Regenerate Your Plate

Delta Air Lines

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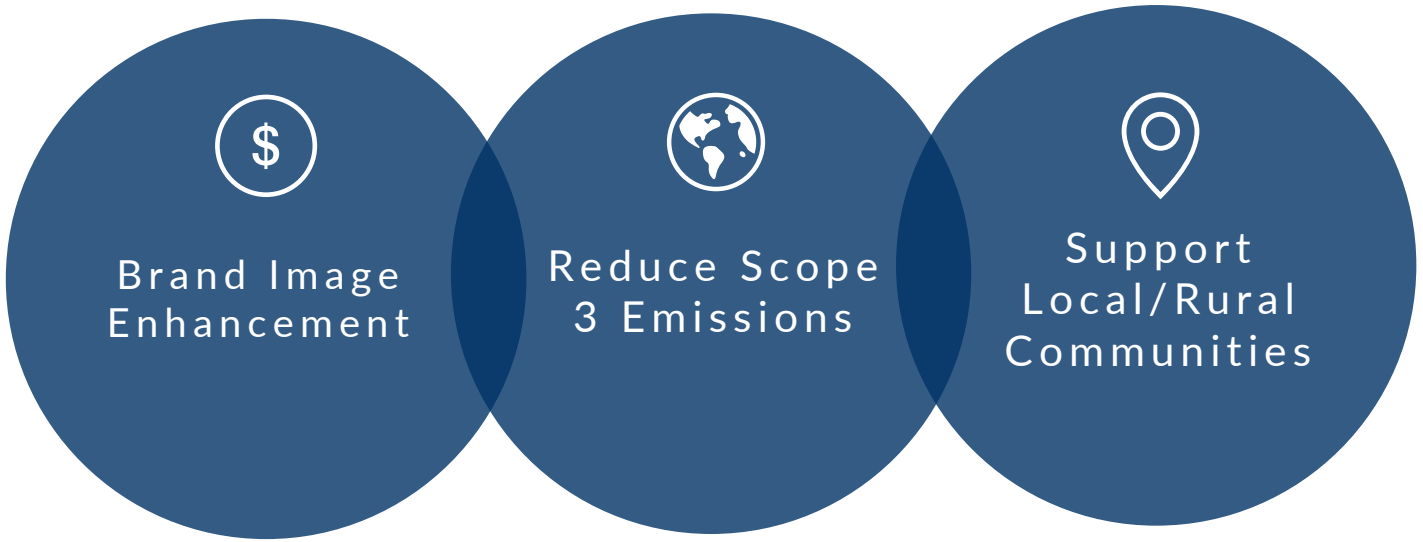
Carbon Reduction Challenge - Summer 2023

Incorporating Regenerative Agriculture into Delta's Onboard Meals Supply Chain

Target Menu Item: Braised Beef Short Ribs



Background: Delta Air Lines

Company Scope

- 9 Core Domestic Hubs
- Over 4,000 flights per day
- 280 destinations across six continents
- Expected to serve nearly 200 million customers in 2023
- Premium Seat Products: Delta One, First Class

Sustainability

- **43,246,733 metric tons of CO2e** emitted in 2022 – mostly jet fuel-related
- Committed to Net-Zero carbon emissions by 2050
- **Highly constrained industry** – aircraft and fuel technology/deployment

What is Regenerative Agriculture?

A dynamic form of farming that restores soil and ecosystem health and offsets the carbon emissions from farm operations through **carbon sequestration**.

A 2019 Quantis LCA for White Oak Pastures (WOP) in Bluffton, GA found that the farm's beef production has **negative net total emissions** due to regenerative grazing practices.

Why is this important?

Commercially farmed beef has been known to be the **number one manmade greenhouse gas emitter in the food industry**.

Braised beef short ribs are **one of the most popular onboard menu items** for First Class/Delta One customers.

Regenerative agriculture suggests a **potential work around** for reducing food-related emissions in the supply chain without having to eliminate red meat all together from the onboard menu.

Carbon Reductions and Financials

Expansion of regenerative beef sourcing from similar farms to WOP across the span of Delta's network for one full schedule year on flights 900 miles or greater.

Carbon Reductions

Carbon Emissions Reduced: 10,242.40 metric tons

- Equivalent to the total carbon footprint of 214 typical American households in one year.
- **6.76% decrease** in total annual Scope 3/Cat 1 emissions (Purchased Goods/Services).

Main Assumptions:

- ~10% of Cat 1 emissions are from ingredients in onboard meals (~151,445.5 metric tons).
- Menu preference ratio for First Class/Delta One customers is assumed at 55% beef, 30% chicken, and 15% vegetarian/other.
- Beef calculations are solely from GHG emissions per kg of fresh meat produced on the farm (not including transportation).
- Regenerative farms used in this project are assumed to have the same carbon footprint as WOP (0 GHG emissions per kg of meat produced on the farm).

Method:

- Extrapolated data from a peak day in both the winter and summer flight schedules to calculate how many total 3 oz portions of braised short ribs are served in one schedule year- based on aircraft type, block time, & seat configuration
- Converted oz to kg to metric tons

Financials

Total Annual Cost Estimate: : $1,610,034,774.57

- **225% increase** in cost in comparison to supplying just commercially farmed beef.

NPV: (646,900.60)

Main Assumptions:

- The average cost of a commercially farmed Chuck Roast is $3.5877
- Regenerative beef prices from WOP and Thousand Hills Lifetime Grazed distribution websites
- Every flight 900 miles or greater is serving braised beef short ribs on its First Class/Delta One menu as a lunch/dinner option.
- Delta stocks its onboard meals for flights at 105% seat capacity, rather than just 100%.
- Life of project = 2 years

Notes on Financials

- The results were very much expected given this type of initiative -> **it is unrealistic that this sort of project will result in cost savings in the short run based on product choice alone.**
- Labels like "grassfed", "local", "organic", etc result in a higher upfront cost compared to just supplying in bulk from a large-scale commercial farm.
- **There is potential for savings in shipping and storage costs by supplying from local farms** close (or closer than as of current) to Delta's kitchens, but this was not able to be explored in the scope of this project given limited information.

Co-benefits & Next Steps

Co-benefits

Delta

Customer Appeal
Highly marketable
Improves public perception
Elevated travel experience

Investor Appeal
Increase stock value
Recognize long-term benefits

Tighter Supply Chain
Reduces shipping & storage costs
Greater transparency

Community Engagement
Brand Loyalty

Farm/Beyond

Boost Local Economy
Support smaller/rural communities in states where Delta has hubs

Reduce Water Use
Restores soil health and ability to naturally store water

Reduce Nutrient & Pesticide Runoff
Minimize tillage
Nourish soil microbes

Restore Biodiversity & Local Ecosystem
Improved air/water quality allows nature to thrive

Next Steps & Impact

Cost is the biggest obstacle

- **Value-driven** business decision

Implementation

- Switching to all regeneratively sourced beef all at once is **highly unrealistic**
- Better to be explored starting on a **smaller scale** to reduce financial burden

Connecting the World

- Demonstrates a **high impact** premium product to high paying customers beyond the seat they're sitting in
- **Empowers** customers and communities

Thank You!