

# TRANSPORTATION MODELING FORUM

July 8, 2020



# Forum Agenda

- Welcome, Introductions and Announcements
- Addressing Institutional Racism
- SB743 Inauguration -- July 01, 2020
  - Introduction
  - Analysis
  - SANDAG's role

# Addressing Institutional Racism

**Maurice Eaton, Branch Chief**

**Local Development | Inter-Governmental Review**

**Travel Modeling & Forecasting**

**Caltrans District 11**

**SANDAG Modeling Forum**

**July 8, 2020**



# CalSTA Statement on Racial Equity

“The California State Transportation Agency (CalSTA) strongly condemns systemic racism and discrimination in all forms, including those historically entrenched in transportation.

To that end, CalSTA firmly embraces racial equity, inclusion and diversity. These values are foundational to achieving our vision of a cleaner, safer, more accessible and more connected future.”

- **California State Transportation Secretary David S. Kim**

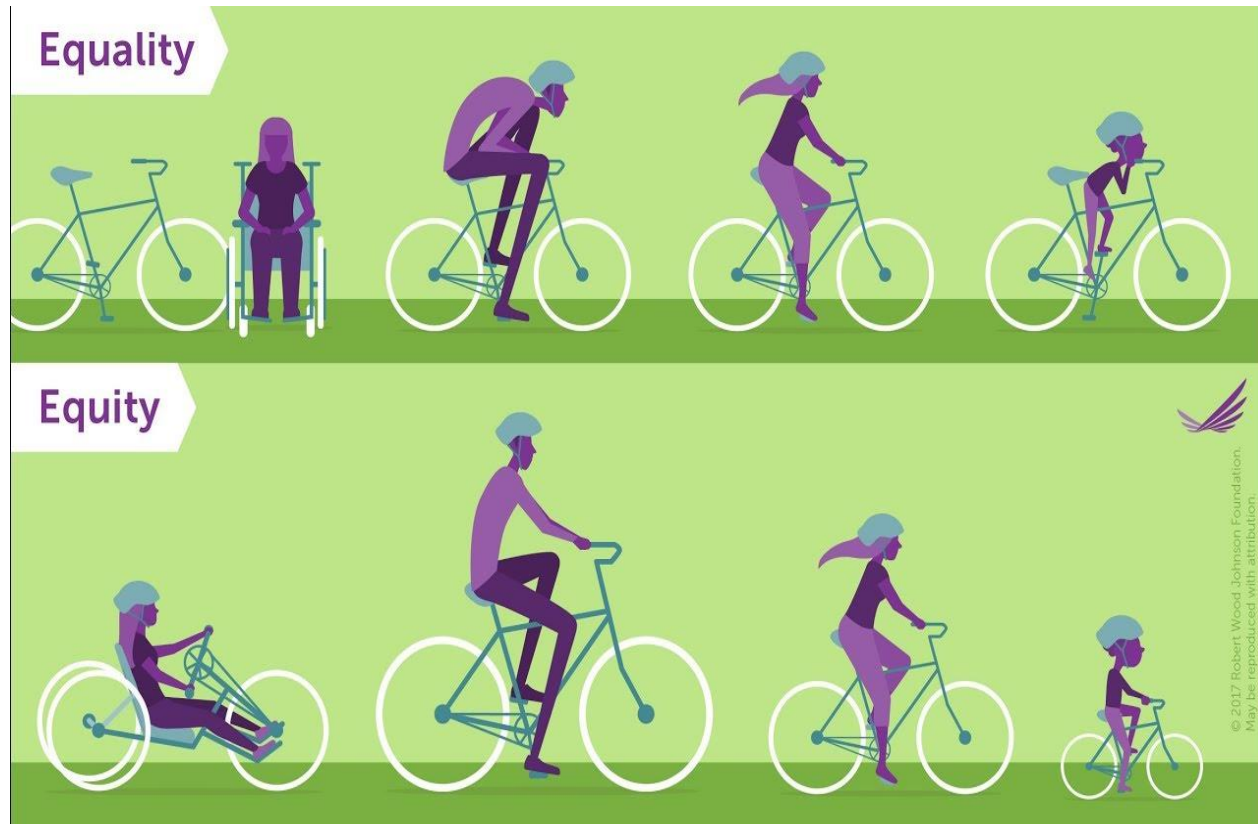
# Equity vs. Equality

## Equality = same treatment for all

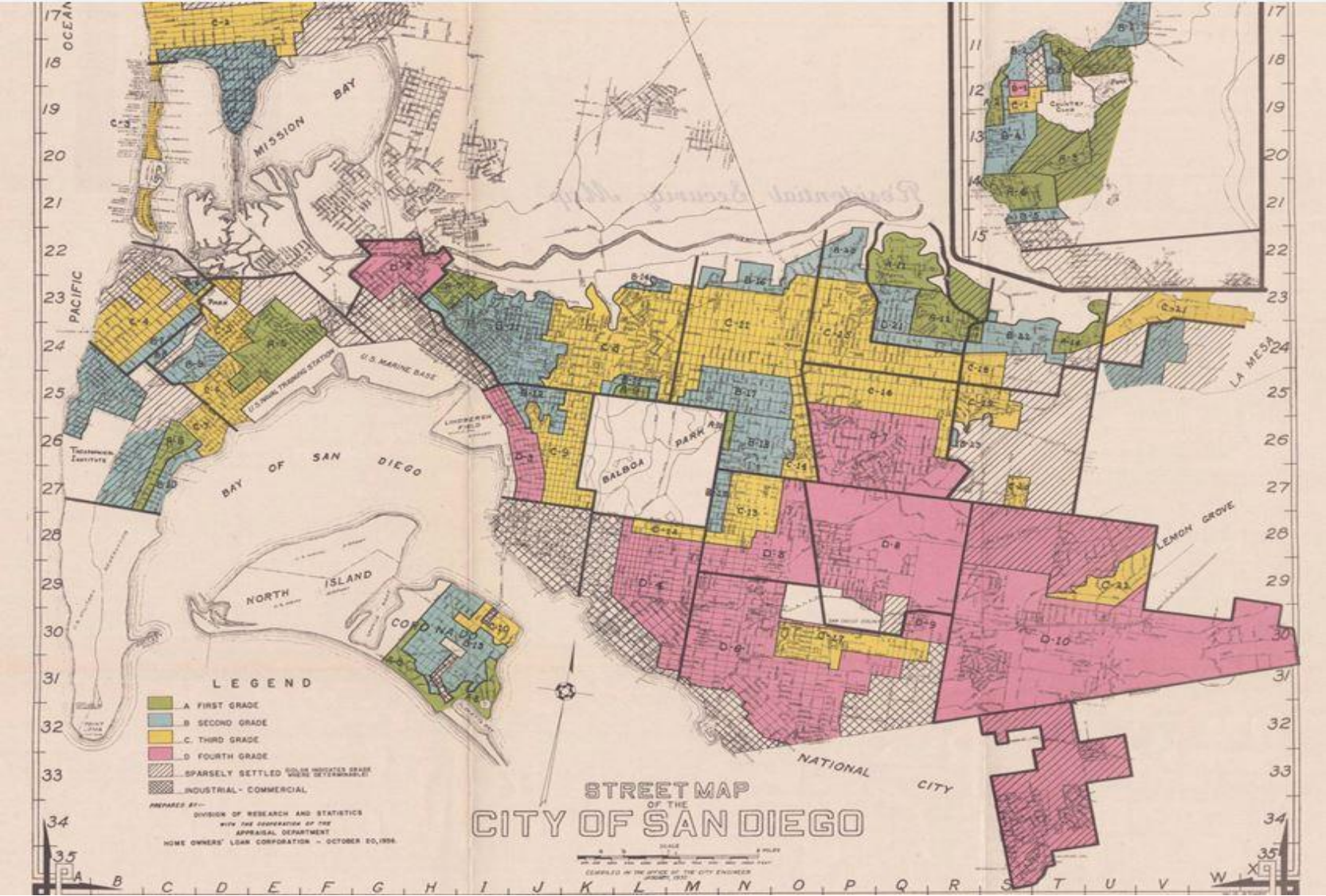
Equal treatment does not necessarily create equal outcomes, it only works if everyone starts from the same place

## Equity = treatment that accounts for disparities

To ensure that everyone can succeed, we need to tailor our solutions to effectively help different groups

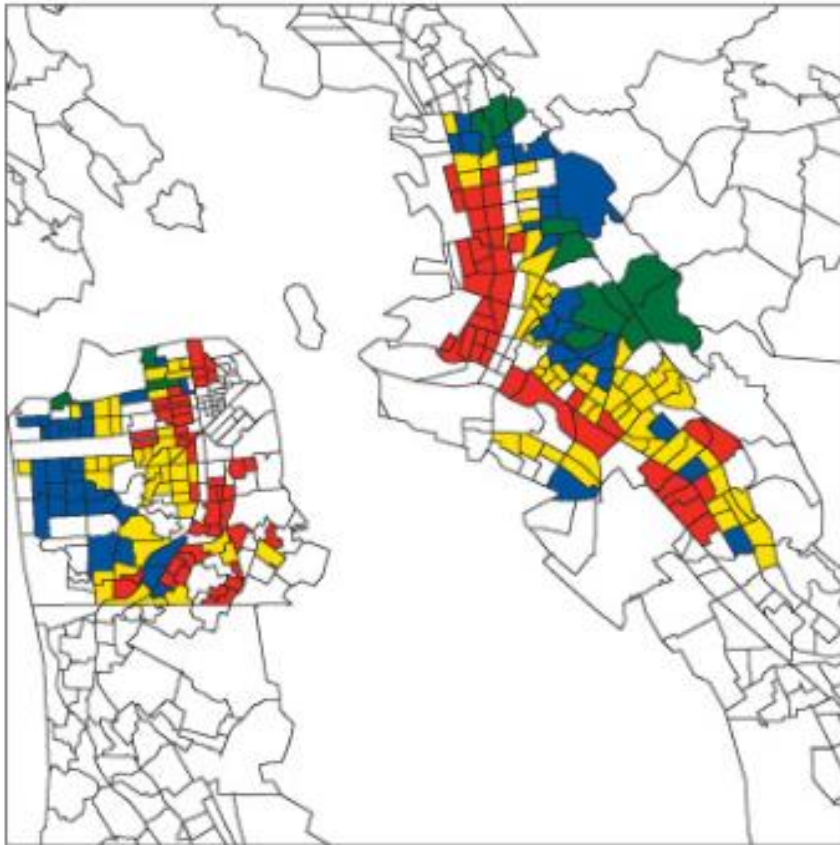


# Segregated By Design

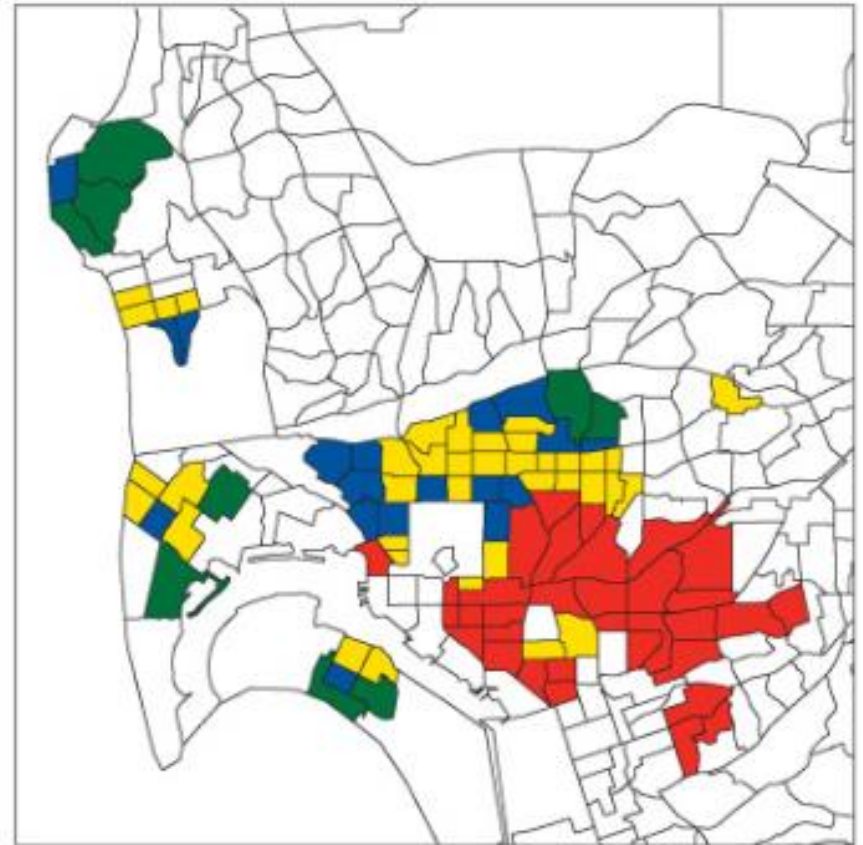


# Segregated By Design

San Francisco and Oakland



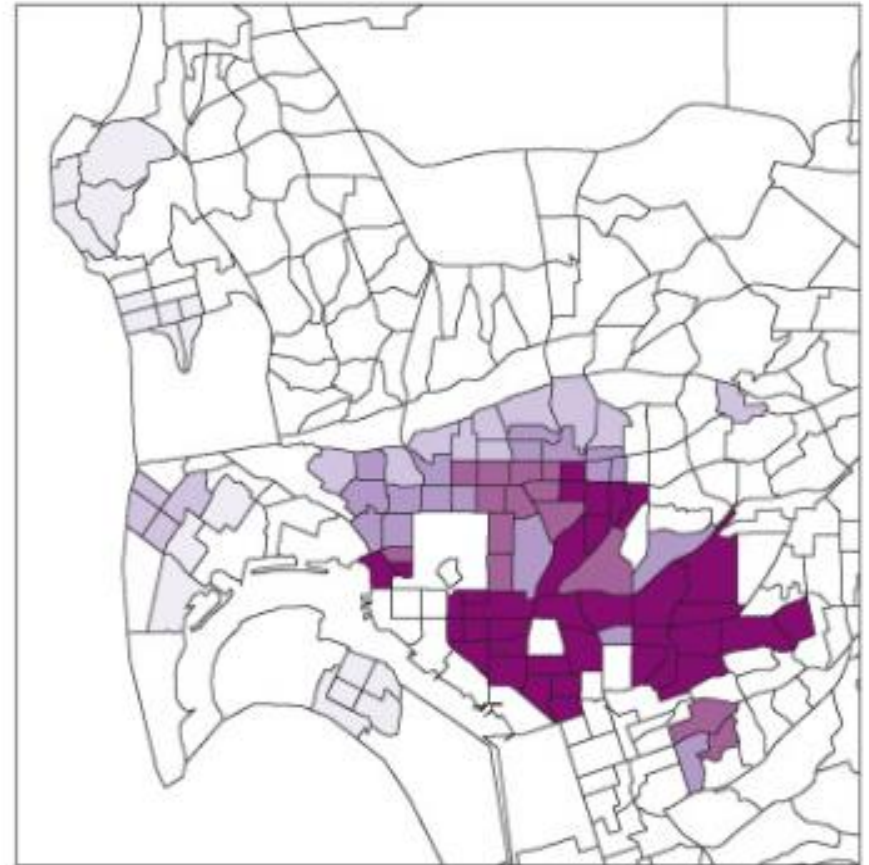
San Diego



HOLC risk grade

■ A ■ B ■ C ■ D

# Health Effects – Eight Decades Later

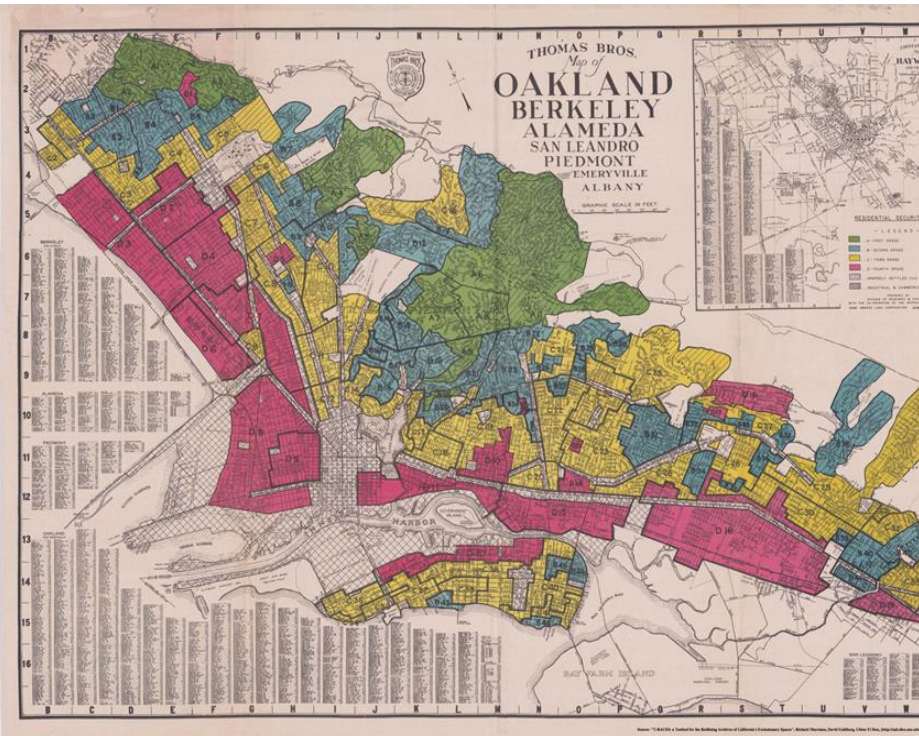


Emergency department visit rate (per 10000)

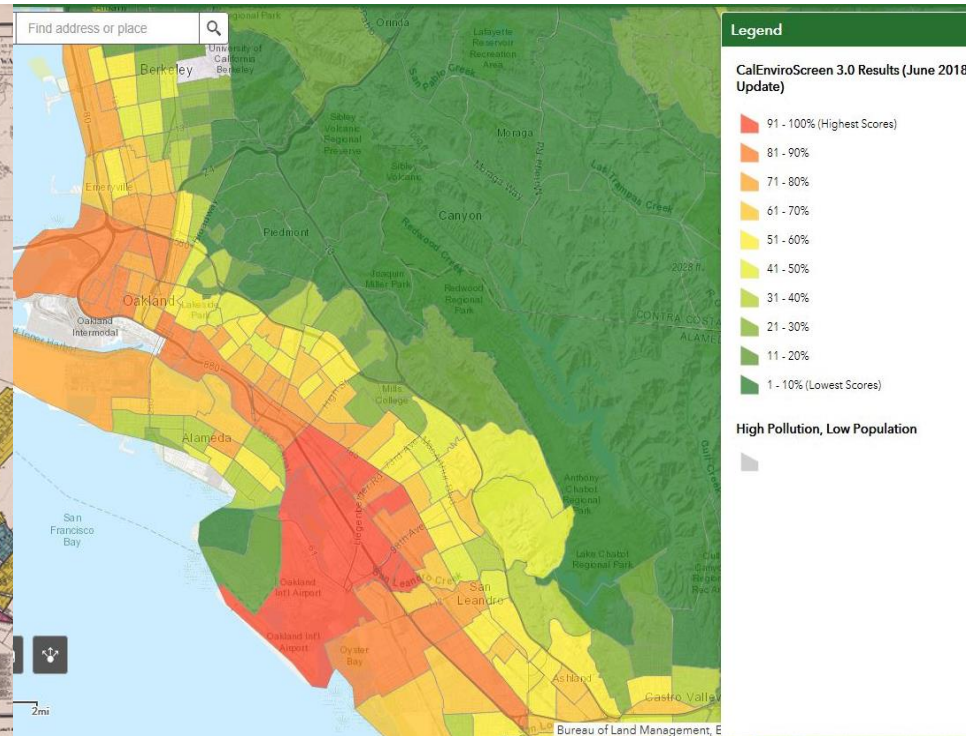
□ <29   □ 29-42   □ 42-58   □ 58-77   □ >77



# Lasting Effects of Government Policy



1933 Redlining Map of Oakland



June 2018 Cal Env. Screen Pollution Analysis

# If we knew then, what we know now



# Caltrans Actions

## What are we doing to Address Institutional Racism?

- Caltrans established the CARES Team (Caltrans Alliance on Racial Equity Solutions)
- Strengthened and expanded the CARES Executive sponsor group
- Caltrans Executive Board approved the Draft Race & Equity Action Plan in December 2019

# Caltrans Alliance on Race & Equity Solutions (CARES)

The mission of CARES effort is to advance the Department's work toward a transportation system that equitably enhances the economy and livability for the people of California.

Caltrans Alliance on Race & Equity Solutions (CARES) team developed the Draft Race & Equity Action Plan to *advance solutions* for Caltrans' internal and external policies, programs, and practices to support racial equity.

# Caltrans CARES Expanded Executive Sponsor Group

## **Expanded Executive Sponsor Group - Sponsors now include:**

Statewide Deputy for Sustainability;

Statewide Deputy for Planning and Modal Programs

District Directors of Districts 2, 4, 5, and 10

Caltrans Inspector General

Assistant Director for Business & Economic Opportunity (Gov's office)

# Caltrans Race & Equity Action Plan

## Draft Race & Equity Action Plan: Three areas of focus

### Communication

Goal: educate and engage Caltrans employees on racial equity solutions

### Pilot Projects

Goal: provide equitable services to all Californians, assess outcomes and inform solutions

### Policy

Goal: for equity to be built into Caltrans culture, values and daily operations

# CalSTA Statement on Racial Equity

“We will be part of the solution. We will promote policies and programs that reflect principles of diversity, equity and inclusion, and will work with stakeholders to identify areas of improvement.

Through these and other efforts, transportation systems have the potential to achieve their intended purpose – to provide safe and equitable access to opportunity and truly enhance quality of life.”

**- California State Transportation Secretary David S. Kim**

# SB743 Inauguration

Erik Ruehr (VRPA)

Katy Cole (Fehr & Peers)

Maurice Eaton (Caltrans)

Rick Curry

Mike Calandra

Keith Greer



# SB743 Inauguration

- Background
- State (OPR) guidelines
- State (Caltrans) guidelines
- Local guidelines
- Gross VMT \ VMT Distribution
- SB-743 VMT Reports
- Interregional VMT
- International VMT
- Map applications
- Case studies
- How to get started (Service Bureau)
- Disclaimers and limitations
- Evolving Issues
- Other tools (TDM)

# Background

## What is SB 743?

- Signed into law in 2013
- **Legislative intent:**
  - New methodologies needed evaluating transportation impacts under CEQA
  - Promote statewide goals “reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land.”
  - OPR to amend the CEQA Guidelines for determining the significance of transportation impacts.

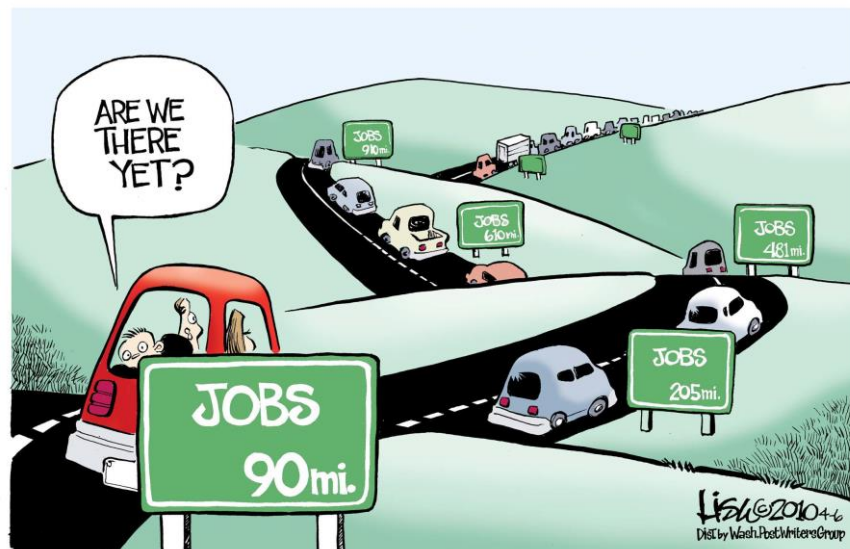
**July 1, 2020 is the statewide implementation**



# Background

## What did it do?

***“Automobile delay shall not be considered a significant impact on the environment”*** (PRC § 21099(b)(2))



Source: Orange County Register

Level of Service (LOS)



Vehicle Mile Traveled (VMT)

# Background

## Why?

*“ During the last 10 years, the Legislature has charted a course of long-term **sustainability** based on denser **infill development**, reduced reliance on individual vehicles and **improved mass transit**, all with the goal of **reducing greenhouse gas emissions**.”*



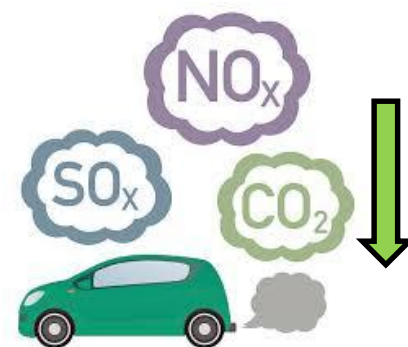
**Promote Infill Development**

+



**Increase Mobility Options**

=

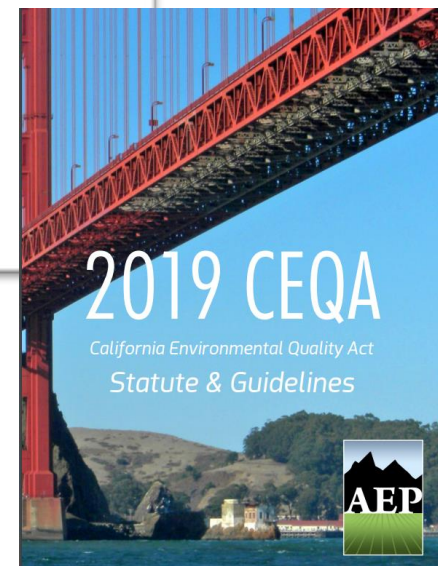
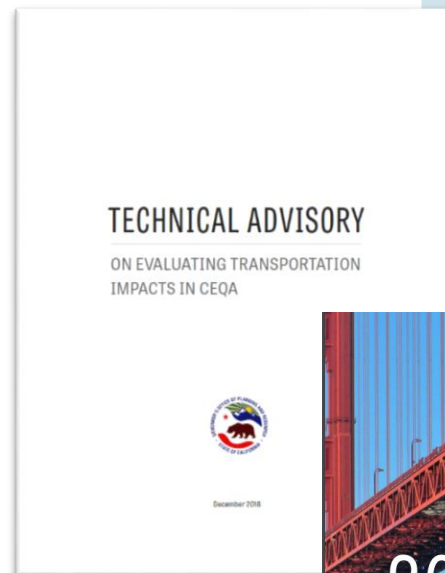
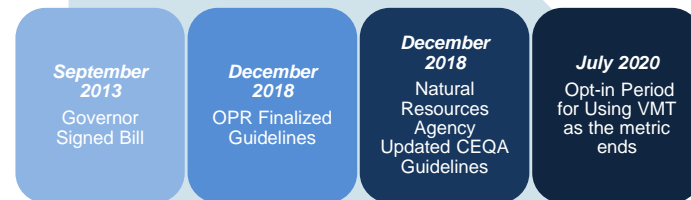


**Reduce GHG and traffic-related air pollution**

# Introduction – State Guidelines

## OPR Technical Advisory Suggests

- **VMT Threshold as:**
  - 15% below average VMT/resident (residential projects) or VMT/employee (for office) based on city or regional average
  - Effect of regional retail on regional VMT (any increase in total VMT)
- **Screening Projects that:**
  - Are In a VMT Efficient Area (based on screening maps)
  - Are small, defined as 110 or less daily trips
  - Are near a Major Transit Stop or a Stop Along a High Quality Transit Corridor
  - Are locally serving retail, suggested as 50,000 square feet or less
  - Are 100% affordable housing in infill locations
  - Are redevelopment projects that generate less VMT than the existing use



# Big Picture on SB 743 Implementation

- 743 implementation continues as scheduled per statute; no official statement about the July 1 deadline from the Administration.
- Letters from both sides of SB 743 implementation issue; some for July 1 implementation, some against implementation or requesting delays.
- Inquiries from our partners regarding delay requests— you can send to me and I will forward to Caltrans Headquarters/Zhongren Wang; response would be from HQ.

# Major Topic Areas of Feedback Questions

**General** (e.g. SB 743 economic impacts, project purpose and need, timing)

## **TAF Traffic Analysis Framework**

- NCST vs. TDM, Reconciliation process
- Consistency
- Priced facilities
- Trucks/freight modeling
- Urban vs. Rural
- Safety Analysis (approved for use)

## **TAC Transportation Analysis Under CEQA**

- Implementation Timing Memo
- Scoping and screening
- Threshold and significance determination
- Mitigation

## **TISG Traffic Impact Study Guide**

- VMT Analysis (approved for use)
- Safety Analysis (approved for use)

# Guidance Materials Being Prepared by Caltrans

## Land Use Project Review through Caltrans LD-IGR program

- Transportation Impact Study Guide (TISG)
- Interim Guidance on LD-IGR Safety Analysis
- **Status:** approved for use (July 1 full implementation)

## Transportation Analysis in EIRs by Caltrans / Project Sponsors

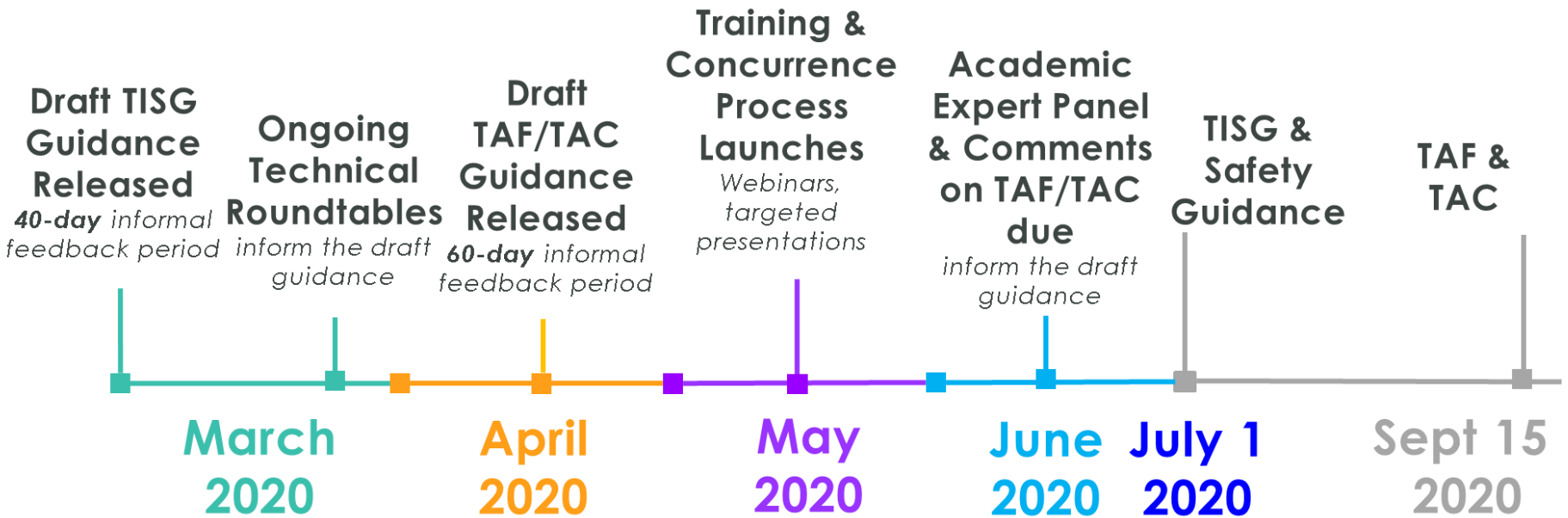
- Transportation Analysis Framework (TAF)
- Transportation Analysis under CEQA (TAC)
- **Status:** September 15 full implementation

## Conducting Concurrence Process on VMT Significance Determinations



# Schedule

## Caltrans SB 743 Compliance



# ITE Guidelines for Transportation Impact Studies in the San Diego Region

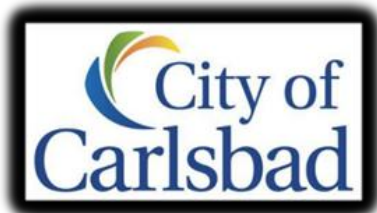
- Prepared in May 2019 by the Transportation Capacity and Mobility task Force
- Based partly on state guidance, but tailored to local conditions
- Informational but not binding



GUIDELINES FOR TRANSPORTATION IMPACT STUDIES  
IN THE SAN DIEGO REGION

May 2019

# Agency Specific SB 743 Guidelines



# Intermission

- Chat Box



# Gross VMT \ VMT Distribution

- “Analyzing Observed VMT” covered in the December 2018 Model Forum
  - Definition
  - Methods
  - Limitations
  - Sources
  - Variability
- Conclusions
  - Statewide collaboration to create a consistent VMT estimation methodology or data library for regulatory analysis and compliance
  - VMT is an estimation, not an empirical calculation

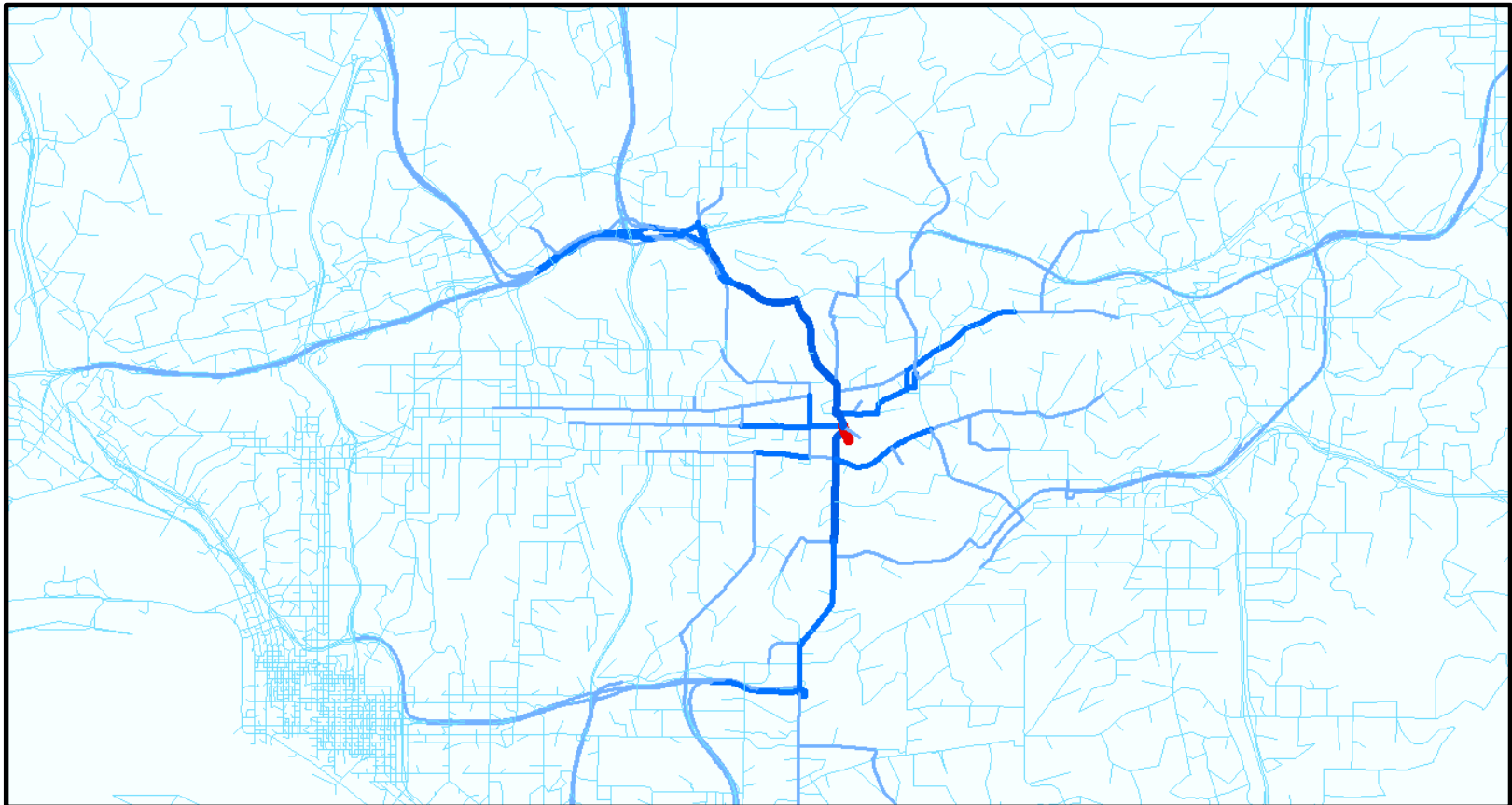
# Gross VMT \ VMT Distribution

- Estimating Gross VMT from a Regional Travel Demand Model
  - Requires a completed model scenario
  - Circulation Element roadways estimated directly from link-level ADTs
  - Residential roadways estimated from Zone Connector ADTs
- Estimating VMT Distribution from a Regional Travel Demand Model
  - Requires a completed model scenario, and a Select Zone Assignment
  - VMT estimation method is the same
  - Result is still Gross VMT, however it is a subset of Gross Regional VMT

# Gross VMT \ VMT Distribution

- VMT Bandwidth mapping

- 2035 Regionwide VMT: 92,447,083
- 2035 TAZ 3412 VMT : 24,618



# SB743 VMT Reports

## Vehicle Miles of Travel Report

Scenario ID 1156

Port Master Plan Update - PMPU1 - District 1 - Shelter Island

VMT per Resident						
	Scenario ID	Residents	Total Trips	rson Miles of Travel	hicle Miles of Travel	VMT per Resident
Regionwide	1156	4,243,618	15,168,868	88,739,376	61,033,942	14.4
Jurisdiction SAN DIEGO	1156	1,917,354	6,880,317	35,596,371	23,598,863	12.3
CPA Peninsula	1156	48,889	181,901	906,799	637,036	13.0
Site District 1 - Shelter Island	1156	397	1,518	6,933	5,004	<b>12.6</b>

VMT per Employee						
	Scenario ID	Employees	Total Trips	rson Miles of Travel	hicle Miles of Travel	VMT per Employee
Regionwide	1156	1,797,656	5,778,893	44,533,639	38,068,205	21.2
Jurisdiction SAN DIEGO	1156	950,209	2,898,736	21,586,988	18,628,173	19.6
CPA Peninsula	1156	15,897	49,861	338,177	288,568	18.2
Site District 1 - Shelter Island	1156	2,164	6,723	55,677	48,601	<b>22.5</b>

Report Generated:

11/27/19



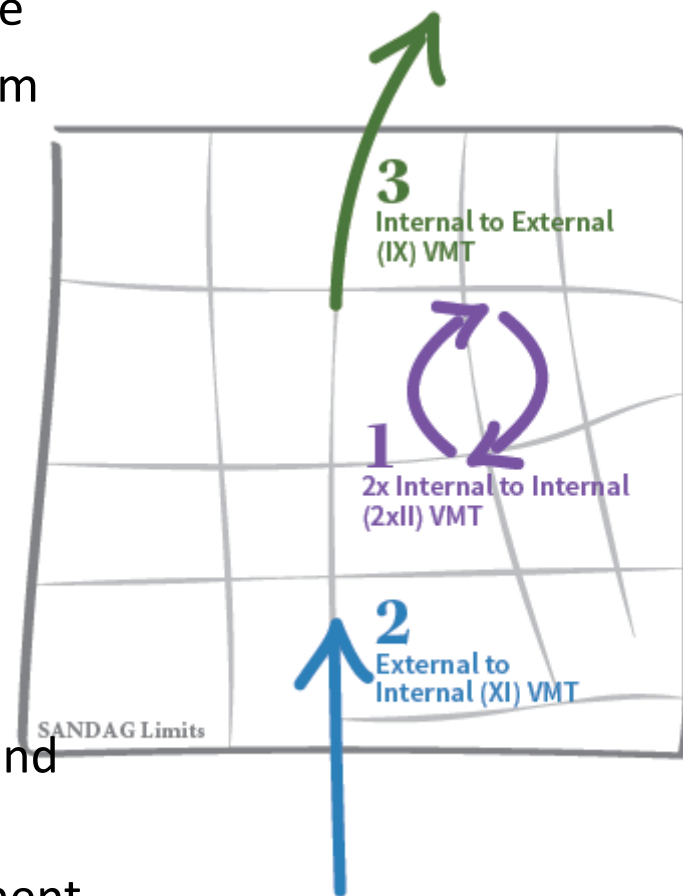


# Interregional VMT

- **Issue Statement:**
  - Trip lengths are truncated at model boundaries
  - OPR recommends that VMT estimation should not be truncated at model or jurisdictional boundaries for convenience of analysis
- **Option to Address Accounting for Full VMT:**
  - Append external gateway distance weighted based on amount and location of external travel origins and destinations

# Interregional VMT – Metric Limitations

- VMT/Resident
  - Daily tour VMT assigned to location of residence
  - Model tracks SANDAG resident tours to and from model boundary
- VMT/Employee
  - Daily tour VMT for residents who are also employed in the region assigned to place of employment
  - Trip purpose cannot be determined for non-SANDAG region residents
- VMT/Service Population
  - VMT based on Origin-Destination (O-D) Skims and O-D Trips
  - Service Population = TAZ Population + Employment
  - Model provides all IX and XI trips



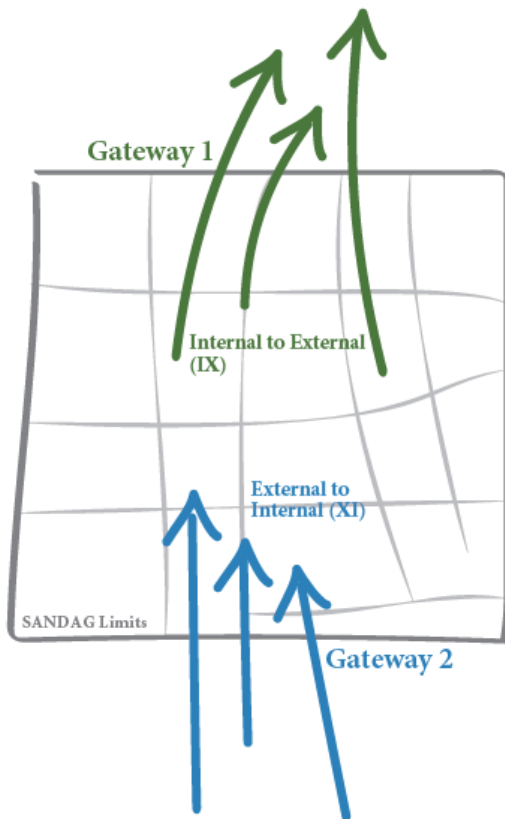
# Interregional VMT – A Calculation Process

1. Determine trip volumes at model gateways (excluding external to external trips)
2. Choose Origin-Destination dataset including flows between model area and area external to the model (using the California Statewide Travel Demand Model-CSTDM)
3. Match SANDAG model gateways to links in the CSTDM and run select link analysis
4. Calculate weighted average distance for each gateway based on select link volumes
5. Calculate VMT beyond model boundary

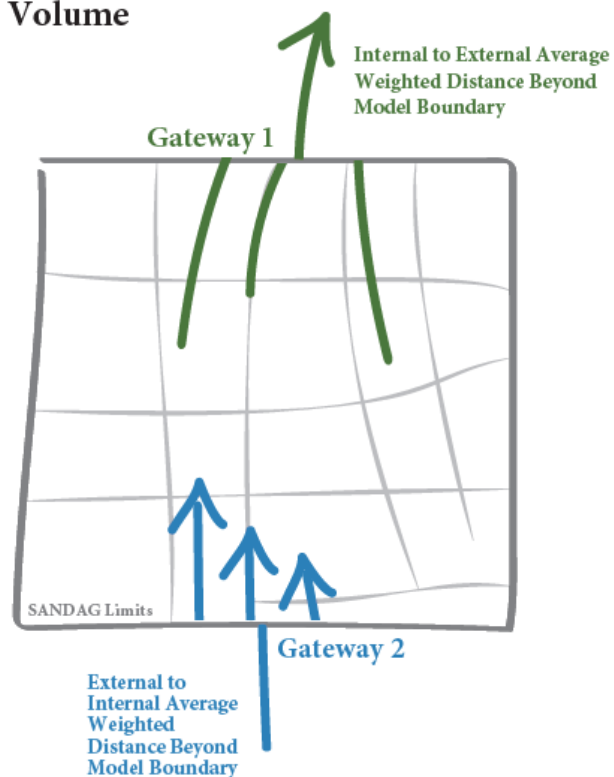
# Interregional VMT – CSTDM Trip Lengths

- Skim shortest travel time between each OD CSTDM pair
- Track gateway and distance outside local model boundary

CSTDM Select Link at SANDAG Gateways



Average Distance Beyond Gateways Weighted by OD Volume



# Interregional VMT – Weighted Distance Beyond Model Boundary

- Calculate average distance beyond local model boundary weighted by volume for each gateway

**Weighted Average Distance Beyond Local Model Boundary**

Gateway		Distance Outside SD County	
		IX Trips	XI Trips
6	I-8 Imperial	70.16	69.20
7	SR-78 Imperial	54.07	58.90
8	SR-79 Riverside	71.71	62.54
9	Pechanga Pkwy Riverside	35.89	30.91
10	I-15 Riverside	24.86	24.81
12	I-5 Orange County	60.54	62.81

# Interregional VMT – VMT Beyond Model Boundary

- Multiply local model gateway volume by weighted distance beyond local model boundary for gateway to determine gateway external VMT

**Example Adjustment Gateway and IX, XI Link Volumes Table**

Gateway		Distance Outside SD County		Gateway Volume		VMT Beyond Model Boundary	
		IX Trips	XI Trips	IX Volume	XI Volume	IX VMT	XI VMT
6	I-8 Imperial	70.16	69.20	4051	4179	284,251	289,216
7	SR-78 Imperial	54.07	58.90	244	250	13,188	14,725
8	SR-79 Riverside	71.71	62.54	608	611	43,632	38,223
9	Pechanga Pkwy Riverside	35.89	30.91	1246	1247	44,711	38,542
10	I-15 Riverside	24.86	24.81	53279	53902	1,324,371	1,337,303
12	I-5 Orange County	60.54	62.81	48596	49855	2,942,196	3,131,468

# International VMT

- **Issue Statement:**

- International VMT / Employee consistent with the San Diego resident VMT / Employee does not exist

- **Details:**

- VMT / Employee, per OPR recommendations, includes both direct and indirect travel impacts of a development
  - Includes all non-commercial trips a person makes during a day, which is more than just the commute trip to/from their workplace
  - Would include taking your kids to school or going out to dinner with your family
- SANDAG has a cross border travel model, but the tours and trips are only for the portion within San Diego County
- There is no publicly available travel model for Tijuana or Baja California with this complete level of detail

# International VMT

- ABM Cross Border Model
  - ~ 29k Work Tours
  - US VMT per Capita = 19

Draft  
Values

Jurisdiction Name	Work Tours	US VMT per Capita
Del Mar	< 100	> 75
Oceanside	< 100	> 75
Escondido	< 100	> 75
San Marcos	< 100	> 75
Carlsbad	< 100	> 75
Poway	< 100	> 75
Lemon Grove	< 100	40 – 60
Imperial Beach	< 100	< 20
Santee	< 100	40 – 60
La Mesa	< 100	40 – 60
Coronado	100-500	20 – 30
El Cajon	100-500	40 – 60
National City	~ 1k	20 – 30
Unincorporated	~2k	20 – 30
Chula Vista	~5k	20 – 30
San Diego	~20k	< 20
Total	~29k	19.0



# International VMT – Sources of Information

- The SR 11 / Otay Mesa East Traffic and Revenue Tier II model
  - The good news:
    - Includes home to work trips from each Colonia to a land Port of Entry (POE)
    - Version 2.1 available years – 2017, 2020, 2025, 2030, 2035, 2040
  - But:
    - Only has travel to/from the POE, does not include personal travel within Tijuana
    - Vehicle based model, does not consider pedestrian / transit trip making
    - Model update to the latest cross border survey expected Spring 2021

# International VMT – Sources of Information

- 2019/2020 Cross Border Travel Survey
  - The good news:
    - Weekday survey completed prior to COVID-19
    - Includes the home to work trip distance from each Colonia to a land POE and their final destination
  - But:
    - Only has travel to/from the POE, does not include personal travel within Mexico
    - Data expected to be publicly available Fall 2020
- 3<sup>rd</sup> Party Data Vendor
  - The good news:
    - Trip Origin – Destination data available potentially through multiple sources
  - But:
    - \$ - Would cost each agency to purchase
    - Would need to determine validity of sample due to potential technology bias

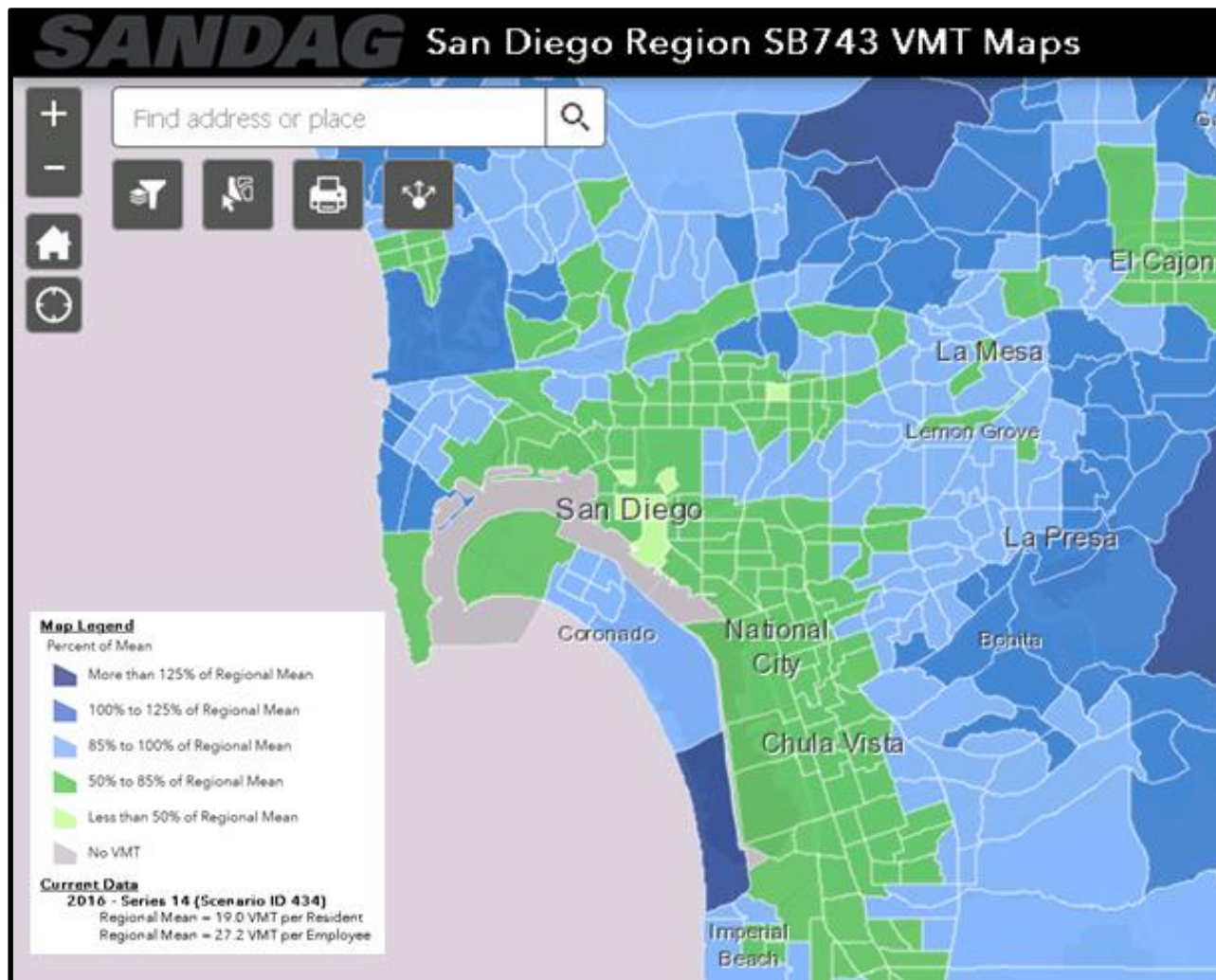
# International VMT – Other Considerations

- Border Delay
  - Crossing delay at San Ysidro and Otay Mesa are not considered in a VMT metric
  - An honorable effort would add equivalent VMT to border crossing vehicle trips due to emissions
  - Depending on queue length and wait time, equivalent VMT may be +2 to +3 VMT added
    - An estimate of average wait time and queue for home to work trips across lane types (SENTRI, Ready, General Purpose) could be determined from the T&R model
    - Based on EMFAC 2017 year 2020 emission estimates
    - Assumes vehicle fleet is equivalent to San Diego vehicle fleet

<i>Year 2020 (EMFAC 2017)</i>	
<b>Speed</b>	<b>Grams CO2/MI</b>
0.0	905.9
1.0	870.6
2.0	839.9
3.0	809.2
4.0	778.5
5.0	747.8
30--60	296.6

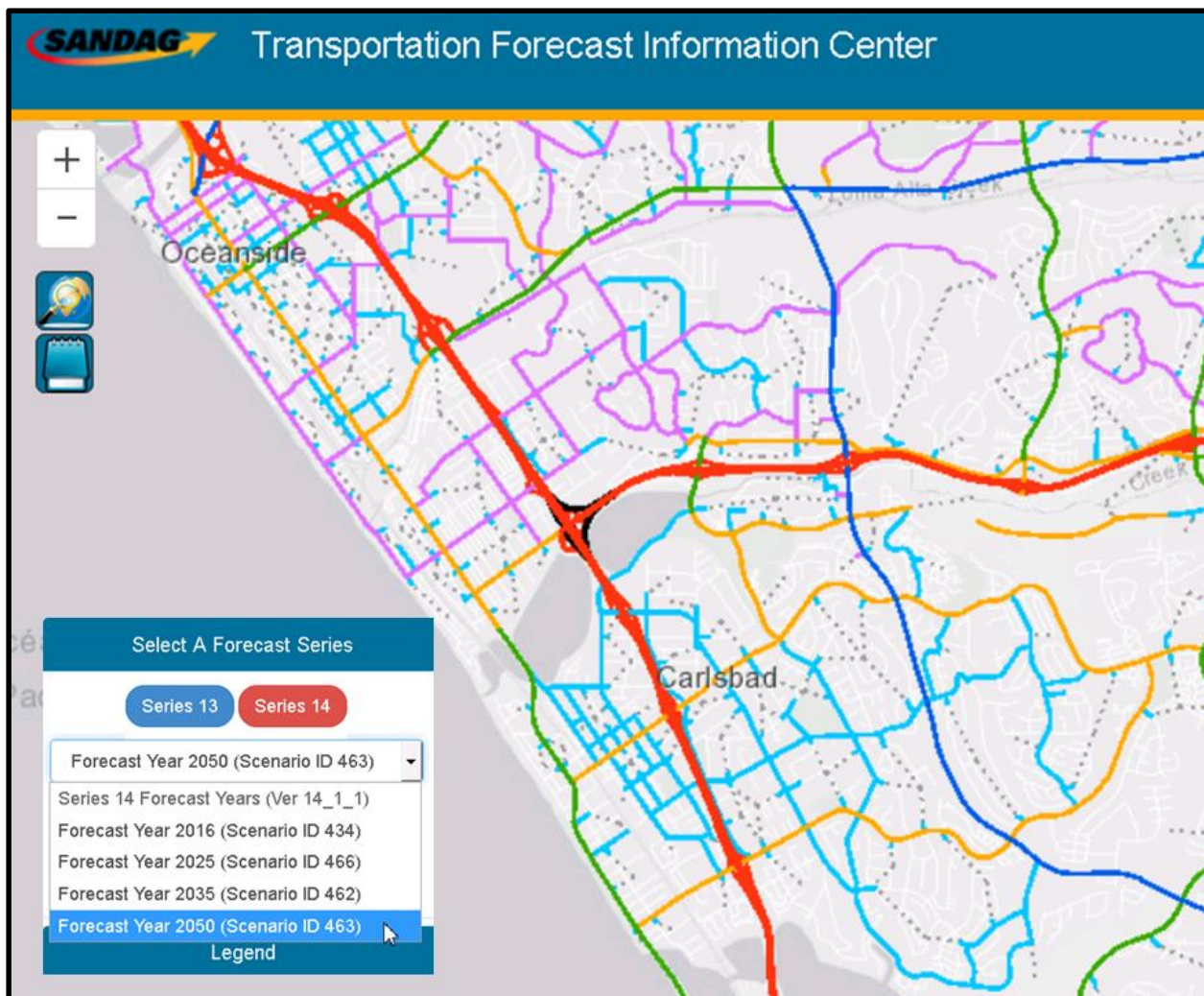
# Map Applications

- [SB743 VMT Map](#)



# Map Applications

- [Traffic Forecast Information Center \(TFIC\)](#)



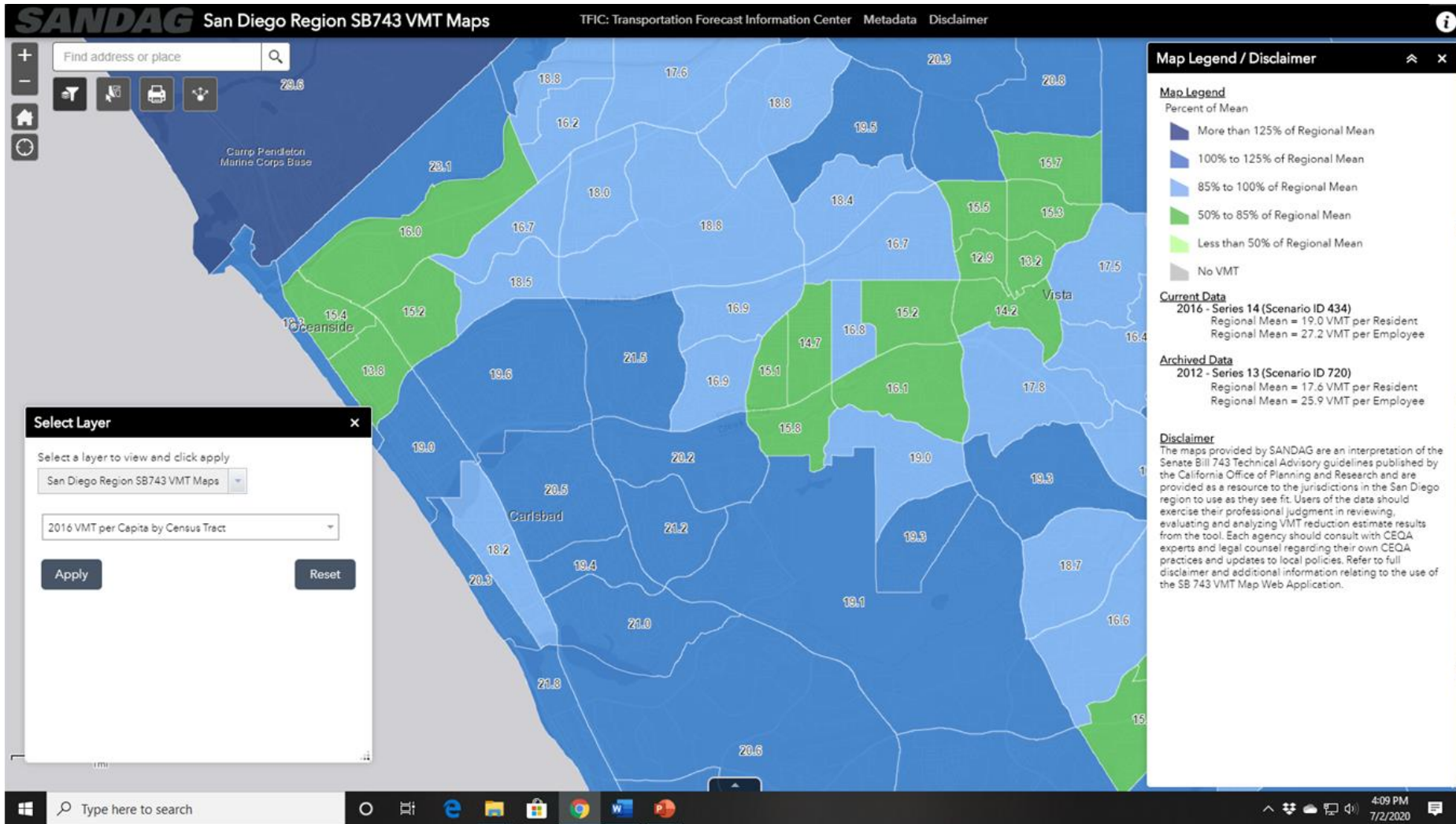
# Case Studies

- Project: 90 Condominium Units
- Current General Plan Zoning: Single Family Residential
- Location: Oceanside, Mystra Drive north of Cannon Road (west of Melrose Drive)
- Average Daily Traffic: 720 (per SANDAG Trip Generation)

# Screening Criteria

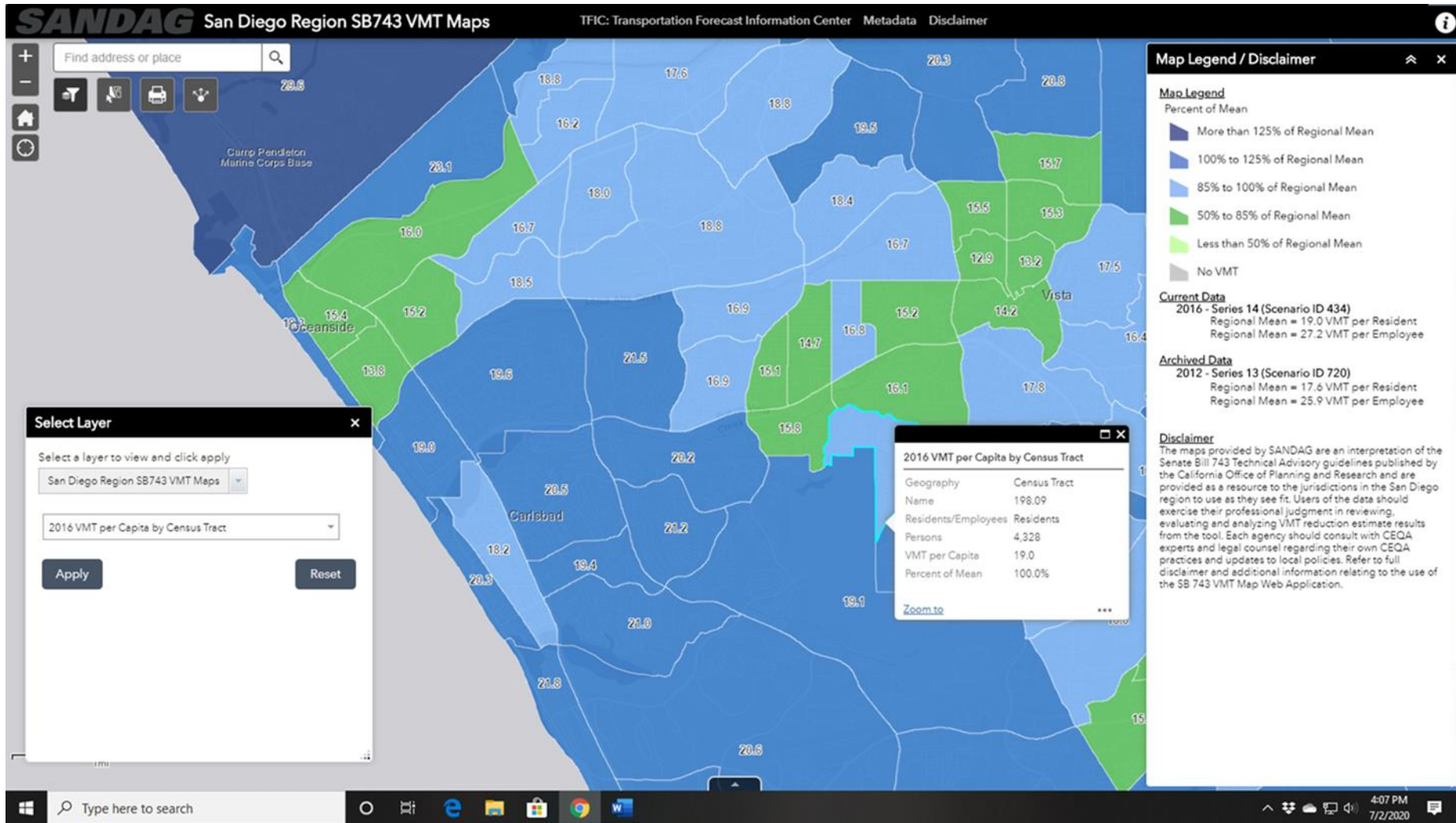
- Green Area of SANDAG Map? [ No ]
- Minimum Project Size? [ No: 720 ADT > 500 ADT ]
- Transit Priority Area? [ No ]
- Affordable housing? [ No ]

# Determine Project VMT/Capita





# Determine Project VMT/Capita



# VMT Analysis

- Project VMT/Capita = 19.0
- Threshold Based on Comparison to Regional Average  
 $0.85 \times 19.0 = 16.15$
- Threshold Based on City Average  
 $0.85 \times 18.3 = 15.55$
- Project is 17.65 % Above Threshold

$$\frac{19.0 - 16.15}{16.15} = 17.65\%$$

# Mitigation

- CAPCOA Report
- Update to CAPCOA Report?
- SANDAG Mobility Management VMT Calculator

# Intermission

- Chat Box



# Service Bureau Overview

- Public and private sector clients
- Generate revenue to support the Regional Information System
- Areas of Emphasis
  - Demographic/Economic Estimates
  - Economic Analysis
  - Transportation Modeling
  - Custom Mapping and Analysis
  - Surveys and Analysis



**SERVICE BUREAU**  
FACT SHEET

**PRODUCTS AND SERVICES**  
Comprehensive Planning  
Regional Transportation Planning  
Design and Construction of Transportation Projects  
GIS Mapping and Analysis  
Transportation Demand Forecasting  
Economic and Fiscal Impact Studies  
Demographic Analysis  
Defining and Profiling Service Areas  
Survey Design and Analysis  
Transportation and Transit System Analysis  
Criminal Justice Analysis  
Environmental Studies  
Facility Location Analysis  
General Plan/Land Use Analysis  
Housing Studies

**GIS and Custom Mapping**



**SANDAG**  
401 B Street, Suite 800  
San Diego, CA 92101  
(619) 699-1900  
Fax (619) 699-1905  
sandag.org

**SANDAGregion**  
**@SANDAG**  
**SANDAGregion**

Tap into the San Diego region's resource for research, analysis, mapping, and planning services. The SANDAG Service Bureau provides customized research products, studies, and technical assistance to public agencies, businesses, and other organizations.

**Innovative Research Solutions**  
The Service Bureau offers a multitude of research consulting services in the areas of Geographic Information Systems (GIS) analysis and mapping, demographic and economic studies, transportation modeling and analysis, comprehensive planning studies, criminal justice projects, survey design and analysis, and others.

Because every project is unique, we approach each one with a fresh perspective. Our products are customized to meet your needs and help you make informed decisions. Visit [sandag.org/servicebureau](http://sandag.org/servicebureau) to learn more about how we can help you with your research and information needs.

**Unparalleled Customer Service**  
Our primary goal is to provide unsurpassed customer service. We provide high quality, timely service that you can count on and call upon for your data needs.

**An Experienced Team**  
The Service Bureau team comprises skilled researchers, statisticians, technologists, and established industry veterans. As a result, when you work with the Service Bureau, you can be assured not only that your team is qualified, but that it has the experience and wealth of resources to get the job done right.

**Request a Project—It's Easy**  
The Service Bureau is your one stop shop for regional data, resources, and technical expertise. Any Service Bureau staff member may be contacted to begin a project. After determining the scope of work and timing, we'll provide a cost estimate and schedule to fit your project needs.

If you have a project you'd like to discuss or would like more information about the Service Bureau, please contact:  
Cheryl Mason, Senior Project Manager  
(619) 699-1951  
[cheryl.mason@sandag.org](mailto:cheryl.mason@sandag.org)



**Demographic Analysis**



**Transportation Analysis**

February 2015

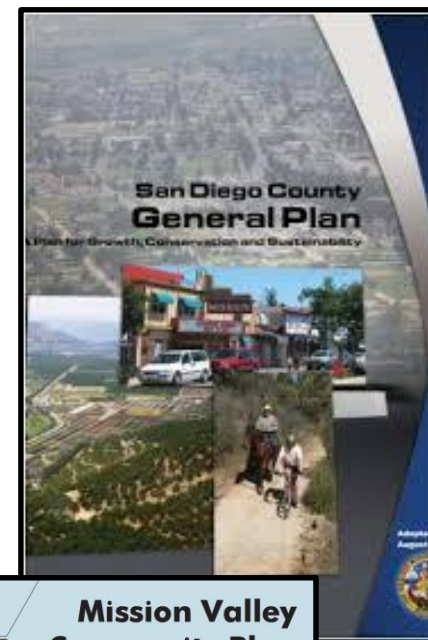
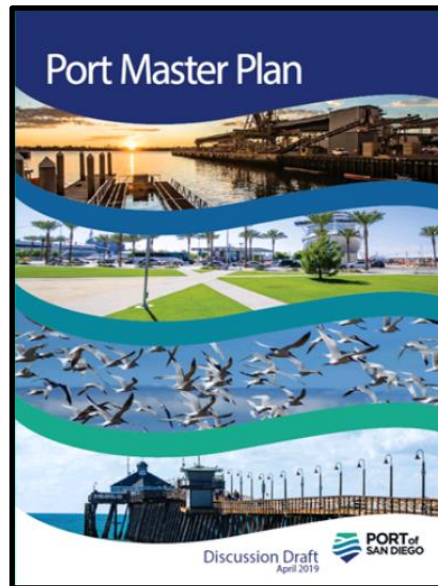
# Service Bureau Staff

- Experienced model application staff dedicated to refining the regional model for sub-regional analysis
- SANDAG Service Bureau & TAM team



# Service Bureau & Transportation Modeling

- Public Sector
  - General Plan Updates
  - Community Plan Updates
  - Housing Element Updates
  - Transit Priority Overlays
- Private Sector
  - Regional Model Analysis
  - Custom Model Analysis



# Disclaimers and limitations

## Disclaimer

The maps provided by SANDAG are an interpretation of the Senate Bill 743 Technical Advisory guidelines published by the California Office of Planning and Research and are provided as a resource to the jurisdictions in the San Diego region to use as they see fit. Users of the data should exercise their professional judgment in reviewing, evaluating and analyzing VMT reduction estimate results from the tool. Each agency should consult with CEQA experts and legal counsel regarding their own CEQA practices and updates to local policies. Refer to full disclaimer and additional information relating to the use of the SB 743 VMT Map Web Application.

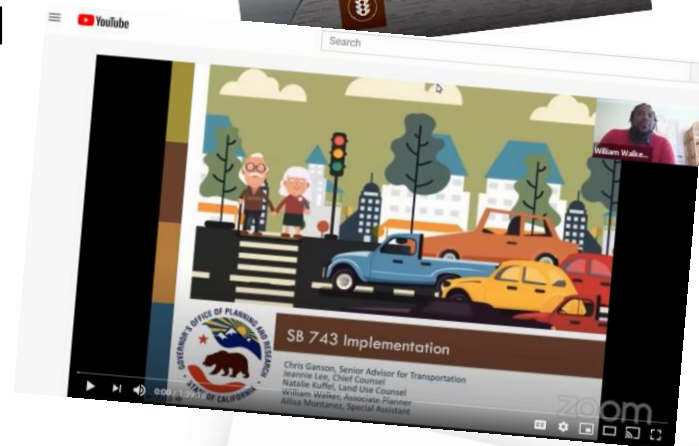




- **Tiering and Subsequent Environmental Review**
  - Can you use a Program level EIR if it only analyzed LOS?
- **Interregional VMT trips**
  - How to account for trips starting in other Counties and Mexico?
- **Goods Movement**
  - Should freight trips be included in a VMT analysis?
- **Qualitative VMT Analysis**
  - When to use it?
- **Mitigation Banking**
  - Regional offsets for VMT impacts

# Other Tools & Resources

- **SANDAG's Mobility Management Toolbox**
  - VMT Reduction Calculator
  - Training Videos
- **OPR Site Check** ([sitecheck.opr.ca.gov](http://sitecheck.opr.ca.gov))
  - Parcel based review for CEQA exemptions and regional VMT
- **OPR YouTube** (Office Hours) and **SB 743 Website**
- Institute of Transportation Engineers (ITE)
  - **Guidelines** for Transportation Impact Studies
  - **SB743 Webinar** on Regional Guidelines
- CAPCOA's Quantifying Greenhouse Gas Mitigation Measures



# Forum Agenda Recap

- Welcome, Introductions and Announcements
- Dealing with Racism in the Planning Profession
- SB743 Inauguration -- July 01, 2020
  - Introduction
  - Analysis
  - SANDAG's role

**Next  
Transportation  
Model Forum:**

**December 9, 2020**

# TRANSPORTATION MODELING FORUM

July 8, 2020

