ASCENT 2022 Fall Meeting

October 25

Civil Aviation, Environmental Protection and Standards

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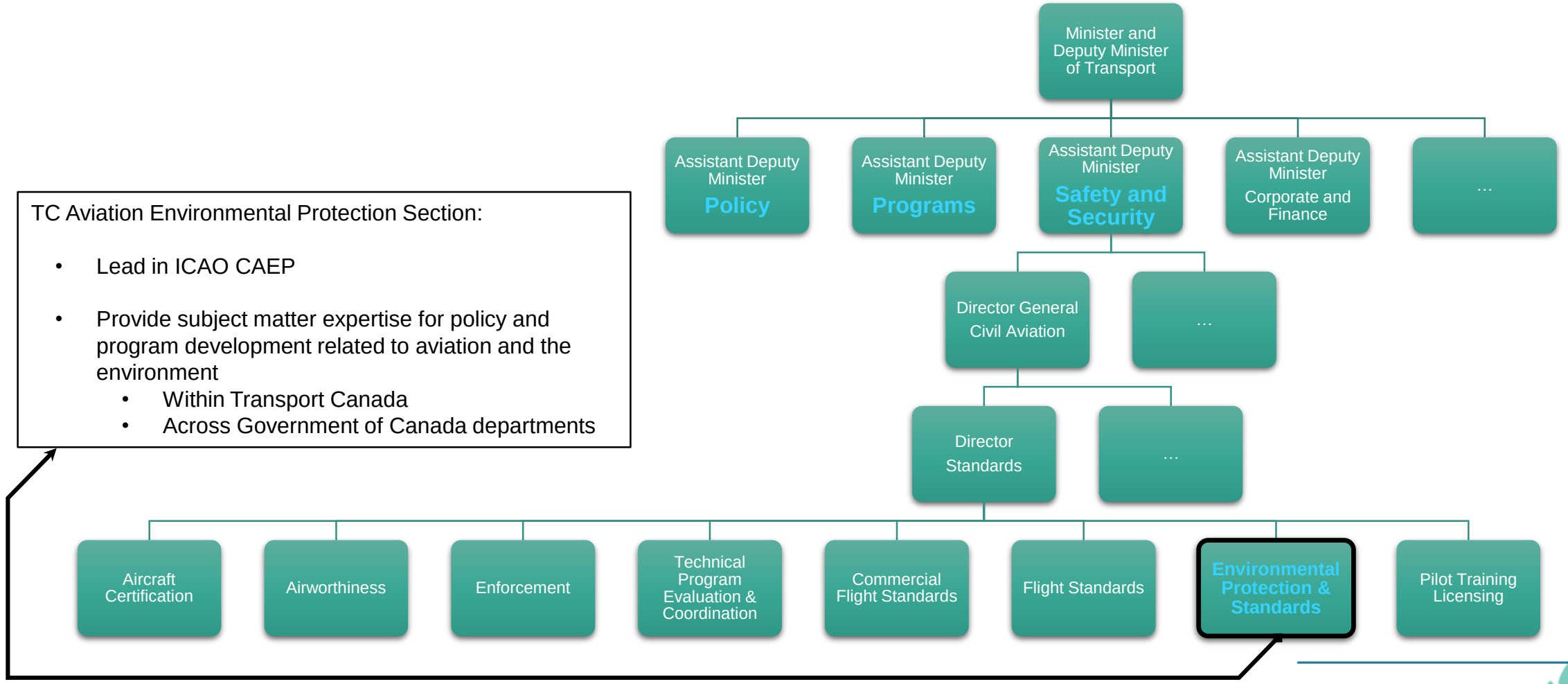
Transport Canada

TC Aviation Environmental Protection Section:

- Lead in ICAO CAEP
- Provide subject matter expertise for policy and program development related to aviation and the environment
  - Within Transport Canada
  - Across Government of Canada departments

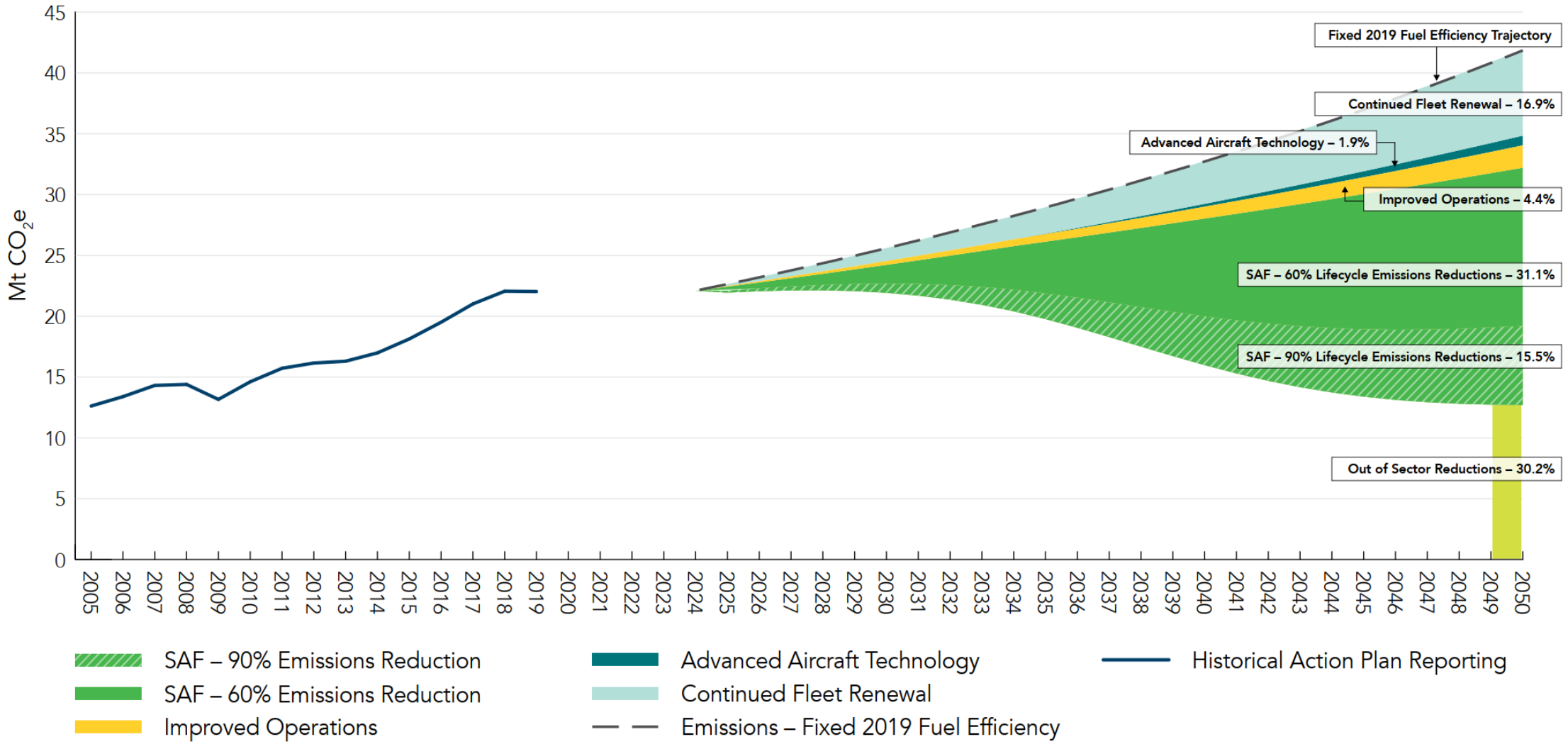


Background

- Signed in September 2022
- Government / industry initiative building on previous Action Plan
- Whole of government approach
- Aligns with commitments within Canada's Emission Reduction Plan
- Highlights key decarbonization pathways and near-term measures
- 2050 vision: Net-zero aircraft emissions
- 2030 aspirational goal: 10 percent SAF use

https://tc.canada.ca/en/corporate-services/policies/canada-s-aviation-climate-action-plan

THE PATHWAYS TO ACHIEVE NET-ZERO BY 2050



Combination of measures is needed – <u>no silver bullet</u>

SAF as a Key Pathway to 2050

SAF is a key alternative to the use of jet fuel that can allow the sector to significantly reduce emissions (life cycle basis) by 2050.

- Aspirational goal of 10% SAF use in Canada by 2030 is a signal – GoC's recognition of SAF's importance towards net zero by 2050

Airports will have a significant role to play in support of the deployment of SAF

- **Opportunity:** lifecycle emissions reduction of up to 90%; economic opportunity associated with domestic production; Canada rich in feedstocks; Canadian airports to serve as low-carbon fuel hubs
- **Challenge:** 2-5 times more expensive than jet fuel, and very limited production globally (essentially zero in Canada); competition with other low-carbon fuels (e.g., renewable diesel)

SAF Planned Actions include:

- Government of Canada's continued collaboration on Canadian SAF roadmap;
- Engage with Canadian Federal Departments to explore existing and new federal measures to create a policy and investment environment that enable and accelerate SAF in Canada

Clean Fuel Regulations (CFR)

The Canadian Clean Fuel Regulations (CFR) went into force on June 21, 2022.

The CFR builds on the success of the *Renewable Fuels Regulations* (5% ethanol and 2% biodiesel)

The CFR is part of Canada's Climate Plan and estimated to deliver 27 Mtonnes of GHG emissions reduction annually by 2030. The CFR:

- incorporates the RFR requirements;
- provides incentives for low carbon fuels and technologies; and
- uses a market-based approach to mitigate costs vs prescriptive regulations.

The CFR is comprised of two main elements:

(1) Reductions in carbon intensity (CI) of liquid fossil fuels produced/imported into Canada

(2) Creation of a credit market (1 CR = 1 tonne CO_2e lifecycle emission reduction)

References

Regulation text: HTML or PDF (SORS/DORS/2022-140, begins in p5)

Compliance: Reporting, Verification, Certification, Fuel LCA Model, Quantification Methods, Credit and Tracking System, etc.

Training Material, Q&A Sessions: Google Drive

CFR information contact : cfsncp@ec.gc.ca

Clean Fuel Regulations (CFR) – CI Requirements

1) The CFR requires the CI of gasoline and diesel to be reduced (produced, sold, used in Canada).

These requirements are to be met by producers and importers of gasoline and diesel:

- 2016 CI baseline: 95 gCO_2e/MJ gasoline, 93 gCO_2e/MJ diesel
- By 2023: 3.5 gCO_2e/MJ reduction vs 2016 CI level
- By 2030: 14 gCO_2e/MJ reduction vs 2016 CI level
- CI limits come into force on July 1, 2023

TABLE: Fuel CI Limits for Each Compliance Period (gCO_2e/MJ)

Liquid Fossil Fuel	2023	2024	2025	2026	2027	2028	2029	2030 and after
Gasoline	91.5	90	88.5	87	85.5	84	82.5	81
Diesel	89.5	88	86.5	85	83.5	82	80.5	79

Clean Fuel Regulations (CFR) – Credit Sources

2) The CFR establishes a credit market where annual CI reduction could be met via three compliance categories (CC):

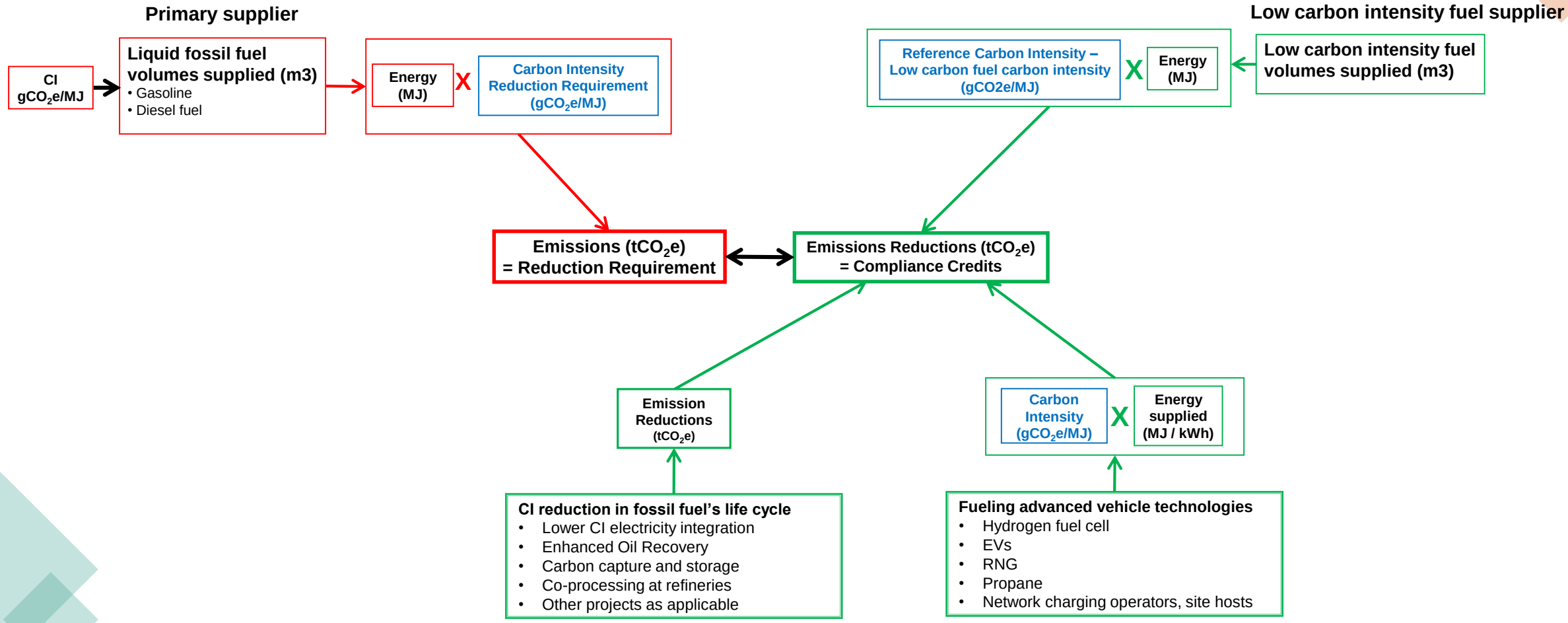
- CC1: actions that reduce the CI of fossil fuel throughout its life cycle (e.g., CCS)
- CC2: supplying low CI fuels (e.g., HDRD, SAF)
- CC3: advanced vehicle technologies, end-use fuel switching in transportation (e.g., gasoline to electricity LDV retrofit, fuel cell vehicles, RNG/propane)

CC2:

- July 2022 - Credit creation can begin upon registration of primary supplier
- Low CI fuel must not exceed 90% of the reference CI in Schedule 1:

2022	2023	2024	2025	2026	2027	2028	2029	2030 and following years
89.2	89.2	87.9	86.6	85.3	84.0	82.7	81.4	80.1

Clean Fuel Regulations (CFR) – Credit Market



Clean Fuel Regulations (CFR) – Fuel LCA Model

Fuel LCA Model was developed for the CFR (latest version 2022 July 6)

Based on OpenLCA software (free software: openLCA.org)

Fuel LCA Model Database contains a library of inputs and fuel pathways used in fuel LCA

Credit creators (fuel suppliers, importers, CI contributors) can use the Fuel LCA Model to calculate credits

Pre-approved/default CIs can be used (conservative, limited time)
3rd party verification required after July 1, 2024

References

Main Webpage: Fuel LCA Model

LCA Model Database, Methodology, Manual

Training Material, Q&A Sessions: Google Drive

Fuel LCA Model Contact : modeleacvcarburant-fuellcamodel@ec.gc.ca.

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