

A satellite view of Earth is shown on the left side of the slide, curving from the top to the bottom. The top portion shows the Eastern United States and the Gulf of Mexico, while the bottom portion shows the Atlantic Ocean and parts of South America. A thick red horizontal bar is overlaid across the middle of the image, containing the title text.

Zero Waste Metrics – The Real Story

Integrated Defense Systems

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Agenda

- Raytheon – Zero Waste Video
- Defining Metrics and Goals
- Gap Analysis
- Metrics Collection Methodology



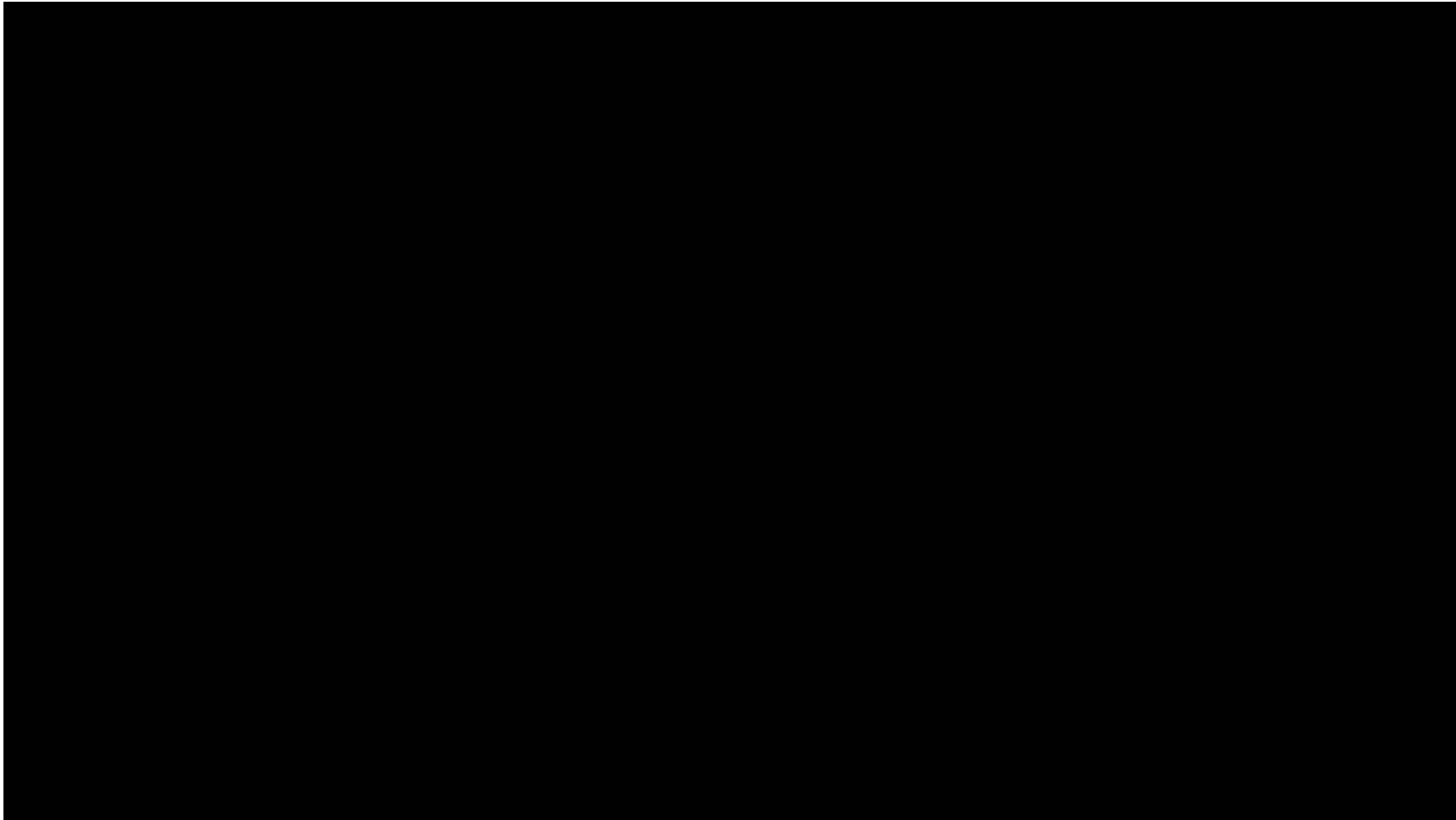
“Good” Metrics are a Cornerstone to Success

RAYTHEON COMPANY – A TECHNOLOGY AND INNOVATION LEADER SPECIALIZING IN DEFENSE, CIVIL GOVERNMENT AND CYBERSECURITY SOLUTIONS THROUGHOUT THE WORLD.

- 2015 NET SALES: \$23 BILLION
- 61,000 EMPLOYEES WORLDWIDE
- HEADQUARTERS: WALTHAM, MASSACHUSETTS



Zero Waste Video



Long History of Recognition


2002	MA WasteCap	Race-To-Recycle Awards
2003	MA WasteCap	Race-To-Recycle Awards
2005	WasteWise	Innovative Waste Reduction Leadership Award
2006	WasteWise	Honorable Mention Partner of the Year – Large Business
2006	Veolia	NE Region Recycling & Environmental Stewardship Award
2006	NWF	National Wildlife Federation Habitat
2007	WasteWise	Partner of the Year – Large Business
2008	WasteWise	Gold Achievement Recycling in the Workplace
2009	MassRecycle	Non-Recycling Business Category
2010	MA TURI	20th Anniversary Leader
2011	WasteWise	Partner of Year – Very Large Business
2012	MassRecycle	Large Business Recycling Award
2013	MA DOT	Pinnacle Award for Excellence in Commuter Options
2013	MA DOT	Pacesetter Award for Excellence in Commuter Options
2014	MA DOT	Leadership Award for Excellence in Commuter Options
2015	USZWBC	Zero Waste Certification - Gold Level (Waltham, MA)
2015	USZWBC	Zero Waste Certification - Platinum Level (Tewksbury MA)
2015	MA DOT	Leadership Award for Excellence in Commuter Options
2016	USZWBC	Zero Waste Certification - Gold Level (Woburn MA, Billerica MA, Sudbury MA, Marlborough MA)



2020 Sustainability Goals


Operations

Energy Consumption



10%


Water Use



10%


EHSS

Solid Waste Diversion Rate



82%


Zero Waste Certification




20 sites

Engineering

Product Material Content




Materials of Concern in Design




Supply Chain

Supplier Sustainability Assessment




90%

Supplier Sustainability Commitment




90%

Eco-Friendly Procurement: Tech Data Packages




80%

Renewable Energy



5%

Greenhouse Gas Emissions



12%


Supplier Packaging



10%


IT

Next-Gen Virtual Collaboration Environment



100%

Enterprise Data Centers: Advanced Energy Mgt



100%

Develop Internal Metric Definitions & Reporting Instructions Guide

▪ **Solid Waste Diversion**

- Each facility should maintain records on the quantity generated for each of the Solid Waste reporting categories.
- Reporting will be consistent with United States Zero Waste Business Council (USZWBC) reporting procedures for zero waste documentation.
- Solid waste metrics will be collected and reported with a 1-month lag because actual invoices and waste receipts are not available right after the end of the month in time for the Corporate Metrics reporting schedule. The 1-month lag reporting ensures that the values reported are actuals and calculated estimates when scale reports are not available.
- Includes categories sent for landfill, incineration, recycling and reuse.

Ensures Consistency & Standardization for Metrics

Guide Includes Exclusions

- Roof replacement
- Sand/salt from annual roadway/parking lot sweepings
- Bituminous from roadway/parking lot repairs/refurbishment
- Sanitary septic system waste
- Biohazards (including sharps)
- Complete building demolition
- Remediation activity waste
- Asbestos and related waste
- Landscaping materials from non-routine activities (soils/vegetation removal, tree removal/pruning)

Although excluded from metrics reporting, these materials should be managed properly. Records should be available to indicate how these materials were managed.

Gap Analysis

- Identifies:
 - All recycling and reuse programs currently in place at each site
 - Every internal and external supplier who supports a recycling or reuse program
 - Missing programs
 - Programs in place but with no data collection



Identify External/Internal Suppliers

Suppliers	Site 1	Site 2
ABCompost	X	
BACompost	X	X
Burn Anything for Cash	X	X
Can You Spell Zero Waste	X	
Pet Poop Composting		
Let Me Landfill You	X	
Raytheon - Property Control Donations	X	X
Raytheon - EHSS Reuse Projects	X	X
Raytheon - Facilities Projects	X	X
Raytheon - Property Control Sales	X	X
Recycle - Recycle - Recycle LLC		X

Identify Existing Programs with Suppliers

	Site 1	Site 2
DISPOSAL		
Trash (Landfill)		Let Me Landfill You
Trash (Incineration)	Burn Anything for Cash	
RECYCLING		
Commingled/Single Stream (mixed fiber, plastic, glass, metal)	Can You Spell ZW	Can You Spell ZW
Organics (Compost)	ABCompost	
Electronic Waste		
Mixed Fiber (Paper & Cardboard)		
Mixed Metals (Ferrous & Non-Ferrous)		
Wood		
Universal Waste - Batteries		

Universal Waste - Mercury Containing Materials		
Universal Waste - Other		
Construction & Demolition		
Kitchen Grease		
Other Recycling - Not Elsewhere Identified		
REUSE		
Surplus Materials for Sale		
Textiles/Absorbents for Reuse		
Toner & Inkjet Cartridges		
Other Reuse - Not Elsewhere Identified		
REVENUE		
Revenues apply to recycling and reuse categories when applicable		

Identification of “Gaps” often Lead to an Improved Diversion Rate

Identify Metrics Collection Contacts & Determine Collection Frequency

Suppliers with Monthly Reports	Person Designated to Submit Report	Supplier Contact	Email	Phone	Jan	Feb	Mar
ABCompost	Dirt Pile	Billy Bones	BBONES@WASTE		X	X	
BACompost	Pile Dirt	Bones Billy	BBILLY@WASTE		X	X	X
Suppliers with Quarterly Reports							
Burn Anything for Cash	Smokey Ash	Landie Fill	LANDFILL@WASTE				X
Can You Spell Zero Waste	Ari Cycle	Waste Wise	WASTE@WASTE				

Use File to Track When Reports are Received

Develop Electronic Metrics Collection Report for Suppliers

- Excel file that includes:
 - Supplier Name
 - Name of Person Submitting
 - Email Address
 - Type of Submission
 - Date of Submission
 - Year of Pickup
 - Month of Pickup
 - Pickup?
 - Facility Site Serviced
 - Type of Waste (See Definitions Tab)
 - Monthly Quantity of Waste (lb)
 - Method Used to Determine Weight
 - Credit Value (\$)

Ensures Standardization & Consistency

Definitions Identified in Report

DEFINITIONS

Please reference the following definitions when selecting the "Type of Waste" on the form.

Trash - Incineration

Includes trash sent to an incinerator for disposal (with or without energy recovery)

Trash - Landfill

Includes trash sent to a landfill for disposal.

Commingled/Single Stream - Recycle

Includes mixed glass, plastics, metals and fiber (i.e. paper and cardboard) that are collected in a single, commingled waste stream for recycling. Vendors should not report their recycling wastes in this category if they are able to split the wastes into other more descriptive categories.

Construction & Demolition - Recycle

Includes construction and demolition solid wastes sent for recycling.

Electronic Waste - Recycle

Includes computers and peripherals, servers/mainframes, printers, electronic test equipment, communication equipment/systems & televisions for recycling.

Electronic Waste - Reuse

Includes computers and peripherals, servers/mainframes, printers, electronic test equipment, communication equipment/systems & televisions for reuse.

Weight Data Methodology

- Direct scale weight (Measured by supplier or Raytheon)
 - Weight should exclude collection container.
- Estimated weight (Determined by supplier or Raytheon)
 - Weights estimated are acceptable as long as acceptable engineering tools are used and calculations documented.
- Combination of direct scale and estimated weight (Determined by supplier or Raytheon)
 - Weights may be determined by using a combination of one time actual scale weight and extrapolating that weight for a certain period of reporting time.



Scale Weights are Best but not Always Available

Standardized Report Template



RAYTHEON MONTHLY ZERO WASTE METRICS REPORT

All zero waste management suppliers used by Raytheon are required to supply the quantity of waste materials disposed, reused and recycled on a monthly or quarterly basis using this file. These reports are subsequently used to calculate diversion metrics for the Raytheon Corporate Responsibility, USZWBC and US EPA WasteWise reports. Reports shall be submitted to Brian Balukonis via email (brian_j_balukonis@raytheon.com) according to directions in "Definitions", "How to Name Files" & "Due Date" tabs below.

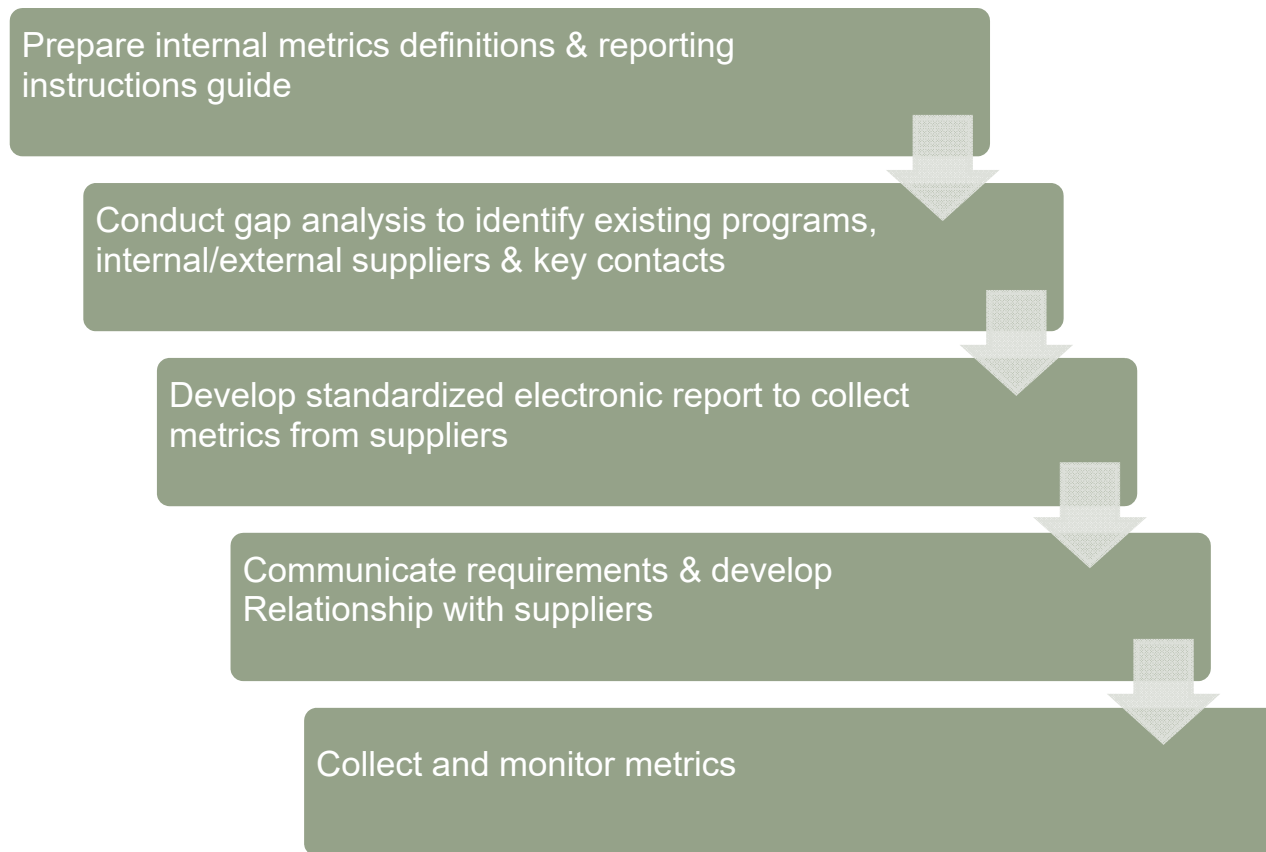
Instructions: All fields are required as noted. Use drop down menus for data consistency, however, you may copy and paste repetitive information. If there was no activity for the calendar period to report, please submit report with "no" indicated in "Pickup?" column with all mandatory fields completed. Mandatory fields are noted by "*". Only mark rows you edited as "Updated" in the "Type of Submission" field and identify the file as Supplier Name-Month-Year-rev# (i.e. ELH-Jan-2015-rev1). If you need additional rows, please request a revised spreadsheet.

- Supplier Name*:** Use drop down menu to identify supplier/company name.
- Name of Person Submitting*:** Add the name of person submitting the report.
- Email Address*:** Add the email address of person submitting the report.
- Type of Submission*:** Use drop down list to identify the type of submission. Use "Updated" when any data is resubmitted after initial submission. This would occur if a credit value or quantity has changed from initial submission.
- Date of Submission*:** Add date when you complete this report.
- Year of Pickup*:** Use drop down menu to identify the year of pickup period being reported.
- Month of Pickup*:** Use drop down menu to identify the month of pickup period being reported
- Pickup?***: Indicate whether a pickup occurred during the reporting period. If "no", submit the report with no additional information to the right of this column.
- Facility Serviced*:** Use the drop down menu to identify the facility location serviced by supplier.
- Type of Waste:** Use drop down menu to identify the type of waste reported. See "Definitions" tab for clarification on the listed
- Monthly Quantity of Waste Reported:** Type the picked up quantity of waste reported in gross weight pounds.
- Method Used to Determine Weight:** Use drop down menu to report the method used to calculate the weight reported. Scale=Determined by scale weight; Estimated=Determined by US EPA Standard Volume-to-Weight Conversion Factors; Combination=Determined by using scale and estimation factors in combination
- Credit Value:** If Raytheon will receive monetary credit for the waste, add the value as gross \$.

Supplier Name*	Name of Person Submitting*	Email Address*	Type of Submission*	Date of Submission*	Year of Pickup*	Month of Pickup*	Pickup?*	Facility Serviced*	Type of Waste (See Definitions Tab)	Monthly Quantity of Waste (lb)	Method Used to Determine Weight	Credit Value (\$)

Only Acceptable Report Format

Summary



Have we Reached the Zero Waste Summit?

We are still climbing!



Gunks, NY - 2013



Fairview Dome, Tuolumne Meadows, CA - 2010



Bugaboos, BC - 2007



Kalymnos, Greece - 2011



Sardinia, Italy - 2008



Red River Gorge, KY - 2011



Arkansas - 2012