



# Why **Agriculture** Matters to **Fuel Economics**

An Executive Brief on **CI Data, Audit Risk, and Revenue Integrity**

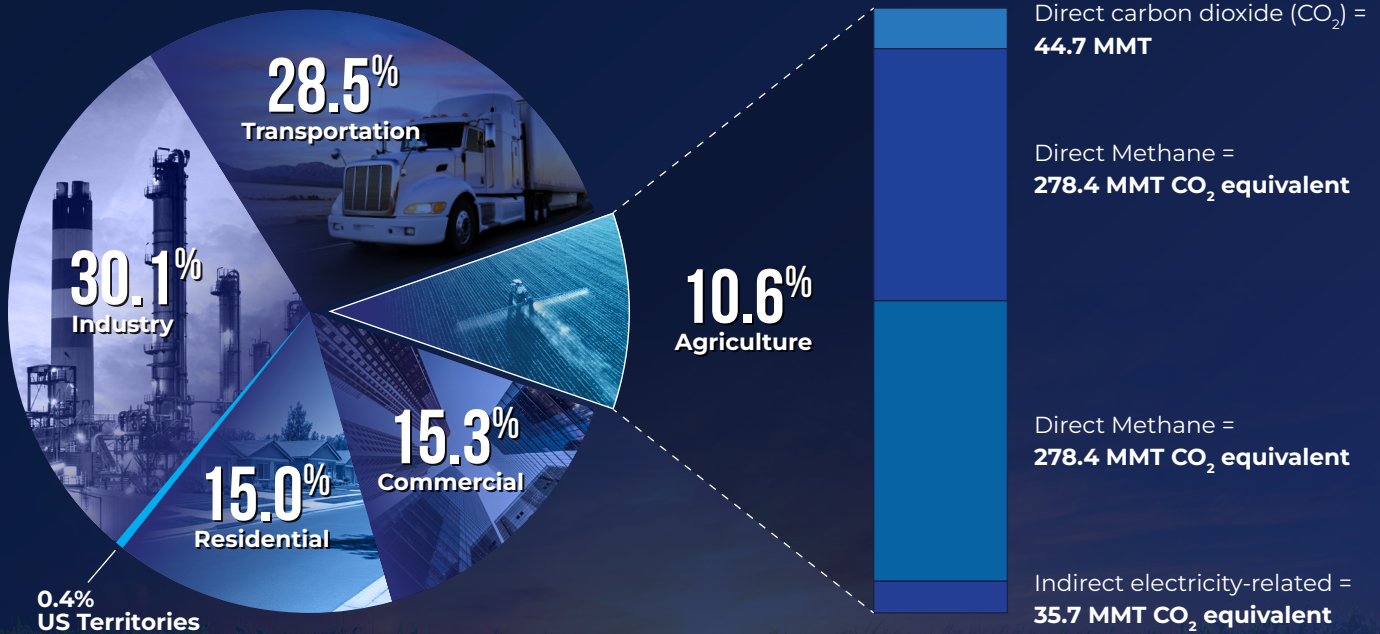
## Executive Summary

45Z materially changes the economics of biofuels. Tax credit value is directly tied to carbon intensity. Carbon intensity depends on upstream agricultural data. Most organizations are approaching 45Z through finance, policy interpretation, or CI modeling. In practice, outcomes are determined much earlier—where field-level data is captured, verified, and governed. When that foundation is weak, credit value becomes fragile. Audit exposure increases. Monetization slows or fails. This brief outlines where 45Z programs break down and what it takes to execute reliably at scale.

## Estimates U.S. Greenhouse Gas Emissions by Sector, Including Electricity Use, 2021



Economic Research Service  
U.S. DEPARTMENT OF AGRICULTURE



**Total emissions in 2021:**  
6,340 million metric tons (MMT)  
of carbon dioxide equivalent

**Total agriculture emissions in 2021:**  
671.5 million metric tons  
of carbon dioxide equivalent

**Note:** CO<sub>2</sub> = carbon dioxide. Emissions from electric power are allocated based on aggregate electricity use in each end-use sector in the pie chart. Components may not sum to totals because of rounding.

**Source:** USDA, Economic Research Service using data from U.S. Environmental Protection Agency, April 2023: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021, table 2-12.

# 5 Things Financial Leaders Need to Know

## 1. Why 45Z Changes the Economics of Biofuels

45Z links tax credit value directly to carbon intensity scores. Lower CI produces higher credit value. This shifts how biofuel economics are determined. Yield and quality alone are no longer sufficient. How crops are grown—inputs, practices, and verification—now influences eligibility, pricing, and audit outcomes.

For financial leaders, this represents a structural shift. Carbon intensity is no longer an external sustainability metric. It is a direct input into revenue.

**Key takeaway:** Carbon intensity now functions as a financial variable, not a reporting outcome.



## 2. What the Market Is Already Signaling

Across earnings calls and investor communications in ethanol, SAF, and renewable fuels, the same signals are emerging:

- Shortage of verified acres
- Active competition for CI-qualified feedstock
- Difficulty scaling CI-ready supply

Demand exists. Capital is committed. The constraint is execution. The challenge is not understanding 45Z. It is operationalizing it across thousands of fields, growers, and practices with data that can withstand scrutiny.

**Key takeaway:** 45Z momentum is real. Execution capacity is lagging.

### 3. Where 45Z Breaks Down in Practice

Most enterprises pursue 45Z through fragmented execution models:

- Consultants interpret regulation
- CI modelers calculate GREET scores
- Software platforms ingest partial datasets
- Local agronomy engages growers informally

Each component may function independently. Together, they fail to produce defensible outcomes. Common failure points include inconsistent field data, low grower participation, lack of standardized attestation, and no single owner accountable for audit outcomes. As a result, CI models surface data gaps rather than create value.

**Key takeaway:** 45Z does not fail because of regulation. It fails because execution is fragmented.



### 4. The Risk Finance Inherits Too Late

45Z risk accumulates upstream. Finance encounters it downstream. By the time credits are claimed, exposure already exists:

- CI scores that cannot be defended
- Documentation gaps during audit
- Delayed or reduced credit realization

These risks surface at the balance-sheet level, but they originate much earlier in program design and execution.

**Key takeaway:** If the data fails, the revenue follows.



## 5. What “45Z Ready” Actually Means

Readiness is operational, not aspirational. Being 45Z-ready requires:

- Scaled field-level data capture
- Verified and standardized practice data
- Clear attestation and governance
- A single accountable execution owner

Software alone does not create defensible CI. Models cannot compensate for missing or inconsistent data.

**Key takeaway:** Readiness depends on execution discipline, not tooling density.



## Closing Perspective

***45Z creates real economic opportunity. That opportunity depends on execution.***

This execution model is already in market. With National Sorghum Producers, Corvian implemented a field-first CI execution framework that captured, verified, and governed agronomic data at scale—enabling defensible CI outcomes in a regulated environment where data integrity directly impacted downstream value. The same execution discipline applies to 45Z.

Organizations that secure the upstream data layer early will move faster, carry less risk, and monetize credits with confidence. Those that do not will continue to reset vendors, delay outcomes, and absorb avoidable exposure.

**To see how this model works in practice, book an executive briefing with our team: [partners@corvian.com](mailto:partners@corvian.com)**