



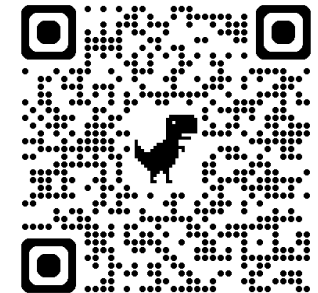
## The State of EPDs and Low Carbon Construction Initiative in MN and the US

Emil Bautista, MnDOT

Abbey Bryduck, MAPA

## 216H.02 Greenhouse Gas Emissions Control: 2019 Legislation and amended in 2023

- Reduce statewide greenhouse gas emissions across all sectors to a level at least:
  - 30% below 2005 levels by 2025, 50% below 2005 levels by 2030 and “net zero” by 2050
- For the purposes of the subdivision, "**net zero**" means:
  1. Statewide greenhouse gas emissions **equal to zero**; or
  2. When annual anthropogenic emissions of greenhouse gases to the atmosphere are **balanced by removals** over a **specific period**.



# Greenhouse Gas Emissions Reduction

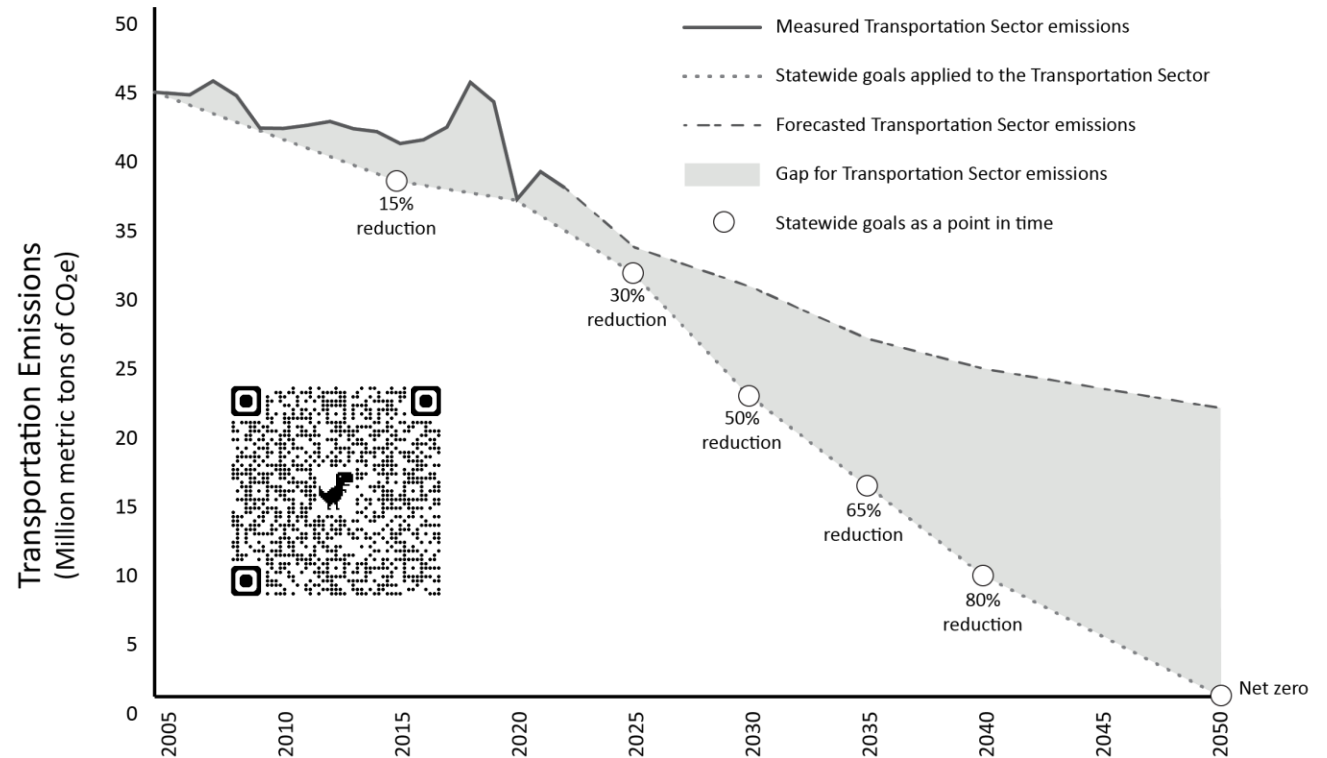
## 216H.02 Greenhouse Gas Emissions

**Control:** updates to state statute in 2023 and 2024 to reduce greenhouse gas (GHG) emissions

- Requires the Commissioner of Transportation to **set emission reduction targets** specifically for the **transportation sector** in Statute 174.01 subd. 3.



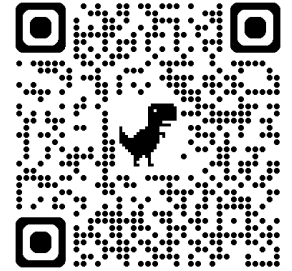
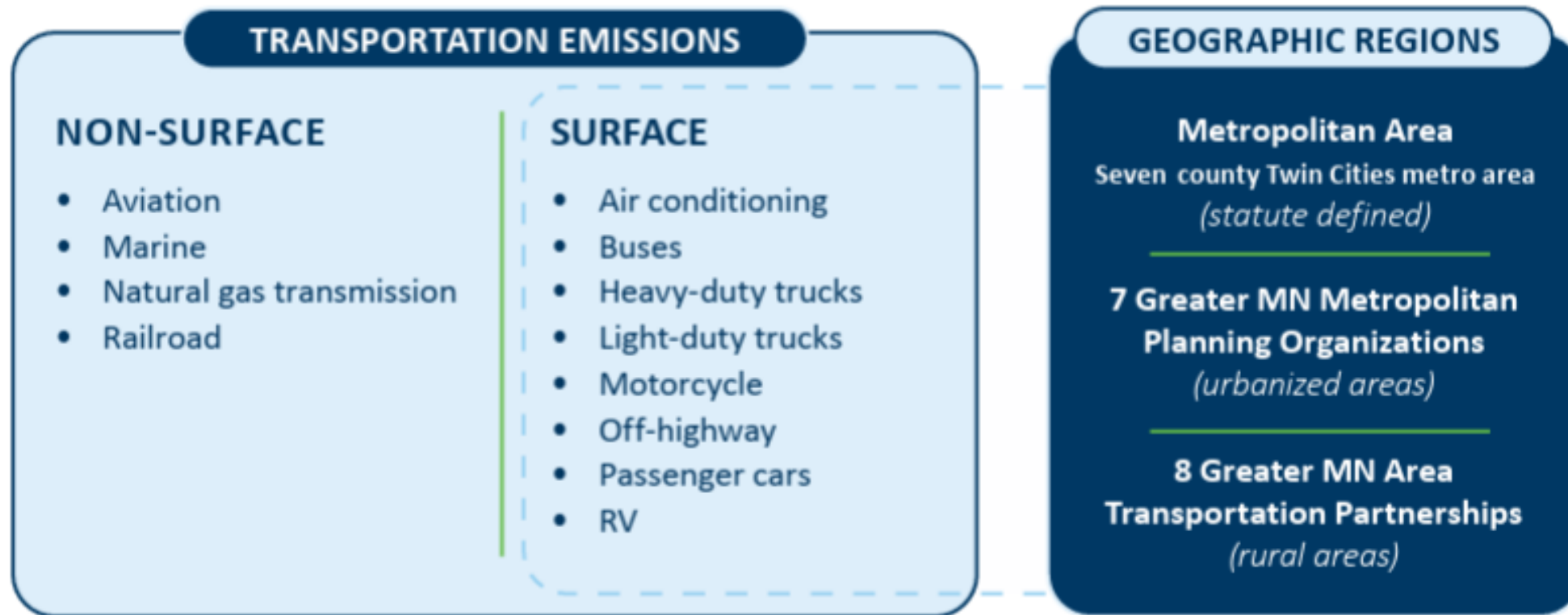
## Transportation Emissions (MMT of CO<sub>2</sub>e)



**Note:** The 'zero' at the right-hand side of the graph represents a net value of zero GHG emissions from the transportation sector. This means that the GHG emissions created by the transportation sector are 100% offset by mitigation efforts.

# Transportation GHG Emissions Legislation ([216H.02](#))

- Reaching Minnesota's emissions goal → [Statewide Multimodal Transportation Plan](#)



## 16B.312 Construction Materials; Environmental Analysis: 2023 legislation

- **Environmental Standards Procurement (ESP) Tasks Force** → October 1, 2023
  - Provide recommendations to the Commissioner
- **Based on ESP Task Force recommendations:**
  - The Commissioner must **establish and publish a maximum acceptable global warming potential by January 15, 2028** → [Subd. 2](#)
  - **Eligible Materials:** carbon steel rebar, structural steel, concrete; or asphalt paving mixtures
  - **Eligible Projects:** new construction or reconstruction of two or more lane-miles of a trunk highway.



# ESP Task Force



[Home](#) > [Government Services](#) > [Purchasing and Contracting](#) > [Environmental Standards Procurement Task Force](#)

- Government Services**
- Buildings and Parking
- Collaboration and Dispute Resolution
- Construction Projects
- Data and Info
- Disability Services
- Enterprise Real Property
- Enterprise Translations
- Grants
- Historic Preservation
- Mail Services
- Public Events
- Purchasing and Contracting
- Real Estate

## Environmental Standards Procurement Task Force

The Minnesota Department of Administration and the Department of Transportation are charged with overseeing the Environmental Standards Procurement Task Force which was established under Minnesota Laws 2023, [Chapter 60](#) and [Chapter 62](#) "to examine the implementation of a program requiring vendors of certain construction materials purchased by the state to:

1. submit environmental product declarations that assess the material production life cycle environmental impacts of the materials to state officials as part of the procurement process; and
2. meet standards established by the commissioner of administration that limit greenhouse gas emissions impacts of the materials."



Upcoming   Past   Members   Stakeholders   EPD Grants   Reports   News   Resources   Updates

### Upcoming Meetings

Upcoming meetings to be announced



## Environmental Standards Procurement Task Force Legislative Report

December 1, 2025



A report prepared for the  
Minnesota Legislature by  
The University of Minnesota's  
Center for Sustainable Building Research,  
Minnesota Department of Administration,  
Minnesota Department of Transportation, and the  
Environmental Standards Procurement Task Force

- **Prepared by:** University of Minnesota, Center for Sustainable Building Research
  - Richard Graves
  - Natalie Georgieff
- **Evaluate use of EPDs** to support GWP limits on construction materials in Minnesota state projects.



## Environmental Standards Procurement Task Force Legislative Report

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- **Develop recommendations** for implementing a Buy Clean program **focused on embodied carbon reduction and material transparency.**
  - Applies to “like-for-like” comparisons (e.g., asphalt vs. asphalt).
  - Focuses on **A1–A3** life cycle stages using **third-party verified EPDs.**
- **Support future integration with full life cycle assessments and operational carbon.**
- Covers materials like **concrete, asphalt, steel, rebar, lumber, glass, insulation, aluminum, and more.**

# Procurement Process [\(Subd. 3\)](#)

- Dept. of Admin and **Dept. of Transportation** must **review recommendations** from the Environmental Standards Procurement **Task Force** ([Subd. 5\(c\)](#))
- **Establish bidding processes that incorporate maximum allowable global warming potential (GWP) for eligible materials**
- Must align with effective dates in [Subd. 2](#) → no later than **January 15, 2028.**
- Include **preference in bidding for materials** mined, made, or assembled in Minnesota

# ESP Task Force Recommendations

- Define how to **incorporate** maximum global warming potential (**GWP**) **limits into project bids**
- Recommend **incentives** for using materials with **GWP below** the established maximum
- Outline **how bidders report** Environmental Product Declarations (EPDs) to the commissioner
- Develop **criteria for waiving GWP limits** due to supply issues, geography, or financial hardship
- Propose **grants** to help Minnesota-based producers obtain or generate EPDs
- Advise on using **industry averages** or **alternative methods** to set GWP thresholds
- Additional Implementation Needs

## 1. Summary of Federal and Other Programs

## 2. Focus Materials

- Asphalt
- Concrete
- Steel (including Structural Steel & Carbon Steel Rebar)
- Other Materials

## 3. Program Mechanics

# Buy Clean Programs Across U.S. States

## California Buy Clean (BCCA)

- Implemented in 2019
- Requires EPDs to demonstrate compliance with GWP limits for steel, rebar, flat glass, insulation.
- 2024 revision (SB1207) expanded scope to all insulation products.
- Varies by agency (DGS, CADOT/Calgreen, UC, DWR, CSU, etc.).

## Colorado Buy Clean (OSA)

- Implemented 2022
- Requires EPDs for asphalt, concrete, glass, steel, wood structural elements.
- GWP limits set by OSA (vertical construction) and CDOT (horizontal construction).
- Buildings  $\geq$  \$500,000 project cost
- Infrastructure  $\geq$  \$3,000,000 material costs

# Buy Clean Programs Across U.S. States

## Maryland Buy Clean (SB 424)

- Implemented in 2023
- Requires EPDs for cement/concrete mixtures.
- GWP limits to be established by 2026.
- Includes EPD Assistance Fund (grants for producers).
- State-funded projects  $\geq 7,500$  SF
- Community college projects  $\geq 7,500$  SF
- K-12 schools

## New Jersey (Assembly Bill 2234)

- Adopted 2022, Implemented 2024
- Provides tax credits for low-carbon concrete and EPD development.
- Credits up to 8% of contract value, capped at \$10M/year.
- Concrete  $\geq 50$  cubic yards
- Producers of concrete, cement, or aggregate eligible for EPD tax credits

# Buy Clean Programs Across U.S. States

## New York Buy Clean (Concrete Guidelines)

- Enacted Dec. 2021, Effective June 2022
- Focuses on low-carbon concrete procurement.
- Initial GWP limits set in 2025, revised in 2027.
- State building contracts > \$1,000,000 with concrete > 50 yd<sup>3</sup>
- NYS DOT contracts > \$3,000,000 with concrete > 200 yd<sup>3</sup>

## New York (Executive Order 22)

- Implemented on Sept. 20, 2022
- Requires reporting of embodied carbon using EC3 or similar databases.
- Annual reporting starting Aug 31, 2024.
- Buildings > \$1,000,000 with thresholds for concrete, asphalt, rebar, steel, glass.
- Transportation projects with material quantity thresholds.

# Buy Clean Programs Across U.S. States

## Port Authority of NY & NJ

- 2020 (EPDs); 2023 (GWP limits for concrete)
- Requires EPD reporting for concrete, steel, asphalt.
- Low-carbon concrete specifications mandated in 2023.
- All port projects must submit EPDs.
- All concrete mixes must meet GWP limits.

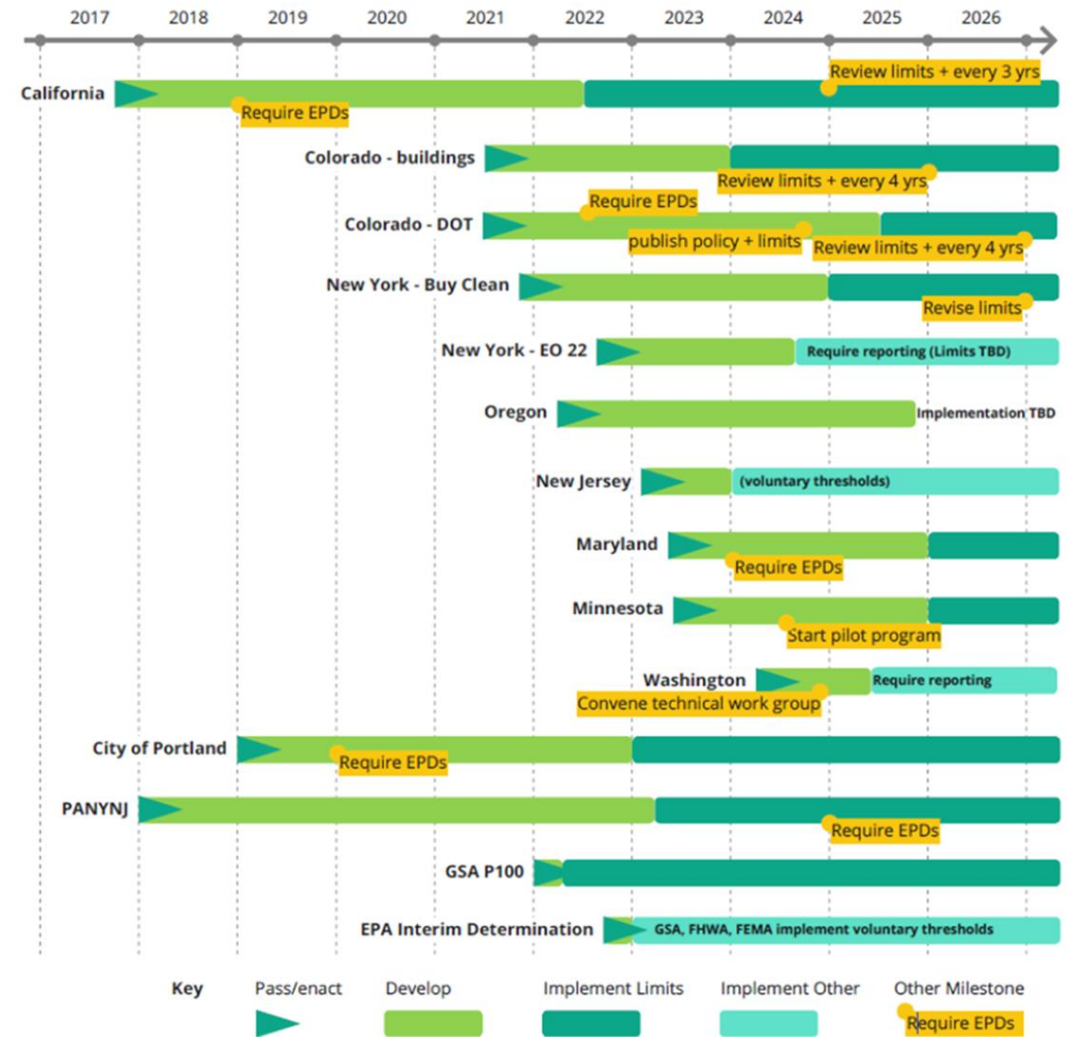
## Oregon (HB4139)

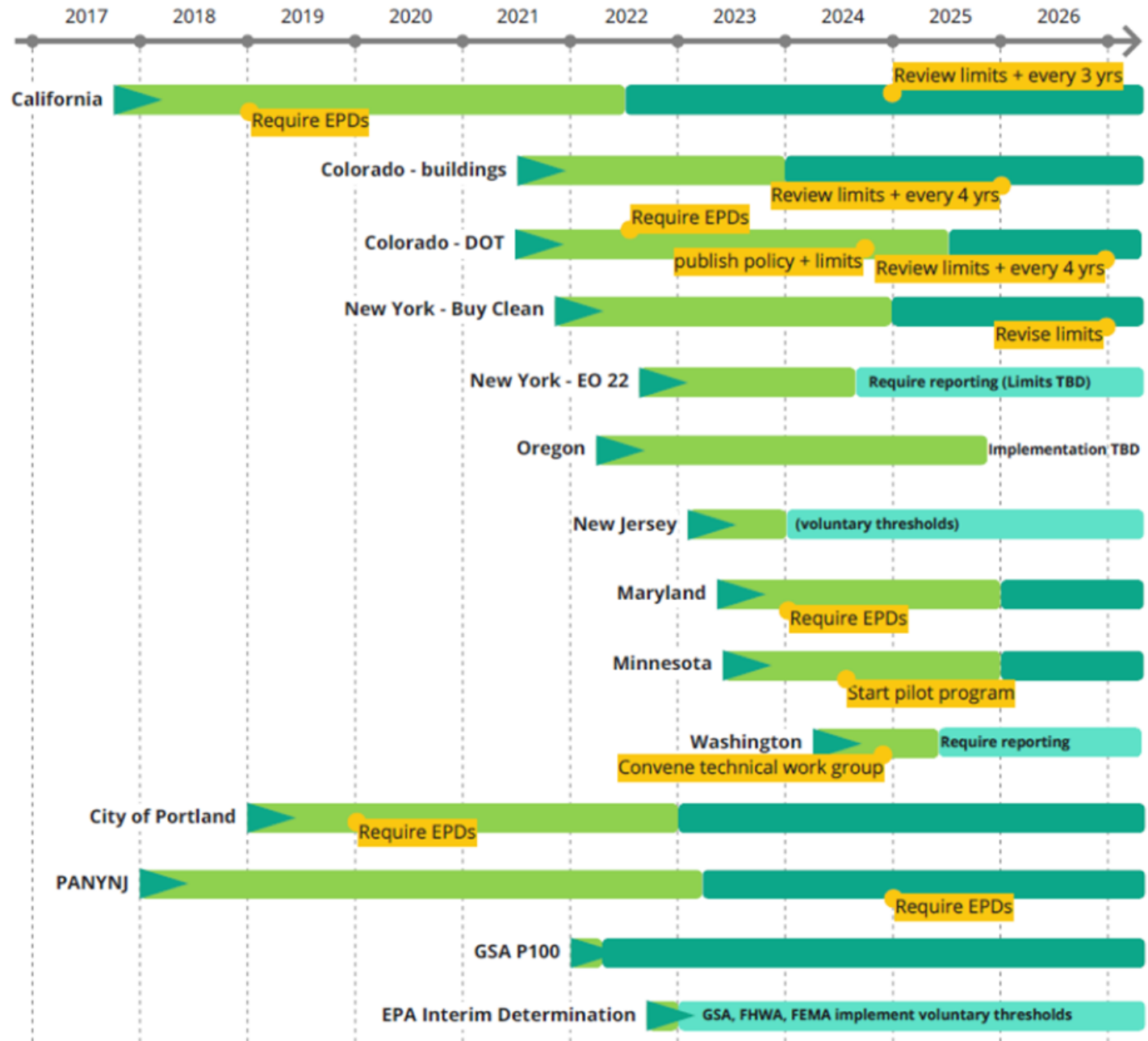
- Implemented in 2022
- Focuses on reducing GWP in transportation infrastructure.
- Establishes TAC, life cycle assessments, grant programs, annual reporting.
- Materials used in ODOT construction/maintenance (details under development).

# Buy Clean Programs Across U.S. States

## Washington State Buy Clean

- Implemented in 2024
- Requires reporting on concrete, steel, and wood products.
- Covers structural concrete, rebar, steel, engineered wood.
- 2025: Buildings > 100,000 GSF
- 2027: Buildings > 50,000 GSF





Key

- Pass/enact
- Develop
- Implement Limits
- Implement Other
- Other Milestone
- Require EPDs

## Task Force Examined Materials (per legislation):

1. **Asphalt** – Paving mixtures for roads & highways
2. **Concrete** – Ready mix, paving, precast, CMU
3. **Structural Steel & Rebar** – Hot-rolled sections, HSS, plate, deck, reinforcing bar
4. **Other Materials** – Lumber/mass timber, glass, insulation, aluminum

**Purpose:** Identify high-impact construction materials for embodied carbon reduction under Minnesota's Buy Clean program.

## Material Background

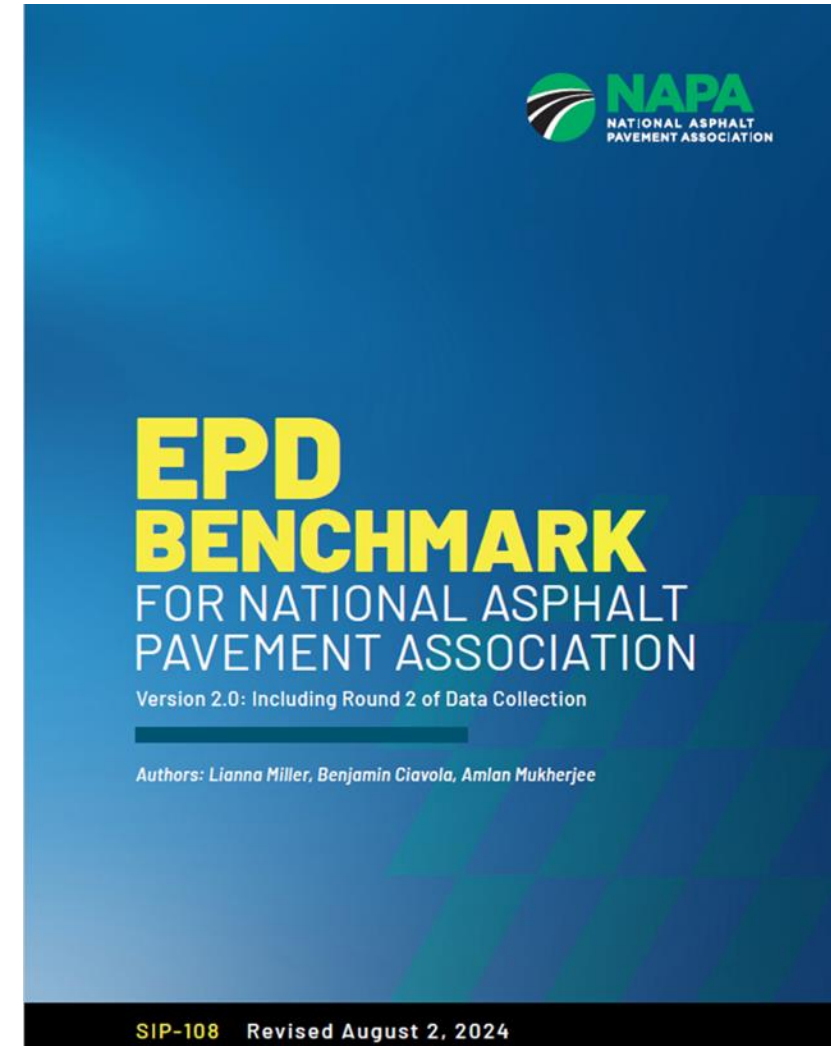
- Asphalt = aggregates + binder + additives;  $\sim\frac{2}{3}$  of MnDOT construction budget
- Major emissions reduction potential in pavements

## State of the Market

- U.S. EPDs:
  - 1 (2021)  $\rightarrow$  9,552 (2025); MN: 0  $\rightarrow$  22
- Market readiness: on-demand EPD tools (NAPA Emerald Eco-Label)
- Data transfer solutions: secure electronic EPD submission via NAPA + DOTs

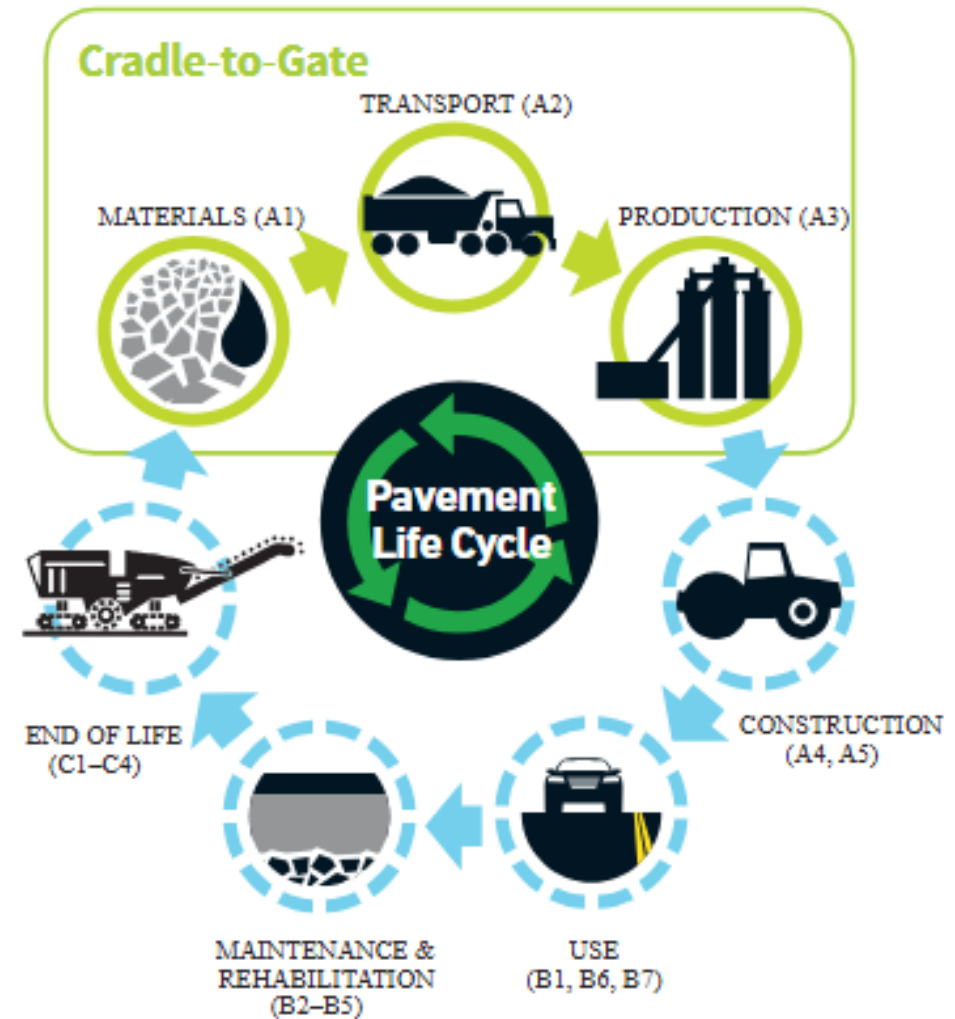
## Benchmarking

- PCR v2.0 requires separate:
  - A1 (raw materials),
  - A2 (transport),
  - A3 (manufacturing)
- NAPA Benchmark Report (2024):
  - A1 = **mix design + binder/RAP** impacts
  - A2 = MN avg (**5.07 kgCO<sub>2</sub>/t**)
  - A3 = MN avg (**24.42 kgCO<sub>2</sub>/t**)



# Cradle-to-gate EPD Stages

- **A1 – Raw Material Supply** covers the **extraction and processing** of raw materials used in the production of asphalt or concrete mixes.
- **A2 – Transportation** involves the transportation of raw materials from their **source to the manufacturing site**.
- **A3 – Manufacturing** includes the actual **production process of mixing**, encompassing all activities within the plant.



# Benchmark methodology and recommendations

## Develop state-specific A1 GWP distributions by collecting published EPDs

- **Collect published EPDs** that are geographically and mix-type representative (by climate, region, and market).
- **Analyze A1 GWP values** statistically to develop **state-specific distributions**.
- **Validate and refine** deterministic A1 benchmarks by comparing them to real-world EPD data.
- Adjust **functional classifications** and thresholds as needed based on observed data trends.

# Concrete Paving Recommendations

- **Benchmarking:** NRMCA industry-wide EPDs + regional benchmarks



www.athenasmi.org

**A Cradle-to-Gate Life Cycle Assessment of Ready-Mixed Concrete Manufactured by NRMCA Members – Version 3.2**

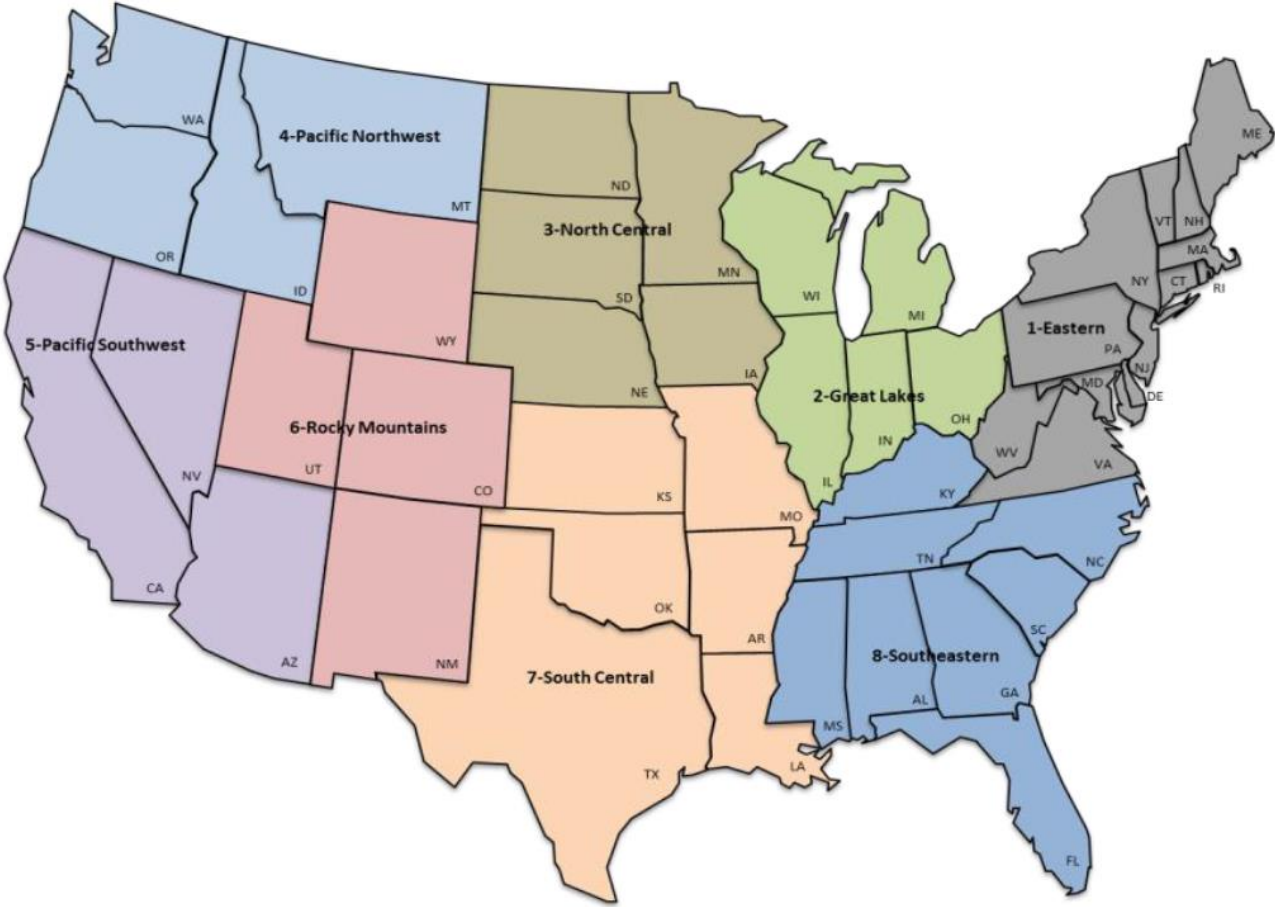
*This project report and its results are used to support the development of an industry wide or sector average Environmental Product Declaration for the production of 72 concrete mix designs*

Comissioner: National Ready Mixed Concrete Association (NRMCA)

EPD Program Operator: NSF International

Prepared by: The Athena Sustainable Materials Institute

July 2022



- **Clinker** = ~10% of mix mass but >90% of embodied carbon
- **MN**: strong growth in Ready Mix EPDs; slower for Precast & CMU

Material/Product	No. of EPDs in EC3* from MN	
	October 2021	March 2025
Ready Mix Concrete	203	1,612
Precast Concrete	0	5
Concrete Masonry Unit (CMU)	0	1

\* EC3 is a free, open-access tool developed by Building Transparency that hosts a comprehensive, third-party-verified database of Environmental Product Declarations (EPDs).

# Concrete Paving Recommendations

- **GWP limits set for Ready Mix**
  - North Central benchmarks
- **GWP limits for pavement applications** will be refined in future updates.
  - Considerations will extend beyond compressive strength to include permeability, workability, smoothness, and functional performance.
  - Potential creation of specialized concrete subclasses tailored to pavement needs.
- **CMU & Precast**
  - EPDs required, limits TBD

**BOF** – Basic Oxygen Furnace = high-carbon;

**EAF** – Electric Arc Furnace = lower-carbon recycled;

**DRI** – Direct Reduced Iron = emerging alternative

**Rebar** = mostly secondary steel → lower GWP

Fabrication adds < **10% of total GWP** → focus on unfabricated values

## **Recommendations:**

- Limits set for hot-rolled sections, plate, rebar, joists, deck
- Separate EAF vs BOF limits recognized as necessary (TBD until more data)
- EPDs required for all categories

# Other Materials

- **Tier 1 (include now):** Concrete, Steel, Asphalt
- **Tier 2 (track, add later):** Glass, Aluminum, Insulation
- **Tier 3 (research needed):** Wood, Gypsum board, Membranes, Plastics, Sealants/Paints
- **Key notes:**
  - **Glass** → closest to Tier 1, needs local EPD engagement
  - **Aluminum** → emissions vary by energy source; recycled aluminum much lower impact
  - **Insulation** → high-carbon petrochemical foams restricted in some states; alternatives available
  - **Wood** → biogenic carbon accounting complex; focus on responsible sourcing

# MN Buy Clean Program Overview

## Buy Clean Minnesota

- Integrating low-carbon materials into procurement & bidding.

## Purpose

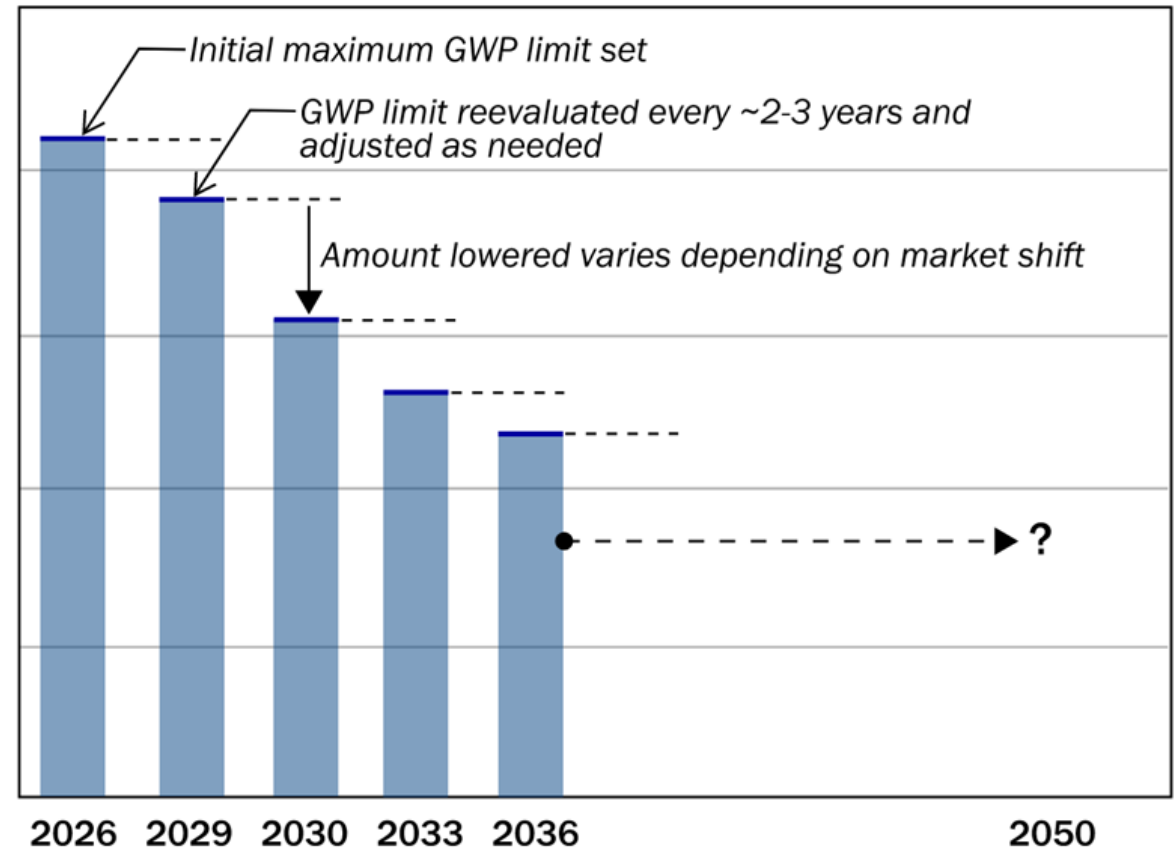
- Smooth policy implementation, align with sustainability goals.

## Covers:

- Setting Limits
- Procurement & Bidding
- Incentives
- Data & Compliance
- Grants & Training

# Limit Setting

- Initial GWP limits **based on benchmarks/EPDs.**
- Reevaluated **every 2–3 years** (or sooner if market shifts).
- Option for **tiered thresholds** (baseline + incentive tiers).
- **Limits** may be **broken down** by life-cycle stages (A1–A3).



# Key Takeaways

- Buy Clean MN integrates **policy, procurement, incentives, data, and training** into one framework.
- **Embodied carbon in construction materials** is the central target for impact.
- **Collaboration is Critical** - Success depends on strong partnerships across agencies, industry, and stakeholders.
- **Continuous Improvement** - Program requirements will be refined as markets evolve and new insights emerge.
- **Clear guidance, education, and robust data systems** are essential for smooth implementation.

# Thank You!

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