Update on the Water Ferry System in San Diego

Transportation Committee Item 4 | March 6, 2020

Agenda

• History of Water Ferry
• Current System
• Expansion Plans
Ferry History

• 1880’s start

Ferry History

• Historical Naval Cooperation
Ferry History

- Coronado Bridge
  - Tolls from 1969 - 1987

Ferry History

- Service to:
  Naval Air Station
  North Island
Ferry Today

• Not a ferry?

Ferry Today

• Flagship Cruises & Events
Future of the Ferry

• MTS/Coronado continue to use TDA funds for commuter services
• Inclusion in 2019 Federal Regional Transportation Plan
• Feasibility study for future expansion

Thanks!

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Military Multimodal Access Strategy

Transportation Committee
Item 5 - March 6, 2020

SAN DIEGO REGIONAL MILITARY WORKING GROUP

Military Installations
Navy Region Southwest
  Naval Base San Diego
  Naval Base Coronado
  Naval Base Point Loma
Marine Corps Installation West
  Camp Pendleton
  MCAS Miramar
  Marine Corps Recruitment Depot
U.S. Coast Guard

Jurisdictions and Transit Agencies
Imperial Beach
National City
San Diego
Coronado
County of San Diego
Port Authority
Metropolitan Transit System (MTS)
North County Transit District (NCTD)
MILITARY MULTIMODAL ACCESS STRATEGY

Regional Setting
- Military Collaboration
- Demographics, Housing and Commute Patterns
- Mobility Programs and Incentives

Military Installation Access
- Regional Planning
- Commute and Access
- Internal Circulation and Parking

2015 Regional Plan Near Term Action

STAKEHOLDER ENGAGEMENT
24 Top Projects

Project Inventory (200+)

Regional Strategies and Actions

OUTCOMES
An Overview of the SANDAG Modeling Tools Used to Assess Travel Behavior and Resulting Greenhouse Gas Emissions and Vehicle Miles Traveled

Transportation Committee Item 6 | March 6, 2020

Presentation Outline

• State Laws and Regulations
• The Data and Modeling Team
• Input Data and Workflows
• Activity-Based Model Overview
• Travel Mode Choice Example
• Induced Demand
• "What If" Scenarios
• Next Steps
State Climate and Air Quality Commitments

• State Laws
  – SB 32 (Pavley, 2016) “… the State (Air Resources) Board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit (1990) no later than December 31, 2030.”

• State Goals
  – Executive Order (EO) S-3-05…”… the following greenhouse gas emission reduction targets are hereby established for California: by 2050, reduce GHG emissions to 80 percent below 1990 levels…”
  – EO B-55-18 “… achieve carbon neutrality as soon as possible, and no later than 2045 …”

Transportation and Total Statewide Greenhouse Gas Emissions

Source: 2017 California GHG Emissions Inventory

424.1 MMTCO₂e
2017 TOTAL CA EMISSIONS
Key Regulations by Sector

Transportation

- **Fuel Providers:**
  Low Carbon Fuel Standard
  (CCR Title 17, subchapter 10, article 4, subarticle 7, sec. 95480-95503)

- **Automakers:**
  ZEV Regulations
  (CCR Title 13, sec. 1962.1 and 1962.2)

- **MPOs:**
  SB 375 – Regional GHG Targets

SB 743

- Required changes to CEQA Guidelines
  *(CCR Title 14, Div. 6, Ch. 3)*

- Technical Advisory on analysis of transportation impacts
  - VMT as new metric for analyzing transportation impacts
  - Replaces “level of service” metric

- Caltrans developing guidance for projects on State Highway System

- July 1, 2020 statewide implementation date
SB 375 and SB 150

• SB 375 directed CARB to:
  – Set regional GHG reduction targets
  – Maintain guidelines for travel demand models
  – Review adopted Sustainable Communities Strategy to accept or reject the MPO’s determination that the SCS, if implemented, would meet the regional targets

• SB 150 directed CARB to:
  – Report on the progress regions have made towards meeting their SB 375 GHG reduction targets

Sustainable Communities Strategy
Building Blocks

Land Use  Transportation Network  Transportation Demand Management
Transportation Systems Management  Pricing Strategies  Vehicle Technology/Enhanced Mobility

Source: California Air Resources Board Proposed Update to the SB 375 GHG Emission Reduction Targets, February 2018
The Data and Modeling Team

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Data and Modeling
Pat Landrum
Acting Director

Data Solutions
Pat Landrum
Manager of Data Solutions

Economic and Demographic Forecasting and Modeling
David Tedrow
Manager of EDAM

Model Development
Dr. Wu San
Manager of Model Development

Transportation Analysis and Modeling
Rick Curry
Manager of TAM

- Land Inventory System
- GIS Services
- Data Acquisition and Management
- Web Applications and Visualizations
- Regional GIS Data Warehouse

- Regional Growth Forecast
- Annual Estimates
- Demographic Forecasts
- Economic Analysis
- Special Analysis

- ABM Development & Maintenance
- ABM Database Management
- Production Modeling Support
- Travel Behavior Survey and Data Development/Integration
- Custom Analysis Support

- Regional Transportation Plan Modelling
- Service Bureau
- Modelling for Special Projects
- Custom Analysis and Mapping

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Input Data and Workflows

Land Inventory System (SPACECORE)
- Land Use (Sub Parcel)
- Dwelling Unit Inventory
- Scheduled Development
- Development Capacity from Jurisdictions
- Buildings and Building Characteristics
- Employment Inventory
- Constraints
### Input Data and Workflows

**Regional Growth Forecast**
- Population
- Households
- Housing Units
- Jobs

**ABM Inputs**
- Synthetic Population
- Subarea Forecast Characteristics

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**Survey Data**
- Household Travel Behavior
- On-board Transit
- Census/ACS Journey to Work
- Regional Transit
- Cross Border
- Parking
- Market Research

**Observed System Performance Data**
- Speed Data
- Traffic Counts
- Transit Passenger Counting Program
- Vehicle Occupancy and Classification Counts/Surveys
What is an Activity-Based Model?

- Analysis platform that translates complex behavioral relationships into computed forecasts of travel
- Suite of modules, processes, and programs that use mathematical equations to replicate observed human behavior
- A projection of our current understanding of the region based on surveys of peoples travel behaviors and observed data

Developing the Activity-Based Model

Travel Surveys → Model Estimation

\[
\begin{align*}
\text{LogSum}_{2(1)} &= \ln\left(e^{\text{LogSum}_{2(2)}} + e^{\text{LogSum}_{2(3)}} \right) \\
\text{LogSum}_{4(1)} &= \ln\left(e^{\text{LogSum}_{4(2)}} + e^{\text{LogSum}_{4(3)}} + e^{\text{LogSum}_{4(4)}} \right) \\
\text{P}_{\text{Auto}} &= \frac{e^{\text{LogSum}_{2(1)}}}{e^{\text{LogSum}_{2(1)}} + e^{\text{LogSum}_{2(2)}} + e^{\text{LogSum}_{4(1)}} + e^{\text{LogSum}_{4(2)}} + e^{\text{LogSum}_{4(3)}} + e^{\text{LogSum}_{4(4)}}}
\end{align*}
\]

Model Calibration (Tuning) → Model Validation & Sensitivity Testing → Future Forecasts and Alternatives Analysis
What Influences Travel Behavior and the Activity-Based Model?

- Existing Transportation Facilities
- New Transportation Facilities
- Transportation & Land Use Policies
- Demographics
- Growth Forecast
- Surveys
- Economics
- Environmental Constraints
- New Transportation Facilities

Model Runs

SANDAG ABM2+ Flow Chart

1. Import and Build Highway / Transit Network
   - Build AT Network
   - Create AT Accessibility

2. Traffic Assignment
   - Simulated Travel
     - San Diego Residents
     - Internal/External Model
     - Cross-border Mexican Residents Model
   - Aggregated Travel
     - Airport Models
     - Visitor Model
     - Commercial Vehicle Model
     - External Heavy Truck Model
     - External – Internal Model
     - External – External Model

3. Auto + Truck Trip Tables / Transit Trip Tables
   - Final Step
     - Traffic Assignment
     - Transit Assignment
     - Data Export
     - Emissions Modeling

Feedback Loops
Cross Border Travel Component

- Cross Border Travel Survey
  - 2010/11, 2020
- Re-calibrated in 2018/2019
- Tour Purposes
  - Work, School, Cargo, Shop, Visit, Other
- Cross Border Xpress (CBX)
  - Modeled like SDIA
  - Survey 2016

Travel Mode Choice

“Lisa”
- 50 years old
- Lives in La Mesa
- Married
- Son (12 years old)
- Works downtown
- 2 car family
- Moderately high income
Travel Mode Choice

- 25 min: $2 fuel & maintenance, $8 parking, 97.2%
- 50 min: $2.50 fare, 2.7%
- 1 hour: free, 0.1%

What Would Lisa Do If?

- 25 min: $2 fuel & maintenance, $8 parking
  - Added Freeway Capacity?
  - Increased Parking Costs?
  - Added VMT Fee?
  - Vehicle was AV?
- 50 min: $2.50 fare
  - Increased Travel Speed?
  - Decreased Transit Fares?
  - Increased Frequency?
- 1 hour: free
  - Added Separated Bike Facilities?
  - E-bikes?
Auto Operating Costs

- Auto Operating Costs is computed using
  - U.S. Energy Information Administration Annual Energy Outlook forecasts for gasoline
  - CEC forecasts for non-gasoline fuels
  - AAA maintenance costs
  - CARB fuel efficiencies

What if…

1 mpg more fuel efficient
- 0.7%

100% EV fleet

1 mile less per day
- 4.7%
What if We Reduced Congestion on the Freeway Network?

CO2 Emissions (EMFAC 2017) by Speed Bin

- 2020 LDV Fleet
- 2035 LDV Fleet

Caltrans SB 743
Evaluating Capacity-Increasing Projects

Source: SANDAG BOD 2-14-20 Presentation by Ellen Greenberg
Induced Travel Demand

• What is Induced Demand?
  – A widely used term to describe the observed increase in traffic volume that occurs after a new roadway is opened or a congested roadway is widened
  – Additional demand for a facility can occur as a result of decreasing generalized cost of travel
    • Reduction in travel time
    • Reduction in out-of-pocket cost

• National Center for Sustainable Transportation
  – 1 new general highway lane mile
  – ~ 8,500 to 19,000 VMT / Day

Induced Travel Demand

• Potential Changes to Travel Behavior
  – Chose to change modes
  – Chose a different destination location including changing between at-home and out of home activities
  – Chose to take a different path/route
  – Chose to travel at a different time
  – Chose to combine trips differently

• Potential Changes to Land Use
  – Change to development patterns based on change in accessibility
SR 78 Example
What if we added one managed lane in each direction today?

current volume (in thousands)
with improvements

SR 52 Example
What if we added capacity today?

current volume (in thousands)
with improvements
Next Steps

- Regional Growth Forecast
- ABM2+ Development
- Regional Plan/EIR Modeling and Analysis

Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov