Farm to Fork or Farm to Landfill?

August 2015; K-State Pollution Prevention Institute

Pollution Prevention Institute

- **PPI's mission is to promote sustainability through environmental education and services to industry and institutions. These services include environmental compliance and pollution prevention technical assistance.**

Pollution Prevention Institute

Food too good to waste

A Love Letter to Food (video introduction)

Getting food from the farm to our fork eats up

- **10 percent of the total U.S. energy budget,**
- **50 percent of U.S. land,** and
- **80 percent of all freshwater consumed** in the United States.

- **40 percent of food in the United States today goes uneaten,**
- **equivalent of $165 billion each year,**
- Uneaten food ends up rotting in landfills as the single largest component of U.S. municipal solid waste where it accounts for a large portion of U.S. methane emissions.
- Methane is a potent greenhouse gas.

Source: Natural Resource Defense Council

Food production and resource use

- Getting food from the farm to your plate uses 10% of U.S. energy, 50% of U.S. land, and 80% of all freshwater consumed in the U.S.
- 40% of food in the U.S. goes uneaten ($165 billion/year).
- One in six **Americans** doesn't have access to enough food.

Sources: National Resources Defense Council August 2012 issue paper (12-06-B)
www.feedingamerica.org/hunger-in-america/

The Challenge Ahead:
With a population of 8.3 billion people by 2030, we'll need…

50% ***more energy***

40% ***more water***

35% ***more food***

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

Food Energy-Water Nexus Identified in NIC Global Trends 2030

As populations grow and consumption levels begin to strain existing resources, access to food, energy, and water will become ever more crucial and interrelated.

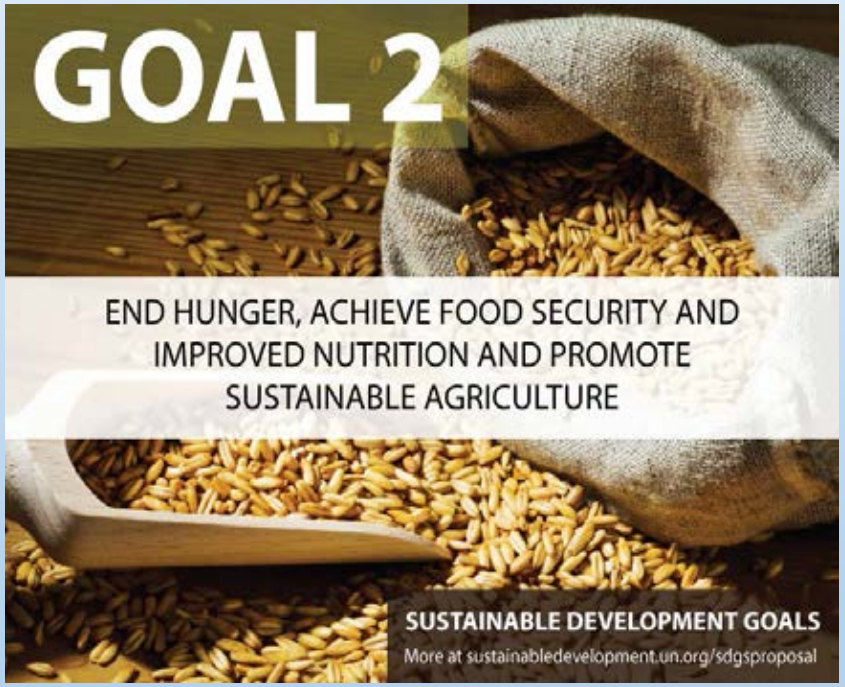
National Intelligence Council

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

Critical Goals

Related UN Sustainable Development Goals

- End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
- Ensure availability and sustainable management of water and sanitation for all
- Ensure access to affordable, reliable, sustainable, and modern energy for all
- Ensure sustainable consumption and production patterns
- Strengthen the means of implementation and revitalize the global partnership for sustainable development.



Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

"NEXUS-FLEXUS" APPROACH

How to Deal with Problems of the 21st Century

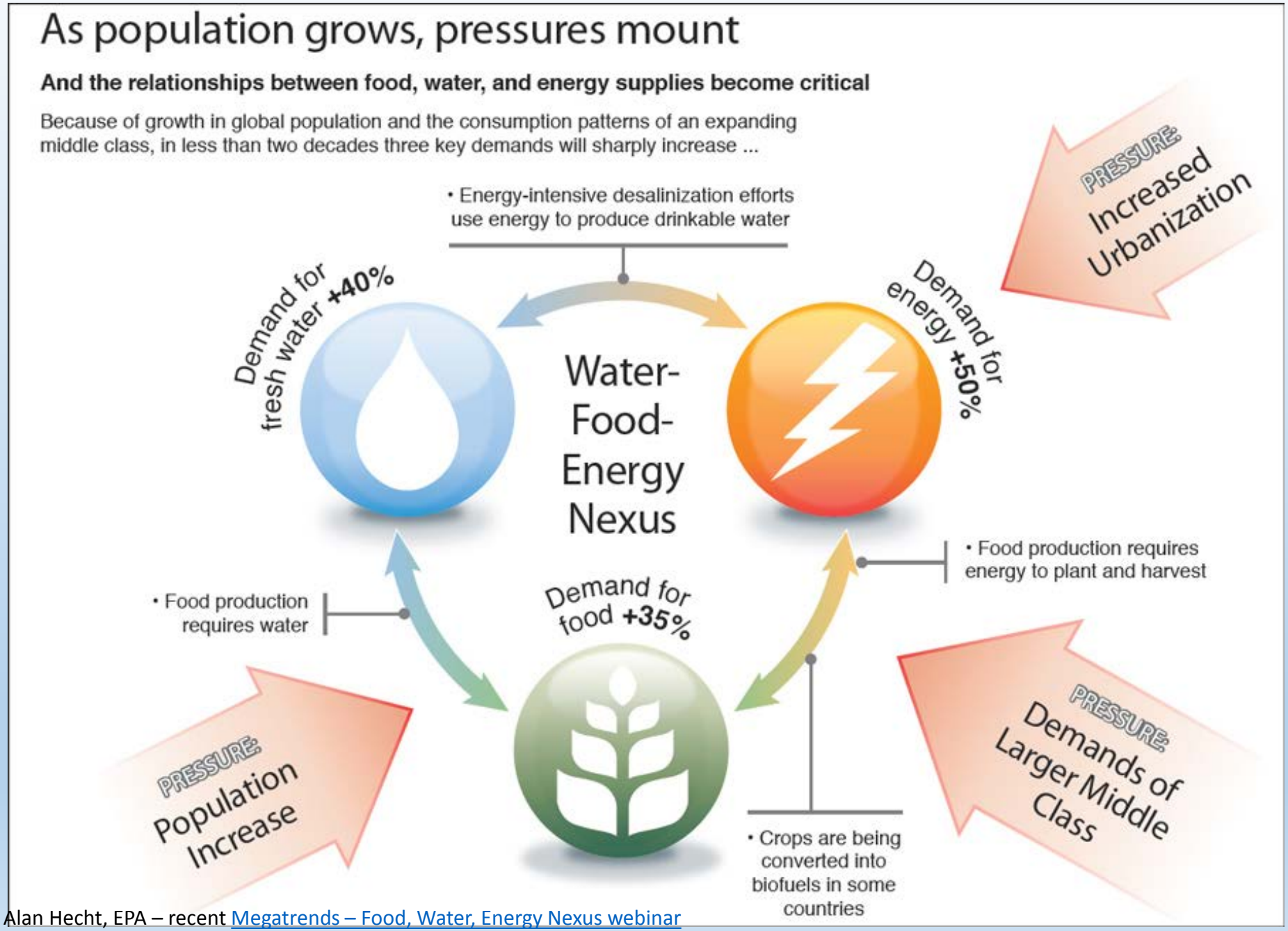
- Anticipate and respond to emerging trends (mega trends)
- Adopt a "systems approach" to effectively assess and manage risks (recognize the nexus of food-energy-water)
- Develop and apply integrated decision support tools
- Advance innovation and science
- Create effective business-government-public collaborations and innovation in investments
- Promote resilient and sustainable decision making

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

As population grows, pressures mount

And the relationships between food, water, and energy supplies become critical

Because of growth in global population and the consumption patterns of an expanding middle class, in less than two decades three key demands will sharply increase ...



Source: Dr. Alan Hecht, EPA – recent [Megatrends – Food, Water, Energy Nexus webinar]

Nexus-Flexus: Pathways to a Sustainability Future

Mega Trends

Nexus

Science Tools/ Indices

Resiliency

Sustainable Outcome

NEXUS-FLEXUS

NCSE Food-Energy-Water Conference January 2016

1. How to feed 9.6 billion people expected to be alive in 2050 while meeting their needs for water and energy and improving the environment?

2. What are the opportunities to improve water and energy efficiency and reduce food waste such that every improvement in one area yields gains in all areas?

3. What are the strategies for resilience in the face of increased climate variability and other environmental changes?

4. How do we unleash scientific talent, technological advances, human ingenuity and entrepreneurialism, with wise public policy to meet essential human needs and restore the earth's environment, both regionally and globally?

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

Discussion Questions

- Are government and business effectively anticipating and responding to emerging trends in an effective manner?
- What science and innovation is needed to address the nexus of food-energy-water?
- How do we promote use of system science and decision support tools?
- How do we create effective business-government-public collaborations and innovation in investments

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

Assessment of the Salina Area Food System

Kansas Environmental Conference
August 18, 2015

Barbara Goode, PE
K-State Engineering Extension

Engineering Extension and Food?

Kansas State University

- College of Engineering
  - Engineering Extension
    - Pollution Prevention Institute (PPI)

Mission - promote sustainability through environmental education and services to industry and institutions. These services include environmental compliance and pollution prevention technical assistance.

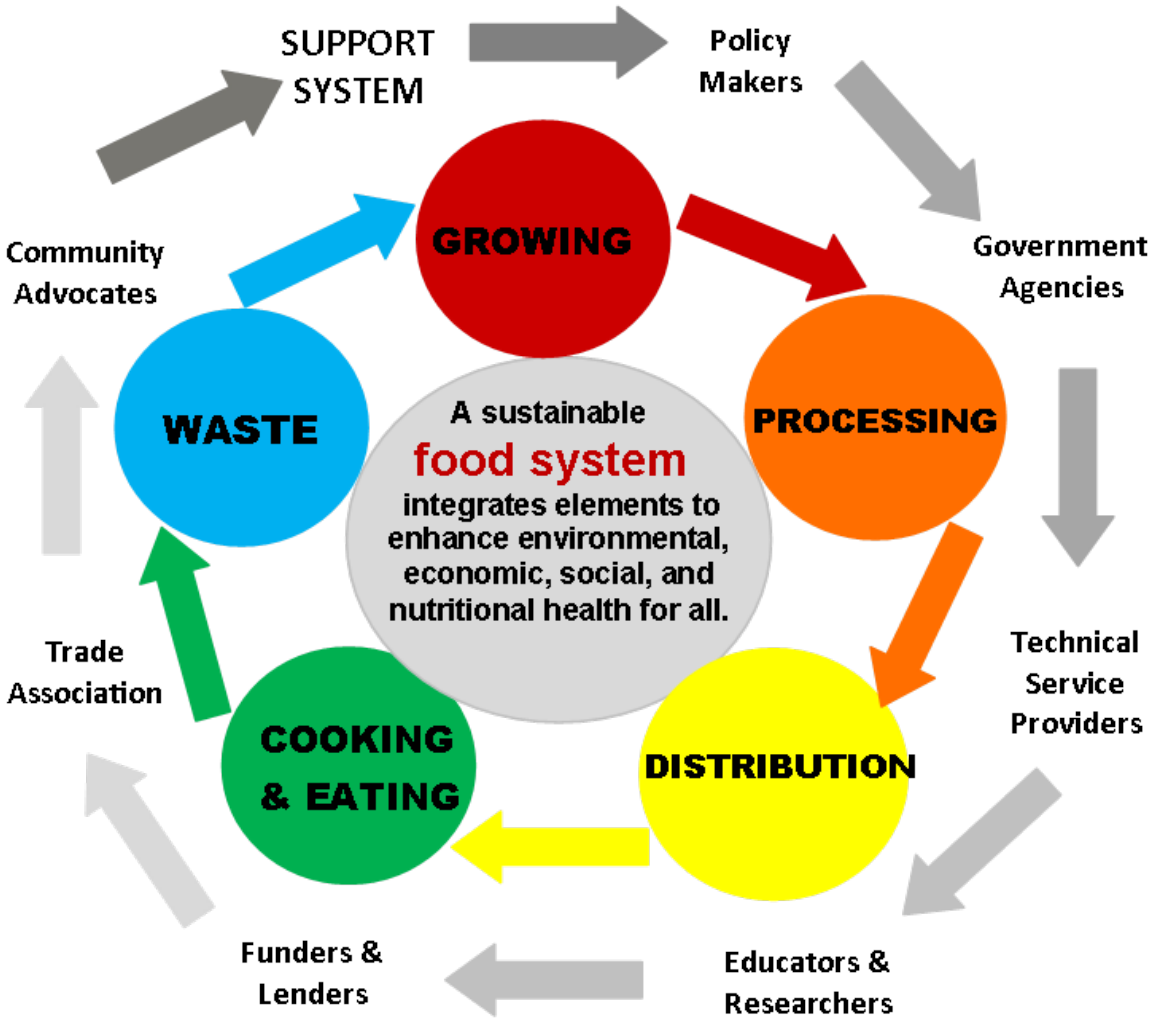
Overview

- Food system basic definitions
- Our local food system assessment project

Food System Basics

- Food System – the sum of all activities required to make food available to people.
- **What are these activities?**

Food System Activities



Food System Basics

- **Community Foods Organizing** – the process of bringing together a variety of stakeholders to reshape a local food system that is more responsive to the needs and assets of a community. The goal of that organizing will
  - promote a healthier community
  - respect, promote, and celebrate the culture of that community
  - seek to improve its economic well-being

–KS rural center

Food System Basics (cont.)

- **Community Food Assessment** – a collaborative and participatory process that systematically examines a broad range of community food issues and assets, so as to inform change actions to make the community more food secure. –KS rural center
- **Food Security** – a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice. –KS rural center

Food System Basics (cont.)

- **Local Food** – no consensus on a definition
  - Transported less than 400 miles
  - Within the state in which it is produced
  - Farmers selling directly to consumers or to schools

  -www.ers.usda.gov
- **Food Hub** – a centrally located facility with a business mgt structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products – USDA AMS

Our Local Food Project

- Planning grant - USDA Agricultural Marketing Service's Local Food Promotion Program (LFPP) - 2014
- Project title – *Assessment of the Salina Area Food System*
- One-year project, $25,000

Goals

- Assess local (Salina/Saline County) food system
  - Facilitate a community planning process that assesses the Salina area food system and find solutions to increase participation in the aggregation and distribution of local foods
- Explore options for connecting low-income neighborhoods with local food sources
- Increase participation in Prairieland Market and Kitchen 4 Hire

Objectives

- Build a steering committee (Salina Area Local Food Task Force)
- Identify who should be at the table
- Meet with identified local-foods stakeholders
  - First meeting – "Meet and greet"
  - Second meeting – 6 hr workshop using FEAST model (discuss Food Education Agriculture and work towards Solutions Together) model - Identify food system's needs

Objectives (cont.)

- Select up to three priority strategies from the local-foods stakeholders analysis and formulate plans for addressing them.
- Conduct an analysis of Prairieland Market and K4H to develop short-term and long-term strategies for increasing participation.

Steering Committee- Original
Salina Area Local Food Task Force

- Prairieland Market
- Kitchen 4 Hire (provided match)
- K-State Salina (provided most of the match)
- NSCD (because of Priority Area: low-income/low food access)
- Kansas Rural Center
- K-State Center for Engagement and Community Development

Steering Committee- Newer
Salina Area Local Food Task Force

- Salina Area United Way
- Kansas Department of Health & Environment – Bureau of Health Promotion
- Live Well Saline County Coalition (Kansas Health Foundation healthy communities initiative)
- School board member
- Thelander Acme Farm
- Salina's Farmers Market
- Moss Treescapes and Nursery/Peony Acres
- Summit Ventures

Identify Stakeholders

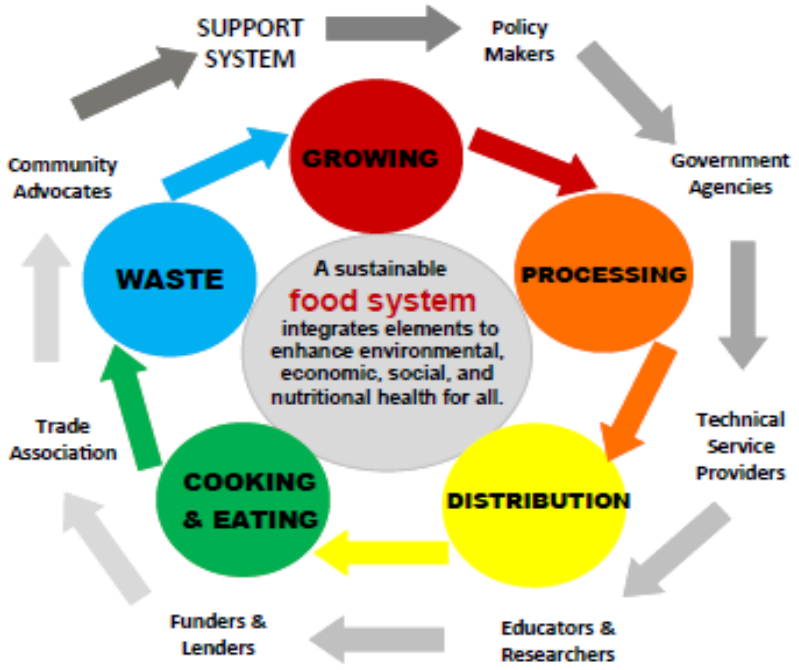
- Created extensive list
  - Producers
  - Processors
  - Distributors
  - Buyers
  - Waste managers

- Invited stakeholders to Meet and Greet – one-on-one invitations
- Invited panelist representing food system
- Mapped food system

A Community Foods Organizing Event

Meet, Greet, and Eat - LOCAL!

January 29, 2015
5:30-7:00 p.m.



Food System

The sum of all activities required to make food available to people.

Community Food Assessment

A collaborative and participatory process that systematically examines a broad range of community food issues and assets, so as to inform change actions to make the community more food secure.

Appetizer Buffet

Cheese
*Jason **Weibe Dairy**, Durham, KS*

Sun-dried Tomato Dip
***C&C High Tunnel Farms**, Chris and Christi Janssen, Scandia, KS*

Spaghetti Squash Fritters with Sriracha Mayonnaise
*Squash from **Saline County Produce**, John Ratzlaff, New Cambria, KS*
Onions from Lucy Alexander, Gypsum, KS
*Eggs from **Thelanders' Acme Farm**, John and Kellie Thelander, Salina, KS*

Butternut Squash Vichyssoise
*Squash from **Saline County Produce**, John Ratzlaff, New Cambria, KS*
Onions from Lucy Alexander, Gypsum, KS

Whole Wheat Crackers with Rosemary
Whole Wheat Crackers with Za'atar
*Whole wheat flour from **Heartland Mill**, Marienthal, KS*

Lavender Iced Tea
***Prairie Lavender Farm**, Mike Neustrom, Bennington, KS*

Coffee
***Iron Street Coffee Roaster**, Carla Mahon, Salina, KS*

Beverages to Purchase

Local Brewed Root Beer
***Big John's Brewery**, Salina, KS*

Local Brewed Beer
***Big John's Brewery**, Salina, KS*
***Blue Skye Brewery**, Salina, KS*

Local Wine
***Smoky Hill Vineyards & Winery**, Salina, KS*

Sincere thanks to the those who made the free local food appetizers possible:

- Squash was generously donated by Salina County Produce, John Ratzlaff.
- Funding for food was provided by Kansas Alliance for Wellness.
- Prairieland Market chefs and sous chefs:

Nancy Arnoldy, Ruth Cathcart-Rake, Claire, Ruby and Sarah Crews, Paula Fried, Amy, Hannah and Kate Hemmer, Martha Rhea, Donna Sandberg, Melanie Sanders, Heather Smith, and Allison Stuewe

- Sacred Heart High School students who served and bussed tables

Program Agenda

Look over the maps and get a picture of our local food system.

5:30 pm Begin Meet, Greet, and Eat

Enjoy food, beverages, and socializing.
Verify or mark your organization's name and location on one of the maps. Who else should be added?
Map facilitators can help you find the right map.
Write detailed comments on your card.

6:10-6:40 pm Food System Panel

Welcome

Jamie Bremen, Kansas Department of Health and Environment, Bureau of Health Promotion

Facilitator

Myles Alexander, K-State Center for Engagement and Community Development

Panelists

GROWING: Don Wagner, Wagner Organic Farms
PROCESSING: Danny Williamson, Krehbiel's Specialty Meats
DISTRIBUTION: Mike Soetaert, Prairieland Market
COOKING/EATING: Cindy Foley, USD 305
WASTE: Ron Rouse, City of Salina

6:40 -7:00 pm Wrap Up

Turn in your completed card at the registration table to have your name included in the drawing for the gift basket.

Comment Card Results

Second Meeting

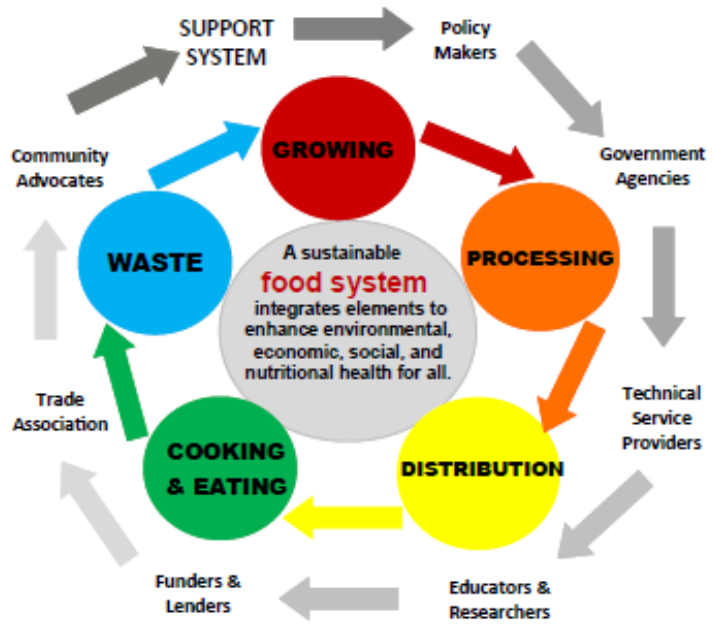
- Six-hour workshop
- Oregon Food Bank's FEAST model (discuss Food Education Agriculture and work towards Solutions Together) - Identify food system's needs
- Panel presentations
  - Food insecurity
  - Food waste
  - National farm to retail
  - Local farm to retail
  - Policy

Six-hour Workshop

A Community Foods Organizing Event

Salina Area Local Food System Assessment

March 10, 2015
3:00-9:00 p.m.



Agenda

2:30-3:00 pm - Registration
Snack provided

3:00-3:10 pm - Welcome & introductions (Barb Goode)

3:10-3:30 pm - Food system basics (Barb)

3:30-4:40 pm - Panel (Myles Alexander moderator)
Food insecurity: Kathy Jackson, Salina Emergency Aid/Food Bank
Waste diversion/food waste recovery: Nancy Larson, K-State Pollution Prevention Institute
National farm to retail market: Jerry Taylor, former Dillons manager
Food hubs-local farm to retail: Leon Atwell, High Plains Food Coop
Policy: Eileen Horn, Douglas County Sustainability Coordinator

4:40-5:00 pm - Food system maps (Brenda Gutierrez)

5:00-6:00 pm - Prioritize issues (Jamie Bremen, Barb & Myles)
Small group discussion

6:00-6:45 pm - Dinner (Prairieland Market)

6:45-8:45 pm - Identify solutions to issues (Myles & Barb)
Small group discussion

8:45-9:00 pm - Next steps (Barb & Myles)

Second Meeting- Workshop

- Small group discussions - topics identified at Meet and Greet
- Report outs
- Voted to identify priority issues
  - Big vision
  - Environmental
  - Education
  - Food access
  - Networking
  - Processing
  - Supply & demand

Second Meeting- Workshop

- Identify solutions
  - Second round of small group discussions
- Report outs

Workshop Local Food Dinner

Dinner Buffet Menu

Enchiladas

Green Chili Chicken or Acorn Squash Black Bean

Garden Salad • Chips and Salsa • Choice of Dessert

Lavender Iced Tea • Coffee • Water

*Chicken from **Thelanders' Acme Farm**, John & Kellie Thelander, Salina*

*Squash from **Saline County Produce**, John Ratzlaff, New Cambria*

*Tomatoes from Dwight **Gage**, Assaria*

*Tortillas from **Tortilla King**, Moundridge*

*Greens from **C&C High Tunnel Farms**, Chris & Christi Janssen, Scandia*

*Tea from **Prairie Lavender Farm**, Mike Neustrom, Bennington*

*Honey from **Rainbow Honey Farm**, Gary J Reynolds, Concordia*

*Cream from **Thelanders' Acme Farm**, John & Kellie Thelander, Salina*

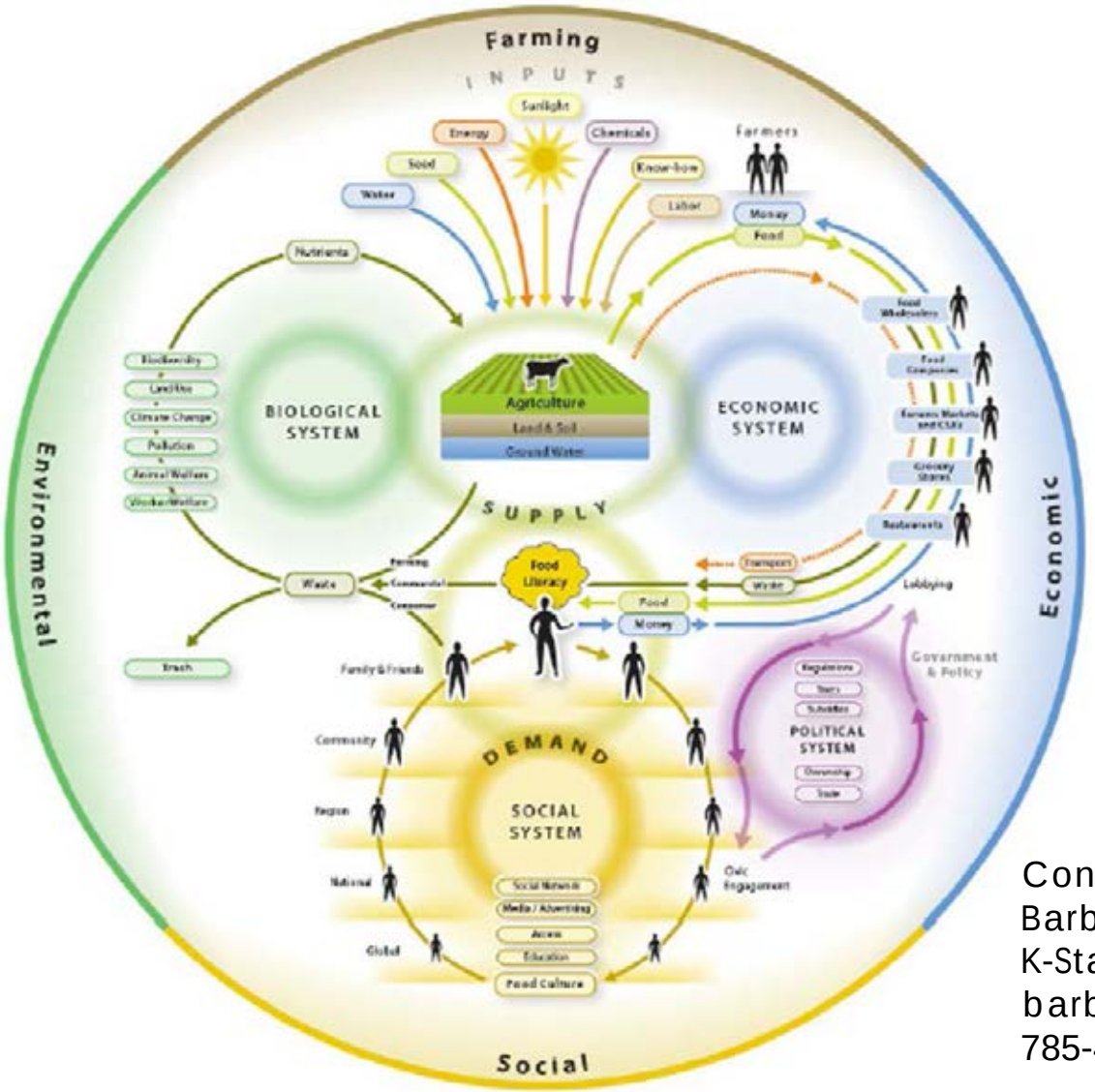
Salina Area Food System Assessment Results

- Need for a food advisory board/food policy council
- Need for a food hub or food cooperative
- Need for education
- Need for changes to current Salina's farmers market

Possible food access sol'ns

- Identify drop-off locations (besides Food Bank) for excess produce from resident and community gardens
- Aquaponics and hydroponics in schools serving low income
- Fruit tree gleaning
- Walking orchard

Questions?



Contact Information:
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785-452-9456

Food Recovery and Diversion Projects

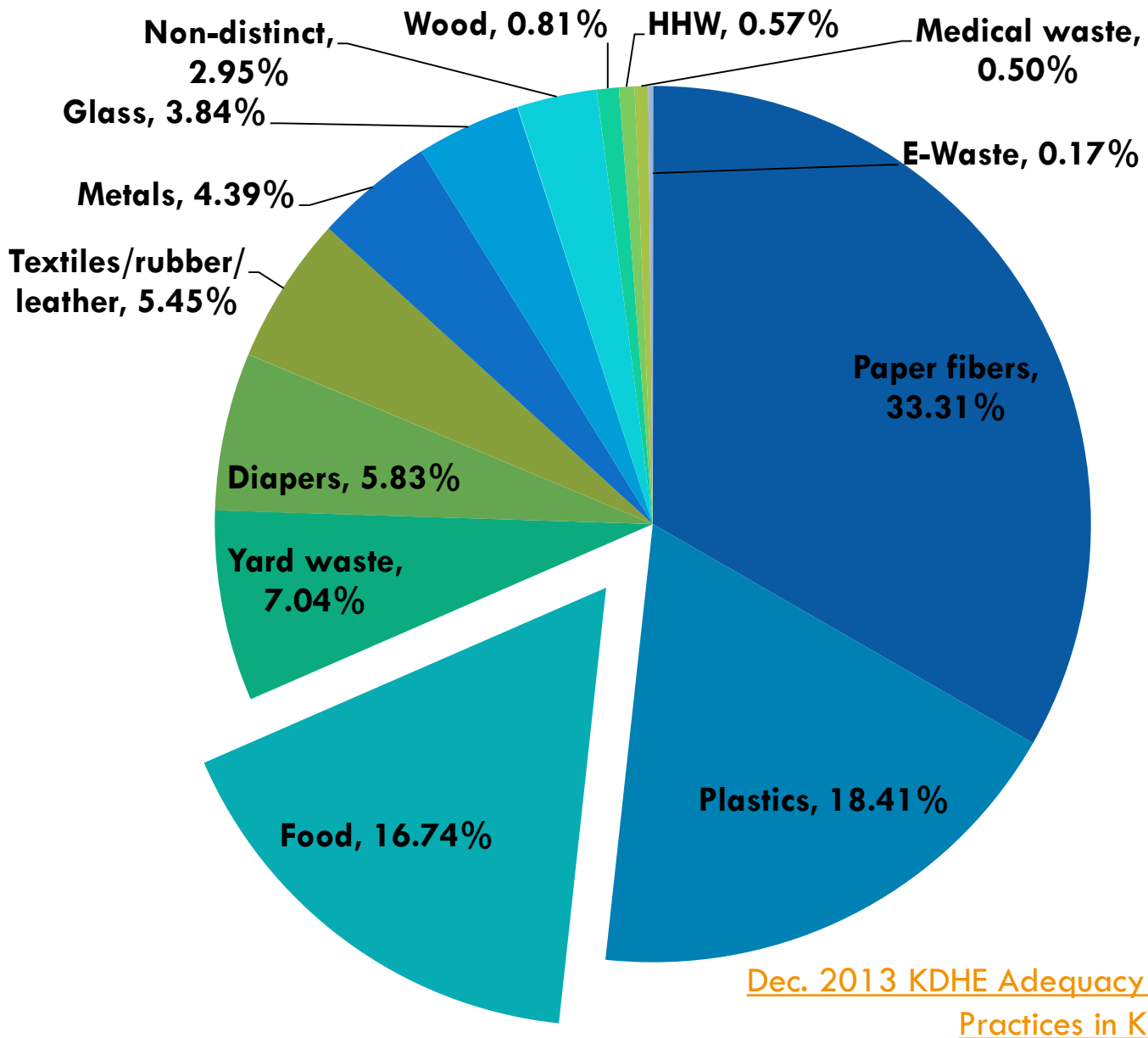
May 2015; K-State Pollution Prevention Institute

Food production and resource use

- Getting food from the farm to your plate uses 10% of U.S. energy, 50% of U.S. land, and 80% of all freshwater consumed in the U.S.
- 40% of food in the U.S. goes uneaten ($165 billion/year).
- One in six Americans doesn't have access to enough food.

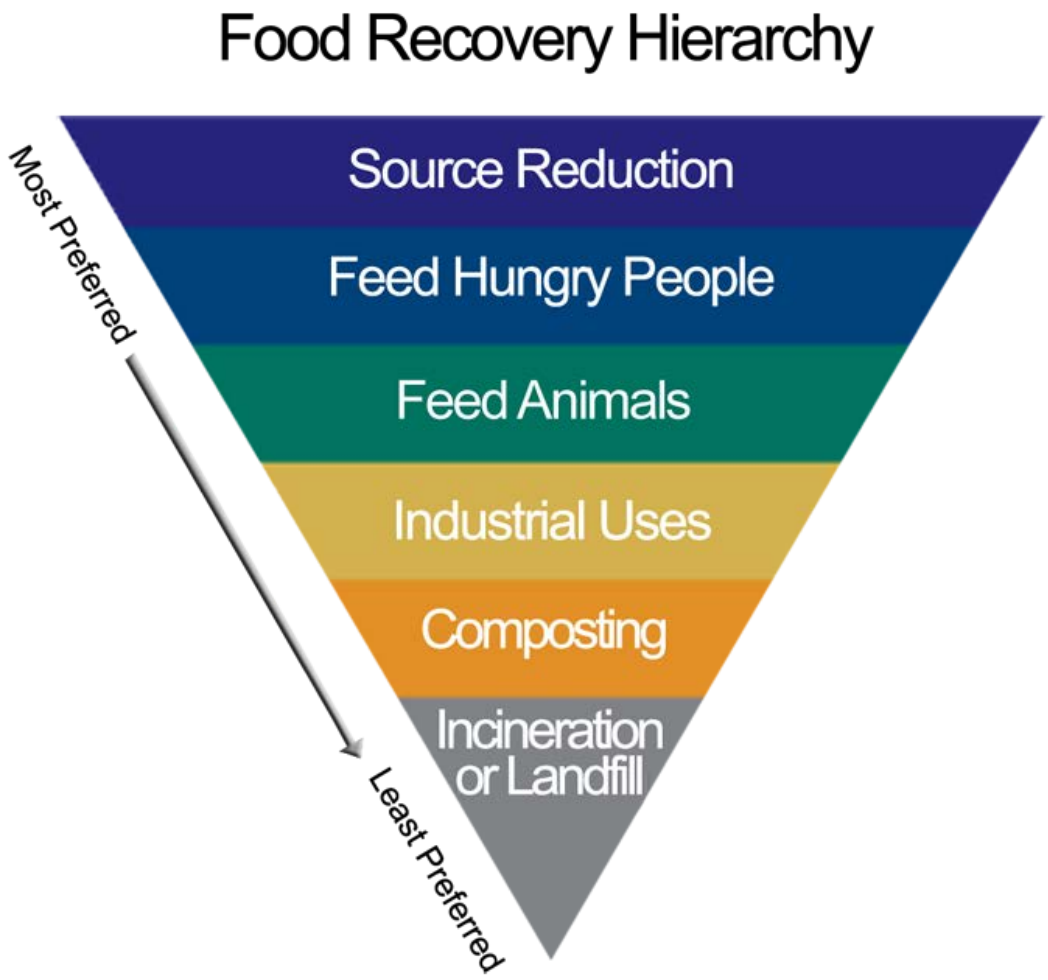
Sources: National Resources Defense Council August 2012 issue paper (12-06-B)
www.feedingamerica.org/hunger-in-america/

2012 MSW composition in Kansas



Dec. 2013 KDHE Adequacy of Waste Reduction Practices in Kansas

Food reduction opportunities



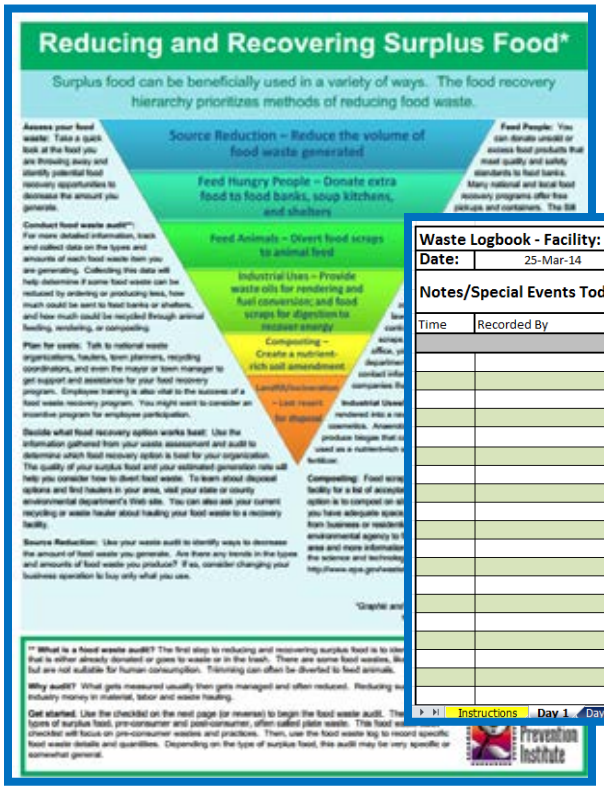
Two projects

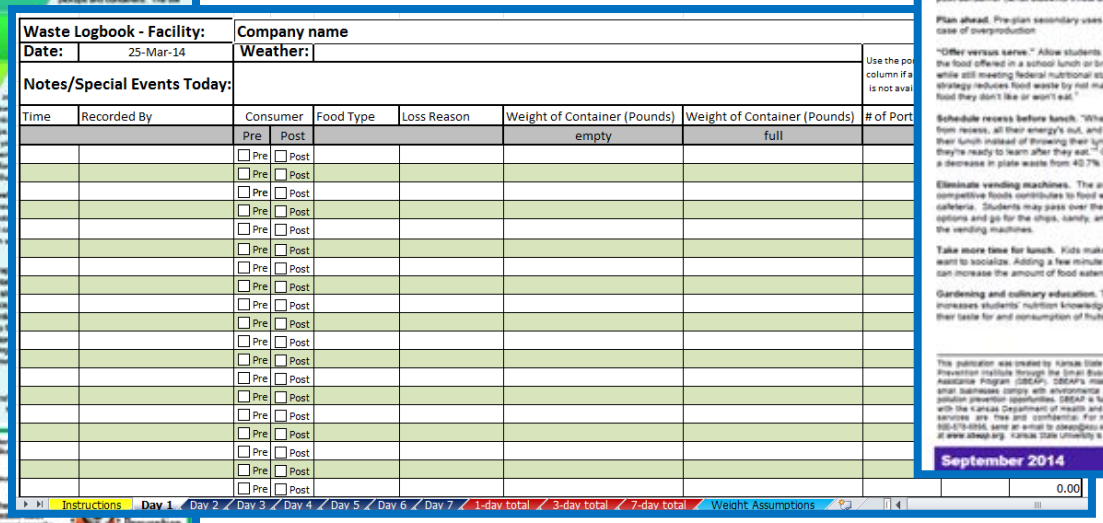
- Food Recovery Challenge meets Rural Kansas
  - One-year project funded through USDA grant

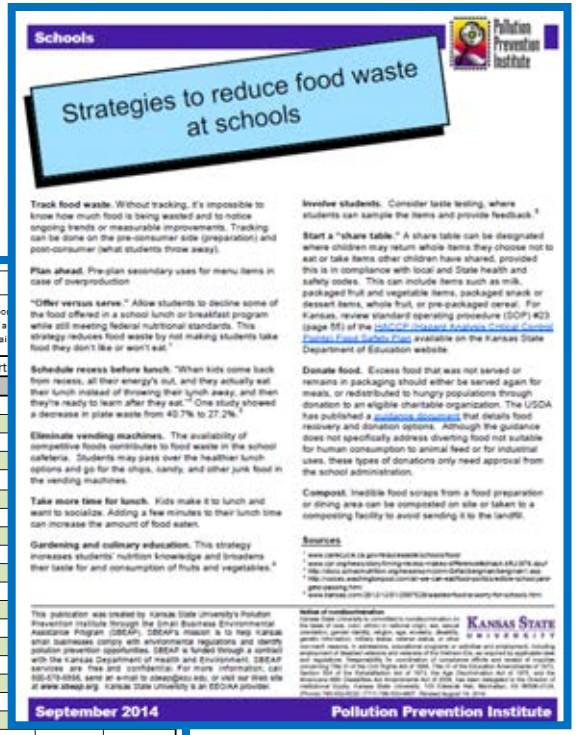
- Food Recovery Challenge (FRC) feeds Sedgwick County Hungry
  - Two-year project funded through Kansas Health Foundation

USDA project

- Worked with nine schools, institutions, and businesses
- Focus area was southeast KS (worked w/ several throughout KS)
- Developed resources to assist in food-waste reduction efforts







www.sbeap.org/services-programs/food-recovery

Kansas Health Foundation project

Title: FRC feeds Sedgwick County Hungry

Project: Work with Sedgwick County grocery chains to reduce food waste and identify food waste that can be donated to programs that feed the hungry.

FRC feeds Sg. County Hungry (Year 1)

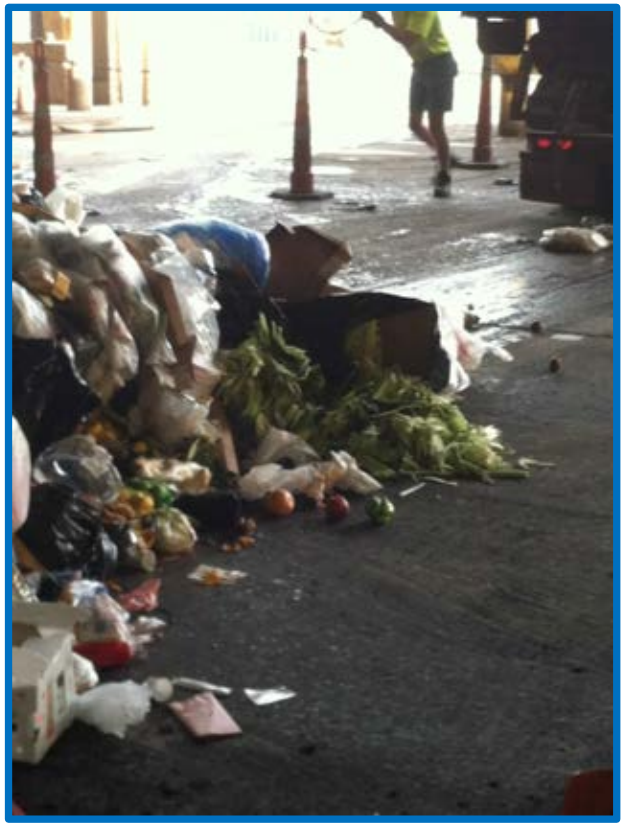
- In first year of two-year project, placed intern at two Dillon's grocery store locations in Wichita
  - Owned and operated under Kroger
  - Already donating some food; worked with PPI to improve and quantify source reduction efforts and food diversion

Kara Hall, civil engineering student at KSU

Transfer Station June 6th, 2013

Large amounts of produce found in trash

Cornhusks account for a large amount of waste



Approximately 30% of waste was organics

Year 1 projects

Year 1 projects at Dillon's

- Bakery (bolillo rolls and donuts)
- Produce (“Perishable Donation Partnership”)
- Deli (rotisserie chickens)
- Grocery (eggs)
- Corn husks to new zoo

Year 1 results

Summary of 2013 intern recommendations for Dillons

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Grocery	2.7 tons	$2,058	Planned
Produce	36 tons	$2,863	Implemented
Bakery			
Bolilo Rolls	2.5 tons	$14,202	Implemented
Donuts	2.1 tons	$9,079	Partially Implemented
Deli	5.4 tons.	$29,955	Recommended
Total savings *	**48.7 tons**	**$58,157**	
GHG reductions *	**33 metric tons CO2e**		

Year two – Bintou Bayo

- Dillons - Food Recovery Challenge
- Main Focus
  - Produce
  - Bakery
  - Deli
  - Dairy
  - Meat & Seafood
- Goals
  - Identify source reduction opportunities.
  - Maximize food donations to the Kansas Food Bank.
  - Increase food waste diversion program.

Produce

- Source Reduction
  - Reduce soup options from four to two
    - 50% reduction – 1,460 lb./year
    - Implemented immediately

Bakery

- Food Donations to the Kansas Food Bank (KFB)
  - Food diversion to the KFB increased by 87%

Projected annual redistribution to KFB	
Store - North	23,360 lbs.
Store - South	10,220 lbs.
Total	33,580 lbs.

Deli

- Source Reduction
  - BBQ baked chicken & baked chicken
    - Recommended reduce production by 50%
    - Not eligible for KFB or Quest
    - If implemented, 1 tons of waste reduced.

Dairy

First Week's food donations to KFB:

26 crates of milk – 111 gallons

Water conservation

- Reverse Osmosis System
  - Malfunctioning; leaking water to floor drain
  - Reported and resulted in water savings of 1.1 million gallons
  - Found similar problem at another store

- Thawing practices for deli & Chinese kitchen
  - Recommended refrigerator thawing
  - Conserve 210,240 gallons of water/yr.
  - Implemented immediately

Year 2 results

Summary of 2014 P2 intern recommendations for Dillons Food Stores

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Deli BBQ Baked Chicken	0.5 tons	$3,500	Recommended
Deli Baked Chicken	0.4 tons	$2,300	Recommended
Deli Small Sides	1.4 tons	$6,000	Implemented
Produce	26.6 tons	$14,000	Implemented
Bakery	12.8 tons	$1,000	Implemented
Water	1,300,000 gal	$7,000	Implemented
Total savings	**41.7 tons waste diverted** **1.3 million gallons of water saved**	**$33,800**	
GHG reductions *	**67.2 metric tons CO2e ($MTCO_2E$)**		

Discussion Questions

- Are government and business effectively anticipating and responding to emerging trends in an effective manner?
- What science and innovation is needed to address the nexus of food-energy-water?
- How do we promote use of system science and decision support tools?
- How do we create effective business-government-public collaborations and innovation in investments

Source: Dr. Alan Hecht, EPA – recent Megatrends – Food, Water, Energy Nexus webinar

Questions or suggestions?

Environmental Hotline:

800-578-8898

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