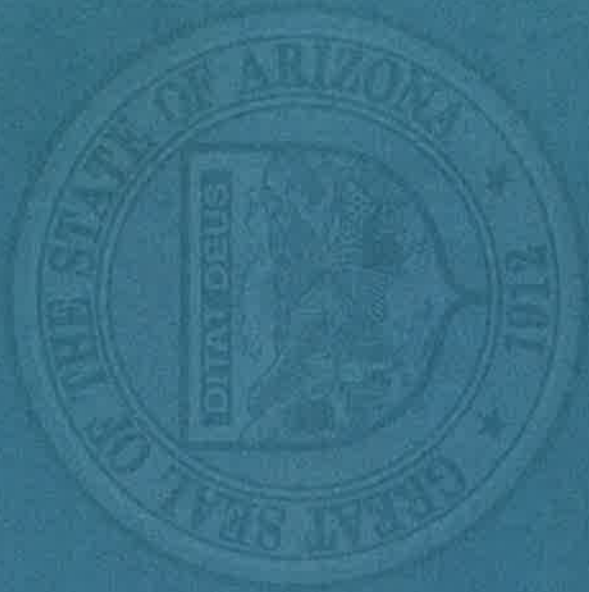


Celebrating 25 years of Arizona's Pollution Prevention (P2) Program



September 21, 2016



Sponsored by ADEQ's Pollution Prevention (P2) Program and the Western Sustainability Pollution Prevention Network (WSPPN)



Webinar Instructions

- This webinar will be muted to reduce or eliminate external auditory disturbances;
- The webinar will be available for download at <http://wsppn.org/news/webinars/>.
- If you are experiencing technical difficulties, call 1-800-263-6317, or 1-805-617-7000. Press 2 when prompted.



Western Sustainability Pollution Prevention Network (WSPPN)

- Cooperative alliance of P2 programs in Region 9
- P2 information research, consolidation, dissemination
- Pollution Prevention Resource Exchange (P2Rx)
- Preventing or reducing pollution before it is released has a greater positive impact on the environment, economy and health



ADEQ's P2 Program



Jeanine K. Inman, P.E.
Associate Environmental Engineer



Linneth A. López
Environmental Engineering Specialist III



John (Jack) Schrilla
Environmental Engineering Specialist I



About ADEQ



Who we are

Under the Environmental Quality Act of 1986, the Arizona State Legislature created ADEQ in 1987 as the state's cabinet-level environmental agency. ADEQ is composed of three environmental programs: Air Quality, Water Quality and Waste, with functional units responsible for technical operational and policy support.

Mission

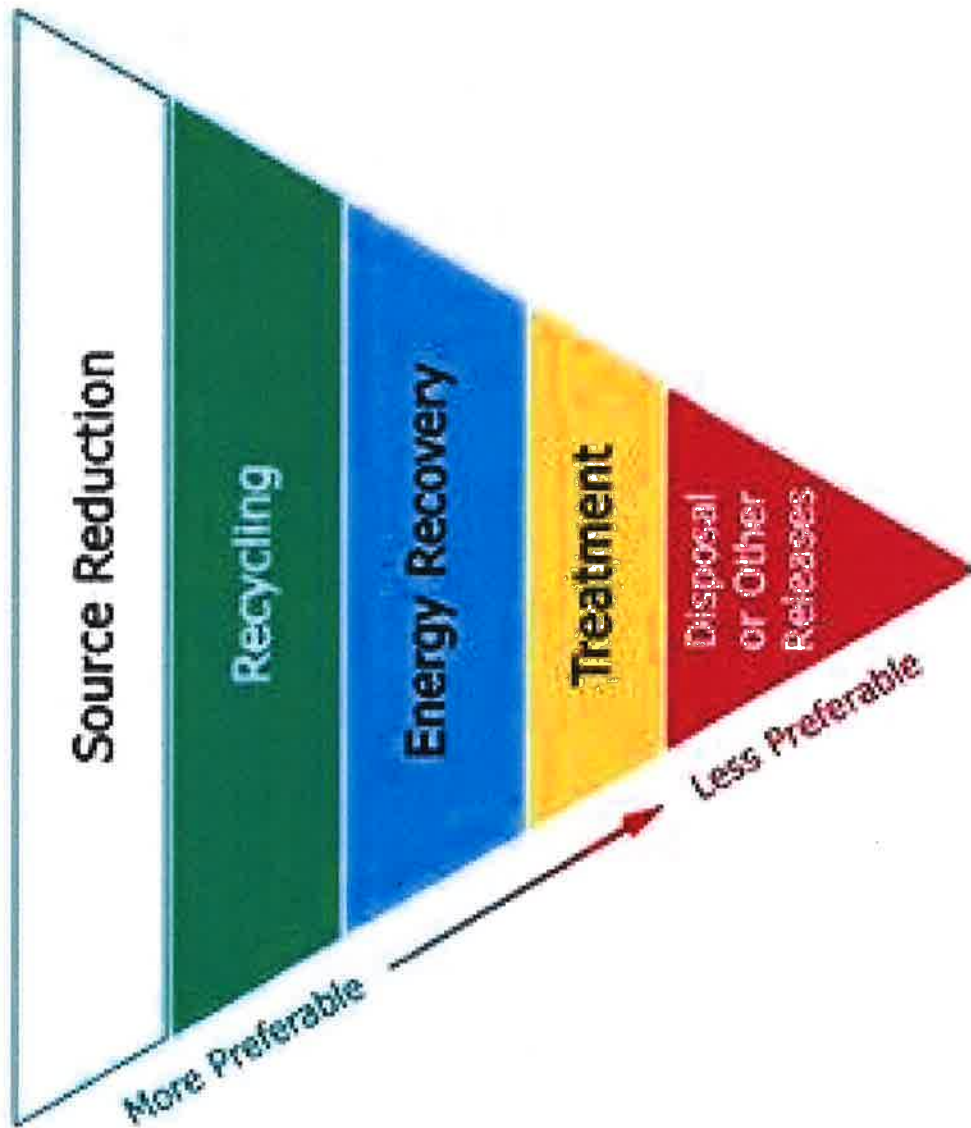
To protect and enhance public health and the environment in Arizona.

Vision

To be the No. 1 state in the nation in:

- Balanced, leading-edge environmental protection
- Technical and operational excellence
- Radical simplicity for customers and staff

What is P2?



Arizona's P2 Program

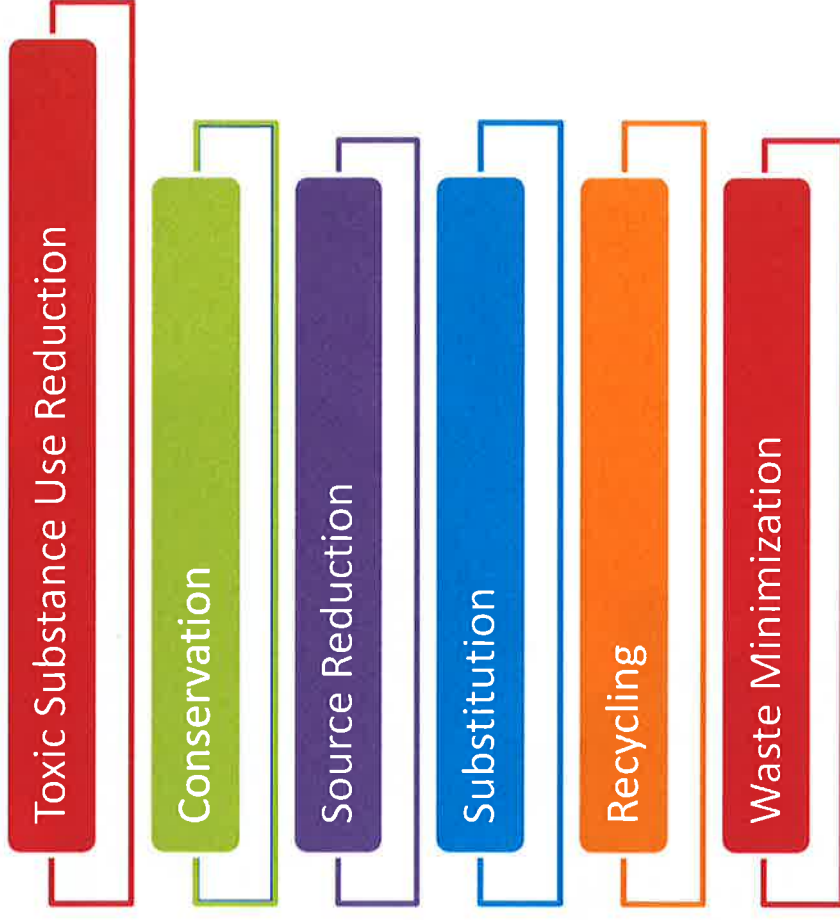
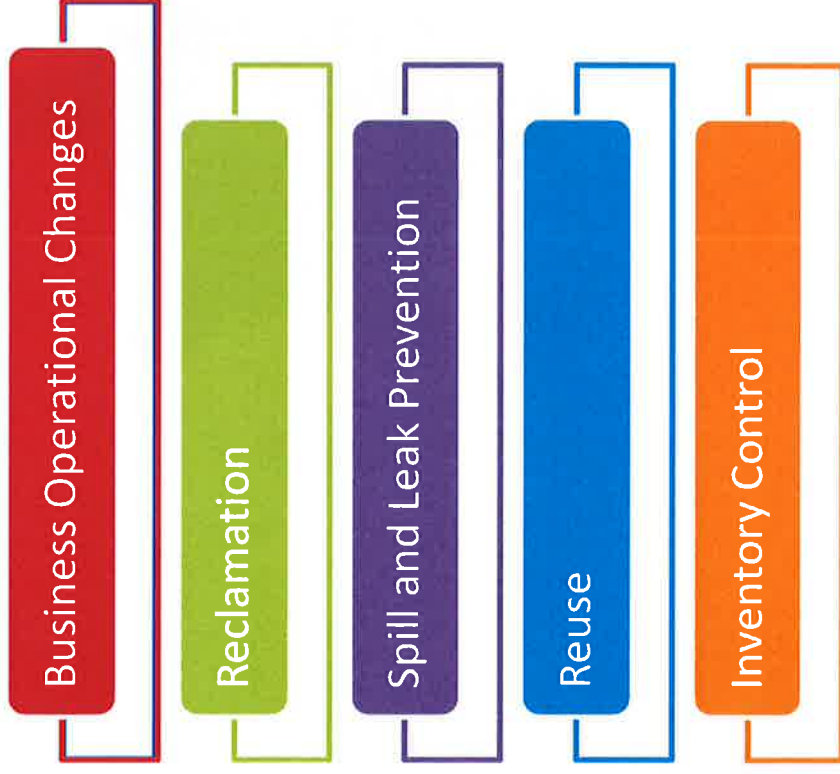
1991

Broadest P2
program in the
Nation

Reduction of:
Toxic Substance Use
Hazardous Waste
Generation



What is P2 in Arizona?

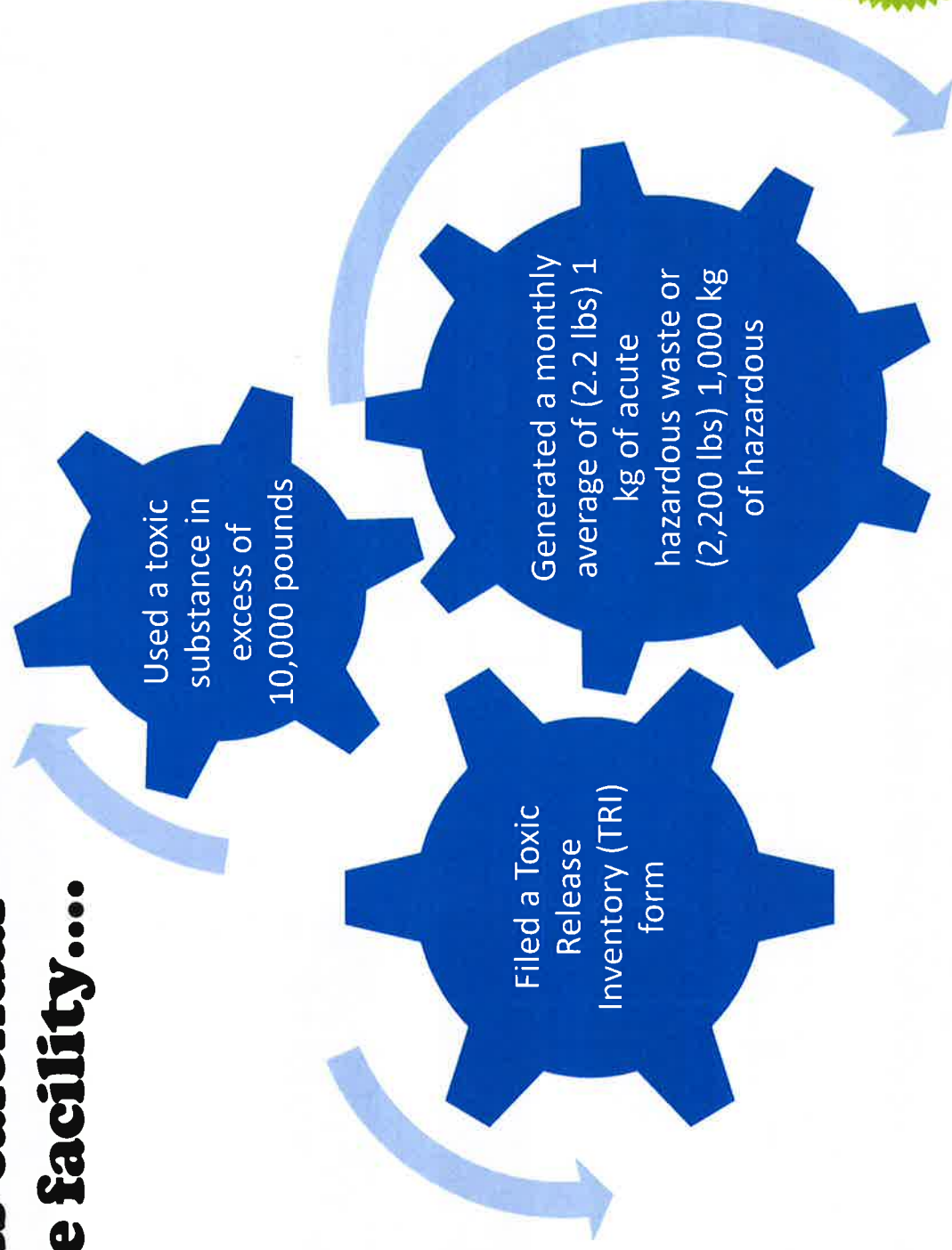


P2 in Arizona

Activities that avoid, eliminate or reduce the generation of hazardous waste, the toxic substance use, or the release of a pollutant or contaminant at the source

Who Needs to file a P2 Plan?

**If during the
previous calendar
year the facility...**



Arizona's P2 Program



Arizona Revised Statutes (A.R.S.) §§49-961 to 49-973

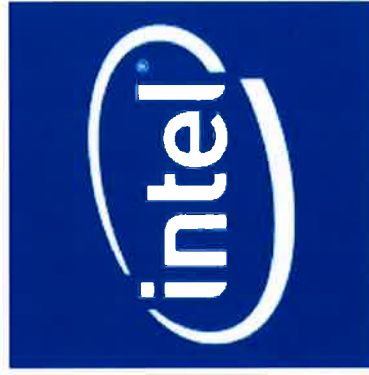


Why Celebrate P2 Week?

P2 week September 18 - 24

Pollution Prevention Week in Arizona highlights the efforts of facilities in our own State P2 program in reducing the use of toxic substances and hazardous waste generation and the conservation of natural resources!

The following companies will present on successful goals implemented at their facilities:



What are P2 goals?

- ADEQ P2 Program Goal Forms:
- An identified opportunity for waste reduction
- Facility provides a statement to reduce pollution
- Facility provides actions needed to implement the goal
- Defines a completion date and identifies a baseline quantity and year
- Reductions are reported annually to ADEQ P2 through the goal form

Section 7. P2 Performance Goal (A.R.S. §49-563 J.4)

Facility Name: _____ P2 ID #: _____

Complete one sheet for each goal

1. Goal statement: Enter a specific performance goal or individual production process goal that includes a statement of the expected result. The goal statement should address areas that can be accomplished by implementing one of the opportunities from Section 6. Goal statements should be in the form: (Action being taken) + (Target chemical, emission, or waste stream) + (Reduction goal). Example: Reduce emissions of volatile organic compounds (VOC) by 10% in the next 12 months. If a goal cannot be measured or will take a long period of time to complete, then include an action plan that outlines measurable milestones. See Page 48 of the guidance manual for an example of an action plan. Submit these goal sheets with your risk plan or amendment and the service progress report.	2. Scheduled Completion Date (month/year)	3. Completion Status: CSP - On CSP - Delayed C - Completed	4. Name of Toxic Substance and Waste stream and RCRA Waste Code(s)	5. State Volatile Organic Chemical "VOC", ozone depleting chemical, or "other" or "NA"
Goal # _____ Process Area(s) (if _____) Goal Statement: _____		☐ C ☐ CSP ☐ D ☐ DR		☐ VOC ☐ ODC ☐ NA

6. If this goal has been delayed or dropped (Don't 3), provide an explanation and include a new estimated completion date: _____

7. Actions Needed to Implement the Goal: Actions we will take to implement this goal are: _____	8. Baseline Quantity (Pounds or Gallons or other unit)	9. Baseline Year	10. How much was reduced or eliminated?	11. Month and year that reduction was measured	12. How much money (US \$) was saved or avoided?	13. Reduction Quantity in Pounds or Gallons or other unit	14. Production Ratio (Pounds or Gallons per unit of product)
Quantity: _____ Correct units: ☐ Pounds ☐ Gallons ☐ MWH ☐ Therms ☐ No measure	Quantity: _____ Correct units: ☐ Pounds ☐ Gallons ☐ MWH ☐ Therms ☐ No measure		Quantity: _____ Correct units: ☐ Pounds ☐ Gallons ☐ MWH ☐ Therms ☐ No measure			Quantity: _____ Correct units: ☐ Pounds ☐ Gallons ☐ MWH ☐ Therms ☐ No measure	Yes ☐ No ☐

14. Volatile Organic Chemical "VOC", ozone depleting chemical, or "other" or "NA"

14. Production Ratio (Pounds or Gallons per unit of product)



Disclaimer: The slides and information presented by the following facilities are for informational purposes only and do not necessarily reflect the opinion or endorsement of ADEQ. For more information on the technologies, topics and calculations discussed on the slides, please contact P2 staff who can forward your questions to the facilities.



Jeff Mieth





Build Something Cleaner

Boeing and the Environment



**ADEQ Pollution Prevention Webinar
September 21, 2016**

Overview

- Company/Facility Background
- History with ADEQ's P2 Program
- Best Practice Sharing
- Summary

The Boeing Company

- **Commercial Airplanes**
 - Boeing 7-series family of airplanes leads the industry.
 - Commercial Aviation Services supports carriers worldwide.
- **Defense, Space & Security**
 - World's largest manufacturer of military aircraft.
 - Global Services & Support provides training, maintenance, and other services to government customers worldwide.
 - World's largest provider of commercial and military satellites and major service provider to NASA.
 - Large-scale systems integration and support; develop networking technology and solutions.
- **Boeing Capital Corporation**
 - Financing solutions focused on customer requirements.

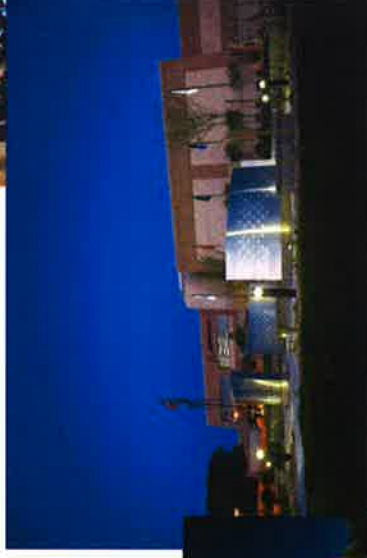


Connect, protect, explore, inspire

1916 | 2016
100

Mesa Facility

- Opened in 1982
- 3,800+ employees in Arizona
- 2 million square feet
- 41 Buildings
- 348 Site Acres



Mesa Products & Services

- AH-64 Apache development, production, flight test & support
- AH-6 development, production, flight test and support
- Rotorcraft Global Services & Support
- Boeing Strategic Manufacturing Center for Electrical Products
- Boeing Unmanned Aircraft Systems
- Boeing Composite Strategic Fabrication Center
- Boeing Phantom Works: New technology development
- Boeing Flight Test & Evaluation capabilities – Vertical Lift



Environmental Strategy

Be the most environmentally progressive aerospace company

Focus

Design in
Environmental Performance

Innovate for
sustainable operations

Inspire Global
Collaboration

Performance
Measures

- Energy and Emissions
- Materials and Waste
- Community
- Water

Surpassing Environmental Targets

2007–2012

We increased aircraft deliveries by 50%.
At the same time we reduced...

CARBON
DIOXIDE
EMISSIONS BY
9%

WATER
USAGE BY
2%

HAZARDOUS
WASTE BY
18%

WASTE TO
LANDFILLS BY
36%

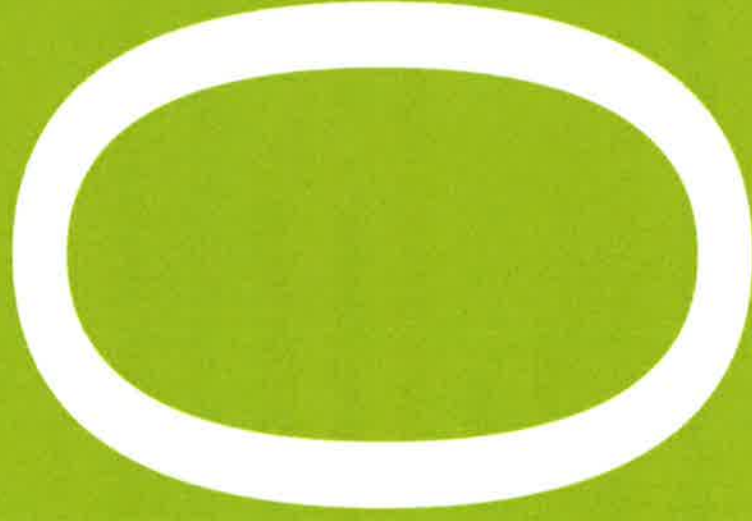
ENERGY
USAGE BY
3%

Reducing our environmental footprint
while significantly growing our business

Continuing Progress

2013 – 2017 Operational Targets

OUR CURRENT GOAL



Zero
absolute
growth in

GHG emissions

Water intake

Solid waste sent
to landfills

Hazardous waste*

*Zero revenue-adjusted growth

1916 | 2016

100

P2 Program

- First P2 Goals Submitted in 1995 as MDHC
- Initial focus on:
 - Chromium elimination
 - Low VOC coatings
 - Elimination of ozone depleting degreasers.
 - Hand wipe cleaning solvents.
- Participated in P2 site tours
 - Hosted FlashJet® tour during P2 Week 1996
- 89 P2 goals identified since inception
 - 6 P2 goals currently being worked



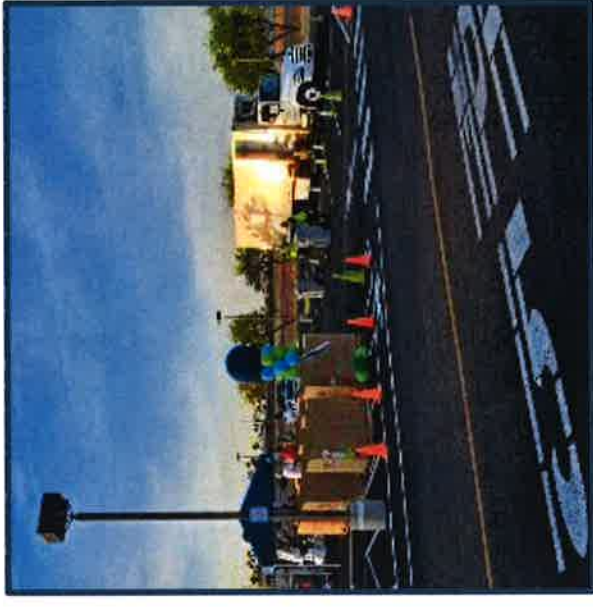
P2 Plan Success Stories

- Replaced vapor degreasers with aqueous degreasers
 - Significant reduction of air emissions
 - Hazardous waste reduction
 - Aqueous wastewater are pre-treated onsite using an electro-coagulation unit
- Use of chrome-free primer on fuselages
 - Approximately 95% of primer use is chrome-free
- Hazardous Materials “right sizing”
 - Implemented pre-saturated solvent wipes
 - Eliminated dispensing to small containers
- FlashJet topcoat removal
 - Pulsed Light Energy + Dry Ice = Removed Coating
 - Primer remains behind; significant reduction in hazardous waste



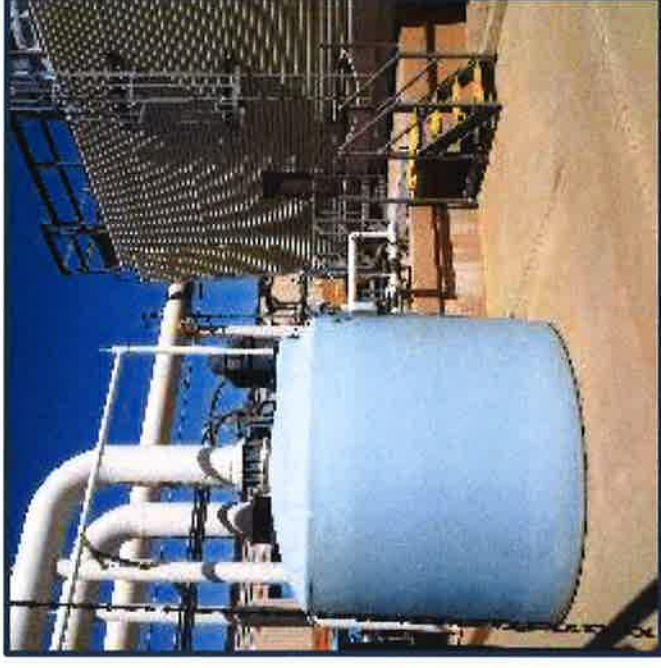
P2 Plan Success Stories (continued)

- ISO 14001 certification
- Earth Day (April), Health & Safety Fair (October)
 - Employee electronic scrap and document shredding
- Employee-led Green Team
- Solar technology demonstration project
- Reduction of canned air containing R134a
 - 2014 Boeing Conservation Award winner
 - Reduced CO₂e emissions by nearly 1,400 tons/year



Best Practice Sharing

- Cooling Tower blow down recovery
 - 2 tanks allow suspended solids to settle out of blow down water
 - Water is returned to the tower for reuse
 - Reduces amount of make-up water required as well as the amount of blow down water to sewer
 - Helped the site reduce water consumption
- Low VOC topcoat
 - Also addressed OSHA silica requirements
 - ISO 14001 project



Since 2007, water consumption has been reduced by 21 million gallons/year (29%)

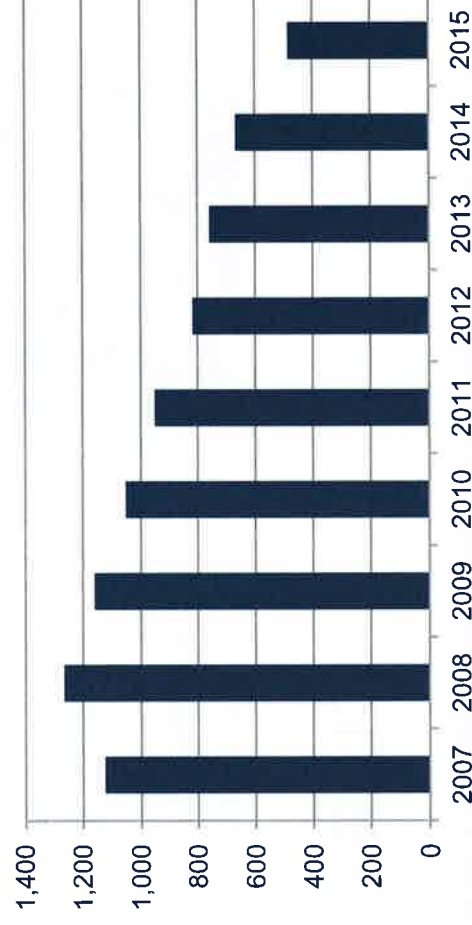
Best Practices (continued)

- Employee engagement
 - Over 100 Employee Involvement teams onsite
 - Team-based business initiatives
 - Green Team has adopted 4 recreation areas at Canyon Lake in partnership with U.S. Forest Service
 - 2016 Boeing Environmental Leadership Award
 - Global Month of Service
- Light Duty “eco-tasking”
 - Employees on light duty sort items such as office supplies, gold connectors, and plastic caps
 - Items are re-used onsite, sold off-site, or donated through Global Corporate Citizenship



- Recycling program

Solid Waste to Landfill (tons)



1916 | 2016

100

Summary

- Boeing aspires to be the most environmentally progressive aerospace company
- Boeing Mesa has participated in ADEQ's P2 Program for over 20 years
- Initial projects focused on hazardous waste reduction
- Recent projects expanded to reduce Environmental metrics for
 - Water consumption (reduced by 21 million gallons/year)
 - Energy use (reduced by 50,800 MMBtu/year)
 - Solid waste to landfill (reduced by 640 tons/year)
 - Hazardous waste generation (reduced by 12 tons/year)
- Opportunities exist to
 - Increase employee environmental engagement
 - Efficiently report projects as P2, ISO 14001, 4-wall/Environmental Metrics, and Waste Minimization Plan activities





Laura Sicking



Lauren Blazek





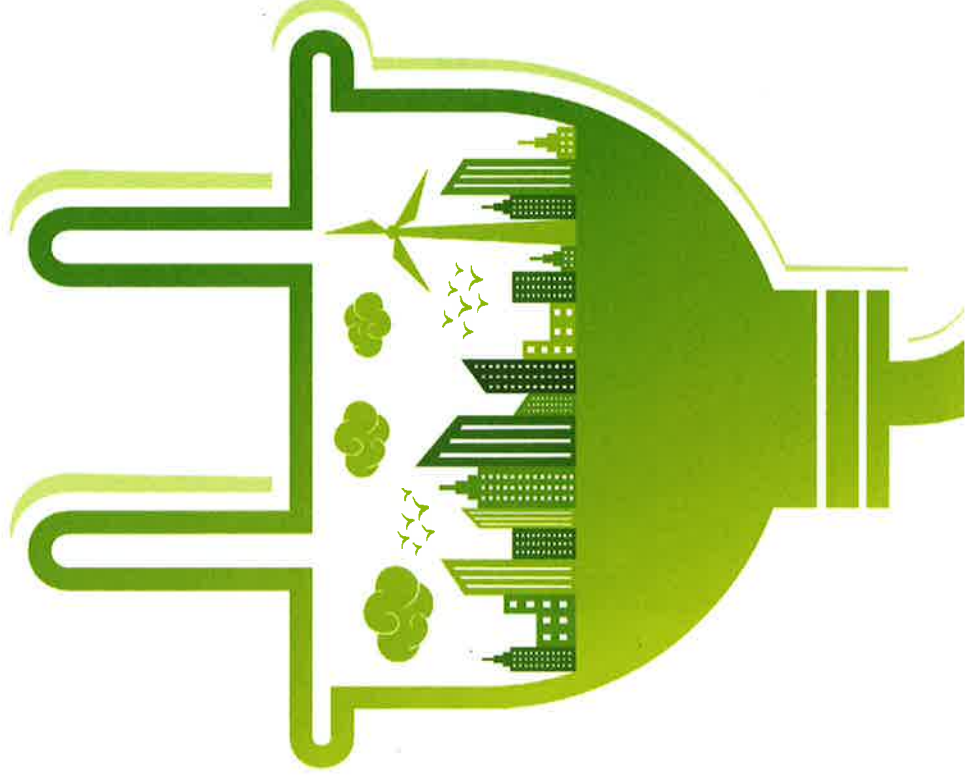
Pollution Prevention Program: Intel Ocotillo Facility

Lauren Blazeck & Laura Sicking

September 21, 2016

Agenda

- Introduction to Intel
- P2 at the Ocotillo Campus
- Examples of Current P2 Goals
 - Solid Waste Recycling
 - LEED Certifications
- Employee Awareness Training
- Questions

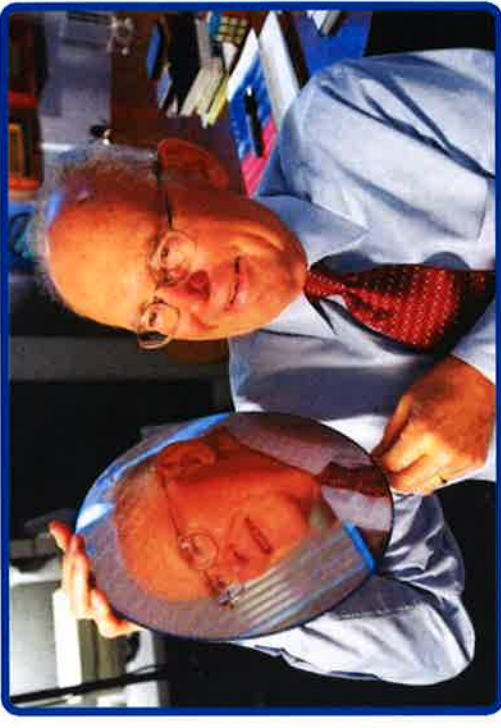


Sustainability is Integrated into Intel's Corporate Culture

“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

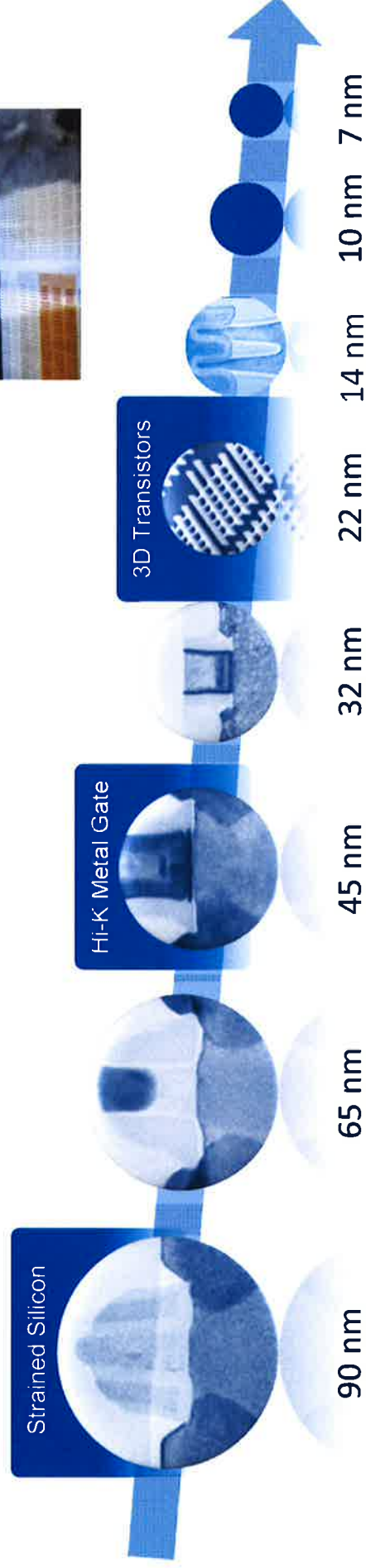
Letter in EHS Report
January 1995



Linking Technology & Sustainability

Executing to Moore's Law

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



Just how small and fast is a 14nm transistor?



>100 Million

*14nm transistors
would fit on the head of a pin*

>1 Billion

*14nm transistors
would fit on your thumbnail*



*A 14nm transistor can
switch on and off
>100 Billion
Times / Second*

*It would take you
around
2000 Years
to Do It*

Intel's Ocotillo Campus



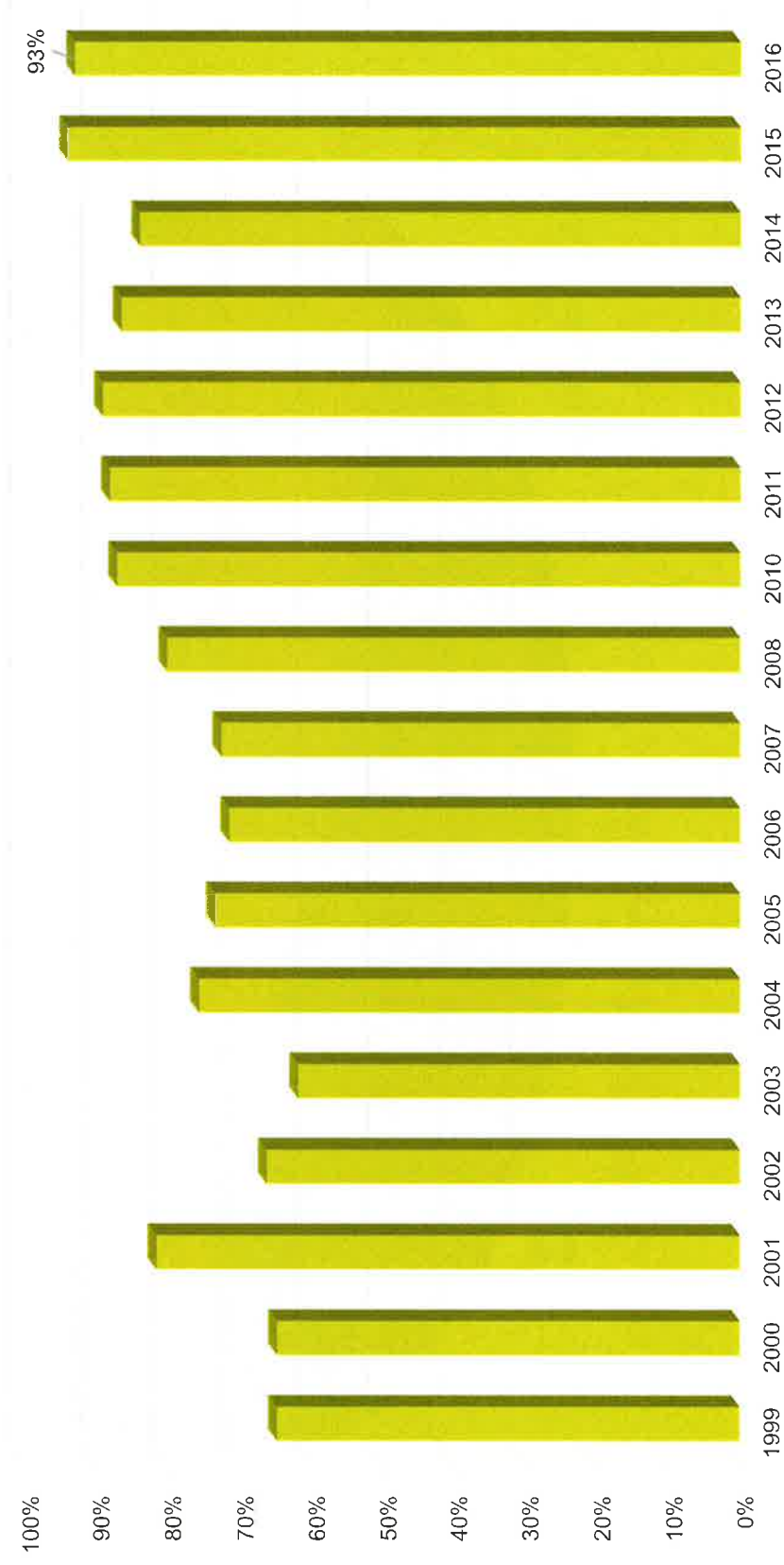
- Located in Chandler, AZ - 20 years old!
- Six main office buildings and three high volume semiconductor manufacturing factories (fabs)
- More than 7000 employees and contractors

History of P2 at Ocotillo

- Entered ADEQ's P2 program in 2007 due to hazardous waste generation
- Completed goals since 2007:
 - Reduction in amount of certain wastes sent offsite for disposal:
 - Ethylene Glycol
 - NMP
 - Lead
 - Certifying buildings under LEED for new construction
 - Fab 42 was built as LEED gold certified
 - Increased recycling of solid waste to 90% or greater
 - Provided training opportunities for thousands of employees each year
- **Intel is VESP platinum level certified as of early 2016!**

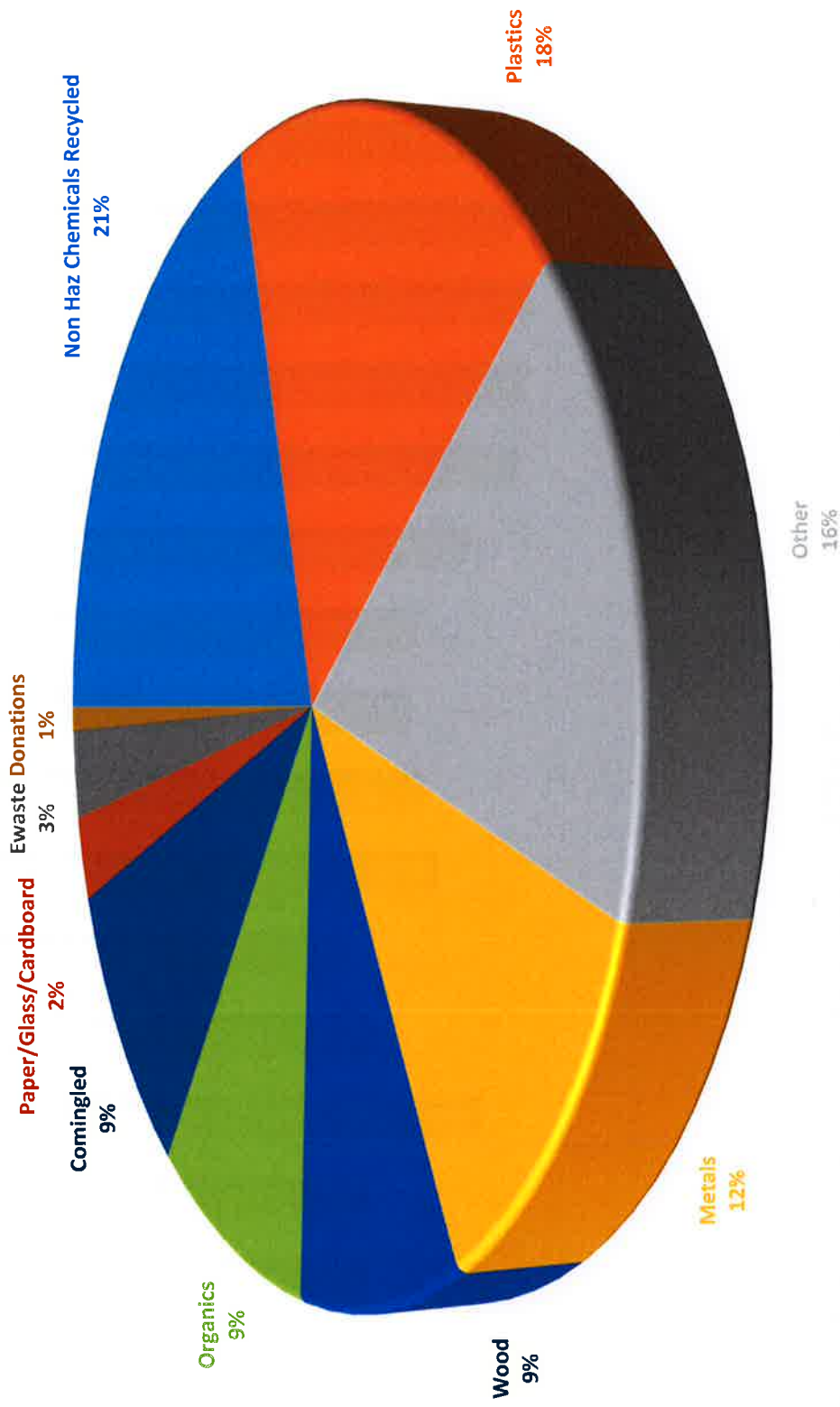
Current P2 Goal: 90% Solid Waste Recycling

Ocotillo Recycling % Over Time



Makeup of Ocotillo's Non-Hazardous Wastes

BREAKDOWN OF RECYCLED WASTE STREAMS



Making it Easy to Recycle

Master Design Standards Created for Docks across Intel

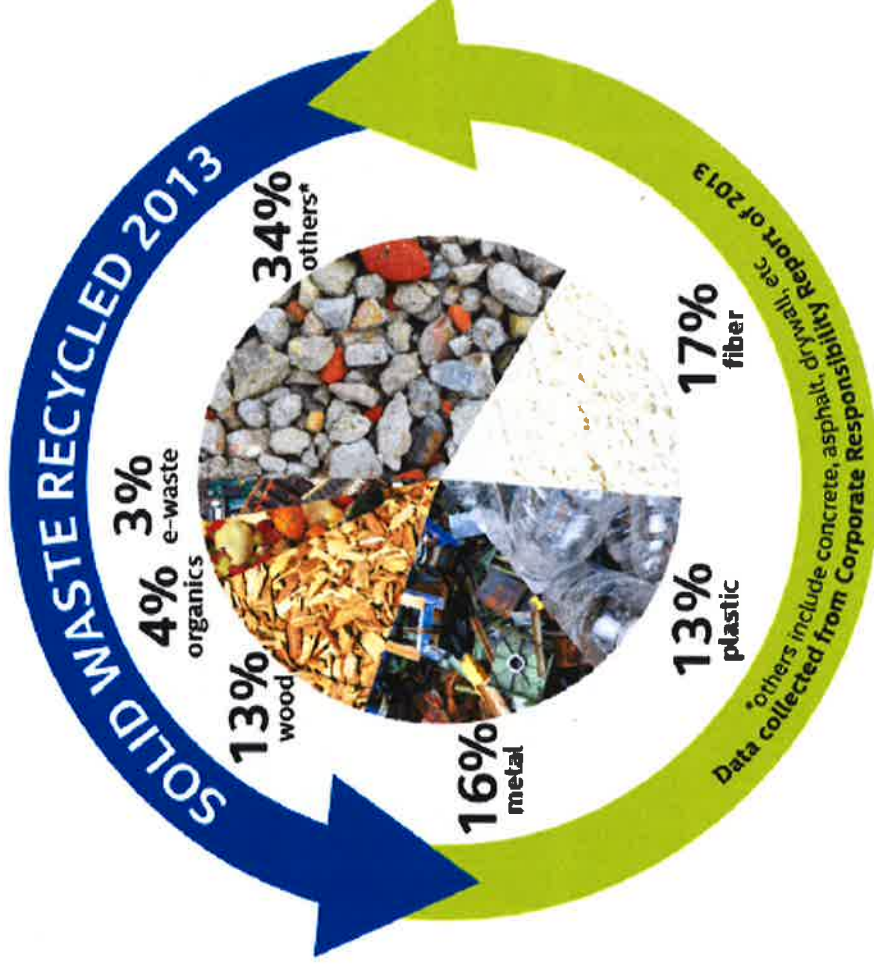


Central “We Recycle” Stations

Recycling Lessons Learned

- Contractual Obligations help!
- By thinking of waste as a product you can develop more recycling options and solutions
- Moving recycling bins from every desk to consolidated collection areas with segregation signs helped explain strategy
- Introducing compostable and reusable dishware is an easy way to reduce food waste to landfill
- Coupling recycling rates to bonuses is an effective way to encourage employees

Showcasing Recycling Goals and Achievements



Graphics and information related to recycling presented in bathroom readers across campus

Showcasing Recycling Goals and Achievements

Explore Intel: Ocotillo



Home

Photos

Videos

Documents

Environmental Information for Entire Facility

Additional Environmental Data

Water

1,755 Millions of Gallons
Water Conserved

557 Millions of Gallons
Water Consumption

Waste

90 %
Percent Non-Hazardous Waste Recycled

3,733 Short Tons
Non-Hazardous Waste Generated

0 %
Percent Hazardous Waste to Landfill

3,638 Short Tons
Hazardous Waste Generated

Energy

0 kWh
Electricity Saved (kWh)

266,738,057 kWh
kWh Used

0 MTCO₂e
CO₂ Saved

Air

348,319 MTCO₂e
Greenhouse Gas (GHG) Emissions

9.26 Short Tons
Volatile Organic Compounds (VOC)

2.68 Short Tons
Hazardous Air Pollutants (HAPs)

7.34 Short Tons
Oxides of Nitrogen (NO_x)

23 Short Tons
Carbon Monoxide (CO)

<http://exploreintel.com/ocotillo>



Awareness Training

Education of both contractors and employees via:

- Bathroom Readers
- Posters
- Green Intel website
- Site walks with management

Available programs:

- Green rental cars for business travel
- Annual free computer recycle day
- Annual Environmental Excellence awards

Awareness Training Examples



The Green Initiative Troupe (GREENit) is focused on sustainability initiatives within Intel.



GREENit is the host of the annual GREENit fair which promotes awareness of sustainability and actionable steps employees can take to living greener.



GREENit supports Chandler's Zero Landfill Initiative sponsored by Corporate Services.

Annual "GREENit" fair held on campus for all employees to attend

Awareness Training Examples



Northwest
Earth Institute
DISCOVER CHANGE. TOGETHER.

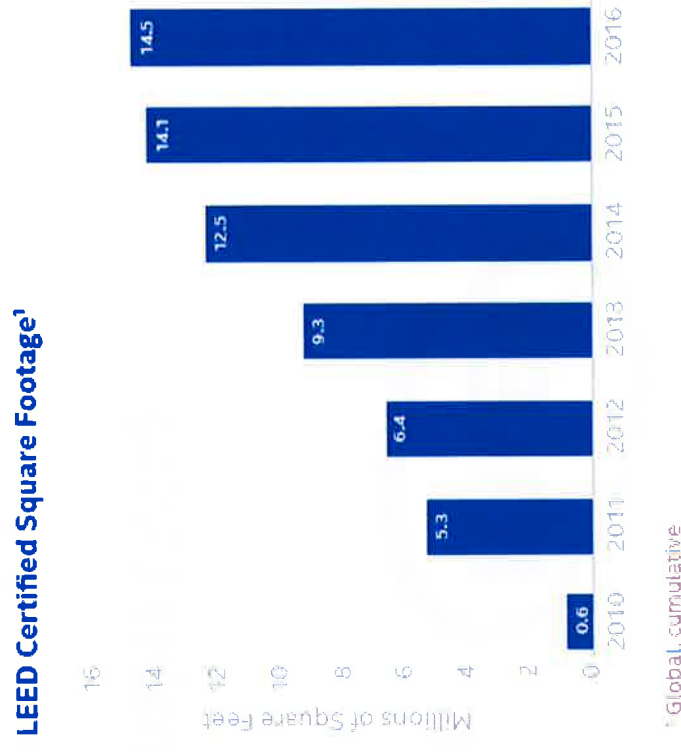


Choices for Sustainable Living

Partnership with NWEI to provide employees with a free seven week course focused on Sustainable Living both at work and home

LEED: Leadership in Energy and Environmental Design

- LEED: a nationally accredited organization that certifies buildings as high performance green buildings
- Intel has LEED certification for over 14.5 million square feet in 45 buildings around the world
- In 2011 Intel was the first chip-maker to obtain LEED certification for existing buildings at the Ocotillo manufacturing campus.



GREENER BUILDINGS



Over 14.5 million square feet in 45 LEED certified buildings

Questions?



ENVIRONMENTAL SUSTAINABILITY

"Intel is committed to being a leader in environmental sustainability, especially in the communities where we operate. Reducing our environmental impact not only benefits our business, but is the right thing to do."

—Neil Turnmore
Vice President, Technology and Manufacturing Group
Director, Corporate Services

www.intel.com/responsibility

Voluntary Environmental Stewardship Program (VESP)



Contact Information

Ian Bingham, Communications Director
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, AZ 85007
(602) 771-4322
idb@azdeq.gov
www.azdeq.gov



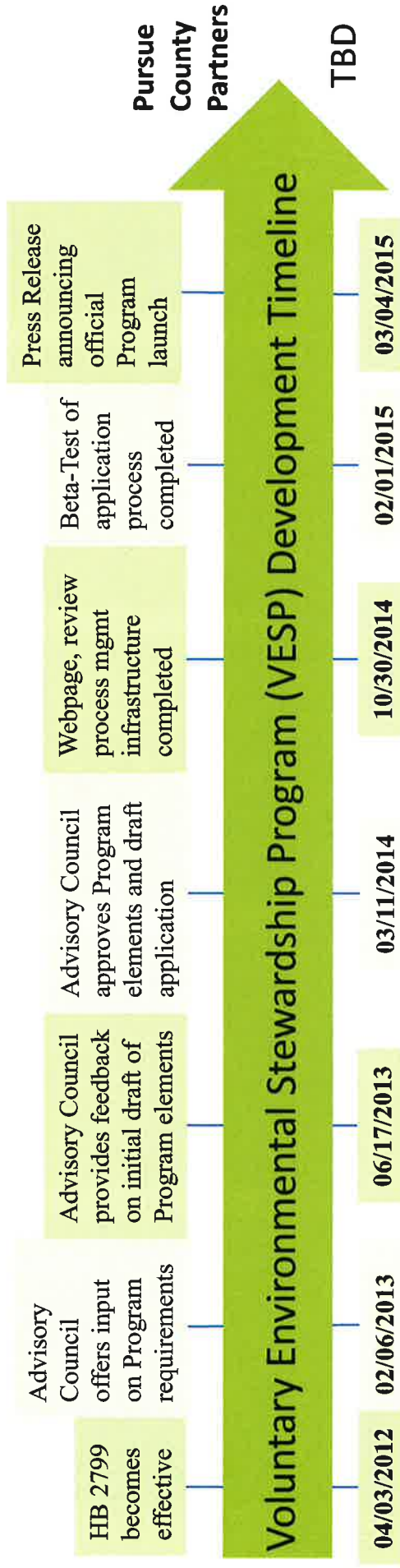
Voluntary Environmental Stewardship Program (VESP)

Ian Bingham, Ombudsman and Tribal Liaison

September 21, 2016



Timeline



Levels of Recognition



Copper

For partnerships, collaborations, or regulated facilities that have completed a project that resulted in measurable improvements to the environment.



Bronze

For regulated facilities making a demonstrated effort to comply with environmental regulations.



Silver*

For organizations improving their environmental footprint by preventing pollution and conserving natural resources.



Gold*

For organizations willing to develop an environmental management system (EMS) that is consistent with the ISO 14001 standard.



Platinum*

For organizations with a fully implemented environmental management system (EMS).

Program Elements

Areas for Continuous Improvement	Potential Benefits and Incentives	Environmental Management System (EMS)
Upstream 1. Material Procurement 2. Supplier's Environmental Performance Input 3. Material Use 4. Water Conservation 5. Energy Conservation 6. Land Use Non – Product Output 7. Air Emissions 8. Discharges to Water 9. Waste Generation/Management 10. Noise 11. Vibration Downstream 12. Products 13. Reduce, Reuse, Recycle or Repurpose	1. Reduced Inspection Frequency 2. Enforcement Notice 3. Reporting Consolidation 4. Recognition 5. Permit Flexibility 6. Reporting Requirement Reduction 7. Participation in Pilot Projects 8. Multi-media Inspections 9. Multi-media Permitting 10. Future Incentive Discussions	• Policy • Planning • Implementation and Operation • Checking and Corrective Action • Management Review

Program Logistics

Electronic Application Process

Membership good for three years

Copper – One time, one year recognition

Annual report documenting progress on commitment(s)

Renewals good for three years

Demotions and Revocations are possible

VESP is not a license

Contact Information



Ian Bingham, Communications Director
Arizona Department of Environmental Quality

1110 West Washington Street

Phoenix, AZ 85007

(602) 771-4322

idb@azdeq.gov

www.azdeq.gov

VESP Webpage:

<http://www.azdeq.gov/other/VESP>

Question and Answer Session

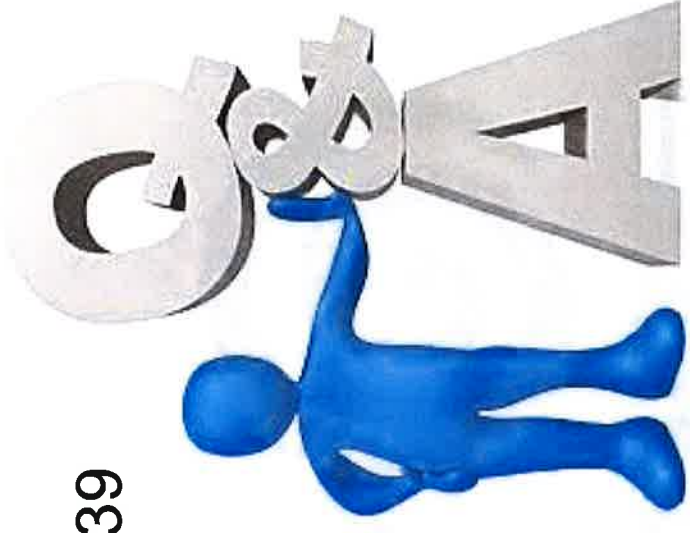


For Further Questions...

Contact us! We are here to help!

Jeanine Inman, P.E. - (602) 771-2351
ji1@azdeq.gov

Linneth A. Lopez - (602) 771-4739
lal@azdeq.gov





Thank you for celebrating 25 years of Arizona's successful P2 Program!