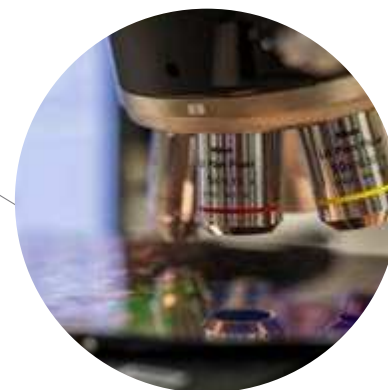




# TABLE OF CONTENTS



<b>COMPANY PROFILE</b>	2	<b>COMMUNITY ENGAGEMENT</b>	21
<b>CEO STATEMENT</b>	6	▶ Education Outreach	22
<b>GOVERNANCE</b>	7	▶ Philanthropy	23
<b>STAKEHOLDER ENGAGEMENT</b>	10	<b>SUSTAINABLE MANUFACTURING AND OPERATIONS</b>	24
▶ Materiality Analysis	13	▶ Leadership in Advanced Manufacturing	25
<b>SUPPLIER RESPONSIBILITY</b>	14	▶ Quality Management Systems	26
▶ Conflict Minerals—Achieving a DRC Conflict-Free Supply Chain	15	▶ Environmental Management Systems	26
<b>OUR PEOPLE AND WORKPLACE</b>	16	▶ Eco-Efficiency in Foundry Operations	27
▶ Compensation & Benefits	18	▶ Review of Performance to Date	27
▶ Human Rights	18	<b>PRODUCT STEWARDSHIP</b>	34
▶ Employee Education & Training	18	▶ Enabling Energy Efficiency	35
▶ Health & Safety	18	▶ Integrating EHS with Research & Development	37
▶ Safety in the Workplace	20	<b>ABOUT THIS REPORT</b>	38
▶ Managing Chemicals Safely	20	<b>GRI CONTENT INDEX</b>	39
▶ Promoting Health & Well-Being	20		

01

# COMPANY PROFILE

We are **GLOBALFOUNDRIES**, a leading full-service semiconductor design, development, fabrication, and innovation company with locations across the globe. We are proud to be the world's first full-service semiconductor foundry with a truly global manufacturing and technology footprint and an integral commitment to corporate responsibility.

We work with some of the world's most inspired companies to develop and produce the semiconductors that are changing the way people live today—and defining what is possible for tomorrow.

While execution excellence remains our first priority, our expertise extends beyond manufacturing. We are the catalyst for growth in the industries we serve. With the largest population of leading-edge scientists and technologists in the semiconductor manufacturing industry, we focus on the technologies and systems that transform markets. And we are dedicated to being the preeminent partner for our customers—helping to identify new opportunities to bring the technologies of the future to life.

GLOBALFOUNDRIES combines manufacturing expertise, innovative technologies, and comprehensive industry insight to help position our customers as leaders in their markets. Our customers' success, the future of our markets, and the technology that will move the world

forward start here. And we take seriously our role as stewards of corporate responsibility in our customers' supply chains.

GLOBALFOUNDRIES was launched in March 2009 through a partnership between Advanced Micro Devices, Inc. (AMD) and the Advanced Technology Investment Company (ATIC), now Mubadala Technology. We have continually pursued capacity and technology development, breaking ground on our leading-edge Fab 8 in New York in 2009, and performing expansion and technology upgrades to Fab 1 in Dresden. With the integration of Chartered Semiconductor in January 2010 and IBM's Microelectronics Division in 2015, we have boldly pursued opportunities to strengthen our technology portfolio, manufacturing capacity, and diversity. In the IBM acquisition, GLOBALFOUNDRIES diversified its technology offerings with differentiated ASIC and RF capabilities that were strengths of IBM's Microelectronics Division. We continue to invest in those assets and technology.

GLOBALFOUNDRIES manufactures wafers in Dresden, Germany; Malta and East Fishkill, New York; Burlington, Vermont; and Singapore. These fab site operations are the culmination of our business focus on manufacturing excellence, and their success requires a globally integrated support system.



GLOBALFOUNDRIES' corporate offices are in Santa Clara, California (Silicon Valley) with a global network of R&D, design enablement, and customer support operations in Singapore, China, Korea, Taiwan, Japan, the United States, Germany, Switzerland, France, India, and the Netherlands.

Our target markets include integrated circuits designed for high-performance and mobile computing, communications, automotive, Internet of Things (IoT), industrial, government, and aerospace and defense (A&D) applications.

GLOBALFOUNDRIES is owned by Mubadala Technology, a specialist investment company focused primarily on the global advanced technology sector. Mubadala Technology is a wholly owned subsidiary of Mubadala Development Company, which is owned by the Government of Abu Dhabi.

With our unprecedented pace of growth and global diversity, we are leading the industry forward. As promised in 2009, "Our global culture will continue to develop, always grounded in a firm commitment to responsible business practices." ▶

## 01 VISION, MISSION, AND VALUES

**OUR VISION** is to reshape the semiconductor industry through collaboration and innovation.

**OUR MISSION** is to bring global resources together to unleash our customers' potential to innovate and create amazing new things with us.

### OUR VALUES:



#### CREATE TOGETHER

We believe collaboration drives innovation, growth, and shared success. We strive to foster and maintain open, cooperative relationships with each other that drive the shared goals of profitability and excellence.



#### ACT WITH INTEGRITY

We hold ourselves to the highest standards of fairness, honesty, and transparency in everything we do. Our relationships with each other are based on trust and mutual respect. As a company, we believe in the importance of doing the right thing.



#### DELIVER SOLUTIONS

We are problem solvers that deliver real solutions. We welcome challenges and see opportunities where others see only obstacles and risks. We do what we say we're going to do, and work relentlessly to meet our commitments.



#### WILL TO WIN

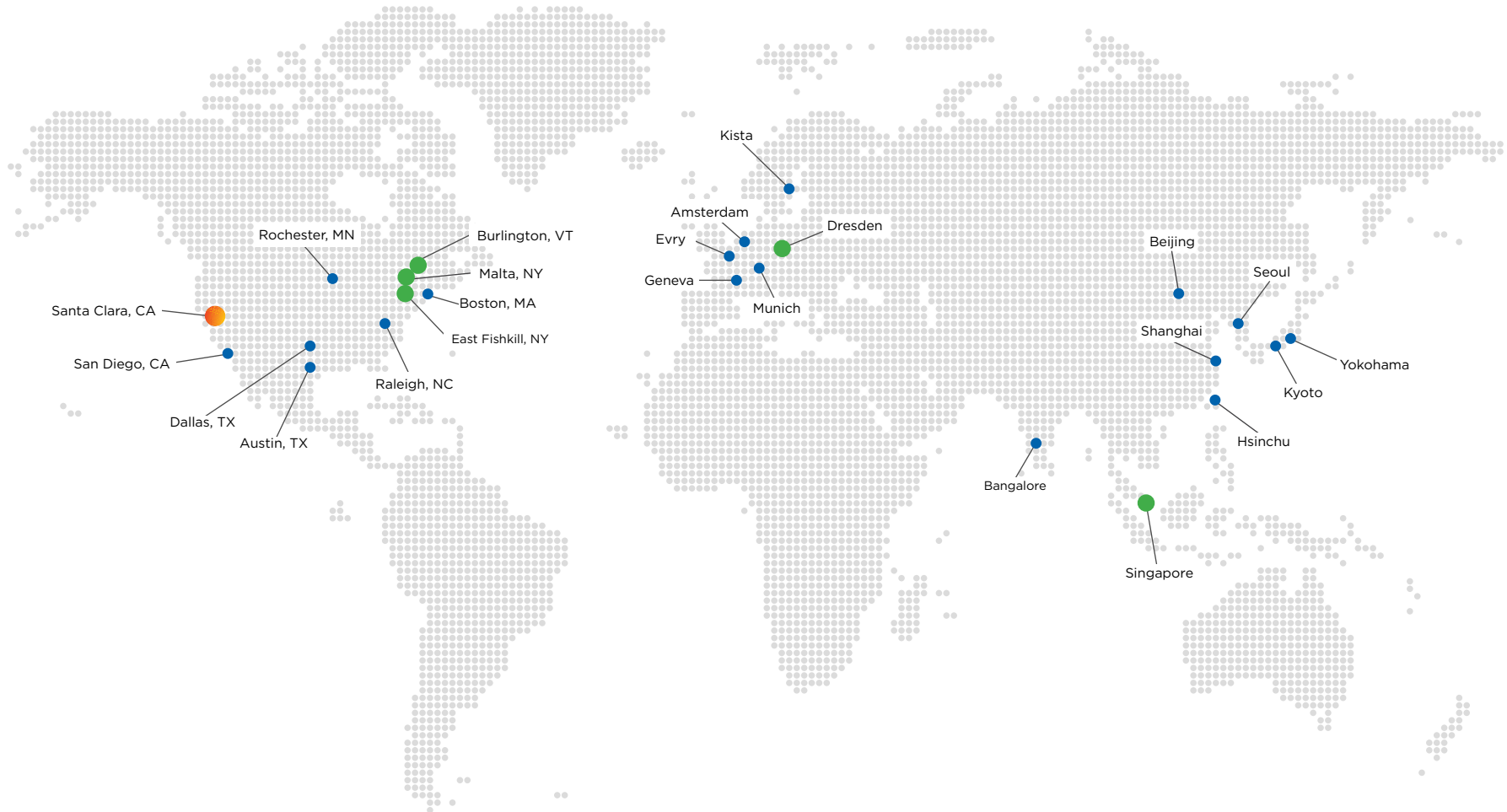
We are ambitious, and we strive for success for ourselves and our customers. We are passionate about what we do and committed to continuously improving how we do it. We will be the best semiconductor company in the world.

# 01 COMPANY LOCATIONS

Headquarters

Manufacturing & Technology Centers

Design, Sales & Administrative Offices



## 01 GLOBALFOUNDRIES MILESTONES

2009-2016

2009

GLOBALFOUNDRIES is formed as a joint venture between Advanced Technology Investment Company (ATIC) and Advanced Micro Devices, Inc. (AMD) in which AMD contributes their Dresden, Germany, wafer fab and R&D capabilities.



GLOBALFOUNDRIES breaks ground for construction of our newest state-of-the-art 300mm wafer manufacturing facility in Malta, New York.

2009

2010

GLOBALFOUNDRIES acquires Singapore-based Chartered Semiconductor.



GLOBALFOUNDRIES repurchases AMD's remaining stake in the joint venture, thus becoming wholly owned by ATIC.

2012

2014

ATIC becomes Mubadala Technology, within Mubadala Development Company's Technology & Industry business unit.

GLOBALFOUNDRIES and Samsung announce partnership bringing leading-edge 14nm technology to Fab 8.



GLOBALFOUNDRIES acquires IBM's Microelectronics Division, adding 5,000 employees; IBM's RF and ASIC product lines; a 200mm fab in Burlington, Vermont; a 300mm fab in East Fishkill, NY; and an extensive portfolio of semiconductor technology patents.

2015

2016

To address shifting market needs and recognizing that one technology does not fit all, GLOBALFOUNDRIES announced the industry's only dual technology roadmap: FinFETs for performance and density at any cost; FDX for low-power, cost-effective performance.



02

## CEO STATEMENT

I am proud to lead an organization that works with some of the world's most inspired companies to develop and produce the semiconductors that are changing the way people live today—and defining what's possible for tomorrow. We are committed to "Act with Integrity" and hold ourselves to the highest standards of fairness, honesty, and transparency in everything we do. This commitment to corporate responsibility has been integral to our company from the beginning.

Since we first started reporting on our CSR activities in 2009, we continue to focus our efforts to ensure that we operate around the globe in an ethical and sustainable manner. This applies across all our operations and interactions with customers, suppliers, employees, and the communities where we are located.

In 2015, our journey included the acquisition of IBM's Microelectronics business. We expanded our workforce by more than 5,000 of some of the most innovative technologists and scientists in the semiconductor industry in more than 12 locations, including two manufacturing facilities in East Fishkill, New York, and Burlington, Vermont, and added significant intellectual capacity in India and China.

We are now in a time when the need for chip innovation is greater than ever. Traditional drivers are changing as the industry transitions from

the era of mobile computing to the next era of "intelligent computing". We proudly accept the responsibilities that come with the role we have earned as global leaders in semiconductor R&D and high-volume manufacturing, upon which many customers rely.

We are pleased to provide our 2016 Corporate Responsibility Report to our stakeholders. Key achievements since our last CSR report include:

- ▶ Emphasis on our high ethical standards by updating our Worldwide Standards: GLOBALFOUNDRIES Code of Conduct, and establishment of our Ethics and Compliance office in 2015;
- ▶ Achievement of 100 percent DRC "Conflict-Free" status with all smelters in GLOBALFOUNDRIES' supply chain compliant with the Conflict-Free Smelter Initiative (CFSI)'s Conflict-Free Smelter Program;
- ▶ Publication of a new set of resource conservation goals reflecting our integrated manufacturing operations, unifying the company in pursuit of sustainability, even as we grow rapidly;
- ▶ Membership in the Electronic Industry Citizenship Coalition® (EICC), along with extended commitment to the EICC Code of Conduct and our customers' corporate responsibility efforts.



While we are proud of our progress, made possible by the dedication of our 18,000 employees around the globe, we recognize that the path to sustainable business practices is never-ending. Our forward-looking Corporate Responsibility strategy focuses on expanding our supplier and customer collaboration while we continue to honor and integrate the tremendous cultural diversity we have within our company. We will also continue to drive improvement in resource conservation. We look forward to working with our customers, communities, and suppliers to meet our shared goals of a prosperous industry that is also a leader in responsible business practices. ●

**SANJAY JHA**  
CHIEF EXECUTIVE OFFICER

A handwritten signature in black ink, appearing to read "Sanjay Jha", with a stylized flourish at the end.

# 03

## GOVERNANCE

GLOBALFOUNDRIES is committed to upholding the highest ethical and compliance standards. Every one of our employees, contractors, and consultants has the responsibility to carry out his or her duties in a manner consistent with this commitment.

### **GLOBALFOUNDRIES' Worldwide Standards: Code of Conduct**

GLOBALFOUNDRIES' Worldwide Standards: Code of Conduct (Code) is the foundation of our Ethics & Compliance program and sets forth the basic rules, standards, and behaviors that we must follow to achieve our business objectives while upholding our values. The Code summarizes legal and ethical standards and provides practical advice covering a wide range of issues pertinent to ethical business practices, including human rights, discrimination, harassment, environmental responsibility, protection of intellectual property, and anti-corruption. It also explains the major elements of our compliance program and identifies where employees can seek help and support. The Code has been communicated to all employees, and employee training and/or certification on the Code is repeated annually.

GLOBALFOUNDRIES' Code is aligned with the EICC Code of Conduct. GLOBALFOUNDRIES joined the Electronics Industry Citizenship Coalition (EICC) in May 2016. We stand committed to the EICC Code and its continuous pursuit of excellence in corporate responsibility and the extension of responsible practices throughout the supply chain. We assess our own conformance with the EICC Code using the EICC's self-assessment tools for each of our manufacturing sites, and make the results available to our customers. To date, the results indicate a low risk of non-conformance with the EICC Code. In addition, we are working with key customers to participate in the EICC Validated Audit Process.

GLOBALFOUNDRIES has established the Ethics & Compliance Office within the Legal Department to develop, coordinate, and support the compliance program and foster a culture of principled behavior and decision-making. This Office is responsible for promoting employee awareness, education, and training, as well as for creating and implementing a program to assess risks and proactively prevent and detect unlawful/unethical conduct. The Ethics & Compliance Office works closely with the Ethics Committee (including the Chief Human Resources Officer, Chief Financial Officer, and Chief Legal Officer), which is the body charged by the Board of Directors to oversee the compliance program. ▶





## 03 GOVERNANCE

The GLOBALFOUNDRIES Ethics First Helpline is accessible 24 hours a day, 365 days a year, enabling employees and stakeholders to inquire directly about the compliance program and report potential violations and other concerns. The Helpline is available to employees and contractors as well as customers, suppliers, and vendors globally. We promptly review all reports, and the company has a strong non-retaliation policy to protect anyone who makes a good-faith report. Investigations of complaints are overseen by the GLOBALFOUNDRIES Ethics & Compliance Office, supported confidentially by other internal organizations such as Internal Audit and Global Security.

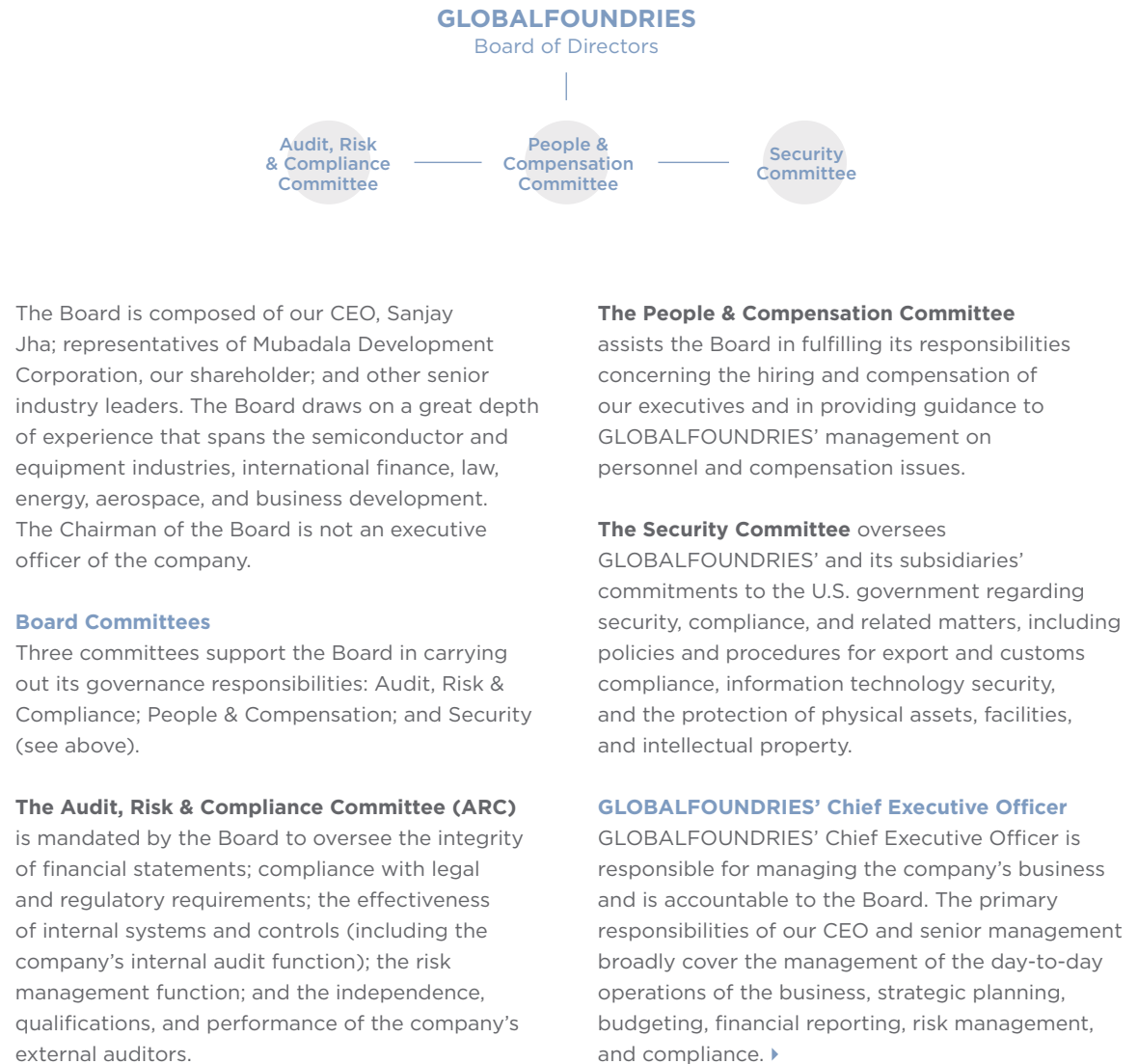
### Governance

Corporate governance addresses the way in which companies are directed, controlled, and managed. Our governance framework is focused on four pillars: responsibility, fairness, transparency, and accountability.

### Board of Directors

The Board of Directors (the Board) is the body charged with the ultimate responsibility for ensuring appropriate governance across the organization, and establishes the “tone at the top.”

The Board reviews and determines the company’s strategy, monitors and assesses the company’s corporate and financial performance, establishes and monitors effective compliance systems and policies, and oversees the performance of GLOBALFOUNDRIES’ executive management.



## 03 GOVERNANCE

### Support for the Board and its Committees

With the ARC, the Legal Department and the Internal Controls Department are mandated by the CEO to oversee corporate governance at GLOBALFOUNDRIES. Together, the Legal Department and the Internal Controls Department ensure that the organization adheres to the company's corporate governance framework and associated policies and procedures, provide guidance, and ensure training sessions are conducted on a regular basis.

Internal and external auditors play crucial roles in assisting the Board and management. External auditors are responsible for auditing the financial statements of the company. The Internal Audit organization plays an important role in providing the Board and senior management with objective assurance support for the business and consulting services. Internal Audit evaluates the effectiveness of risk management, internal controls, and governance processes, and makes recommendations for improvement. Internal Audit also acts as a bridge between the Board and management, and reports to the ARC Committee.

In addition, the Compliance Network promotes our culture of principled behavior and decision-making. The Compliance Network consists of a group of influential employees who serve as Ethics & Compliance representatives to help identify key compliance risks, drive engagement, and ensure that training and communications are tailored to the needs of the individual sites.

### Delegation of Authority

GLOBALFOUNDRIES is an integral part of the Mubadala Group. An important mechanism in maintaining a strong relationship with our sole shareholder is the shareholder-approved Delegation of Authority (DOA). The DOA allows the shareholder to exercise control and oversight over the authority levels within the company.

The DOA is a critical component of our corporate governance structure. In accordance with the GLOBALFOUNDRIES' DOA, the Board has delegated certain of its powers to the Board Committees, the CEO, and management. The Board, management, employees, contractors, agents, and anyone acting on behalf of GLOBALFOUNDRIES are responsible for ensuring that they operate in accordance with the DOA. On an ongoing basis, management in coordination with the ARC ensures that the DOA is appropriate for the nature of the business and that it is reviewed on an annual basis.

### Executive CSR Council

In addition to the oversight provided by the Board and its committees, the GLOBALFOUNDRIES Executive CSR Council is responsible for setting strategic direction, conducting management review, and providing approval for global Environmental, Health & Safety (EHS) and Corporate Social Responsibility (CSR) matters. The Executive CSR Council membership includes senior executives from Global Operations; Global Sales and Business Development; Global Supply Management; Communications; Legal (including Ethics & Compliance); Human Resources; and Risk Management, Sustainability, and Real Estate.

### Risk Management

GLOBALFOUNDRIES manages risk at the enterprise, business, and functional levels. Our structured approach enables us to identify critical risks and target mitigation programs at the appropriate level to avoid loss, disruption, or interruption of mission-critical activities and systems. We routinely review and update our business resilience and preparation, including risk mitigation and business continuity plans. Each year, our manufacturing sites and business units identify the potential operational and natural disaster risks that present business continuity challenges. Executive management conducts an annual review of prioritized risks and our related mitigation strategies, projects, and goals.

Protecting the intellectual property of GLOBALFOUNDRIES and our customers and suppliers is a critical risk-management focus area. GLOBALFOUNDRIES' growing portfolio of intellectual property advances our leadership in manufacturing technology and strengthens our competitive position. We adhere to strict policies and procedures at all times to ensure the security of company confidential information and the confidential information of our customers and suppliers. Our Enterprise Security Council brings together expertise in both information security and physical security to address potential threats. ●

04

# STAKEHOLDER ENGAGEMENT



Our key stakeholders have a significant interest in our business and help shape our company and the products and services we provide. We regularly engage with our employees, customers, suppliers, communities, and industry peers, sharing perspectives and gaining valuable insight relevant to our business and operations.

## CUSTOMERS

GLOBALFOUNDRIES is committed to being the most customer-centric partner in the industry, working with customers to achieve their business objectives. The design of today's complex integrated circuits requires state-of-the-art electronic design automation (EDA) software tools, design intellectual property (IP), design services, mask services, and assembly solutions. GLOBALFOUNDRIES supports customers in achieving successful designs by partnering with leading providers in these areas.

Engineering collaboration with customers unlocks and enables the power of customer designs through wafer manufacturing, bump, and package technologies. GLOBALFOUNDRIES reviews and analyzes customer feedback through a number of tools, including Quarterly Business Reviews, to continuously improve our quality and service. The relationships we maintain through ongoing dialogue and collaboration ensure that we understand our customers' expectations, including a shared commitment to social and environmental responsibility. ▶

## 04 STAKEHOLDER ENGAGEMENT

### EMPLOYEES

We take great pride in the dedication and commitment of our global workforce to GLOBALFOUNDRIES' success. We nurture a performance-based culture in an environment that encourages individual development, collaboration, and new ideas. Employees stay current on corporate and local site information through a number of communication formats, including our internal weekly global news digest, our company intranet (GlobalConnect), regular corporate and employee communications, and town hall meetings, all of which include opportunities to ask questions and provide feedback. Employees also engage and share their ideas through participation in various committees at the site level.

In 2015, the Singapore EHS-Security team pioneered the *GlobalEchoes* monthly newsletter to engage with site stakeholders on environmental, health, safety, and security issues. The effort was well received, and in 2016 the Dresden and U.S. fab sites built upon Singapore's successful example with local versions of *GlobalEchoes* tailored to enhance engagement with their site stakeholders.

### COMMUNITIES

Along with our global footprint comes a responsibility to the communities in which we operate. At a worldwide level, we aim to drive programs that are specifically focused on education outreach, philanthropy, and the environment. ▶



Senior Vice President and General Manager Tom Caulfield and our Fab 8 employees partnered with the U.S. Marine Corps Reserve's Toys for Tots Program in 2015, donating more than 2,000 toys to children in New York's Capital Region community.



Green Mountain Power and the town of Williston partnered with GLOBALFOUNDRIES to develop a 4.7 megawatt solar facility located on our Vermont campus. The facility will provide enough electricity to power 1,100 homes in the region.

## 04 STAKEHOLDER ENGAGEMENT

### SUPPLIERS

Suppliers of goods and services play a critical role in our business. Our supplier relationships are built on a foundation of trust and integrity. We strive to establish long-term working relationships through mutual performance expectations and measures, performance feedback, and continuous improvement plans. We engage with our suppliers through measures such as periodic business reviews and our Total Supplier Rating (TSR) process to determine supplier performance with

regard to technology, quality, cost, flexibility, and service including Environmental, Health & Safety (EHS) and Corporate Social Responsibility (CSR). EHS and CSR expectations are established early in supplier relationships to improve efficiency and reduce risks throughout the supply chain. GLOBALFOUNDRIES' commitment to the EICC Code has been well communicated and continues as a focal point of engagement.

### INDUSTRY COLLABORATION

Through our participation—and leadership—in semiconductor industry trade associations, we gain valuable insight into the economic, social, and environmental trends that affect our business. These groups include the Semiconductor Industry Association (SIA), the European Semiconductor Industry Association (ESIA), the World Semiconductor Council (WSC), the Global Semiconductor Alliance (GSA), Semiconductor Equipment and Materials International (SEMI), ZVEI (a leading German electronics trade association), and the Electronic Industry Citizenship Coalition (EICC).

GSA's membership spans the entire semiconductor ecosystem, representing the world's best integrated device manufacturers, fabless companies, and their suppliers. These associations are engaged in a wide variety of public policy matters ranging from trade, tax, and environmental policy to promoting STEM education

and the adoption of energy-efficient technologies. SIA, ESIA, the WSC, and SEMI all have active EHS committees. GLOBALFOUNDRIES is also a member of the Abu Dhabi Sustainability Group (ADSG), established in 2008 by the Environment Agency Abu Dhabi and the Executive Council to promote sustainability management by providing policy support, education, and knowledge-sharing opportunities for government, private companies, and non-profit organizations.

Since our inception, GLOBALFOUNDRIES has been committed to the EICC Code of Conduct and its continuous pursuit of excellence in corporate responsibility and the extension of responsible practices throughout the supply chain. GLOBALFOUNDRIES fully supports the vision and goals of the EICC, and we are working toward convergence with best practices in our own operations as well as with our major suppliers. ▶

## 04 STAKEHOLDER ENGAGEMENT

### The Materiality Analysis

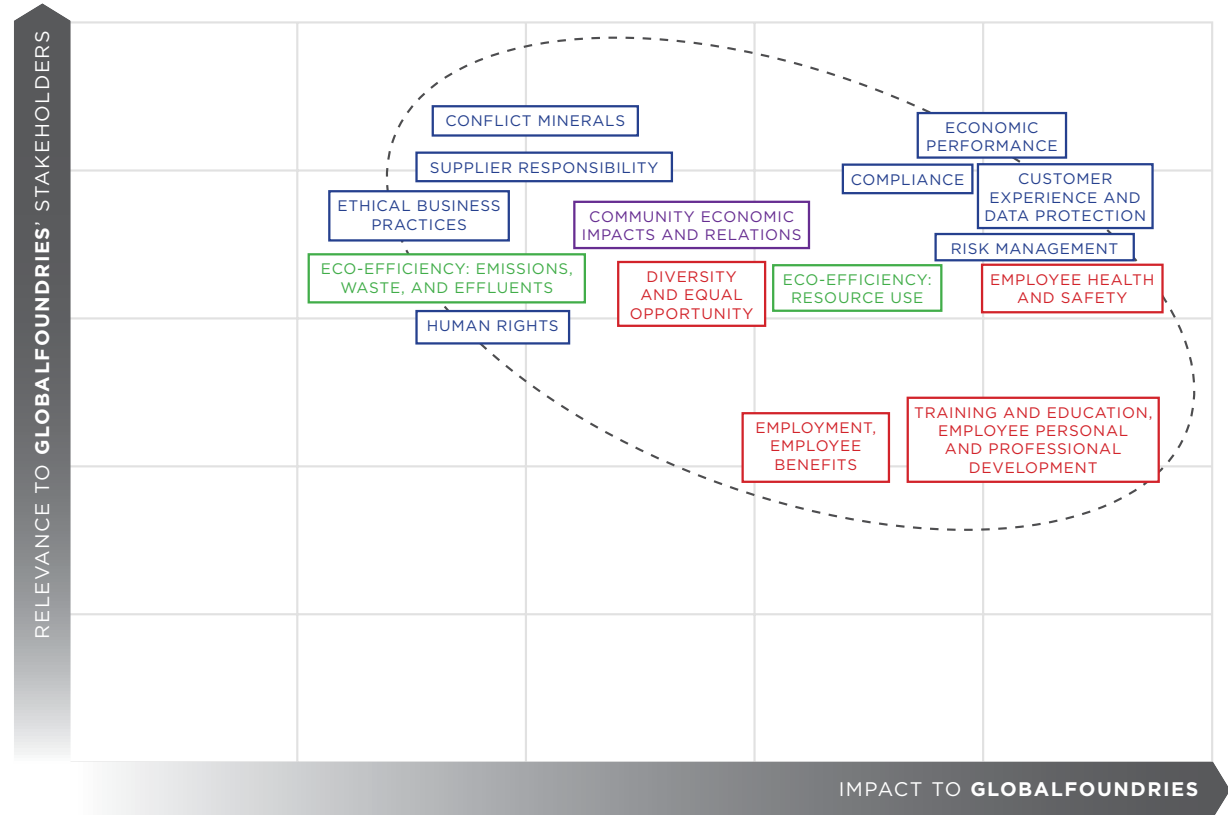
We conducted an internal materiality analysis in 2016 to identify topics considered material to GLOBALFOUNDRIES. To do so, we assembled a team representing different organizations from within our company that reflect a diverse spectrum of perspectives on GLOBALFOUNDRIES, as well as a multitude of insights into internal and external stakeholder expectations and perceptions.

The Materiality Analysis Team is composed of senior representatives from a cross section of GLOBALFOUNDRIES organizations: Communications, Customer Engineering, Ethics & Compliance, Global EHS & Corporate Social Responsibility, Global Supply Management, Human Resources, Product Management, Risk Management, Sustainability, and Real Estate.

Team members were nominated by our CSR Executive Committee based on their role within the company, as well as their insights into internal and external stakeholders' perspectives as per their function within the company. In conducting the materiality analysis, the team started by identifying potential material topics. In subsequent and iterative steps, these topics were prioritized with regard to their economic, environmental, and social impacts to GLOBALFOUNDRIES, as well as their perceived level of importance to internal and external stakeholders.

The resulting materiality map, as presented at right in FIGURE 1, was reviewed and approved by GLOBALFOUNDRIES' Executive CSR Council. ●

**FIGURE 1** GLOBALFOUNDRIES' Materiality Map (Per Materiality Analysis Performed In Q2 2016)





05

# SUPPLIER RESPONSIBILITY



GLOBALFOUNDRIES' commitment to corporate responsibility extends to ensuring that our suppliers follow ethical and responsible business practices. Our supply chain consists primarily of manufacturers of highly specialized semiconductor manufacturing equipment and materials, as well as highly specialized business services. The vast majority of our suppliers conduct their operations in the United States, Germany and other EU countries, Japan, Singapore, and Taiwan—countries with strong regulatory systems defining the cornerstones of responsible business.

In 2009, our founding year, GLOBALFOUNDRIES adopted the Electronics Industry Citizenship Coalition (EICC) Code of Conduct to align our approach to supply chain CSR with this industry-wide commitment to socially and environmentally responsible business practices. GLOBALFOUNDRIES implements and re-enforces the EICC Code through our supplier management process. Our Global Supplier and Subcontractor Management Policy, standard supplier agreements, and purchase order terms and conditions all require conformance with the EICC Code.

We conduct regular supplier surveys to determine our suppliers' risk of non-conformance with the EICC Code's expectations. We employ industry-standard self-assessment tools with our top tier suppliers, as well as other suppliers based on an assessment of potential risk. Where applicable, the results of EICC non-conformance risk assessments are included in our Total Supplier Rating (TSR) process. We continue to develop our supplier assessment program with measures such as on-site verification. ▶

## 05 SUPPLIER RESPONSIBILITY

### Conflict Minerals—Achieving a DRC Conflict-Free Supply Chain

GLOBALFOUNDRIES is conscious of the severe human right abuses in conflict regions of the Democratic Republic of Congo (DRC) and adjoining countries, and the financial support that comes from extractive minerals production. We are proud to have achieved a fully “DRC Conflict-Free” supply chain. As of January 2016, all GLOBALFOUNDRIES sourcing of tantalum, tin, tungsten, and gold (“3TG metals”) is from smelters included on the list of compliant smelters maintained through the CFSI’s Conflict-Free Smelter Program (CFSP). Any new commodities including 3TG metals must be sourced only from CFSP-compliant smelters.

The 3TG metals are used in numerous applications throughout the electronics industry. In the complex, multi-step silicon wafer manufacturing process, tantalum and tungsten are added to achieve the desired functionalities of integrated circuits. The commodities we purchase that contain tantalum or tungsten include high-purity targets used in physical vapor deposition (PVD) and process gases and chemicals, all of which are used to deposit ultra-thin films of these metals directly onto the wafer surface. Tin and gold are used in post-wafer fab process steps, such as in interconnect materials in wafer bump or wafer packaging, and in components used for semiconductor module assembly.

GLOBALFOUNDRIES has supported global efforts to achieve a DRC conflict-free supply chain in the sourcing of 3TG metals since 2009, and is a member of the Conflict-Free Sourcing Initiative (CFSI). GLOBALFOUNDRIES established a conflict minerals policy which prohibits sourcing that contributes to financing armed conflict and human rights abuses in the conflict regions of the DRC and adjoining countries.

We conducted a thorough assessment of our supply base to identify all 3TG metals suppliers. We worked with these suppliers to identify all smelters in our extended supply chain and determined their progress in moving towards certification as CFSI “DRC Conflict-Free” smelters.

To support our customers’ needs for reporting under the United States Securities and Exchange Commission’s (SEC) Conflict Minerals Rule (regulations under the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act), we routinely provide due diligence information using industry-standard reporting tools and processes. Our conflict minerals program and progress are reviewed periodically by the Executive CSR Council. ●



Peter Benyon, Vice President and General Manager of GLOBALFOUNDRIES Fab 7 in Singapore, presenting an outstanding service award to Eric Poh, Lam Research, at the 2015 GLOBALFOUNDRIES Singapore Supplier Appreciation Event

06

# OUR PEOPLE AND WORKPLACE



GLOBALFOUNDRIES relies upon our people to deliver on our mission to enable our customers' success with the right technology at the right time.

Individuals with varied backgrounds enrich our ideas and drive innovation. Our strength lies in the talent and diversity of our employees, who bring a range of capabilities, experiences, and qualifications that give us a competitive advantage in our global markets.

GLOBALFOUNDRIES strives to create a working environment that respects diversity and allows employees the opportunity to learn, grow, and develop their talents. TABLE 1 shows a breakdown of our workforce and our leadership team by region and by gender. ▶

**TABLE 1** Employee And Leadership Team Composition Data (As Of December 2015)

INDICATOR	TOTAL	MEN	WOMEN
<b>Number of Employees</b>	18,500	75%	25%
• USA	44%	79%	21%
• Europe, Middle East, Africa	21%	82%	18%
• Asia Pacific / China	35%	65%	35%
<b>Senior Leadership Team</b>	18	89%	11%
<b>Board</b>	10	90%	10%

## 07 OUR PEOPLE AND WORKPLACE

While we naturally have an international workforce due to the span of our global locations, GLOBALFOUNDRIES is also proud to be an employer of a highly diverse workforce within our sites. For example, at Fab 8 in New York, GLOBALFOUNDRIES has created close to 3,000 new direct jobs since breaking ground on the project in 2009. Our unique and diverse workforce is drawn from local talent as well as experienced professionals from across the United States and represents more than 50 nationalities. Similarly, while the majority of our workforce at Fab 1 in Dresden, Germany, is hired locally, the fab is home to employees from more than 50 nations.

With respect to gender diversity, we are committed to the advancement of women at GLOBALFOUNDRIES. In 2013, we initiated GLOBALWOMEN, a program that provides a networking forum and focuses on creating a sustainable framework for the professional growth of women. GLOBALWOMEN pursues initiatives designed to make a positive impact on women and our business by increasing awareness of gender diversity and leveraging the critical role of women in the GLOBALFOUNDRIES workplace. GLOBALWOMEN has been expanded across the U.S. and to our newly acquired sites. ▶

### STEP Ahead **Recognition** for **GLOBALFOUNDRIES** Employees

On April 21, 2016, GLOBALFOUNDRIES joined leaders from more than 200 companies to honor 130 women in manufacturing at an evening celebration in Washington, D.C. Launched by the Manufacturing Institute, the STEP Ahead initiative honors and promotes the role of women who have made significant contributions in the fields of Science, Technology, Engineering, and Production (STEP). GLOBALFOUNDRIES helped develop STEP Ahead as a charter member of the Advisory Board.

Representing GLOBALFOUNDRIES at the STEP Ahead Awards were Deb Leach, Senior Director of Procurement, Fab 8; and Amelia Folkins, Manager for Equipment Engineering (Etch), Fab 10. Deb and Amelia were two of the four Emerging Leaders and Honorees from New York State. STEP Emerging Leaders are women

**Amelia Folkins**  
Manager for Equipment  
Engineering, Fab 10



**Deb Leach**  
Senior Director of  
Procurement, Fab 8



in the industry who are making significant contributions and excelling early in their careers. STEP Honorees are women in the industry who have demonstrated excellence and leadership in their careers, from the factory floor to the C-Suite.

STEP Ahead plays an integral role in GLOBALFOUNDRIES' strategy to increase gender diversity and ensure a sustainable pipeline of skilled talent. Deb and Amelia follow in the footsteps of Alexie Lee, Chief of Staff to CEO Sanjay Jha, who was the first GLOBALFOUNDRIES employee nominated for this distinguished award when the initiative launched in 2013.

## 07 OUR PEOPLE AND WORKPLACE

### Compensation & Benefits

GLOBALFOUNDRIES' Global Benefits Strategy is to provide compliant and cost-effective benefit programs that are considered competitive against current local market norms. Our goal is to gain balance between global standardization and local customization, while offering our employees protection and flexibility with their benefit offerings. We recognize that benefit environments vary by country, and therefore the types of benefit plans we offer reflect the prevailing local market practices. Benefits under this strategy include healthcare, risk benefits such as personal insurance, retirement/savings, time off, educational assistance, and other location-specific benefits.

For example, GLOBALFOUNDRIES' approach to parental leave for employees for the birth or adoption of a child is based on a combination of national and local leave entitlements implemented through our regional leave policies. As shown in TABLE 2, more than 95 percent of employees who have taken a parental leave returned to work, with a 7 percent difference between the rates for men and women. The subsequent retention rate for employees following parental leave was more than 84 percent, with a difference between men and women that is similar to the return to work rate.

**TABLE 2** Parental Leave Data (2015)

INDICATOR	TOTAL	MEN	WOMEN
Return to Work After Parental Leave*	95%	97%	90%
Retention Rate After Parental Leave**	85%	87%	79%

\*OF THE EMPLOYEES WHO TOOK PARENTAL LEAVE IN 2014, 97% RETURNED TO WORK AFTER LEAVE

\*\*OF THE EMPLOYEES WHO TOOK PARENTAL LEAVE IN 2015, 85% WERE STILL EMPLOYED AS OF MAY 2016

### Human Rights

GLOBALFOUNDRIES is strongly committed to protecting the fundamental rights of all people. We strive to maintain a fair and open workplace based on a culture of respect, dignity, and integrity for all. As outlined in our Worldwide Standards: GLOBALFOUNDRIES Code of Conduct, the company strictly forbids all forms of child labor and forced, compulsory, or trafficked labor in the operation of our business, and we require the same from our suppliers. We respect the rights of employees to associate freely and have a zero-tolerance policy against harassment, including sexual harassment, and discrimination based on age, ancestry, color, marital status, medical condition, mental or physical disability, national origin, race, religion, political and/or third-party affiliation, sex, sexual orientation, gender identity, or veteran status.

### Employee Education & Training

At GLOBALFOUNDRIES, we recognize the importance of developing our people as a cornerstone of our success. To do that, we provide employees with opportunities to enhance their knowledge, skills, and abilities through technical and corporate training programs. Using the three pillars of Experience, Exposure, and Education, we offer instructor-led courses, e-learning, videos, interactive simulations, and job aid education solutions. We also support our employees' development through mentoring, professional certifications, and partnerships with outside organizations. We are building the foundation of a learning culture where all employees, from individual contributors to senior executives, learn and grow through new challenges, job rotations, special projects, and ongoing feedback from their managers. We incorporate all of these developmental opportunities through our annual performance evaluation process.

### Health & Safety

Protecting the health, safety, and well-being of our employees, visitors, and communities is one of our greatest responsibilities, one that we embrace proactively and systematically. We are committed to Behavior-Based Safety (BBS), a collaborative approach to safety that recognizes and facilitates individual safety awareness and behaviors, with collective results. We strive to continuously reduce occupational injuries and illnesses in all of our operations, with an ultimate goal of zero incidents. All of our manufacturing facilities are certified to the OHSAS 18001 standard for health and safety management systems. Our OHSAS certificates are available [here](#). ▶

## 07 OUR PEOPLE AND WORKPLACE

Our Global EHS Policy and Standards are the foundation of health and safety management systems at each manufacturing location. The Standards provide a consistent standard of care, and set performance expectations applicable globally throughout the company. Our Standards cover a wide range of health and safety aspects, including injury and illness prevention, electrical safety, chemical safety, and industrial hygiene monitoring programs. GLOBALFOUNDRIES' health and safety professionals, management, and employees share responsibility for implementing the Standards at each fab site through local programs and operating procedures.

Health and safety professionals engage with operational personnel to analyze potential process hazards and mitigate them according to the following hierarchy of controls:

- ▶ Elimination (example—eliminate use of a material)
- ▶ Substitution (example—substitute a less hazardous process or material for a more hazardous one)
- ▶ Engineering controls (examples—ventilation, equipment interlocks, enclosure/segregation, etc.)
- ▶ Administrative procedures (examples—procedures, training, etc.)
- ▶ Personal protective equipment (to manage any residual risks after all other controls have been implemented).

Behavior-Based Safety emphasizes communications, engagement, and training to encourage safe behaviors. We provide a wide range of general and job-specific health and safety training to our employees and contractors.

We strive for continuous improvement of our processes and performance as well as the semiconductor industry. Our Risk Management, Sustainability & Real Estate organization (RMSRE) provides a unique platform for collaboration and integration across the disciplines of Safety, Environmental, Industrial Hygiene, Health, Security, Real Estate, and Risk Management—united in the pursuit of operational excellence and the mitigation of risks to our people, communities, and assets.

The RMSRE Centers of Excellence program provides opportunities for staff from different sites to work together in order to drive global integration and best practice identification and implementation. We also encourage and make available our health and safety professionals to help improve health and safety in the industry by contributing to the development of industry-wide standards. ▶

### Health and Safety Recognition

Both GLOBALFOUNDRIES Fab 9 and Fab 10 are recognized as OSHA VPP (Voluntary Protection Programs) Star sites. The VPP Star designation is held by only a small fraction of companies in the U.S. and is based upon measurable results, continuous improvement, and on-site audits that demonstrate excellence in areas such as management leadership and employee involvement, worksite analysis, hazard prevention and control, and safety and health training.

All three GLOBALFOUNDRIES Singapore entities have been awarded 2015 and 2016 silver awards at the Workplace Safety and Health (WSH) Awards. The WSH Performance Award was started in 2006 by the Singapore Workplace Safety and Health Council and the Singapore Ministry of Manpower, and recognizes organizations that have achieved excellent performance in WSH through the implementation of sound WSH management systems or processes. “We are very honored and motivated to receive three awards this year for all our sites. This affirms our continued efforts to achieve a safer and healthier workplace for everyone,” said Kay Chai “KC” Ang, Senior Vice President and General Manager, Singapore Operations.



KC Ang, Senior Vice President and General Manager, GLOBALFOUNDRIES Singapore and members of the EHS & Security team celebrate receiving Silver Workplace Safety and Health (WSH) Awards at the 2016 WSH Award Ceremony.



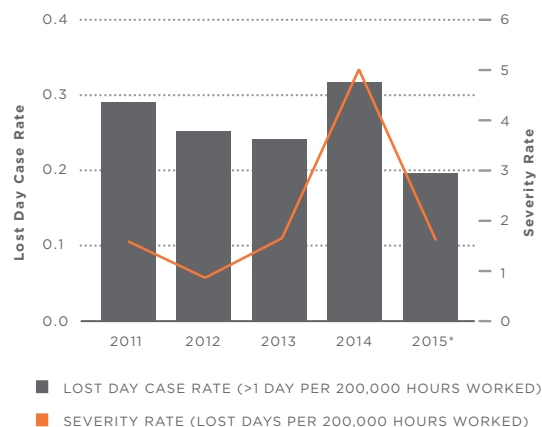
## 07 OUR PEOPLE AND WORKPLACE

### Safety in the Workplace

GLOBALFOUNDRIES measures the performance of our health and safety programs using a lost work day case rate\* and severity case rate.\* We evaluate all occupational injuries and illness cases to identify their root causes and determine appropriate preventive measures or corrective actions.

As shown in FIGURE 2, from 2011 to 2015 our employee lost work day case rate declined from 0.29 in 2011 to 0.2 in 2015, with a spike of 0.31 during 2014. In comparison, the 2014 U.S. Lost Work Day Incidence Rate (the most recent year for which this number is available) for the semiconductor industry was 0.3.

**FIGURE 2** Lost Day Case Rates & Severity Case Rates



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

**Note:** GLOBALFOUNDRIES defines a lost work day case as any injury requiring one or more days away from work. For comparative purposes, we have provided Lost Day Case rates for "Semiconductor and related device manufacturing" (NAICS Code 334413) compiled by the U.S. Bureau of Labor Statistics.

### Managing Chemicals Safely

Semiconductor processing takes place in a highly controlled cleanroom environment. Manufacturing equipment and chemical/gas distribution systems are completely enclosed to maintain an ultra-clean manufacturing space and provide safe working conditions. Stringent material handling procedures include automated chemical delivery systems and sophisticated manufacturing equipment that incorporates multiple engineering controls to minimize the risk of chemical exposure for employees working in the cleanroom and chemical distribution areas.

GLOBALFOUNDRIES' chemical review processes ensure that all new chemicals are thoroughly reviewed before introduction to our sites, and that proper safeguards and material handling procedures are in place. Our chemical management systems at each site provide employees with ready access to Safety Data Sheets and identification of appropriate personal protective equipment.

### Promoting Health and Well-Being

We place great value on our employees' overall health and wellness. Each of our manufacturing facilities has an on-site clinic and medical professionals who administer health and wellness programs in collaboration with Human Resources. We encourage employees to live healthy, active lives, and provide them with access to a variety of activities such as vaccinations, health screenings and surveillance, first aid training, and safety tips for travelers.

Our ongoing wellness programs provide many opportunities for employees and their families to learn about healthy living and lifestyles. For example, our Dresden facility provides information about healthy diets, sports and fitness activities, and health-related benefits provided by GLOBALFOUNDRIES on an intranet-based health portal. Further measures include, among others, on-site flu vaccinations, educational ergonomics presentations, specific on-site training for First Aiders, specific medical examinations, and biometric screening.

Our U.S. fabs' wellness services include benefits such as on-site flu vaccinations, educational presentations, health and benefits fairs, and biometric screening events (screening and counseling on weight, blood pressure, cholesterol, and blood sugar). In addition, GLOBALFOUNDRIES' Employee Assistance Program (EAP) provides all U.S. employees and their families with confidential access to resources to help with life management issues.

#### Resources include:

- ▶ Short-term counseling sessions
- ▶ Legal and financial services
- ▶ Childcare, eldercare, and adoption references

Our Singapore employees have access to a variety of wellness opportunities, including fitness facilities where they can participate in fitness classes and other organized activities that promote a healthy, active lifestyle. ●



07

## COMMUNITY ENGAGEMENT

Our company has a global footprint, and with it a responsibility to the communities in which we have a presence—a responsibility that extends beyond just meeting regulatory expectations. At a worldwide level, we look toward driving programs that are specifically focused on education outreach, philanthropy, and the environment.

Each of our fab locations has well-established programs and teams dedicated to enriching the lives of local citizens, and we take great pride in their long history of community involvement. Through the GlobalGives program, we are building upon these grassroots efforts, embracing them as integral to our company identity and connecting employees and teams to a larger international effort. The GlobalGives platform provides employees with direct access to more than two million non-profit organizations to facilitate both employee giving and volunteer engagement. It also provides an effective mechanism at the corporate level for disaster response. ▶



“GLOBALFOUNDRIES TAKES OUR COMMITMENT TO CORPORATE RESPONSIBILITY VERY SERIOUSLY. WE STRIVE TO IMPROVE THE QUALITY OF LIFE IN OUR COMMUNITIES THROUGH OUR EMPLOYEES’ VOLUNTEER EFFORTS AND SUPPORT OF EDUCATION, HUMAN SERVICES, AND ENVIRONMENTAL PROTECTION INITIATIVES. WE HAVE A TRACK RECORD OF GETTING INVOLVED, BECAUSE IT IS SIMPLY THE RIGHT THING TO DO.”

▶ **MIKE CADIGAN**

*Senior Vice President, Global Sales and Business Development / ASICS BU and Corporate Executive Sponsor for Community Involvement at GLOBALFOUNDRIES*

## 07 COMMUNITY ENGAGEMENT

### Education Outreach

GLOBALFOUNDRIES strives to promote, develop, and support educational programs, both inside and outside the classroom, as well as in our homes and local communities. Our many activities include developing, supporting, and expanding upon educational programs in the STEM (Science, Technology, Engineering, and Math) fields, providing experiential learning opportunities for students and teachers, establishing early college technology programs in high schools, providing mentorships for girls pursuing careers in technology, and providing potential employment opportunities for graduates in advanced manufacturing, among others.

### Some of the specific programs we have supported include:

- **TechTuesday**, which introduces local schoolchildren to STEM activities (Malta, NY);
- **GLOBALGirls**, an initiative aimed at promoting interest and excitement in STEM among elementary, middle, and high school age girls (U.S.);
- **GLOBALAmbassadors**, designed to strengthen GLOBALFOUNDRIES' engagement with the education community and support the development of a skilled talent pipeline (U.S.);



- **FIRST®** (For Inspiration and Recognition of Science and Technology) programs, designed to motivate young people to pursue education and career opportunities in STEM, while building self-confidence, knowledge, and life skills (Malta, NY);

- **Microelectronics Academy**, which gives top young engineers exposure to the technical challenges of the semiconductor industry (Dresden, Germany);
- **Global STEM Initiative**, which provides funding for STEM programs and activities at all of our worldwide locations (Global); and



Festive award ceremony for 2016 winners of the Saxon "Jugend forscht" contest with Saxon Minister of Education Brunhild Kurth and representatives of the cosponsoring companies. © 2016 EVENT MODULE DRESDEN

- **"Jugend Forscht"** (Youth in Science) Saxony, a regional competition that supports creative talents and encourages young people to put their ideas into practice (Dresden, Germany). ►

## 07 COMMUNITY ENGAGEMENT

### Philanthropy

We believe the success of our company is directly related to the health of the communities we call home. GLOBALFOUNDRIES and its employees make a difference by generously volunteering their time and donating money and goods to support a wide variety of philanthropic causes, helping to improve the quality of life in our communities.

Our Calendars for Charity program leverages the winning images from our annual employee photo contest to create calendars that are given to employees in recognition of their charitable donations made in support of their local communities.

Some of the many local programs we have supported across the company include:

- **Hair for Hope**, which serves to raise funds and promote awareness of childhood cancer (Singapore);



- **Family Giving Tree Holiday Wish Drive**, which provides gifts to children in need (Santa Clara, California);
- **Operation Holiday Happiness**, which provides gifts for needy families in local communities (East Fishkill, NY);
- **Children's Outreach Program**, which provides gifts and donations to children separated from their families (Dresden, Germany);
- **Burlington Site Food Drive**, which provides food to help fight hunger in the local community (Burlington, VT);

**WE ARE COMMITTED TO BUILDING UPON THE EFFORTS OF OUR INDIVIDUAL SITES TO ESTABLISH A COMPANY-WIDE COMMUNITY INVOLVEMENT INITIATIVE. WE HAVE ACHIEVED A MAJOR MILESTONE—THE LAUNCH OF GLOBALGIVES AND OUR CHARITABLE GIVING PLATFORM. NOW, GLOBALFOUNDRIES HAS A HOLISTIC VIEW OF OUR EMPLOYEES' GLOBAL GIVING AND VOLUNTEER EFFORTS, AND THE ABILITY TO LEVERAGE THOSE FOR THE GREATER GOOD AND AS A GREAT SOURCE OF PRIDE.**

- **Christmas Celebration** supporting the Mathru Educational Trust for the Blind, which provides funds to purchase custom-made notebooks for children at the school (Bangalore, India); and
- **Malta Food and Toy Drives**, which provide much-needed food to the Food Pantries of the Capital District, and toys to needy children through the Toys for Tots program (Malta, New York).

Together with the towns of Malta and Stillwater, GLOBALFOUNDRIES established and funded two charitable foundations, specifically designed to benefit the communities located near our Malta, NY, site. These foundations fund and support a wide variety of local community programs, not-for-profit organizations, and other charitable causes that have been benefiting the towns of Malta and Stillwater since the first grants in 2012. With the 2016 awards, the foundations will have exceeded \$1 million in total grants invested in the communities and retain healthy endowments for continued, future giving.

GLOBALFOUNDRIES strives to support valuable education outreach programs, improve the quality of life in our communities through our charitable and volunteer efforts, and implement processes and technologies that minimize our impact on the environment. We take great pride in these efforts as an important aspect of our brand identity and a reflection of our values. ●

08

# SUSTAINABLE MANUFACTURING AND OPERATIONS

GLOBALFOUNDRIES is committed to eco-efficiency in foundry operations. We define eco-efficiency as the optimization of resources to yield products meeting stringent GLOBALFOUNDRIES and customer performance and quality criteria.

---



Semiconductor manufacturing operations must be both highly efficient and extremely flexible to deliver optimal results in a fast-paced and demanding market. We are committed to providing differentiated manufacturing services that value speed, accuracy, and agility to help ensure that our customers are consistently provided with the right technologies at the right time that meet or exceed their specifications for quality and reliability.

Producing advanced integrated circuits at ever-smaller geometries requires exacting manufacturing processes. As integrated circuit line widths shrink and products become more complex, so too does the number of manufacturing steps and the intensity of resource use per wafer. Getting the most from those resources is fundamental to the sustainability of our manufacturing and our customers' products. ▶



## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

### Leadership in Advanced Manufacturing

Our newest, most advanced manufacturing facility, Fab 8 in Malta, New York, strategically positions GLOBALFOUNDRIES as a foundry leader in globally distributed capacity.

Fab 8 is a cornerstone of upstate New York's "Tech Valley" region and is the largest public-private sector industrial investment in New York State's history. With our manufacturing facilities in East Fishkill, New York; Burlington, Vermont; Singapore; and Dresden, Germany, GLOBALFOUNDRIES' manufacturing capabilities span three continents, offering our customers a flexible and secure long-term supply source that is unique in the pure play foundry industry.

The current capital investment for the Fab 8 campus is more than \$12 billion. The majority of this investment has been directed towards supporting the ramp of our leading-edge 14nm technologies.

Since breaking ground on Fab 8 in 2009, GLOBALFOUNDRIES has created approximately 3,000 new jobs. These new jobs support an additional 15,000 indirect jobs in the economy, based on research by the Semiconductor Industry Association. The Fab 8 project has required more than 6 million man hours to complete to date, and created more than 20,000 new construction jobs on site and thousands of additional local construction-related jobs.

The Fab 8 campus integrates green building principles and practices as part of the site design, construction, and operation. Some of the energy-efficient features include the use of high-efficiency equipment, smart controls, and innovative heat recovery systems. Our goal is to achieve U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification for several projects at the campus.

The Admin 2 building achieved LEED Gold level certification in April 2014, followed by Admin 1, which received LEED Gold level certification in June 2015.

Fab 8 is an ideal home for GLOBALFOUNDRIES' leading-edge manufacturing and technology development activities. Working within the Joint Development Alliance in Albany and Polytechnic Institute at the State University of New York (SUNY Poly), combined with the growing presence of technology development personnel on the Fab 8 campus, we have helped make New York's Tech Valley a global center for next-generation technologies.

The significance of GLOBALFOUNDRIES' investment, and both its impact on the local economy and its importance to advanced manufacturing in the U.S., have been recognized by Governor Andrew Cuomo of New York, and by U.S. President Barack Obama.

In addition to our substantial capital investment in the Fab 8 campus and creation of direct jobs, the Capital Region has benefited from an estimated growth of approximately 15,000 indirect jobs, plus the 20,000 construction jobs previously mentioned. The region has also benefited from our support of local education through numerous initiatives. The following are a few examples of those programs:

#### **TechValley Connection for Education and Jobs:**

Launched in 2012, this regional program collects and builds upon innovative practices and ideas in education to help ensure that students acquire the skills that businesses require to be successful into the future.

**First Robotics:** GLOBALFOUNDRIES is honored to be among an extensive network of corporations, educational and professional institutions, foundations, and individuals that support FIRST robotics programs in New York's Tech Valley and the Northeast Tech Corridor.

As part of our partnership with the organization, GLOBALFOUNDRIES has pledged \$25,000 per year for the next three years, for a total of \$75,000. In March 2015, GLOBALFOUNDRIES took that commitment to the next level and announced a collaborative effort pledging \$500,000 over the next three years to support the New York Tech Valley FIRST® Robotics Competition Regional and STEM education through FIRST® programs.

**GLOBALGirls:** First launched as a Fab 8 pilot program on May 12, 2015, GLOBALGirls is a GLOBALFOUNDRIES initiative to inspire young women and girls to pursue an education in STEM and help guide them on a pathway to a rewarding career in advanced manufacturing.

**TechTuesday:** Launched on September 22, 2015, TechTuesday is a new education and workforce development initiative to strengthen GLOBALFOUNDRIES' engagement with the community. TechTuesday combines inspiration, education, and innovation to offer a glimpse into the world of nanotechnology, our people, and the career pathways available at Fab 8.

All of these investments and initiatives support the revitalization of the upstate New York region, making "Tech Valley" a major hub for the global technology industry.





## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

### Quality Management Systems

The GLOBALFOUNDRIES quality management system institutionalizes effective operating mechanisms to ensure that our products and services meet or exceed customer expectations. The “zero excursion, zero defect” mission guides the implementation of the advanced quality system to become our customers’ partner of choice.

The GLOBALFOUNDRIES facilities are certified to international quality standards that validate the effectiveness of the system in support of market segments including automotive (IATF-16949) and aerospace (AS9100). The advanced quality system builds upon these internationally recognized standards. The quality standards codify the requirements to ensure product quality, including robustness of the management system and infrastructure.

GLOBALFOUNDRIES ensures flawless execution of the design and development of new technologies with a phase-gate business process. This process is utilized from initial exploration research through the full release of production. GLOBALFOUNDRIES is able to quickly release new technologies into the market correctly the first time in alignment with customer requirements.

In the quest to continually improve our customers’ experience when partnering with GLOBALFOUNDRIES, we listen to our customers and feed their voice back into our business processes and systems. We manage

customer issues in our Action Escalation system to ensure responsive follow-through with our commitments. We track internal, customer-facing key performance indices that are closely aligned to our customers’ Quality, Business, Technology, Fulfillment, and Responsiveness targets. Finally, we conduct third-party customer relationship surveys every year to ensure our customers notice the improvements we’re making.

Our Quality vision is to be our customers’ partner of choice, and we believe that consistently creating a better customer experience is the basis of achieving our goals.

Our quality management system is described further, including copies of third-party certification certificates, [here](#).

### Environmental Management Systems

Our Global EHS Standards form the foundation of integrated EHS management systems employed at our manufacturing sites. All of our manufacturing locations are certified to the ISO 14001 environmental management systems standard. Fab 9 and Fab 10 have also addressed the product-related requirements of the ISO 14001 Standard as an additional certification scope and earned certification for their product stewardship program. Fab 1 (Dresden, Germany) has put an additional focus on significant effort into improving the site’s energy management, and has established an ISO 50001-certified energy management system.

In addition to ISO 14001 certifications, all of our operating fabs have either been certified under the Sony Green Partner program or maintain equivalent controls to ensure product compliance. Our certificates are available [here](#).

Our environmental commitment extends beyond manufacturing to the location and design of new facilities. We have developed a green building standard for GLOBALFOUNDRIES, which requires a construction sustainability plan for new construction projects. Among other requirements, the plan must include targets and measures to achieve the LEED certification or comparable “green building” standards appropriate to the location.

Fab 8, in Malta, New York, was designed as a “green fab.” The fab and associated administrative and support buildings include many energy and water efficiency features. We achieved LEED Gold Level certification for Admin 1 and Admin 2 buildings, and we are in the process of completing LEED certification for Fab 8.1 fabrication facility. ▶

## 09 SUSTAINABLE MANUFACTURING AND OPERATIONS

### Eco-Efficiency in Foundry Operations

Our environmental engineers partner with our technical experts from the research and technology development phases to integration into volume production at our fab sites in order to optimize the eco-efficiency relative to raw material use and waste generation. We also work with equipment and material suppliers to reduce resource consumption and evaluate new chemistries. We support a precautionary approach to the materials that we use in our processes and continually seek alternatives to hazardous materials that meet our quality and performance requirements.

Meaningful data collection and analysis is the key to eco-efficiency, as in all areas of operational excellence. We measure our operational EHS performance using a defined set of global key performance indicators (KPIs), reflecting resource consumption, environmental emissions, waste generation, occupational injury and illness, and regulatory compliance. For meaningful comparison, we normalize data from operations with differing levels of technology complexity using an industry standard Manufacturing Index (MI). The MI is derived from the number of wafers manufactured, the number of masking steps in our fabrication processes (reflecting process complexity), and the total area of wafers produced.

Our global EHS KPIs are collected quarterly from all of our manufacturing sites. The data are validated internally and are reviewed by our global Executive CSR Council and reported to the

Audit, Risk & Compliance Committee of the Board of Directors. In addition, each manufacturing facility collects site-specific data that are used to identify opportunities for improvement and to measure performance against site-specific goals. These operational EHS KPIs are reported to site management and used for cross-site benchmarking.

We have redefined our resource conservation goals to accommodate the significant change in our company structure in 2015 with the acquisition of IBM's Microelectronic Division, including the two manufacturing facilities now known as Fab 9 in Burlington, VT, and Fab 10 in East Fishkill, NY.

By the end of 2018 we will attain the following goals:

- ▶ **18 percent reduction of normalized electricity consumption**
- ▶ **32 percent reduction of normalized water consumption**
- ▶ **20 percent reduction of normalized greenhouse gas emissions.**

We will use the first 12 months of our combined operations (July 2015-July 2016) as the baseline to measure progress toward these revised, global goals. We have established an additional goal to recycle or reuse at least 55 percent of hazardous waste generated across the company by the end of 2016.

We intend to achieve these goals through dedicated effort across the company's manufacturing sites that will reduce consumption of electricity and water, greenhouse gas emissions, chemical consumption, and generation of waste. In aggregate, by the end of 2018, we challenge ourselves to achieve these goals and:

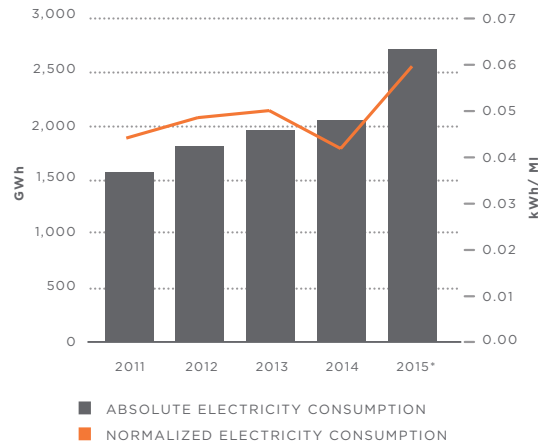
- ▶ **Reduce electricity use by 48 gigawatt hours (GWh);**
- ▶ **Reduce water use by 3.7 Million cubic meters (m3);**
- ▶ **Reduce GHG emissions by 14,600 metric tons carbon equivalents (MTCE); and**
- ▶ **Reduce chemical use and waste generation by a combined 11,000 tons.**

### Review of Performance to Date

In 2013, GLOBALFOUNDRIES published its three-year environmental resource conservation goal set. Given the company's rapid rate of change and the early stage of development of the massive Fab 8 project, this was a challenging forecast to make. And as noted above, we have reset our goals to integrate acquired operations from IBM. In this section, we are proud to report on our progress to date as we move forward to achieve the 2018 goal set. ▶

## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

**FIGURE 3** Absolute And Normalized Electricity Usage



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

### Energy Consumption

Absolute consumption of electricity increased approximately 30 percent compared to 2014, due to continued installation of new process equipment and technology qualification in Fab 8 and the acquisition of Fabs 9 and 10. Normalized electricity usage decreased 4 percent from 2011 to 2014, and grew by 35 percent in 2015. We expect further reduction of the normalized rate as production volumes ramp, along with continued efficiency improvements.

### Energy Efficiency Highlights

GLOBALFOUNDRIES' fabs have a number of energy efficiency features integrated into their design. For example, Fab 1 is mainly powered

by two specially designed, highly efficient trigeneration plants, with a smaller fraction of electricity from the Dresden public grid. Energy Centers I and II (EVC I and EVC II) burn natural gas to supply Fab 1 with electricity. Waste heat from electricity production in the EVCs' trigeneration systems provides heating and cooling energy to the manufacturing areas. As a result, trigeneration is much more efficient than conventional coal or natural gas power plants, which typically have efficiencies lower than 40 percent. In comparison, EVC I has achieved a total average lifetime efficiency of approximately 73 percent. In 2015, the plant achieved an average total efficiency of more than 74 percent. EVC II has achieved a total average lifetime efficiency of more than 84 percent, and in 2015 achieved an average total efficiency of more than 88 percent.

We integrated numerous energy-efficient features into the design and construction of Fab 8 in New York. These features are estimated to save approximately 16 GWh annually. Some of the features include:

- ▶ High-efficiency motors, chillers, boilers, fan filters for the cleanroom, and vacuum pumps.
- ▶ An innovative system that uses heat recovery chillers to meet the fab's year-round base cooling load and recover the heat for site needs instead of removing it with cooling towers. The system meets 40 percent of the site's heating load with recovered heat.

- ▶ A fab-wide "Green Mode" strategy for point-of-use abatement systems and for a significant portion of the installed base of vacuum pumps. Green Mode uses smart controls that place fab support equipment into an idle mode that lowers power and natural gas consumption during periods of inactivity. This strategy is in the process of being implemented.

All GLOBALFOUNDRIES sites actively pursue projects to increase energy efficiency. In 2014 and 2015, our project list included the following:

- ▶ **Dresden Fab 1 Process Cooling Water Pump Optimization.** This enabled the site to reduce the number of PCW system pumps and helps to save more than 900 MWh per year.
- ▶ **Singapore Woodlands Campus High Efficiency Vacuum Pump Conversion (multi-year project).** Conversion to variable speed drives resulted in electricity savings of more than 3.4 GWh per year.
- ▶ **Singapore Woodlands Campus High Efficiency Chiller Retrofit (multi-year project).** The site-wide retrofit program is projected to save 54 GWh annually.
- ▶ **Singapore Tool-Specific Chiller Retrofit.** Connection of a specific group of process tools to the more efficient site process cooling water system achieved savings of 3 GWh in 2015. ▶

## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS



GLOBALFOUNDRIES Fab 9 Chiller Energy Conservation Project Team Receives 2016 Vermont Governor's Award for Environmental Excellence from Deborah Markowitz, the Secretary of the Vermont Agency of Natural Resources

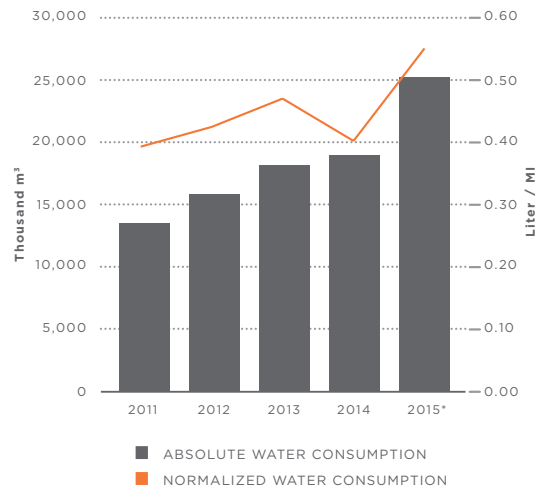
### GLOBALFOUNDRIES Energy Conservation

- ▶ In 2014, GLOBALFOUNDRIES Singapore received the "Singapore Standard SS 564 Green Data Centres" certification by the Infocomm Development Authority of Singapore for a new data center established in July 2013.
- ▶ In June 2015, GLOBALFOUNDRIES Dresden was certified to the ISO 50001 energy management system standard by GUTcert.
- ▶ In 2014 and 2015, GLOBALFOUNDRIES Malta achieved LEED Gold Level Certification for the two administrative buildings on the campus. (Certification of the fab is pending.)
- ▶ In 2016, GLOBALFOUNDRIES Burlington received the Vermont Governor's Award for Environmental Excellence for completing a chiller-related energy conservation project that helped to save more than 7.6 GWh over a period of three years.
- ▶ A joint project by GLOBALFOUNDRIES Singapore and Edwards Technologies Singapore for combustion chamber replacement abatement units received Honourable Mention in the Best Practices category at the Singapore EENP Awards 2016. The project involved a redesign of the existing abatement units to reduce LPG consumption by 31 percent while maintaining abatement destruction efficiency at the same level.

- ▶ **Singapore Woodlands Campus Installation of Energy Reduction Modules.** Reduction of non-process dry pump electrical power consumption realized annual savings of more than 3.7 GWh since 2014.
- ▶ **Fab 9 Burlington Chiller Conversions and Upgrades.** Three chiller-related projects, including the conversion of a specific tool set to operate on the site process cooling water system and an upgrade to the site's chilled water system, saved more than 7.6 GWh over a three year period.
- ▶ **Fab 8 Malta Process Exhaust Load Reduction.** A combination of efficiency improvements, including reduction in process exhaust loads, HVAC optimization, and implementation of economizer modes, reduced power consumption by more than 20 GWh in 2015.▶

## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

**FIGURE 4** Absolute And Normalized Water Use



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

### **WATER USE**

GLOBALFOUNDRIES uses water from municipal sources at all of our manufacturing facilities. More than 95 percent of the water consumed at GLOBALFOUNDRIES Singapore is NEWater, which is reclaimed and treated wastewater supplied by the Singapore Public Utilities Board. Using NEWater supports Singapore's water conservation strategy to reserve high-quality potable water for domestic consumption.

**FIGURE 4** shows absolute and normalized water consumption at our manufacturing facilities from 2011 to 2015. The startup of Fab 8, production

growth at Fab 1 in Dresden, and the addition of Fab 9 and Fab 10 in 2015 resulted in an 81 percent increase in absolute water use from 2011 to 2015, while normalized water use grew at more moderate rates (37 percent) from 2011 to 2015.

We have extensive water reuse and recycling programs at our manufacturing facilities. In 2015, we achieved a combined corporate water reclaim rate of 55 percent as compared to incoming water supply. "Reclaim" includes both water recycling and reuse. Some reclaimed water is used as a raw water supply to our ultra-pure water (UPW) plants (defined as "recycling") as well as for facility operations such as cooling towers and scrubbers (defined as "reuse"). In 2015, the average water recycling rate across our fab sites was 38 percent compared to incoming water.

Our Singapore fabs, which operate in the region with the highest water constraints, achieved a 57 percent recycling rate in 2015 as compared to incoming water. In 2016, our Singapore site further enhanced its conservation efforts by completing construction of a new water treatment and reclamation facility at our Woodlands campus. The state-of-the-art facility features advanced technology that is designed to reduce waste sludge and enable the reuse of treated wastewater as incoming "feed" water, thereby further reducing the overall raw water consumption. The facility is also projected to use less chemicals and energy during the treatment process.

We operate permitted wastewater treatment systems at each of our manufacturing sites to manage effluent from production areas. These facilities treat the wastewater to meet regulatory requirements prior to discharge to municipal treatment facilities or directly to surface waters at Fabs 9 and 10. The direct discharges follow a rigorous combination of industrial and biological treatment processes. In 2015, we discharged 20.9 million cubic meters of treated wastewater.

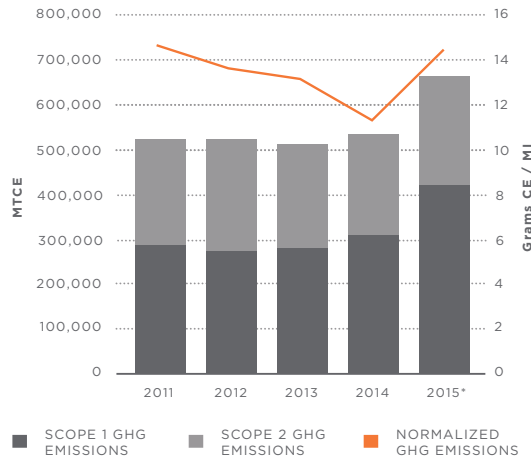
### **MATERIAL USE**

A wide range of resources, including energy, water, chemicals, and gases, is needed to manufacture semiconductors. Chemical and gas usage ranges from bulk gases and chemicals to specialty gases and chemicals used in smaller amounts. In addition, chemicals are needed to produce ultra-pure water and treat wastewater and exhaust.

A high-volume semiconductor fab may use more than 100,000 tons of materials per year. High-purity bulk gases (oxygen, nitrogen, helium, and others) represent the largest share, followed by process chemicals. These include sulfuric acid, hydrogen peroxide, specialty chemicals like photoresists and developers used in photolithography or slurries for the chemical-mechanical planarization (CMP) process, and chemicals used in water purification and treatment. Specialty gases used in chemical vapor deposition (CVD) and plasma etching processes constitute a relatively small amount (less than one percent of the total). ▶

## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

**FIGURE 5** Absolute And Normalized GHG Emissions



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

### GREENHOUSE GAS EMISSIONS

**FIGURE 5** shows absolute and normalized direct (Scope 1) and indirect (Scope 2) greenhouse gas (GHG) emissions for 2011 through 2015. Absolute direct (Scope 1) GHG emissions increased by 38 percent from 2011 to 2015, primarily as a result of the production ramp of Fab 8, production increases in Fab 1 and Singapore, and the addition of Fabs 9 and 10 in 2015. Indirect (Scope 2) GHG emissions increased 14 percent in 2015 compared to 2011 for the same reasons.

Contrary to the growth in absolute GHG emissions, normalized GHG emissions continued to decrease. 2015 normalized emissions were 3 percent lower than 2011, largely due to the expansion of wafer production in the fabs that were designed to produce lower greenhouse gas emissions, such as emissions of PFC (perfluorocompound) gases used in semiconductor manufacturing processes like wafer etching and CVD chamber cleaning.

### Managing Climate Change Impacts

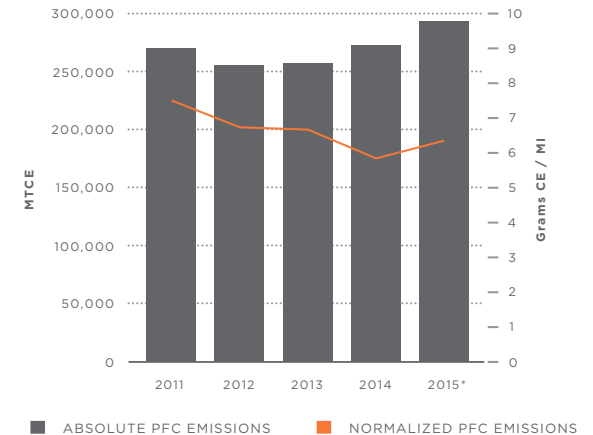
Global climate change is an increasingly important challenge impacting society and the global economy. As presented in this report, we monitor our energy consumption and GHG emissions to understand our climate impacts. We manage our climate-related business risks through energy conservation, operational controls, and participation in initiatives to drive industry-wide improvements.

Risks associated with climate change are complex, ranging from regulatory initiatives to severe weather events such as droughts, flooding, and extreme temperatures. Climate-related risks, including supply or operational disruptions due to severe weather events, are evaluated as part of our risk management process. We track the development of proposed climate legislation around the world and have implemented proactive measures that go well beyond regulatory requirements.

We are also active in industry-wide initiatives that drive reductions in GHG emissions. Fab 1 in Dresden is one of the largest fabs in Europe, and yet it produces very low levels of PFC emissions. Fabs 1, 9, and 10 participated in the industry-wide goal established by the World Semiconductor Council (WSC) to reduce PFC emissions 10 percent by 2010 compared to 1995. In 2011, the WSC had far surpassed its goal, having achieved a 32 percent reduction.

In 2011, the WSC announced a new voluntary PFC agreement for 2020. The elements of the 2020 goal are rooted in the implementation of best practices for new semiconductor fabs. The semiconductor industry expects that the implementation of best practices in new semiconductor fabs will result in a 30 percent reduction of normalized emission rate (NER) from the WSC 2010 aggregated NER baseline. Best practices will be continuously reviewed and updated by the WSC. Our newest fab, Fab 8 in New York, was designed to meet the WSC commitment.

**FIGURE 6** Absolute And Normalized PFC Emissions



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

**FIGURE 6** shows our absolute and normalized total PFC emissions from 2011 to 2015. Absolute PFC emissions increased by 7 percent in 2015 compared to 2011, while normalized PFC emissions decreased 18 percent. These decreases are due to increased utilization of fabs with lower PFC emissions, such as Fab 1 in Dresden. Fab 8 in New York was also designed for extremely low emissions of PFCs. These fabs use low-emission gases in CVD chamber cleaning, coupled with near-universal use of point-of-use abatement equipment for PFC-using processes. ▶



## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

### AIR EMISSIONS

All of our manufacturing facilities operate within conditions permitted by local regulatory agencies. The primary air emissions from our wafer manufacturing facilities include corrosives (acids and bases) and volatile organic compounds (VOCs).

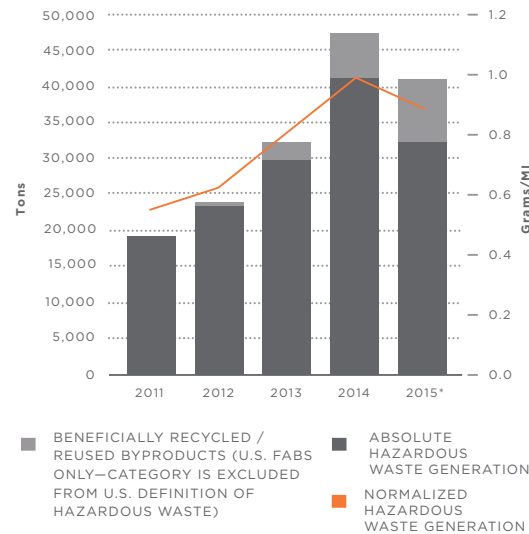
We employ wet scrubbers to neutralize corrosive emissions and treat the scrubber water in on-site wastewater treatment systems prior to discharge. Based on air emission measurements that we conduct at each fab, we have estimated our 2015 fabs' combined corrosive emissions at approximately 124,300 kg.

For VOC emissions reduction, most sites use thermal oxidation or carbon bed adsorbers. Fab 1 in Dresden, Fab 8 in Malta, NY, and Fab 10 in East Fishkill, NY, have control technology that utilizes rotary concentrators followed by thermal oxidation. This technology uses highly adsorbent zeolite materials to capture VOCs, which are subsequently desorbed, producing a low-volume exhaust stream with a higher concentration of VOCs. This more concentrated exhaust stream is then treated with greater efficiency through a combustion process that destroys as much as 98 percent of the VOCs.

### HAZARDOUS WASTE

**FIGURE 7** shows absolute and normalized hazardous waste generation for 2011 to 2015. The classification of waste as "hazardous" is dictated by the regulations that apply to each of our manufacturing sites. Absolute hazardous waste generation increased by approximately 66 percent from 2011 to 2015, with an intermediate peak in 2014, while normalized hazardous waste volumes increased by 58 percent during the same time period, also with a higher rate observed during 2014.

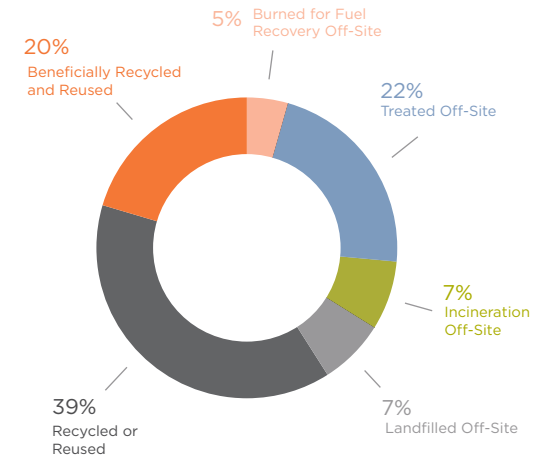
**FIGURE 7** Absolute And Normalized Hazardous Waste Generation



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

While we have significantly increased our manufacturing capacity over this time period, the rise in absolute and normalized hazardous waste generation is also due to the increased complexity associated with manufacturing integrated circuits at more advanced technology nodes. The number of wafer cleaning steps continues to grow, due to smaller feature dimensions and the fact that constructing these complex circuits requires technologies that involve hundreds of individual process steps. More cleaning steps require an increased use of UPW and cleaning chemicals such as sulfuric acid. We are actively investigating ways to reduce water and chemical use to ultimately reduce hazardous waste.

**FIGURE 8** 2015\* Disposal Methods For Hazardous Waste And Beneficially Recycled And Reused Byproducts

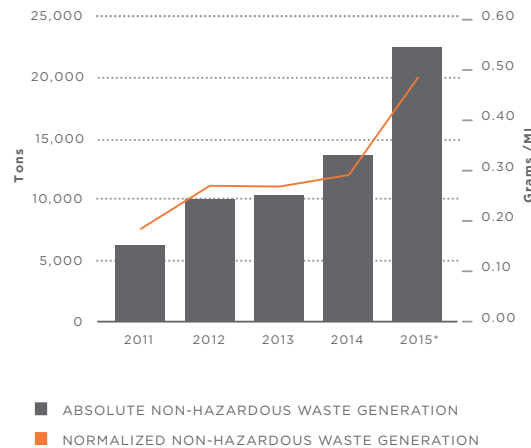


\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

**FIGURE 8** shows a breakdown of the disposal methods for the hazardous waste generated in 2015. We also include the category "byproducts beneficially recycled and reused" because reclaimed material is excluded from the definition of hazardous waste. This category is applicable only to U.S. sites. Approximately 59 percent of total hazardous waste (including byproducts beneficially recycled and reused) generated in 2015 was recycled or reused. With that, we met our 2015 goal to achieve a recycle and reuse rate of more than 55 percent. ▶

## 08 SUSTAINABLE MANUFACTURING AND OPERATIONS

**FIGURE 9** Absolute And Normalized Non-Hazardous Waste Generation

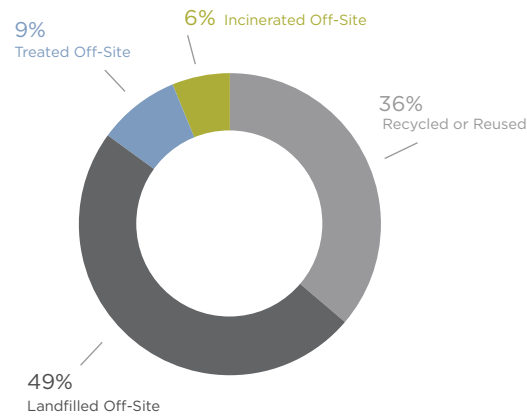


\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

### NON-HAZARDOUS WASTE GENERATION

**FIGURE 9** shows absolute and normalized non-hazardous waste generation for 2011 to 2015. The startup of Fab 8 in 2012 is the main factor causing absolute non-hazardous waste generation to more than double from 2011 to 2014. The two manufacturing sites added in 2015 contributed to the more than threefold increase in absolute non-hazardous waste generation from 2011 to 2015. Normalized non-hazardous waste generation grew by a factor of more than two between 2011 and 2015.

**FIGURE 10** 2015\* Disposal Methods For Non-Hazardous Waste



\*2015 totals include second-half data only for Fabs 9 & 10 acquired as of July 1, 2015.

**FIGURE 10** shows the breakdown of the disposal methods for non-hazardous waste generated in 2015. Approximately 36 percent of non-hazardous waste generated by GLOBALFOUNDRIES in 2015 was recycled or reused.

### EHS COMPLIANCE

Through our global Environmental, Health & Safety policy, we are committed to a “Beyond Compliance” approach, seeking to exceed the requirements of applicable regulations. We implement consistent and rigorous EHS standards, management systems, metrics, external reporting, and compliance assurance programs.

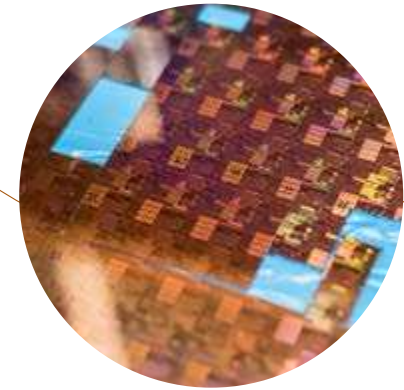
These are designed to protect the environment; to protect the safety, health, and well-being of our employees, contractors, and communities; and to ensure that we meet or exceed regulatory compliance requirements. Our manufacturing sites perform internal reviews as part of their EHS Management Systems and are routinely inspected by regulatory authorities.

In 2014 and in 2015, inspections and regular compliance reporting across our global locations resulted in three notices of violation (NOV) in 2014 and eight in 2015. All issues were corrected to the satisfaction of the respective regulatory authorities. Of these NOVs, four (one in 2014 and three in 2015) related to exceedances of Singaporean wastewater discharge standards and resulted in *de minimis* financial penalties ranging from \$760 USD to \$3800 USD.

09

# PRODUCT STEWARDSHIP

It is our responsibility to reduce the potential health, safety, environmental, and social impacts of the product life-cycle stages under our control. With our broad range of technologies and manufacturing expertise, we help our customers reduce their environmental footprint, cut energy costs, and remain competitive in the market.



## **Materials Management and Product Compliance**

All GLOBALFOUNDRIES sites have chemical review and approval systems in place to ensure that only approved materials are brought on site for use in manufacturing. Our material qualification process assesses materials relative to GLOBALFOUNDRIES' Specification for Banned, Restricted, and Declarable Materials Management, which includes both regulatory and customer-driven requirements. Applicable regulatory requirements include the EU Directive on restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive), and substances regulated under the EU REACH Directive, such as designated Substances of Very High Concern (SVHCs).

Our specifications require packing material suppliers to meet applicable substance restrictions. In addition, GLOBALFOUNDRIES requires that paper-based shipping materials contain more than 50 percent recycled content, and any remaining content is preferably sourced from sustainably managed forests.

GLOBALFOUNDRIES has programs in place to obtain analytical evidence of product compliance (such as RoHS and halogen-free requirements) and makes product compliance documentation available to customers on Global-FoundryView, our customer portal. ▶

## 09 PRODUCT STEWARDSHIP

### Enabling Energy Efficiency

Semiconductors are a key enabling technology to improve energy efficiency and reduce energy consumption in a variety of products and processes that touch our lives daily. From improving the efficiency of the cars we drive to the technologies we use in our homes and offices, semiconductors help reduce the amount of energy we consume.

GLOBALFOUNDRIES offers a portfolio of manufacturing technologies that enable our customers to design more energy-efficient products. Smaller, faster, and more power-efficient transistors are the building blocks for improving future performance and power consumption in end products.

Our leading-edge manufacturing technologies make possible shrinking transistors, lower power consumption, and lower leakage currents, particularly for mobile devices. We have integrated leading-edge wafer technology capabilities into manufacturing processes that enable energy efficiency gains, such as Fully Depleted Silicon on Insulator (FD SOI), High-k Metal Gate (HKMG), Strained Silicon, and Fin-Shaped Field Effect Transistors (FinFET transistors)—lowering power requirements for the end products in which the chips are used. ▶

### Leading-edge wafer technology elements enabling energy efficiency gains

#### FD-SOI Technology—Fully Depleted Silicon on Insulator Technology

FD-SOI technology is a planar process that leverages existing manufacturing methods to deliver reduced silicon geometries, improved performance, and low power consumption.

Two key innovations are combined, synergistically, to create the FD-SOI process. The first is the use of an ultra-thin oxide insulator placed on top of the base silicon. Second, a very thin silicon layer creates the transistor channel. Due to the thinness of this layer, no channel doping is required, making the transistor “fully-depleted”. The FD-SOI structure results in much better transistor characteristics compared to traditional bulk CMOS technology, reducing leakage current and parasitic capacitance, thus making the transistor more energy-efficient.

#### FinFETs (Fin-Shaped Field Effect Transistors)

Historically, transistors have been two-dimensional features in an integrated circuit. FinFETs are three-dimensional transistors that have the intrinsic capability to operate at a lower voltage, which translates to improved energy efficiency and longer battery life. This is a highly desired technology for performance-hungry mobile computing applications.

#### HKMG—High-k Metal Gate

One critical materials system that has been introduced in leading-edge manufacturing technologies is High-k Metal Gate (HKMG). This system makes up the fundamental switching element of a transistor. HKMG technology allows the size of transistors to shrink while significantly minimizing leakage current, a key factor in reducing power consumption.

#### Strained Silicon

Strained silicon is a substrate in which the atoms in the top layer are stretched beyond the atoms of the underlying semiconductor crystalline layers. The so-called strained silicon enables enhanced transport properties of the electrical charge carriers in the transistor. These carriers can transport electricity more quickly through the transistor, leading to better chip performance and lower energy consumption.

These power-saving wafer technology elements are applied in a number of technology platforms at GLOBALFOUNDRIES, such as:

#### GLOBALFOUNDRIES' 7nm and 14nm FinFET technology platforms

In September 2016, GLOBALFOUNDRIES announced plans to deliver a new leading-edge 7nm FinFET semiconductor technology that will offer the ultimate in performance for the next era of computing applications. Building on the success of its 14nm FinFET technology platform, GLOBALFOUNDRIES' 7nm FinFET technology is positioned to enable next-generation computing applications that demand ultra-high-performance and increased energy efficiency, even compared to 14nm FinFET technology.

GLOBALFOUNDRIES' 14nm FinFET technology platform, one of the most advanced in the industry, is ideal for the most demanding high-volume, high-performance, and power-efficient System on Chip (SoC) designs. The platform taps the benefits of three-dimensional, fully-depleted FinFET transistors to overcome the limitations of planar transistor technology. The 14nm FinFET devices offer the perfect answer to growing market needs, with intrinsic performance boost over 28nm and 20nm devices and a superior power footprint compared to any predecessors.

## 09 PRODUCT STEWARDSHIP

### GLOBALFOUNDRIES' 22FDX™ and 12FDX™ technologies

The company's 22FDX and 12FDX technologies have been developed to meet the ultra-low-power requirements of the next generation of intelligent connected devices, from mobile computing and 5G connectivity to artificial intelligence and autonomous vehicle applications.

GLOBALFOUNDRIES' 22FDX platform delivers FinFET-like performance and energy-efficiency at a cost comparable to 28nm planar technologies, leveraging the industry's first 22nm two-dimensional, FD-SOI technology. Our next-generation 12FDX platform, announced in September 2016, builds on the success of our 22FDX offering. As the world becomes increasingly integrated through billions of connected devices, many emerging applications demand a new approach to semiconductor innovation. The chips that make these applications possible are evolving into mini-systems, with increased integration of intelligent components including wireless connectivity, non-volatile memory, and power management—all while driving ultra-low power consumption. GLOBALFOUNDRIES' new 12FDX technology is specifically architected to deliver these unprecedented levels of system integration, design flexibility, and power scaling.

Our focus on technologies that enable energy efficiency extends beyond the leading-edge technology nodes. We also offer semiconductor services for power-management integrated circuits (PMICs) and power converters. Our growing portfolio is continuously expanding for higher voltages.

GLOBALFOUNDRIES has developed a unique version of BiCMOS/DMOS named BCDlite™, which has become one of the key technology platforms for cost-effective power management and power converter solutions. This technology platform offers tremendous design flexibility for power management and high-voltage analog circuits.



Rutger Wijburg, Senior Vice President and General Manager, Fab 1, with Dresden site employees.

## 09 PRODUCT STEWARDSHIP

### **Integrating EHS with Research & Development**

GLOBALFOUNDRIES is driving advancements in semiconductor technology that challenge the current limits of manufacturing and materials development. Keeping pace with leading-edge technologies requires substantial investments in research and development. Addressing the environmental, health and safety aspects of new materials and processes is a key requirement for successful technology innovation.

GLOBALFOUNDRIES' professionals play a leading role in setting industry strategy for EHS research and development. For many years, we and our industry peers have supported EHS R&D work at the Semiconductor Research Corporation's (SRC) Engineering Research Center for Environmentally Benign Semiconductor Manufacturing, and other R&D consortia, including IMEC and SEMATECH. Through the SRC, we co-fund fundamental EHS research at leading academic institutions, such as the University of California, Los Angeles; University of Arizona; University of Texas; and Arizona State University. We also directly participate in fundamental research, for example, partnering as co-Principal Investigators with professors at the University of Arizona and Arizona State University in a National Science Foundation-funded project to characterize the EHS properties of novel semiconductor materials.

In addition, we have initiated a program in which professors can spend a sabbatical period with us. This opportunity provides academics with direct insight into research needs and technical challenges faced by our industry. It also provides GLOBALFOUNDRIES' engineers with direct access to university expertise, providing an opportunity to increase their technical skills. The intent of these and our other EHS research efforts is to assure that the introduction of new materials and processes into semiconductor manufacturing processes is conducted in a safe and environmentally responsible manner.

Our participation in industry research consortia allows us to pool resources with other leading manufacturers to evaluate the EHS aspects of new materials at a pre-competitive stage. This provides us with essential information as we bring new materials and processes through our development process, and helps ensure that EHS criteria are addressed all the way from exploratory research through release to high-volume manufacturing. ●



## 10 ABOUT THIS REPORT

The **GLOBALFOUNDRIES 2016 Corporate Responsibility Report** is our second comprehensive sustainability report. GLOBALFOUNDRIES' first Corporate Responsibility Report was published in 2014 and presented data from 2010 through 2013. That report fulfilled the promise made in our 2009 founding commitment, Forging a New Path on Sustainable Business Practices. We continue our path forward with this second report, using the Global Reporting Initiative (GRI) G4 Sustainability Reporting Guidelines, and self-declare the report to be prepared in accordance with the GRI G4 "Core" level.

Operational data presented in this report reflect calendar years 2014 and 2015. The data were compiled from facilities owned or operated by GLOBALFOUNDRIES during the reporting period and were validated using our internal processes.

A significant change in our company structure occurred in July 2015—the acquisition of IBM's Microelectronic Division, including two manufacturing facilities, now designated GLOBALFOUNDRIES Fab 9 in Burlington, Vermont, and Fab 10 in East Fishkill, New York. Data for the second half of 2015 for these two facilities are included in the reporting scope. Where practical, the data are measured directly or obtained from external sources, such as utility providers.

We value and encourage your feedback on this report.

Please send comments or questions to [CSR@globalfoundries.com](mailto:CSR@globalfoundries.com).

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

**GLOBALFOUNDRIES** reviewed the disclosures in this report relative to the GRI G4 guidelines. Please refer to the Index table below, which indicates how our disclosures address the GRI guidelines.

STANDARD DISCLOSURES PART I: PROFILE DISCLOSURES				
STRATEGY AND ANALYSIS				
PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
G4-1	Provide a statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability.	●	CEO Statement	
ORGANIZATIONAL PROFILE				
G4-3	Report the name of the organization.	●	Company Profile	
G4-4	Report the primary brands, products, and services.	●	Company Profile	
G4-5	Report the location of the organization's headquarters.	●	Company Profile	
G4-6	Report the number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.	●	Company Profile	
G4-7	Report the nature of ownership and legal form.	●	Company Profile	
G4-8	Report the markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	●	Company Profile	
G4-9	Report the scale of the organization.	●	Company Profile	
G4-10	Report the total number of employees by category.	◐	Company Profile	We report the total number of employees by region and gender.
G4-11	Report the percentage of total employees covered by collective bargaining agreements.	●	-	None

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

ORGANIZATIONAL PROFILE (CONTINUED)				
PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
G4-12	Describe the organization's supply chain.	●	Supplier Responsibility	A significant change in our company structure occurred in 2015—the acquisition of IBM’s Microelectronic Division, including two manufacturing facilities, now designated GLOBALFOUNDRIES Fab 9 in Burlington, VT, and Fab 10 in East Fishkill, NY.
G4-13	Report any significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain.	●	Company Profile	
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization.	●	Governance	
G4-15	List externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	●	Stakeholder Engagement	
G4-16	List memberships of associations (such as industry associations) and national or international advocacy organizations.	●	Stakeholder Engagement	
IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES				
G4-17	List all entities included in the organization’s consolidated financial statements or equivalent documents.	○	-	
G4-18	Explain the process for defining the report content and the Aspect Boundaries.	●	Stakeholder Engagement	
G4-19	List all the material Aspects identified in the process for defining report content.	●	Stakeholder Engagement	
G4-20	For each material Aspect, report the Aspect Boundary within the organization.	●	Stakeholder Engagement	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES (CONTINUED)				
PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
G4-21	For each material Aspect, report the Aspect Boundary outside the organization.	●	Stakeholder Engagement	None  A significant change in our company structure occurred in 2015—the acquisition of IBM's Microelectronic Division, including two manufacturing facilities, now designated GLOBALFOUNDRIES Fab 9 in Burlington, VT, and Fab 10 in East Fishkill, NY. H2 2015 data for these two facilities are included in the reporting scope.
G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements.	●	-	
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	●	Company Profile; About this Report	
STAKEHOLDER ENGAGEMENT				
G4-24	Provide a list of stakeholder groups engaged by the organization.	●	Stakeholder Engagement	
G4-25	Report the basis for identification and selection of stakeholders with whom to engage.	●	Stakeholder Engagement	
G4-26	Report the organization's approach to stakeholder engagement.	●	Stakeholder Engagement	
G4-27	Report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns.	●	Stakeholder Engagement	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

REPORT PROFILE				
PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
G4-28	Reporting period.	●	About this Report	
G4-29	Date of most recent previous report.	●	About this Report	
G4-30	Reporting cycle (such as annual, biennial).	●	About this Report	
G4-31	Provide the contact point for questions regarding the report or its contents.	●	About this Report	
G4-32	Report the 'in accordance' option the organization has chosen, and the GRI Content Index for the chosen option.	●	About this Report	
G4-33	Report the organization's policy and current practice with regard to seeking external assurance for the report.	●	-	At this time, GLOBALFOUNDRIES is not seeking external assurance for this report.
GOVERNANCE				
G4-34	Report the governance structure of the organization, including committees of the highest governance body.	●	Governance	
ETHICS AND INTEGRITY				
G4-56	Describe the organization's values, principles, standards, and norms of behavior such as codes of conduct and codes of ethics.	●	Governance	
ECONOMIC				
MATERIAL ASPECT: ECONOMIC PERFORMANCE				
G4-DMA	Generic Disclosures on Management Approach.	○	-	Not disclosed; GLOBALFOUNDRIES is privately held.

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
G4-EC1	Direct economic value generated and distributed.	○	-	Not disclosed; GLOBALFOUNDRIES is privately held.
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	○	-	Not disclosed; GLOBALFOUNDRIES is privately held.
G4-EC3	Coverage of the organization's defined benefit plan obligations.	○	-	Not disclosed; GLOBALFOUNDRIES is privately held.
G4-EC4	Financial assistance received from government.	○	-	Not disclosed; GLOBALFOUNDRIES is privately held.
ASPECT: INDIRECT ECONOMIC IMPACTS				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EC8	Significant indirect economic impacts, including the extent of impacts.	●	Sustainable Manufacturing	
ENVIRONMENTAL				
MATERIAL ASPECT: ENERGY				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EN3	Energy consumption within the organization.	●	Sustainable Manufacturing	
G4-EN5	Energy intensity.	●	Sustainable Manufacturing	
G4-EN6	Reduction of energy consumption.	◐	Sustainable Manufacturing	Examples with significant reductions are reported.
G4-EN7	Reductions in energy requirements of products and services.	●	Product Stewardship	Examples are reported for new and existing energy-efficient technologies that enable our customers to design energy-efficient products.



# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
MATERIAL ASPECT: WATER				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EN8	Total water withdrawal by source.	●	Sustainable Manufacturing	
G4-EN10	Percentage and total volume of water recycled and reused.	●	Sustainable Manufacturing	
MATERIAL ASPECT: EMISSIONS				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1).	●	Sustainable Manufacturing	
G4-EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2).	●	Sustainable Manufacturing	
G4-EN18	Greenhouse gas (GHG) emissions intensity.	●	Sustainable Manufacturing	
G4-EN21	NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emissions.	◐	Sustainable Manufacturing	
MATERIAL ASPECT: EFFLUENTS AND WASTE				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EN22	Total water discharge by quality and destination.	●	Sustainable Manufacturing	
G4-EN23	Total weight of waste by type and disposal method.	●	Sustainable Manufacturing	
G4-EN24	Total number and volume of significant spills.	●	-	No significant spills occurred in 2014 and 2015.
MATERIAL ASPECT: COMPLIANCE				
G4-DMA	Generic disclosures on management approach.	●	Sustainable Manufacturing	
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.	●	Sustainable Manufacturing	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
MATERIAL ASPECT: SUPPLIER ENVIRONMENTAL ASSESSMENT				
G4-DMA	Generic disclosures on management approach.	●	Supplier Responsibility	
G4-EN32	Percentage of new suppliers that were screened using environmental criteria.	●	Supplier Responsibility	
SOCIAL: LABOR PRACTICES AND DECENT WORK				
MATERIAL ASPECT: EMPLOYMENT				
G4-DMA	Generic disclosures on management approach.	●	Our People and Workplace	
G4-LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.	●	Our People and Workplace	
G4-LA3	Return to work and retention rates after parental leave, by gender.	◐	Our People and Workplace	
MATERIAL ASPECT: OCCUPATIONAL HEALTH AND SAFETY				
G4-DMA	Generic disclosures on management approach.	●	Our People and Workplace	
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	◐	Our People and Workplace	We do not disclose by gender and region.
MATERIAL ASPECT: TRAINING AND EDUCATION				
G4-DMA	Generic disclosures on management approach.	●	Our People and Workplace	
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	●	Our People and Workplace	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
MATERIAL ASPECT: DIVERSITY AND EQUAL OPPORTUNITY				
G4-DMA	Generic disclosures on management approach.	●	Our People and Workplace	
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	●	Our People and Workplace	We do not disclose by age group and/or other minority groups.
MATERIAL ASPECT: SUPPLIER ASSESSMENT FOR LABOR PRACTICES				
G4-DMA	Generic disclosures on management approach.	●	Supplier Responsibility	
G4-LA14	Percentage of new suppliers that were screened using labor practices criteria.	●	Supplier Responsibility	
HUMAN RIGHTS				
MATERIAL ASPECT: CHILD LABOR				
G4-DMA	Generic disclosures on management approach.	●	Full Supplier Responsibility	
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	●	Full Supplier Responsibility	
MATERIAL ASPECT: FORCED OR COMPULSORY LABOR				
G4-DMA	Generic disclosures on management approach.	●	Supplier Responsibility	
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	●	Supplier Responsibility	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

◐ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
MATERIAL ASPECT: ASSESSMENT				
G4-DMA	Generic disclosures on management approach.	●	Stakeholder Engagement	We periodically assess our conformance with the EICC Code using the EICC's self-assessment tools, and make the results available to our customers.
G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessment.	●	Stakeholder Engagement	
MATERIAL ASPECT: SUPPLIER HUMAN RIGHTS ASSESSMENT				
G4-DMA	Generic disclosures on management approach.	●	Supplier Responsibility	
G4-HR10	Percentage of new suppliers that were screened using human rights criteria.	●	Supplier Responsibility	
SOCIETY				
MATERIAL ASPECT: LOCAL COMMUNITIES				
G4-DMA	Generic disclosures on management approach.	●	Community Engagement	
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	●	Community Engagement	
MATERIAL ASPECT: ANTI-CORRUPTION				
G4-DMA	Generic disclosures on management approach.	●	Supplier Responsibility	In 2016, the company's Ethics & Compliance team conducted an enterprise risk assessment that covered 17 unique risk areas. No significant risks related to corruption were identified.
G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified.	●	-	
G4-SO4	Communication and training on anti-corruption policies and procedures.	●	Governance	

# 11 GRI CONTENT INDEX

● FULLY DISCLOSED

▮ PARTIALLY DISCLOSED

○ NOT DISCLOSED

PROFILE DISCLOSURE	DESCRIPTION	REPORTED	CROSS-REFERENCE	EXPLANATORY COMMENT
MATERIAL ASPECT: COMPLIANCE				
G4-DMA	Generic Disclosures on Management Approach.	●	Governance	
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations.	●	-	In 2014 and 2015, GF was not assessed any significant fines or non-monetary sanctions. For EHS-related fines, please refer to Sustainable Manufacturing.
MATERIAL ASPECT: SUPPLIER ASSESSMENT FOR IMPACTS ON SOCIETY				
G4-DMA	Generic Disclosures on Management Approach.	●	Supplier Responsibility	
G4-SO9	Percentage of new suppliers that were screened using criteria for impacts on society.	●	Supplier Responsibility	
PRODUCT RESPONSIBILITY				
MATERIAL ASPECT: COMPLIANCE				
G4-DMA	Generic Disclosures on Management Approach.	●	Governance	
G4-PR9	Monetary value of significant fines for noncompliance with laws and regulations concerning the provision and use of products and services.	●	-	None



GLOBALFOUNDRIES®, the GLOBALFOUNDRIES logo, and combinations thereof are trademarks of GLOBALFOUNDRIES Inc. in the United States and/or other jurisdictions. Other names used in this document are for identification purposes only and may be trademarks of their respective owners. ©2016 GLOBALFOUNDRIES Inc. All rights reserved.