Tillamook

2021 GRI ISSUE BRIEF

ENERGY, EMISSIONS AND CLIMATE CHANGE

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WHY IT'S IMPORTANT TO US:

TCCA depends on natural resources to deliver wholesome products, and we recognize our obligation to protect those resources. According to the U.S. Environmental Protection Agency (EPA), the agricultural industry contributes 9.9% of our nation's anthropogenic (human-influenced) greenhouse gases (GHGs), and the dairy industry is almost 2% of total U.S. emissions[1]. Additionally, the use of energy represents the largest source of GHG emissions from human activities. About two-thirds of global GHG emissions are linked to burning fossil fuels for energy that's used for heating, electricity, transport and industry. While dairy represents a small fraction of total emissions, and U.S. farmers are among the most efficient in the world, we still recognize the importance of reducing our environmental impact in our operations and supply chain. Agriculture is one of the industries that can sequester carbon through climate-smart practices such as compost application and cover cropping. As a leading voice for dairy, it is our duty and passion to promote transformative solutions to reduce our environmental impact.

MANAGEMENT APPROACH:

TCCA has developed a comprehensive Stewardship Management System, which includes policies, procedures, documentation, measurement and communication of our practice and performance. A key component of this management system is our board-approved, third-party reviewed 2017 Stewardship Charter. Developed with our key stakeholders in mind, this charter defines our vision and our six commitments, including Enduring Ecosystems. Our work on energy, emissions and climate change are part of this commitment. Our Energy Policy provides a framework for our Energy, Emissions and Climate Change programs for our Facilities, Supply Chain, Governance and Reporting. Our Stewardship Supplier Engagement Program aims to gather environmental and social governance (ESG) and sustainability performance information from our supply chain, including climate change goals and accomplishments.

Key Players: TCCA's Engineering Team manages and monitors GHG-related data (electricity, propane, steam etc.) within our facilities, and works to implement energy-saving solutions on a continuous basis. Our Farm Services Team includes a designated Natural Resources Lead that promotes good agricultural practices, including manure and nutrient management, air emissions studies and other on-farm practices. This team also works to collect farm-level GHG emissions data through the FARM Environmental Stewardship tool. Our Environment and Community Impact Team is working with industry leaders and policy makers to identify new opportunities such as carbon sequestration programs, promote climate-smart agricultural policies and develop clear climate goals.

[1] https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

INDUSTRY INVOLVEMENT AND COLLABORATIVE EFFORTS:

TCCA works with government agencies, non-governmental organizations and industry groups such as Food Northwest and Oregon Business & Industry. Together we focus on impact areas like energy, water, fuel consumption and GHG mitigation and adaptation. We participate directly in policy advocacy with local and state officials. We are on the Food Northwest Energy Committee that strives to identify solutions for energy reduction. TCCA is also a member of the Innovation Center for the Dairy Sustainability Alliance, which has a long history of collaboration between key players in the dairy industry. We formally aligned with their commitment across the dairy industry to become carbon neutral or better by 2050. In 2020, we started submitting our resource use data, including GHG emissions, to the U.S. Dairy platform, which will serve as a benchmark for the dairy industry in the United States.

ENERGY SOURCING IN OREGON:

The electric power at our Tillamook manufacturing facility is from Tillamook People's Utility District (PUD), which sources electricity from Bonneville Power Administration (BPA).[2] BPA's electrical power is generated by 31 federal hydroelectric projects in the Northwest, one non-federal nuclear plant and several small non-federal power plants and in 2020, 83.16% of its power was renewable.[3] To reduce emissions from electricity, we have joined the PUD Green Team and pay a premium per-kilowatt hour for 100% renewable energy to support the needs of The Creamery visitors center. We also pay a higher per-kilowatt hour for 10% renewable energy to help run our manufacturing plant. The electric power at our Boardman, Oregon, manufacturing facility is from Umatilla Electric Cooperative (UEC). In 2021, 85.83% of UEC's power was renewable, sourced from hydropower facilities.

In addition to electric power, our manufacturing facilities rely on steam, propane, natural gas and diesel as energy sources to support operations. In Boardman, we purchase steam from the Portland General Electric (PGE) Coyote Springs electricity co-generation plant. By purchasing waste steam from PGE, we improve energy efficiency and make use of an energy source that would otherwise be a waste product.

ENVIRONMENTAL FOOTPRINT RESULTS:

Each year we conduct a comprehensive environmental footprint to track GHG emissions and measure our total energy consumption. Our corporate carbon footprint has been computed in accordance with the Greenhouse Gas Protocol, developed by the World Resources Institute and World Business Council for Sustainable Development. We have reported Scopes 1 and 2 GHG emissions since 2012 to the CDP[4] (formerly known as the Carbon Disclosure Project), and from 2014-2021 we added measurement of our Scope 3 GHG emissions. We selected 2020 as our base year for tracking GHG emissions, as it is the year that will serve as the base year for longer term emission reduction targets, which are being developed with input from key stakeholders across the organization.

[2] https://www.usdairy.com/sustainability/environmental-sustainability
https://www.umatillaelectric.com/wp-content/uploads/2017-Annual-Report-Final-for-Web.pdf
[3] https://www.bpa.gov/about
https://www.oregon.gov/deq/ghgp/Documents/2022ElectricityCIs.pdf
[4] https://www.cdp.net/en

Our 2021 emissions data is provided below. We work with Quantis, an international sustainability consulting firm, on our footprint calculations. We also report our sustainability practices in alignment with the rigorous Global Reporting Initiative protocols.[5]

For reference, GHG emissions result from a variety of activities. Direct emissions (Scope 1) come from within a company's organizational boundary from sources owned or controlled by the company. Indirect emissions (Scopes 2 and 3) result from a company's activities, but from sources owned or controlled by another company.

KPIs for 2020:
- Direct Emissions (Scope 1): 13,254 metric tons CO2-eq
- Indirect Emissions (Scope 2): 33,641 metric tons CO2-eq
- Other Indirect Emissions (Scope 3): 1,609,932 metric tons CO2-eq

KPIs for 2021:
- Direct Emissions (Scope 1): 12,800 metric tons CO2-eq
- Indirect Emissions (Scope 2): 25,890 metric tons CO2-eq
- Other Indirect Emissions (Scope 3): 1,337,337 metric tons CO2-eq

During the process of updating our GHG calculator in 2021, we identified several errors in our 2020 footprint. The above value is an updated calculation for 2020, with fixes that include: eliminated double counting of fuel-related fugitive emissions, eliminated double counting of milk supply quantities from one supplier, and updated steam energy use formula. The most substantial impact came from recalculating our fugitive emissions, which reduced Scope 1 emissions by roughly 10,000 metric tons CO2-eq.

Following best practices, for our 2021 footprint we updated several emission factors, with support from our consultants at Quantis. Emissions factors were improved for Scope 2 specific regional utility consumption based on recent data from utilities. We also updated our Scope 3 regional milk production emission factors. From 2014-2020, our model used an emission factor for milk from a 2012 study based on U.S. National averages. In the decade since that study, more research has been completed through the Farmers Assuring Responsible Management – Environmental Stewardship (FARM ES) program.[6] In 2021, we started collecting farm-specific data from our milk suppliers using FARM ES, allowing us to calculate new emissions factors for dairy production based on location and management practices. For farms that we did not collect FARM ES data from, we used an emission factor reflecting the FARM ES national average. We will update our GHG footprint in future years as we collect more data through the FARM ES program.

[5] https://www.globalreporting.org/
[6] https://nationaldairyfarm.com/dairy-farm-standards/environmental-stewardship/

ENERGY, EMISSIONS AND CLIMATE CHANGE PROGRAMS:

PROGRAMS FOR ADDRESSING OUR SCOPE 3 EMISSIONS

Dairy emissions are generated through many processes, including enteric fermentation—a natural digestive process that results in methane. Methane and nitrous oxide are emitted from manure storage and during field application. Nitrous oxide is also emitted from the soils in the production of feed crops and pasture because of fertilizer application. Our on-farm carbon mitigation and sequestration efforts are outlined below. These primarily occur on TCCA farmer-owner farms only, unless stated otherwise. The following are programs we have put in place to address our Scope 3 emissions:

- **Feed Supplements:** Feed supplements such as ionophores are known to reduce the GHGs associated with enteric fermentation. Studies have shown that using ionophores as a dietary supplement can reduce methane production by as much as 30%.[7] Most of TCCA's farmer-owners work with dairy nutritionists to introduce ionophores as a dietary supplement at some point during the lifetime of the cow. TCCA has actively engaged with scientists and industry thought leaders to explore alternative feed varietals and supplements that would achieve similar results.[8]

- **Biodigesters:** Since 2018, cow manure in Tillamook has been sent to dairy digesters that generates renewable electricity for over 1,000 homes annually though Tillamook People's Utility District's Green Power Program. Biodigesters also mitigate water quality issues by converting raw manure into a liquid fertilizer with reduced coliform content. TCCA pays a premium per kilowatt-hour to source 100% of our electricity use for The Creamery visitor center and 10% of our production plant and offices in Tillamook from this program.[9] In addition, our main milk provider in Boardman has a large dairy digester that creates renewable natural gas, reducing their GHG emissions by approximately 136,000 mt CO2e/year.[10]

- **Regenerative Agricultural Practices:** Regenerative agriculture aims to capture carbon in soil and aboveground biomass, reversing current global trends of atmospheric accumulation. These healthy soil practices result in many ecosystem services such as sequestering carbon, improving water quality, increasing groundwater infiltration, and providing habitat for wildlife. Over 90% of our farmer-owners are applying regenerative management practices, such as nutrient management, cover cropping, no till, and riparian buffers.

- **Farm-based Air Emissions:** We have hired a third-party consultant to evaluate air quality best management practices for our farmer-owners. This includes consideration of animal nutrition and feed management, as well as milking parlor practices, housing type, grazing practices and manure and land management—activities that can result in fewer emissions when correctly managed.

- **Milk Urea Nitrogen:** We track Milk Urea Nitrogen (MUN) (in mg/dl) from farmer-owners in Tillamook as a proxy for animal welfare and ammonia (NH3) emissions. Ammonia is emitted from barns, manure storage areas and soils, and can contribute indirectly to production of nitrous oxide (N2O), a GHG[11]. As a breakdown product of protein, MUN can be used to monitor the protein status of cows and indicates feed use efficiency.

[7] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC184044/pdf/aem00094-0021.pdf
[8] https://www.frontiersin.org/articles/10.3389/fmars.2017.00100/full
[9] https://www.tpud.org/ways-to-save/green-programs/green-power-program/
[10] https://www.threemilecanyonfarms.com/sustainability/digester
[11] https://www.ncbi.nlm.nih.gov/pubmed/23982822

PROGRAMS FOR ADDRESSING OUR SCOPES 1 AND 2 EMISSIONS

TCCA creates emissions due to the electricity, fuel, natural gas, propane and steam use at our operating sites. These sites include the Tillamook Office and manufacturing facility, Boardman Office and manufacturing facility, Farm Stores, The Creamery visitors center, the Portland Outpost, and the Tillamook Market. Below are programs we have put in place to address our Scopes 1 and 2 emissions:

- **Fleet Efficiency:** While the largest source of our GHG emissions is from the production of milk, our second largest contributor is the upstream and downstream transportation of ingredients and final products. We have worked diligently to improve operation efficiency and reduce fuel consumption. For example, since 2017 we have participated in the Oregon Green Light Program, which allows TCCA-owned trucks to bypass Oregon automated weigh stations through a preclearance system, saving us 1,728 gallons of fuel in one year. We are currently examining replacing old trucks with renewable natural gas/electric hybrid trucks to further improve our fleet's environmental performance.
- **Energy Efficiency Projects:** In 2021, TCCA implemented energy reduction projects that will save an estimated 200,000 kWh and 142 metric tons of CO2-eq annually.[12] These projects included lighting upgrades, motor controls and an expanded steam boiler system. The largest project involves expanding the use of an electric boiler and optimized boiler controls to maximize efficient fossil-fuel consumption while minimizing inefficient idle operation.

TCCA is committed to large-scale sustainability initiatives at regional, national and global levels. Our values and Stewardship Commitments are aligned with and inspired by the United Nations Sustainable Development Goals, the Dairy Sustainability Framework Global Criteria, the Innovation Center for the U.S. Dairy Stewardship Commitment and the National Milk Producers Federation FARM program.

[12] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

U.N. SUSTAINABLE DEVELOPMENT GOALS

GOAL 7

Goal 7: Ensure Access to Affordable, Reliable, Sustainable, and Modern Energy for All

The Pacific Northwest's commitment to hydro and renewable electricity sources is driving our shift to sustainably sourced power at TCCA.

GOAL 9

Build Resilient Infrastructure, Promote Sustainable Industrialization, and Foster Innovation

Adopting and supporting new technologies, such as a digester, is one way in which we are committed to advancing innovation in the industry.

GOAL 13

Take Urgent Action to Combat Climate Change and Its Impacts

We have taken the initial steps to identify and to understand our greatest climate change impacts and are working to implement actionable changes.