

Rules

Compliance

Control

LCFS Verifications Demystified - What We've Learned



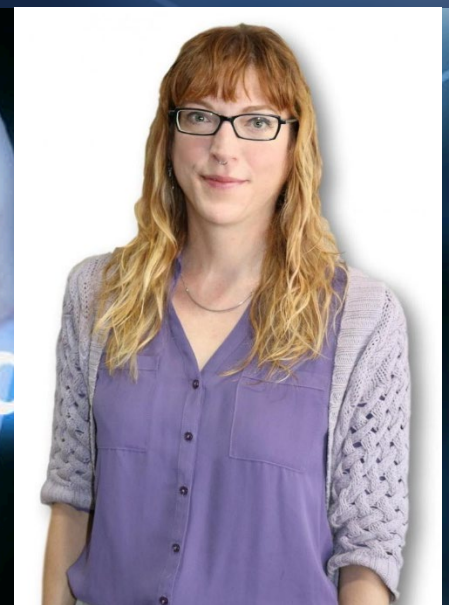
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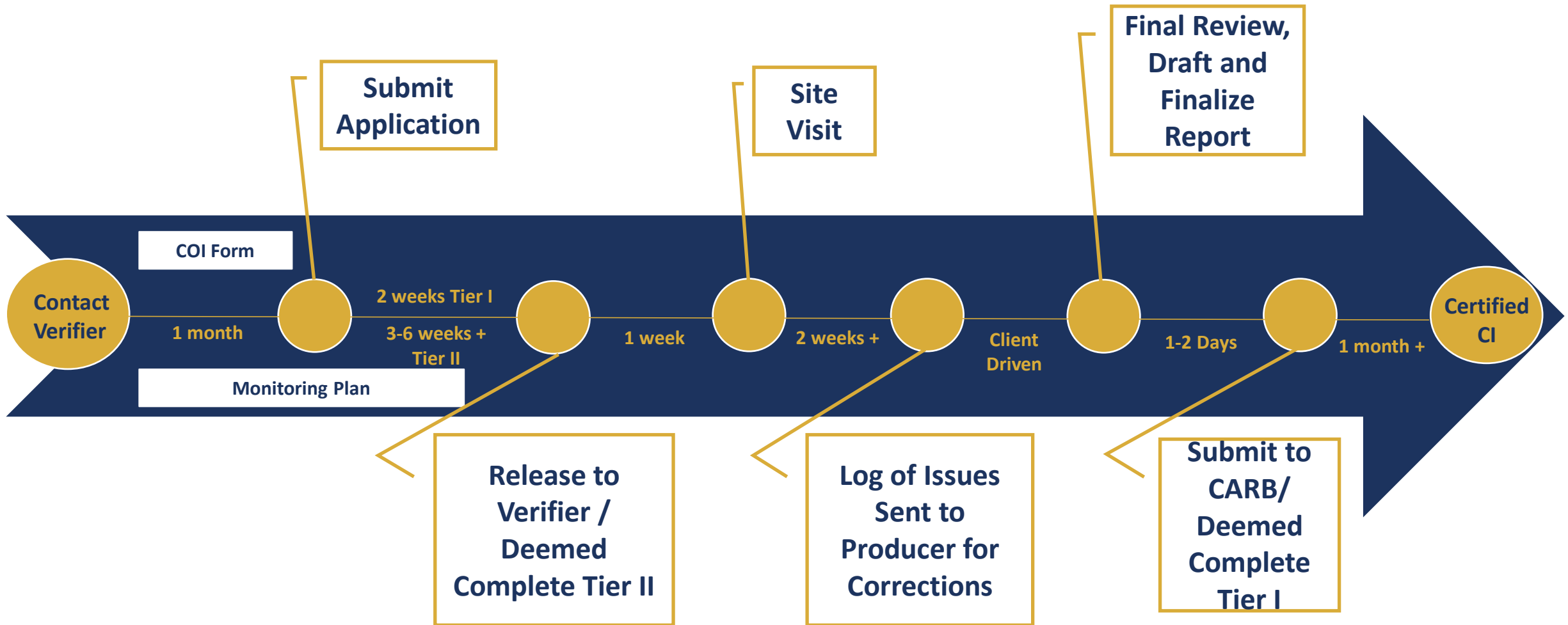


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Overview

- > Timelines for validation and verification service
- > What you can expect from a Christianson verification
- > Set yourself up for success

Verification Timelines



Expectations for a Christianson Verification

- > Meets AICPA and CARB requirements
- > Engineering expert and accounting expert
- > Experience and knowledge of the plants



Expectations for a Christianson Verification

- > Team will typically consist of 4-5 members
 - > Staff
 - > Lead Verifier from Christianson
 - > Manager in charge if other than Lead Verifier
 - > Subcontracted engineer
 - > Independent Reviewer
- > Process Flow
 - > Review monitoring plan, initial requests and sample pulling
 - > Site visit (interview session, walk through plant, accounting review)
 - > Desk audit – detailed testing and follow up questions
 - > Request for changes per log of issues
 - > Review final changes, draft report and finalize



Setting Up for Success

- > Read the calculator instructions
- > Be familiar with your calculator
- > Monitoring plan should meet requirements at 95491.1(c)
- > Be proactive with CARB on unusual items/situations
- > Leave plenty of time for verification
- > Consider opting in to quarterly reviews



Monitoring Plans, Calibrations, and Process Equipment Trends

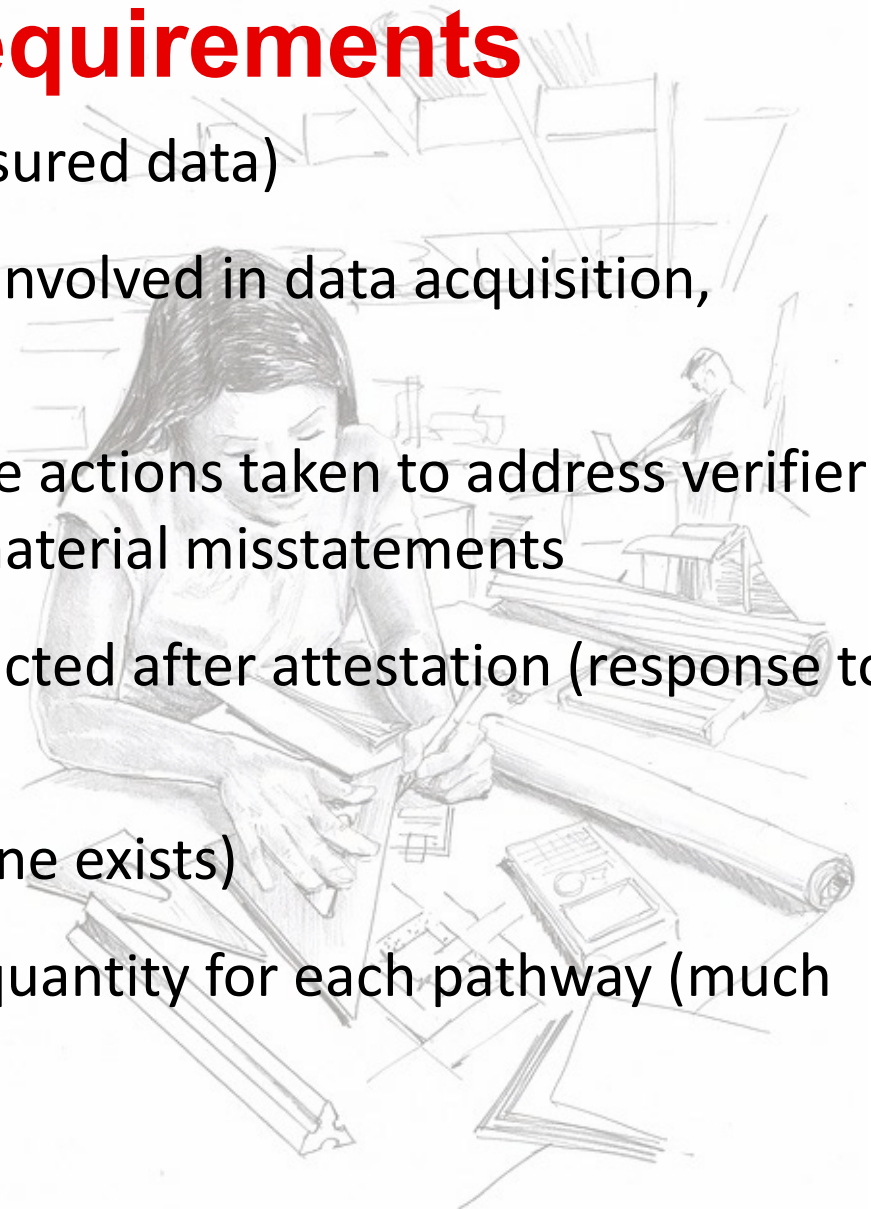


Monitoring Plan - Requirements

- Required under § 95491.1(c) – including the following but not limited to
 - Business boundaries and operations (context of activity and other programs)
 - Management policies or practices for reporting including recordkeeping
 - Process and methods to collect data
 - Explanation of data queries for intermediate and final data
 - Block flow diagrams showing location of measurement and sampling for calculating reported data
 - ID all measurement devices supplying data for reporting (incl. low cut-offs)
 - Description of devices, methods for calibration (or showing FTM), description of QA, maintenance, repair of continuous monitoring/flow meters. – dates of last cal and next planned

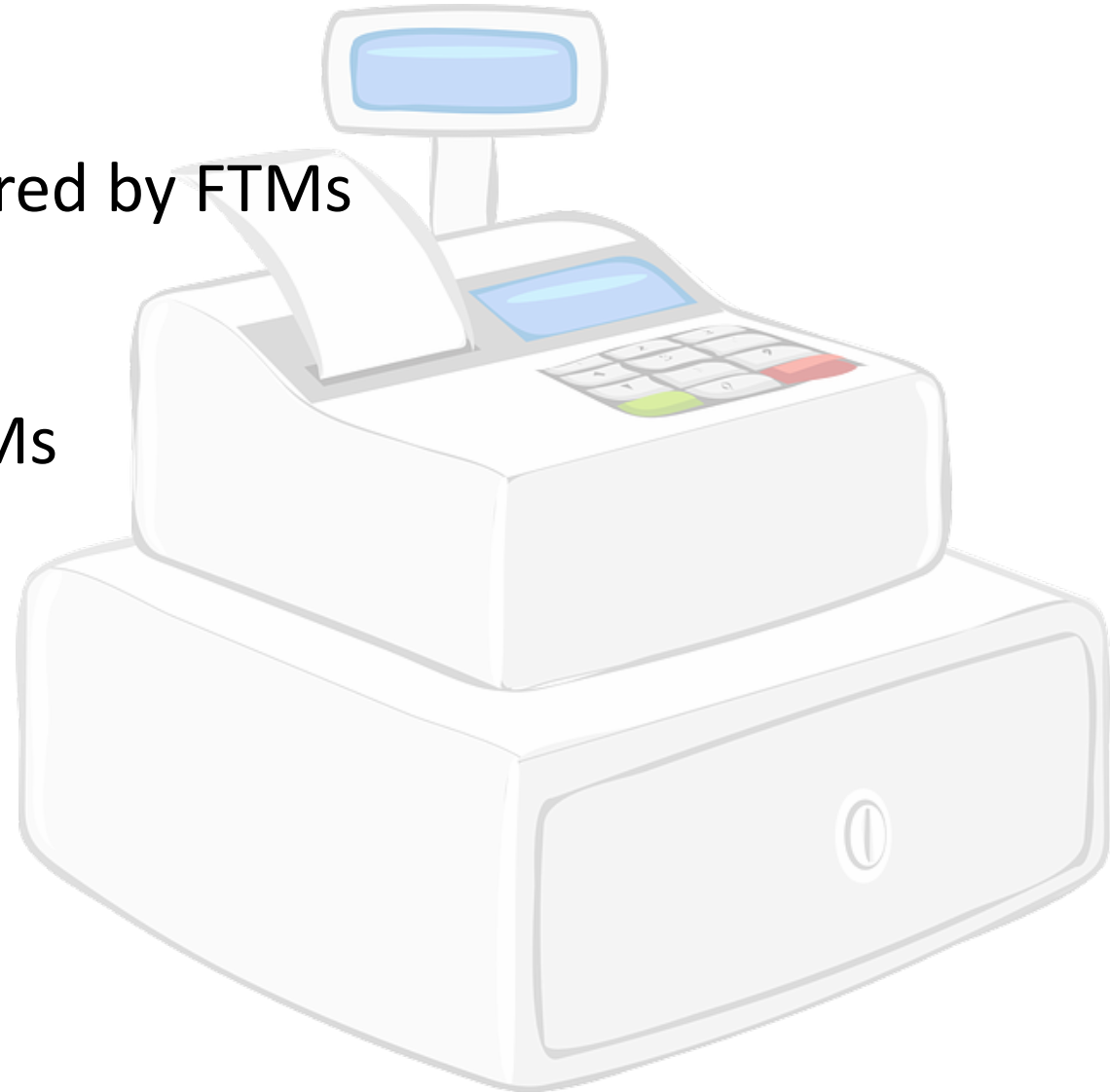
Monitoring Plans - Requirements

- Equations (for calculating data inputs or non-measured data)
- Job titles and training practices for key personnel involved in data acquisition, monitoring, reporting, and report attestation
- Records of corrective and subsequent preventative actions taken to address verifier and CARB findings of past nonconformance and material misstatements
- Log of modifications to fuel pathway report conducted after attestation (response to review by third-party verifier or CARB)
- Written description of internal audit program (if one exists)
- Methodology used to allocate the produced fuel quantity for each pathway (much more detail on this, if applicable)



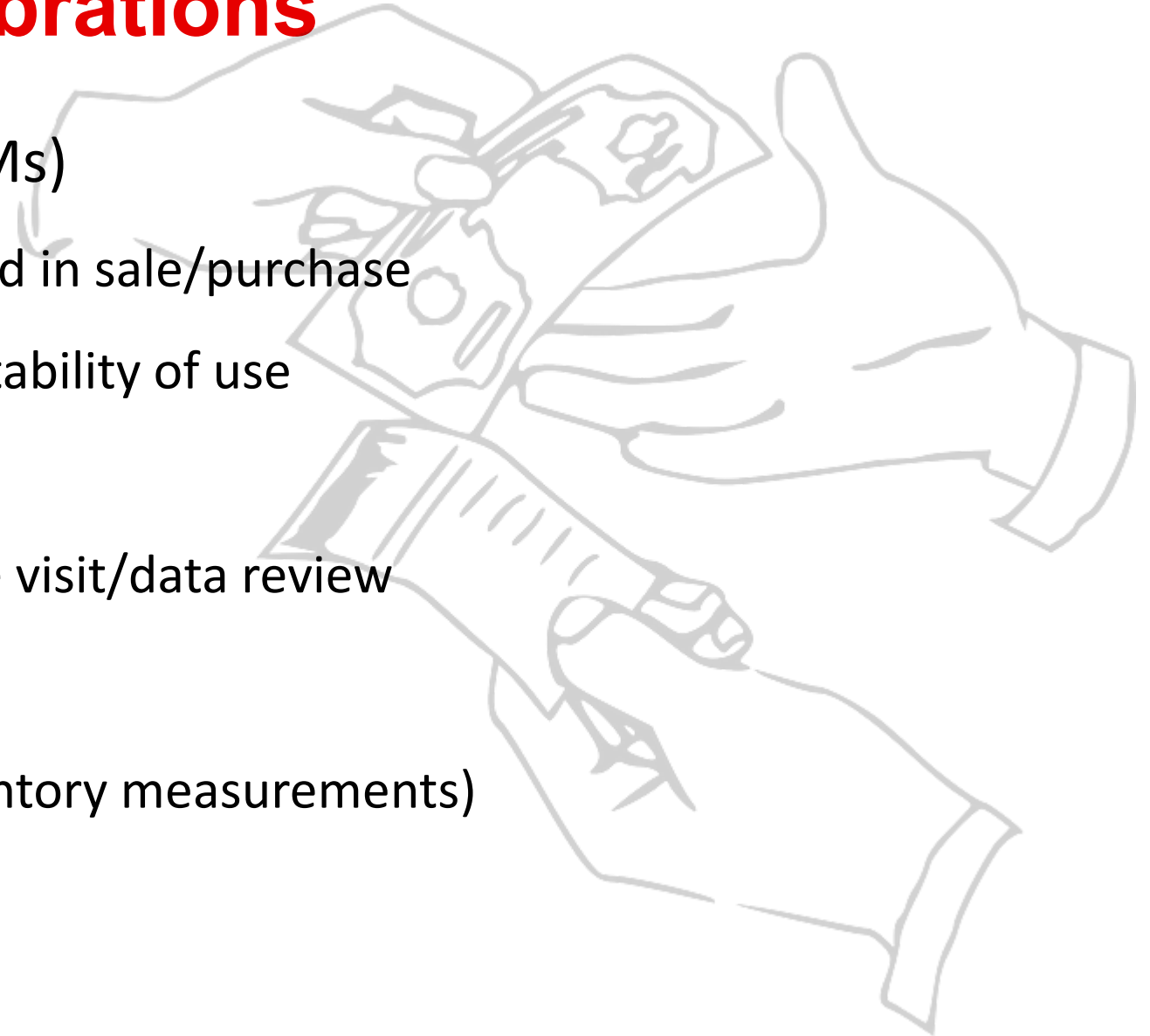
Monitoring Plans - Recommendations

- Show parameters that are measured by FTMs
- Focus more detail on the non-FTMs
- Make it usable and manageable



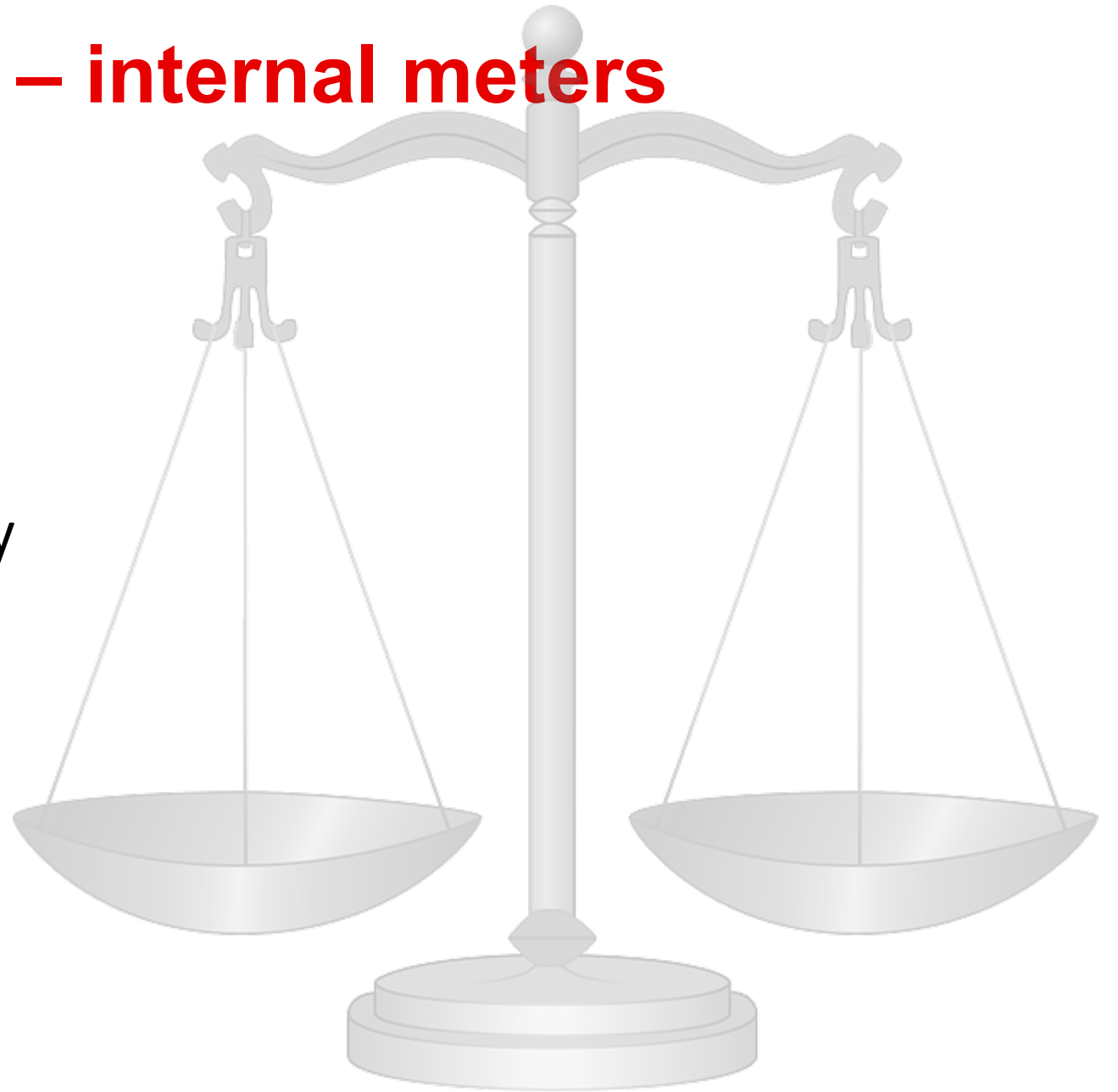
Calibrations

- Financial Transaction Meters (FTMs)
 - Used to measure parameters involved in sale/purchase
 - Check for proper installation and suitability of use
 - Generally accepted as accurate
 - May still identify issues based on site visit/data review
- Internal meters (main focus)
 - Level transmitters/tank gauges (inventory measurements)
 - Flow meters
 - Moisture measurement



Calibrations – internal meters

- CARB requirements
 - Calibrate per manufacturer specs
 - Or every 6 years
- No manufacturers req. frequency
 - Determine calibration methods
 - Identify frequency
 - Document results!



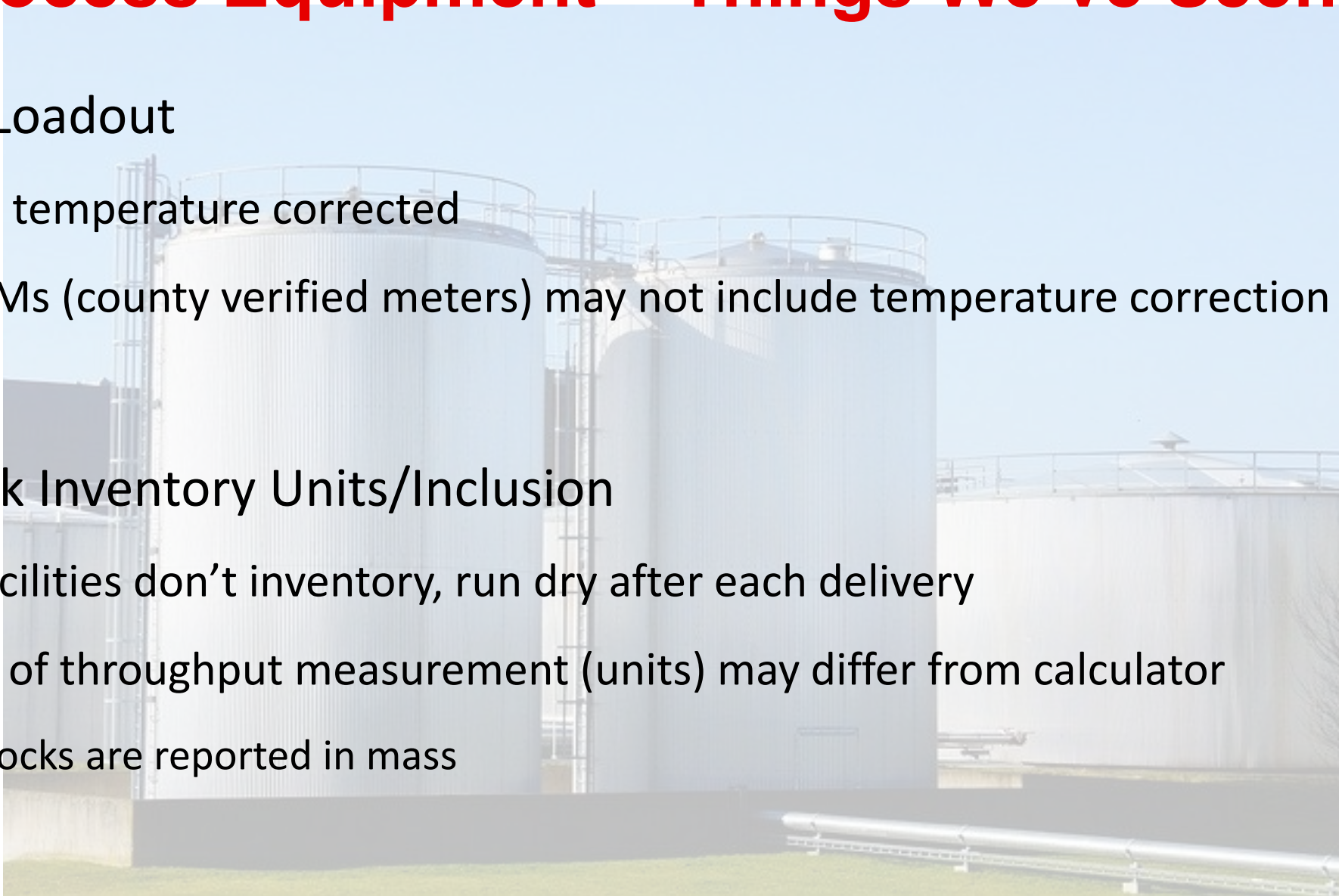
Process Equipment – Things We've Seen

➤ Product Loadout

- Must be temperature corrected
- Even FTMs (county verified meters) may not include temperature correction

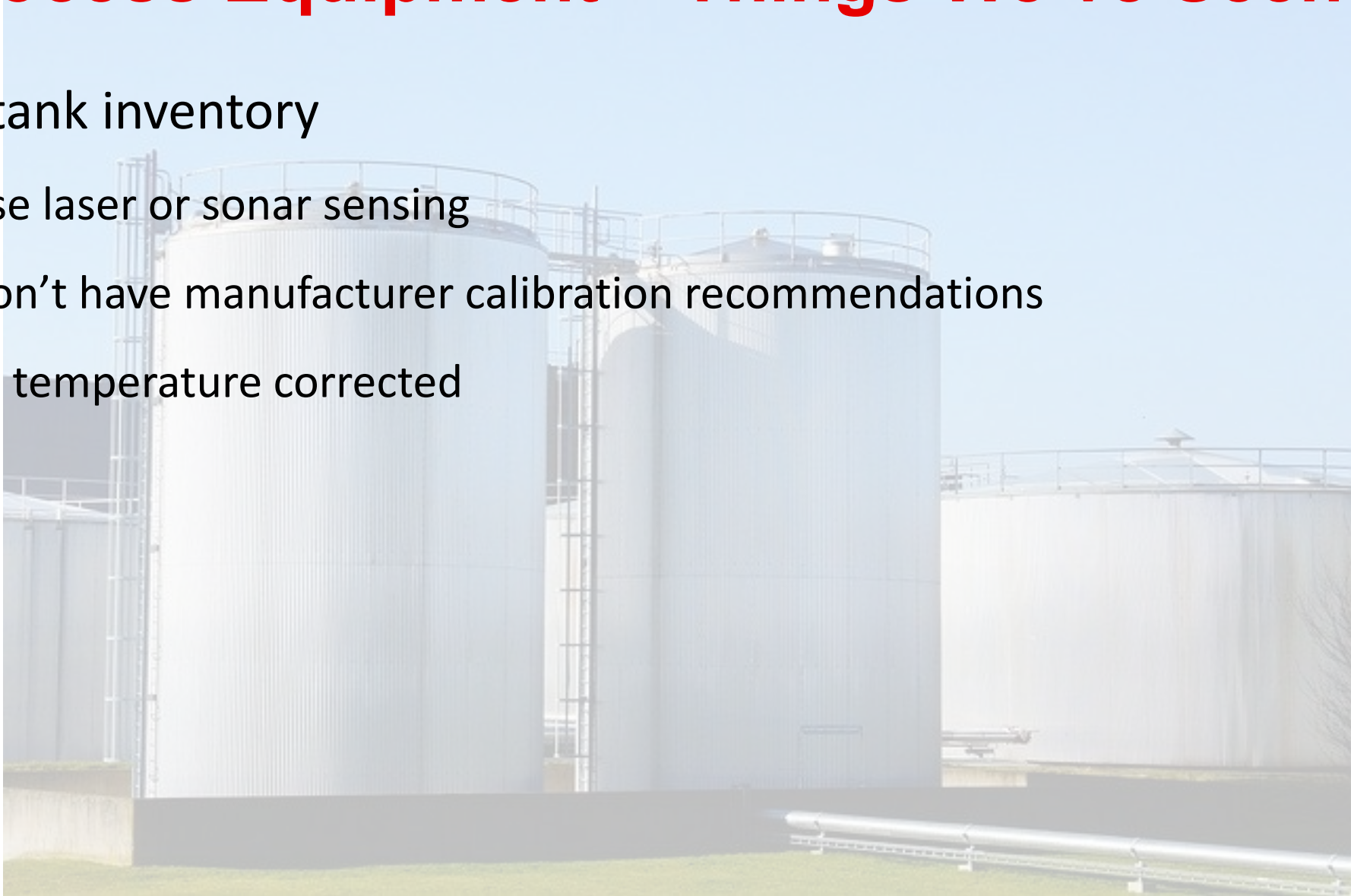
➤ Feedstock Inventory Units/Inclusion

- Some facilities don't inventory, run dry after each delivery
- Method of throughput measurement (units) may differ from calculator
 - Feedstocks are reported in mass



Process Equipment – Things We've Seen

- Product tank inventory
 - Often use laser or sonar sensing
 - Often don't have manufacturer calibration recommendations
 - Must be temperature corrected



THANK YOU!

**Paul Mordorski, PE
Merjent, Inc.**



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**LCFS Verification – Biodiesel Trends
and Tracing**

**Zach Hauser, Senior Accountant
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Overview

- Operating Conditions
- Key Calculator Input Items
- Fuel Pathway Allocation for Produced Fuel
- Feedstock Definitions and Inputs
- Specified Source Feedstock Process



Operating Conditions

- > Co-product energy density (field 2.19.a)
- > Biomass boilers and alternate fuels (field 2.14)
- > Other unique items that could reduce the CI score significantly or save a lot of time and cost



Key Calculator Input Items



- > Should methanol % of alcohol/catalyst mixtures be included in methanol use inputs? – CARB is working on this
- > Methanol unit of measurement confusion, gallons is the correct unit to input
- > Natural gas usage conversions
- > B100 in inventory and sales
- > Methyl esters production should be included in the CI calculator but can't be used for credit generation

Key Calculator Input Items



> Co-products

- > All must be adjusted for moisture
- > Must not be further processed at a different facility (glycerin is an exception)
- > Glycerin processing and adjustments
- > Co-products used as process fuel

> Fuel transportation

- > Must use official mapping sites
- > Weighted average vs. Conservative method



Fuel Pathway Allocation for Produced Fuel

- > We must review this for validation AND verification
- > Feedstock usage and fuel sales should agree with what is input in the calculator
- > Keep in mind that sales outside of California don't qualify for credit generation, but must be tracked and assigned a pathway for fuel allocation
- > Inventories must be kept for each feedstock pathway and ensure that none are negative at quarter end.
- > Total credit inventory at each quarter end should not exceed physical fuel inventory.

Feedstock Definitions and Inputs

- > UCO – Used cooking oil, brown grease. Waste edible oils aren't eligible and must be excluded.
- > Tallow – animal fats, fish oil and yellow grease (UCO/Tallow, in the industry UCO and yellow grease are used interchangeably)
- > Moisture and Distance reporting
- > For feedstock we can't trace or that doesn't qualify there are two options
 - > Exclude raw materials and finished goods using facility average yield (follow fuel pathway allocation guidance 19-08)
 - > Exclude from CAPP

Specified Source Feedstock Process

- > CARB has draft guidance but no ETA
- > Time consuming for verification
- > Scenarios
 - > Suppliers that sell multiple types of feedstock
 - > Suppliers that provide UCO/Brown Grease only
 - > Suppliers that provide tallow only
 - > Suppliers that provide corn oil only



Self Collected UCO

> Scenarios

- > UCO collected on routes must be included in weighted average calculations
- > UCO from collecting points/aggregators – this mileage must be included from their location to yours
- > Original UCO route collection logs must be retained as support/data sources.



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Questions

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Joint Applications &
Intermediate Facilities

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Introduction

- > What is site-specific and user-defined data?
- > What are Intermediate Facilities and Joint Applicants?
- > What is the difference between the two?
- > What are the advantages (and disadvantages) of them?



Site-specific Data & User-defined Data

- CA GREET 3.0 default values are conservative
- User-defined values can come from the biodiesel producer and replace default values
- User-defined values can also include site-specific data and come from feedstock suppliers

Section 2. Information for UCO Production	
2.1 Select Sources of UCO	U.S.
2.4 Select Oil Rendering	User Defined



Section 2. Information for Tallow Oil Production	
2.1 Select Sources of Tallow	U.S.
2.4 Select Oil Rendering	User Defined



Site-specific Data & User-defined Data

- Feedstock Processing Energy and Emissions Factors (EFs) are key user-defined values that can have major impacts on a biofuel facility's CI score
- Examples
 - > Tallow default carbon intensity $\text{gCO}_2\text{e}/\text{MJ} = 303.82$
 - > UCO default carbon intensity $\text{gCO}_2\text{e}/\text{MJ} = 90.44$
 - > A user-defined value can get these down into the single digits

<input type="text"/>	<input type="text"/>
2.5 User Defined UCO Rendering GHG Emission Factor, $\text{gCO}_2\text{e}/\text{lb oil}$:	2.6 User Defined Oil Extraction Energy, Btu/lb oil:

Site-specific Data Reporting

- Multiple entities may contribute site-specific data to a single fuel pathway application
- Can either designate a single entity as the pathway applicant (Intermediate Facility) or designate multiple entities (Joint Applicants) on a single pathway
- Decision on whether the time and effort is worth the reward



Intermediate Facilities

- Entities in the supply chain that contribute site-specific data to the fuel pathway CI score
- Tied to the fuel producer and are not independently validated
- Must be registered in AFP by the biofuel producer
- Produce components of a fuel or intermediate chemical
- Includes feedstock-processing facilities AKA aggregators/collectors/collecting points
- Site visit is required for each fuel pathway they are a part of

Joint Applicants

- Two entities+ are the Joint Applicants in the fuel pathway applications
- Allows each entity to maintain control of their validation and confidential data for the portions of the pathway they submit
- Optional except for 2 situations: using CCS or directly-supplied low-CI process electricity



Joint Applicants

- Joint Applicants are independently validated and subject to all the requirements for pathway application, attestations, validation/verification, and recordkeeping under LCFS for the portion of the pathway they control.
- Monitoring Plans requirements § 95491.1(c) apply
- Only one site visit annually as part of initial validation and subsequent verifications
- Joint Applicants are linked to the biofuel producer but can be a Joint Applicant with multiple producers



Guidance on Applications



- Intermediate Facilities: [Low Carbon Fuel Standard Guidance 20-01](#)
- Joint Applicants see [Low Carbon Fuel Standard Guidance 20-02](#)
- The feedstock supplier joint applications *usually* follow the biofuel producer(s) they are applying with

Guidance on Applications

- There are no CI Calculator templates or instructions for feedstock supplier joint applications
- Require using a GHG specialist who is familiar with the full GREET model to build a custom feedstock CI calculator that can determine the CI score of the facility correctly



Trends & Tips – Intermediate Facilities

- Biofuel producers need to prep their suppliers
- Requires tracing back to point of origin = CBI for most suppliers
- Requires site visit
- Time-consuming process

Trends & Tips – Feedstock Joint Applicants

- Consult with CARB early and often
- Unique situations require CARB approval and Operating Conditions
- Maximizing low CI score takes time and efforts



Trends & Tips – Feedstock Joint Applicants



- Conservative measures can be taken so your facility fits the models
- Reduces need to get time-consuming approval from CARB for unusual situations
- Example: ineligible raw materials
- Example: co-processing multiple types of raw materials with different EFs without separate energy meters or CARB approval

Trends & Tips – Feedstock Joint Applicants

- Monitoring Plans – often the source of a lot of NCs
 - These are typically new compliance requirements for feedstock companies
- Calculator specifics
 - Inventories of raw materials and finished goods
 - UCO refined finished goods reported as is
 - Tallow and meal co-product must be adjusted moisture
 - All energy usage must be reported, including alternate fuel, biomass boilers, etc.



Trends & Tips – Feedstock Joint Applicants

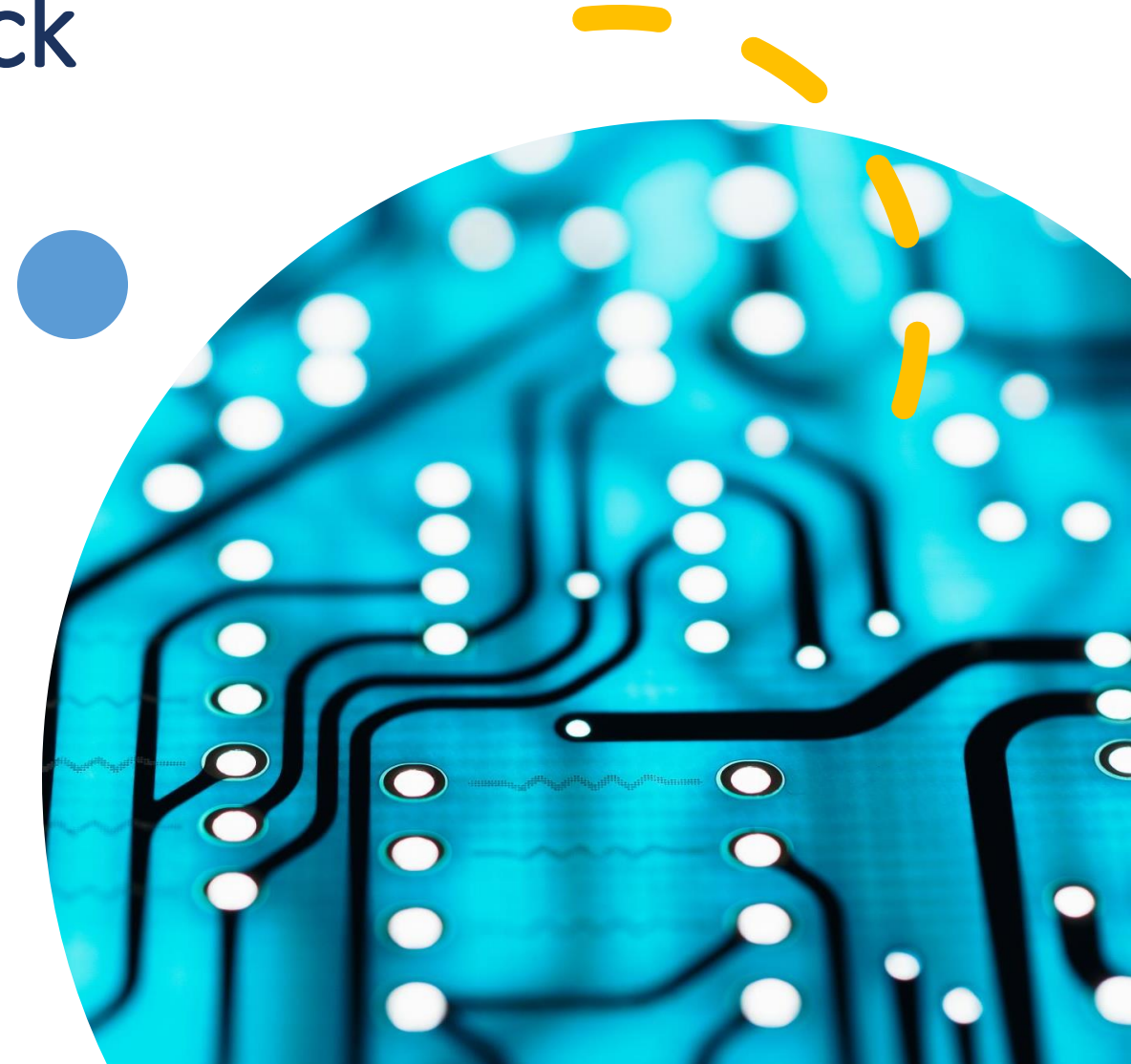


Raw material transportation:

- Tallow – the point of origin is the rendering facility
- UCO – weighted average transportation requirements just like self-rendering biofuel producers
- Original UCO route collection logs must be retained as original support/data sources

Trends & Tips – Feedstock Joint Applicants

- Specified source feedstock tracing
 - Tallow – rendering facility is the POO, no upstream tracing for tallow, simply material confirmation with renderer
 - UCO – same tracing applies for feedstock Joint Applicants as for biofuel processor to trace raw materials back to their points of origin
 - Sort raw materials by type and its pathway into your facilities
- Sister facilities allowed with full accounting

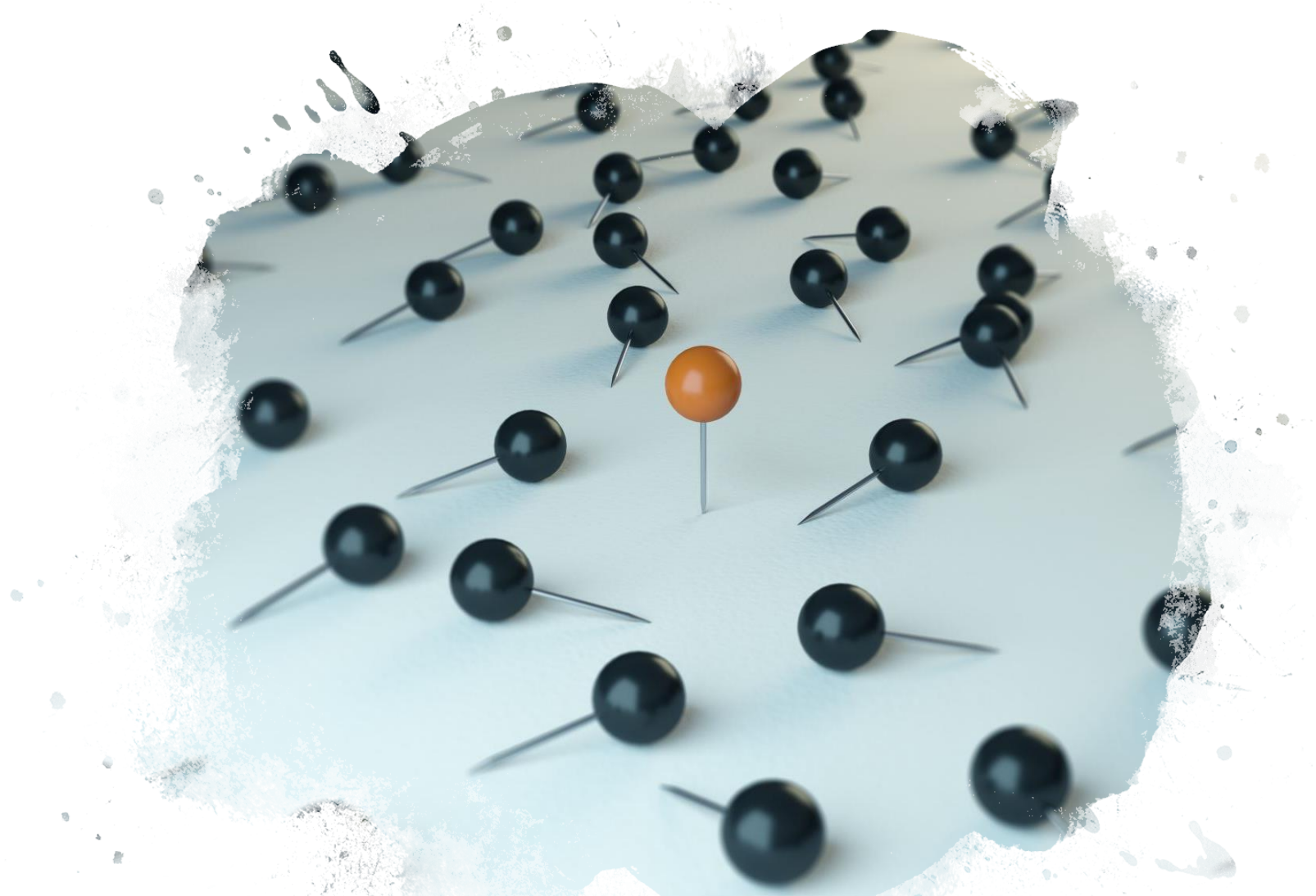


Conclusion

Reach out to CARB
before you submit your
application

&

simply be prepared to
document and explain
everything you do.





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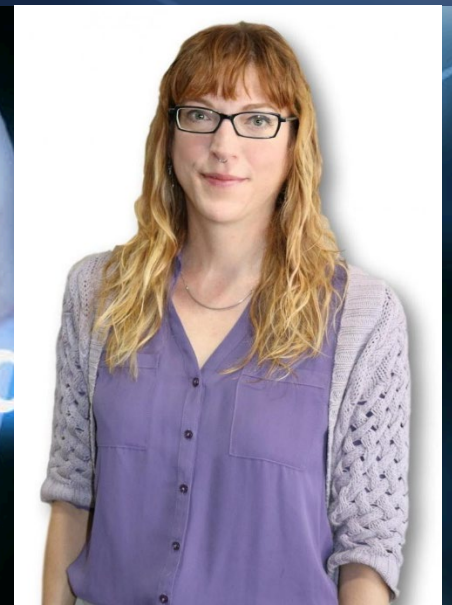
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