Fossil & Renewable Natural Gas in the LCFS

- Livestock Biomethane Pathways
  and
- Updates to December 2, 2016 working meeting topics

Public Working Meeting for Stakeholder Groups
April 17th, 2017

Meeting Participation

- Posted materials can be found on the LCFS Meetings webpage
  - https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm
- Watch and listen via the Webcast:
  - https://video.calepa.ca.gov/
- Ask questions or provide feedback during the working meeting
  - Email SierraRm@calepa.ca.gov
  - Participate via conference call
    - Toll Free: 1-888-989-4363
    - Toll/Outside the United States: 1-517-308-9239
    - Participant Code: 1966380
- Feedback should be sent to: LCFSworkshop@arb.ca.gov by May 15, 2017

Agenda Overview

- Livestock Manure to Biomethane Pathways
- Updates to December 2, 2016 Working Meeting topics
  - Fuel Pathways
  - Fuel Reporting
  - Verification
- Next Steps

LIVESTOCK MANURE TO BIOMETHANE PATHWAYS

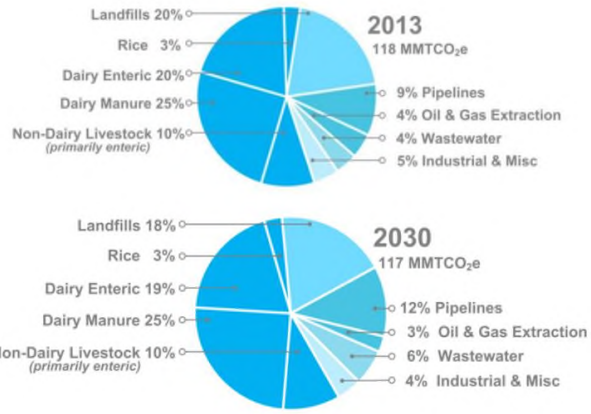
Livestock Discussion Outline

1. Background
2. Verification and Quantification Approach
3. Application Process
4. Discussion Topics
   - Timing
   - Allocation
   - Regulatory Compliance
   - CA-GREET emission factors & GWPs
5. LCA Methodology

Background

- Methane is a major concern for California Legislature and ARB

California's Methane Inventory

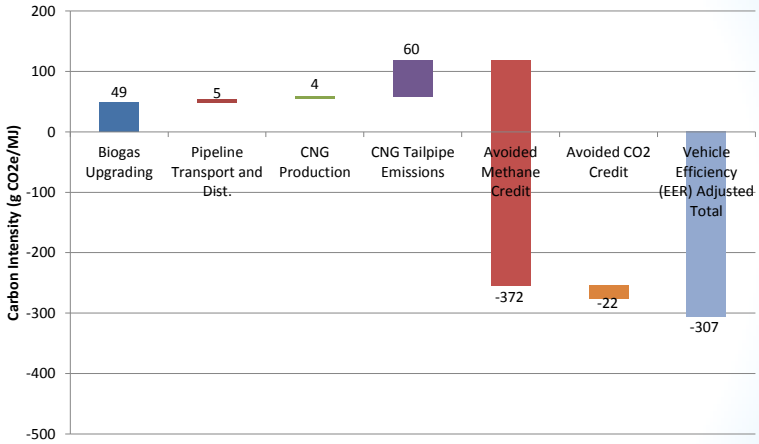


Background (2)

- Methane is a major concern for California Legislature and ARB
- SB 1383 (Lara, 2016)
  - 40% reduction in methane from 2013 by 2030
  - Directed approval and implementation of SLCP reduction measures.
  - Directed ARB to provide guidance on credits generated from livestock and dairy projects pursuant to LCFS.
- RNG derived from livestock manure can offer significant GHG reduction potentials as transportation fuel
  - By capturing and destroying methane (avoided methane)
  - By displacing petroleum fuel

The SLCP Strategy is available at: https://www.arb.ca.gov/cc/shortlived/shortlived.htm

Example Carbon Intensity Breakdown for a Dairy Manure to CNG Pathway



The draft CA-GREET template for an example Livestock Manure to Bio-CNG pathway is available for download at: http://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet2.0-dairycng.xlsm

Verification and Quantification Approach

- LCFS Amendments for Third-Party Verification currently under development for 2019
- Robust quantification and verification framework for avoided methane from livestock projects already exists through the ARB-approved Compliance Offset Protocol Livestock Projects ("Livestock Protocol")
- ARB will impose an Operating Condition on each manure-to-biomethane pathway requiring the use of the Livestock Protocol to verify the total methane avoided.

Verification and Quantification Approach (2)

Table 1. Comparison of Suggested LCFS Requirements for Manure-to-RNG Pathways to the Livestock Protocol

Areas where suggested LCFS requirements would be identical to the Livestock Protocol
Additionality requirements to ensure any crediting is for GHG reductions resulting from actions not required by law or beyond business as usual
Offset project crediting period to define a reliable period of time for return on investment for project implementation
The LCFS Pathway system boundary is a subset of the Livestock Protocol's Offset Project Boundary. See Figure 1 in this document.
GHG sources and sinks; for example, emissions from enteric fermentation are considered outside the fuel system boundary and will not be included.
Project monitoring parameters
Livestock operation parameters including livestock categories, volatile solid excretion rates, qualifying digesters (closed tank reactor, covered lagoon) and collection efficiencies, IPCC methane conversion factors (MCF).
Registry listing, monitoring, reporting, and third-party verification requirements.
Equations for Baseline Methane Emissions

Verification and Quantification Approach (3)

Table 1 (continued). Comparison of Suggested LCFS Requirements for Manure-to-RNG Pathways to the Livestock Protocol

Remaining Discussion Topics
Timing of application and reporting periods.
Attribution of emissions between transportation fuel and other destruction methods.
Regulatory compliance requirements.
Emission factors for energy use, fuel properties (e.g., energy density) and global warming potentials (GWP)

LCFS Application Process

- Demonstrate that the project meets the requirements of the Livestock Protocol by generating Registry Offset Credits (ROC) issued by a registry and approved by ARB
  - **Existing offset projects** can supply the most recent 12 months of verified project data, the verification report, and other information and supporting documentation required for all LCFS applications
  - **Projects that have not generated ROCs previously** can apply; must satisfy the requirements to be awarded ROCs by following the procedures and requirements of the Protocol within 18 months of submitting the initial LCFS pathway application
- All livestock projects generating LCFS credits must continue to submit required data and obtain 3rd party verification, or forfeit all LCFS credits generated under the pathway.

For more information on application requirements, see LCFS regulation section 95488(c)(4) and Guidance Document for LCFS New Pathway Applications. Nov. 5, 2015. Available at: https://www.arb.ca.gov/fuels/lcfs/fuelpathways/newpathway-11052015.pdf

Provisional CI and Credit Generation

- The provisional CI will be determined on the basis of the operational data submitted. This CI can be used to report for LCFS credit generation.
- Each quarter, the applicant continues to submit operational data for the previous quarter.
- The provisional CI may be adjusted at any time on the basis of quarterly operational data.
- At the end of the annual reporting period, the verification report and verified project data for the preceding year is submitted to ARB, and evaluated to determine the actual (operational) CI for the reporting period. Staff will work with the applicant and registry to determine the quantity of ROCs to be retired to support issuance of LCFS credit.
- If the operational CI exceeds the provisional CI, the applicant's LCFS credit balance will be adjusted.

Timing of Application & Reporting Periods

- LCFS credits are generated quarterly
  - Livestock Protocol grants offset credits in arrears after each 12 month reporting period plus the additional time required for the verification report
- LCFS reporting is based around the four quarters in a calendar year: January to March, April to June, July to September, October to December
  - Livestock Protocol allows a rolling 12 month period

QUESTIONS

- *Are there any challenges in changing the reporting, monitoring and verification period to a calendar year?*
- *Staff is seeking stakeholder feedback on how to prevent loss of credits for any period during the transition from generating Compliance Offset credits to LCFS credits.*

Allocation of Methane Emissions
to the LCFS Transportation Fuel Pathway

- To qualify for LCFS credits, RNG must be either:
  - Produced and used on-site to fuel natural gas vehicles in California,
  - Injected into a natural gas pipeline physically connected to California and used as a feedstock to produce a vehicle fuel, or
  - Provided directly to a facility that produces transportation fuel for use as a source of process energy.
- If biogas is used for both qualifying and non-qualifying end uses, then a portion of the modeled baseline methane emissions and certain project methane emissions will be allocated to the fuel pathway, in proportion to the end use, for CI determination.

QUESTIONS

- *Please review the example calculations provided and provide feedback on the suggested allocation method.*

Allocation of Methane Emissions (2)
to the LCFS Transportation Fuel Pathway

- A portion of the methane reduction quantified by the Livestock Protocol may not be converted to LCFS credit.
  - Emissions, including avoided emissions, associated with methane that is destroyed or used to produce electricity for export to the grid are not eligible for LCFS credit

QUESTIONS

- *What should happen to these remaining GHG reductions?*
- *Staff is seeking stakeholder feedback on the importance of supporting the ability to participate in both LCFS and Cap-and-Trade.*

Protocol Regulatory Compliance Requirement

- The Livestock Protocol requires that an offset project must be in compliance with all relevant federal, state, and local regulations that cover environmental and health and safety concerns that relate to the project (section 95973(b) of the Cap-and-Trade Regulation).
- Currently, no other LCFS pathways are subject to this requirement.

QUESTION

- *Staff is seeking stakeholder feedback on this Regulatory Compliance Requirement as it could relate to the LCFS pathway, and whether alignment is necessary between crediting for manure-to-biomethane and other LCFS pathways.*

Emission Factors, Fuel Properties and Global Warming Potentials

- To allow for CI determination under the LCFS:
  - Provide metered data in SCF or energy units to allow the use of CA-GREET gas properties and conversion factors
  - Provide calculated methane emissions in metric tons of the constituent gas (e.g., MT CH_4)
  - Substitute the LCFS Global Warming Potential (GWP) values from CA-GREET in place of the Cap-and-Trade Regulation's GWPs
  - CA-GREET emission factors for energy inputs
- Emissions from downstream operations (from upgrading facility to qualifying end use) use same standard assumptions, operational data and calculations from CA-GREET 2.0 for consistency with other RNG pathways (e.g., landfill gas)

QUESTIONS

- *Should staff consider allowing an estimation method for emissions from energy use in operations that are upstream of the biogas upgrading facility?*

LCA Methodology

Key Features

- Primarily rely on the Compliance Offset Protocol Livestock Projects equations for baseline and project methane emissions with some modifications

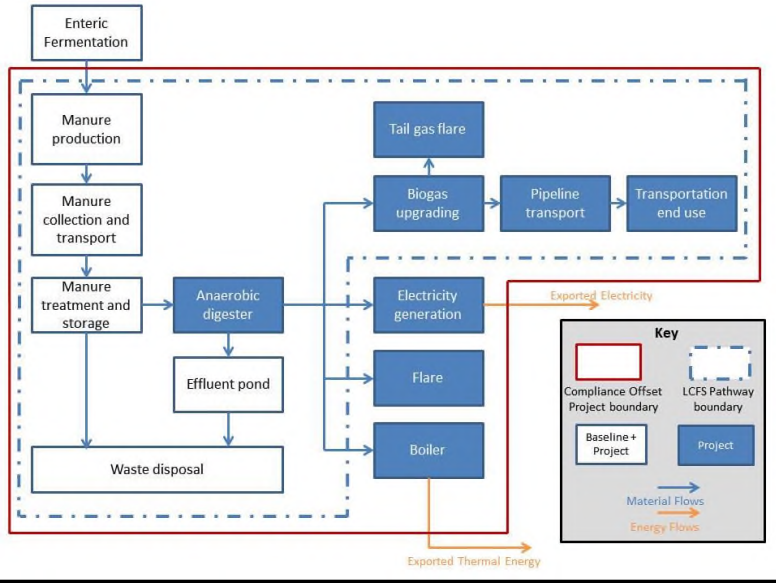
Avoided Methane Emissions = Project Methane Emissions – Baseline Methane Emissions

- This template is an example to illustrate CI calculations—staff is
  - Open to feedback
  - Continuing to review these methods
  - Collaborating with Cap-and-Trade Program staff
- Livestock manure-to-biomethane pathways are "Tier 2" – allows the model to be customized.

The draft CA-GREET template for an example Livestock Manure to Bio-CNG pathway is available for download at: http://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet2.0-dairycng.xlsm

LCA Methodology

System Boundary Illustration



THANK YOU!

Feedback should be sent to
LCFSworkshop@arb.ca.gov
by May 15, 2017

Posted information from today's working meeting can be found at
https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/lcfs_meetings.htm

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1. Fuel Pathway Evaluation
2. Reporting Requirements
3. Verification

UPDATES TO DECEMBER 2, 2016 WORKING MEETING TOPICS

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Fuel Pathway Evaluation Discussion Outline

1. Update to CA-GREET
2. Stakeholder Feedback Summary
3. Simplified CI Calculator
   - Input Value Definitions
   - Suggested Changes to CI Inputs
   - Electricity Consumption LCA Methodology
   - Transport Distances
4. Staff Responses to Feedback
5. New Feedback Requests

Update to CA-GREET

- CA-GREET 3.0 will be based on Argonne National Laboratory's GREET1 2016
- A draft version expected to be released for stakeholder review and feedback in June/July 2017
- California-specific modifications envisioned:
  - Electricity grid resource mix from e-GRID 2014
  - Tailpipe emission factors from ARB EMission FACtors (EMFAC) model 2014
  - Natural gas emission factors based on updates from ARB OGGMB branch (expected Aug 2017)
  - California refinery crude slate
  - Others as appropriate based on available data

Stakeholder Feedback Summary

- Support for a Lookup Table pathway for North American Fossil CNG similar to the one offered for grid electricity.
- Request to use a compression efficiency which closely reflects real-world value for stations.
- Requests for the Simplified CI Calculator:
  - Clearly identify all user-inputs required for a pathway application
  - List all assumptions in the input form
  - Provide details of leakage during biogas processing and pipeline transmission
  - Consider use of Flaring emission factors for landfill gas consumed during processing, not IC engine

Simplified CI Calculator (1)

- *Summary:* Staff provided a draft simplified CI Calculator for Landfill Gas pathways, suggested as a replacement for the CA-GREET Tier 1 Calculator. This iteration refines the inputs and calculations, after consulting with landfill gas upgrading facilities and receiving stakeholder feedback from the Dec 2 Working Meeting.
- *Update:* Introduced definitions for Tier 1 input values: 'site-specific' and 'standard'
  - *Site-specific:* an input value, or raw operational data used to calculate an input value, which is unique to a facility, pathway, and feedstock. All site-specific inputs must be measured, metered and verifiable (e.g., consumption of utility natural gas or grid electricity at a fuel-production facility)
  - *Standard:* an input value that would not appear in the operational data summary form. These values are intended to be the same for all applicants of a given fuel type and will not be verification points (e.g., the pipeline transmission distance for fossil natural gas; much of the background data used in CA-GREET) values.

All suggested yellow fields in the current draft calculator are site-specific and therefore would be subject to verification.

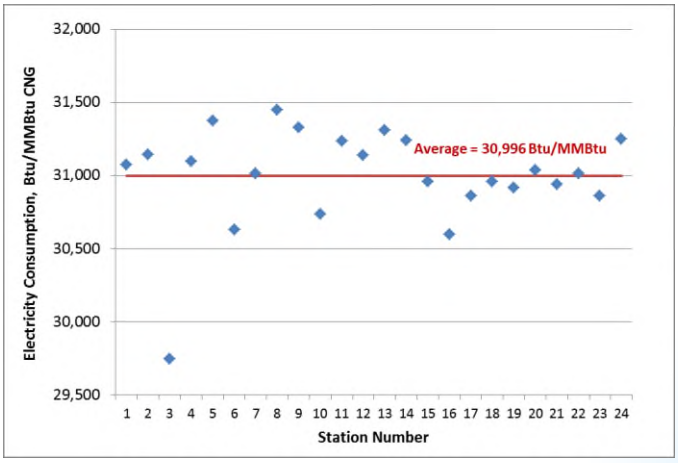
Excel sheet available at: http://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/CI_calculator-LFG-updated.xlsm

Simplified CI Calculator (2)

- *Update: Preliminary Proposal for Changes to CI inputs*
  - *Upgrading facility:*
    - Raw biogas metering: Require measurement of quantity and methane concentration of raw biogas as a check to ensure that total biomethane sales do not exceed the biogas captured.
    - All non-biogas energy use at the upgrading facility must be entered as process fuel inputs, including any non-biogas derived components added to biomethane prior to pipeline injection.
    - Biomethane sales gas entered into the form should include only the biogas-derived Btu of the pipeline-quality gas after upgrading, and prior to any blending with non-renewable fuel for injection into a pipeline. Only the energy content of renewable fuel that is injected into the pipeline will be used for CI calculation.
  - *Liquefaction facility:*
    - Total pipeline NG (including NG used as feedstock and process energy)
    - LNG produced (difference between the two considered to be process energy)
    - Electricity used (by e-grid region), other fossil and renewable inputs.
  - *Fueling Facilities:* Standardizing fueling facility parameters for all NG pathways—whether from fossil or renewable sources, and whether dispensed as CNG, LNG, or L-CNG.

Simplified CI Calculator (3)

- *Update: Preliminary Proposal for Changes to inputs*
  - *Standardize Electricity Consumption at all CNG Fueling Facilities*



Simplified CI Calculator (4)

- *Update: Preliminary Proposal for Changes to inputs*
  - *Pipeline transmission and Truck transport distances:*

Pathway	Processing facility TO CA CNG fueling station via pipeline	Processing facility TO liquefaction facility via pipeline	Liquefaction facility TO LNG fueling via truck
NG to CNG	Standard (1000 mi)	N/A	N/A
RNG to CNG	From the specific processing facility location to a common endpoint in California	N/A	N/A
NG to LNG	N/A	Standard (1000 mi)	Weighted average distance from the specific liquefaction facility to each fueling facility
RNG to LNG	N/A	From the specific processing facility location to the specific liquefaction facility	Weighted average distance from the specific liquefaction facility to each fueling facility

Staff Responses to Feedback

- Staff suggests including Lookup Table pathway for North American Fossil CNG
- Staff suggests using average compression efficiency which closely reflects real-world value for stations
- Staff suggestions for the Simplified CI Calculator:
  - All user-inputs detailed in the calculator
  - All assumptions specified in the calculator
  - Leakage during biogas processing and pipeline transmission included from CA-GREET 2.0. Will be updated in August 2017 together with factors from CA-GREET 3.0
  - New approach would not use raw biogas in CI calculation. Also, no credit/debit considered for biogas flared

New Feedback Requests

QUESTIONS:

- Please review site-specific inputs and provide feedback on appropriateness for the Tier 1 Simplified CI Calculator for Landfill Gas pathways.
- Do stakeholders agree with current approach on CI calculation (no flaring credit or debit)?
- Please review required operational data inputs – do invoices or metering points align with your facility records?
- Please review pipeline transmission distance for fossil NG and centroid concept for renewable natural gas and provide feedback.
- Stakeholder feedback solicited for all inputs and CI calculation methodology.
- Please review approach detailed for Lookup Table pathway for North American Fossil CNG and provide feedback.
- Should biogas used for electricity production at upgrading facility be a required input?
- As part of CA-GREET 3.0 update, staff is reviewing available data/studies for fugitives at dispensing stations. Is there other data or research we should consider related to this effort?
- Suggestions for how ARB might further simplify the application process?

Reporting Requirements Discussion Outline

1. Stakeholder Feedback Summary
2. Renewable Attribute Reporting Requirements
3. Fuel Application Type
4. Fueling Facility Registration Update

Stakeholder Feedback Summary

- Support for changing the units to therms at HHV in the LRT for credit generation
- Support for the use of the natural gas utility meter number as well as the permanent address as the basis for a unique LCFS identifier for each CNG fueling facility
- Support for a framework of 3rd party aggregators/designees
- Should not limit the carryover of renewable attributes to one month of biomethane injected into the common carrier pipeline.

Tracking the Renewable Attributes of RNG

- *Staff Thinking:* Renewable attributes associated with biomethane injected into the common carrier pipeline in a given quarter could only be carried over to the following quarter to be reported as dispensed as bio-CNG, bio-LNG, or bio- L-CNG.
- *Rationale:* To mitigate the risk of double counting biomethane renewable attributes.

QUESTION:

- Are there any concerns with the two quarter time period for energy balancing of renewable attributes?

Reporting of Fuel Application

- *Issue:* How to determine and document the type of vehicle application (LD/MD vs HD) for reporting?
- *Rationale:* To reduce potential errors and inconsistencies in reporting vehicle application and improve the accuracy of credit calculations.

QUESTIONS:

- Should we use a volumetric threshold based on fueling transactions to determine the vehicle application? If so, what should the threshold be? 15 GGE or 30 GGE?
- What other documentation is available to substantiate the type of vehicle application? For example, could the ARB Executive Order for engine emission certification be acceptable? Other documents?

FSE Registration Update

- Fuel Supply Equipment (FSE) registration module released in Q1 2017 in LRT-CBTS:
  - Upload FSE registration data by March 30th
  - A batch review of all applications and approval by ARB staff
  - Upload of the quarterly fuel data using a new ARB assigned FSE IDs.
    - An updated template for quarterly upload to the LRT-CBTS reporting of the fuel dispensed at individual FSEs
- If there are any post-registration changes (e.g., FSE removed, replaced or added), the FSE registration should be updated in the LRT-CBTS prior to quarterly reporting.

Verification Discussion Outline

1. Stakeholder Feedback Summary
2. Entities Responsible for Verification
3. Monitoring Plan
4. Harmonization with U.S. EPA RFS Voluntary QAP Program
   - Considerations for Biomethane Upgrading Facility and Supply Chain
   - Considerations for ARB Accreditation
5. Additional Considerations to Assure Renewable Attributes are not Double Counted
6. Verification Scope for Retail Fueling Facilities (RNG and NG)
7. Verification Scope for Liquefaction Facilities (RNG and NG)

VERIFICATION

Stakeholder Feedback Summary

- Landfill/Upgrading Facilities
  - Hire QAP provider who can include LCFS requirements
  - Verification schedule should coincide with QAP schedule
  - Leverage existing QAP biannual site visits and quarterly review of monthly transactions data
- Liquefaction Facilities
  - Site visit as part of onboarding process during CI validation
- Fueling Facilities
  - Should not be subject to on-site verification except under special circumstances or random sampling using portfolio approach
- Existing QAP audits review chain of custody and renewable attributes accounting (contracts and notarized affidavits similar to existing requirements in LCFS regulation)

VERIFICATION

Entities Responsible for Verifications (RNG and NG)

VERIFICATION

Preliminary Proposal:

- The credit-generating party would be responsible for both reporting in the LRT-CBTS and verification
- For credits to remain valid, reporting parties would be responsible for ensuring LCFS requirements are met along the supply chain, including annual CI and transaction verifications
- For flexibility, each entity in the supply chain could hire their own verification body.

QUESTION:

- Should the reporting party's verifier be required to accept verification results from upstream entities?

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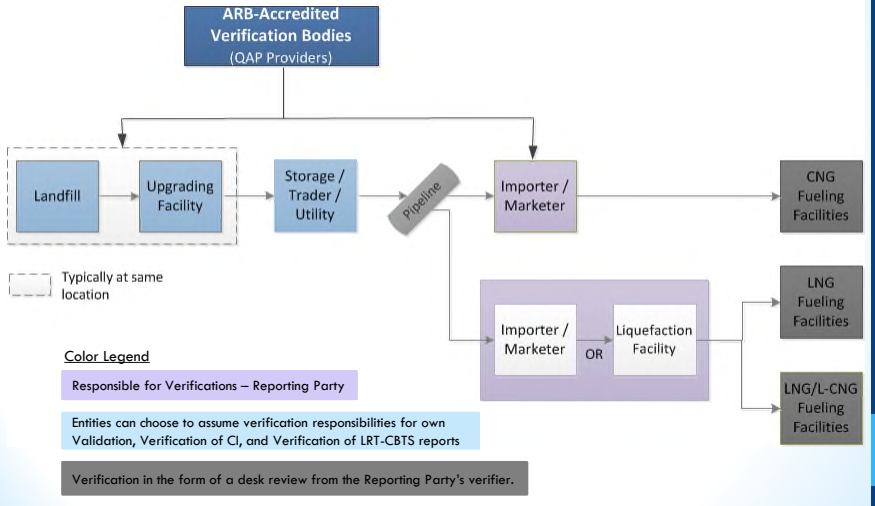
Entities Responsible for Verifications (Ex. Landfill RNG)

VERIFICATION



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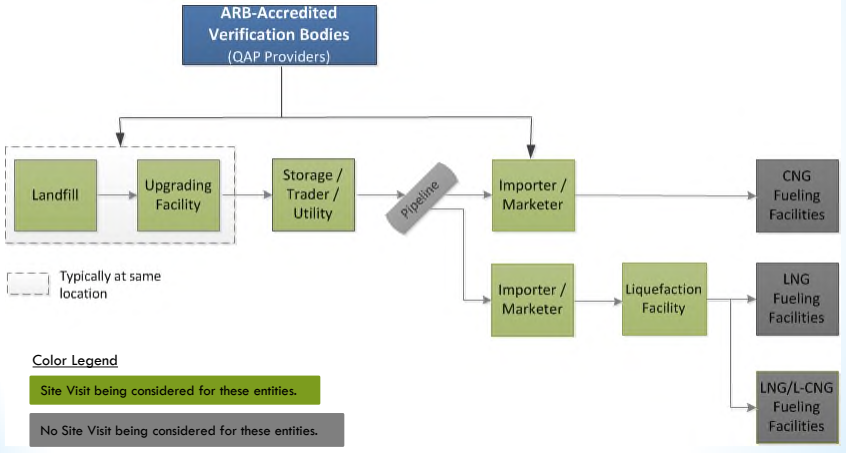
Entities that May Require a Site Visit (Ex. Landfill RNG)



VERIFICATION

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Monitoring Plans

Preliminary Proposal:

- Require all entities undergoing a verification to develop and maintain a monitoring plan to serve as a roadmap to demonstrate how each entity along the supply chain would monitor reported fuel quantities and operations that affect certified CI values
- Entity responsible for verification would contract with entities along the supply chain to attest they are maintaining monitoring plans
- The monitoring plan would initially be submitted with fuel pathway application
- Changes to practices and procedures should be reflected in monitoring plan updates and made available upon request by third-party verifier or ARB
- The monitoring plan would aid in understanding how an entity intends to maintain conformance with LCFS CI and reporting requirements
- Intended to aid in audit planning by the third-party verifier and ARB
- Errors in the plan itself would not be subject to enforcement, nor result in an adverse verification statement by the verification body
- The entity's actual practices (not the monitoring plan) would be evaluated relative to LCFS regulatory requirements and result in the final verification statement, whether positive or adverse

VERIFICATION

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Harmonization with Voluntary QAP Program – Upgrading Facility

Preliminary Proposal:

- Harmonize with Existing QAP Program Requirements:
  - Align site visit frequency (two per year) to confirm landfill biogas and biomethane quantities and concentrations
  - Determine if there is any mixing of propane or fossil natural gas to achieve biomethane pipeline standards
  - Quarterly desk review to confirm biomethane quantities and energy balance from pipeline injection through intermediaries to fueling facilities
- Include LCFS-Specific Requirements:
  - Annual review of prior year site-specific input data to Simplified CI Calculator

VERIFICATION

Harmonization with Voluntary QAP Program – Supply Chain

Preliminary Proposal:

- Align LCFS with existing QAP Program Requirements:
  - Upgrader's auditor performs quarterly desk review of contracts and notarized affidavits[1] to
    - Establish Chain of Custody from upgrader to fueling facilities, and
    - Mitigate risk of double counting renewable attributes along supply chain
- LCFS requires attestations along supply chain—section 95488(e)(2)

QUESTION:

- To strengthen assurance of no double-counting, should the reporting entity be required to maintain agreements with all entities in renewable attribute chain-of-custody for access by ARB and the verifier?

VERIFICATION

Unique LCFS Requirements

Preliminary Proposal:

- CI validation and verification (site-specific CI input values)
  - Landfill biogas upgrading facilities
  - Liquefaction facilities
- Fueling facility data for LRT-CBTS report verification
  - CNG/LNG/L-CNG fueling quantities for individual facilities
  - Fossil and renewable natural gas allocations to total dispensed fuel at each facility
  - Vehicle application type

Stakeholder Feedback Requests

QUESTIONS:

- Are annual verification site visits to the LCFS reporting party necessary to review supporting records for reported fuel quantities, unredacted contracts, and data management practices? [Note this would be additional to current QAP practices.]
- Are there scenarios when the LCFS reporting party has contracts that link back to more than one biomethane upgrading facility/landfill where the reporting party would prefer their own verification (instead of verification by the upgrader's verifier)?

ARB Accreditation Considerations

- Considering accrediting current biogas QAP providers for RNG/NG verifications.
  - Recognize existing fuel-specific expertise and facilitates continuity of audit services.
- Staff is considering the following conditions be met for ARB accreditation:
  - ARB staff review and approval of general and fuel-specific audit plans to ensure auditor's understanding of LCFS regulation and consistency
  - ARB staff annual performance review—select a subset of client-specific audit plans as part of oversight (aligns with MRR)

QUESTIONS:

- Should ARB require potential verification bodies submit general and fuel-specific audit plans for ARB review and approval as part of the accreditation process?

VERIFICATION

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Accounting of Renewable Attributes

- *Issue:* Double counting of renewable attributes
- *Staff Thinking:* To strengthen renewable attributes accounting by either:
  - Improving transparency by combining LCFS published information with information in the U.S. EPA's Landfill Methane Outreach Program (LMOP) or
  - Requiring the energy balance approach to audit individual entities along the supply chain, as accepted under EU RED (e.g., ISCC EU System Documents)
- *Rationale:* Need to ensure renewable attributes from biomethane injected into commercial pipelines are not double counted.

QUESTION:

- Are there additional requirements that should be considered to assure no double counting of renewable attributes?

VERIFICATION

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Improving Transparency of Renewable Attributes – Stakeholder Feedback Requests

QUESTIONS:

- Should biogas source information be published more prominently by ARB to facilitate internet searches by parties interested in whether renewable attribute claims exist for these landfills?
- Would detection of double claims by other parties be facilitated by publishing the quantity of landfill biomethane (MMBtu) consumed as transportation fuel in California from each landfill per year?
- In addition, would detection of double claims by other parties be facilitated by including U.S. EPA's published LMOP landfill and energy project data for a sense of total production from the landfill?
- Should ARB require landfills and energy projects applying for fuel pathways to provide data in the voluntary LMOP database?

VERIFICATION

Verification Scope for Information from Fueling Facilities

Preliminary Proposal:

- Staff does not consider verifier site visits to retail fueling facilities necessary for review of:
  - CNG-only Fueling Stations
    - Utility Statements to determine total dispensed quantities of CNG and cross-check reporting of sum of fossil and bio-CNG quantities per station
    - ARB documentation to support vehicle application type
  - LNG and L-CNG Fueling Stations
    - Dispensing records with DGE and GGE breakdown to determine total dispensed quantities of LNG and L-CNG per station
    - Bills of Lading, Invoices and Receipts to cross-check reporting of sum of fossil and bio-LNG and L-CNG quantities per station and establish transportation of LNG
    - ARB documentation to support vehicle application type
- Objective evidence at the reporting party's location of central data management is expected to be available for verifier review

VERIFICATION

Verification Scope for Liquefaction Facilities

- *Issue:* *Need to define verification scope for liquefaction facilities*
- *Staff Thinking:* Considering site visits for review of:
  - CA-GREET User-Defined Inputs – Initial CI Validation and Annual Verification of CI
    - Invoices and BOL to support LNG production quantities and final use
    - Contracts and Affidavits to support entities along the supply chain
    - Facility-wide energy balance to support production efficiency and quantities
  - If also a Reporting Party, LRT-CBTS reports – Annual verification of LRT-CBTS reports
    - Contracts, Invoices, and Affidavits to support reported quarterly production and use
- *Rationale:* To ensure accurate accounting of total LNG production and use.

VERIFICATION

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Stakeholder Feedback Request

QUESTIONS:

- Do stakeholders have concerns regarding precluding site visits to retail fueling facilities, since relevant records can be reviewed at a location of central data management?
- Should annual verification of liquefaction facility CI and LNG volumes include a site visit each year? Why or why not?
- Would liquefaction facility owners want to take responsibility for part or all of the verification of bio-LNG and bio-L-CNG supply chains (instead of the upgrader as under QAP)?

VERIFICATION

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THANK YOU!

Feedback should be sent to

LCFSworkshop@arb.ca.gov

by May 15th, 2017