



The Missing Layer in LA's Waste System: Feedstock Intelligence

ATAS Meeting

April 16, 2026



Earthia Bio

**Earthia Bio is a
bioinfrastructure-focused
company**

**We are a team of
scientific and
commercial experts
on a mission to scale
the bioeconomy**



Bianca Costa, PhD
Bio process Engineering



Nadia Szeinbaum, PhD
Biology and Microbiology



- PhD-level microbial and engineered systems expertise
- Direct experience in scale-up environments
- Systems-level framing across biology + economics
- Deep expertise tracked as peer-reviewed papers, conference presentation invitations
- Grounded in California regulatory context
- We translate biology into financial signal



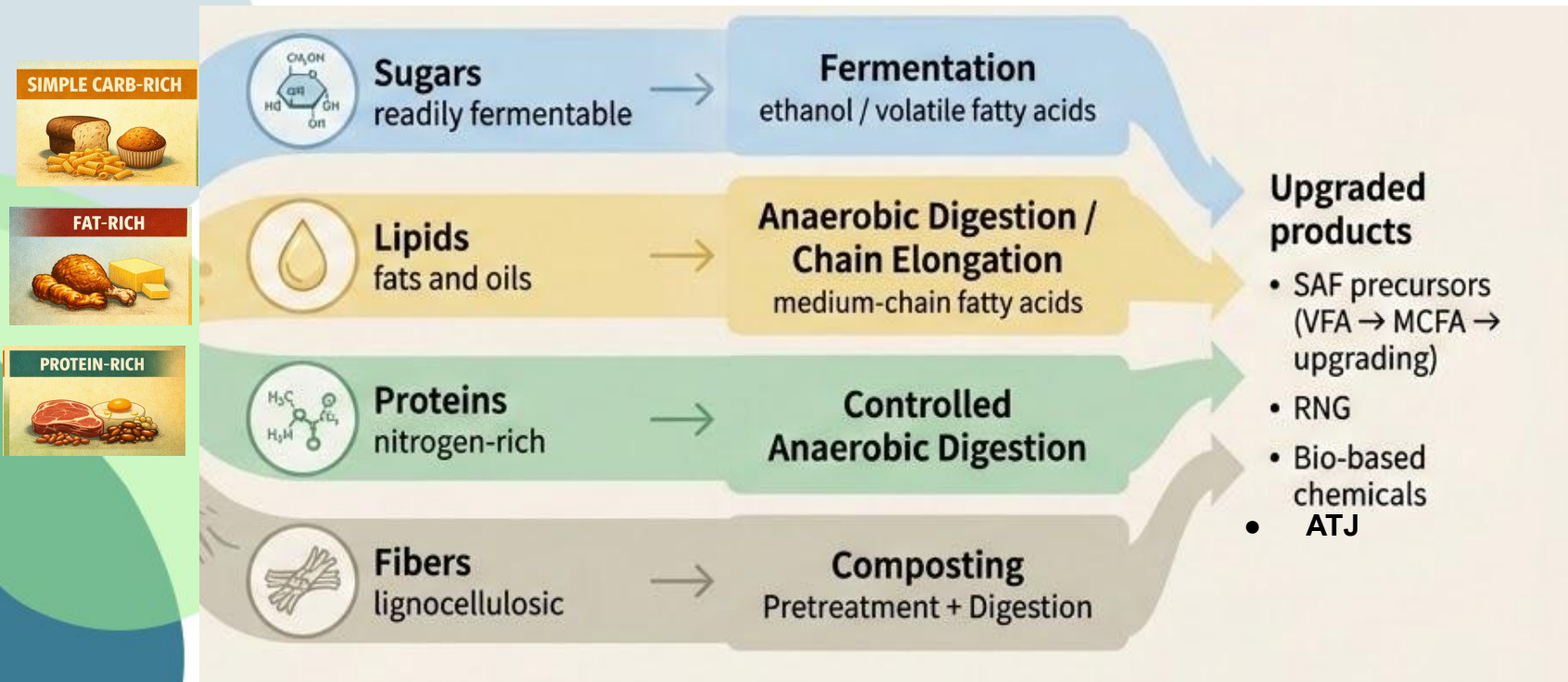
Out of the ~1.5 million tons of food waste produced each year, about 550–750K tons of waste is sent to landfills as inedible or non-donatable food waste^{1,2}.

Overall, almost no municipal food waste reaches anaerobic digestion or higher-value conversion pathways

Municipal food waste as feedstock for conversion technologies is challenging to underwrite.

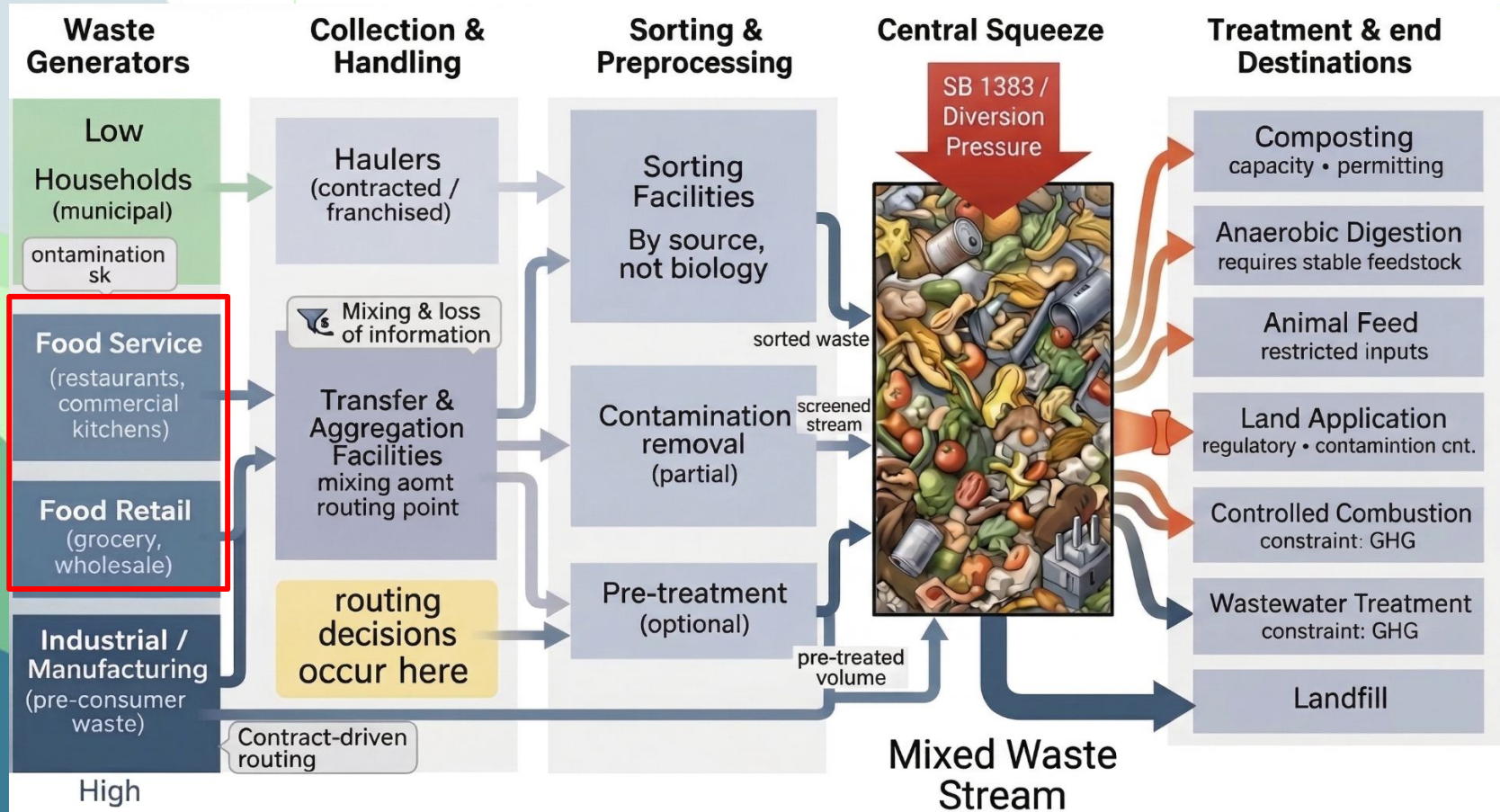
- (1) [lasc.org](https://www.lasc.org)
- (2) <https://www.epa.gov/anaerobic-digestion/anaerobic-digestion-facilities-processing-food-waste-us-2020-2021>
- (3) California Department of Resources Recycling and Recovery (CalRecycle). (November 2022). *2021 Disposal Facility-based Waste Characterization Data Tables.a*

Not all food waste is suited for the same biological process



Not all food sources are the same

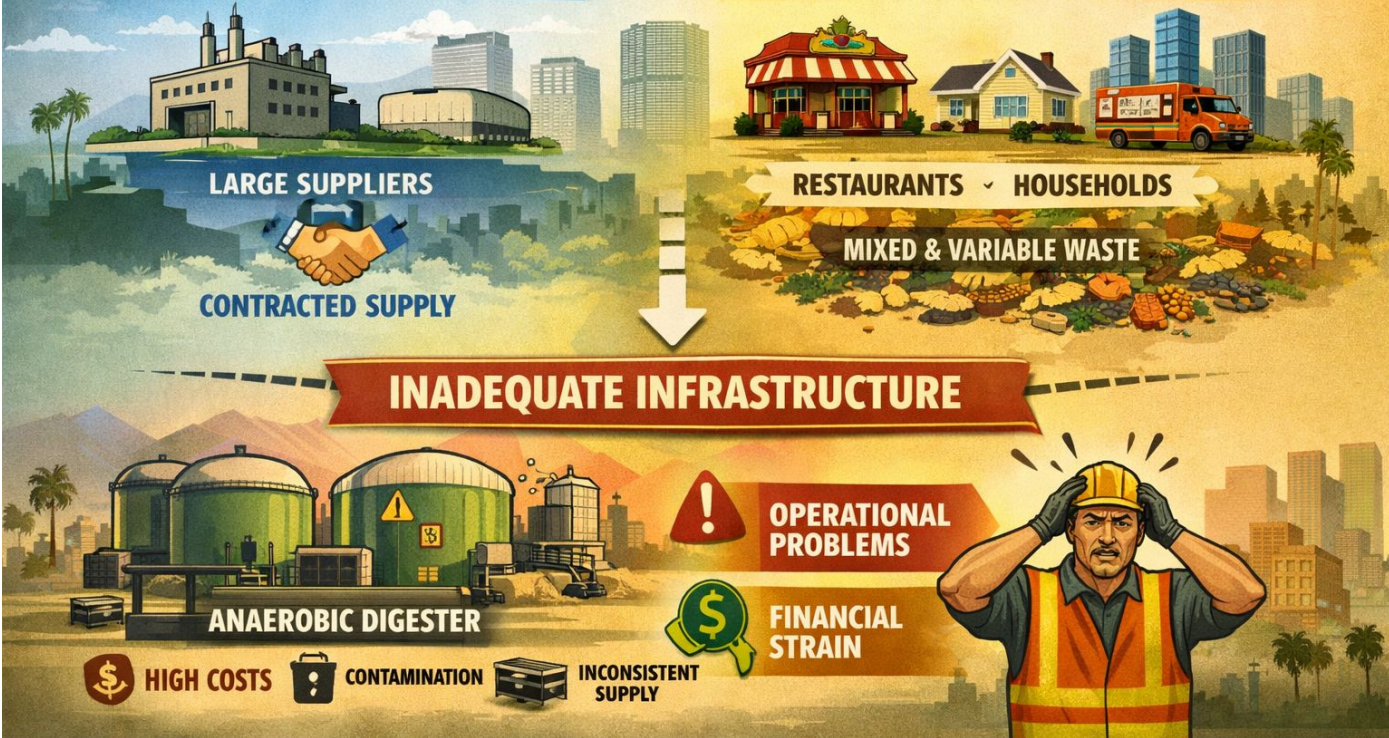
Most food waste excluded from conversion technologies due to aggregation



SHIFTING FROM CONCENTRATED TO DISTRIBUTED FEEDSTOCKS

Concentrated Feedstocks (Past)

Distributed Feedstocks (Present)



Feedstock is modeled as static but behaves variably

Typical model for
development and permitting:
Planning

**Average Feedstock
composition**

Lender gap

**Average Yield with
assumed variability**

Deployment

Financial outcomes

Reality:

Feedstock Variability: Seseonal supply shifts, routing mixing, day-to-day composition changes (sugar, fat, protein, moisture), contamination

Biological response: Inhibition, competition, biochemical pathway changes

Performance instability: Yield fluctuates, failures

Financial Outcomes: Covenant breaches, **unexpected** returns, higher OPEX

Translation engine: feedstock reality to financial signal

The Engine

A tested, reality aware decision on how to build and what to bank

Feedstock Variability: Sesonal shifts, routing mixing, day-to-day composition changes, contamination

Biological and process response: Inhibition, competition, biochemical pathway changes, process conditions

Performance variability: Opex variability, yield deviations, downtime

Financial Outcomes: Covenant breaches probability, return distribution, OPEX distribution

1

Real feedstock composition probability distributions

2

Yield/opex/failure distributions

3

Financial performance distibutions

4

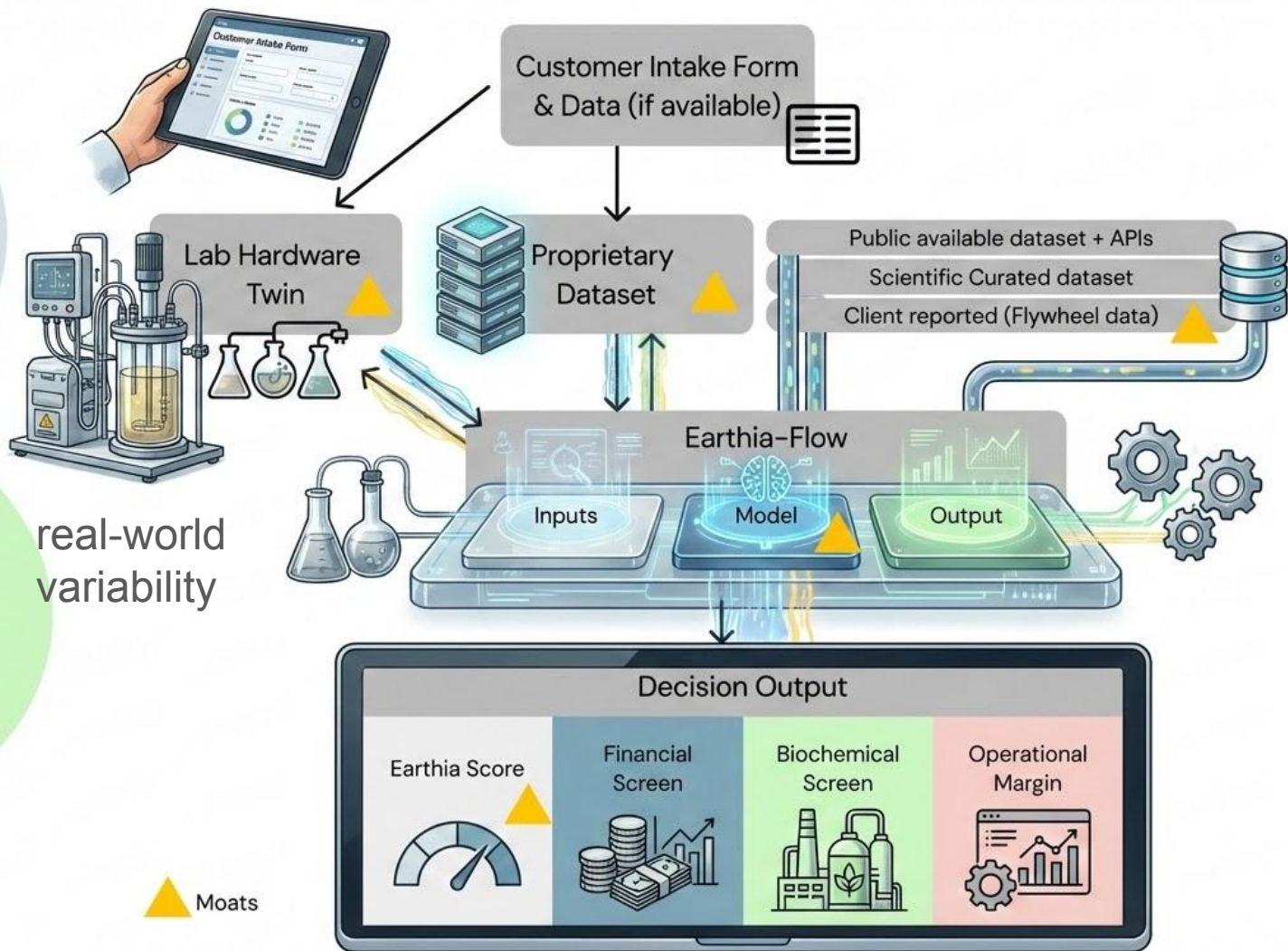
Decisions

Given Feedstock only: What should I build

Given Feedstock + design: viability, fragility, revenue risks, risk root cause, alternative paths for revenue creation

How it works

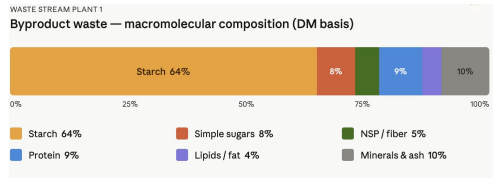
An integrated software-hardware system for bio process scale up



Diversion through plant capacity and capability expansion

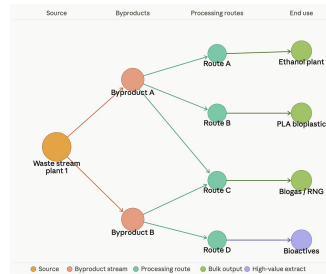
Feedstock characterization

Composition profiling by substrate type and mixing, source, and season: moving beyond averages to realistic ranges



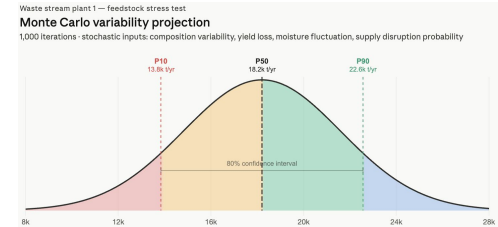
Compatibility Modeling

Predicting process performance under real input conditions for current and emerging pathways



Supply System Design

Variability projections to stress-test project assumptions



- 1) **Reduce risk** : bioprocess and feedstock variability-grounded prediction that inform stakeholders on permitting and contractual risk
- 2) **Unlock opportunities**: Identify waste streams rerouting into facilities that can integrate higher value treatment train or be FOAK (RNG-MCFA, ATJ)

Opportunity at scale example: A subset of LA County's landfilled food waste could support commercial-scale SAF

The Opportunity

- Estimated 400,000–677,000 tons of non-donatable non-meat food waste landfilled in LA County annually
- With higher per ton yield of ethanol compared to corn stover, some of this food waste could produce 10–20 million gallons of SAF / year.

Source: NAICS database + CalRecycle 2021 Waste Characterization Study, LA County disposal data 2024.

What is missing

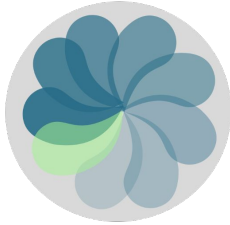
- Actual composition profile & mass load of bio-convertible waste
- The characterization of bioconversion capacity and efficiency
- Routing intelligence. This feedstock is already being collected, concentrated in industrial corridors, flowing year-round under SB 1383 mandates.

We're connecting feedstock reality to project decisions in LA County—starting with pilot projects and partners



If you work with conversion technology developers, investors and haulers — we want to talk to you today

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