Restaurants for Tomorrow
September 17, 2018

# The NJ Sustainable Business Registry

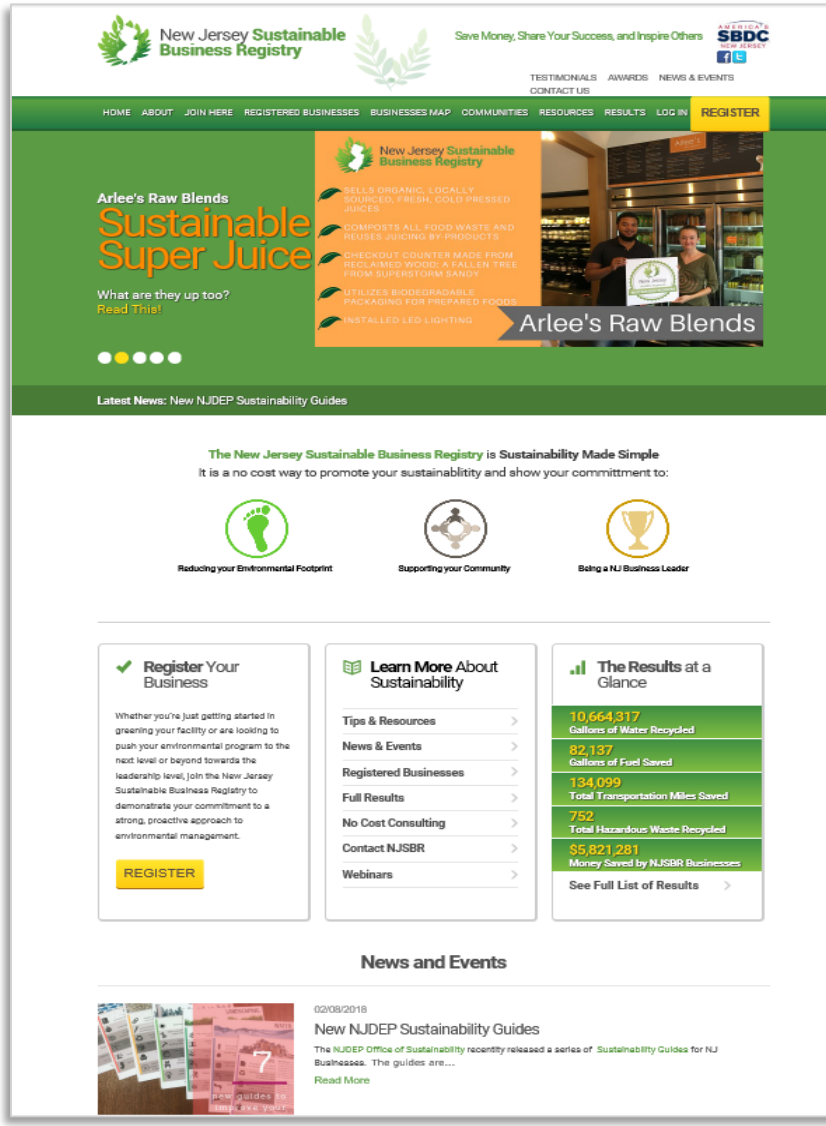
# SUSTAINABILITY MADE SIMPLE

# Goals of the NJ Sustainable Business Registry

1. **Recognize and Promote NJ Sustainable Businesses**

2. **Encourage all NJ businesses to adopt green practices**

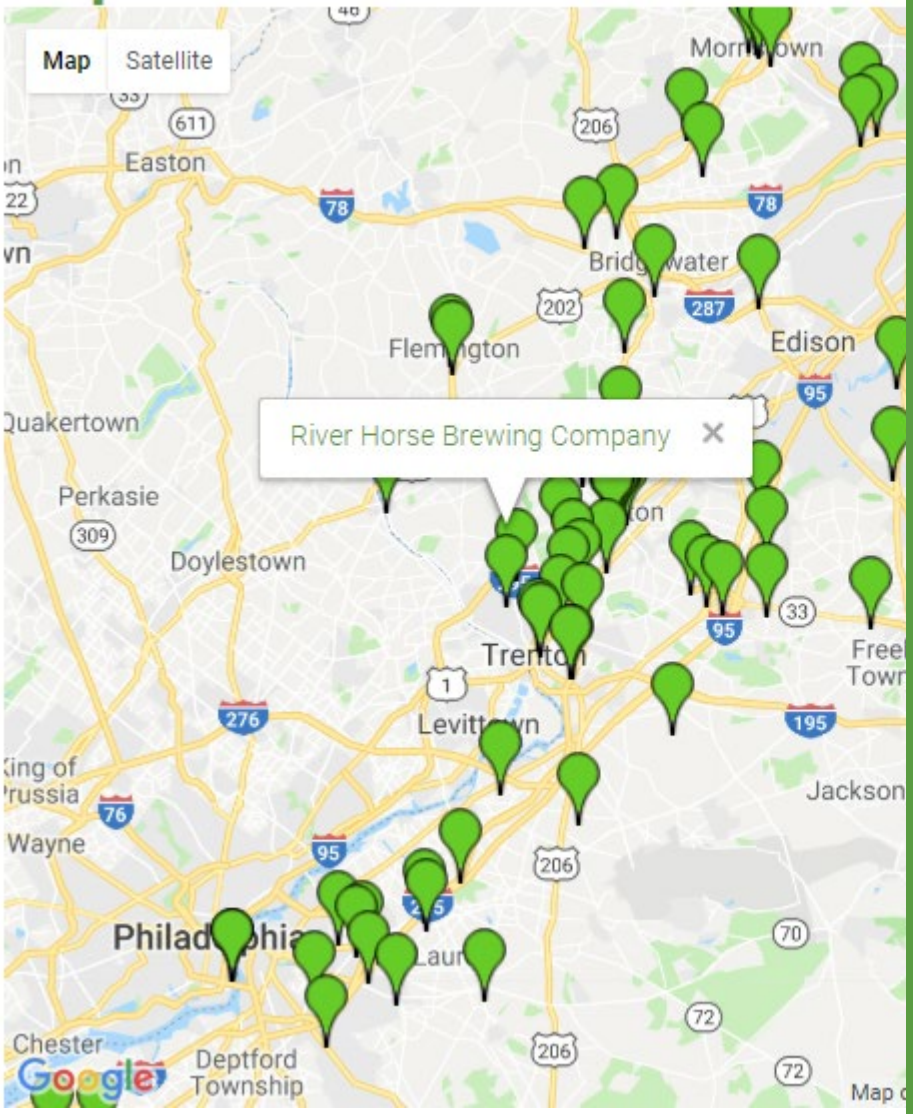
3. **Increase Transparency for NJ Consumers**




AMERICA'S SBDC NEW JERSEY

# Website Features

## Map of Businesses




New Jersey Sustainable Business Registry

Save Money, Share Your Success, and Inspire Others

SBDC NEW JERSEY

TESTIMONIALS NEWS & EVENTS CONTACT US

HOME ABOUT JOIN HERE REGISTERED BUSINESSES BUSINESSES MAP RESOURCES RESULTS AWARDS LOG IN REGISTER

### River Horse Brewing Company

**Business Information**

**Name of Organization:**
River Horse Brewing Company
**Business Logo:**

RIVER HORSE
BREWING CO. EWING, NJ

**Organization Type:**
Breweries
**Business Description:**
River Horse Brewing Company is one of the largest craft breweries in New Jersey, focusing on great beer with fresh and natural ingredients. The brewery offers weekend tours and tastings, meanwhile gives back to the local community through beer and merchandise donations, and by hosting charity events.
**Contact Person:**
Andrea Whaley
**Title:**
Office Manager
**Business Location:**
River Horse Brewing Company
2 Graphics Drive
08628 Ewing , NJ
United States
40° 16' 34.9572" N, 74° 47' 45.6144" W
See map: Google Maps
**Phone:**
609-883-0890
**Email:**
info@riverhorse.com
**Number of Employees:**
30
**Website:**
www.riverhorse.com
**Membership Date:**
Thursday, September 15, 2016

Renewable Energy

**Description of Action:**
8000 sq. ft. of solar panels on brewery roof.
**Upload Document (PDF Only):**
River Horse Brewery Solar Panels.pdf

Waste Recycling

**Description of Action:**
Glass and cardboard recycling dumpster.

Water Conservation

**Description of Action:**
During the brewing process, cold water is used to cool boiled, un-fermented beer from 212 F to 70 F. This cool water is heated during the process and collected in our hot water tank for use in the next brew.
**Gallons Saved:**
800 000
**Money Saved:**
2,200

Identify Sustainability Leader

**Description of Action:**
Chris Rakow is the lead of sustainability at River Horse. On a daily basis, Chris oversees efficiency and sustainability practices at the brewery.

Support the Well-Being of Your Employees

**Description of Action:**
Shift scheduling does not allow any employee to work alone in case of an emergency.

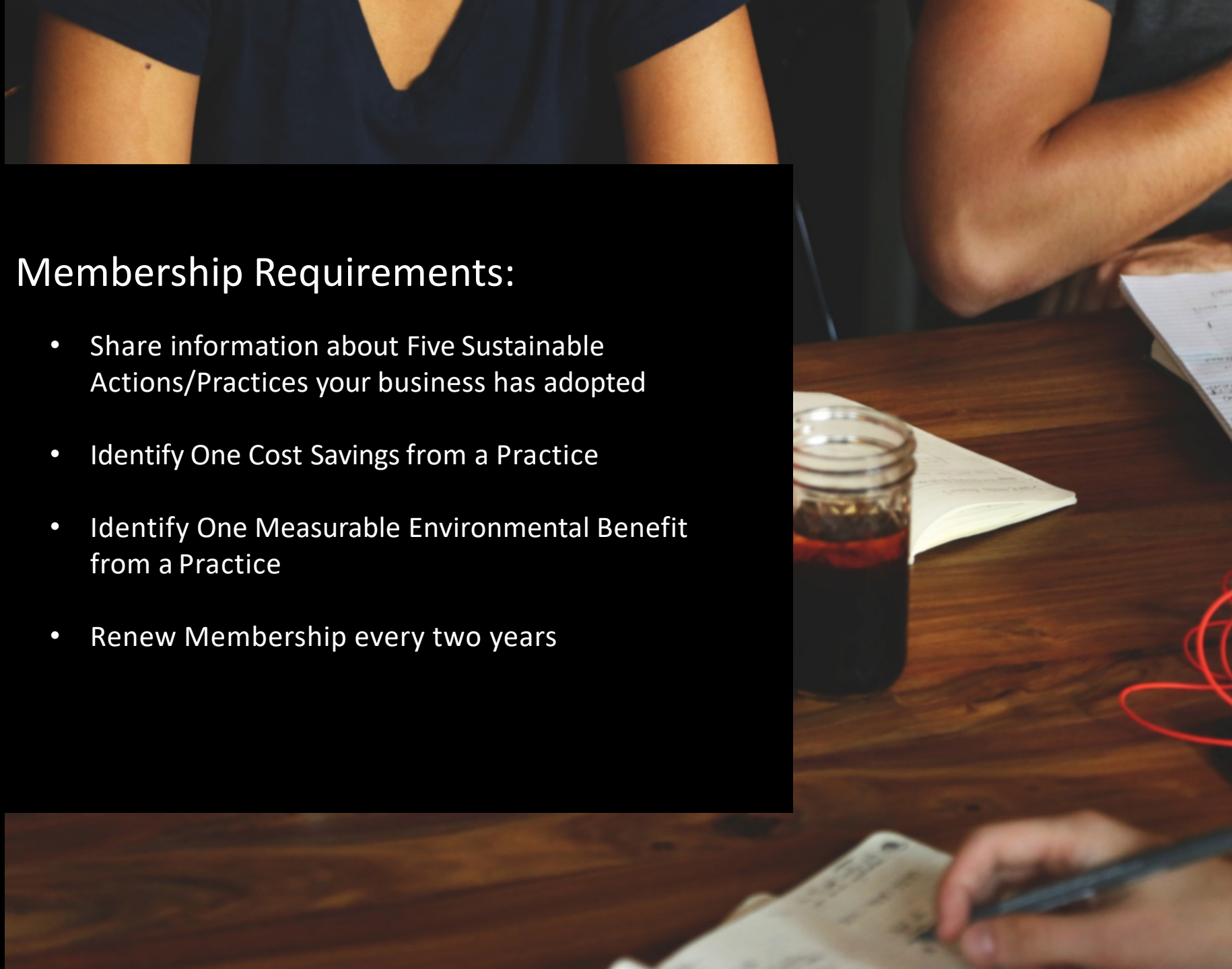
**Learn More** About Sustainability

- Tips & Resources
- Calculations
- News & Events
- Registered Businesses
- Full Results
- No Cost Consulting
- Contact NJSBR
- Webinars

**Register** Your Business

Whether you're just getting started in greening your facility or are looking to push your environmental program to the next level or beyond towards the leadership level, join the New Jersey Sustainable Business Registry to demonstrate your commitment to a strong, proactive approach to environmental management.

REGISTER



## Membership Requirements:

- Share information about Five Sustainable Actions/Practices your business has adopted
- Identify One Cost Savings from a Practice
- Identify One Measurable Environmental Benefit from a Practice
- Renew Membership every two years

# Eligible Practices

### Management and Leadership:
- ☐ Adopt an Environmental Policy Statement
- ☐ Identify a Sustainability Leader / Create a Sustainability Team
- ☐ Set Annual Environmental Goals
- ☐ Develop an Environmentally Preferable Purchasing Plan
- ☐ Provide Environmentally Preferable Products and Services
- ☐ Implement an Environmental Management System
- ☐ Develop Aspirational Goals

### Community:
- ☐ Support the Well-being of your Employees
- ☐ Improve Indoor Air Quality
- ☐ Serve Customers with Disabilities
- ☐ Support Community Initiatives
- ☐ Adopt a Cause or Project in your Community
- ☐ Participate in Sustainable Jersey
- ☐ Participate in Sustainable Somerset
- ☐ Shop Local

### Other:
- ☐ Any other environmental activities not covered in the categories above

### Waste:
- ☐ Waste Reduction Practices
- ☐ Waste Reuse Practices
- ☐ Waste Recycling
- ☐ Hazardous Waste/Toxic Use Reduction

### Energy:
- ☐ Energy Efficiency Measures
- ☐ Utilize Renewable Energy

### Transportation:
- ☐ Support Employee Commuting Options
- ☐ Efficient Business Travel
- ☐ Fleet Vehicles Efficiency

### Water:
- ☐ Water Conservation Efforts
- ☐ Storm Water Management and Environmental Site Design

### Certification Programs:
- ☐ NJDEP Environmental Stewardship Initiative Recognition
- ☐ Certified by Leadership in Energy and Environmental Design (LEED)
- ☐ Participate in the New Jersey Clean Marina Program
- ☐ River Friendly Certification
- ☐ Participate in other Sustainability Certification or Recognition Programs

### Green Building:
- ☐ Apply other Green Building Practices independent of LEED

### Environmental and Community Restoration:
- ☐ Participate in Environmental Restoration Projects
- ☐ Share your Environmental Successes

### Industry Specific:
- ☐ Implement Environmental Practices specific to your Industry

### Emergency Preparedness:
- ☐ Make Preparations for Emergencies

# Example Requirements

## Water Conservation Practice


1 Five Sustainable Practices

**Description of Action:**
We installed low flow toilets and low flow water faucets.

2 One Measurable Benefit

**Gallons Saved:**
14,600/year

Measurable Benefit

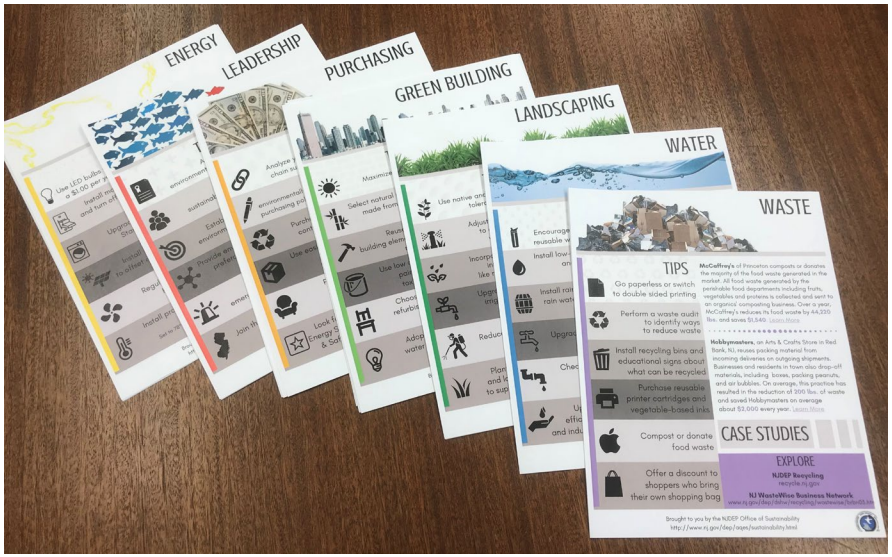
3 Cost Savings from One Practice

**Money Saved:**
$263/year

Cost Savings

# Membership Benefits

- Free publicity and statewide recognition
- Sustainable Business Seal and Logos
- Access to technical assistance
- Access to tips and resources
- Search Engine Optimization




# About our Registry Members

## Business Sectors Represented

- Agriculture
- Architecture
- Arts & Entertainment
- Automotive & Vehicles
- Beauty & Spas
- Breweries
- Construction
- Dry Cleaner
- Engineering
- Event Planning & Services
- Financial Services
- Fitness & Instruction
- Food & Drink
- Grocery
- Healthcare & Medical Services
- Hospitality
- Landscaping Services
- Manufacturing
- Media
- Printing Services
- Professional Services
- Pharmaceutical
- Real Estate
- Recycling Equipment
- Retail
- Transportation
- Warehousing & Storage
- Waste & Recycling Services

**19/21**
NJ Counties Represented

**143**
Businesses

**18**
Food & Drink Establishments

LANGOSTA LOUNGE
Nauna's Bella Casa
TOMFOOLERY BREWING CO.
JAVA LOVE
IRON HILL BREWERY & RESTAURANT
Gina THE BAKER
LONE EAGLE BREWING
JAMMIN' crêpes
Arlee's RAW BLENDS
RIVER HORSE BREWING CO. EWING, NJ
The ALEMENTARY BREWING CO.
Siam Garden Authentic Thai Cuisine
Green Point JUICERY

# What is the New Jersey Food & Drink Industry doing?

## Management/Leadership

- Creating  environmental policy statements
- Setting environmental goals
- Offering vegetarian and vegetable-based menu items

## Recycling & Food Waste

- Recycling organic waste with local farmers and waste haulers
- Recycling used cooking oil
- Recycling cardboard, glass, paper, metals and plastic
- Recycling used crayons

## Single Use Plastics & Disposables

- Adopting a no-straw policy
- Adopting a no-balloon policy
- Switching to paper bags and aluminum take-out containers
- Investing in reusable cups, plates and utensils
- Investing in glass to-go containers, and offering a discount on your next purchase for returning

## Energy

- Switching to LED lightbulbs
- Utilizing motion sensor lighting in restrooms
- Installing humidity control filter panels in walk-in refrigerators
- Upgrading to Energy Star® appliances

## Water

- Providing filtered water to customers rather than bottled
- Installing low flow toilets and faucets
- Upgrading Water Sense® fixtures and appliances

## Transportation

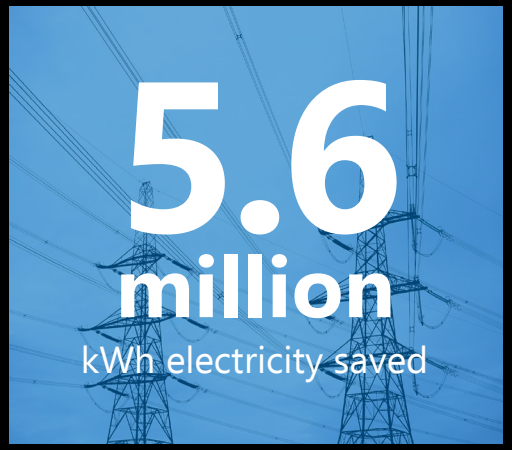
- Installing Electric Vehicle charging stations in Parking Lots
- Providing bike racks for customers and employees

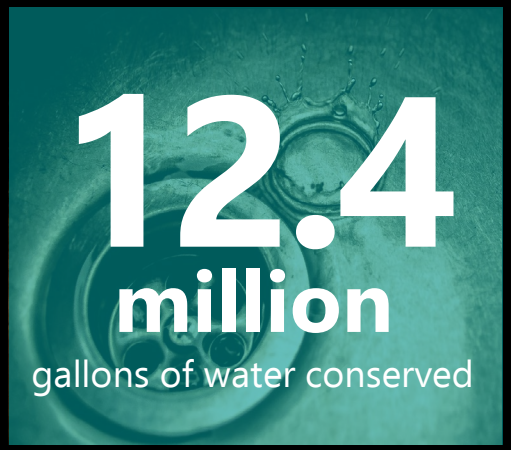
## Community

- Sourcing local and organic ingredients
- Supporting and volunteering in community clean-ups
- Using environmentally friendly cleaning supplies
- Offering employees health benefits

# Results

Members Make a Difference







# It Pay$ to Plug In:
## NJ's Electric Vehicle Charging Grants

**It Pay$ to Plug In provides grants of up to $6,000 per charger to offset the cost to purchase and install electric vehicle charging stations**

**Apply Today!**

Application forms, grant amounts and instructions are available at:
www.drivegreen.nj.gov

# Contact

**CONTACT US:**

**Website**
registry.njsbdc.com

**Email Address**
Helaine.Barr@dep.nj.gov

**BE SOCIAL WITH US:**

**Like us on Facebook**
@NJSBDCGREENBIZ

**Follow us on Twitter**
@NJSBDC_GREENBIZ

**Follow us on Instagram**
@njsustainablebusinessregistry

# *New Jersey's Clean Energy Program™*

## Energy Efficiency Opportunities for Commercial, Industrial and Institutional Buildings

Jim Friedl

September 17, 2018

# NJCEP BACKGROUND

**ADMINISTERED by**

New Jersey Board of Public Utilities

**FUNDED from**

Societal Benefits Charge (SBC)
on utility bill

**PROGRAM GOALS**

Save energy and lower operating cost
Protect environment and lower emissions
Change the business mindset

# PROGRAM PORTFOLIO

**ELIGIBLE SECTORS**

Commercial, Industrial, Government, Schools, Non-Profit, Institutional and Multifamily

**PROGRAMS**

Audits:

- Energy Benchmarking
- Local Government Energy Audits

Comprehensive Projects:

- Direct Install
- Pay for Performance – Existing Buildings
- Pay for Performance – New Construction
- Large Energy Users Program

Equipment Rebates:

- Smart Start – Existing Buildings
- Smart Start – New Construction

Distributed Energy Resources (DER) – Energy Generation:

- Combined Heat and Power
- Electric Storage

# WHERE TO START?

- Do you know what you want to do or do you need help deciding on a plan?
- How large is your facility?
- Comprehensive or individual measure?
- What is your goal?

# NEED SOME HELP?

- If you need some help getting started……

Benchmarking

# BENCHMARKING OVERVIEW

- Open to Commercial, Industrial, Agricultural, Government, Non-Profit and Institutional Customers
- Program covers 100% of cost
- Benchmarking Report includes:
  - An ENERGY STAR® Portfolio Manager score
  - Suggestions for improving operations and maintenance
  - Identification of relevant incentives and program options for energy efficiency projects

# HOW TO PARTICIPATE

## To Request a Benchmarking report:

- Visit NJCleanEnergy.com/BENCHMARKING
- Submit the online data collection form
- Submit 12 consecutive months of energy data or a signed Fuel/Energy Release Authorization Form

# DIRECT INSTALL

# DIRECT INSTALL: OVERVIEW

- A turn-key retrofit program to replace outdated and inefficient equipment. All paperwork handled by contractor.
- Open to Small to Mid-Sized Commercial and Industrial facilities with an average annual peak electric demand ≤ 200 kW
- Lighting, HVAC, Refrigeration

# DIRECT INSTALL: OVERVIEW

- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
  - Customer only pays remaining % of installed cost
  - $125,000 project cap
  - $250,000 per entity cap
- Project must pass cost/benefit test

# DIRECT INSTALL: BENEFITS

- Minimal cost: Low upfront cost with generous incentives
- Fast turnaround time: Average length of time for job completion, 4-6 months
- Ongoing savings: Projects provide energy savings year after year

# DIRECT INSTALL: Measures

- Lighting
  - DLC qualified LED Luminaires including LED linear tube replacements
- HVAC (Electric Cooling and Natural Gas, Oil, Propane Heating)
- Variable Frequency Drives (VFD)
- Premium Motors
- HVAC and Hot Water Controls
- Refrigeration

* No Commercial Food Equipment in Direct Install. Use Prescriptive Program.

# LIBRARY IV

- Restaurant
- Lighting & HVAC retrofit
- Total Project Cost: $61,283
- **Incentive: $42,898**
- **Annual Savings: $9,052**
- **Payback Period: 2.0 Years**


***This case study was from a previous fiscal year and may not represent current incentive levels or costs.***

# McDONALD'S

- Franchise in Piscataway
- Lighting & HVAC retrofit
- Total Project Cost: $85,331
- **Incentive: $59,731**
- **Annual Savings: $9,478**
- **Payback Period: 2.7 Years**


***This case study was from a previous fiscal year and may not represent current incentive levels or costs.***

# NJ SMARTSTART BUILDINGS

# SMARTSTART: OVERVIEW

- Individual incentives for broad project categories:
  - Equipment Replacement
  - Renovation
  - Remodeling
  - New Construction
- Available to all Commercial, Industrial, Agricultural, Government, Non-Profit and Institutional customers
- Provides two types of financial incentives for high efficiency equipment installation: **Prescriptive & Custom**
- Incentives up to $500,000 per electric account and $500,000 per natural gas account per fiscal year.

# SMARTSTART: INCENTIVES

Prescriptive Incentives

- Specific incentives and individual applications for:
  - Lighting & Lighting Controls
  - Packaged HVAC
  - Boilers & Water Heaters
  - Chillers
  - VFD’s
  - Food Service
  - Refrigeration
- Project pre-approval required for all lighting measures

# SMARTSTART: Food Service Equipment

- Commercial Combination Oven/Steamers (Electric/Gas
- Commercial Refrigerators & Freezers
- Commercial Ice Machines
- Commercial Ovens, Steamers, Fryers, and Griddles
- Insulated Holding Cabinets and Commercial Dishwashers

# SMARTSTART: INCENTIVES

Custom Incentives

- Designed for new or innovative technologies proven to be cost-effective and not listed as prescriptive
- Incentives based on incremental costs and energy savings analysis paid for approved projects at the lesser of three values*:
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms to be eligible.
- Project pre and post inspection required.

* For equipment replacement, gut-rehab/new construction, incentives caps based on incremental cost and energy savings where applicable.

# CTEEP – PILOT: OVERVIEW

Customer Tailored Energy Efficiency Program

- Streamlined approach to projects involving multiple SmartStart Buildings measures/applications (prescriptive and custom)
- Offers direct on-site assistance
- No minimum energy savings requirements
- Technical assistance incentives available up to $10,000

# FOR MORE INFORMATION

**Visit** NJCleanEnergy.com

**Call** (866) NJSMART

**Stay Informed** NJCleanEnergy.com/Newsletter

To join the Energy Efficiency listserv

contact the NJCEP Webmaster.

# NJDEP Draft Food Waste Reduction Plan Overview

## IN RESPONSE TO BILL S 3027 – P.L. 2017c.136

## 50% FOOD WASTE REDUCTION GOAL BY 2030

# Legislation Requires



- **A 50% reduction in food produced that is never consumed by humans based on 2017 losses**
  - Not mandating recycling of food waste but reduction in the generation of food waste
  - DEP to look to food supply chain to reduce amount of wasted food
    - Like Oregon
  - DEP to hold public hearings and engage Dept of Ag
  - 2017 food loss as a baseline for comparison
    - Universal problem is quantifying food waste/food loss
    - DEP will have to estimate
  - DEP sees proposed plan as a first step

# The Impacts of Wasting Food (various Sources)



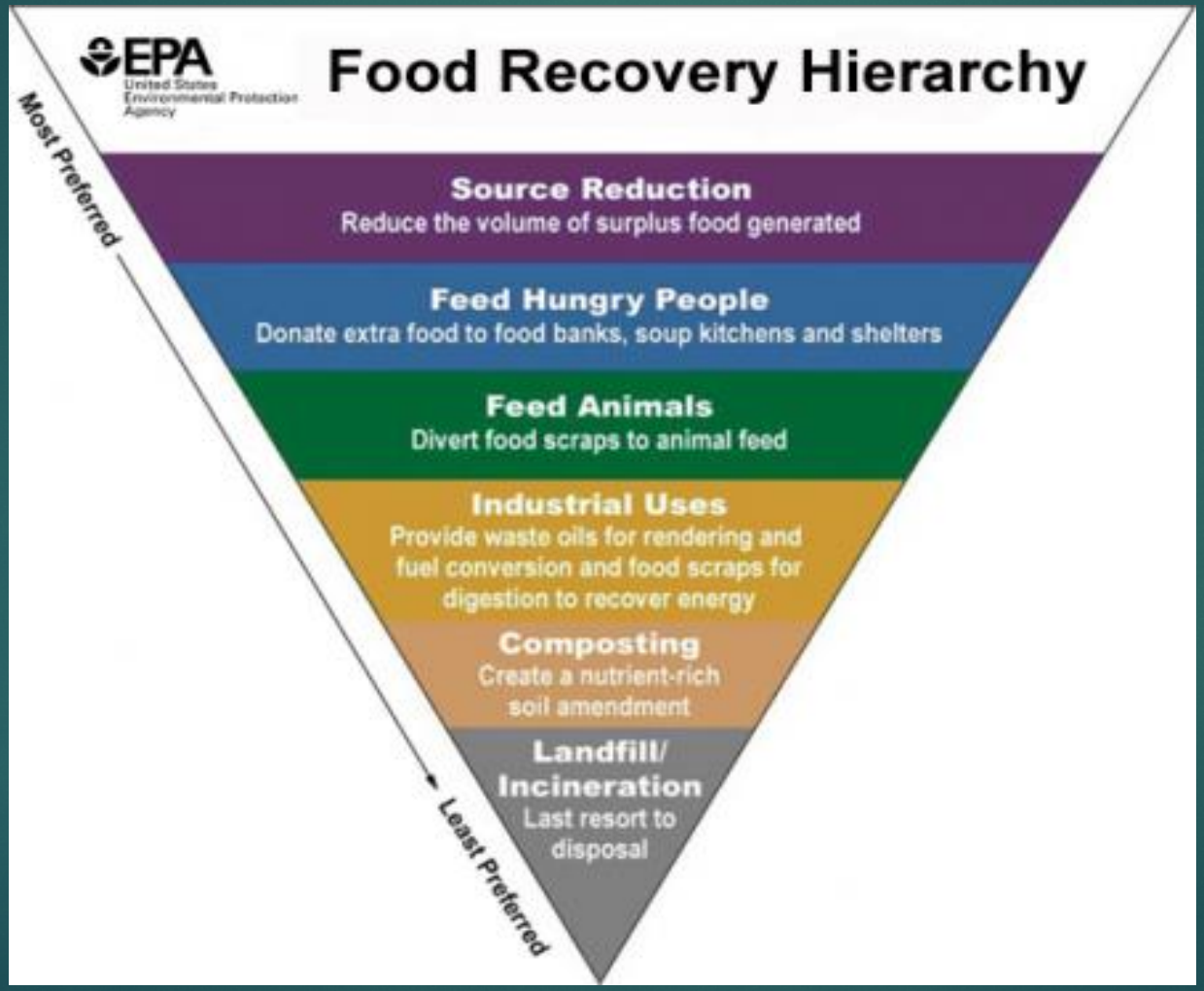
- Nationally 40 % of food produced is never eaten
  - $165 billion of food is wasted in US each year
- 11% of NJ population is food insecure
- Food waste = waste of resources to produce the food
  - 10 percent of the total U.S. energy budget
  - 50 percent of U.S. land
  - 80 percent of freshwater consumed is used for food production
- Decomposes to produce methane and takes up landfill space
- Food waste is approximately 21% of MSW stream in NJ

# Plan Development Process



- **S 3027 signed into law July 21, 2017; requires a plan in one year**
  - DEP researches and identifies the issues, processes, and interested parties in food waste
  - Meet and learn at informal focus group meetings by sector
  - Develop draft plan based on informal focus group meetings and research
  - Next step → Release draft plan to the public prior to public hearings
  - Hold three public hearings as required by P.L. 2017, c. 136
  - Incorporate comments
  - Release another draft or final version of plan; implement as appropriate

# New Jersey's Plan Supports EPA's Food Recovery Hierarchy



# Issues identified during research and focus group meetings



- Lack of awareness is a big problem

- The general public does not believe that they are part of the problem
- Date label confusion results in edible food being discarded too early
- Lack of understanding about liability for food donation
- Lack of coordination or information sharing within and between supply chain sectors
- No actual generation data is available to establish baseline or progress

# Proposed Plan Principles



- Prioritize attention and actions in sectors of highest potential benefit, i.e. those areas with the largest potential for decrease in food waste or loss
- Promote/leverage/engage already established organizations
- Promote existing information, processes, tools and awareness opportunities
- Identify and provide a platform for food reduction champions in each sector

# Possible Near Term Actions

Pending Chain of Command Review



- Promote a sector by sector approach to raise awareness through multi-media channels
- Stand up and promote a clearinghouse website and/or app
- Meet informally with a diverse small group of interested parties for information gathering, sharing  and eventually coordinating implementation
- Fund a Food Waste Composition Study
- Bring in other levels of government
- Support legislation establishing standards for date labeling

# Going forward



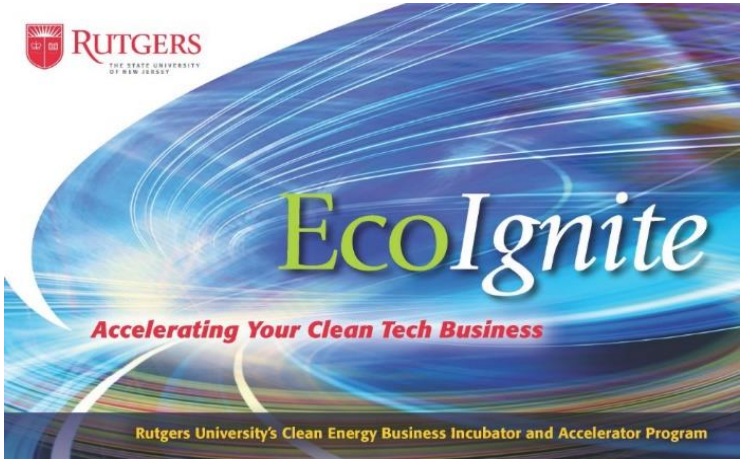
- Comments requested!
- Plan is a living document and will not have all the answers but will chart a course forward
- Overall intention is to elevate the issue of wasted food and food waste among NJ's residents, businesses, producers, governments, institutions
- Create a system where food waste generation data is collected and analyzed to measure success of reduction plan
- Process is long and complicated but the issue is too important to not be addressed

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

# New Jersey's Organic Waste Solutions and Approaches

**Serpil Guran, Director**

**Rutgers EcoComplex "Clean Energy Innovation Center"**

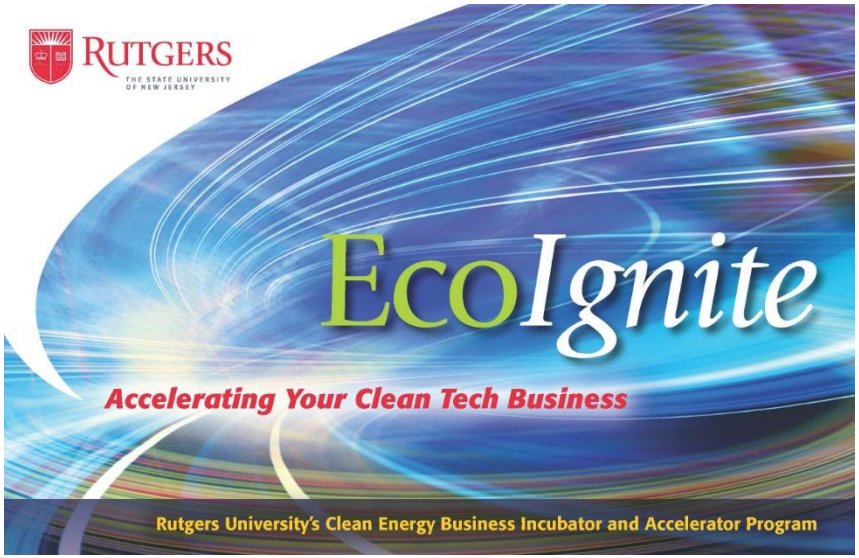


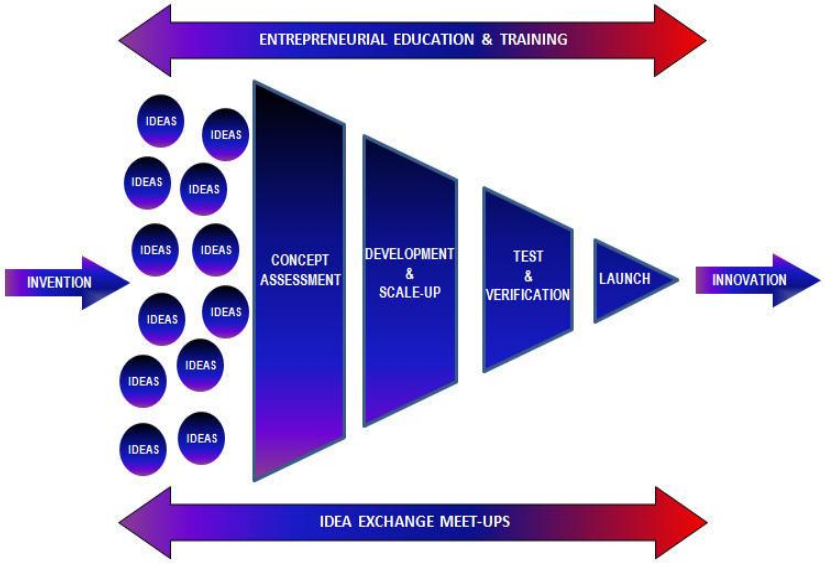

member incubateenergy network

nbia INTERNATIONAL BUSINESS INNOVATION ASSOCIATION SOFT LANDINGS

NEW JERSEY BIN BUSINESS INCUBATION NETWORK

# *RutgersX EcoIgnite*:
# Clean Tech Proof of Concept Center & Accelerator




# Urbanization at Fast Pace!

- In the past century, as the world's population has grown and become more urban and affluent.
- From now to 2030 the world will need to build a city of one million people, in every five days, in developing countries!
- As urbanization increases, global solid-waste generation is accelerating.
- A city resident generates twice as much waste as their rural counterpart of the same affluence.
- If we account for the fact that urban citizens are usually richer, they generate four times as much.

Hoornweg,D., Bhada-Tata, P., Kennedy, C., 2013, 'Waste Production must peak this century", Nature, 502, pp.615-617

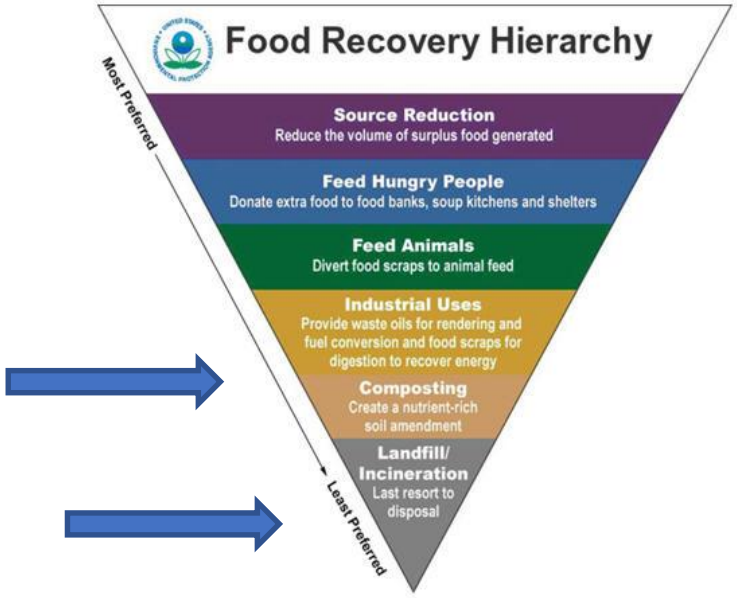
# US Wet Waste Streams -Petroleum Displacement Potential*

- Animal Waste (manure) 1.9-3.8 Quads**
- *Food Processing- 0.5-1.5 Quads*
- Wastewater sludge -0.2 Quads

** 1 Quad= $10^{15}$ BTU or $1.055 \times 10^{18}$ joules

Arpa-e, Biogas Council Webinar 9.27.2016

**Can "Organic Waste to Energy and Products- Pathway serve as an effective tool?**



# Food/Energy/Water NEXUS


***Can organic waste be considered as resource and waste reutilization be integrated into this concept to achieve better results?***

# Environmental Footprint of Food

- Expansion in cropland & pastures
- Reduction of forests, grasslands and ecotones
- Further expansion of land for agricultural production is almost at its limits
- Crop intensification practices through high water, energy and nutrient applications
- Last 50 years - food production has more than doubled
  - Cropland increased only by 12%
  - Massive increase in **Nitrogen (700%), phosphorus (350%), and pesticide** use.
  - 70% increase in irrigation, increased fossil energy usage through fertilizer usage and mechanization
- Further intensification can have adverse affects on land and water quality:
  - Loss of natural habitat, increase in continental water storage that formerly were flowing into deltas, extinction of freshwater fauna population and native fisheries, reduction of bird population due to inadequate water flows, nitrogen and phosphorus driven eutrophication of freshwater and near-shore marine ecosystems, shifts in the food chains, increased GHG emissions, …



*Credit: *Khan,S., Hanjra, M.A., Footprints of water and energy inputs in food production-Global perspectives, Food Policy (2008), doi:10.1016/j.foodpol.2008.09.001*

# Agriculture & Water Footprint Facts

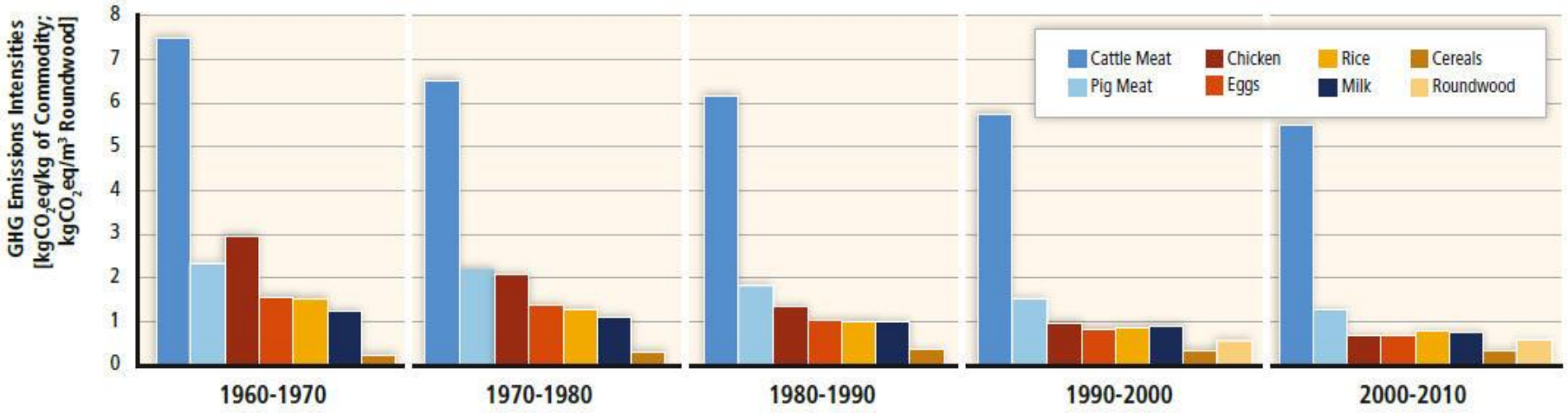
- Climate change is expected to accelerate the water cycle: surges in seasonal and spatial patterns and surge in the extreme events.
- Prolonged droughts and extreme rainfalls.
- Climate change and population growth will impact agriculture and environmental footprint.
- Irrigated agriculture (intensively managed) provides 40% of world's food production 18 % global cropland – significant impact on resources.
- Irrigated agricultural production accounted for 87- 90% of global freshwater consumption during the 20$^{th}$ century ( increased 480%) and increased demand will further stress water resources –projected to increase 20% by 2030.
- Rain-fed agriculture accounts for 80% of global cultivated area and produces 60% of world's food

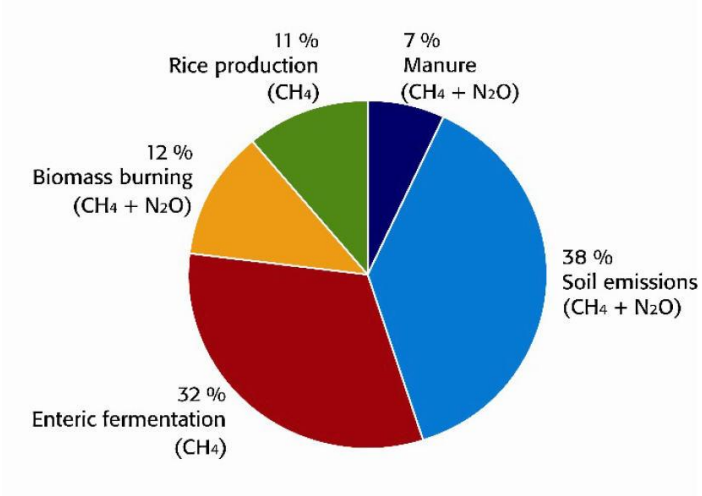


*Credit: *Khan,S., Hanjra, M.A., Footprints of water and energy inputs in food production-Global perspectives, Food Policy (2008), doi:10.1016/j.foodpol.2008.09.001*

# Food Systems and Climate Change (Cause or Victim?)

- Climate change will dramatically alter global food production
- Agriculture is not only affected by climate change, but also contributes to it.

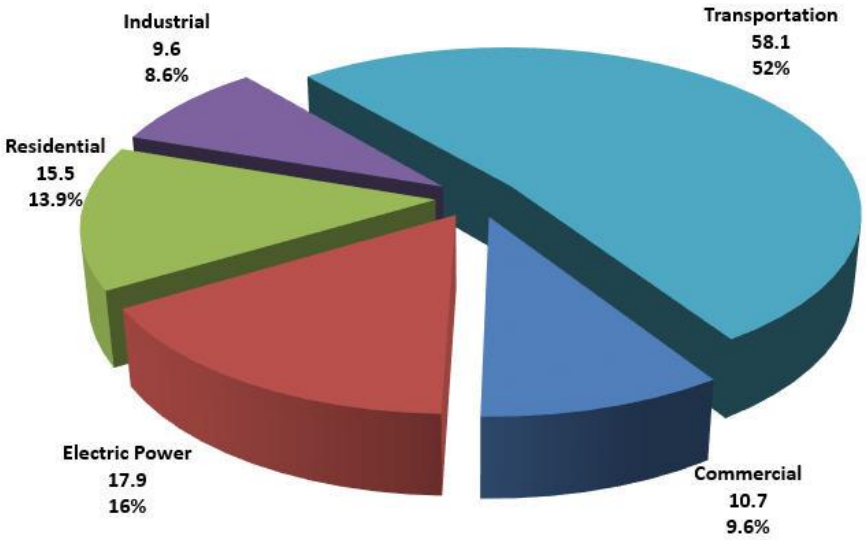


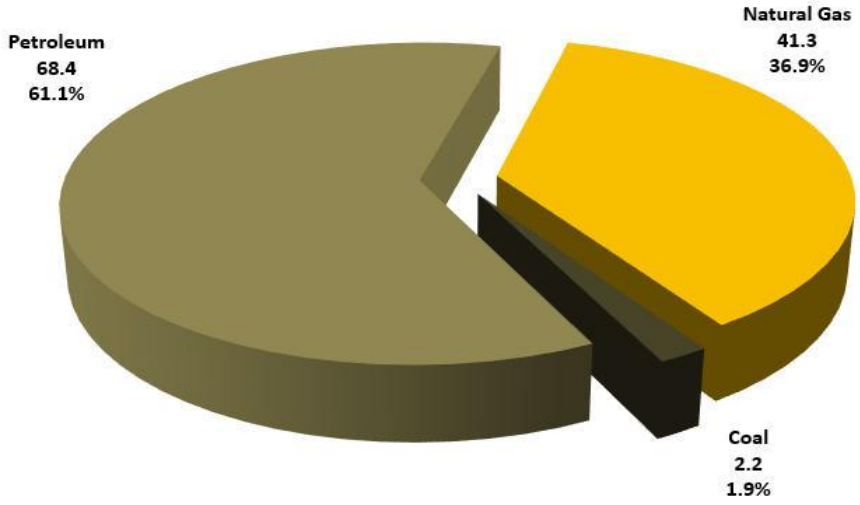



*Credit: - IPCC https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf*
*-http://orgprints.org/13414/3/niggli-etal-2008-itc-climate-change.pdf*

## NJ Energy Related $CO_2$ Emissions by Sector (million mtons/y, %)




## NJ Energy Related $CO_2$ Emissions by Fuel (million mtons/y, %)



# Clean Energy Pathways for New Jersey

- Solar - Current Installed Capacity of 2,391,780 kW
- Wind – Off Shore Wind initiatives for Development
- Can "**Sustainable Bioenergy - energy from organic waste** " be also recognized as an important tool? to achieve:
  - Mitigating Climate Change
  - Circular-Economy

**Creating an effective regulatory, management and implementation infrastructure is key to the successful achievement of bioeconomy goals. Applicable to Food Waste to Energy and Biobased Products Pathway:**

1- Institutional infrastructure
2- Regulations
3- Market-based incentives
4- Market transformation through technological innovation
5- **Feedstock Integrity and availability**

**A systems approach is needed to identify where the largest opportunities are, and more importantly, how various strategies and policies might impact each other.**

**STATE OF NEW JERSEY**
**218th LEGISLATURE**

- S. 1206 Sponsored By Senators Smith & Bateman
- It is still in the committees.
- Requires large food waste generators to separate and recycle food waste and amends definition of "Class I renewable energy."

# Feedstocks:

## New Jersey Coastal Communities
## Commercial Waste Generator's Disposal Survey

| Disposal Method | Frequency | Percent (%) |
|---|---|---|
| Donate | 156 / 820 | 19 |
| Animal Feed | 44 / 820 | 5.4 |
| AD (via WWTP) | 5 / 820 | 0.6 |
| Aerobic Digestion | 1 / 820 | 0.1 |
| Grease Repurposed | 11 / 820 | 1.3 |
| Meat Rendered | 11 / 820 | 1.3 |
| Reused for Juices | 3 / 820 | 0.4 |
| Compost | 95 / 820 | 11.6 |
| Landfill | 363 / 820 | 44.3 |

# Movements of Food in Food Supply Chain

Agriculture & Farming

Processing

Refrigerated Storage & Distribution

Retail

Consumer

# The EcoComplex Baseline Assessment

## Post-Consumer Food Waste Generation

**Residential**

Single & Multi Family

**Education**


Pre-K12

Higher Education

**Health/Wellness**


Hospitals


Rehab. Centers

Nursing Homes

Gyms/Health Clubs

**Hospitality**

Hotels

Restaurants/ Diners
Banquet Halls

**Special Events**

Conferences

Arenas/
Stadiums

Religious
Events

Membership
Clubs

**Correctional Facilities**

**Food Bank/Soup Kitchens**

**Airports**

# Traditional Linear Organic Waste Disposal & Utilization

Fossil-based Power & Fuel Fertilizer

↓

Agricultural and Animal Farming

Fossil-based Power & Fuel

↓

Food Processing

Fossil-based Power & Fuel

↓

Distribution

Fossil-based Power & Fuel

↓

Consumption Residential & Institutional

Disposal Landfill & Incineration

Organic Waste

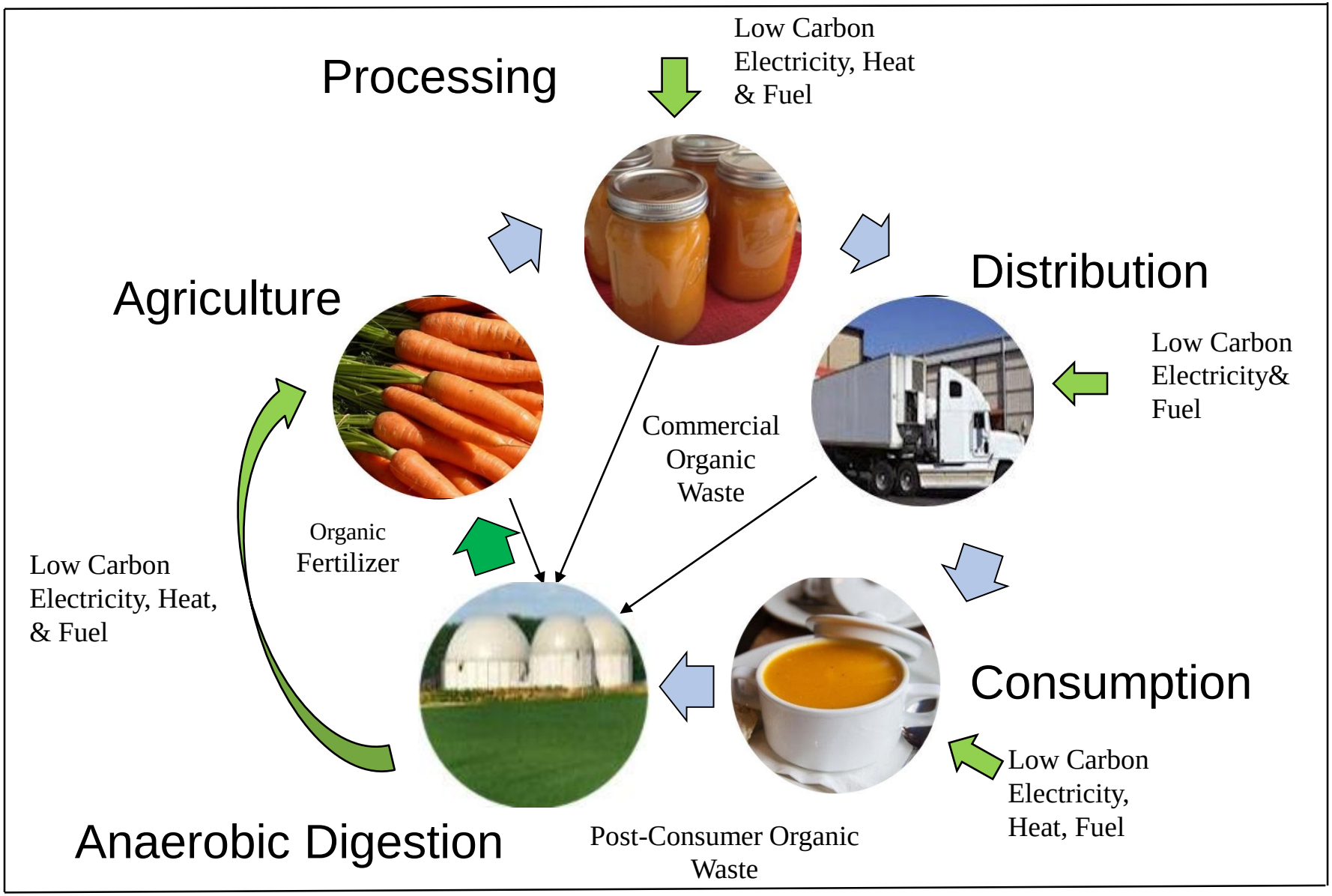
Organic Waste

Organic Waste

Organic Waste

LFG

# Closing the Loop for Resource Recovery



# Where to locate Anaerobic Digesters?

- Large scale Digesters are more efficient
- Small scale digesters can only be used for demonstration or education reasons
- Centralized
- Where waste is generated or available most
- Where permitting is feasible
- Energy generation component of the project should also be remembered when it is considered
- Track trafficking should not be heavily increased
- Large Farm Applications
- Co-locating at the Landfills
- Waste Water Treatment Facilities

# NJ Food Waste Reutilization

## Emerging Projects

**Waste Management CORe Facility & RVSA Collaboration**

- Receives packaged produce from grocery stores
- Capacity : 500 tons/day permitted
- Initial Project: 150tons/day
- Depackaging and contaminant removal is followed by slurrying the food waste engineered bioslurry (EBS) and it is delivered to Rahway Valley Sewerage Authority to be digested.
- Biogas production is currently 250,000 ft3/day at RVSA.
- Anticipated to at least double, potentially triple once codigestion reaches the full quantity of food waste the plant is designed to receive.
- The facility owns four 1.55 MW CHP engines, and will use all the power generated from the biogas to run the plant. The treatment plant power demand ranges from 1.5 MW to 3.0 MW.

# CORe Facility & RVSA
# Waste-Biogas-to-Grid Pr0ject

Acceptable:
-Produce
-Meats & Seafood
-Dairy
-Bakery & Dry goods
-Processing liquids, beverage

Incidentally Acceptable
-Food Soiled paper
-Food soiled Cardboard
-Bones& Shells

# Trenton BioGas

Technology : Anaerobic Digestion

Capacity: 320tons Food Waste /day

Power Generation: 3.3MW

Location: Duck Island, Trenton

# Linden Renewable Energy Project,

- Site Lease: Executed on June1st 2018 will be located at 4900 Tremley Point Rd. in Linden, NJ

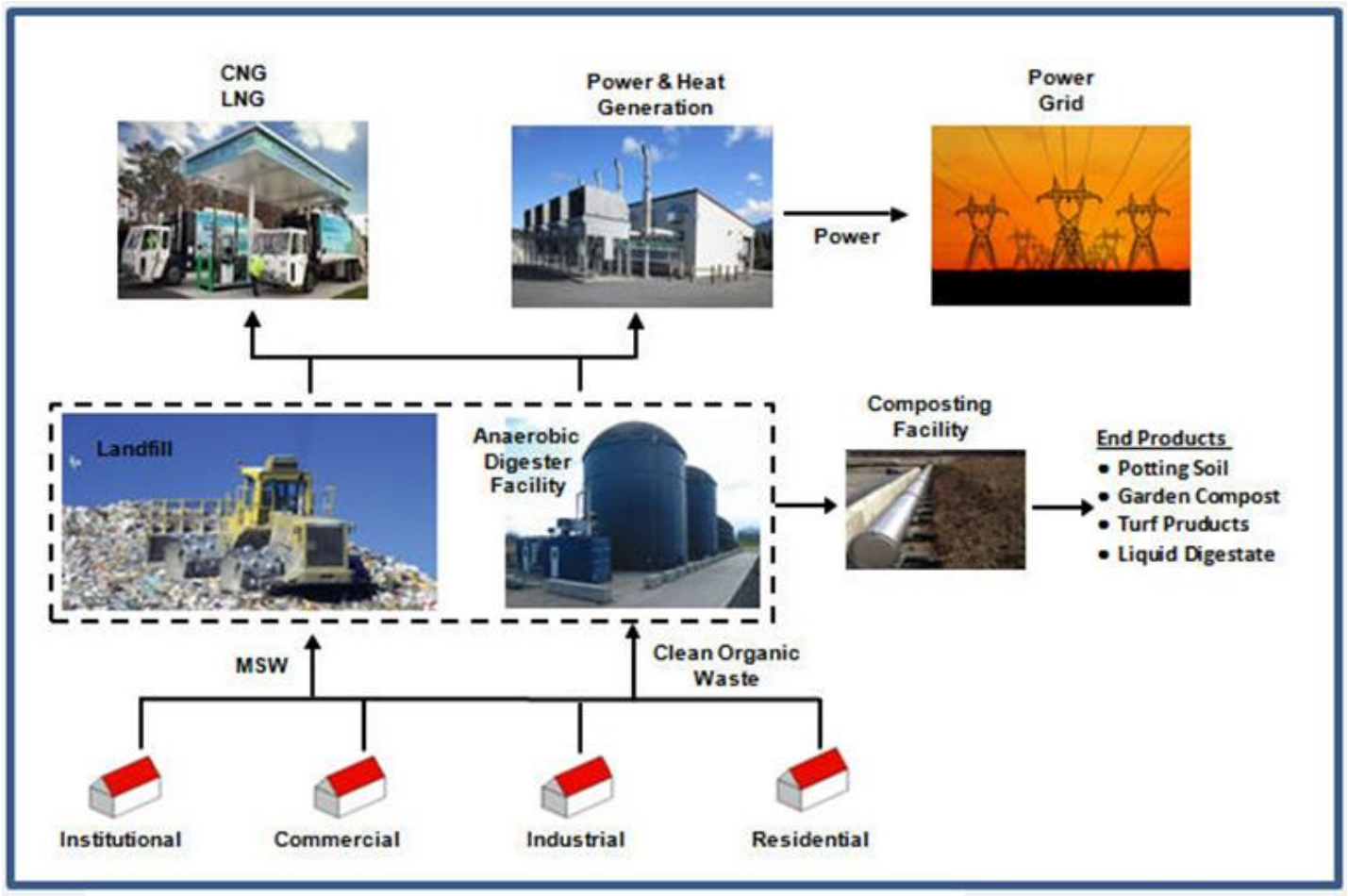
- The LRE Project will use advanced anaerobic digesters to convert organic waste into bio-methane which will be upgraded to pipeline quality gas (4,000 dktherms of Renewable Natural Gas). Completion of the project is estimated at December of 2021.
- Pre-processed waste collected in New jersey will be delivered via truck, pre-processed waste collected in NYC will be delivered via barge.

RNG ENERGY

# LANDIS Sewerage Authority

Started digesting cow manure & food waste in 2016
Generates energy for its sewage treatment facility
176 kW

# New Approaches



# Innovations in Transforming Waste to Value- Added Products

# Symposium

## December 5-7, 2018

AIChE's "Institute for Sustainability" & Rutgers University

- www.AICHE.org/sps18

# Thank You!

For more information contact:

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609-499-3600 x4225

CAMPUS AS LAB


# Campus Biodigester:

## *Princeton University's Food Waste Demonstration Project*

*Gina Talt*

Facilities
Princeton University

Sustainability
at Princeton

Campus Dining

# Odor-plagued compost plant ordered to shut down

Jeff Montgomery, The News Journal | Published 3:45 p.m. ET Oct. 21, 2014 | Updated 8:01 a.m. ET Oct. 22, 2014

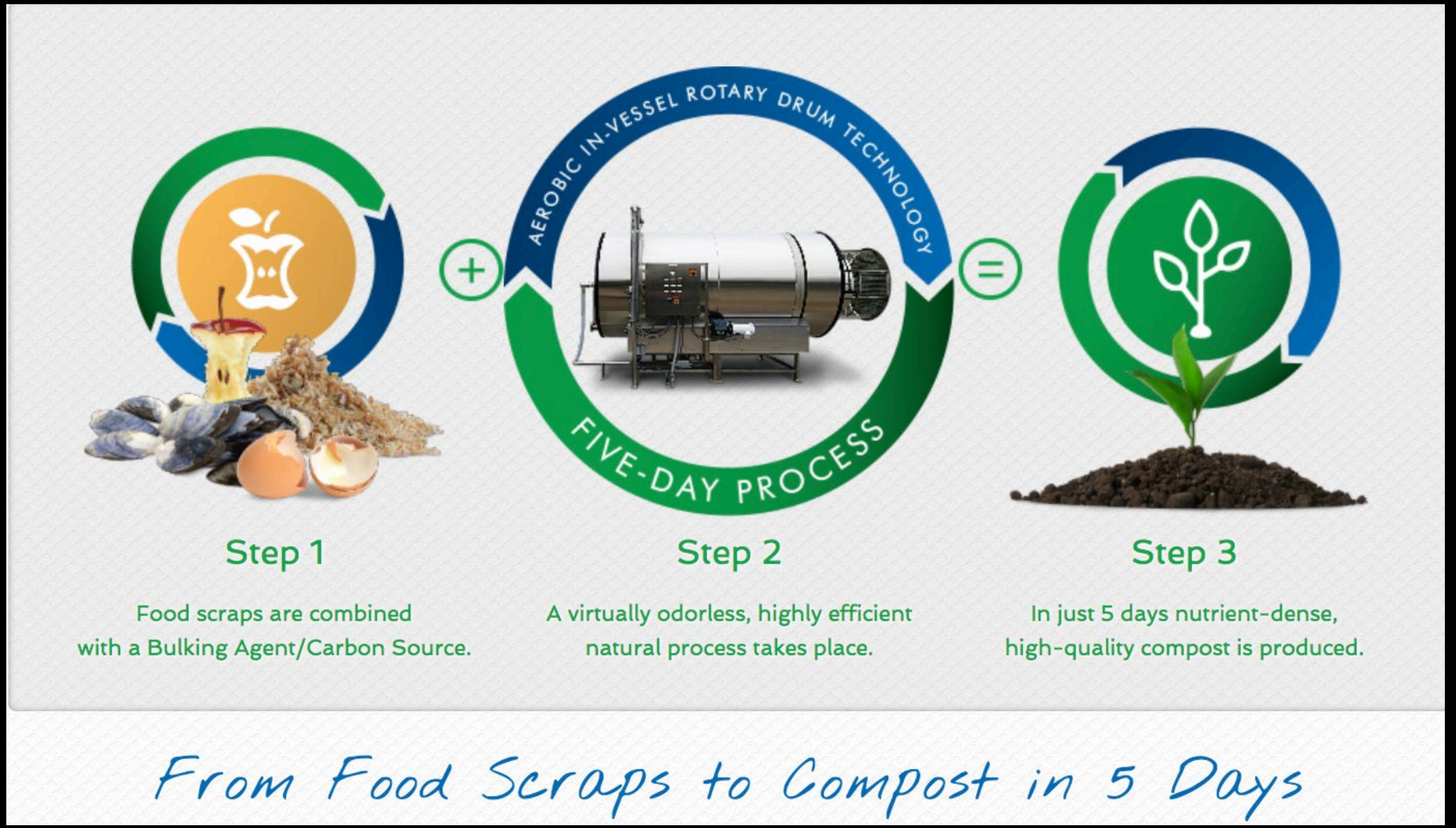
# City's food composting program suffering after plant shut down

By Sophia Rosenbaum | December 2, 2014 | 11:50pm


# Princeton food waste meant to be composted is now going to an incinerator in Pa.

3 days ago | Krystal Knapp | Add comment

For the last several months, organic waste deposited in bins by participants in the town of Princeton's composting program has not gone to a farm or a facility that composts the waste — instead the food and other organic materials have gone to an incinerator in Tullytown, Pa.




Graphic courtesy of FOR Solutions:
http://forsolutionsllc.com/

# Where does our food waste go?

Campus Dining

ALL DINING HALLS

**45.91 TONS**

FRIST CENTER

**10 TONS**

WOOD SHAVINGS

REMAINING CAMPUS

**NOT COMPOSTED**

**CO2 EMISSIONS FROM TRANSPORTATION**

Organic Diversion
*food and organics recycling*

OFF-CAMPUS COMPOSTING

**Pig feed and compost**

CAMPUS BIODIGESTER SOIL AMENDMENT

**Potential to reduce synthetic fertilizer use on campus**

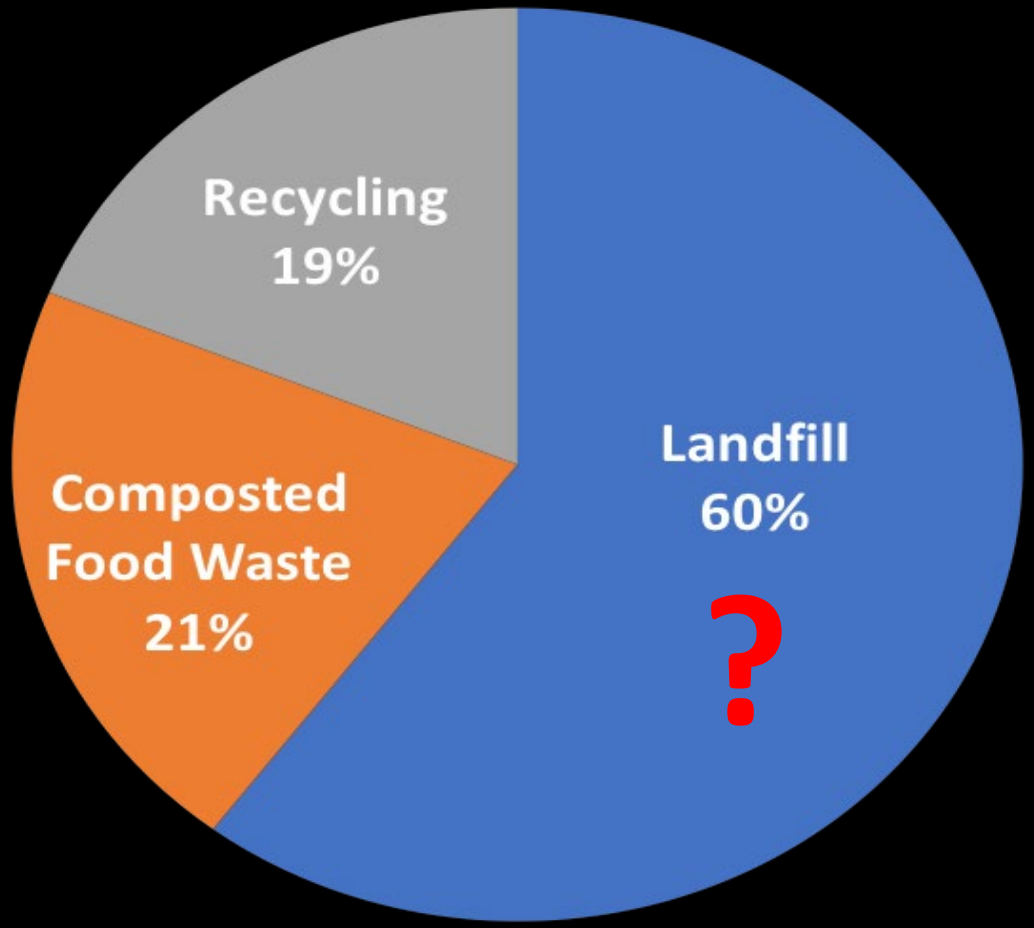


Image: www.scarce.org

**Nutrients from food waste thrown in landfill bins will never be recovered for positive environmental applications.**

Based on a graphic by: Patrick Brucki ’21, Tom Johnson ’19 and Max McPherson ’19

# Princeton University
# “Household” Waste, 2016




LANDFILL
COMPOST
FOOD WASTE ONLY
composted for soil amendment
8 miles from Princeton
in Hopewell, NJ
sustain.princeton.edu/recycle
Campus Dining
LANDFILL
No Food
Please
Food Waste
Only


Cream-O-Land
Reduced Fat Milk


FOOD
WASTE
ONLY

# Acceptable vs Not Acceptable "Compostables"

| Item | Acceptable | Not Acceptable |
|---|---|---|
| **Dinnerware** | BPI- certified<br>▪ Clamshells<br>▪ Bowls<br>▪ Plates | PLA ("wax-lined") **cups** |
| **Paper** | <= 10% (by weight)<br>PLA/wax-lined paper | >10% (by weight)<br>PLA/wax-lined paper |
| **Cutlery/ Utensils** | Bamboo or<br>Wood-based | All other cutlery |

**NOTE: Compostable bags are NOT acceptable . They will jam the volume-reduction shredder**

# Stay informed

Visit/subscribe to our blog for project updates:

https://biodigester.princeton.edu/

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# Now Let's Visit!