit the streets in Cologne by the end of 2018.

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

Vehicles Powered by Alternative Fuels

	Renewable Biofuel Vehicles	CNG and LPG Vehicles	Hydrogen Fuel Cell Vehicles (FCVs)
Fuel	Ethanol , made from fermented corn sugars or sugar cane, is usually blended with gasoline (e.g., E15, E22 or E85); ethanol from non-food feedstocks is technically feasible Biodiesel , made from soy, canola, rapeseed, corn or palm oil, or animal fats, and mixed with fossil diesel (e.g., B7, B20)	CNG LPG	Hydrogen fuel cell system – converts stored hydrogen to electricity
Benefits	Biofuels made from renewable resources reduce CO ₂ emissions Next-generation biofuels made from plant cellulose use stems and leaves, reducing competition for food crops	Lower CO ₂ and life cycle GHG emissions than gasoline or diesel vehicles Lower <u>non-CO₂ emissions</u>	Zero-emission electric vehicles Only water and low-temperature heat are by-products
Models	E85 FFV: Escape, F-150, Super Duty, Transit Connect, Kuga B20: F-150, F-250/F-350 Super Duty, Transit, Transit Connect	Wide range of commercial vehicles: F-150, F-250, F-350, Transit, Transit Connect, F-X50 cutaway, F-X50 chassis cab. Additionally, a Fiesta LPG variant will be offered	As hydrogen refueling infrastructure expands and consumer interest builds, fuel cell model availability will meet demand

CO₂ Savings vs. Gasoline (E10) in the United States

Powertrain/ Fuel	TTW ¹ CO ₂ emissions	WTW ² CO ₂ emissions
HEV	28%	28%
PHEV ^{3,4}	45%	37%
BEV (grid-average electricity)	100%	56%
BEV (renewable electricity)	100%	100%
E85 ⁵	2%	27%
CNG	25%	19%
LPG	11%	13%
FCV ⁶	100%	41%
Diesel	15%	14%
B7 (Europe) ⁷	15%	17%
B20 (United States) ⁷	15%	24%

¹ 2015 U.S. Vehicle efficiency from Elgowainy, A. et al. (2016) Argonne National Lab report number ANL/ESD-16/7.

² WTW from GREET 2015.

³ Average grid electricity mix (GREET 2017).

⁴ PHEV has c.20 km all-electric range.

⁵ Ethanol from corn.

⁶ Hydrogen from steam methane reforming of NG at central plant.

⁷ Biodiesel from rapeseed (RME).



REDUCING OUR VEHICLE FOOTPRINT CONTINUED

ADDRESSING NON-CO₂ EMISSIONS

We are working hard to reduce emissions of non-CO₂ pollutants through our research, vehicle development and operations, in accordance with increasingly stringent vehicle emissions standards around the world.

Standards Continue to Tighten

ICEs emit hydrocarbons, carbon monoxide, nitrogen oxides and particulate matter during combustion. These pollutants can reduce air quality in urban areas, potentially affecting people's health.

We continue to comply with all global criteria emission standards as they are introduced, including the Tier 3/LEV III standards in the United States and the Real Driving Emissions standard in Europe.

Despite large reductions in vehicle emissions and substantial improvements in air quality in many cities in recent decades, due to the enforcement of such standards, countries such as Norway, France and the U.K. have announced sales bans for ICEVs or 100 percent zero-emissions vehicle sales targets in the 2025–2040 timeframe. We question whether such bans are needed and have raised the question “How low should we go?” for future vehicle criteria emissions. The answer will have profound implications for automotive and fuel companies, and for the future economic and environmental health of urban areas. Our research is covered in an article published in *npj Climate and Atmospheric Science*.

Regional Emissions Standards

	United States	Europe	China	Other Regions
Already Compliant or Surpassing	Environmental Protection Agency (EPA) Tier 2 regulations California's Low Emission Vehicle II (LEV II) program	Euro 6 tailpipe emissions standards Phase II	National stage-5 emission standards	India: Bharat Stage IV Brazil and Argentina: PROCONVE L-6 and standards based on Euro 5 Middle East: Standards based on Euro 2, Euro 3 diesel and Euro 4
Becoming Compliant as Phased In	EPA Tier 3 standards California's LEV III standards, closely aligned with the EPA's Tier 3 program	Euro 6d Real Driving Emissions (RDE) standards Euro 6 evaporative emissions standards Phase II	National stage-6 emission standards	India's Bharat Stage VI (BS VI) standards

Beyond the Tailpipe

With vehicle tailpipe emissions decreasing, other emissions are getting increasing attention. We are monitoring research in the area of non-tailpipe emissions. Through our Restricted Substance Management Standard, we have:

- Prohibited GHGs such as perfluorocarbons and sulfur hexafluoride
- Replaced all chlorofluorocarbon refrigerants with hydrofluorocarbons (HFCs), which do not contribute to ozone depletion and have significantly lower global warming impacts

Globally, we continue to lower non-CO₂ GHG emissions. In the United States and Europe, we have replaced HFC-134a with HFC-1234yf – a compound with a lower global warming potential – in many of our passenger cars. The lack of servicing

infrastructure limits the use of HFC-1234yf in other markets, but we remain committed to further reducing non-CO₂ emissions.

USING SUSTAINABLE MATERIALS

The materials it contains are a key aspect of a vehicle's sustainability. We aspire to use renewable, recycled and lightweight plastic materials that have a reduced lifecycle impact, and that provide equivalent or superior performance to existing materials. We also aim to reduce and eventually eliminate single-use plastics.

Building on Our Sustainable Materials Legacy

We have been using sustainable materials since the company's inception. Henry Ford advocated for the reduce/reuse/recycle

model and for industry and agriculture to use both the products and by-products of the other. He researched and demonstrated the applications of many plant-based materials, such as in coatings, vehicle body panels made from soy bean-based plastic and wheat-straw-filled steering wheels.

Given the finite nature of fossil-fuel-based materials and evolving consumer expectations, that work continues today. These materials are lighter, improving fuel economy and other performance criteria, and contain less carbon. They also provide our engineers with more options and create new revenue streams for farmers and other stakeholders.

The need to meet evolving regulations about recyclable material is also fueling progress. For example, the EU ELV (End-of-Life Vehicle) Directive requires an increasing amount of recycled materials to be used in Europe, with

REDUCING OUR VEHICLE FOOTPRINT CONTINUED

a focus on plastics made using post-consumer and post-industrial sources. The proposed EU Strategy for Plastics may require the use of a further 10 million tons of recycled plastics, from across all industries, by 2025.

This challenges our design teams, suppliers and other partners to use more renewable content, decreasing our reliance on virgin petroleum-based materials. This will take a significant amount of research and cooperation to ensure we meet or exceed strict performance requirements.

With a long-term ambition to go beyond zero and create positive impacts where possible, our sustainable materials strategy encompasses origin (virgin, renewable or recycled), sourcing and processing methods, life cycle emissions and end-of-life disposal.

Recycled Materials

Much of our initial progress to date has been achieved by using recycled materials, which

comprise up to 20 percent of a modern car. Recycled materials keep waste out of landfill, reduce pressure on natural resources and can reduce both energy consumption and costs. However, these materials must deliver the same or superior quality, appearance and performance as virgin materials.

Many metals are regularly recycled and contain a considerable amount of recycled content. In some cases, we are able to recycle production scrap back into the same use through “closed-loop recycling.” For example, the aluminum scraps from the stamping of window openings are collected and turned into body panels.

There is considerable potential for recycling more non-metallic materials from outside Ford. Over the past 20 years, Wellman/PRET has supplied Ford with around 350 million pounds of nylon from recycled, post-consumer carpet, which has found a second life as molded engine components. This is

enough to carpet downtown Detroit 42 times. And last year, we launched an extension dash panel on the 2019 Ford Edge made using recycled tires. The cost-saving material, which has improved heat and soundproofing performance, was a finalist in the Environmental category of the [2018 Society of Plastics Engineers' Innovation Awards](#).

We are also looking at incorporating other by-products and waste streams, such as turning post-consumer detergent containers and milk bottles into blow-molded components, and have tested composites made using ocean plastic waste. However, we acknowledge that marine waste is often degraded and lacks the consistent quality needed in automotive materials.

Renewable Materials

Our scientists have been exploring ways to replace petroleum-based plastics with plant-based materials since 2000. We were

Recycled Material Use⁹

- **Rubber from post-consumer tires:** underbody covers and exterior mirror gaskets
- **Aluminum recycled at some Ford factories:** truck bodies
- **Recycled plastic bottles:** carpeting and wheel liners
- **Scrap cotton from T-shirt and denim jean production:** interior padding and sound insulation
- **Post-industrial/post-consumer PET from recycled bottles:** seat fabrics
- **Post-consumer nylon carpeting:** cylinder head covers

the first to use soy bean-based foam in 2007, on the seatbacks and cushions of the 2008 Mustang, and over the past decade, we have produced more than 20 million vehicles containing this foam. This equates to using about 625 billion soy beans, saving more than 250 million pounds of CO₂ from entering the atmosphere.

Over the years, our research program has expanded to include a wide range of foams, plastics and composites derived from renewable resources. Today, we can proudly claim to use around 300 parts made using soy, wheat, rice, castor, hibiscus, tree cellulose, jute and coconut (see box), and we're exploring applications for tomato skin, bamboo, agave fiber, dandelion roots and algae as well. We also work with several companies, suppliers and universities to find new applications for captured CO₂.

What's in a Typical Vehicle?

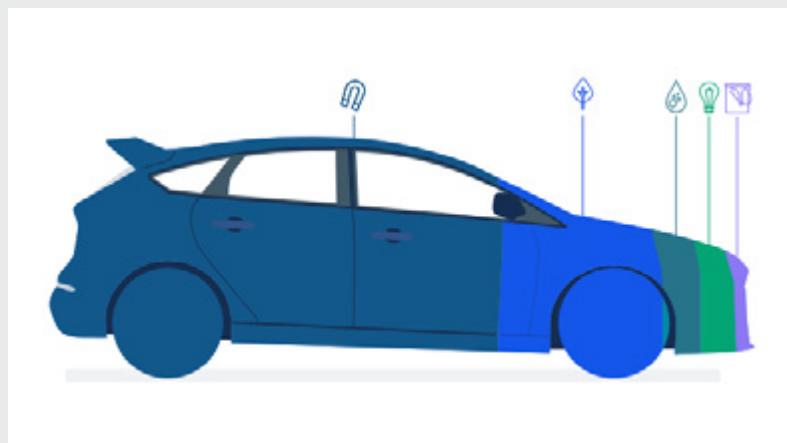
Around 40,000 parts...

from 1,200 Tier 1 production suppliers...

using 1,000 materials...

and 10,000 chemical substances...

- 75% metals (steel, aluminum, magnesium, titanium)
- 17% plastics, elastomers, textiles and natural materials
- 4% fuels and consumable liquids (engine oil, lubricants)
- 3% electronics, ceramics, glass and other compounds
- 1% miscellaneous (paint, adhesives, sealants)



REDUCING OUR VEHICLE FOOTPRINT CONTINUED

Last year, we introduced a tree-based cellulose hybrid material in the consoles of the Lincoln Continental – an industry first that won Ford a coveted Environmental Innovation Award from the Society of Plastics Engineers in 2018. The material not only boasts improved mechanical properties compared to the traditional material, but is 24 percent lighter, reduces GHG emissions and cuts costs by 13 percent. We are now looking to use this material in other applications such as door panels and instrument panel substrates.



We aspire to only use recycled and renewable plastics in our vehicles globally

Eliminating Substances of Concern

By monitoring and managing the materials we use in our vehicles, we can be sure we meet relevant local and global regulations to phase out substances of concern. We have made notable progress in eliminating or reducing our use of a range of materials including hex chrome, lead, mercury and copper.

We have phased out all EU REACH Authorization-Listed substances that have reached their sunset dates, after which they cannot be used in the EU without authorization from the European Chemicals Agency. We also lead, chair or participate in several industry association working groups, including the Global Platform for Sustainable Natural Rubber and Drive Sustainability, and advise governmental agencies about developments in global substance restrictions.

10 Vehicle and region specific.

Recycled Material Use¹⁰

- **Castor bean oil:** nylon fuel lines and soft-touch foams in instrument panels
- **Post-consumer nylon carpeting:** cylinder head covers
- **Soy-based polyurethane foam:** seat backs, cushions and head restraints
- **Rice hulls:** reinforced plastic in electrical harnesses
- **Coconut husk fibers:** reinforced plastic trunk liners
- **Cellulose-reinforced plastic:** replaced fiberglass in armrests and consoles
- **Wheat straw:** reinforced plastic in storage bins
- **Kenaf** (a species of hibiscus): molded plastic door parts

Reducing End-of-Life Impacts

In theory, at least 95 percent of a vehicle is recoverable at the end of its useful life, but getting the final fractions can be prohibitively energy- and labor-intensive. Nonetheless, we aim to maximize what is recoverable through the careful selection of materials and by engaging with dismantlers.

For example, none of our current components contain mercury but we work with the U.S. EPA, state authorities, dismantlers, steelmakers and environmental groups to encourage the recycling of mercury switches in older vehicles. Around 15,270 pounds of mercury had been recovered by the end of 2018.

And as part of our voluntary Go Green Dealer Sustainability Program, many U.S. dealership service centers collect the headlights, bumpers and windshield-wiper motors removed during servicing for potential reprocessing, reimbursing dealers accordingly. The parts are either cleaned, machined and tested before being sold as remanufactured parts, or dismantled and recycled for use in new applications.

ADVANCING THE CIRCULAR ECONOMY

Materials Manufacturing

We use many bio-based materials and agricultural by-products in our vehicles, including rice hulls, soy, coconut fibers, wheat straw and jute, as well as recycled materials such as nylon carpeting, cotton scraps and plastic bottles. We also recycle aluminum scrap from our stamping plants.

Vehicle and Parts Manufacturing

We strive to reduce our carbon footprint through energy efficiency and by using more renewable energy. We are also reducing our use of freshwater through new waterless technology and by using alternative sources, including wastewater from other businesses. Many of our buildings are LEED-certified for their sustainable energy, lighting and heating systems, and we have 88 facilities that send zero waste to landfill. In addition, our packaging contains recycled, renewable or recyclable materials.

Distribution

Our efforts to make our transport and distribution more sustainable include aerodynamic features on our trucks and training on fuel-efficient driving techniques. Network planning helps optimize routes and payloads, avoiding any empty journeys, and we switch from road transport to lower-carbon modes wherever feasible.

Dealership and Servicing

Ford dealerships are continually improving their utility and energy efficiency through the Go Green Dealer Sustainability program, and many reprocess the parts removed during servicing for reuse.

Vehicle Use

To reduce the CO₂ emissions associated with driving our vehicles, we give customers a wide choice of models and fuels. Our smarter vehicles include a range of developments, such as new engine, transmission and powertrain technologies, aerodynamic improvements and weight reductions. We also continue to develop vehicles that are electrified or use biofuels and other lower-carbon fuels. We also have many partnerships to provide sustainable mobility solutions and services, from shuttles and ride sharing to Spin e-scooters.

End of Life

Across Europe, Ford owners can access a free take-back network, with sites ensuring our vehicles are treated responsibly at the end of their useful life. Other industries also recycle and reuse a range of parts, from tires to batteries, from the automotive industry.

SUSTAINABLE OPERATIONS

In managing the impacts of production operations directly under our control, we are striving to move from reducing any negative impacts to make a net zero or even positive contribution.

Maximizing the efficiency of our operations is the key to lowering GHG emissions and facility energy use. This has involved using the Science-Based Targets initiative methodology to develop glide path targets specific to our manufacturing operations. These are based on climate science and the need to limit the rise in global temperature to under 2°C.

We are also looking for ways to reduce our footprint by:

- Increasing our use of renewable energy, towards 100 percent by 2035
- Focusing on responsible water stewardship, as we plan to achieve zero water withdrawals in our operations and only use freshwater for human consumption
- Achieving true zero waste to landfill across our operations, wherever practicable, and eliminating single-use plastics from our operations

> [Read more about how we're sharing best practices to help reduce the environmental footprint of our entire supply chain.](#)

500,000

MWH OF LOCALLY SOURCED WIND POWER PURCHASED IN DETROIT – OUR LARGEST-EVER RENEWABLE ENERGY PROCUREMENT AND A STEP TOWARDS OUR GOAL OF 100% RENEWABLE ENERGY FOR ALL MANUFACTURING SITES BY 2035

100%

RENEWABLE ENERGY FOR ALL MANUFACTURING PLANTS GLOBALLY BY 2035

ENERGY AND EMISSIONS

At our manufacturing plants and other sites, rethinking the way we use energy is crucial to lowering our facility GHG emissions and playing our part in addressing climate change. As well as maximizing efficiency, we also look for ways to make a more positive impact by using more renewable energy, setting a more aggressive target to reduce operational emissions and making our transport more fuel efficient.

Ford's New Global Carbon Reduction Strategy for Manufacturing

Building on the success of our last strategy, through which we achieved our goal of a 30 percent reduction per vehicle eight years early, we have announced a new global Carbon Reduction Strategy for manufacturing, with a significant emphasis on renewable energy initiatives and a continued focus on low-emission sources and energy efficiency. This strategy targets an absolute reduction of 18 percent by 2023, exceeding the requirement of the IEA ETP2017 Beyond 2°C Scenario pathway for Ford's manufacturing operations.

We have also established an aspirational goal to achieve 100 percent renewable energy for all manufacturing plants globally by 2035.

Collaborating with DTE Energy on Local Wind Power

In February 2019, we announced the procurement of 500,000 megawatt hours

of locally sourced Michigan wind energy through DTE Energy's MIGreenPower program: the largest renewable energy procurement in our history. The Dearborn Truck Plant (home of the F-150), the Michigan Assembly Plant (where we make the Ranger and Bronco) and several other new buildings on our Research and Engineering and Corktown campuses, will be powered by 100 percent locally sourced renewable energy by January 2021.

We support the use of renewable energy where the project can be tied to the energy-using facility, either directly or through a local distribution utility, instead of purchasing Renewable Energy Credits, which may be far removed geographically.

Reducing Emissions and Energy Use

To drive down energy use and GHG emissions from our manufacturing processes, we invest in state-of-the-art facilities and lean production techniques. Driven by our Plant Energy Team, our comprehensive Energy Management Operating System focuses our efforts in three key areas:

- Assessing and improving how our facilities operate
- Collecting, storing and managing data and analytics
- Securing a reliable supply of energy for our manufacturing plants

We participate in GHG emissions reporting and trading and adhere to a number of national carbon reduction initiatives.

Lowering GHG Emissions from Our Facilities

In 2010, we set an ambitious goal to reduce GHG emissions per vehicle produced by 30 percent by 2025. We're proud to say we reached that goal eight years early through initiatives such as installing more than 100,000 LED lights and updating our painting operations.

In 2018, we reduced our absolute emissions by 1.1 percent. This reduction in operational emissions – 0.05 million metric tons – is the equivalent of more than 10,000 passenger vehicles being driven for one year. In 2018, we also reduced global volatile organic compound emissions by 1.7 percent compared to 2017 and by 4.2 percent since 2016.

Committed to Green Buildings

Ford is a member of the U.S. Green Building Council and supports its industry-standard LEED (Leadership in Energy and Environmental Design) rating system. Committing to green buildings in our operations, we follow the basic principles of resource and process efficiency, life cycle assessments, health and safety and environmental performance. We currently have 26 LEED-certified buildings around the world.

We continue to implement a range of best practices in our new facilities, from advanced water treatment and waste reduction systems to energy-saving technologies.

Twenty-four of our U.S. plants are also part of the U.S. Department of Energy's Better Buildings, Better Plants program. This national public-private partnership initiative aims to reduce industrial energy intensity by 25 percent over 10 years against a 2011 baseline.

SUSTAINABLE OPERATIONS CONTINUED

Emissions From Logistics Operations

From receiving parts and components from suppliers to delivering finished vehicles to dealerships, our logistics operations represent a significant opportunity to educe our environmental impacts, particularly with regard to emissions.

To minimize the impacts of our inbound and outbound freight, we examine every opportunity to reduce the miles we travel and explore more fuel-efficient and lower-carbon modes of transport. Overseen by our Material Planning and Logistics organization, our environmental initiatives are coordinated at a regional level. They include:

- Updating our fleets to ensure we comply with the latest requirements of ISO 14001 and other regulatory standards
- Improving the efficiency of our network to reduce emissions

- Measuring and reporting freight GHG emissions
- Optimizing packaging to protect components and finished vehicles in transit

How We're Reducing Freight Emissions

Freight emissions are dependent on a wide range of inter-related factors, including the type of transport used, equipment efficiency and network design. We seek to achieve emissions reductions by improving the efficiency of our processes, by adopting new technology and by using alternative modes of transport.

Measuring and Reporting Freight Emissions

Quantifying and reporting our freight emissions helps us minimize our total life cycle carbon emissions and reduce our overall environmental footprint. We measure all GHG emissions, including nitrous oxide and methane, using the “CO₂ equivalent” (CO₂e) approach. Our logistics partners help

by collating data from across our networks in a global scorecard.

We also work with industry bodies, university partners and standards agencies to improve our reporting and methods, such as the Scope 3 GHG Emissions Standard. Continuing to adapt our methodology as necessary, we began to take account of WTW emissions resulting from the production of the fuel and energy we use for freight in Europe in 2018.

We also encourage others in our industry to improve their measurement and reporting of GHG emissions, through the AIAG in North America, the Department for Transport in the U.K. and Odette International in Europe.

WATER USE

Access to safe, clean water and adequate, accessible sanitation has been identified as one of our salient human rights issues. Water is also critical to many areas of our operations. We acknowledge our responsibility to use and manage water sources efficiently and sustainably, especially in water-stressed countries such as India, South Africa and Mexico.

Our Water Strategy

Our long-term water strategy reflects the need to understand water challenges in their local context. Our extraction policies and practices are designed to ensure that our operations do not negatively impact access to water for other users.

Throughout the world, we use a variety of water sources but focus on reducing our usage of freshwater: the main source of drinking water. Our long-term goal is to reduce our use of freshwater in our manufacturing operations to zero, by

Leadership on Water

Ford is one of more than 140 companies that endorses the UN Global Compact CEO Water Mandate. We're also proud to be one of only 31 publicly listed companies (out of 2,111 participating companies) to appear in the CDP Water Security “A List”, the only automaker to be recognized in this way. We have been on the A-List for four consecutive years.

For more information, see [Ford's response to the CDP](#).

utilizing non-water-based technologies and tapping into alternative sources such as other companies' greywater and wastewater.

Reducing Water Use in Our Facilities

Our target, to reduce water use per vehicle produced by 30 percent from 2015 to 2020, represents a significant challenge but it's a vital step forward if we are to manufacture vehicles without withdrawing any drinkable water. In 2018, we reduced our absolute operational water use by 7.8 percent, contributing to an overall reduction of 65 percent (a saving of 10.9 billion gallons) since 2000.

To help us reduce our water consumption further, we're introducing more water-efficient processes and technologies such as a data monitoring center to better measure our water use.

The Flat Rock Assembly Plant in Michigan has installed a system that allows the plant to reuse their wastewater treatment plant effluent in the paint shop. At full production,

Network Efficiency	Drivers	Vehicles	Other Transport Modes
Improved route planning	Training in fuel-efficient driving techniques	Using the latest engine technologies	Using rail, sea and river transport to reduce emissions and road miles
Regional distribution centers to coordinate deliveries		Modifying equipment (e.g., deflectors, speed limiters)	Multi-modal solutions (e.g., “SWAP bodies”: trailers for both road and rail)
“Milk run” routes with several collection points		Packaging designs to carry extra loads	
		Improving load density for fewer trips and lower fuel consumption	

SUSTAINABLE OPERATIONS CONTINUED

this system has the potential to save approximately 60 million gallons of water per year.

Collaborating With Our Suppliers

14.5%

ABSOLUTE REDUCTION IN WATER USE SINCE 2010

We recognize that we can't tackle water issues by ourselves and that our water impact doesn't stop at our factory walls – it includes the impacts of the suppliers who make parts and components for us. That's where our PACE program comes in, helping us to foster partnerships with suppliers and solve challenges by sharing best practice.

Eight Ford suppliers participating in PACE report that they expect to save an estimated 480 million gallons of water from 2018 to 2030 – enough to fill 730 Olympic-sized swimming pools – according to data collected in 2019. PACE participants report that their largest water savings were achieved through better cooling water management, including closed-loop systems and reusing process water and reverse osmosis reject water.

In addition to the full PACE program, we are launching a new streamlined version, FastPACE in the Asia Pacific region. Selected suppliers received an Excel-based toolkit containing hundreds of leading practices and actions to address air emissions, energy use and water use. Suppliers are encouraged to set and report progress towards long-term reduction targets.

What is Freshwater?

The GRI defines freshwater as surface water, but our broader definition includes both surface water and groundwater, in line with the United States Geological Survey: *"all water other than oceans and other saline water."*

WASTE REDUCTION

The automotive industry is resource-intensive, so we work hard to optimize efficiency, generate less waste and repurpose or recycle any waste we generate wherever we can. This keeps it out of landfill and provides us with an additional supply of valuable resources.

Meeting Our Waste Targets

To continue to reduce the amount of landfill waste associated with vehicle production, we set ourselves a challenging target: to reduce waste to landfill by 40 percent per vehicle between 2011 and 2016. We exceeded this, reducing waste to landfill by 65 percent. Reflecting our ongoing efforts, we have now reduced waste to landfill, on a per-vehicle basis, by more than 49 percent over the last five years.

In 2018, Ford facilities around the world sent approximately 20,000 metric tons of waste to landfill, 50 percent less than in 2014.

Taking Further Action to Cut Waste

We have now entered the second phase of our global waste strategy. This includes a key focus on waste minimization and management priorities, driving our efforts to reduce costs and sustain our true zero waste to landfill status through:

- Less waste generated, targeting waste streams within individual plants control as well as high-volume waste streams:
 - Paint sludge: 10 percent reduction over three years
 - Wastewater treatment plant sludge: 10 percent reduction over three years
 - Expendable packaging
- More sustainable waste disposal:
 - General trash: 15 percent reduction over three years
 - Eliminating single-use plastics across our global operations
- Continuing to send less waste to landfill globally:
 - Annual reduction in waste to landfill of 7 percent per vehicle
 - Additional facilities to achieve true zero waste to landfill (ZWTL) status

Going for Zero

When a facility acquires ZWTL status, it means that absolutely no waste goes to a landfill site. To date, 88 Ford sites have achieved ZWTL.

To ensure that more of our plants and facilities reach ZWTL status, we continue to implement a range of waste reduction initiatives, including:

- Investing in new technologies and programs that minimize waste
- Standardizing how we track and sort waste to aid recycling and reuse
- Focusing on the five main sources of waste to landfill at each facility

- Working with suppliers to increase the use of eco-friendly packaging

Reducing the Impact of Packaging

Packaging plays an important role in ensuring that components reach our facilities in good condition. As well as protecting its contents, our standard packaging maximizes payload and reduces cost; standardized containers also make packaging more transferable between suppliers.

We continually work to share best practice between regions and always review the packaging of components and parts before we launch a new vehicle, to find opportunities for improvement. In many locations, we have contracts with packaging providers to collect and store packaging for our suppliers and forward it to where it is needed next.

Our packaging guidelines require supplier-provided packaging to have a neutral (or positive) environmental footprint, achieved through true zero waste to landfill and the use of 100 percent recycled, renewable or recyclable materials.

- We aspire to achieve zero air emissions from our facilities
- We will achieve true zero waste to landfill across our operations
- We will eliminate single-use plastics from our operations by 2030
- We will make zero water withdrawals for manufacturing processes
- We aspire to use freshwater for human consumption only

MINIMIZING OUR SUPPLY CHAIN IMPACT

We rely on thousands of suppliers to provide the materials, components and services we need to make our vehicles. By sharing best practices, we can help them lower their costs, improve quality and meet their own sustainability targets. This not only reduces the environmental impacts of our supply chain but of the whole automotive industry.

The automotive supply chain is complex, with many tiers between the original source of the materials and manufacturers such as Ford. Our supply chain includes suppliers of parts and components for vehicle production, as well as indirect suppliers of facilities, equipment, materials and services.

We work closely with our suppliers to build their capacity and ensure sourcing transparency. For materials of concern, such as tin, tantalum, tungsten, gold, cobalt, mica and rubber, suppliers may be invited to support initiatives that improve due diligence or required to provide information

to verify that the materials in the parts and components supplied to Ford have been sourced responsibly.

Since 2003, we have conducted more than 1,100 third-party external supplier audits and more than 1,500 follow-up assessments globally across all commodities.

Our long-term objectives are to:

- Engage with our supply chain to understand its carbon and water footprints
- Work with selected suppliers to reduce our collective environmental footprint, by encouraging target setting and sharing best practices for reducing energy and water use, CO₂ emissions and waste
- Improve the transparency of mineral sourcing within our supply chain while improving the capacity of conflict-free smelters
- Continue efforts to source purchases from veteran-, minority- and women-owned businesses

UNDERSTANDING OUR SUPPLIERS' IMPACT

As well as directly managing the impacts of Ford-owned and operated facilities, we also have a responsibility to help our suppliers reduce their environmental footprint while ensuring social standards are upheld.

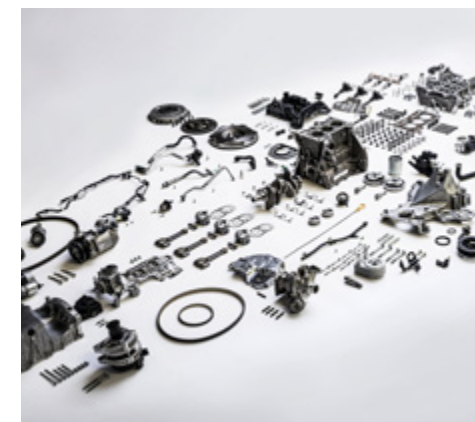
To better understand our suppliers' GHG emissions and water use, and to identify "hotspots", we survey a selection of them every year, using the CDP Supply Chain program's Climate Change and Water Security questionnaires.

We select production suppliers, as well as indirect suppliers of logistics and information technology services, based on their emissions or water intensity, their geographic footprint and the strategic nature of their relationship with us.

These two surveys provide us with qualitative and quantitative information about how our suppliers manage environmental risks and impacts, and maximize opportunities.

Building Supplier Capability Through PACE

Our supply chain sustainability initiative, PACE, was developed to reduce the overall environmental impact of Ford and our supply chain partners. PACE enables us to share the best practice examples we've implemented with 50 strategic suppliers so that they can be replicated. We encourage our Tier 1 suppliers to extend the reach of the program by cascading the information down their own supply chains.



Suppliers that are:	2017	2018
Integrating climate change into their business strategy	81%	84%
Reporting a water-related target or goal	69%	81%
Reporting an emissions reduction target or goal	66%	73%

Our Supply Chain

Operations	Production Suppliers	Indirect Suppliers
\$120 billion global spend on goods and services	1,200+ Tier 1 supplier companies	10,000 supplier companies
67 Ford manufacturing sites	60+ countries	600+ commodities
	4,400+ supplier sites	
	100,000+ parts manufactured	
	500+ commodities sourced	

257

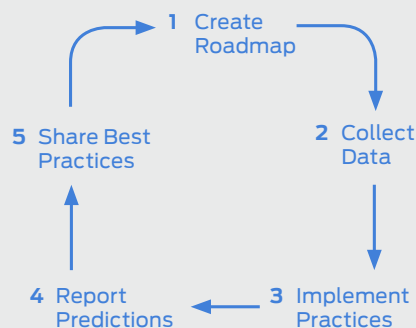
SUPPLIERS SURVEYED USING CDP SUPPLY CHAIN QUESTIONNAIRE (81% RESPONSE RATE)

214

SUPPLIERS SURVEYED USING CDP WATER QUESTIONNAIRE (73% RESPONSE RATE)

MINIMIZING OUR SUPPLY CHAIN IMPACT CONTINUED

PACE at a Glance



1. Suppliers create long-term plans for improving environmental performance
2. Baseline environmental data is recorded
3. Successful approaches are selected and replicated
4. Performance improvements are measured and progress against the baseline data is reported
5. Best practice examples are updated and shared among our suppliers and our own facilities

Engaging With Key Suppliers

As well as PACE, we engage with our key strategic suppliers through our Aligned Business Framework (ABF). This dialogue helps to drive quality and innovation, identify operational synergies and encourage collaboration in areas such as ethical business practices, working conditions and responsible sourcing. To manage sustainability issues with these ABF suppliers:

- Ford verifies that the supplier has a code of conduct that aligns with our [Policy Letter 24](#)
- The supplier provides internal training to ensure its employees understand and comply with the code of conduct – Ford validates their processes to ensure ongoing alignment
- The supplier also verifies that its own suppliers are compliant with our shared standards and expectations

Our ABF Network

114 suppliers comprising:

- **84** production suppliers and 30 indirect suppliers
- **13** of these are minority-, veteran- and women-owned suppliers

Of our 84 production suppliers:

- **100%** have codes of conduct aligned with our Policy Letter 24
- **81%** have governance systems covering their operations and supply chains

> [Download a list of our ABF Suppliers](#)

Recognizing Supplier Excellence

We honor our suppliers for outstanding performance and achievements with our World Excellence Awards. At the 20th annual ceremony, held in May 2018, Ford recognized 56 suppliers from across the globe with awards spanning safety, quality, sustainability, diversity and smart technology. Four companies also received Special Recognition awards.

Collaborating With Industry Partners

To amplify our efforts and encourage alignment throughout the automotive supply chain, we participate in several industry forums.

- As a founder of the [AIAG's](#) Environmental Sustainability Advisory Group and member of the Greenhouse Gas Work Group, we help integrate environmental sustainability, water benchmarking and GHG management across the sector. Along with other OEMs, we developed one-day supplier training programs for GHG emissions, Scope 3 emissions and water management, which provide guidance on calculations and sustainability strategy development

- We have worked alongside other members of the Environmental Science Work Group at the [RBA](#) to implement best practice and cross-industry collaboration. We were the first automaker to join the RBA and, as part of our membership, we adopted the Validated Audit Protocol. In 2018, we conducted 30 new audits across a range of suppliers. Through direct engagement, those suppliers improved their scores by more than 50 points between initial and closure audits, reinforcing our combined commitment to improving working conditions. [Read more about the RBA audit process](#)

- Through our membership of the [Suppliers Partnership for the Environment](#) – a collaboration among automotive OEMs, their suppliers and the U.S. EPA – we are working to advance responsible battery management at vehicle end-of-life, increase biodiversity and reduce waste



INNOVATING FUTURE MOTION

We are reinventing mobility. By harnessing technology and driving innovation, we are striving to address global transportation challenges and help people move more confidently, freely and safely.

We strive to provide our customers with vehicles they love and trust.

Our belief, that freedom of movement drives human progress, lies behind our commitment to become the world's most trusted company, and fuels our passion for designing smart vehicles for a smart world.

We are committed to addressing today's most pressing issues through our vehicles and services.

Through advances in connectivity and cleaner fuels, our new generation of vehicles and services will reduce air pollution and reduce congestion in urban centers.

We continue to adapt our business to meet demand for a growing range of mobility solutions.

Emerging opportunities in electrified vehicles, self-driving vehicle technology and other mobility solutions and services are a strategic priority for Ford, as they offer the potential for significant growth.

Highlights

\$11b

GLOBAL INVESTMENT IN ELECTRIFIED VEHICLES BY 2022

10+

YEARS OF EXPERIENCE IN DEVELOPING SELF-DRIVING VEHICLE TECHNOLOGY

Sustainable Development Goals

THROUGH OUR WORK IN INNOVATING FUTURE MOBILITY, WE ARE CONTRIBUTING TO THE UN SDGS:



Our Aspirational Goal



We aspire to drive human progress by providing mobility and accessibility for all.

SCALING UP ELECTRIFICATION

We remain focused on delivering affordable electric vehicles at scale, by electrifying our most popular and iconic vehicles. With around 20 years of experience in the field, we have committed to invest \$11 billion in electric vehicles and the infrastructure they require over five years.

OUR ELECTRIFICATION STRATEGY

Global demand for cleaner transportation is rising. China, India, France and the U.K. have all announced plans to phase out vehicles powered solely by combustion engines and fossil fuels between 2030 and 2040. To help them progress toward that goal, we plan to deliver affordable electric vehicles at scale, particularly in China, Europe and North America.

Electrifying Our Vehicles

As part of our vision of smart vehicles for a smart world, we have adopted a holistic approach to electrification. This includes electrifying our most popular nameplates, such as SUVs, commercial vehicles and trucks, to provide a profitable portfolio of hybrids, plug-in hybrids and all-electric vehicles to meet our customers' evolving needs and preferences.

Enhancing the Owner Experience

To drive our strategy further, we have created a dedicated global electric vehicle organization, Ford Team Edison, based in Detroit's historic Corktown neighborhood. The team is moving quickly to deliver electric vehicles that offer exciting ownership experiences and enhanced capabilities.

As we drive electric innovation, we will continue to focus on human-centric design. As well as exploring customer trends, we will draw on feedback from the public to fully understand what our customers are looking for in electric vehicles, such as how to use the extra space created by not having a conventional engine.

Supporting Charging Infrastructure

Our approach is to help make charging an effortless experience, at home and on the road. In Europe, we are a founding member of the IONITY consortium that aims to build 400 fast-charging stations across the continent locations by 2020, and in the United States, we are developing an extensive set of charging solutions to support our customers.



SCALING UP ELECTRIFICATION CONTINUED

OUR BIG PUSH IN CHINA

We will create a new energy vehicle center of competence in China to deliver on – and accelerate – our commitment to introducing a broad range of electric vehicles to the world’s largest auto market. This will include plug-in hybrids and all-electric vehicles, leveraging our global and local relationships and resources. By 2021, we will launch more than 10 new electrified vehicles from Ford and Lincoln, including the all-new Ford Territory BEV SUV and the all-new Lincoln Aviator PHEV SUV in 2019.

Advancing Electric Vehicle Technologies Through Innovation and Cooperation

As part of our commitment to reducing CO₂ emissions, our work to electrify our most popular nameplates will see all-new Explorer and Escape hybrids in 2019, and an all-new F-150 hybrid in 2020 that will include a mobile generator.

We are also on track to launch our

new Mustang-inspired, fully electric performance utility in 2020 with a range of 300 miles, and we have started developing an all-new, all-electric F-150 that will be our first full-size electric pickup truck.

Committed to leveraging adaptive business models and collaborating with others, we have a partnership with Mahindra to jointly develop a small EV in India, and we are exploring potential collaboration on electric vehicles with Volkswagen.

SELF-DRIVING VEHICLES

The opportunity with self-driving vehicles is much more than just developing the technology. The challenge is to build consumer trust in the safety, reliability and experience that it will enable, and to apply it to improve our lives.

A TASTE OF TOMORROW’S MOBILITY TODAY

Self-driving vehicles can help solve real-world problems in today’s increasingly urbanized environments. They promise individuals new levels of accessibility, affordability and convenience, while also enabling businesses large and small the opportunity to reach more customers.

We believe that self-driving vehicles can become a fundamental part of a new connected transportation network, populated by smart vehicles and infrastructure communicating through the TMC. That’s why we’re working closely with business, government and industry partners to test and deploy self-driving technology.

BRINGING SELF-DRIVING TO THE CAPITAL

With our partners Argo AI beginning to map the city in 2018, we became the first company to test self-driving vehicles in Washington D.C. in early 2019. Working with the municipal government, we plan to deploy our test fleet of self-driving vehicles in all eight of the city’s neighborhoods. Washington D.C. is our latest U.S. testbed, enabling us to build on what we’ve already learned from the different environments and specific challenges presented by Pittsburgh, Detroit and Miami.

	HEVs	PHEVs	All-Electric Vehicles
Power Sources	ICE, electric motor with a battery system	ICE, electric motor with a high-voltage electric battery	High-voltage electric motor powered by a lithium-ion battery pack
Benefits	When using the electric motor and battery system only (e.g., low speeds, short distances), no gasoline is used	Battery can be charged from a household or public electric outlet	Lack of tailpipe CO ₂ and other emissions during use
	Can run on battery power, on ICE power, or both	When the battery is depleted, the vehicle functions as a standard HEV	
	Regenerative braking system captures energy to recharge the battery	Accrues charge through regenerative braking Tailpipe emissions can reach zero when running on battery power	
Models	Hybrid versions of high-volume vehicle platforms, including: Ford Fusion, Ford Mondeo, Lincoln MKZ, Ford Police Responder Hybrid Sedan	Fusion Energi, Mondeo Energi, Police Special Service Plug-in Hybrid Sedan	

SELF-DRIVING VEHICLES CONTINUED

OUR NO.1 PRIORITY: SAFETY

We currently offer customers a wide variety of driver assist technologies in our vehicles, alerting them to potential collisions and making stressful aspects of driving, such as parallel parking, easier. As well as improving safety today, many of these automated features are also the building blocks for a safe autonomous future.

Recognizing the level of public hesitation that exists about self-driving cars, we implement strict precautions to ensure safety. As well as going through simulation and proving-ground testing before testing on public roads, all of Ford's self-driving test vehicles have a safety driver and co-pilot on board during development.

We are on track to deliver on our commitment to launch a purpose-built self-driving vehicle in 2021.

A Matter of Trust

We have recently published *A Matter of Trust*, a voluntary safety self-assessment that outlines our approach to self-driving vehicle development. It details how self-driving vehicles work, what challenges they will solve and how we're working to earn public trust by prioritizing safety, designing for reliability and delivering an enjoyable and valuable customer experience.

> [Read A Matter of Trust](#)



Goods That Deliver Themselves

As we work toward our goal to launch self-driving vehicles in commercial operation in 2021, we have teamed up with several partners in Miami to test how customers interact with them.

A project with Postmates allowed us to test prototype vehicles with novel modifications. The vans have a locker system to keep packages secure and to make multiple deliveries along a route. A touch screen allows customers to retrieve

their order with a personalized code, while external audio and lights systems direct them to the correct locker.

Keeping the customer at the center of our vehicle and service developments, we're also working with Walmart, trialing the delivery of groceries using self-driving vehicles.

MOBILITY SOLUTIONS

We could be on the cusp of the biggest transportation revolution in a century. Our vision for the future of urban transportation is to return streets to the people, by addressing the challenges facing cities today, such as climate change, air pollution and congestion.

CREATING TOMORROW, TOGETHER

We believe smart vehicles for a smart world will help people continue enjoying the freedom of movement that has underpinned human progress. We also believe coordinating all forms of transportation will benefit the growing number of people moving into big cities and facing more congestion. Everything from parking and traffic flow to public transport and goods deliveries could be radically improved to reduce congestion and to transform roads into more public spaces.

Two core elements underpin everything we're doing to ensure our mobility solutions will benefit both the city and the citizen:

- We're focusing on the real-world experiences of our customers, taking a human-centric approach to looking at how technology can enhance those experiences
- Building on our existing reputation for data privacy and security, we want owners and users of our vehicles to trust us with the data they share with us



We aspire to drive human progress by providing mobility and accessibility for all

Transforming Michigan Central Station

We are investing \$740 million to restore Michigan Central Station and several surrounding properties to create a hub of innovation in Corktown, Detroit's oldest neighborhood. This will bring together more than 2,500 Ford employees and 2,500 other entrepreneurs and partners to shape the future of mobility. The area will serve as a catalyst for new ideas and a proving ground for self-driving vehicles, connectivity and new mobility solutions that will address the way people live and move.

We plan to transform the long-abandoned train station to its original grandeur and preserve the cultural heritage of existing neighborhoods, while creating modern and sustainable mixed-use spaces to foster innovation and community engagement.

POWERING SMART CITIES IN THE CLOUD

Collectively, it is estimated that people spend 160 million hours commuting and sitting in traffic each year, and putting more cars on the road, without taking any other action, will only worsen the congestion and pollution we already endure. It's no wonder that a new vision for city transport is emerging – one that revolves around the people who live and work in our cities – and we are at the forefront of efforts to make that vision a reality.

MOBILITY SOLUTIONS CONTINUED

From A to B with Ease

The [Micro-Mobility Revolution](#), a 2018 report by Populus, states that nearly half of all trips made in the United States are three miles or less in length, highlighting a need for convenient, cost-effective micro-mobility options.

With this in mind, Ford acquired San Francisco-based electric-scooter company Spin, to help more people travel those first and last miles more efficiently and sustainably.

Extending Spin's existing operations in three U.S. cities and university campuses, we plan to deploy fleets of zero-emission two-wheelers in more than 100 locations by 2020.

To provide new mobility services that improve people's lives, it will be essential for vehicles to communicate with the city around them, including the road itself. The TMC is the first open cloud-based platform that connects the diverse components of urban mobility systems, including connected vehicles, mass transit, pedestrians, city infrastructure and service providers – with the goal of orchestrating a safer, more efficient and sustainable transportation network.

Like other tech platforms, the TMC leverages innovation inside and outside Ford. In fact, during 2018, Ford signed six partners, including:

- RideOS: cutting-edge transportation marketplace and mapping technologies for highly accurate travel time estimates
- Swarm Technologies: the world's lowest-cost satellite network for access to critical

remote cloud services anywhere

- TribalScale: Dashero predictive ordering service for businesses to better plan on-demand deliveries

Also, since August 2018, Ford has been collaborating with Alibaba Cloud to bring the TMC to China. The TMC will provide standardized data and infrastructure to help developers deliver better experiences, from helping residents plan transit journeys and ride-hailing businesses manage large-scale fleets to routing self-driving cars on busy streets.

C-V2X: It's Good to Talk

Every new car we make in the United States will soon be able to tap into a wireless network and “talk” directly to other vehicles, pedestrians and infrastructure, helping to make our streets safer and less congested. Ford is committing to deploy cellular vehicle-to-everything technology (C-V2X) in all new U.S. vehicle models beginning in 2022, pending a technology neutral regulatory environment. Also, the company will begin deploying C-V2X technology in Ford vehicles in China in 2021. C-V2X is a wireless communication technology that can “talk” and “listen” to similarly equipped vehicles, people and traffic management infrastructure such as traffic lights to relay important information.

Enabled through the rapidly developing, powerful 5G cellular network, C-V2X enables direct communication between the connected devices, meaning a signal doesn't need to first travel to a cellular tower, allowing vehicles to quickly send and receive information. Ultimately, it lets drivers know what's ahead of them before they have to encounter it.

For example, if a person suddenly steps into the street from out of view, your vehicle would stop because it was alerted by that person's smartphone. This unique ability for vehicles and cell phones to communicate is just one example of what C-V2X will enable, but it is important, as fatalities involving pedestrians continue to undo years of auto safety improvements.

The City:One Challenge

Our City Solutions team was created to help cities and communities address their challenges and help residents move more freely. To do so, we're learning how each city works and how our technology could be adapted to improve traffic flow through an ever-wider range of mobility options.

As part of their work, our City Solutions team has launched the 2019 series of its [City:One Challenge](#) with the first of this year's locations: Indianapolis. Through the competition, city officials and residents collaborate to solve their own community's unique mobility challenges, with \$100,000 available to help fund pilot projects. More 2019 cities will be announced in the coming months.

The 2018 challenge winners, from challenge cities Pittsburgh, Miami-Dade County and Grand Rapids, have now received funding to pilot their ideas. These range from providing safe transport for people working night shifts at unpredictable hours, to a mobile app that improves school drop-offs and pick-ups for parents, teachers and children.

[> Watch a recap of our 2018 Challenge](#)

Creating Commercial Connections

For long-lasting improvements in our urban transport, commercial vehicles must be able to handle all the challenges posed by the modern city. Ford Commercial Solutions has developed two new, connected vehicle systems that are designed to improve the efficiency of business vehicle fleets:

- The first, aimed at large company fleets, relays information from built-in modems in Ford vehicles to a business's internal IT system. Fuel usage, mileage, GPS location, vehicle health and driver behavior can all be analyzed to improve efficiency
- The other, for law enforcement operators, uses information on fuel usage, emissions, vehicle health and driver seatbelt to monitor fleet efficiency and driver behavior

RECLAIMING THE STREETS

Our streets are economic engines, destinations for social activity and channels for everything that moves. We want streets that provide places of personal fulfillment and give access to opportunity for all people in cities. So, we're looking at how they can be redesigned to serve many functions and meet a multitude of needs for pedestrians, cyclists, business owners, users of private and public vehicles and those who use them for relaxation and exercise.

To foster conversations about the potential of America's streets, our City Solutions team offers the [National Street Service](#), a participatory social movement, as part of the City:One Challenge program. This effort has a simple message: the street is yours to use in meaningful ways and yours to change for the better.

DRIVER ASSIST TECHNOLOGIES

Sixty years after we set the standard with factory-installed safety belts, we are still pushing the boundaries. We continue to develop new, innovative technologies that enhance vehicle safety and help customers stay safe on the road.

A WORLD OF DRIVER ASSIST OPTIONS

We offer a wide variety of available driver assist technologies, which can alert drivers to potential collisions and make routine tasks easier amid rising congestion and distractions. These features use radar, ultrasonic sensors and cameras to detect and interpret the environment.

Ford Co-Pilot360™ will roll out in key global markets in 2019. Ford was the first non-luxury OEM to bundle and offer five Ford Co-Pilot360™ technologies as standard on most vehicles in North America. Our 2020 Ford Explorer will have a suite of Ford Co-Pilot360™ technologies available:



11 Driver assist features are supplemental and do not replace the driver's attention, judgement and need to control the vehicle.

12 If the vehicle stops for more than three seconds, the driver must intervene and press the RES button or accelerator pedal to resume system operation.

– **Pre-Collision Assist with Automatic Emergency Braking** scans the road ahead and alerts the driver to potential collisions with vehicles or pedestrians. If an impact becomes imminent and corrective action is not taken, the brakes can apply automatically¹¹

– **BLIS® (Blind Spot Information System) with Cross-Traffic Alert** alerts drivers to vehicles in a blind spot with an indicator light in the side view mirror, while Cross-Traffic Alert can detect traffic behind the vehicle when backing out of a parking spot or driveway. Available BLIS with Trailer Coverage can detect vehicles alongside a trailer¹¹

– **Lane-Keeping System**, when engaged, notifies drivers through steering wheel vibration when they need to correct course, provides steering torque to steer back toward the center of the lane and includes an alert system that continuously monitors driving patterns using a forward-looking camera. If the system detects limited vigilance in driver behavior, it provides visual and audible warnings to remind the driver to take a break¹¹



– **Intelligent Adaptive Cruise Control** maintains a vehicle's speed but can also stop or slow the vehicle to match the traffic ahead.¹² It can even "read" speed limit signs and adjust speed accordingly. An additional **Lane Centering** feature scans lane markings to help keep the vehicle centered between the lines¹¹

– Available **Active Park Assist 2.0** can help locate a potential parking spot and assist with parallel or reverse parking. The driver brakes to a complete stop, shifts into neutral and holds down the Active Park Assist button while the vehicle takes care of the rest. This feature also offers **Park Out Assist** with side-sensing capability for navigating out of a tight spot¹¹

– Available **Reverse Brake Assist** can detect both stationary and moving objects (up to 37 mph) behind a vehicle, alerting the driver to potential hazards like garage pillars and distracted pedestrians, and apply the brakes to help mitigate a potential collision¹¹

Occupant Protection

Precompetitive Partnerships

We collaborate with other automakers to enhance the safety of vehicle occupants and

RoadCode

RoadCode is a simulation tool that reveals the driver behavior contained in connected vehicle, crash and infrastructure data and combines them with social media and population information to inform transportation engineers' decisions about safety.

Through an intuitive web-based platform, RoadCode shows traffic flow, travel patterns, and crash and connected vehicle events associated with specific road segments and intersections. This allows users to simulate the potential impacts of different safety interventions. The system incorporates analytical methods found in the Highway Safety Manual, as well as algorithms developed by our Global Data Insights and Analytics team.

We developed RoadCode for the U.S. Department of Transport-sponsored Solving for Safety Challenge, which ended in May 2019. Beta testing will be conducted across the United States.

often publish the results in peer-reviewed journals and scientific publications.

We work alongside General Motors and Fiat Chrysler through the working groups and committees of the U.S. Council.

> See how we're addressing the challenges associated with autonomous driving, including safety, reliability and trust, in our safety assessment report, [A Matter of Trust](#).

DRIVER ASSIST TECHNOLOGIES CONTINUED

Our Safety Research Partnerships

Technical Challenges Surrounding Autonomous Driving

- As a founding member, Ford uses the American Center for Mobility's facility for developing and validating self-driving test methods
- Ford is a Leadership Circle member of MCity, partnering with the University of Michigan on self-driving-related projects
- We joined the Partners for Automated Vehicle Education to inform the public and policymakers about self-driving vehicles
- We work with Virginia Tech to assess positional issues for potential restraints and seating configurations in self-driving vehicles
- We participate in the Society of Automotive Engineers (SAE) Automated Driving Systems (ADS) Crashworthiness Task Force Committee

Vehicle-to-Vehicle (V2V) Safety Communication Systems

- Through the Crash Avoidance Metrics Partnership, Ford and other automakers in the Vehicle Safety Communications Consortium are working on V2V development and testing

Vehicle-to-Infrastructure (V2I) Applications

- Various automotive OEMs are working with the Federal Highway Administration on V2I safety, mobility and sustainability applications, alongside the SAE on message standards, and with owners and operators of road infrastructure to facilitate developments

Cybersecurity

- We have been developing automotive cybersecurity best practice alongside members of the Alliance of Automobile Manufacturers (Auto Alliance) and Global Automakers, and in conjunction with the Auto-ISAC
- Ford is working with the Department of Homeland Security on precompetitive research through the Automotive Cybersecurity Industry Consortium

Driver Distraction

- Partnering with universities and organizations such as the Auto Alliance, we are researching driver distraction and analyzing data from large-scale naturalistic driving studies

for Automotive Research (USCAR) and collaborate with other manufacturers through the SAE, Auto Alliance, the European Automobile Manufacturers' Association and the International Organization for Standardization.

Research into Occupant Protection and Crashworthiness

We have conducted internal studies and teamed up with universities to conduct vehicle safety and occupant protection research.

- We are working with industry partners to evaluate the repeatability, reproducibility and durability of new anthropomorphic test devices – “crash test dummies” – so that they more closely simulate the responses of human occupants
- With USCAR, we are analyzing the occupant injuries sustained in far-side crashes
- We continue to work with Sandia National Laboratories and the National Renewable Energy Laboratory to evaluate the safety performance of lithium-ion batteries
- With Wayne State University, we are researching a non-destructive way to quantify the internal damage a battery cell can sustain without shorting
- We are researching the potential of nano-liquid foam technology in both restraints and structural applications with Michigan State University
- With the Royal Melbourne Institute of Technology, we're evaluating the material properties of 3D metal lattices using additive manufacturing and developing the computer-aided engineering methodology for modeling crash-loading

Post-Crash Response

In-vehicle technology that helps occupants to call for accident assistance can give first responders potentially life-saving information, quickly and efficiently. Our SYNC® in-car connectivity, which enables drivers to use cell phones and MP3 players through voice commands, also comes with a call-for-help system. SYNC 911 Assist (or Emergency Assistance outside the United States) can make an emergency call using a paired cell phone after a severe crash where an airbag is deployed or the fuel pump shut off.

The system provides the operator with a GPS location and data on impact velocity, crash type, safety belt usage and whether airbags were deployed. This information helps emergency services understand the severity of the incident and dispatch the most appropriate response.

Most of our vehicles also carry the SOS Post-Crash Alert System™, which alerts passers-by and first responders to a vehicle's location. In the event of airbag or safety belt pre-tensioner activation, it automatically starts the hazard lights, unlocks the doors and sounds the horn (non-European vehicles only).

A EU regulation on “Automated Emergency Calling Systems” became mandatory for new vehicles in 2018. In parallel, a UN regulation covering all in-vehicle systems and requirements to drive harmonization of this technology on a global scale has also been adopted.

“It has been 20 years since we produced our first sustainability report, but moving toward a more sustainable world has been a priority for us from the very start. Our goal is to revolutionize the way people move by providing transportation solutions that improve the lives of our customers and the communities in which they live.”



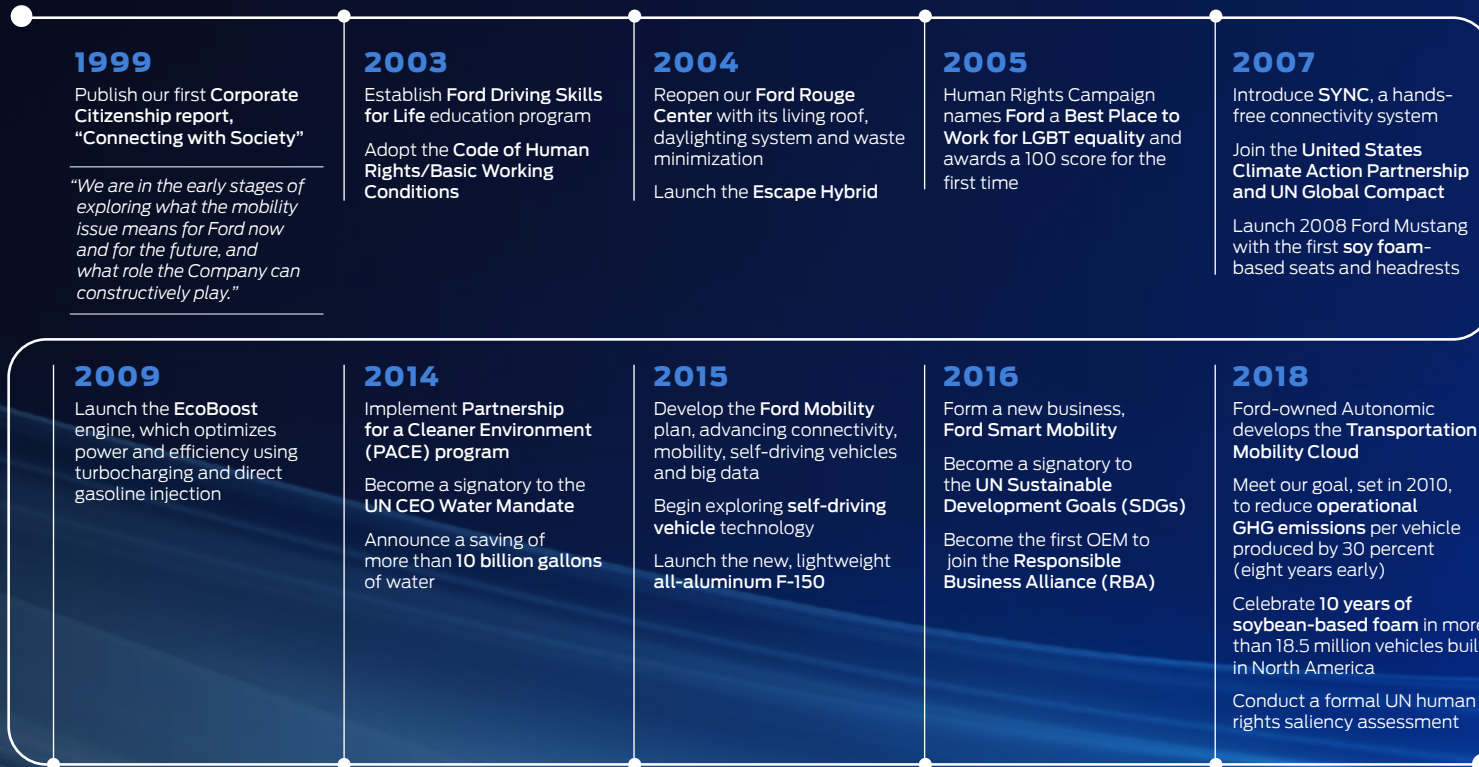
William Clay Ford, Jr.
Executive Chairman



Jim Hackett
President and
Chief Executive Officer

REFLECTING ON 20 YEARS

We've made great progress in sustainability over the last 20 years. Having initially focused on environmental issues, our approach to sustainability has since become much broader.



THE NEXT 20 YEARS

We have no plans to slow down, as we aspire to become the world's most trusted company, designing smart vehicles for a smart world.



ACCESS

We aspire to drive human progress by providing mobility and accessibility for all



CLIMATE CHANGE

We support CO₂ reductions consistent with the Paris Climate Accord



AIR

We aspire to achieve zero air emissions from our facilities



ENERGY

We will use 100 percent renewable energy for all manufacturing plants globally by 2035



WASTE

We will achieve true zero waste to landfill across our operations
 We will eliminate single-use plastics from our operations by 2030



WATER

We will make zero water withdrawals for manufacturing processes

We aspire to use freshwater for human consumption only



MATERIALS

We aspire to only use recycled and renewable plastics in our vehicles globally



HUMAN RIGHTS

We aspire to responsibly source all raw materials used within our vehicles globally



DIVERSITY

We aspire to become the most inclusive and diverse global company



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