2018 Amendments to the Low Carbon Fuel Standard

WASTEWATER AND SOLID WASTE SECTORS
CALIFORNIA ASSOCIATION OF SANITATION AGENCIES
JULY 11, 2018
SACRAMENTO, CALIFORNIA
LCFS Targets – Proposing a 20% Carbon Intensity Reduction by 2030

* Negative CIs have been achieved for some fuel pathways but are not shown.
** The average percent CI reduction for electricity shown represents Light-Duty Electric Vehicle charging.
LCFS Supports Implementation of State’s Methane and Organics Diversion Goals

- Short Lived Climate Pollutant Reduction Strategy (SLCP)
- SB 1383 (Lara, Chapter 395, Statutes of 2016)
  - Organic Wastes Diversion Targets for Landfills to Reduce SLCP
  - 75 Percent Reduction in Statewide Disposal of Organic Wastes by 2025
  - 2020 and 2025 Reduction Targets Take Effect in 2022
- Commercial Organics Diversions Goals (AB 1826) (Chesbro, Chapter 727, Statutes of 2014)
  - Local Jurisdictions must Implement an Organic Waste Recycling Program
  - 50 Percent Reduction in Statewide Disposal of Organic Wastes by 2020
LCFS Credit Value for Biomethane

<table>
<thead>
<tr>
<th>CNG from biomethane (CI = 35 g/MJ)</th>
<th>Hydrogen from biomethane (CI = 100 g/MJ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(per MMBtu)*</td>
<td>(per kg)*</td>
</tr>
<tr>
<td><strong>Compliance Year 2019</strong></td>
<td><strong>Credit Price</strong></td>
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<tr>
<td></td>
<td><strong>Credit Price</strong></td>
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<tr>
<td></td>
<td><strong>$50/MT</strong></td>
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<tr>
<td>Credit Value</td>
<td><strong>$100/MT</strong></td>
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<tr>
<td>$2.63</td>
<td><strong>$150/MT</strong></td>
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<tr>
<td>$5.25</td>
<td><strong>$200/MT</strong></td>
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<tr>
<td>$7.88</td>
<td><strong>Credit Price</strong></td>
</tr>
<tr>
<td><strong>Credit Value</strong></td>
<td><strong>$50/MT</strong></td>
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<tr>
<td>$0.80</td>
<td><strong>$100/MT</strong></td>
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<tr>
<td>$1.60</td>
<td><strong>$150/MT</strong></td>
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<tr>
<td>$2.40</td>
<td><strong>$200/MT</strong></td>
</tr>
<tr>
<td>$3.20</td>
<td><strong>Credit Price</strong></td>
</tr>
</tbody>
</table>

* Reference Fuel is Diesel, EER = 0.90

* Reference Fuel is Gasoline, EER = 2.50

Note: These are illustrative examples. Actual values depend on certified CI and LCFS credit price. Download the LCFS Credit Value calculator at: https://www.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm
Key Objectives of the 2018 Rulemaking

- Strengthen Targets through 2030
- Credit Alternative Jet Fuels
- Encourage ZEV Infrastructure Using Low-CI Electricity
- Promote Innovation in Conventional Fuel Supply Chains
- Carbon Capture and Sequestration
- Third-Party Verification
- Technical Updates and Process Improvements
- Streamline Pathway Certification Process

Rulemaking Page: https://www.arb.ca.gov/regact/2018/lcfs18/lcfs18.htm
Regulation Updates

- Book-and-claim provisions for biomethane and electricity
  - Clarifies accounting for pipeline-injected biomethane
  - Provides flexibility to facilitate use of renewables (including biomethane) in the production of electricity and hydrogen

- Transfer period
  - Limits the period of time that fuels can be transferred with environmental attributes or LCFS credits/deficits attached to three quarters

- Crediting period for pathways involving avoided methane
  - Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal

- Credit the use of biogas/biomethane in innovative crude and refinery projects
Updates to Low Carbon Fuel Pathways

- New Simplified CI Calculators for Biomethane from Anaerobic Digestion
  - Dairy and Swine Manure
  - Wastewater Sludge
  - Food, Green, and Other Organic Waste
- Added/updated Lookup Table pathways
- Added/updated Temporary CIs for biomethane pathways

Review the proposed CA-GREET Models and CI Calculators: https://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet.htm
QUESTIONS?

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