ARIZONA ENVIRONMENTAL STRATEGIC ALLIANCE

WELCOME TO INTEL

Craig McCurry, P.E.
Senior Environmental Engineer

Agenda

- Intel Commitment to Sustainability
- Approach to Sustainability
- Product Stewardship
- Intel is Evolving
- Company Sustainability Metrics and Goals
- Intel in Arizona
- Questions?
- Tour of OBRF

Intel and Drone Technology – Breaking New Ground
(https://www.youtube.com/watch?v=aOd4-T_p5fA)

Drone Encore
(https://www.youtube.com/watch?v=1S8c3fVAwLA&feature=player_embedded)

Intel’s EHS Policy

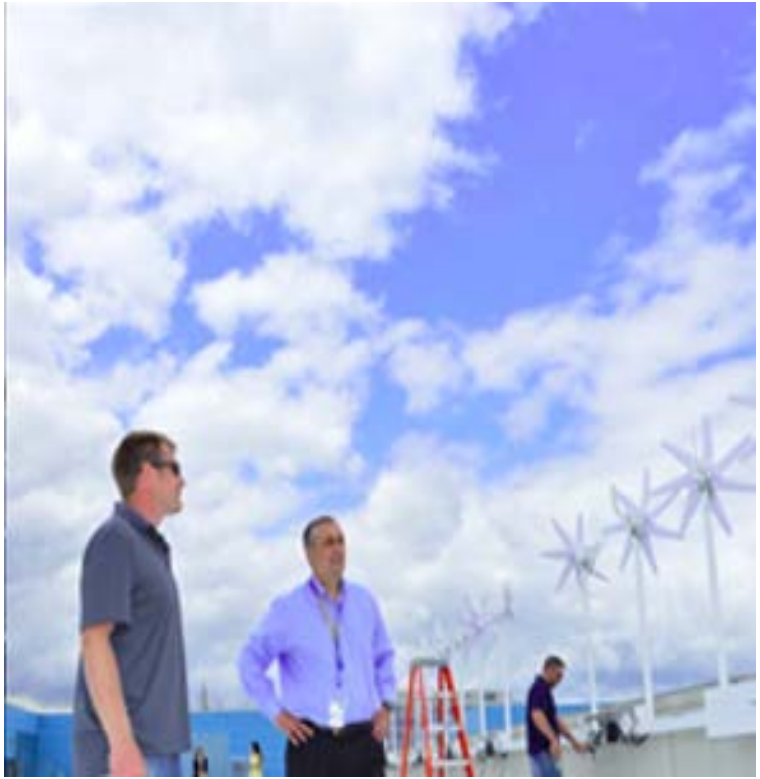
Environmental, Health and Safety Policy

Intel is committed to caring for our people and the planet by integrating design for the environment and safety principles into all aspects of our business; from the development of our products, through our supply chain and manufacturing. We believe that responsible environmental stewardship is good business and that our technology can play a key role in addressing the planet’s sustainability challenges.

We will comply with all applicable regulatory and Intel Environmental Health & Safety (EHS) requirements wherever we operate. We will engage with stakeholders to develop responsible laws, regulations and innovative programs that provide safeguards for the community, the workplace, and the environment while providing flexibility to meet the needs of our business.

We are committed to provide a safe, injury-free workplace by integrating safety into our daily business decisions and processes. Management leads the effort behind this important Intel value, and all employees are responsible for both their safety and the safety of those around them. We actively promote a healthy lifestyle and encourage employees to proactively manage their personal health.

We strive to conserve natural resources through innovative processes and continuous improvement methodologies with the goal of reducing, reusing, recycling, and identifying safer material substitutes or alternatives for our operations. We strive to utilize green chemistry principles to identify safer material substitutes or alternatives for our operations. We will continue to invest in energy conservation, we will work to reduce our emissions over time and adhere to our climate change policy and water policy.



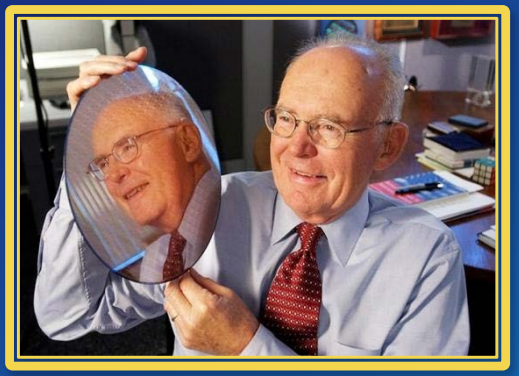
EXECUTING TO MOORE'S LAW

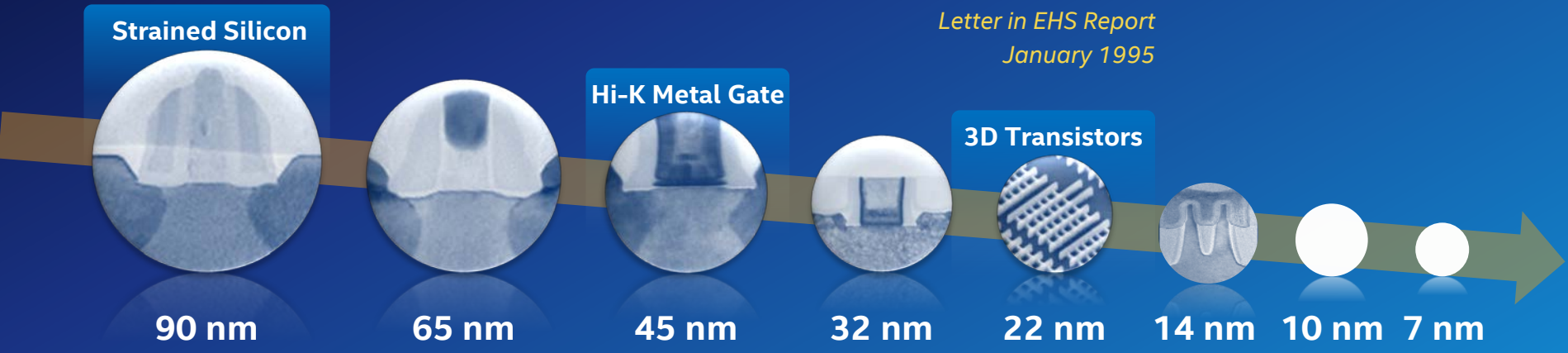
Enabling new devices with higher functionality and complexity while controlling power, cost, and size

"We need to continually improve our manufacturing process, thereby reducing our burden on the environment and becoming an asset to the communities in which we live and work."

Gordon Moore, Intel Chairman

Letter in EHS Report
January 1995





LINKING TECHNOLOGY AND SUSTAINABILITY

What If You Applied Moore's Law To The Automobile…

1971 – 81 MPH
Today – 324,000 MPH

Speed Increase

1971 – 26 MPG
Today – 130,000 MPG

Energy Efficiency

1971 – $2,500.00
Today – $0.05

Cost

Source: Volkswagen 1971 Super Beetle Brochure

INTEL'S APPROACH TO SUSTAINABILITY

Our mission for the coming decade

- *Pursuing a gentler footprint*
- *Innovation for the planet*
- *Engaging for a sustainable future*

GREEN: PURSUING A SMALLER FOOTPRINT

Focus Areas:

- *Energy conservation*
- *Renewables*
- *Water conservation*
- *Greener buildings*
- *Empowering employees*
- *Transparency*

RENEWABLES

- *Newest solar installation in Folsom, California is the largest private solar carport in the U.S.— more than half of the site's peak energy supply is now solar.*
- *Investing in fuel cell, wind and solar technologies*

ENVIRONMENTAL SUSTAINABILITY

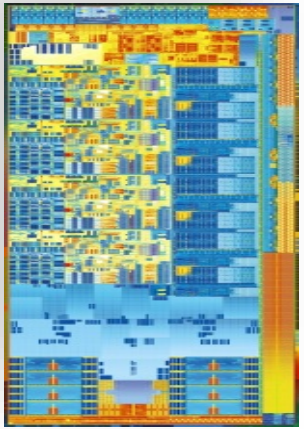
Key issues: Climate change and energy use, water conservation, green buildings, and waste management

- For the eighth consecutive year, Intel is the U.S.'s largest voluntary corporate purchaser of green power, according to the U.S. Environmental Protection Agency.
- Since 2008, we have also conserved more than 52 billion gallons of water and return close to 80% of our water withdrawals back to municipal water treatment operations, where it can be treated for reuse

OUR APPROACH TO SUSTAINABILITY

Care for our people, the planet and inspire the next generation

Operations

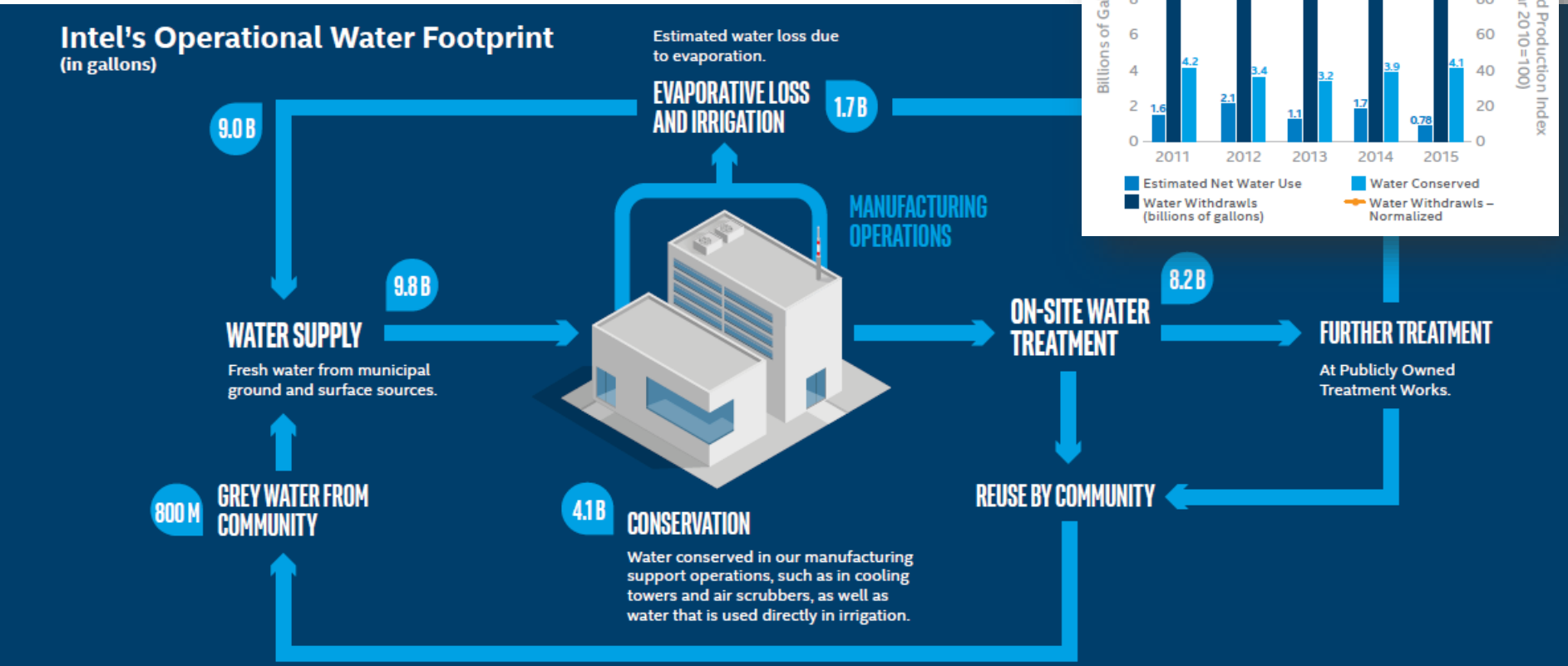


Products & Technologies

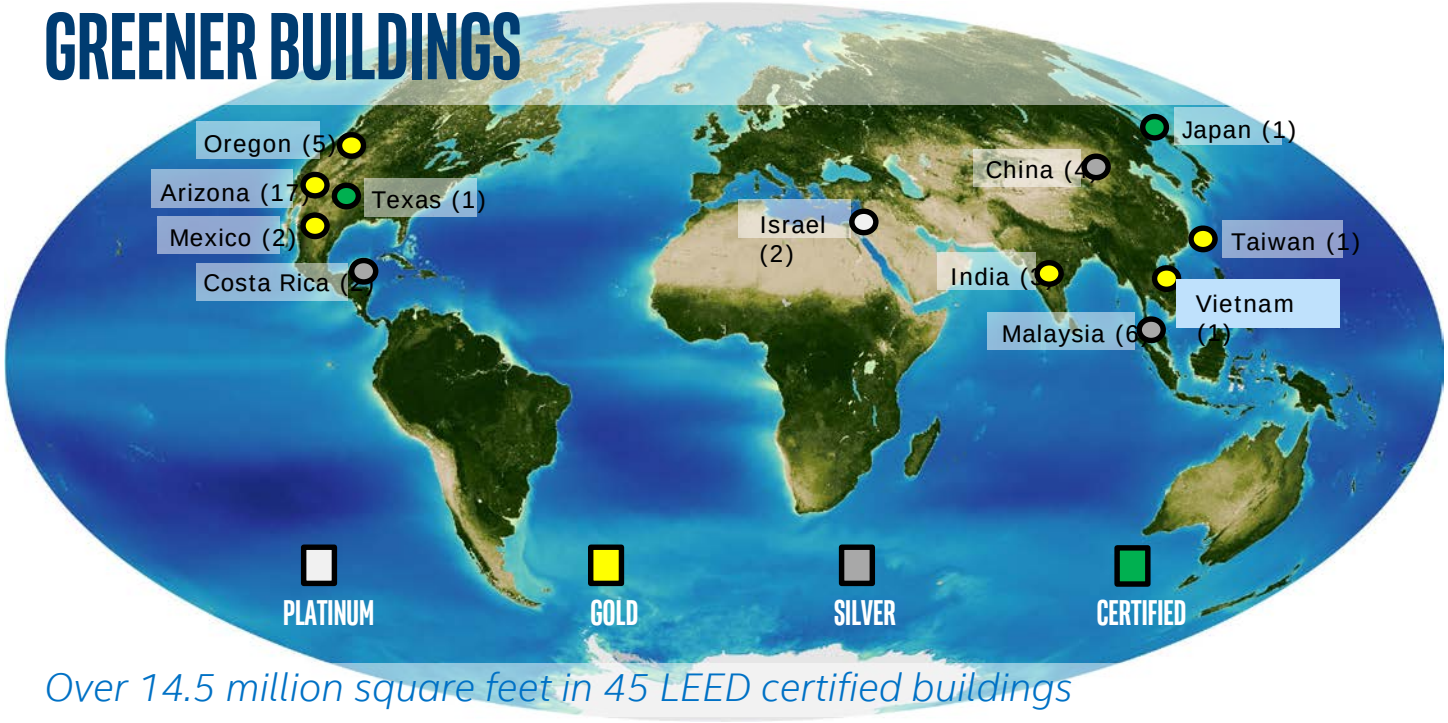
People

RESPONSIBLE WATER MANAGEMENT

Intel's Operational Water Footprint
(in gallons)



GREENER BUILDINGS



Over 14.5 million square feet in 45 LEED certified buildings

EMPOWERING EMPLOYEES & THE COMMUNITY

Learn

Employee Bonus tied to sustainability goals

Act

"Sustainability In Action" grant program

Share

Explore Intel for community

PFA (PERFLUOROALKOXY) CIRCULAR ECONOMY

Current Situation:

- PFA which is a fluoropolymer which is chemically inert and solvent resistant to virtually all chemicals
- It is not recyclable and when sent to recyclers ends up in landfills

Solution:

- Recycle PFA back into PFA

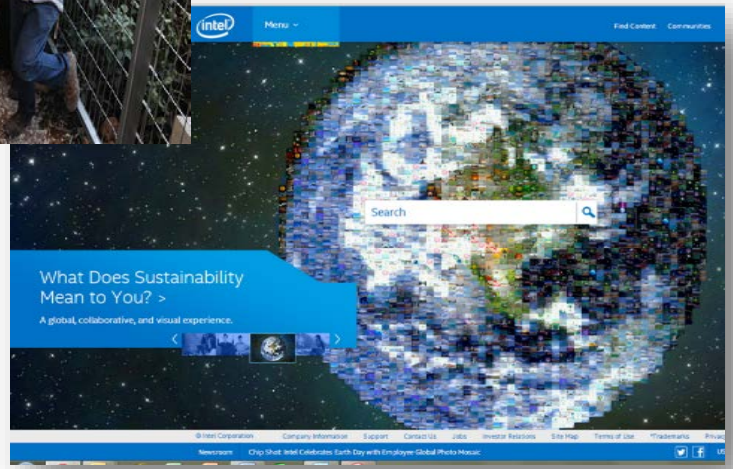
De-installs:

- Have the trades take all clear plastic pipes to one location onsite
- Send this back to the manufacturer

Installs:

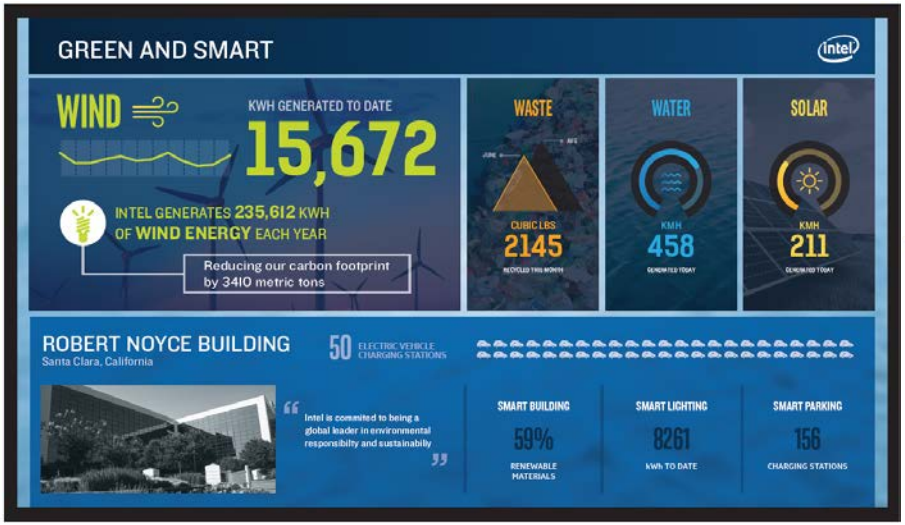
- Scraps/Excess go to a single bin and send back to the Manufacturer

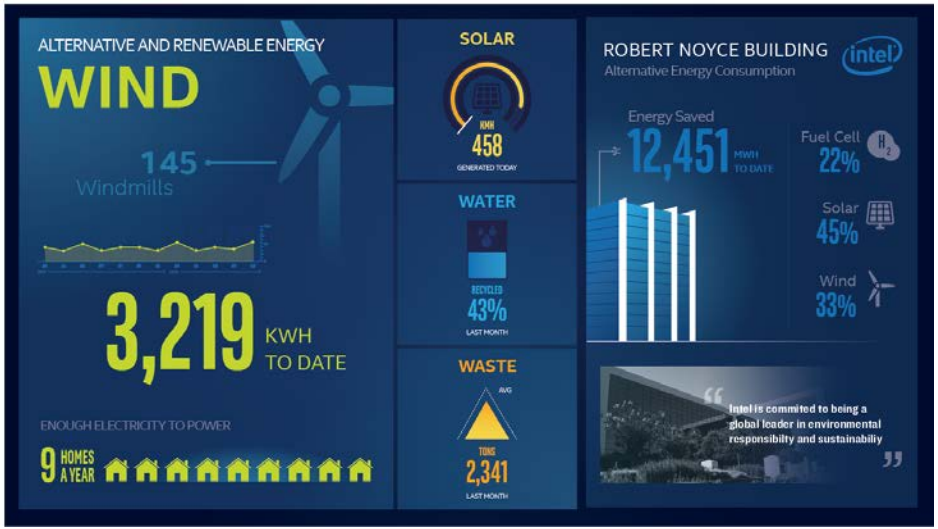
SUSTAINABILITY IN ACTION – IT'S THE PEOPLE



Since 2006:
75 projects
1000+ employees
10000+ impacts

ENGAGING OUR EMPLOYEES





OPERATIONS - BOTTOM LINE SAVINGS

There is a ROI for your business – have you found it?

SUSTAINABILITY IS GOOD BUSINESS

40+ LEED certified buildings

World's largest rooftop array of wind micro-turbines and private solar carport

$120

Million invested in 2,300+ energy conservation projects

$200+

Million saved through energy initiatives

SUPPLY CHAIN RESPONSIBILITY

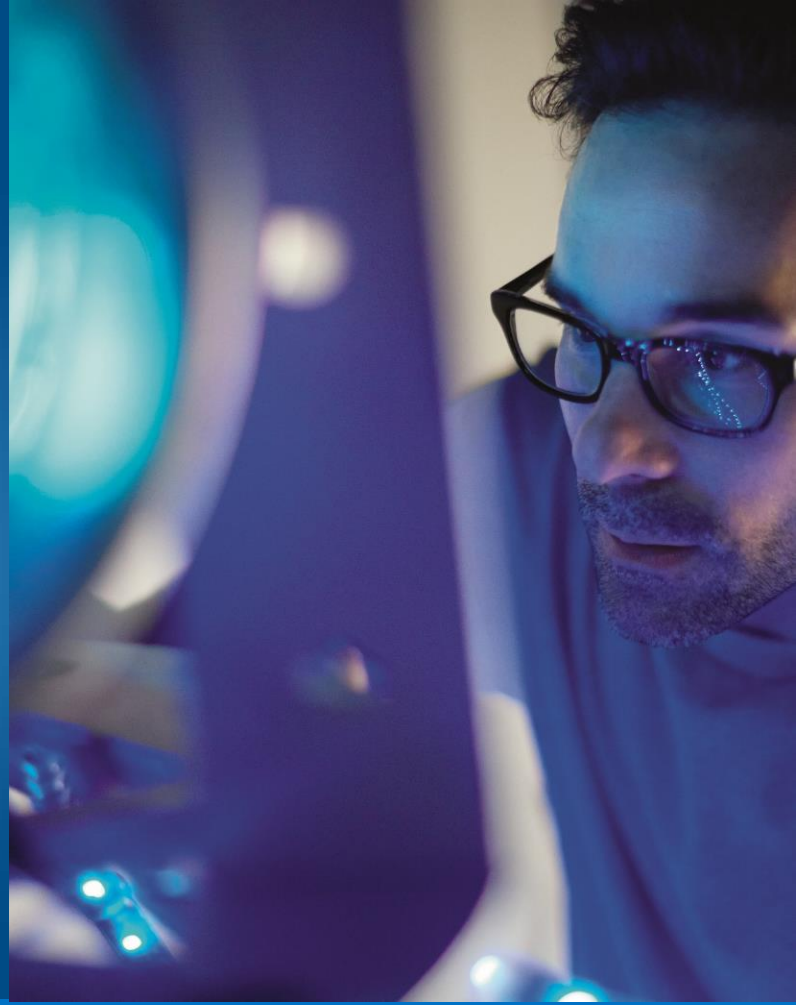
Key issues: Conflict-free and driving supplier accountability, diversity, and environmental impact

- Since 2013, Intel has manufactured microprocessors that are conflict-free for tantalum, tin, tungsten and gold. Intel is on track to achieve its goal to validate that its broader product base is conflict-free in 2016.
- Intel has committed to invest $1 billion in annual spending by 2020 with diverse-owned businesses across the supply chain. In 2015, the company spent $299 million with diverse suppliers, double the level in 2014.

PRODUCT STEWARDSHIP

Key issues: product ecology, energy efficiency, privacy and cybersecurity, and applying technology to solve social challenges

- Launched our 7th Gen Intel® Core™ processors which set a new standard for energy efficiency, offering up two-and-a-half times the performance and triple the battery life[1] when compared to computers many people currently own
- Intel, NetHope, and the United Nations Foundation developed a playbook that details how technology can be used as a tool to help achieve the UN Sustainable Development Goals

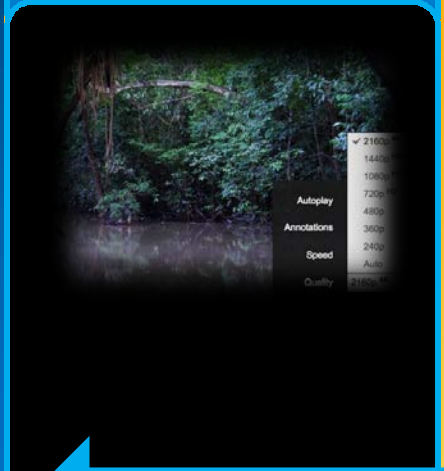


7TH GENERATION INTEL® CORE™ PROCESSOR

IMMERSIVE LIFE

STUNNING • SENSORY • ACTIVE • ENGAGING

4K UHD



360° VIDEO

VR/MR

ESPORTS

TRANSFORMING THE PC EXPERIENCE

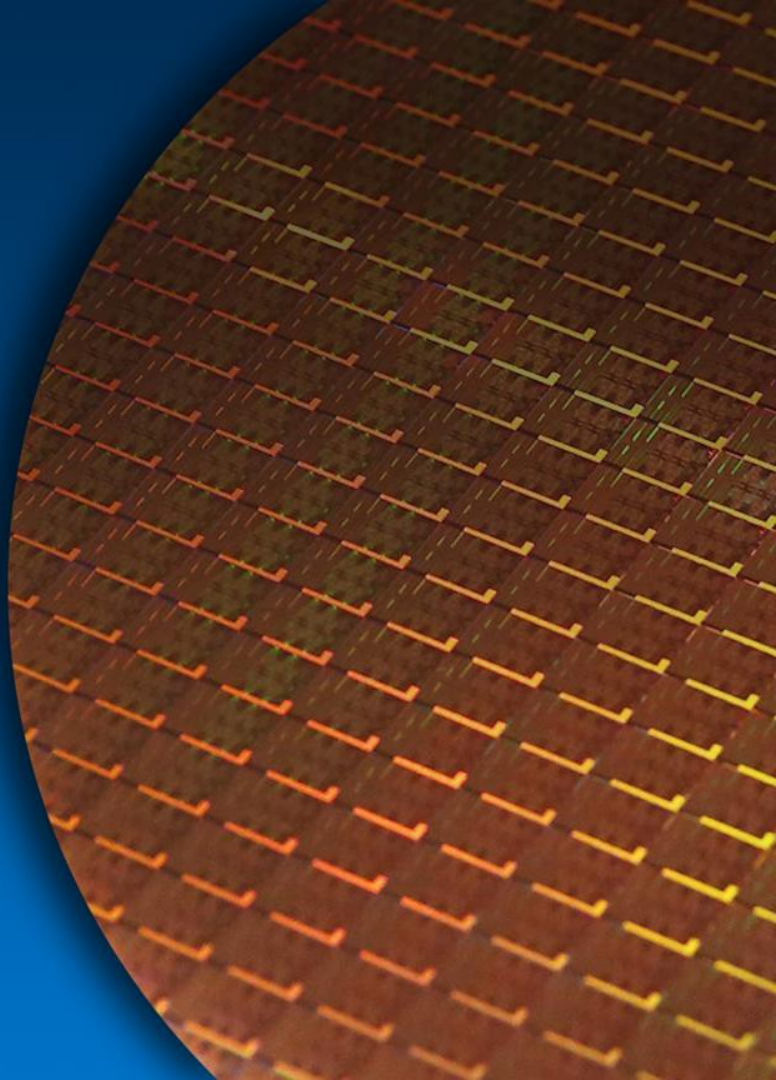
ARCHITECTURE & 14NM+ FUELS PERFORMANCE GAINS

Improved fin profile

Improved transistor channel strain

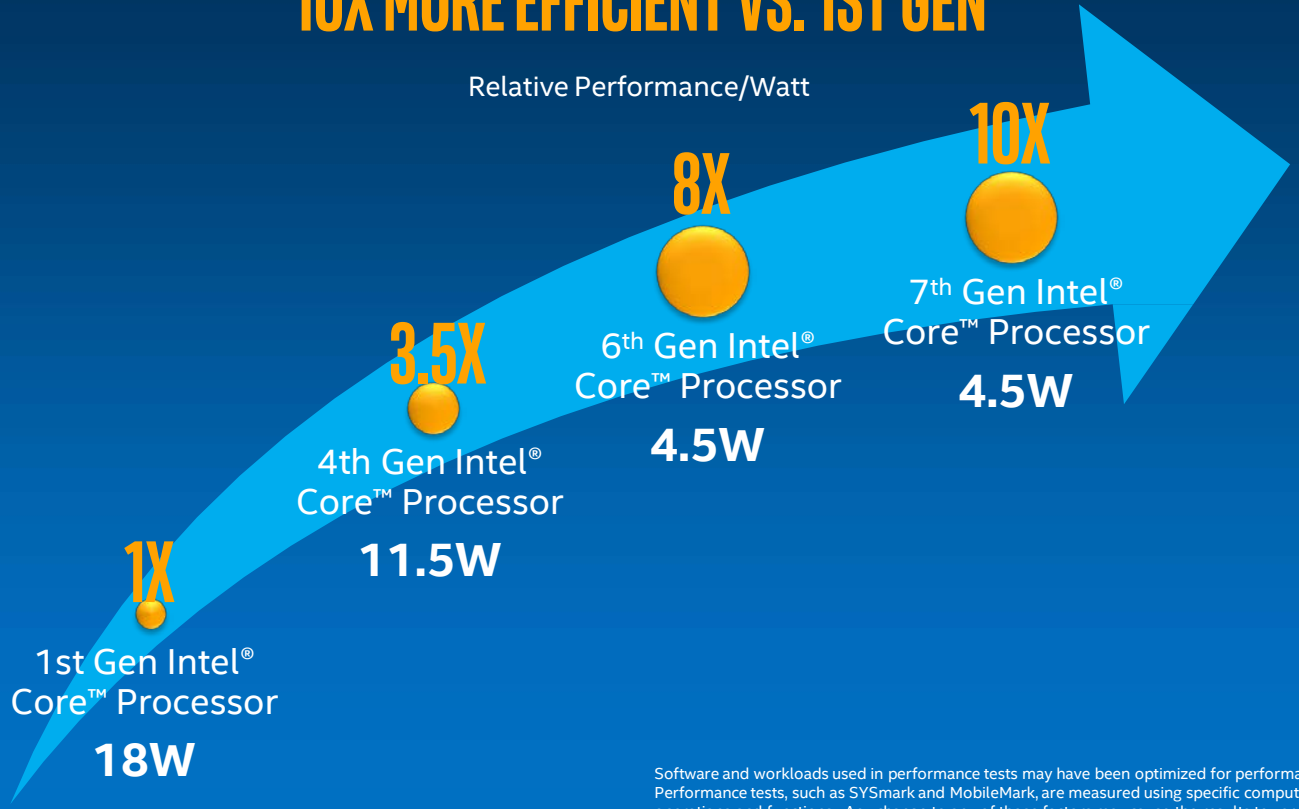
Integrated design & manufacturing

12% PROCESS PERFORMANCE INCREASE SUPPORTS LEADING EDGE PROCESSORS



DRIVING PERFORMANCE & POWER EFFICIENCY

10X MORE EFFICIENT VS. 1ST GEN



[1]Performance based on SYSMark 2014-Overall Performance @ Native Resolution
See appendix for configurations

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information about performance and benchmark results, visit http://www.intel.com/benchmarks

7TH GEN INTEL® CORE™ PROCESSORS WORK FASTER FOR YOU

MORE THAN 70%[1] FASTER MOBILE PRODUCTIVITY THAN A 5 YEAR OLD PC

WORK

Get work done **faster**

1.7X FASTER[1]

CREATE

Seamlessly create, edit and share 4K UHD 360 videos

8.6X FASTER[2]

GAME

Play your favorite games, like Overwatch*, on-the-go, in HD

3X BETTER[3]

LEAPS IN PERFORMANCE COMPARED TO 5-YR-OLD PC

[1]Based on SYSmark* 2014 Overall Score (Intel® Core™ i5-7200U vs. Intel® Core™ i5-2467M).
[2]Based on 4K 360 Video Creation Workload (Intel® Core™ i5-7200U vs. Intel® Core™ i5-2467M).
[3]Based on 3DMark* Cloud Gate Graphics Score (Intel® Core™ i5-7200U vs. Intel® Core™ i5-2467M).
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ENJOY 4K UHD LONGER ANYWHERE

New VP9 & HEVC 10-bit Decode Capability Delivers Efficient & Fluid Playback

6TH GEN CORE		7TH GEN CORE
Up to 1080p video streaming	Premium content (HEVC 10-bit)	Up to 4K UHD video streaming **"All Day 4K"** battery life (9.5hr)[1]
4 hours video battery life[2]	4K, 4K 360 YouTube* video (VP9)	**1.75X** longer video battery life (7hr)[2]
View multiple video streams simultaneously, up to 4K	Multi-video streaming	Support for additional formats of 4K 360 content streams

YOUR OWN 4K UHD THEATER ON THE GO

[1]Based on 4K 10bit HEVC Local Video Playback on Intel® Core™ i7-7500U vs. Intel® Core™ i7-6500U @ 66WHr battery and 4K panel
[2] As measured by 4K VP9 Streaming workload
*Other names abd brands may be claimed as the property of others
See appendix for configurations

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7TH GEN INTEL® CORE™ PROCESSORS

PERFORMANCE LEADERSHIP

Work, multitask, create

1.7X – 15X[1] faster

BRINGING 4K UHD MAINSTREAM

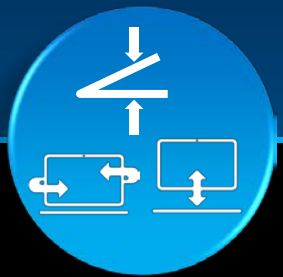
"All Day 4K" battery life (9.5hr)[2]

Premium 4K UHD content on your PC

FEATURE RICH

120+ Thunderbolt™ 3
100+ Windows® Hello 4K
50+ 4K UHD

25+ Pen designs



INNOVATIVE DESIGNS

New levels of thin 2 in 1s and clamshells

>100 DESIGNS IN Q4'16 STARTING IN SEPTEMBER

[1]Range of performance scores on benchmarks in this presentation
[2] Based on 4K HEVC 10-bit local video playback on Intel® Core™ i7-7500U at 66WHr battery and 4K panel
See appendix for configurations

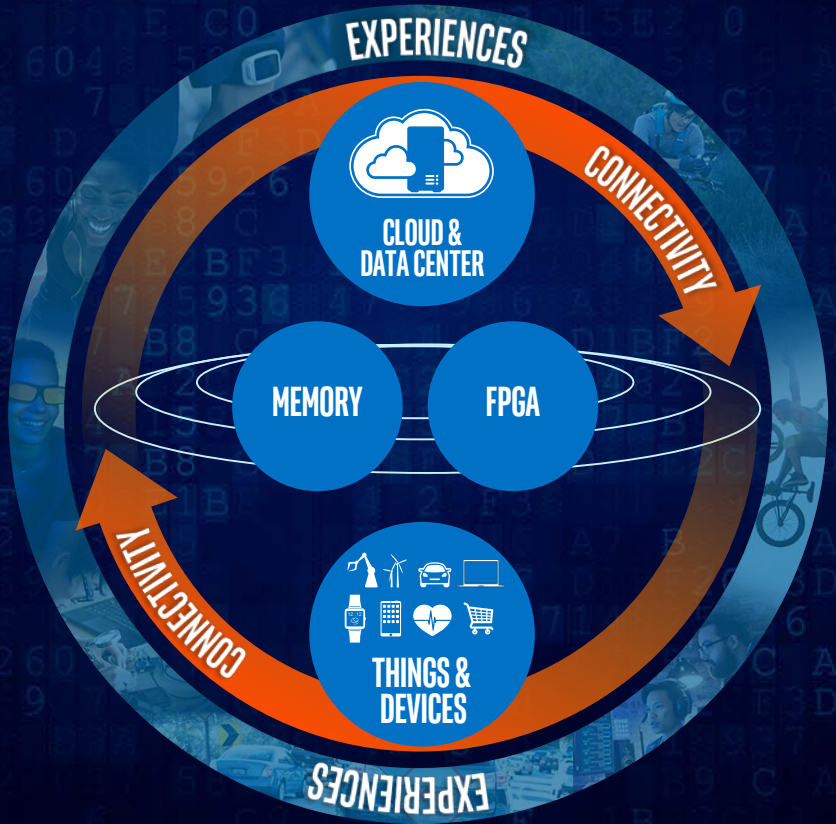
7TH GENERATION

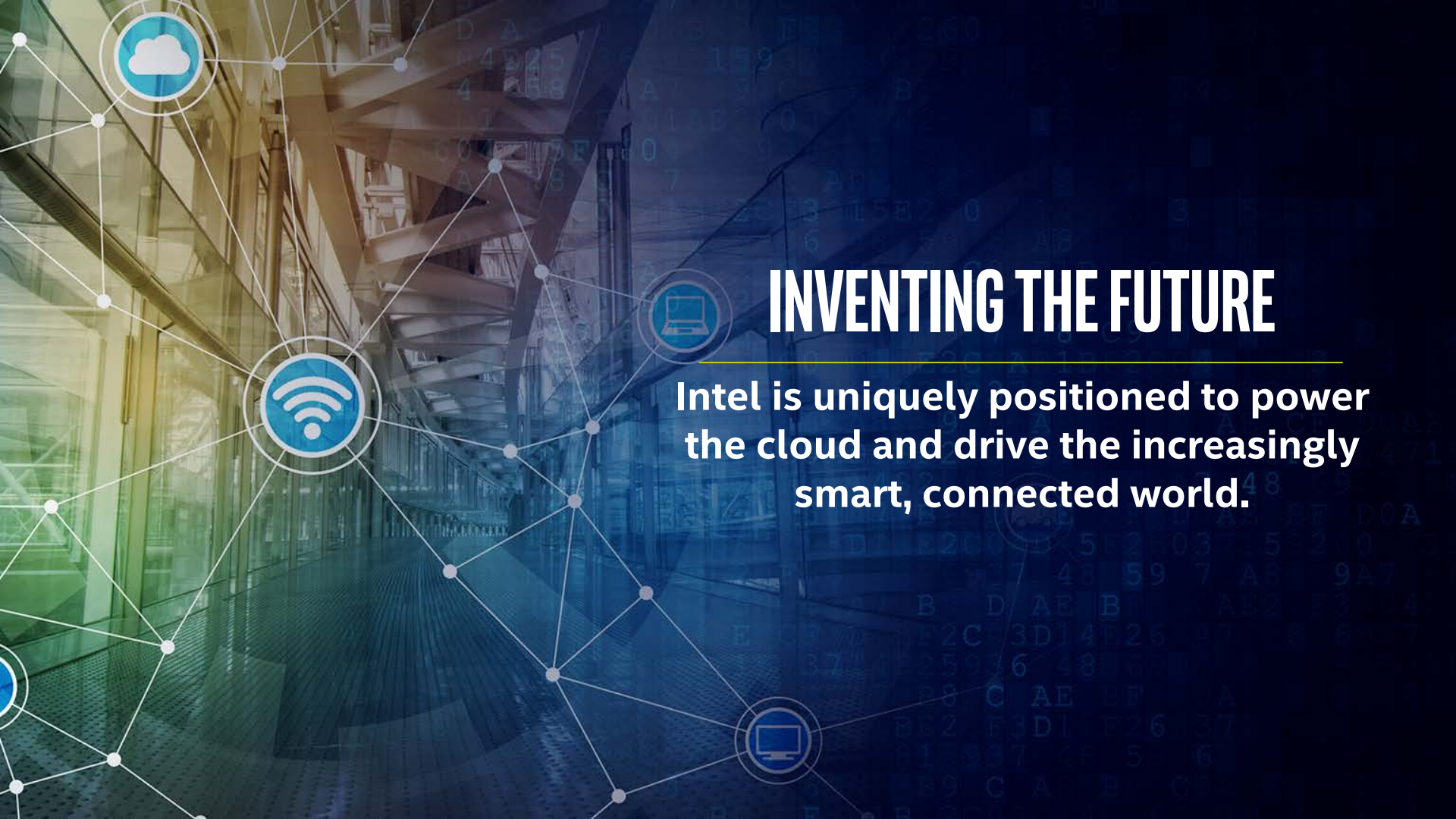
INTEL® CORE™ PROCESSOR

DESIGNED FOR THE IMMERSIVE INTERNET

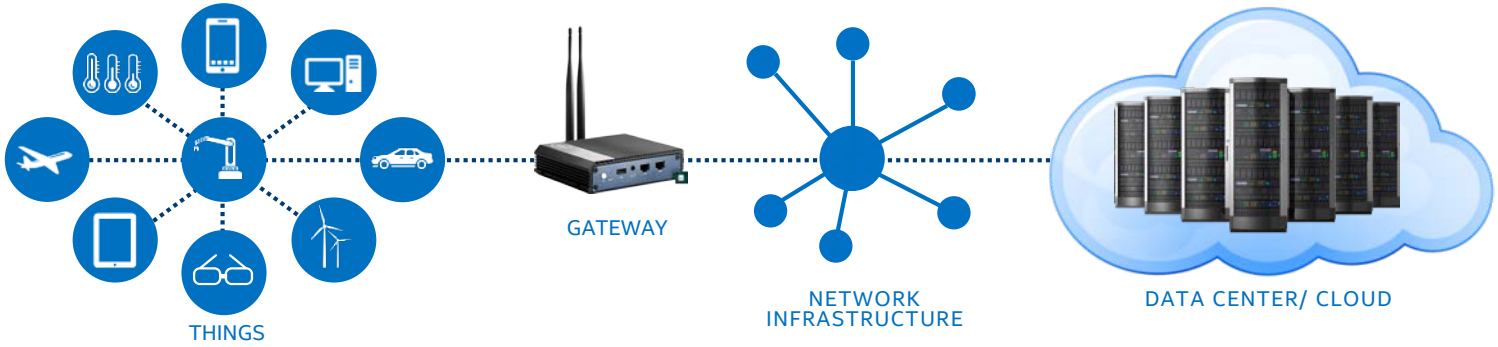

INTEL IS EVOLVING.
We're moving towards a world where the boundary between digital and physical is eroding, computing is truly mobile and ubiquitous, and **everything is smart and connected.**
INTEL'S VISION:
If it's **smart** and **connected**, it's **best** with **Intel.**

VIRTUOUS CYCLE OF GROWTH




INVENTING THE FUTURE
Intel is uniquely positioned to power the cloud and drive the increasingly smart, connected world.

SMART: INTERNET OF THINGS



THE INTERNET OF THINGS:

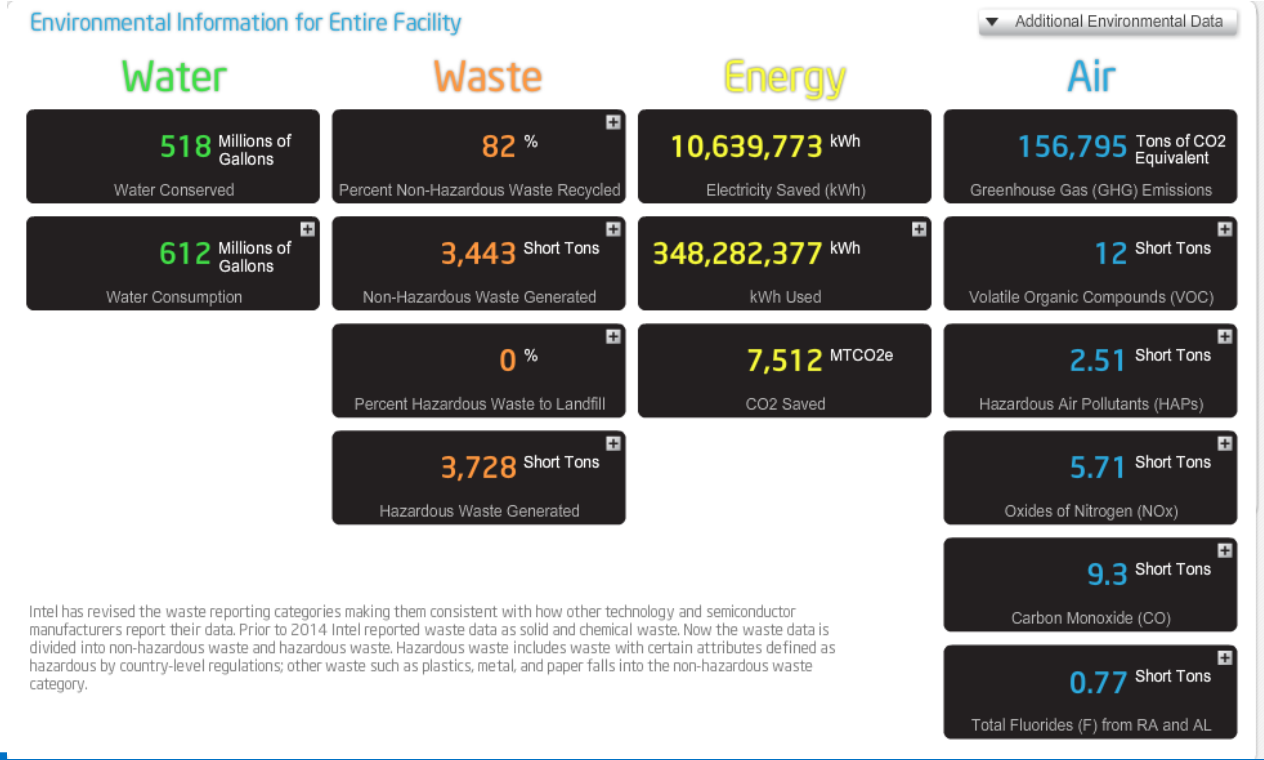
Devices that connect to the Internet integrating greater compute capabilities using data analytics to extract information

IOT PLATFORM – PULLING IT ALL TOGETHER

Welcome to Explore Intel.

We've created this site to promote corporate transparency by sharing information on our environmental performance.

TRANSPARENCY LEADERSHIP

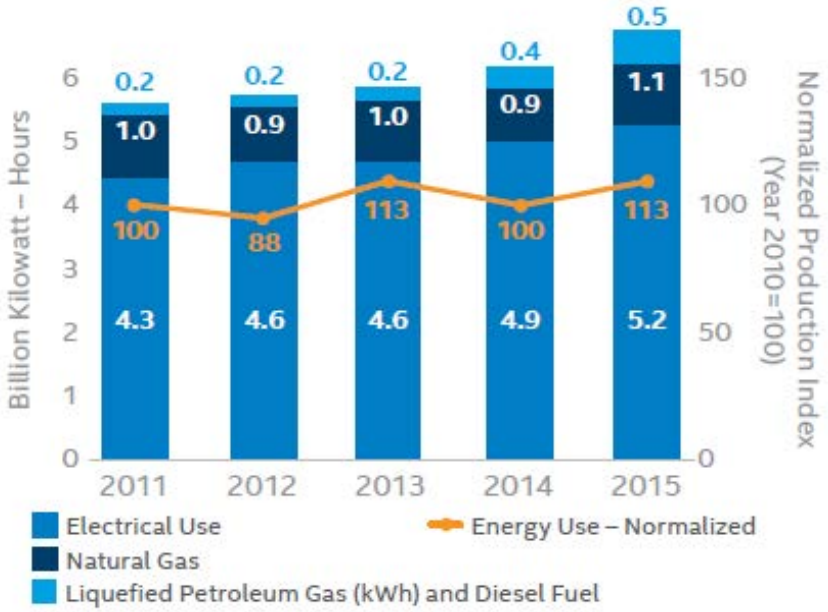


Exploreintel.com – Openly sharing our environmental performance

GOALS FOR 2016 AND BEYOND

Report Section	Goal
Product Stewardship	• Increase the energy efficiency of notebook computers and data center products 25x by 2020 from 2010 levels.[1] • Implement an enhanced green chemistry screening and selection process for 100% of new chemicals and gases by 2020.
Our People	• Achieve full representation[2] of women and underrepresented minorities at Intel in the United States by 2020.
Environmental Sustainability	• Reduce direct greenhouse gas (GHG) emissions by 10% on a per unit basis by 2020 from 2010 levels. • Grow the installation and use of on-site alternative energy to three times our 2015 levels by 2020. • Continue 100% green power in our U.S. operations and increase alternative energy use for our international operations from 2015 to 2020. • Reduce water use on a per unit basis below 2010 level by 2020. • Achieve cumulative energy savings of 4 billion kWh from 2012 to 2020. • Achieve zero hazardous waste to landfill by 2020. • Achieve 90% non-hazardous waste recycle rate by 2020. • Design all new buildings to a minimum LEED* Gold certification between 2015 and 2020.
Supply Chain Responsibility	• Complete or review an on-site audit for each of our Top 75 suppliers by the end of 2016. • Establish an 85% "green" Intel ground transportation fleet by 2016. • Validate our broader product base as conflict-free in 2016.[3] • Increase our annual spending with certified diverse-owned suppliers to $1 billion by 2020.
Social Impact	• Through the Intel She Will Connect program, reach 5 million women in Sub-Saharan Africa by 2020.

Energy Use



Our energy use calculations are based on Global Reporting Initiative G4 guidelines, the World Resources Institute/ World Business Council for Sustainable Development's The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, and internal criteria defined by Intel management.

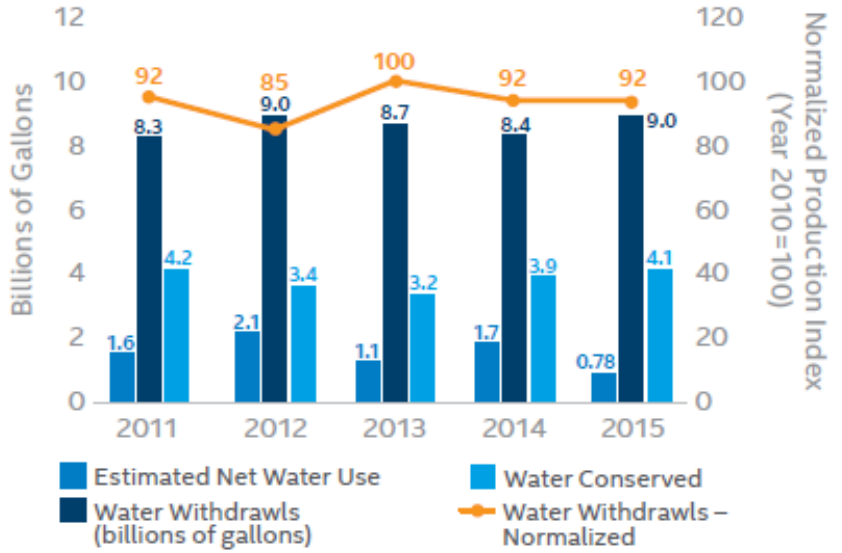
Energy Use

Goal: Achieve cumulative energy savings of 4 billion kWh from 2012 to 2020.

Progress: On track

Commentary: Since 2012, we have achieved cumulative energy savings of 1.6B kWh and remain on track to hit our 2020 energy goal. Our 2015 absolute energy use increased 10% compared to 2014, and our 2015 normalized energy use increased 13% from 2014 through 2015 as we ramped up new factories.

Water Use



Our water use calculations are based on internal criteria defined by Intel management. We define water withdrawals as total gallons of potable water (i.e., drinking water) used in our operations. "Operations" includes all manufacturing and non-manufacturing sites that use more than 35 gallons of water per person, per day.

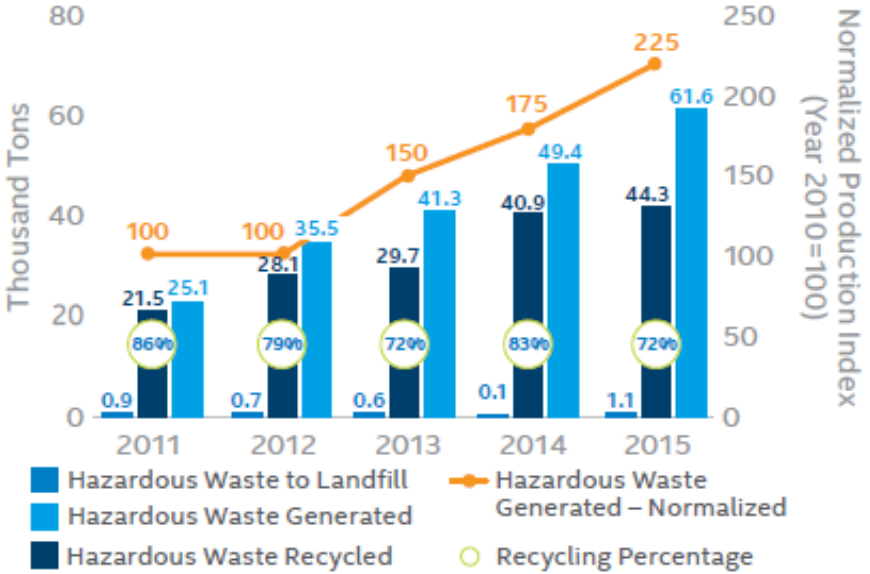
Water Use

Goal: Reduce water use on a per unit basis below 2010 level by 2020.

Progress: On track

Commentary: In 2015, our absolute water withdrawals increased by 7%, while our normalized water withdrawals remained flat. While our normalized water use is 8% lower than our 2010 baseline figure, as our manufacturing processes continue to evolve, we expect them to become more water-intensive, and our water withdrawals may increase. To address this issue, we have put a team of internal experts in place to investigate and develop a comprehensive plan to address our growing water use.

Hazardous Waste



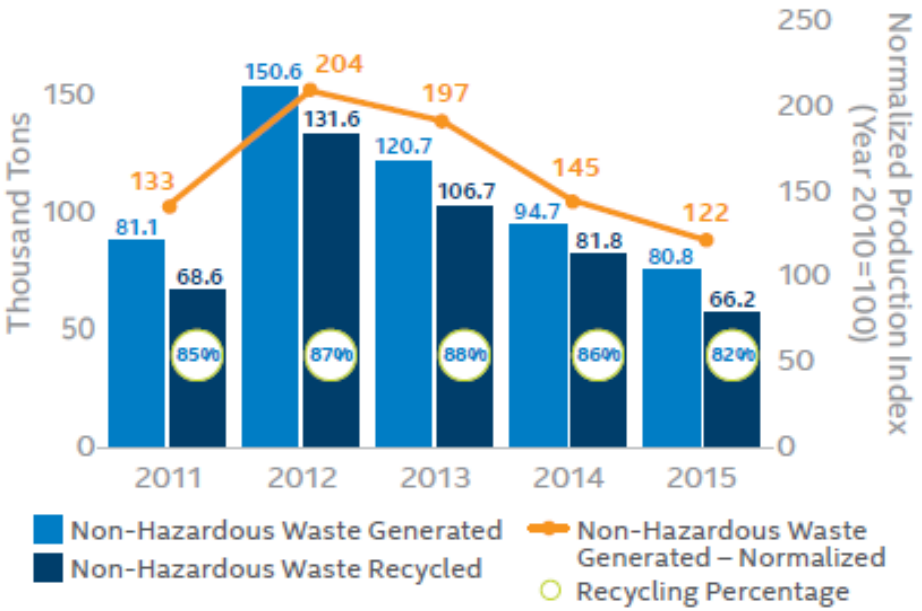
Hazardous Waste

Goal: Achieve zero hazardous waste to landfill by 2020.

Progress: On track

Commentary: In 2015, we sent just 2% of our hazardous waste to landfill, and we are on track to achieve our 2020 goal. From 2014 to 2015, our absolute and normalized hazardous waste generated increased 25% and 50% respectively, primarily due to new manufacturing processes that are more chemical-intensive. However, we were able to find novel recycle, reuse, and treatment technologies to keep these chemicals out of the landfill.

Non-Hazardous Waste



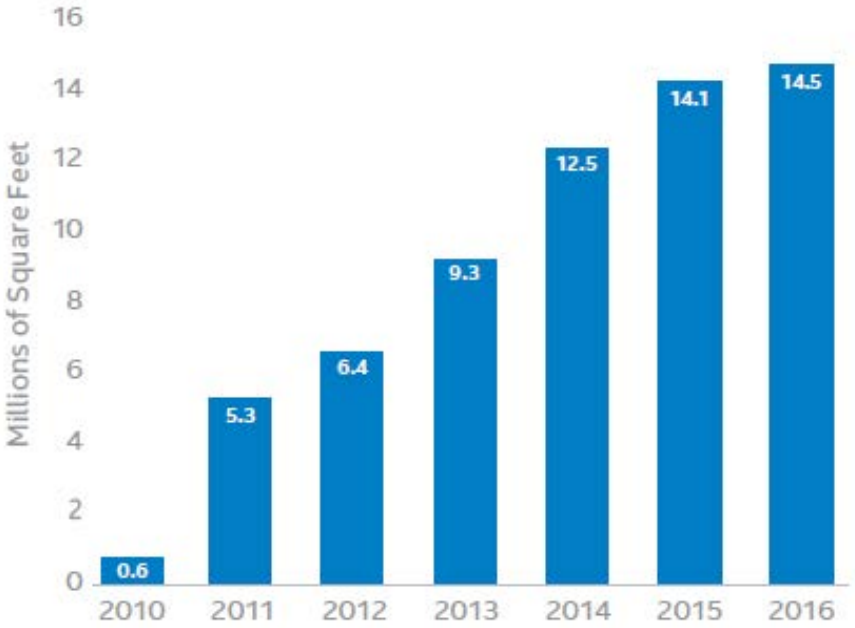
Non-Hazardous Waste

Goal: Achieve 90% non-hazardous waste recycle rate by 2020.

Progress: On track

Commentary: We recycled 82% of our non-hazardous waste in 2015, and are on track to reach our 2020 goal. We generated 15% less non-hazardous waste in 2015 compared to 2014, primarily due to the completion of construction projects. Our normalized non-hazardous waste generated also decreased by 23%.

LEED Certified Square Footage[1]



[1] Global, cumulative

Green Buildings

Goal: Design all new buildings to a minimum LEED Gold certification between 2015 and 2020.

Progress: On track

Commentary: We have achieved LEED certification for over 14.5 million square feet of space in 45 buildings around the world (approximately 25% of our total building space), and are on track to achieve our goal.

Intel Arizona

- One of the largest and most complex semiconductor manufacturing sites in the world
- Capital investment of $20 billion in manufacturing at the Ocotillo site since 1996 *(Intel established AZ operations in 1979)*
- $5.3 billion annual economic impact to Arizona
- 11,000 employees - $148,000 average total compensation
- Intel was ranked No.1 by the Phoenix Business Journal for total LEED-certified space in Arizona
- Since 1996, more than 5.1 billion gallons of water have been returned to the aquifer by Intel, enough to support almost 35,000 households for a family of four per year
- In 2015, Intel Arizona had a non-hazardous solid waste recycling rate of 87%

Intel Arizona

- 12 of 14 original buildings LEED Silver Certified ~3.9 Million sq. ft
- 2007 EPA Water Efficiency Award Winner
- YTD solar voltaic power output equivalent to 164 homes annual consumption
- 2015 water saved equivalent to annual usage of 12,000 homes
- Presented OBRF partnership at Global Water Summit
- H1 ‘16 Solid Waste recycle 93%
- Installed solar thermal system for OC6 cafe

Environmental Scan

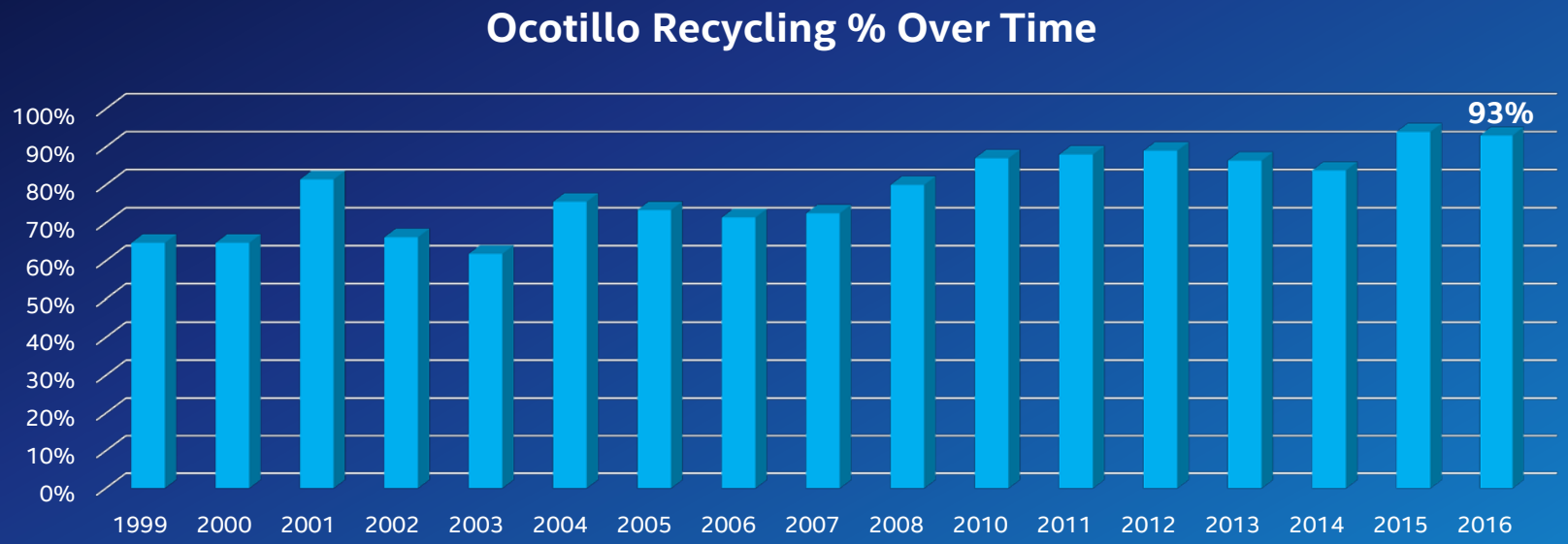
- Site Environmental Data is reported quarterly on the Explore Intel Website:
  - http://exploreintel.com/
- Semi-Annual Title V Compliance Monitoring Report
  - Site checked, validated, and certified compliance to ~450 air permit compliance items
  - System includes robust management review including internal compliance sign-off by all Area Managers
  - Report signed by Site Vice President responsible for OC Manufacturing
    - 2 Deviations were reported
      - Contractor paint buckets without lids (VOCs)
      - Isopropyl Alcohol improperly contained and open to atmosphere (VOCs)
- Unannounced Air Quality Inspection (MCAQD) – 2 Days onsite and detailed records request
  - All abatement equipment walked, factory and subfab, solvent storage and containers walked for compliance
  - Documentation review of all required records
  - **No findings** or NOVs were noted

Environmental Scan

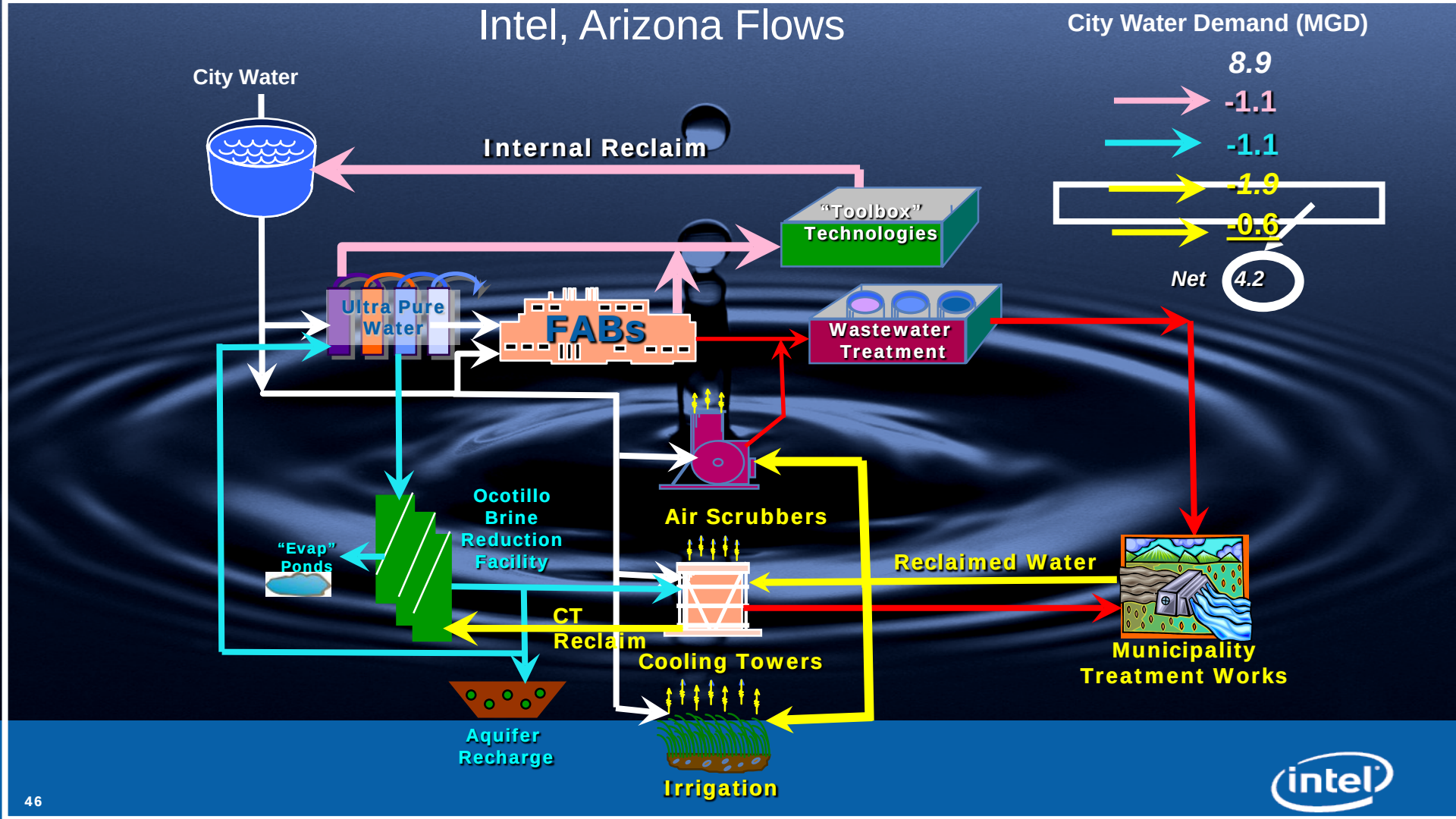
- Title V permit revision complete
  - Added 3 new EGENs
  - New ultra-low NOx burners retrofitted into older boilers
  - VFD upgrades on VOC abatement for improved CO/NOx performance
- H1 Wastewater monitoring completed with no issues

RECYCLING AT OCOTILLO

From 1999 to H1 2016 a total of 183,111 tons were recycled of the 233,280 tons shipped off site in total



Intel, Arizona Flows



Municipal Reclaim Water Path – Intel Driven

Reclaim Water

100 %

2.5 mgd

70 % Evaporation

Potable Water

Cooling Towers

WIN # 1

Industrial Water Reuse

Intel

WIN # 3*

Municipal Brine

30 %

28.5 %

WIN # 2

Industrial Brine

1.5 % Evaporation

1.5 %

Evaporation Ponds

Brine Reduction Facility

Ocotillo Brine Reduction & Water Reclaim Facility

OBRF can treat 2.8 mgd of high TDS brine (Industrial Brine, Win#2, 95% recovery, 98% salt removal) to high purity levels enabling re-use in semi-conductor plant, non process operations. The plant can also remove ~40 million lbs./year of dissolved solids. Plant achieves Zero Liquid Discharge (ZLD) in the most energy efficient manner through a combination of thermal brine concentrator and evaporation ponds

Questions?