

# DeCA's Solid Waste Cost Saving Initiatives

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# Discussion Topics



- Background
- DeCA's current waste stream/waste sorts
- Eight week study
- Purpose of the Solid Waste Container Infrastructure (SWCI)
- Waste Reduction Alternatives
- Conclusion
- Questions

# DECA Background



- The Defense Commissary Agency operates a worldwide chain of commissaries providing groceries to military personnel and retirees and their families at 249 locations worldwide
- Our solid waste and recycling efforts have been focused on the 182 locations in the Continental United States, Alaska, Hawaii, and Puerto Rico
- Our total store sales for Fiscal Year 2011 exceeded \$5.9 billion

# DeCA's Waste Stream



- Waste sorts
- AZ, CA, CO, VA

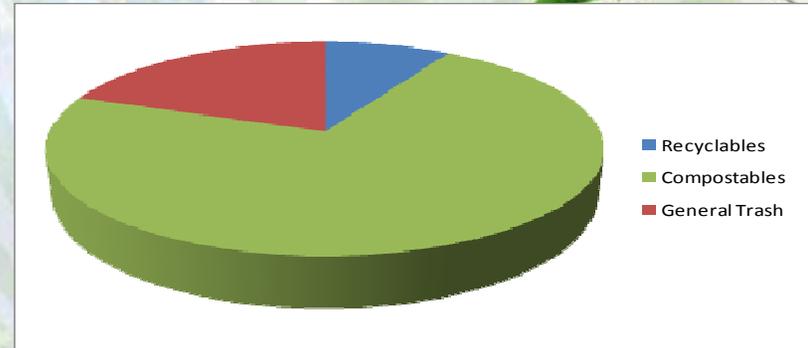


# Waste Sorts, VA



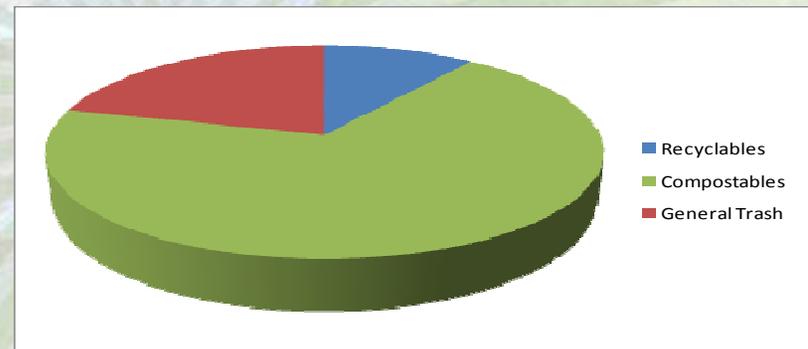
## Fort Belvoir Commissary (Sales Band 14)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	180.8	8.6%
<b>Compostables</b>	1,515.2	71.9%
<b>General Trash</b>	410.8	19.5%
<b>Total</b>	2,106.8	100.0%



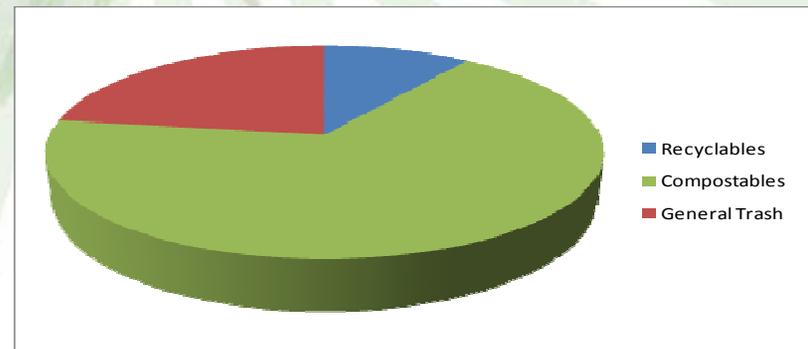
## Fort Lee Commissary (Sales Band 8)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	550.3	10.3%
<b>Compostables</b>	3,667.7	68.6%
<b>General Trash</b>	1,126.9	21.1%
<b>Total</b>	5,344.8	100.0%



## Oceana NAS Commissary (Sales Band 13)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	333.2	10.0%
<b>Compostables</b>	2,245.6	67.3%
<b>General Trash</b>	760.0	22.8%
<b>Total</b>	3,338.8	100.0%

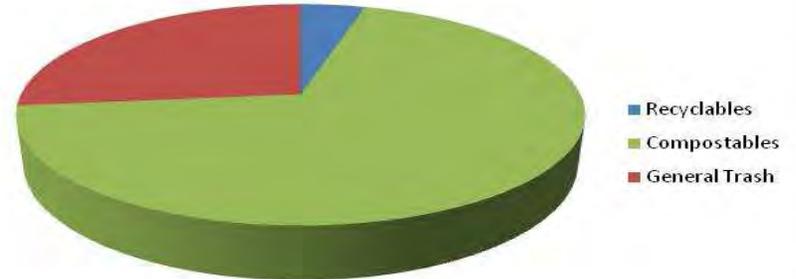


# Waste Sorts, CO



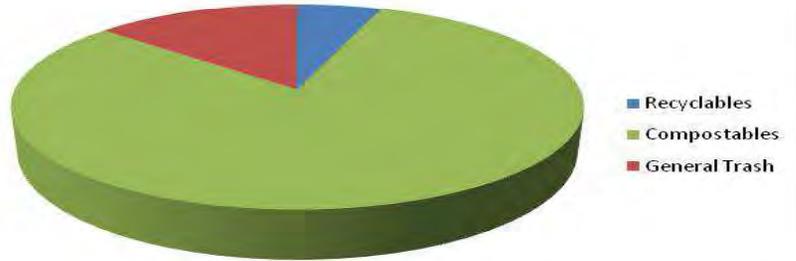
## Fort Carson Commissary ((Sales Band 9)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	198.0	4.4%
<b>Compostables</b>	3,116.8	69.0%
<b>General Trash</b>	1,203.8	26.6%
<b>Total</b>	4,518.6	100%



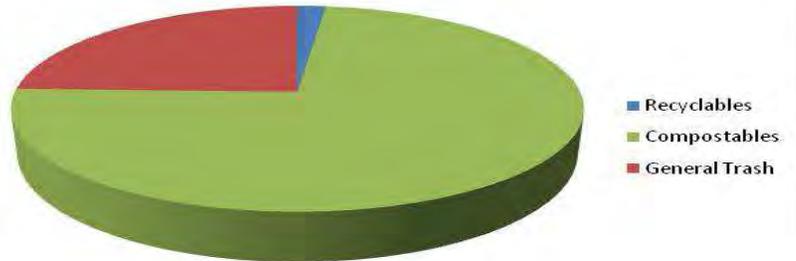
## Peterson AFB Commissary (Sales Band 9)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	257.0	5.6%
<b>Compostables</b>	3,704.9	80.7%
<b>General Trash</b>	626.6	13.7%
<b>Total</b>	4,588.5	100%



## Buckley AFB Commissary (Sales Band 8)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	66.8	1.9%
<b>Compostables</b>	2,598.4	73.6%
<b>General Trash</b>	865.6	24.5%
<b>Total</b>	3,530.8	100%

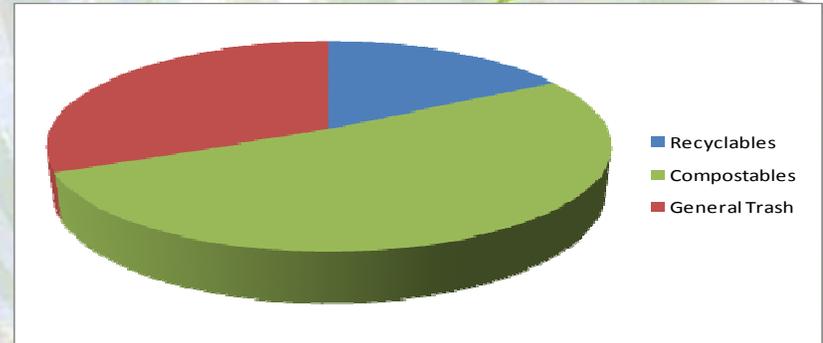


# Waste Sorts, AZ, CA



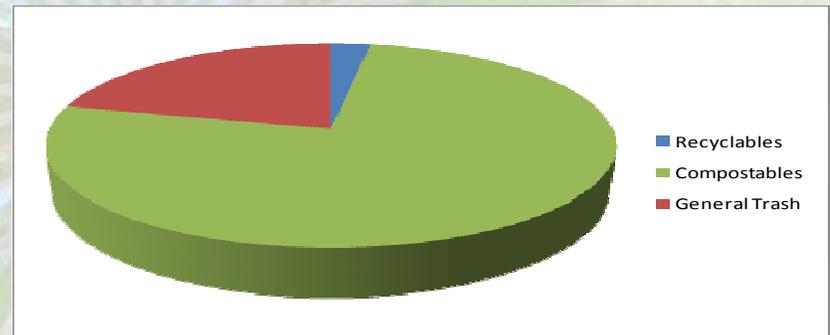
## Davis-Monthan AFB Commissary (Sales Band 10)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	493.1	16.8%
<b>Compostables</b>	1,513.0	51.6%
<b>General Trash</b>	926.4	31.6%
<b>Total</b>	2,932.5	100%



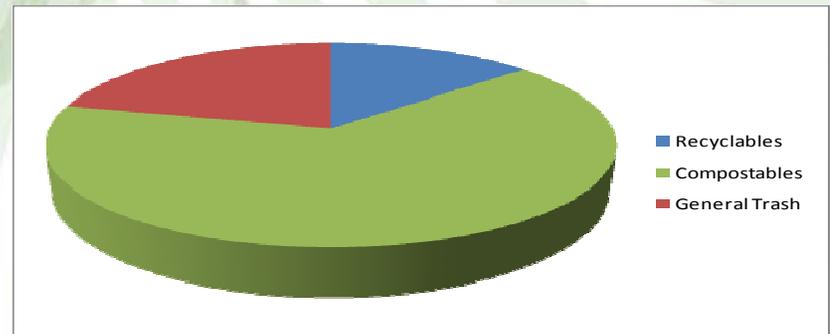
## McClellan AFB Commissary (Sales Band 9)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	70.4	2.6%
<b>Compostables</b>	2,038.3	76.1%
<b>General Trash</b>	570.6	21.3%
<b>Total</b>	2,679.3	100%



## Travis AFB Commissary (Sales Band 11)

	Weight (lbs)	Percent of Total
<b>Recyclables</b>	485.2	13.7%
<b>Compostables</b>	2,306.3	65.0%
<b>General Trash</b>	754.3	21.3%
<b>Total</b>	3,545.8	100%



# Eight Week Waste Study



- Goal of 8-week study is to collect sufficient waste data to extrapolate over a year
- Identify opportunities to adjust containers
- Record the weight of refuse in compactors and roll-offs by obtaining weight from the solid waste contractor or installation contact
- Record the percent full of dumpsters before scheduled pickups

# Data Collection



# SWCI

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- Agency knew the cost of solid waste disposal, but did not know the capacity nor whether we were sized right for our changing requirements
- Allows DeCA to align the appropriate solid waste container with the stores waste profile and make changes in order to reduce the waste disposal
- Reduce pick-up frequencies, number and/or size of containers
- Lower burden on Agency's capital funds

# SWCI

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# SWCI

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- Policy and guidance approved in Nov 2010
- Gradual elimination of compactors
  - Currently, sales band 12 stores and higher are authorized one compactor (subject to change)
  - Huge expense, environmental liability, often picked up under capacity
- To date, out of the store waste container structures changed, DeCA has realized over \$275K in savings

# Waste Reduction Alternatives

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- Composting

- DeCA is currently reviewing different composting equipment
- Potential pilot test demonstration at Ft. Hood

- Anaerobic Digestion

- Air Force Center for Environmental Excellence is conducting an anaerobic digestion pilot test at commissary in FL
- Project consists of turning organic waste into methane gas via anaerobic digestion. The purpose of the project is to place a large reactor on base and generate electricity for the base.
- \$4.4M set aside to construct up to a 50' reactor. Numbers will be better quantified as we move through the pilot test and refine assumptions.

# Anaerobic Digestion

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- The pilot system is designed to handle a maximum of 700 pounds per day of waste
- Currently we are adding approximately 500 pounds of waste per day
- Waste that have been tested to data include food waste, stable waste, paper towels, and spent cooking oil
- Anticipated daily biogas generation was 27,000 liters per day, current generation is 28,300 liters per day
- Target methane concentration was 70%, current average methane concentration 62 %

# Anaerobic Digestion



# Gasification

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- On Oahu, DeCA has significant waste disposal costs and expensive electrical rates
  - In FY10, Hickam Commissary incurred \$88K + in solid waste disposal costs (~\$500K for four commissaries)
  - The National Renewable Energy Lab (NREL), in conjunction with the US Army – IMCOM, and the US Navy Pacific command, has requested DeCA participation in an approximate nine to twelve month testing of a Gasifier at the Hickam Commissary.

# Gasification

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## Gasification Technology Overview:

Community Power Corporation's (CPC) High Energy Density Waste-to-Energy Converter (HEDWEC) is a combined heat and power generating system that converts dry and wet waste (including cardboard, cartons, pallets, some plastic, and wet food waste) to onsite electricity and heat.

It can convert up to 4,800 lbs of bone dry mixed waste per day to about 2 MWh/ day of utility grade electricity and approximately 400,000 Btu/hr of heat.

# Gasification

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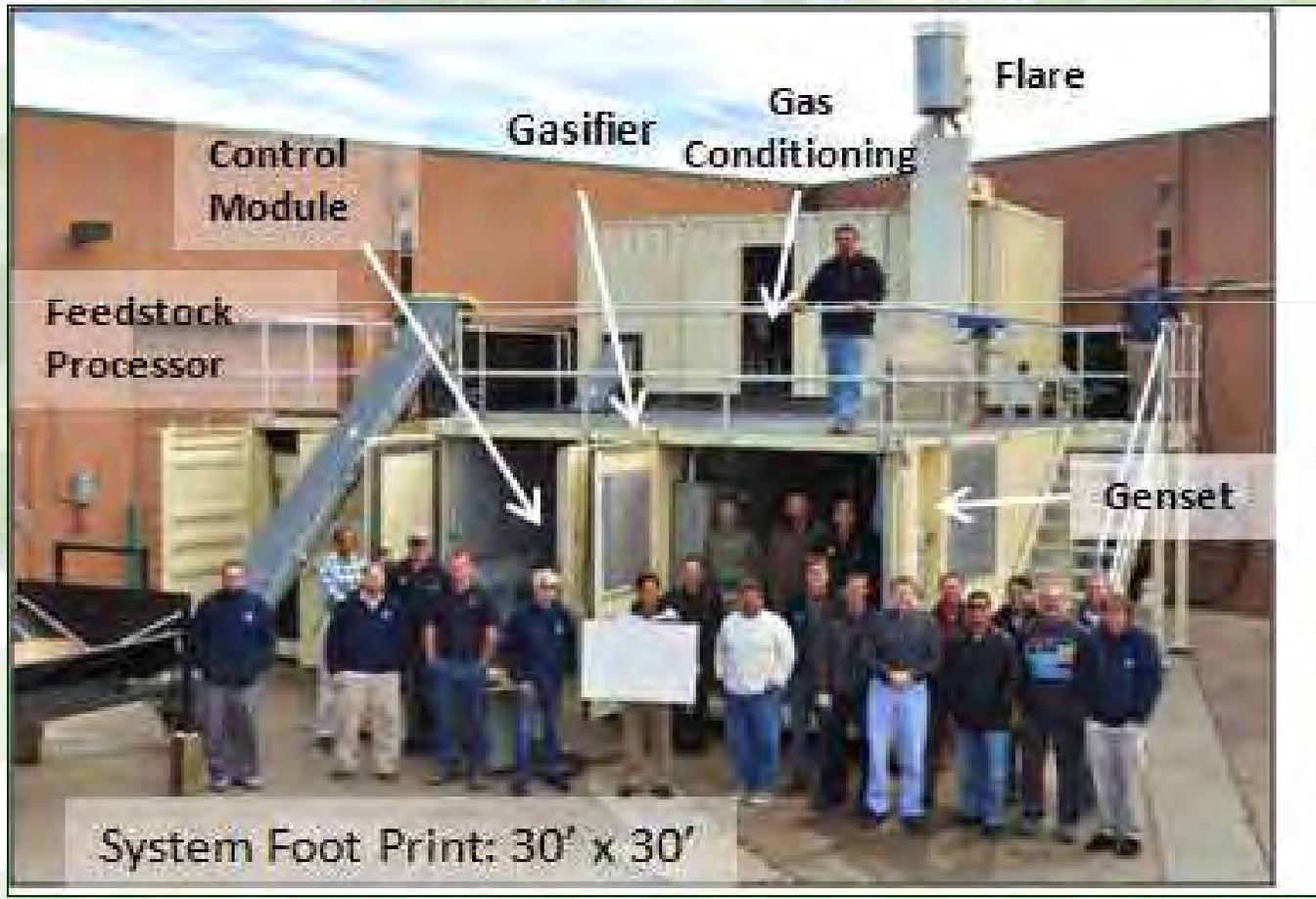
## •Objectives:

- Enhanced management of problematic wastes
- Landfill avoidance
- Energy/fuel co-products
- Replicability of technology

## •Key Stakeholders

- Defense Commissary Agency
- NAVFAC-Pacific / NAVFAC-Hawaii
- US Army Natick Soldier Research Development and Engineering Center
- US Army Installation Management Command, Pacific Region
- US Department of Energy, National Renewable Energy Laboratory

# Gasification



# Gasification

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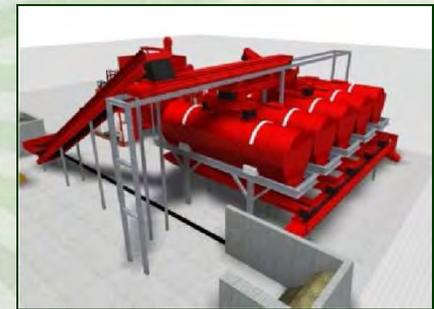


# Organics/Salvage Diversion



- Currently working on removing organics and salvage from waste stream
  - Reduce refuse cost
  - Waste to Energy
  - Working with General Counsel on food donation issues
    - Donations for FEDS Feed Families:
    - DOD total 1,901,132 lbs.
    - DeCA total 723,337 lbs.
    - 38% of the total came from DeCA.
- Converting Zones for organics disposal
  - includes fats, bones, & salvage

# Organics/Salvage Diversion



# Conclusion

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- DeCA has a Zero Waste goal!
- Through SWCI, compactor monitoring, organics diversion, recycling, and behavioral modification, DeCA is poised to meet Executive Order 13514
- Solid waste disposal is one of the last areas where DeCA can make great strides in controlling costs through better stewardship of our resources
- DeCA can also prepare itself for the next wave of solid waste reductions through diversion of our organic/salvage waste

# Questions?

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