



Climate Emissions Analysis:



Metro's Indirect Impact on Greenhouse Gas Emissions

August 18, 2022





Background

- LA Metro Office of Sustainability created by CEO Wiggins creates and influences policies that improve sustainability and climate related outcomes.
- The 2028 Vision Strategic Plan includes goals that address high quality mobility, outstanding trip experiences, enhancing communities, and providing access to opportunities.
- LA Metro *Long Range Transportation Plan* (LRTP, 2020) assesses GHG impacts of implementation of the entire plan through 2047 but **only as a comprehensive plan**.
- LA Metro *Climate Action and Adaptation Plan* (CAAP, 2019) assesses emissions and commits to reduction pathway but **only for internal operations**.
- This work focuses on how **transportation policies, plans, and programs** contribute to regional climate emissions, primarily through their impacts on travel patterns (mode-shift) and on vehicle miles traveled (VMT).



Analysis Objectives

This analysis includes:

1. A response to the Board Directive to **evaluate Metro's role** in regional GHG and VMT reduction targets through a ***preliminary evaluation*** of Metro's major programs.
2. A better understanding of how **transportation policies, plans, and programs** contribute to regional climate emissions, primarily through their impacts on travel patterns (mode-shift) and on vehicle miles traveled (VMT).

This analysis does not address:

1. Evaluation of other **co-benefits** resulting from these programs such as congestion relief, increase of travel speeds, accessibility, equity, safety, and reductions in criteria air pollutants.
2. VMT reducing project components (i.e., VMT mitigation bank)



Considerations/Challenges *(Disaggregating the VMT/GHG Impacts is complicated & has significant limitations)*

1. This analysis does **not attempt to offer exact GHG outcomes** of the programs it assesses, based on the complexity of disaggregating transportation programs and due to a lack of consensus on how to quantify the relationship between roadway projects and induced VMT.
2. Some of the **reference sources are dated**, were developed for other purposes (such as the evaluation of congestion-reduction projects rather than changes in travel), or the **data reflects pre-Covid mobility** conditions.
3. Locally derived data is available for **most, but not all inputs** - when not available, regional or state datasets have been applied.
4. Several foundational data sources, such as regional population, job projections, and the VMT and GHG emissions generated by transportation demand models, **include degrees of uncertainty** that increase over the 30-year analysis period.
5. Metro has **limited control** over factors such as land-use and active transportation infrastructure where local jurisdictions play a bigger role.
6. The analysis is not designed to be used for decision-making & it does not recommend actions to prioritize programs or funding since issues of equity and access to opportunity have not been evaluated.



Analysis Elements

The **VMT** and **GHG emissions impacts** of the following Measures/Initiatives were estimated:

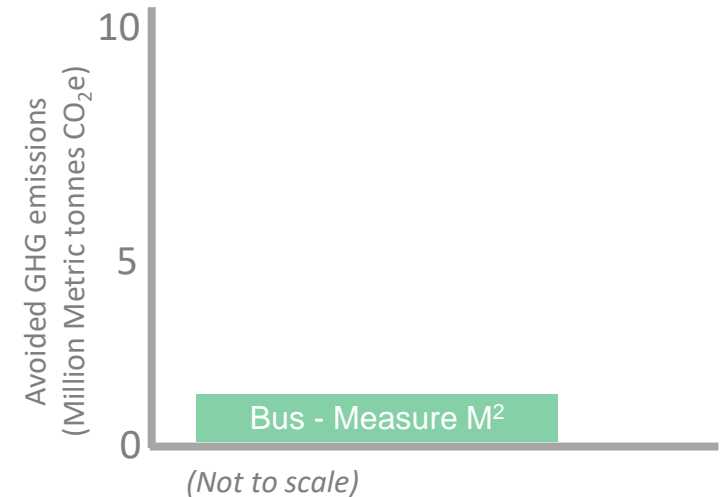
1. Measure M: Bus Infrastructure Expansion
2. Measure M: Rail Infrastructure Expansion
3. NextGen Bus Improvement Program
4. Active Transportation (Cycling, Walking, Rolling)
5. New Lane-Miles
6. Pricing Policies: Congestion Fee (Cordon-pricing)

Disclaimers:

- These are the projects and bold policies currently being considered or discussed at Metro, but not an exhaustive list.
- These projects are considered independent from one another but are interrelated; however, the VMT and GHG impacts are not additive.
- Operational and construction-related emissions are not included in the analysis
- The Congestion Fee (Cordon-pricing) scenario was modeled as a bold policy scenario in the LRTP but not included in the adopted LRTP document.

1. Measure M Bus Expansion

- Includes all new bus projects planned through 2047¹:
 - North San Fernando Valley Transit Corridor (BRT)
 - North Hollywood to Pasadena Transit Corridor (BRT)
 - G Line (Orange) Improvements
 - Lincoln BI (BRT)
 - Historic Downtown Streetcar
- The change in VMT is estimated based on the number of passengers carried. **Ridership projections and split** are obtained directly from LRTP and do not reflect the actual ridership or measures taken during COVID-19.
- Dynamic ridership split between Bus vs Rail makes use of agency data that adjusts for completion of new Rail lines.
- Share of bus-riders having access to personal-auto: **16%** (Fall 2019 Customer Satisfaction Survey).
- Measure M funding for bus capital projects: **US\$ 1.58 B**

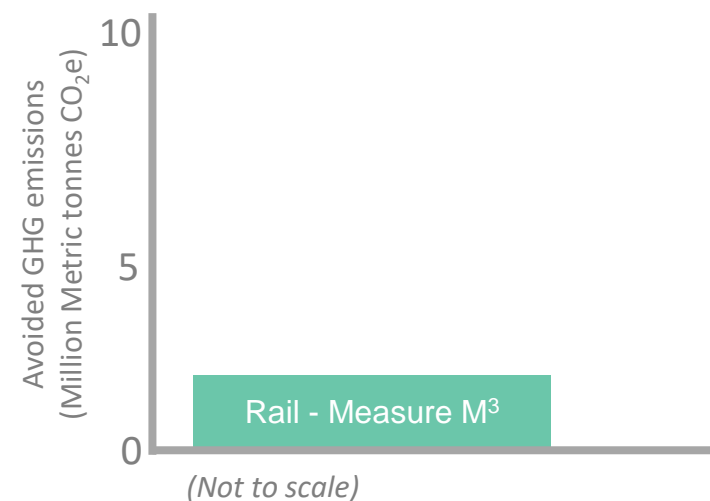


¹ Does not include NextGen Bus improvements

²Included in the 2020 LRTP

2. Measure M Rail Expansion

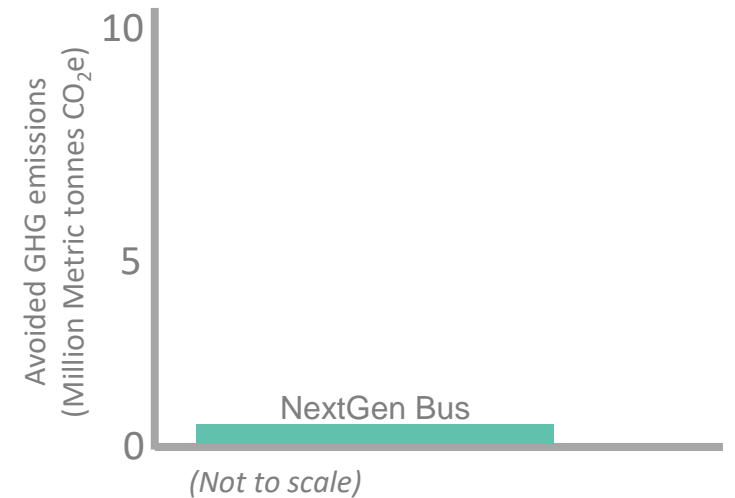
- Includes all new rail projects planned through 2047:
 - Airport Metro Connector 96th St. Station
 - Westside Purple Line Extension Section 3
 - Gold Line Foothill Extension to Claremont
 - Vermont Transit Corridor
 - Green Line Extension to Crenshaw Blvd in Torrance
 - Sepulveda Pass Transit Corridor (Phase 2)
 - Gold Line Eastside Extension (One Alignment)
 - Crenshaw Northern Extension
 - Crenshaw/LAX Transit Project (LRT)
 - Regional Connector Transit Project (LRT)
 - D Line (Purple) Extension (HRT)
 - East San Fernando Valley Light Rail Project (LRT)
 - West Santa Ana Branch Transit Corridor (LRT)
 - Green Line Eastern Extension (Norwalk)
 - Sepulveda Pass Westwood to LAX (Phase 3)
 - Orange Line Conversion to Light Rail
 - Gold Line Eastside Extension (Second Alignment)
- The change in VMT is estimated based on the number of passengers carried. **Ridership projections and split** are obtained directly from LRTP and do not reflect the actual ridership or measures taken during COVID-19.
- Dynamic ridership split between Bus vs Rail makes use of agency data that adjusts for completion of new Rail lines.
- Share of rail-riders having access to personal-auto: **34%** (Fall 2019 Customer Satisfaction Survey).
- Measure M funding for rail capital projects: **US\$ 39.99 B**



³ Included in the 2020 LRTP

3. NextGen Bus

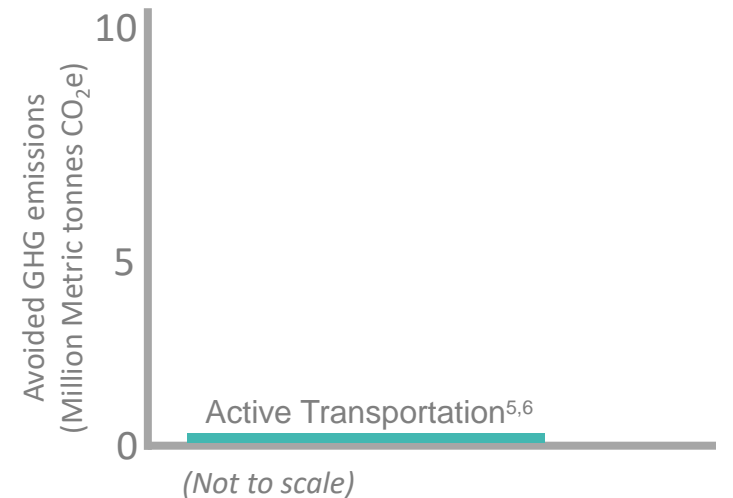
- The NextGen Bus Program will increase service frequency for buses – Expected to increase ridership by **5-20%** over the baseline⁴.
- The NextGen Bus Improvement Program is **not included directly in the LRTP 2020** modeling, but a surrogate analysis that includes an increase in frequency and speed on the 40 most popular bus routes resulted in a **7% increase** in ridership (*Page 23*).
- Includes all improvements planned under the NextGen Bus Improvement Program – signal prioritization, faster onboarding, and bus priority lanes.
- This analysis is conducted over the Do-Nothing scenario of LRTP which considers implementation of no further projects.



⁴ Page 90 of the NextGen Grant application – Appendix Section 3.1

4. Active Transportation (Cycling, Walking and Rolling)

- Metro is investing more than \$850 million in Active Transportation grants, towards its ongoing commitment to **enhance access to transit stations**, create safer streets and develop a regional network to improve mobility for people who walk, bike and take transit. Programs that support these policies include Metro’s Bike Share program, our Bike Parking Program, and the First/Last Mile Program.
- The majority of the planning and implementation for active transportation and complete streets projects occurs at **the local level**.
- With an increase in the length of total bike paths from **63 miles** in 2017 to **244 miles** in 2047, there is projected to be an increase of **0.1%** in active transportation users by 2047 (*from LRTP*).
- From Metro’s Fall 2019 Customer satisfaction survey, **11%** of the bus-riders and **27%** of the rail-riders use their personal auto to reach transit stops.
- The length of the trip to reach the transit stop is assumed to be **0.5 miles**.



⁵ Included in 2020 LRTP

⁶ This includes 244 miles of bike lanes across the County that further incentivizes the use of active transportation.

5. New Lane-Miles

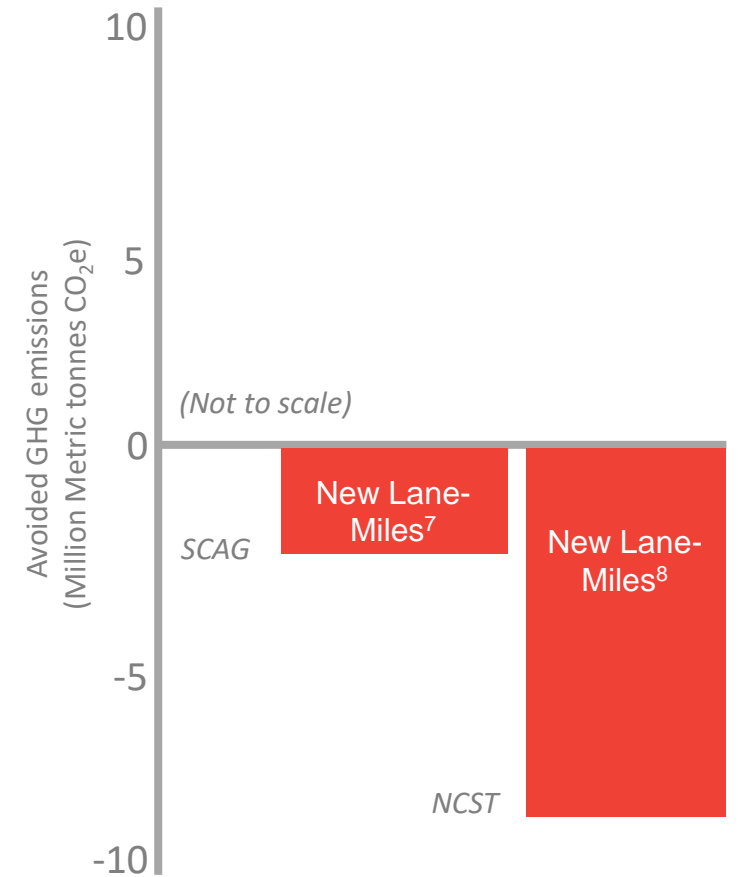
New Project Types	Total Lane-Miles Added (By 2047)
Highways	281
Arterials	35

Considerations:

- Based on the current guidance from Caltrans and SCAG, new lane-miles constructed will result in an **induced VMT**, due to the additional capacity added.
- A range of induced VMT due to new lane-miles is estimated using tools developed by the State (NCST Calculator) and by SCAG (SCAG Regional Travel Model).

Notes:

- 1) The proposed highway projects will incorporate VMT Mitigation measures (for e.g., VMT Mitigation Bank) in compliance with the requirements for SB 743.
- 2) Metrolink service that parallels the highway is not included in the analysis.
- 3) Multimodal synergy of Metro ExpressLanes is not included in the analysis.



⁷ Calculations of induced VMT from highway expansion calculated based on SCAG's Regional Travel Demand Model.

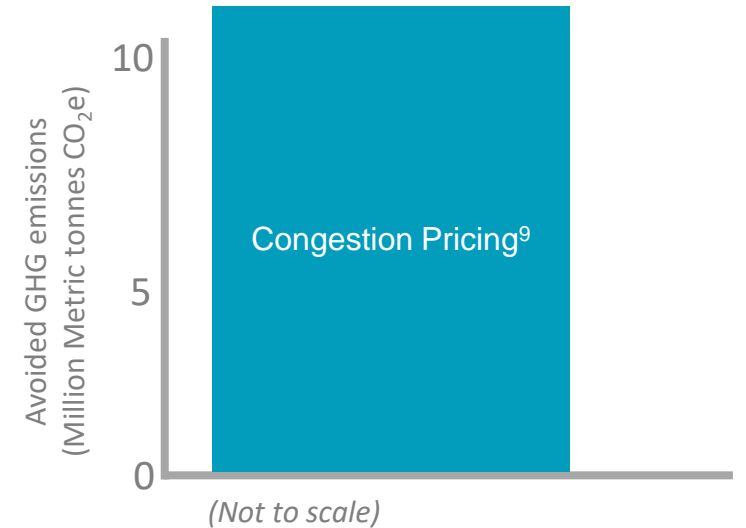
⁸ Calculations of induced VMT from highway expansion calculated based on the NCST calculator, the statewide tool included in recent Caltrans SB 743 guidance.

6. Pricing Policy: Congestion (Cordon) Pricing

- The Cordon Pricing Scenario was created by agency staff to model Metro's Vision 2028 goal of reducing congestion by pricing the *Urban Core*, *Central Business District (CBD)* and *Urban Business District (UBD)* areas in LA County.
- A **1.33%** reduction in VMT was estimated in LA County under this scenario.
- The scenario analysis was discussed in the 2020 LRTP but not included in the final expenditure plan due to the need for continued evaluation of congestion pricing options.

⁹ Data analyzed is a concept modeled in a congestion pricing scenario for the 2020 LRTP, but not included in the Final LRTP. This is not reflective of the current concept that OEI is using in the forthcoming Traffic Reduction Study. When that study is released, we will update our work accordingly.

Note: With this pricing policy, trips going from outside to a UBD, CBD and Urban Core zone will be charged \$3/trip, \$6/trip and \$9/trip respectively.





VMT and GHG Benefits



Key

- █ Savings in VMT/GHG
- █ Added VMT/GHG

¹⁰ Included in 2020 LRTP.

¹¹ Indicates initial modeled performance analysis, further scoping and detailed analysis required.

¹² This includes 244 miles of bike lanes across the County that further incentivizes the use of active transportation.

¹³ Calculations of induced VMT from highway expansion calculated based on SCAG's Regional Travel Demand Model.

¹⁴ Calculations of induced VMT from highway expansion calculated based on the NCST calculator, the statewide tool included in recent Caltrans SB 743 guidance.





Conclusions

- Metro is uniquely positioned to address GHG avoidance in the region by expanding service capacity and innovative programs in the most populous county in the nation.
- Metro's programs and planned infrastructure contribute to meeting regional climate targets but can do much more when paired with policies that change the economics of travel.
- Based on the current guidance from Caltrans and SCAG, new lane-miles constructed are expected to induce VMT, due to the additional capacity added. Through a separate effort, the VMT Mitigation Program, Metro is undertaking an in-depth study to explore ways to mitigate any significant VMT impacts in compliance with SB 743.
- Equity must be considered concurrently because some programs that advance VMT reduction goals may not advance equitable outcomes, while some programs that advance equity may not realize the greatest VMT reduction, but that does not make them any less worthwhile — the benefits & burdens of each program and project must be viewed holistically.
- Disaggregating VMT/GHG data to inform decision-making of major regional transportation initiatives is not recommended because the transportation system in LA County is highly interconnected and synergistic.





Next Steps

- Present to Metro Board in August 2022.
- Office of Sustainability to work with Metro Planning to develop achievable GHG reduction targets and the concurrent equity analysis that help align Metro with the updated CARB Scoping Plan and SCAG goals.
- Metro Planning to complete the development of VMT mitigation program.



Thank You