



2021 Campus Race to Zero Waste Case Study Competition

Kent State University at Kent

1. Contact info (name, department, school, email, phone)

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2. Focus of Case study

Kent State University: supporting campus and community during times of food insecurity and diverting food waste during the Covid-19 pandemic

3. Detailed description of campaign or effort:

[In April 2020, the U.S. unemployment rate reached 14.8%—the highest rate observed since data collection began in 1948.](#) Millions faced a pandemic health crisis, lost jobs, and struggled to meet basic needs of food or rent. [Feeding America](#) projected that **45 million people** may have experienced **food insecurity** in 2020, and 42 million people may experience food insecurity in 2021. [Feeding America](#) also listed **Ohio** as one of the **top five states** with the highest projected number of people living in “**food-insecure households**” and “**very low food secure households.**” [According to the EPA](#), 22% of total MSW generation in 2018 was food waste, while [the USDA has shown that](#) 30% of available food goes uneaten through loss or waste.

Kent State University has responded to these pressing needs by supporting students and the surrounding community, following two tiers of the [EPA’s Food Recovery Hierarchy](#): “feed hungry people” and “industrial use (food digester to recover energy)” for the 2020-2021 academic year. In fact, while the majority of campus closed down in March 2020 due to the COVID-19 pandemic, the **Campus Kitchen at Kent State University (CKKSU)**, **one of the largest campus-based food recovery and distribution operations in the country**, expanded its operations, **recovering 64,110 pounds of food**. CKKSU then distributed this via four weekly on-campus food pantries, drive-thru distributions, and hot meals. During this time, **pantry-usage tripled**, reaching thousands of unique individuals and households. Thanks to the generous support of local grocers, farmers, and individual/group donors, CKKSU continued to collect food and get it to over 100 households each week. From August 2020 to May 2021, **26.1 tons of food** was collected at Kent State’s non-

sewer based Grind2Energy anaerobic digester system at the Design and Innovation Hub, turning food scraps into electricity, heat or compressed natural gas, and fertilizer.

4. Planning steps & timeline to implement:

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

- **2011:** [CKKSU started by Kent State students after they participated in an Alternative Spring Break and learned about food waste and insecurity.](#) The organization describes itself as “a student-powered response to hunger”. Students use on-campus kitchen space and donated food to prepare and deliver nourishing meals to their communities. [The Campus Kitchen at Kent State started in March 2011 and served 60 meals a week](#) with a startup of [\\$15,000 grant from Kent State.](#) [At the time, the group’s efforts made Kent State the first of only three Ohio colleges to establish a kitchen.](#)
- **2012:** At 2012 Campus Kitchen Project conference, the [Campus Kitchen at Kent State University won the Excellence in Programming Award](#) for its outreach and programming efforts at the Haymaker Farmer’s Market—conducting food demonstrations and providing nutrition information for the customers. In 2012 the student volunteers prepared and served 260 meals per week and a meal supplement to an additional 60-100 of those in need in the community. A total of 33 schools across the U.S. have Campus Kitchens, part of the national Campus Kitchens Project which was started in 2001 in Washington D.C.
- **2013:** [Kent State named President’s Higher Education Community Service Honor Roll](#), the highest honor a college or university can receive for its commitment to volunteering, service-learning and civic engagement.
- **2014:** [Campus Kitchen at Kent State received a portion of a \\$625,000, three-year grant from the AARP Foundation to help community senior citizens fight hunger.](#)
- **2015:** [During the 2015-16 school year, Campus Kitchen collected almost 350,000 pounds of food from its local suppliers — creating an estimated 17,000 meals to those in need, according to the kitchen’s financial reports.](#)
- **2016:** [Mighty Pack Program begins.](#) The Mighty Pack Program was a graduate student project that grew into a countywide food insecurity prevention program. A backpack with healthy foods, such as fruits, vegetables and dairy items, along with nutritional education materials and kitchen supplies that are many times not available in the home, are provided to the students.
- **2017:** [Flashes Fighting Hunger](#) — an on-campus organization dedicated to finding ways to fight food insecurity on campus is formed. [The organization, established in 2017,](#) is composed of students, faculty, staff and members of the community.
- **2018:** [Food Pantry and Pop-Up-Market programs begin.](#) The Campus Kitchen Food Pantry is now open 3-4 days per week and is available to anyone from the campus or surrounding community. The Campus Kitchen gives out meat, bread, fruits, vegetables and other perishable items to provide a wholesome and nutritious meal. The pantry also targets specific sub-populations that experience higher levels of food insecurity such as racially diverse and first-generation college students as well as our international student population.
- **2018:** Launch of [a weekly meal program at Kentway Apartments](#), a subsidized housing complex for individuals “55 years and better.” The kitchen received a \$5,000 grant from AARP and the National Campus Kitchen network allowing them to provide the meals weekly to those who are food insecure.
- **2019:** The CKKSU was awarded the Environmental Activism award at the Portage County Environmental Conservation Awards.
- **2019:** [The national Campus Kitchen Organization disbanded in 2019.](#) However, the Campus Kitchen at Kent State University remains a student-run organization supported by Community Engaged Learning.

- **2019:** [Statistics](#)—81,321 pounds of food recovered, 12,500 hot meals served; 4,500 hours of service; 28,294 pounds of food pantry distribution
- **2020:** [In June, Campus Kitchen received a \\$2,000 grant from the Portage Foundation's COVID-19 Rapid Response Fund](#) to assist with food insecurity in the local community in the wake of the pandemic. Specifically, the money supported Campus Kitchen's partnership with Kentway Apartments, a low-income housing facility in Kent for senior citizens. A deep freezer was purchased for the facility and over 750 lbs. of locally raised meat products were purchased to fill the freezer for the residents to access.
- **March 2020-August 2020:** [Between March and August, Kent State's pantries remained open while the university went online and supplied over 43,000 pounds of food, compared with 32,000 pounds throughout all of 2019.](#)
- **2021:** Monthly Drive Thru Food Distribution partnership with Akron-Canton Regional Foodbank established, thanks to a grant through Feeding America. [More than 6,000 pounds of food distributed in 2 hours.](#)
- **2021:** – The Campus Kitchen at Kent State participated in their most successful [Giving Tuesday](#) fundraising campaign, bringing in over \$25,000 during the month of November 2020. This money allowed the organization to receive a donation of a small box truck, which will act as a mobile food unit for the organization.
- **2021:** [CKKSU is hiring an AmeriCorps Member to serve from August 2021-June 2022 to assist with developing campus hunger interventions, as well as creating programming for our NEW mobile food unit.](#)
- **Present:** Since its inception in 2011, Campus Kitchen has grown into one of the largest campus-based food recovery and distribution operations in the country.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

- **2018:** [10 year facility Master Plan adopted by the Board of Trustees.](#) The DI Hub is among the major milestones in phase one of the university's Gateway to a Distinctive Kent State, a \$1 billion facilities master plan. In addition, the DI Hub will include a new, large dining venue that will seat about 350 people and offer unique menu items.
- **2018-2019:** Office of University Architect begins redesigning the Art Building into a 24/7 maker's space and with a new dining facility. Solutions are sought to make building more sustainable and fit with theme of an interdisciplinary solution-seeking space. University Dining Services collects, and shares data of food scraps collected at similar sized dining locations. Proposals and RFPs for food scrap solutions to fit within building space are conducted. Updated Office of University Architect building plans.
- **2019:** [Construction launch of Design Innovation Hub](#)
- **2020:** [Grind2Energy system in the DI Hub begins collecting food scraps in late August.](#) Collecting **18 tons of food in the first 6 months of use.** DI Hub's a new, large dining venue seats about 350 people and offers unique menu items.
- **2020:** [Virtual Grand Opening of the DI Hub](#)

5. Resources and stakeholders involved

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

STAFF

- Community Engaged Learning Director, Amanda Woodyard
- General Student Manager; Cooking Student Manager; Pantry Student Manager
- Campus Kitchen at Kent State University Student Volunteers: 4,500 hours of service by 500+ unique volunteers (2019 statistic)

PROGRAMS

- Hot Meal preparation for local service agencies including over 10,000 meals each year to Kentway Apartments, Kent Social Services, and Center of Hope
- Delivery of fresh food to the Office of the Deans of Students satellite pantry weekly
- Monthly Drive-Thru Food Distribution (December 2020-June 2021) in partnership with the Akron-Canton Regional Foodbank, distributing approximately 30,000 lbs. of food total at the events and serving 100+ households each month.
- Provides fresh food for the Mighty Pack program in collaboration with the Center for Nutrition Outreach at Kent and local elementary schools
- Weekly presence at the local Haymaker Farmers' Market including a pilot "Grow an extra row" program with local farmer to provide fresh local produce at food programming

FOOD DONATIONS

- The Campus Kitchen at Kent State University collected 64,110 lbs. of food during the 2020-2021 academic year (August – May). The Campus Kitchen at Kent State University 2020-2021 donors:
 - Trader Joe's
 - Akron-Canton Regional Foodbank
 - Brimfield Township
 - Lake County Alumni Association
 - College Now AmeriCorps Members
 - Admissions Office Staff
 - Seasons Micro Farm and other local farmers from the Haymaker Farmer's Market
 - Undergraduate Student Government and other student organizations
- Flashes Fighting Hunger Contactless Food Drive at the start of the academic year brought in over 2000 lbs. of food from Kent State and the surrounding community
- [Adventure Center: Office of the Dean of Students Satellite Pantry Food Drive Competition: Feb. 1 - 12](#) 326 pounds of food collected.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

STAFF

- Office of the University Architect Interim Executive Director and University Architect, Jay Graham
- Office of the University Architect, Project Manager II, Mike Wasowski
- Office of the University Architect, Engineering Assistant Director, Jerry Eveleth
- Office of the University Architect, Electrical Engineer II, Carmine Ricchetti
- Office of the University Architect, Physical Facilities Planner, Kerry Gernert
- Office of the University Architect Mechanical Engineer, Project Manager II, Keith Bush
- Design and Innovation Initiative Executive Director, J.R. Campbell
- Design Innovation Hub Special Assistant, Amy Nethken
- Sustainability Manager, Melanie Knowles
- Outreach Recycling Coordinator, Leah Graham
- University Dining Services, Student Services Assistant Vice President, Gary Goldberg
- University Dining Services, Aramark Sustainability Coordinator, Kristeena Blaser
- University Facilities Management Custodial Supervisor, Lisa Ferrell
- InSinkErator Grind2Energy Business Development Lead, Heather Dougherty

Design Innovation Hub project budget covered the cost of the InSinkerator Grind2Energy anaerobic digester for food scraps.

6. Describe the Results of this campaign component

a. General results (*ex: attracted attention of campus president, campus paper did a news story on the event, etc.*)

SUMMARY

Kent State's focus on helping students and Northeast Ohio families stay afloat during these extraordinary times has resulted in nothing short of a lifeline for many. While general results may be difficult to quantify, images of double lines of cars queued up to receive monthly food distributions have not been uncommon. Many have recounted how these programs helped lessen hardships, from [stories](#) of children looking forward to baby oranges each week to [personal accounts](#) of how food distribution and pantries helped families make ends meet. Kent State also lessened its ecological footprint by diverting food scraps from the landfill into the Grind2Energy anaerobic digestion system at the DI Hub. In one academic year, 26.1 tons of food scraps have been turned into forms of electricity, heat or compressed natural gas, and fertilizer.

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

The CKKSU was started by KSU students in 2011 after they participated in an Alternative Spring Break trip and learned about the prevalence of hunger in communities nation-wide. Since its inception, the CKKSU has grown into **one of the largest campus-based food recovery and distribution operations in the country**. Collaborating with local grocers, farmers, and individual donors, CKKSU **recovers over 90,000 lbs. of food annually**. Besides providing food resources to the community, the Campus Kitchen also contributes to environmental sustainability. By repurposing food that otherwise would end up as waste in a landfill over 80,000 lbs. of CO₂ was kept out of the atmosphere each year. That's the equivalent to the greenhouse gas emissions of 34 vehicles driven annually (www.naturbag.com). All this work is done by a core group of dedicated volunteers and student leaders. CKKSU student leaders come from a variety of different majors and backgrounds, turning their skills, passions, and talents into positive change. They host weekly volunteers (**450 unique volunteers annually**) through shifts that shine a spotlight on inequitable and inefficient food systems and transform wasted product into nourishment and sustenance for thousands of individuals. No two-years look identical in our operations as each student leader brings their own perspectives, networks, and passion-areas to our cause. CKKSU have recently affiliated with a local foodbank and have also acquired vehicles to take the pantry on the road. With increased food resources and new means of transportation, CKKSU looks forward to continuing to fight food insecurity throughout our 8-campus regional system.

While Kent State moved to remote classes in March 2020, food pantries remained "open" adjusting to follow safety protocols. Between March and August 2020, Kent State's **pantries supplied over 43,000 pounds of food**, compared with 32,000 pounds throughout all of 2019. Campus Kitchen at Kent State University pantries are listed on [Kent State University's Covid-19 emergency resources website](#). In 2020, the Office of the Dean of Students created an additional pantry supported by the Campus Kitchen. Heather Dougherty and Amanda Woodyard presented at "Garden to Energy: Kent Sustainable Food Systems" on the [April 6 Earth Month event](#).

The Campus Kitchen's monthly food distribution drive throughs attracted the attention of local newspapers including: Kent Wired May 1, 2020 "[Women's Center and Campus Kitchen join to distribute groceries to counter food insecurity](#)"; Idea Stream October 21, 2020 "[Northeast Ohio Colleges Fight Hunger, Fill Basic Needs For Students](#)"; The Portager December 17, 2020 "[Lines of cars flock to Dix Stadium for food assistance](#)"; Kent Wired February 18, 2021 "[Drive-thru food distribution event provides more than 6,000 pounds of food in two hours](#)"; Kent Wired March 25, 2021 "[Kent State offers Campus Kitchen as food stamps alternative](#)"; and university news channels: Kent State News August 19, 2020

[“Kent State Holds Flashes Fight Hunger Contactless Food Drive on August 26”](#); Kent State Today June 24, 2020 “[Campus Kitchen Pivots Operations from Hot Meals to Food Pantry to Help Increasing Numbers of Food Insecure Due to Covid-29 Pandemic](#)”; Kent State Today December 18, 2020 “[Campus Kitchen Teams up with Akron-Canton Regional Foodbank to help fight food insecurity in Portage County](#)”.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

Reducing and diverting food waste is important to students at Kent State. Indeed, food scraps and food waste are among the most common concerns brought forward by students to the Office of Sustainability. Fortunately, a new opportunity arose to continue to divert waste from the landfill and lessen our ecological footprint through Kent State’s DI HUB Grind2Energy Anaerobic Digester. Here, food scraps are diverted from the landfill and used to create electrical energy, compressed natural gas or heat, and fertilizer. This successful operation was explained by Melanie Knowles, Sustainability Manager, at the AASHE 2020 Conference through a presentation entitled “Converting Food Scraps into Renewable Energy: Supporting a Circular Economy,” as well as to Kent State’s Vice President of the Division of Finance and Administration. Heather Dougherty and Amanda Woodyard presented at “Garden to Energy: Kent Sustainable Food Systems” on the [April 6 Earth Month event](#).

Kent State University’s DI Hub Grind2Energy system attracted the attention of local newspapers including Public Radio News for Northeast Ohio WKSU February 20, 2020 “[Kent State’s Food Waste is Quasar’s Specialty](#)” February 15, 2020 “[Kent State to Keep Food Scraps Out of Landfills](#)” Kent State Dining Services News February 21, 2021 “[Grind2Energy Food Waste Recycling System at the DI Hub](#)”.

- b. Specific measurable impact figures, if applicable (*Ex: Reduced contamination rate 13%, Gathered 316 pledges to recycle more, etc., 250 people engaged, etc.*)

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

- Campus Kitchen Pantries listed on [Kent State University’s Covid-19 emergency resources](#)
- FOOD PANTRIES: The Campus Kitchen at Kent State University **collected 64,110 lbs. of food** during the 2020-2021 academic year (August – May). All our recovered food was used to provide supplemental groceries at four on-campus food pantries each week, serving approximately **100 people weekly**.
- MONTHLY FOOD DISTRIBUTION DRIVE THRU December 2020 through June 2021 approximately **30,000 pounds of food** served over **100+ households each month**. New this year, we were able to co-host large-scale food distributions with the Akron Canton Regional Foodbank.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

- August 2020- May 2021, **26.1 tons of food** was collected at Kent State University’s non-sewer based Grind2Energy system at the Design and Innovation Hub. Grind2Energy is an anaerobic digester and turns food scraps into clean water and renewable energy – in the form of electricity, heat or compressed natural gas, and fertilizer.
- The **26.1 tons of food waste** processed by Grind2Energy anaerobic digester, generated **4,409 kWh of additional electrical power**; by diverting food waste from the landfill, reduced **carbon emissions by 17 tCO₂e**; and yielded **1.4 tons of fertilizer**.
- During Campus Race to Zero Waste, January 31- March 27, **8 tons of food** was processed by Grind2Energy anaerobic digester

7. What would you do differently in the future?

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

In the future, we aim to recover more food for human consumption from our own campus dining services operations. In June of 2021, the University concluded its contract with Aramark and launched its own internal dining service operation. We aim to work together to recover the thousands of pounds of food wasted weekly at on-campus dining facilities, catered events, and grocery centers. We also plan to expand our reach using the new Mobile Food Unit. Working closely with a geography course in Spring 2021, pockets of Portage County were identified who experience significantly higher levels of food-insecurity, are situated in food deserts, and have limited access to vehicles. We will use this newly collected data to target outreach and food programming efforts to create more strategic hunger interventions. We also continue to collect data as it relates to student food insecurity to continue dismantling the stigma attached to utilizing food resources.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

We are looking at ways to divert more food waste to the Grind2Energy system by possibly transporting food waste from smaller nearby venues on campus.

8. What advice would you give to another college that wanted to do a similar effort?

CAMPUS KITCHEN AT KENT STATE UNIVERSITY (CKKSU)

Our advice would be to create strong partnerships that are centered on reciprocity and sustainability. For example, we partner with a local social service agency who allows us usage of their box truck to recover our food items from the foodbank and local grocers. In return we provide them with hundreds of hot meals using the food collected. These meals are prepared by KSU students in the Nutrition program who are enrolled in a Food Service course, giving them hands-on experiential learning opportunities in our commercial-grade kitchen space. By partnering in all that we do, we are able to expand our operations with minimal financial investment and create buy-in from various constituents who are committed to helping us reduce waste and combat food insecurity.

DESIGN INNOVATION HUB (DI HUB) GRIND2ENERGY ANAEROBIC DIGESTER

Consider the way pre-consumer and post-consumer food waste is handled to design a system where the diversion of food waste to the Grind2Energy system is automatic. At the DI Hub, pre-consumer food waste is collected at each food prep station and goes into the system as part of clean up at the end of each shift. Post-consumer food waste comes back to the dish room on a conveyer along with reusable plates and cutlery and is scraped into bins for transportation to the Grind2Energy system.

9. Photos and Graphics

SOCIAL MEDIA

[Office of Sustainability Twitter](#)

[Office of Sustainability Facebook](#)

[Campus Kitchen at Kent State University Instagram](#)

[Campus Kitchen at Kent State University Twitter](#)

[Campus Kitchen at Kent State University Facebook](#)



Volunteers Dave and Terri Cardy pack and weigh produce to hand out at the Campus Kitchen in Beall Hall. The food is mostly donated by Trader Joe's locations in the Cleveland Area. Photo from Kent State University.



Beall Hall food pantry modified the operation in 2020 so that there are only two to three volunteers at a time, who handle the food with gloves. The food is set up at the Beall Hall loading dock in a way that allows for maintaining the recommended social distancing guidelines and allows for users to drive up and go. Photo from Kent State University.



Campus Kitchen Volunteers in Beall Hall getting food ready to distribute. Photo from Kent State University.



Campus Kitchen Volunteers in Beall Hall getting food ready to distribute. Each person who visits the Campus Kitchen leaves with about 25 to 30 pounds of food packed in a box or a bag. Any food that is left over after Friday is given to

community agencies such as Kent Social Services, Kentway Apartments or the Center of Hope. Photo from Kent State University.



Flashes Fighting Hunger Contactless Food Drive at Kent State University in Fall 2020, collecting 2,000 pounds of food. Photo from Kent State Community Engaged Learning.



From Community Engaged Learning Facebook Page



From Community Engaged Learning Facebook Page



Kent State volunteers at the monthly food distribution drive-thru event at Dix Stadium. From Community Engaged Learning Facebook Page



“Kent State Community Engaged Learning Director Amanda Woodyard talks with Akron-Canton Regional Foodbank CEO Dan Flowers while Kent State volunteers break down boxes and carry groceries to cars during the food distribution at Dix Stadium on Wednesday”. -- Michael Indriolo/The Portager



Kent State volunteers at the monthly food distribution drive-thru event at Dix Stadium. Akron-Canton Regional Foodbank Facebook photo

KENT STATE UNIVERSITY **DRIVE-THRU FOOD DISTRIBUTION**

AKRON-CANTON REGIONAL FOOD BANK
WEDNESDAY, JANUARY 20, 2021
1PM-3PM
DIX STADIUM
2213 SUMMIT ST
KENT, OH 44242

IMPORTANT:
Please stay in your vehicle and make sure to clean out the trunk of your vehicle as groceries will only be placed in trunks.

CKKSU twitter monthly food distribution graphic



CKKSU twitter monthly food distribution volunteer photo



CKKSU twitter: Three weekly food pantries at our main location in Tri-Towers! Just look for the large flag at the corner of Senhauser Dr and Leebrick Dr during your registered time slot.

CAMPUS KITCHEN
FOOD PANTRY *Update*

TRI-TOWERS LOCATION
1475 Leebrick Dr, Kent, OH
Corner of Leebrick Dr and Senhauser Dr

TUESDAYS | 3-5 p.m.
FRIDAYS | 2-4 p.m.

Open to students, faculty/staff & community members

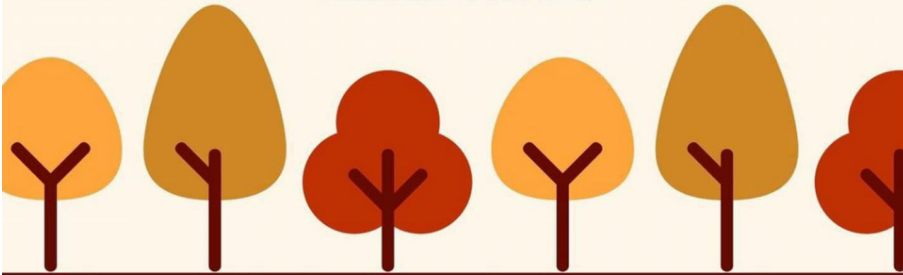
► **Flashes Safe Seven Required** www.kent.edu/community/campus-kitchen

CKKSU twitter. Community Engaged Learning graphic.

CAMPUS KITCHEN AT KENT STATE

THANKSGIVING FOOD DRIVE

Share your Thanksgiving blessings with
the Campus Kitchen at the Haymaker
Farmers Market.



**COLLECTING FOOD DONATIONS ON 11/21 AT THE
HAYMAKER FARMERS MARKET**

All donations accepted and will be distributed at our food
pantry



CKKSU twitter graphic. Community Engaged Learning graphic.



Kent State University Grind2Energy InSinkErator in the DI Hub. Kent State University photo.



Kent State University Grind2Energy InSinkErator in the DI Hub. Kent State University photo.



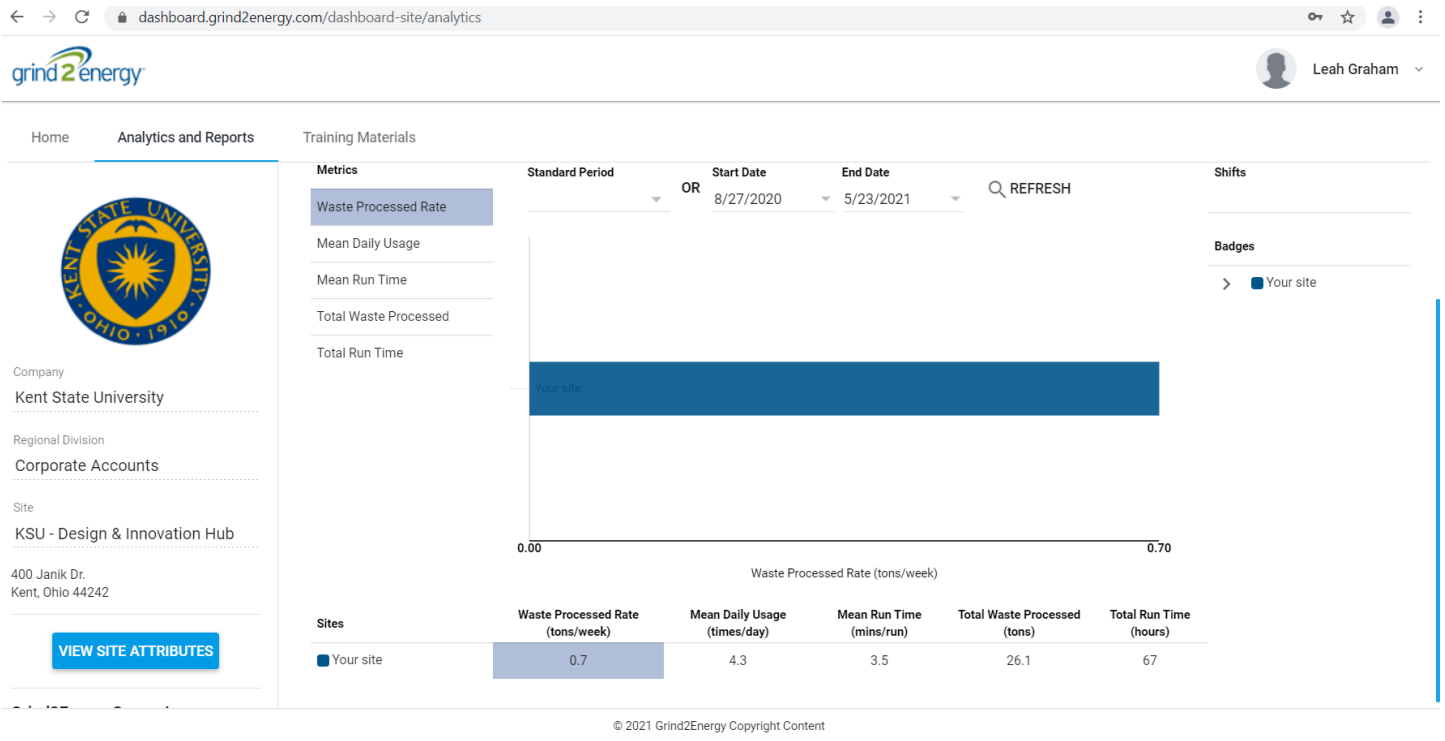
Kent State University Grind2Energy InSinkErator in the DI Hub. Kent State University photo.

Kent State has partnered with Emerson's Grind2Energy on an organics recovery process that converts food waste to renewable energy. This forward-thinking approach allows us to significantly decrease our impact on the environment while creating renewable energy for the communities we serve. Learn more at www.kent.edu/dining/sustainability

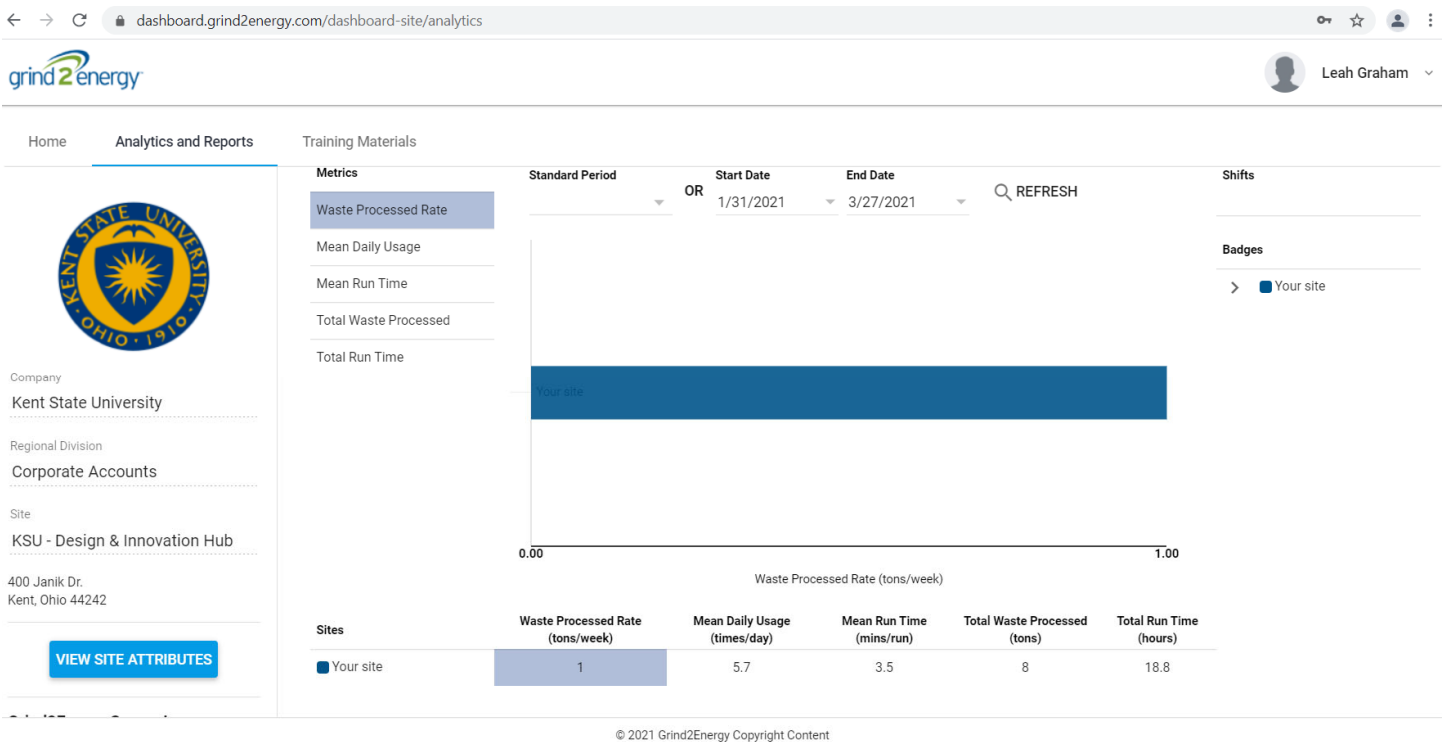
Turning food scraps
into energy with **grind2energy**[®]

An InSinkErator[®] solution

Kent State University Grind2Energy InSinkErator in the DI Hub. Kent State University graphic for website and news articles.



Kent State University Grind2Energy InSinkErator system login showing waste processed from August 2020-May 2021. Kent State University screenshot.



Kent State University Grind2Energy InSinkErator system login showing waste processed during Campus race to Zero Waste. Kent State University screenshot.

Sustainability Report

PREPARED FOR: Kent State University - KSU - Design & Innovation Hub

PERIOD: 2020 to 2021 (through April)

LOCATION(S):

KSU - Design and Innovation Hub (400 Janik Dr., Kent, Ohio 4...)



Energy

Your slurry was used to generate 4,409 kWh of additional electrical power

CO2 Reduction

By diverting your waste from landfills, you reduced carbon emissions by 17 tCO₂e



Bio-solids for Fertilizer

The remainder of the slurry after extracting the energy yielded 1.4 tons of fertilizer

Technical References:

- Carbon emissions and heat generated from EPA Waste Reduction Model (WARM), assuming national average for landfill gas recovery, no curing of digestate after digestion and digestate land application
- Typical food waste mix adopted: Beef 9%, Poultry 11%, Grains 13%, Fruits and Vegetables 49%, Dairy Products 18%
- Miles from EPA's Greenhouse Gases Equivalencies Calculator
- Heat to electricity conversion efficiency adopted of 44%
- Average Household consumption from U.S. Energy Information Administration (EIA)
- Fertilizer based on 0.19gTS/gTSfw & 30%TS, Kim et al. 2016. Synergism of co-digestion of food wastes with municipal wastewater treatment biosolids. Waste Management.

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Kent State University Grind2Energy InSinkErator system sustainability report for waste processed from August 2020-May 2021. Kent State University screenshot.