

**Real Food Challenge and Climate Impact
Assessment: A Food System Analysis at
Santa Clara University, 2018-19**

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Table of Contents

Abstract	3
Background	3
SCU's Commitment to Sustainability and Environmental Justice	3
The Real Food Challenge (RFC)	4
History of RFC at SCU	4
Sustainability Indicator Management & Analysis Profile (SIMAP)	5
Methods	5
Overview	5
Real Food Standards, Version 2.1	6
SIMAP	8
Additional Information Collected	9
Results	9
Real Food Challenge Results	9
SIMAP Results	12
Degree of Processing Results	15
Plant-Based Analysis Results	16
Analysis	17
Policy Recommendations	17
Product Recommendations	17
University Comparison	19
"Reaching 25% Real" Proposal/Projecting into the future	19
Acknowledgements	20
References	20
Appendix	21

Real Food Challenge and Climate Impact Assessment: A Food System Analysis at Santa Clara University, 2018-19

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Abstract

Two undergraduate students at Santa Clara University were hired to work as Food Systems Fellows from April to October, 2019. This position was co-sponsored by the Center for Sustainability and the Auxiliary Services division. The goal of this work was to explore the Santa Clara University food system's impact on the environment from both an ecological and a social perspective and identify opportunities for improvement.

The Fellows utilized standards and core values from The Real Food Challenge, a national non-profit dedicated to leveraging the power of colleges and universities to increase equity and sustainability in food systems. The Real Food Challenge provides student researchers with rigorous standards and procedures for identifying products that qualify as 'Real' (standards are detailed below). Research teams work with university dining service providers to analyze all or a representative portion of purchases from the year of interest. Real Food Challenge connects researchers with full-time staff members who can support throughout their analysis. This report contains the results of the Real Food Challenge analysis at Santa Clara University for the 2018-19 academic year

The Center for Sustainability, the Food System Fellows, and the faculty mentors at Santa Clara University have additionally added the Sustainability Indicator Management & Analysis Platform (SIMAP) climate emissions analysis for university food systems to investigate the carbon and nitrogen footprint of SCU's food system for the first time. The combination of year-to-year trends in the Real Food data and this new climate emissions data provides the finest resolution to date of the ecological impacts of the University's food system.

Background

1. SCU's Commitment to Sustainability and Environmental Justice

- a. Vision of Climate Neutrality
 - i. Santa Clara University developed a Climate Neutrality Action Plan in 2010, and expanded this plan in 2018. The plan includes goals for 2020 climate neutrality in natural gas and electricity, and 2029 climate neutrality in university travel GHG emission. The plan includes many action items for members of the university community.
 - ii. Addressing the social-environmental impact of the campus food system is integral to fulfilling SCU's climate neutrality goals.
- b. Sustainability Strategic Plan
 - i. In addition to expanding the Climate Action Plan in 2018, Santa Clara developed a Sustainability Strategic Plan. The plan contains almost 200 specific strategies for the University to build a culture of climate action,

sustainable consumption, and quality education. These strategies contain goals, objectives, and action items to help the University make progress towards the vision of climate neutrality.

- ii. Drawing on action items from Project Drawdown, the Strategic Plan contains objectives to increase the proportion of plant-based meals offered on campus and to purchase 25% Real Food by 2020
- c. History of leadership in food system change initiatives and student-led action
 - i. The Real Food Challenge has been a topic of discussion at SCU since an undergraduate student, Amelia Evans, made SCU the 1st Jesuit institutions and first non-UC school in California to run the Real Food Calculator in 2012.
 - ii. The Leavey School of Business's Center for Food Innovation and Entrepreneurship emphasizes the important relationships between food production, food consumption, hunger, poverty, and the environment.
 - iii. The Center for Sustainability boasts The Forge Garden and the Bronco Urban Gardens (BUG) program. The Forge Garden is a ½ acre organic campus garden that hosts a weekly donation-based farm stand and BUG is a food justice initiative that works in solidarity with local marginalized neighborhoods.
- d. Incorporation of food systems assessments into teaching and research
 - i. Courses addressing food justice are offered at Santa Clara in various departments including Environmental Studies, Anthropology, Economics, Communications, and the University Honors Program.
 - ii. Research initiatives and immersive study are integral to the Center for Food Innovation and Entrepreneurships success.

2. The Real Food Challenge (RFC)

- a. Leverages the power of youth and universities to organize their peers around creating a just and sustainable food system.
- b. Goal is to shift \$1 billion of university spending nationwide to Real Food.
- c. Provides a set of criteria with which to holistically evaluate the environmental and social impact any food product purchased by an institution. Some of these criteria rest on third-party certifications.
- d. Developed the Real Food Calculator community and resources for student researchers to analyze and work to improve their institutions' food system.
- e. Emphasizes student-led food justice activism.

3. History of RFC at SCU

- a. SCU's food system has been analyzed using the Real Food Challenge standards three times before: for the first time in 2012 (~19%), again in 2015 (~18%), and with updated methods in 2017/18. Last year's analysis total was **19.68% Real Food** according to the Real Food Standards 2.0.

- b. This analysis of the 2018/19 fiscal year provides the first year-to-year comparisons of our Real Food expenditure.
- c. Santa Clara University has pledged to source 25% Real Food by 2020.

4. Sustainability Indicator Management & Analysis Profile (SIMAP)

- a. Ecological impact of food systems
 - i. Industrialized agricultural systems rely on nitrogen-based fertilizers to sustain large operations. However, the use of nitrogen-based fertilizers is the single largest contributor of environmental nitrogen, which can cause significant impacts to human and ecological health.
 - ii. Production and transportation of food also relies heavily on fossil fuels, which results in significant emissions of greenhouse gases.
- b. Carbon Footprint
 - i. The collective greenhouse gas emissions (primarily carbon dioxide and methane) from the activities of an individual or organization.
 - ii. These greenhouse gases contribute to trapping additional heat in the earth's atmosphere, exacerbating the impact of human actions on the environment.
- c. Nitrogen Footprint
 - i. The collective nitrogen emissions from the activities of an individual or organization conducted over a period of time.
 - ii. Anthropogenic nitrogen emissions interfere with natural nitrogen cycles, causing aquatic dead zones, smog and acid rain, and the loss of healthy habitat and biodiversity.
- d. About SIMAP
 - i. The SIMAP tool uses data from various aspects of an organization's operations (including the food system, waste management, and others) to give detailed feedback on the sources of that organization's greenhouse gas and nitrogen footprint.
 - ii. Adding the SIMAP component to this analysis will enable finer resolution in determining which products to prioritize in order to increase SCU's overall sustainability.

Methods

1. Overview

Students analyzed over 11,000 lines of purchasing data from October 2018 and February 2019. Bon Appetit Management Company, SCU's dining services provider, granted researchers access to these line items in several formats: Accounts Payable records of invoice totals, electronic spreadsheets of itemized invoices, and access to physical invoice records for each month.

Researchers initially compared the total amount paid to a vendor during October 2018 and February 2019 recorded in both the electronic spreadsheets to the those of the Accounts Payable records. For vendors with <5% difference in these two totals, line items from the electronic data were transferred to the research spread, with researchers doing supplemental research to determine product eligibility for Real Food designation. Vendors with divergent totals (>5% difference) were transferred to the research spread from physical invoice records kept on file in the campus dining services office. Reasons for divergent totals across the electronic spreadsheet data and the Accounts Payable invoice totals include inaccurate or incomplete reporting mechanisms in electronic itemizations, a mismatch in the date range recorded in electronic data, food purchases made with a credit card and paid off at a later date, and non-food items included in the electronic spreadsheets or recorded as a food-related purchase in the general ledger of the Accounts Payable records.

For a food product to be considered “Real,” it must meet at least 1 of 4 criteria: fair, local, humane or ecologically sound. Items were evaluated using the Real Food Guide 2.1 Standards released by the Real Food Challenge administrators in July 2018. Real-qualifying products are further differentiated into green, yellow, and red ‘stop lights’. Green products represent the fullest expression of the standards, yellow products meet minimum requirements, and red products are disqualified from Real Food status. Additional details included below.

The team at Santa Clara University chose to investigate additional criteria in this assessment. Each item was designated as either ‘Vegan’ (or ‘Plant-based’), ‘Vegetarian’, or neither. Every product was labeled with a ‘degree of processing’ ranging from ‘Unprocessed/Minimally Processed’ to ‘Highly Processed.’

For effective analysis, each line item was updated with a cost, brand, item description, food category, dining hall/cafe/facility, and whether or not the product fit requirements for Bon Appetit Management Company’s Farm to Fork Program.

Before finalizing Real Food data, research was carefully cross-checked by Real Food Challenge administrators to ensure compliance with the Real Food Standards. Some produce items initially marked as Real were revised to be counted as conventional purchases. These produce items were indeed local, but were not coming from farms grossing less than \$5 million annually (see Real Food Standards, Version 2.1, below).

2. Real Food Standards, Version 2.1

The Real Food Guide is included in the appendix to this document. The complete Real Food Standards packet can be downloaded at:

<https://www.realfoodchallenge.org/resources/real-food-resources/real-food-standards-20/>

- a. Updates from Version 2.0
 - i. The standards for Real-qualifying eggs is the most significant change. Previously, many 3rd party certifications for ‘cage-free’ eggs were able to qualify as Real Food. Recent scholarship has shown farm conditions certified as cage-free to be inhumane. The Real Food Challenge has

adjusted their standards accordingly. This year, only eggs from free-range certified hens may qualify as Real in the Humane category. (Eggs from local suppliers may still qualify in the Local category.)

- b. The Real Food Traffic Light
 - i. *Green-lighted* products represent the “fullest expression” of the Real food standards. We should continue stocking these products.
 - ii. *Yellow-lighted* foods are still considered Real, but they represent products or producers which still have room for improvement.
 - iii. *Conventional* foods do not qualify as Real, but they do not have any easily verifiable violations of the Real Food Standards.
 - iv. *Red-lighted* foods represent production processes which are detrimental to workers, the environment, animals, or human health. These products are good low-hanging fruit to remove from our food system and improve our Real Food percentage.
- c. Humane
 - i. Certification guarantees that the needs of animals are provided for and no unnecessary harm is caused during their life.
 - ii. Must be Animal Welfare Approved (AWA), Biodynamic Certified, or Global Animal Partnership Steps 4-5+ certified to qualify as green-lighted real food in this category.
- d. Ecologically Sound
 - i. Evaluates the environmental stewardship and natural resource consumption of production practices.
 - ii. Must meet one of select third-party certifications to qualify, commonly Rainforest Alliance Certified or USDA Organic.
- e. Fair
 - i. Certification promotes safe conditions and fair compensation for food production workers.
 - ii. Must meet one of select third-party certifications to qualify, commonly Fair Trade Certified, Fair for Life Certified, and Fair Trade USA.
- f. Local
 - i. Certification supports local economies and small producers as well as resisting trends towards consolidation in the food industry.
 - ii. Unlike the other Real Food criteria, Local qualification does not rely on third-party certification. In order to qualify, a producer must meet three criteria:
 1. Size: Producers must gross profits of <\$5M for produce or <\$50M for baked, beverages, dairy, eggs, grocery, meat, poultry, seafood.
 2. Ownership: Producers must be owned cooperatively or privately, not by a large industry leader.
 3. Distance: Products must originate within 250 or 500 miles of campus depending on the product.

3. SIMAP

- a. Weight data
 - i. Some products did not have available weight information, so the data were approximated based on the food-industry standard cost-to-weight ratio for each product.
 - ii. The source spreadsheets for each month contained aggregate weight totals for some product categories, including many meat and dairy products. Weight information for products included in the aggregate total was excluded in order to avoid double-counting.
- b. Food products designated as Organic or Local in SIMAP, as organic and/or local foods are associated with lesser greenhouse gas emissions. We deferred to Real Food Challenge criteria for Organic and Local designations in SIMAP.
- c. SIMAP Categories
 - i. In order for an ingredient to be listed in the SIMAP tool, it must be at least 30% of the product. This means that products can have one, two, or three listed ingredients. Products with more than three ingredients could have only up to three of those ingredients listed in the tool.
 - ii. The SIMAP tool includes a limited number of product categories with the intent of generating a manageable calculation. One drawback of this is that some line items must be intentionally mis-categorized. For instance, several Turkey line items were entered into the tool as Chicken because there is no category for Turkey. Similarly, Lamb was entered into the tool as Beef for lack of a more accurate category. The emissions profiles associated with the Chicken-Turkey and the Beef-Lamb combinations are similar, so the carbon and nitrogen footprints are relatively accurate in these cases.
- d. Confidence Rating
 - i. “High Confidence” products were products...
 - 1. ... in aggregate
 - 2. ... with complete weight and ingredient data
 - ii. “Medium Confidence” products were products...
 - 1. ... with reasonably estimated weight data (i.e. weight data was extrapolated from a different line item of the same product)
 - iii. “Low Confidence” products were products...
 - 1. ... with missing (and therefore estimated) weight data
 - 2. ... with unlocatable (and therefore guessed) ingredient data
 - 3. with suspicious cost-to-weight ratios (many were updated to more realistic ratios)
 - iv. Confidence ratings are solely for the purposes of tracking research and do not impact the final emissions calculations.

4. Additional Information Collected

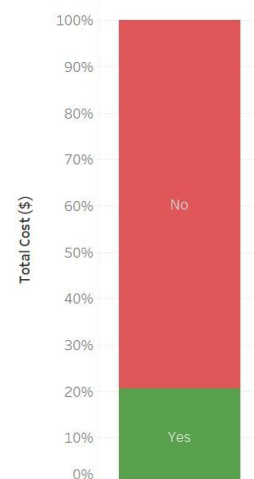
- a. Percent Plant-Based
 - i. *Vegetarian*: excludes meats and fish; includes eggs and dairy
 - ii. *Vegan*: excludes all animal-based products, including honey and isolated ingredients derived from animals (such as Taurine, an amino acid found only in meat and fish and a common ingredient in energy drinks).
- b. Degree of Processing
 - i. *Unprocessed*: Single foods with no or slight modifications (produce, eggs, some meats)
 - ii. *Basically processed*: Single foods processed as isolated food components or modified by preservation methods (sugar, flour, oils).
 - iii. *Moderately processed*: Single foods with flavor additives (salted nuts, flavored water, most cheeses)
 - iv. *Highly processed*: Multi-ingredient, industrially formulated mixtures (sugary drinks, candies, ice cream, microwavable meals, sauces)
 - v. Degree of Processing was derived from a 2017 publication by the High Level Panel of Experts (HLPE) on Nutrition and Food Systems (see appendix)
- c. Farm-to-Fork
 - i. A concept in food justice describing food systems in which all steps from production to consumption occur within a small geographic radius.
 - ii. BAMCO defines as a “small farm or ranch within 150 miles of the kitchen,” and vendors were cross-referenced upon entry to an existing list of SCU’s Farm-to-Fork vendors.
- d. SCU Facility/Unit
 - i. SCU’s main dining hall is called Marketplace. Other facilities include a small snack market called ‘Cellar Market’, various cafes, Adobe Lodge (for staff and faculty), and a designation for food purchased for catered events.
 - ii. For some products, food is purchased and prepared in the main dining hall, then distributed by cart to cafes across campus. These purchases are included under Marketplace.

Results

1. Real Food Challenge Results

- a. Real Food Percent Total
 - i. The data from this year indicate that 20.68% of food by cost purchased for the Santa Clara University campus qualifies as Real for the 2018-19 academic year.
 - ii. **The Real Food total is exactly 1% higher than the results from the 2017-18 academic year.**

Real Food Percent of Total Cost

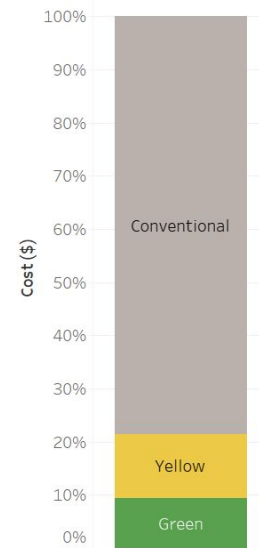


- iii. Real Food total is over 3% higher than the results from results from 2015.
- iv. 9.44% of purchases were 'Green-lighted' products, with 11.91% of purchases being 'Yellow-lighted' products. The most common yellow-lighted products were multi ingredient organic products, which cannot qualify under green-light criteria.
- v. No foods were Red-lighted this year. Some products meet criteria that would have disqualified them as red-lighted (i.e. ultra-processed/artificially synthesized dyes), but in order for a product to be red-lighted it must first qualify as Real in some other category. All of the products that met Red-lighting criteria did not qualify in other categories, so no products were red-lighted.

b. Real Food spending by facility (see *Figure 1*)

- i. Real Food expenditures are concentrated in the Marketplace, The Cellar Market, and Sunstream Cafe.
- ii. Real Food purchased for the Marketplace is largely local produce.
- iii. Real Food purchased for the Cellar Market is largely prepared, organic products (such as processed beverages, Ben & Jerry's ice cream, dried fruit, Clif bars, etc).
- iv. Although they represent a significantly smaller portion of overall expenditures, Adobe Lodge, Catering, and Mission Bakery all had relatively low percentages of Real Food.

Real Food by Stoplight



c. Real Food spending by food category (see *Figure 2*)

**** many data points are excluded from this section to comply with Non-Disclosure agreements with Bon Appetit Management Company**

- i. Real Food expenditures are concentrated in Fish, Produce, Poultry, Dairy, and Beverage food categories.
- ii. Real-qualifying produce is mainly local produce purchased via Farm-to-Fork routes or from small, local vendors.
- iii. Real poultry purchased qualifies in the Humane category via the Global Animal Partnership 3rd party Certification.
- iv. Real dairy is purchased from local, non-CAFO dairies in or around Sonoma County
- v. Real beverages qualify largely through Ecologically Sound criteria and are largely composed of Organic kombucha purchases

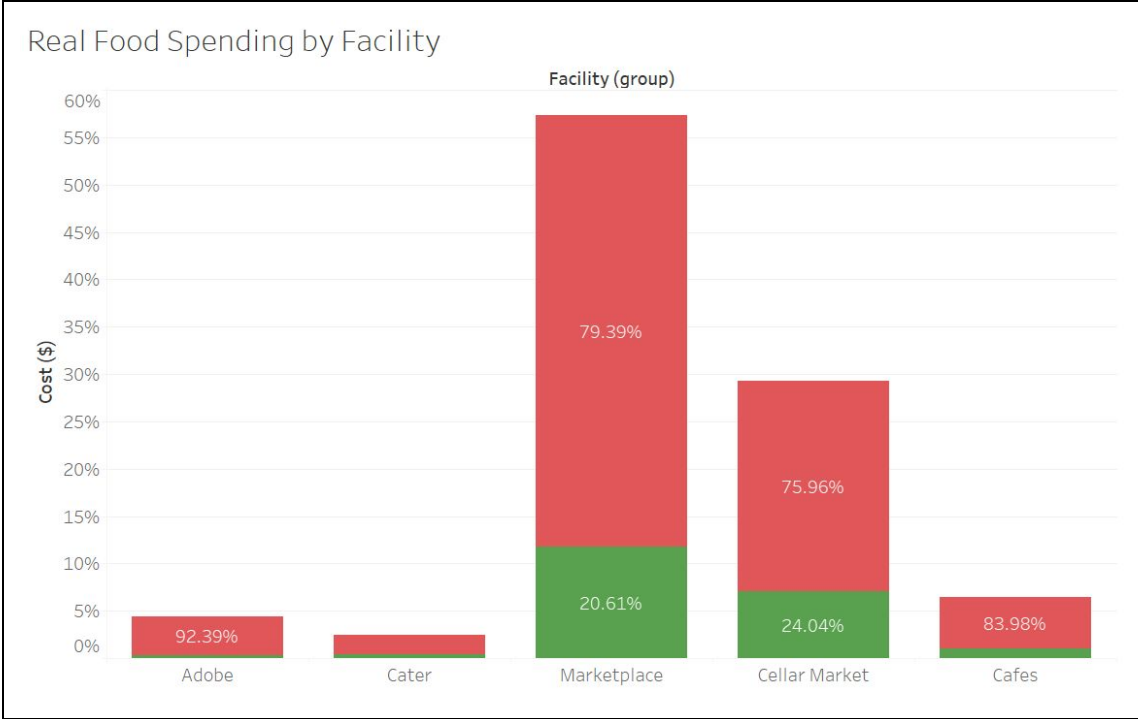


Figure 1. Real Food Spending by Facility. See Appendix Table 2.

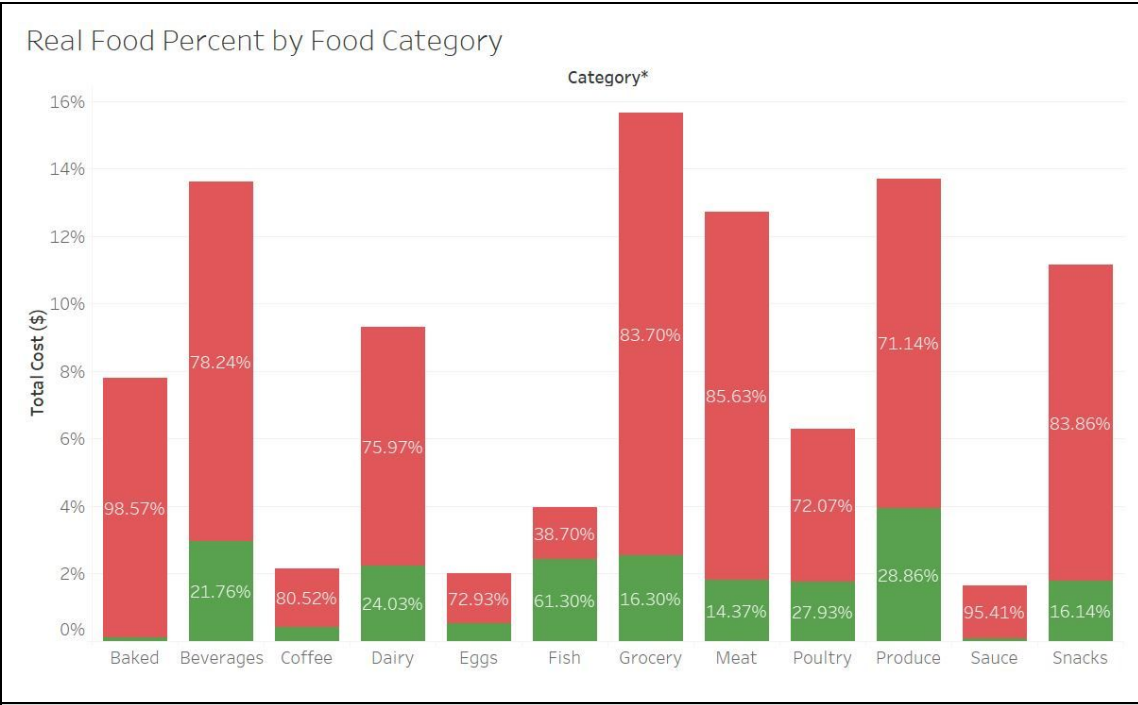


Figure 2. Real Food Spending by Product Category. See Appendix Table 3.

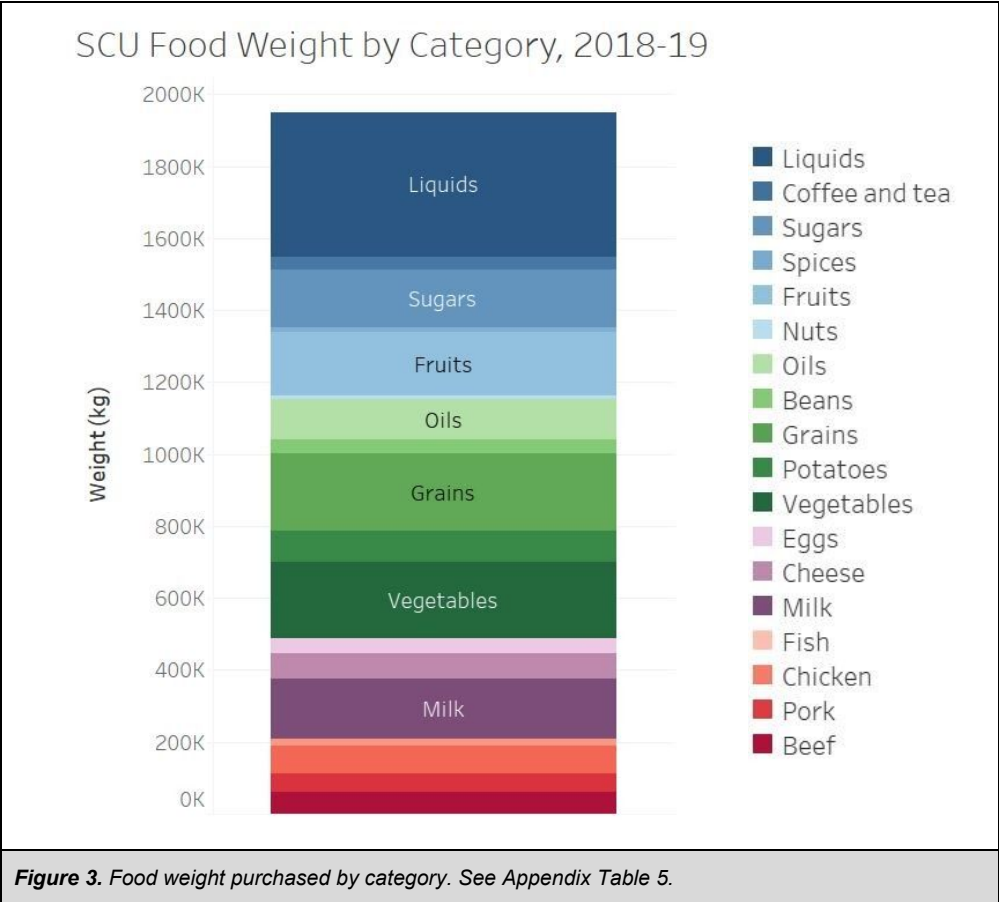
<i>Table 1. Error Estimation</i>	
<i>**data points are excluded from this section to comply with Non-Disclosure agreements with Bon Appetit Management Company</i>	
Total Cost Included in Analysis	---
Estimated Maximum Missing Invoice Value	---
Estimated Range of Error	2.85%
Notes:	
<ul style="list-style-type: none"> ➤ The approximate value of missing invoices was estimated for each vendor according to the confidence of the researcher and the discrepancy between the electronic and AP spreadsheets. The sum of these approximated values gives the total Estimated Maximum Missing Invoice Value, above, which was then used to calculate the estimated percentage range of the error. 	

2. SIMAP Results

- a. Food weight (see *Figure 3*)
 - i. Total weight for the 2018-19 academic year was estimated from the two representative sample months to be 1,948.51 metric tons of food.
 - ii. 74.96% of food weight came from plant-based products.
 - iii. 25.04% of food weight came from animal-based products.
- b. Carbon emissions (see *Figure 4*)
 - i. Total carbon emissions for the 2018-19 academic year were found to be 4,677.14 metric tons.
 - ii. According to the EPA, this weight of CO₂ emissions is equivalent to the greenhouse gas emissions from 11,435,550 miles driven by passenger vehicles in the United States, or to the CO₂ emissions from the burning of 526,290 gallons of gasoline. It would take 5,505 acres of US forests one year to sequester enough carbon from the atmosphere to counteract the global warming potential of 4,677.14 metric tons of CO₂ emissions[†].
 - iii. 81.33% of carbon emissions from Santa Clara University's food system are due to consumption of animal-based products.
- c. Nitrogen emissions (see *Figure 5*)
 - i. Total nitrogen emissions for the 2018-19 academic year were found to be 63.5 metric tons.
 - ii. According to the EPA, Nitrogen emissions in the form of Nitrous Oxide (N₂O) have a Global Warming Potential 265–298x that of CO₂ emissions over a 100-year timescale. The weight of nitrogen emissions from Santa Clara University's food system is equivalent to the greenhouse gas

emissions from 46,266,504 miles driven by passenger vehicles in the United States, or to the CO2 emissions from the burning of 2,129,290 gallons of gasoline. It would take 22,271 acres of US forests one year to sequester enough carbon from the atmosphere to counteract the global warming potential of 63.5 metric tons of nitrous oxide[†].

- iii. 88.72% of nitrogen emissions from Santa Clara University’s food system are due to consumption of animal-based products.



SCU Food System Carbon Emissions, 2018-19

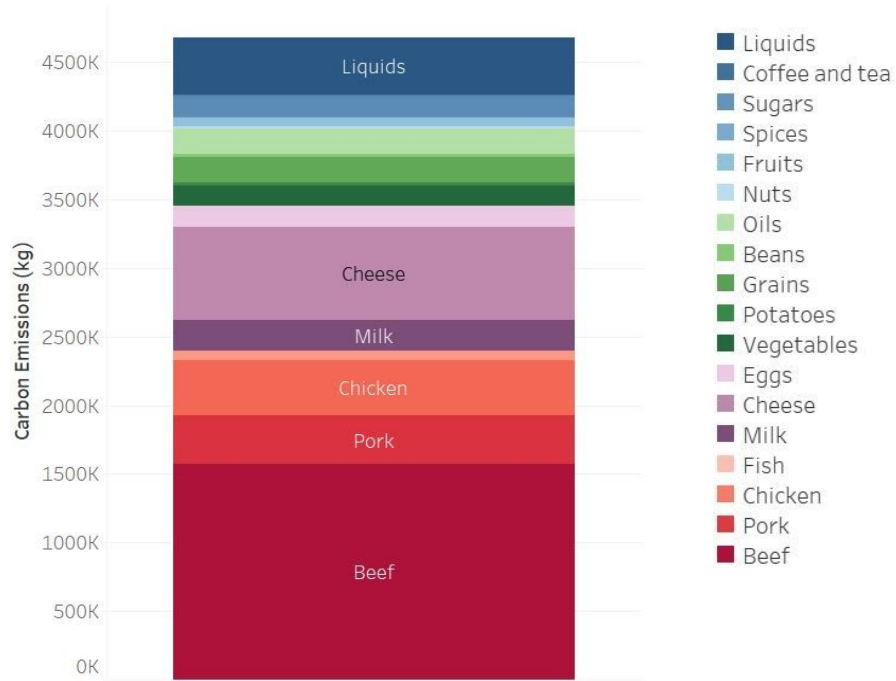


Figure 4. Carbon emissions by category. See Appendix Table 5.

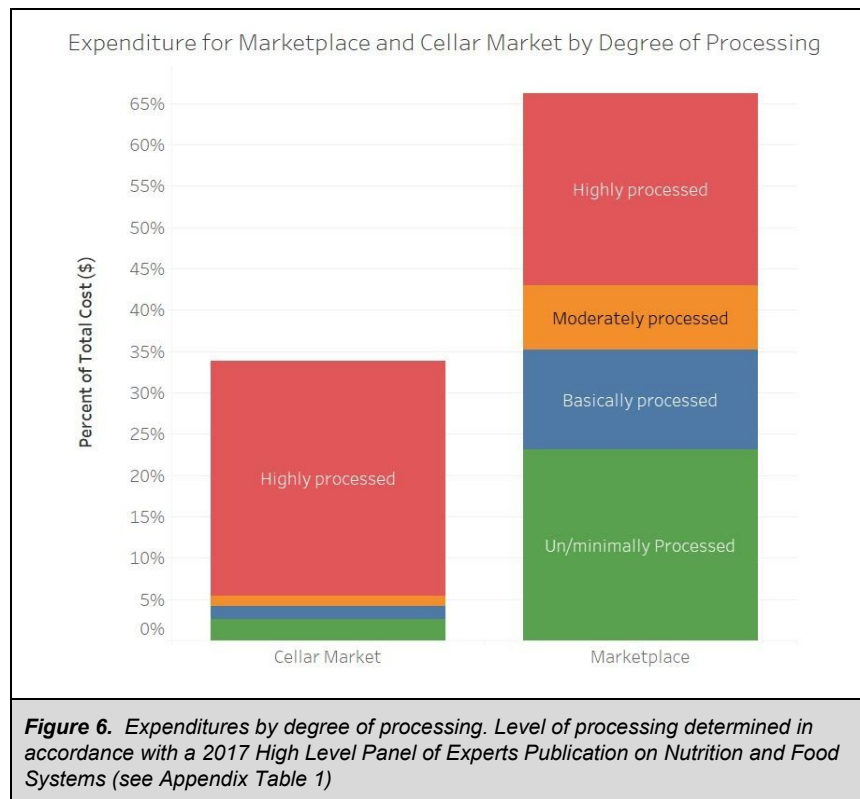
SCU Food System Nitrogen Emissions, 2018-19



Figure 5. Nitrogen emissions by food category. See Appendix Table 5

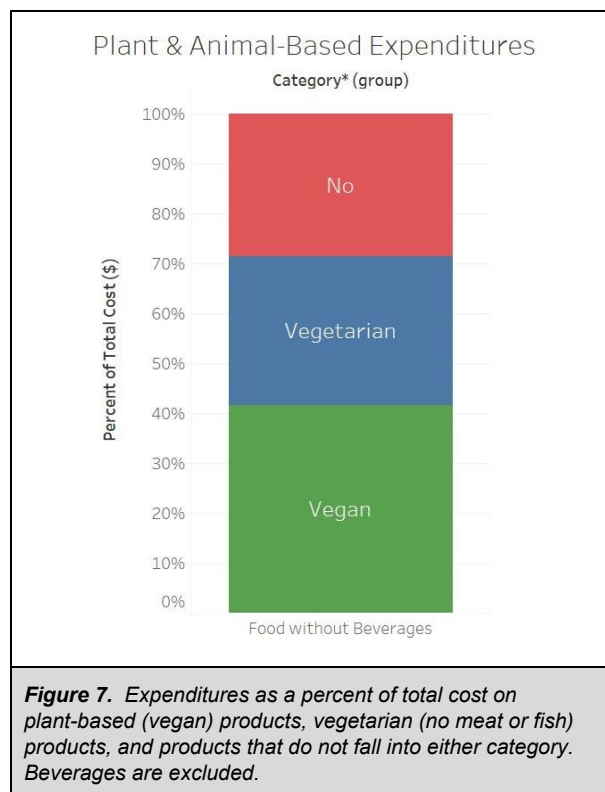
3. Degree of Processing Results

- a. Over half of food purchases by cost were classified as ‘Highly Processed’
- b. The next most common classification was ‘Unprocessed/Minimally processed’
- c. Excluding the estimated margin of errors, degree of processing results were as follows:
 - i. Unprocessed/Minimally Processed: 24.22%
 - ii. Basically Processed: 13.91%
 - iii. Moderately Processed: 9.06%
 - iv. Highly Processed: 52.80%
- d. Because the Cellar Market mainly sells prepackaged snacks and prepared meals, degree of processing varies significantly by facility. Results for the two largest facilities at SCU, Marketplace and Cellar Market, are shown in *Figure 6*
- e. Important note: any prepared item with multiple ingredients (other than occasional simple flavor or stabilization additives like salt and spices) are classified as ‘Highly Processed’. This includes all baked items, prepared foods purchased for catering, and any other non house-prepared items. Highly processed items do not necessarily contain chemically derived ingredients or laboratory-engineered foods. For example, prepared black bean empanadas purchased for catering from Gourmet Foods are considered highly processed. ‘Ultra-Processed’ Real Food disqualifier. For next year’s analysis, we recommend adding a 5th category for the degree of processing analysis which includes ultra-processed ingredients as defined by the Real Food Challenge.



4. Plant-Based Analysis Results

- a. 41.66% of items purchased for campus can be classified as plant-based/vegan, and an additional 29.75% are classified as vegetarian (see *Figure 7*). This is a marginal improvement over last year's results of 38.76% and 26.33% for plant-based/vegan and vegetarian, respectively.
- b. For this year's analysis, researchers chose to count items containing eggs as vegetarian. Last year, eggs were excluded from the vegetarian category.
- c. The results described above and in the figure below exclude beverages. Many beverage purchases that appear to fall into the plant-based category are highly processed, carbonated beverages that do not represent plant-based standards. Additionally, many refined sugars are bleached in bone char, disqualifying them from both vegetarian and plant-based qualifications. Researchers did not consider such disqualifications when researching products, but recommend doing so next year. Additionally, we recommend aligning the plant-based standards used in this research to comply with those of AASHE's STARS Report. For more information, please visit <https://stars.aashe.org/>
- d. Particularly for the Marketplace, the percent of meals or snacks offered to students that are vegetarian and vegan is significantly lower than the total food purchases reflect. Often, plant-based products are combined with meat or dairy products before being sold, effectively reducing the plant-based dining options available to students, staff, and faculty.



Analysis

1. Policy Recommendations

- a. SCU is already a national leader in sustainable food sourcing; now is the time to make an official Campus Commitment to the Real Food Challenge
 - i. Start a Food-System Working Group with stakeholders from multiple facets of the Santa Clara food system (including but not limited to students, dining services managers and employees, and faculty members).
 - ii. Commit to a yearly food procurement assessment and progress report (including a continuation of the two assessments in this report).
 - iii. Agree to annually increase the percentage of Real Food purchased (which coincides well with the goal of reaching 25% Real Food purchased by 2020).
 1. Real Food percentage is calculated using the cost of the product. Considering that Real replacements for conventional products may vary in price, it would be worthwhile to explore the financial implications of product shifts on Real Food percentage. This exploration is a task well-suited to the proposed Food-System Working Group
 - iv. Create and make public an official Real Food policy, a multi-year action plan, and yearly progress reports.
 - v. Increase awareness about sustainable and just food systems on campus through co-curricular events and cafeteria-based education.
- b. Promote better communication between Bon Appetit and small producers (this will likely fall under the purview of the Food-System Working Group)
 - i. Large food service distributors are more likely to have streamlined purchasing interfaces, and therefore easily accommodate the ordering practices of large universities.
 - ii. Direct and efficient communication channels between the stages of the food system is critical in establishing a cohesive local food system; although large distributors make ordering easy, Bon Appetit must be willing to work with small producers and distributors to establish these communication channels.
- c. Update the degree of processing and plant-based standards for the 2019-20 analysis
 - i. Please see Results, Sections 3 and 4 above.

2. Product Recommendations

*** some data points are excluded from this section to comply with Non-Disclosure agreements with Bon Appetit Management Company*

- a. Short-Term Switches (“**Low-Hanging Fruit**”)
 - i. Purchase fair trade coffee, sugar, and tea
 - 1. Sugar options (organic and fair trade):
 - a. ***excluded from this section to comply with Non-Disclosure agreements with Bon Appetit Management Company*
 - 2. Work with Fair Trade Colleges and Universities to become officially designated as a Fair Trade campus.
 - ii. Switch to organic, non-gmo tortillas from current vendor.
 - iii. Cage-free eggs can no longer be counted as Real Food. Shift purchasing of cage-free eggs to local eggs or to free-range/pasture-raised eggs.
 - iv. Consider the organic option when buying honey.
 - v. Inquire with other vendors about organic options for existing products.
 - vi. Real Beverages
 - 1. Promote/increase purchasing of organic beverages in place of conventional.
 - 2. Consider buying organic juice mixes instead existing juice mixes that do not qualify as Real.
- b. Address the high percentage of highly-processed foods purchased for campus
 - i. Reduce purchasing of ultra-processed snack foods or locate Real alternatives:
 - 1. Munchies/Cheetos/Doritos
 - a. Purchasing more of the brand-name organic options would be a good first step (Simply Organic has joined with Doritos and Cheetos to produce organic alternatives)
 - 2. Coke/Sprite/Powerade and other sugary beverages with food dyes
 - 3. Candy is frequently disqualified due to the addition of food dyes and ultra-processed ingredients
 - a. Consider purchasing from the Natural Candy Store (which offers organic, fair trade, vegan, and dye-free candies)
- c. Long-Term Recommendations (“**High-Hanging Fruit**”)
 - i. Ensure that eggs come from free-range or local producers.
 - ii. Use DefaultVeg for catering; increase organic, local or fair trade plant-based proteins.
 - iii. Switch all milk purchasing to current Real-qualifying vendor. Consider switching other dairy products (yogurt, sour cream, cream, butter, etc.).
 - iv. Return to purchasing local, organic produce from small vendors.
 - v. Switch conventional produce items from current vendor to products from Veritable Vegetable, an organic produce distributor based in San Francisco.
 - vi. Switch conventional products from current vendor to a bakery using Organic or Fair ingredients, or attempt to work with current vendor to improve their sourcing practices.

3. University Comparison

<i>Table 2. Comparison of Peer University Real Food Percentage</i>			
Institution	Year	Real Food %	Notes
<i>Santa Clara University</i>	<i>2018/2019</i>	<i>20.68%</i>	
<i>Santa Clara University</i>	<i>2017/2018</i>	<i>19.68%</i>	
<i>San Jose State University</i>	<i>2016</i>	<i>12%</i>	<i>From Real Food Calculator institution profile</i>
<i>UC Santa Cruz</i>	<i>2013</i>	<i>28%</i>	<i>No longer reporting Real Food percentages, but a good role model for sustainable food and operations practices</i>
<i>Gonzaga</i>	<i>2017</i>	<i>19%</i>	<i>No updated % available</i>

4. “Reaching 25% Real” Proposal/Projecting into the future

<i>Table 3. Effect of Proposed Action Items. Data points are excluded from this section to comply with Non-Disclosure agreements with Bon Appetit Management Company</i>			
Current Real Food Percentage: 20.68%			
Proposed action item	Impact on RF% (by cost)	Resulting Real Food Percentage	Notes
<i>Switch all milk to current Real-qualifying vendor</i>	+1.38%	22.06%	“Low-Hanging Fruit” that should be easy to target
<i>Switch all other dairy to current Real-qualifying vendor</i>	+7.9%	28.58%	Other Real dairies may be necessary to locate all products
<i>Replace non-Real, meat-based products with Real vegetable-based proteins</i>	+10.9%	30.97%	It’s unrealistic to swap <i>all</i> meat products, but this category presents significant opportunity to grow our RF%
<i>Switch conventional produce items from current vendor to Veritable Vegetable</i>	+5.9%	26.58%	Veritable Vegetable is just one option for sourcing Real produce
<i>Replace conventional baked goods with fair/organic products</i>	+3.42%	24.1%	This could be accomplished by locating a new vendor <i>or</i> coordinating with current vendor
<i>Switch all eggs to free range or local</i>	+0.45%	21.13%	“Low-Hanging Fruit” that should be easy to target

The Impact on Real Food Percentage of the action items proposed in **Table 3** was

determined by calculating the total cost of all goods affected by the action item as a percentage of total cost. For example, the amount spent on milk from farms other than the current Real-qualifying vendor was 1.38% of the total fiscal year expenditure. Accordingly, these predictions don't account for variations in prices between the Real and non-Real options for the same product — switching all milk to a Real-qualifying vendor may increase the Real Food percentage by *more* than 1.38% *if* that milk costs more than the milk we currently purchase.

If the new product costs more than the current product for a given action item, the impact on our Real Food percentage will be even larger. However, if the Real alternative costs *less* than the current product, the impact on our Real Food percentage will be blunted. This is an important consideration when choosing which action items to pursue and which product alternatives to select, as more expensive products will benefit our Real Food percentage at the detriment of the dining budget. However, this shouldn't be a deterrent to action — with careful research and foresight our Real Food percentage can be improved without significantly impacting dining expenditure.

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- Associate Vice President, Auxiliary Services at SCU, Robin Reynolds

References

For more information, please refer to the appropriate site below or contact the researchers at sustainablefood@scu.edu

- The Real Food Challenge, <https://www.realfoodchallenge.org/>
- Sustainability Indicator Management and Analysis Platform, <https://unhsimap.org/home>
- The Center for Sustainability, Santa Clara University, <https://www.scu.edu/sustainability/>
- Bon Appetit Management Company, Compass Group, <http://www.bamco.com/>
- Center for Food Innovation and Entrepreneurship, Santa Clara University, <https://www.scu.edu/business/cfie/>
- Nutrition and Food Systems, High Level Panel of Experts Report 12 <http://www.fao.org/3/a-i7846e.pdf>
- The Sustainability Tracking, Assessment & Rating System, The Association for the Advancement of Sustainability in Higher Education, <https://stars.aashe.org/>
- †Environmental Protection Agency, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator> and <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

Appendix

The Real Food Guide 			
Local & Community Based	Fair	Ecologically Sound	Humane
<p><i>These foods can be traced to nearby farms, ranches, boats and businesses that are locally owned and operated. Supporting small and mid-size food businesses challenges trends towards consolidation in the food industry and supports local economies.</i></p>	<p><i>Individuals involved in food production work in safe and fair conditions, receive fair compensation, are ensured the right to organize and the right to a grievance process, and have equal opportunity for employment.</i></p>	<p><i>Farms, ranches, boats, and other operations involved with food production practice environmental stewardship that conserves biodiversity and ecosystem resilience and preserves natural resources, including energy, wildlife, water, air, and soil. Production practices should minimize toxic substances, direct and indirect greenhouse gas emissions, natural resource depletion, and environmental degradation.</i></p>	<p><i>Animals can express natural behavior in a low-stress environment and are raised with no added hormones or non-therapeutic antibiotics.</i></p>
<p>Green Light: Products meeting these criteria or certifications qualify as Real Food and <i>best</i> represent the standard</p>			
<p>Single-ingredient Products:</p> <p>A product must meet ALL the following criteria:</p> <p>A. Ownership: Producer must be a privately or cooperatively owned enterprise. <i>Wild-caught Seafood must come from owner-operated boats</i></p> <p>B. Size:</p> <ul style="list-style-type: none"> • Produce: Individual farms must gross \$5 million/year or less • Meat, Poultry, Eggs, Dairy, Seafood, Grocery: Company must gross \$50 million/year or less <p>C. Distance: All production, processing, and distribution facilities must be within a 250 mile radius of the institution. <i>This radius is extended to 500 miles for Meat</i></p> <p>Single-ingredient Products (Aggregated): 100% of the products must meet the criteria for Ownership, Size and Distance</p>	<p>A product must be certified by ONE of the following approved certifications:</p> <p>International Products:</p> <ul style="list-style-type: none"> • <i>Ecocert Fair Trade Certified</i> • <i>Fairtrade America (Fairtrade International FLO)</i> • <i>Fair For Life Certified</i> by Institute for Marketecology (IMO) • <i>Fair Trade Certified</i> by Fair Trade USA • <i>FairWild</i> • <i>Hand in Hand</i> <p>Domestic Products:</p> <ul style="list-style-type: none"> • <i>Equitable Food Initiative (EFI)</i> • <i>Food Justice Certified</i> by Agricultural Justice Project <p>Worker Driven Social Responsibility Programs*:</p> <ul style="list-style-type: none"> • <i>Fair Food Program</i> by the Coalition of Immokalee Workers • <i>Milk with Dignity</i> by Migrant Justice 	<p>A product must be certified by ONE of the following approved certifications:</p> <p>All Products:</p> <ul style="list-style-type: none"> • <i>ANSI/LEO-4000</i> the American National Standard for Sustainable Agriculture by Leonardo Academy • <i>Biodynamic Certified</i> by Demeter • <i>FairWild</i> • <i>Food Alliance Certified</i> • <i>Rainforest Alliance Certified</i> • <i>Salmon Safe</i> • <i>USDA Organic Standard and approved certifiers</i> <p>Coffee Only:</p> <ul style="list-style-type: none"> • <i>Bird Friendly</i> by Smithsonian <p>Produce Only: Produce grown in a farm or garden at the institution, in which the researcher can confirm the use of organic practices</p>	<p>A product must be certified by ONE of the following approved certifications:</p> <p>All Products:</p> <ul style="list-style-type: none"> • <i>American Humane Certified [Free Range]</i> (egg-layers only) • <i>Animal Welfare Approved/Certified AWA</i> by A Greener World • <i>AWA Grassfed</i> by A Greener World • <i>Biodynamic Certified</i> by Demeter • <i>Certified Humane</i> by Humane Farm Animal Care (all species except swine) • <i>Global Animal Partnership steps 4-5+</i> • <i>Pennsylvania Certified Organic 100% Grassfed</i> by USDA • <i>Rainforest Alliance Certified</i>

Yellow Light: Products meeting these criteria or certifications qualify as Real Food but do not represent the *fullest* expression of the standard

<p>Multi-ingredient Products: (e.g. Baked Goods)</p> <p>Company must meet ALL the following criteria:</p> <p>A. Ownership: Company must be a privately or cooperatively owned enterprise</p> <p>B. Size: Company must gross \$50 million/year or less</p> <p>C. Distance: All processing and distribution facilities must be within a 250 mile radius of the institution.</p> <p>-AND-</p> <p>At least half (50%) of the ingredients must come from farms meeting ALL the following criteria:</p> <p>A. Ownership: Company must be a privately or cooperatively owned enterprise</p> <p>B. Size:</p> <ul style="list-style-type: none"> • Produce: Individual farms must gross \$5 million/year or less • All other ingredients: Company must gross \$50 million/year or less <p>C. Distance: All production facilities must be within a 250 mile radius of the institution</p> <p>Single-ingredient Products (Aggregated): At least three-quarters (75%) of the product (by volume) must meet <i>Green Light</i> criteria for Ownership, Size and Distance</p>	<p>A product must meet ONE of the following criteria:</p> <p>For multi-ingredient products:</p> <ul style="list-style-type: none"> • Producer and at least half (50%) of the ingredients meet the <i>Green Light</i> criteria • <i>Fair Trade Certified Ingredient</i> by Fair Trade USA 	<p>A product must meet ONE of the following criteria:</p> <p>Single-ingredient Products Be certified by one of the following approved certifications:</p> <ul style="list-style-type: none"> • <i>Certified Sustainably Grown</i> • <i>Fair Trade USA Certified</i> • <i>LEAF (Linking Environment and Farming)</i> • <i>Protected Harvest Certified</i> • <i>USDA Transitional Organic Standard</i> <p>Multi-ingredient products:</p> <ul style="list-style-type: none"> • At least half (50%) of the ingredients meet the <i>Green Light</i> criteria <p>Seafood (wild-caught only):</p> <ul style="list-style-type: none"> • <i>Marine Stewardship Council (MSC) Blue Eco Label</i> paired with the <i>MSC Chain of Custody Certification</i> • Monterey Bay Aquarium Seafood Watch Guide "Best Choices" (Regional Guide or Buyer's Guide) 	<p>A product must be certified by ONE of the following approved certifications:</p> <ul style="list-style-type: none"> • <i>AGA Grassfed</i> by American Grassfed Association (ruminants only) • <i>American Humane Certified (Cage Free and Enriched Colony)</i> (egg-layers only) • <i>Certified Humane</i> by Humane Farm Animal Care (swine only) • <i>Food Alliance Certified</i> • <i>Global Animal Partnership Step 3</i>
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DISQUALIFICATIONS: Products containing disqualifying characteristics cannot count as Real Food in any category

- **Egregious Human Rights Violations:** Producers have been found guilty of criminal charges of forced labor within the previous 10 years.
- **Labor Violations:** Producer is known to have been found guilty of or has been cited for a case relating to a serious, repeat or willful Occupational Safety and Health Administration (OSHA), National Labor Relations Board (NLRB), or Fair Labor Standards Act (FLSA) violation within the last 3 years. They will be disqualified unless the producer has addressed these violations by: 1) Making the workers whole, 2) Paying any fines and 3) Developing written policy preventing future violations. In the case of wage theft and/or worker fatality, a producer is disqualified for 3 years regardless of any steps they have taken to address the violation.
- **Concentrated Animal Feeding Operations (CAFOs):** Producer is a Concentrated Animal Feeding Operation (CAFO)
| Except for dairy that has been aggregated from multiple farms IF the average farm size is less than 200 cows
- **Genetically Modified Organisms (GMOs):** Products made with genetically engineered ingredients (including corn, soy, rapeseed, beet sugar, papayas and summer squash) and their derivatives
| Unless these ingredients are used in trace amounts or the product carries a certification that precludes the presence of GMOs (Non-GMO Project Verified or any of the certifications that qualify as *Ecologically Sound*)
- **Ultra-Processed Foods:** Products made with the following ingredients: Aspartame; Butylated hydroxyanisole (BHA), Butylated hydroxytoluene (BHT); Caramel coloring; Partially hydrogenated oil (trans-fats); Potassium bromate; Propyl gallate; rBGH/rBST; Saccharine; Sodium nitrate added; Sodium nitrite added; Dyes: Red #3, Red #40, Yellow #5, Yellow #6

*Worker-Driven Social Responsibility Programs are exempt from Disqualifiers, and can count as Real Food even if they have a disqualifying characteristic

Table 1 Classification by degree of processing of food and beverage products

Category	Definition	Examples
Unprocessed/ minimally processed	Single foods, no or very slight modifications	Fresh or frozen produce, milk, eggs, fresh meat, fresh fish.
Basically processed	Single foods, processed as isolated food components or modified by preservation methods	Sugar, oil, flour, pasta, white rice, unsweetened canned fruit, unsalted canned vegetables.
Moderately processed	Single foods with addition of flavour additives	Salted nuts, fruit canned in syrup, vegetables canned with added salt, whole-grain breads or cereals with no added sugar.
Highly processed	Multi-ingredient, industrially formulated mixtures	Pre-prepared mixed dishes, refined-grain breads, ready-to-eat cereals, salty snacks, cookies, candy, sugar sweetened beverages (SSBs), ketchup, margarine, mayonnaise

Source: Adapted from Poti et al. (2015), Moubarac et al. (2014).

<i>Table 2. Percentage of Real Food Served by Facility</i>		
	<i>Real Food Qualifying?</i>	
<i>Facility</i>	No	Yes
Adobe	92.44%	7.56%
Cadence	61.33%	38.67%
Cafe	75.24%	24.76%
Cater	82.09%	17.91%
Cellar Market	75.87%	24.13%
Marketplace	79.39%	20.61%
Mission Bakery	94.45%	5.55%
Nobili Bakery	100.00%	0.00%
Side Bar	87.68%	12.32%
Sunstream	47.09%	52.91%
Total Real Food Percentage	79.30%	20.70%

<i>Table 3. Real Food by Category as a Percentage of Total Expenditure</i>			
	<i>Real Food Qualifying?</i>		
<i>Category*</i>	No	Yes	<i>Total</i>
Baked	7.68%	0.11%	7.79%
Beverages	10.65%	2.95%	13.60%
Dairy	7.07%	2.24%	9.30%
Eggs	1.47%	0.54%	2.01%
Fish	1.50%	2.49%	3.98%
Grocery	23.97%	4.49%	28.46%
Meat	10.90%	1.83%	12.72%

Poultry	4.53%	1.76%	6.29%
Produce	9.81%	3.88%	13.69%
Tea & Coffee	1.73%	0.42%	2.15%
Grand Total	79.32%	20.68%	100.00%

<i>Table 4. Qualifying Certification as a Percentage of All Line Items</i>		
	<i>Real Food Qualifying?</i>	
<i>Criteria:</i>	No	Yes
Local	96.62%	3.38%
Fair	92.95%	7.05%
Ecological	84.1%	15.9%
Humane	99.98%	0.02%

Notes:
This table is by line-item COUNT, not by cost.

<i>Table 5. Food Weight, Carbon Emissions, & Nitrogen Emissions by Month and Food Type</i>						
<i>Month</i>	<i>Food Category</i>	Organic	Local	Weight (kg)	CO2 (kg)	N (kg)
Oct 2018	Beans	No	No	3,980	3,105	27
Oct 2018	Beans	Yes	No	417	325	3
Oct 2018	Beef	No	No	4,574	120,980	1,527
Oct 2018	Beef	Yes	No	25	653	8
Oct 2018	Beef	No	Yes	103	2,642	34
Oct 2018	Beef	Yes	Yes	571	14,659	191
Oct 2018	Cheese	No	No	5,076	49,640	497
Oct 2018	Cheese	Yes	No	67	653	7
Oct 2018	Chicken	No	No	6,337	31,999	767
Oct 2018	Chicken	Yes	No	27	138	3
Oct 2018	Coffee and tea	No	No	553	199	34
Oct 2018	Coffee and tea	Yes	No	2,073	746	128
Oct 2018	Eggs	No	No	3,911	13,845	250
Oct 2018	Eggs	Yes	No	37	130	2
Oct 2018	Fish	No	No	653	2,502	54
Oct 2018	Fish	No	Yes	1,274	4,732	106

Oct 2018	Fruits	No	No	9,215	3,317	29
Oct 2018	Fruits	Yes	No	355	128	1
Oct 2018	Fruits	No	Yes	1,898	663	6
Oct 2018	Fruits	Yes	Yes	1,046	365	3
Oct 2018	Grains	No	No	10,667	9,173	193
Oct 2018	Grains	Yes	No	607	522	11
Oct 2018	Grains	No	Yes	6,535	5,452	117
Oct 2018	Grains	Yes	Yes	875	730	16
Oct 2018	Liquids	No	No	24,677	25,417	136
Oct 2018	Liquids	Yes	No	2,355	2,426	13
Oct 2018	Liquids	No	Yes	317	317	2
Oct 2018	Milk	No	No	13,268	17,779	273
Oct 2018	Milk	Yes	No	71	94	1
Oct 2018	Nuts	No	No	1,206	1,411	17
Oct 2018	Nuts	Yes	No	25	29	0
Oct 2018	Oils	No	No	5,565	9,071	2
Oct 2018	Oils	Yes	No	77	125	0
Oct 2018	Pork	No	No	3,730	25,623	511
Oct 2018	Pork	No	Yes	501	3,340	69
Oct 2018	Potatoes	No	No	6,712	1,410	43
Oct 2018	Potatoes	Yes	No	13	3	0
Oct 2018	Potatoes	No	Yes	95	19	1
Oct 2018	Potatoes	Yes	Yes	1,273	259	8
Oct 2018	Spices	No	No	399	291	11
Oct 2018	Spices	Yes	No	46	33	1
Oct 2018	Spices	No	Yes	235	166	7
Oct 2018	Spices	Yes	Yes	18	13	1
Oct 2018	Sugars	No	No	11,285	10,495	23
Oct 2018	Sugars	Yes	No	583	542	1
Oct 2018	Vegetables	No	No	5,915	4,318	54
Oct 2018	Vegetables	Yes	No	250	182	2
Oct 2018	Vegetables	No	Yes	4,806	3,403	43
Oct 2018	Vegetables	Yes	Yes	7,396	5,237	67
Feb 2019	Beans	No	No	1,278	997	9
Feb 2019	Beans	Yes	No	751	586	5
Feb 2019	Beef	No	No	4,397	116,308	1,468
Feb 2019	Beef	No	Yes	38	970	13
Feb 2019	Beef	Yes	Yes	218	5,602	73
Feb 2019	Cheese	No	No	6,334	61,950	620
Feb 2019	Cheese	Yes	No	90	880	9
Feb 2019	Cheese	No	Yes	3	27	0
Feb 2019	Chicken	No	No	6,742	34,046	816
Feb 2019	Chicken	Yes	No	20	100	2
Feb 2019	Coffee and tea	No	No	1,692	609	105
Feb 2019	Coffee and tea	Yes	No	1,715	617	106
Feb 2019	Eggs	No	No	3,219	11,395	206
Feb 2019	Eggs	Yes	No	1	2	0
Feb 2019	Fish	No	No	795	3,044	66
Feb 2019	Fish	No	Yes	301	1,119	25
Feb 2019	Fruits	No	No	14,394	5,182	44

Feb 2019	Fruits	Yes	No	179	64	1
Feb 2019	Fruits	No	Yes	2,472	863	7
Feb 2019	Grains	No	No	14,924	12,835	269
Feb 2019	Grains	Yes	No	553	476	10
Feb 2019	Grains	No	Yes	1,016	847	18
Feb 2019	Grains	Yes	Yes	520	434	9
Feb 2019	Liquids	No	No	35,101	36,154	193
Feb 2019	Liquids	Yes	No	2,251	2,319	12
Feb 2019	Liquids	No	Yes	1,902	1,901	10
Feb 2019	Milk	No	No	14,336	19,210	295
Feb 2019	Milk	Yes	No	68	92	1
Feb 2019	Nuts	No	No	685	801	9
Feb 2019	Nuts	Yes	No	29	34	0
Feb 2019	Oils	No	No	12,981	21,158	4
Feb 2019	Oils	Yes	No	73	119	0
Feb 2019	Pork	No	No	3,765	25,867	516
Feb 2019	Pork	No	Yes	769	5,126	105
Feb 2019	Potatoes	No	No	6,061	1,273	39
Feb 2019	Potatoes	Yes	No	10	2	0
Feb 2019	Potatoes	No	Yes	151	31	1
Feb 2019	Spices	No	No	725	529	20
Feb 2019	Spices	Yes	No	58	42	2
Feb 2019	Spices	No	Yes	205	145	6
Feb 2019	Sugars	No	No	14,803	13,766	30
Feb 2019	Sugars	Yes	No	306	285	1
Feb 2019	Vegetables	No	No	12,757	9,312	116
Feb 2019	Vegetables	Yes	No	151	111	1
Feb 2019	Vegetables	No	Yes	3,996	2,829	36
Feb 2019	Vegetables	Yes	Yes	227	161	2

Notes: Emissions calculated with the Sustainability Indicator Management & Analysis Platform (SIMAP) climate emissions analysis for university food systems.

The weights and emissions recorded above are calculated directly from weight data recorded from each representative month. Values reported for the 2018-19 academic year are obtained by averaging the sum of October and February and multiplying by 12.