Mobility and Emissions in the Denver Region
MOBILITY TRENDS IN THE DENVER REGION
Denver Regional Council of Governments (DRCOG)

- Federal required MPO – Metropolitan Planning Organization (transportation)
- 9 ¼ Counties
- Population 3.3 million
- Employment 1.8 million
On an average weekday in the Denver region…

15 million person-trips
(110 mil. PMT)

13 million person-trips in motor vehicles

2 million walk/bike trips

9 million vehicle trips
(84 mil. VMT)

250,000+ hours of extra congestion delay
Average Daily VMT in the Denver Region (2000 – 2018)

- **Stable Growth**: VMT: +2.8% per year, Population: +1.3% per year
- **No Growth**: VMT: 0% per year, Population: +1.7% per year

- **Total VMT**: 84.3m
- **VMT/Capita**: 25.7

2040 Metro Vision Target: 23 VMT/Capita

VMT: +2.8% per year  
Population: +1.3% per year

VMT: 0% per year  
Population: +1.7% per year
Growth in the Denver Region

- booming economy
- population and job growth
- housing prices/longer commutes
- construction activity

Growth since 2000:

- DRCOG Region
- National

[Bar chart showing growth percentages for VMT (Vehicle Miles Traveled) and Population Growth for DRCOG Region and National levels, with DRCOG Region showing higher growth.]
DRCOG Region: Means of Transportation to Work
(2005-2017)

<table>
<thead>
<tr>
<th>Year</th>
<th>Drove alone</th>
<th>Carpoled</th>
<th>Public transportation</th>
<th>Bicycle (summer higher)</th>
<th>Walked</th>
<th>Other means (e.g. motorcycle, taxi)</th>
<th>Worked at home</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>74.4%</td>
<td>8.1%</td>
<td>4.2%</td>
<td>1.2%</td>
<td>2.2%</td>
<td>1.1%</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

- Drove alone: 74.4%
- Carpoled: 8.1%
- Public transportation: 4.2%
- Bicycle (summer higher): 1.2%
- Walked: 2.2%
- Other means (e.g. motorcycle, taxi): 1.1%
- Worked at home: 8.8%
Five-Year Travel Trends

+8% population

+23% Denver International Airport passengers

+21% working from home

+250% vehicle miles traveled via ride-hailing services

+INFINITY% e-scooter share of vehicle miles traveled
Five-Year Travel Trends

- 3% transit boardings

+15% vehicle miles traveled

+6% vehicle miles traveled per capita
Five-Year Motor Vehicle Emission Trends

-35% ozone precursor emissions

+507% registered electric vehicles

+2% greenhouse gas emissions
Five-Year Crash and Congestion Trends

- **+56%** annual fatalities
- **+29%** miles congested more than three hours
- **+26%** daily vehicle hours of delay
Five-Year Freight Trends

- +12% Denver International Airport air cargo
- +50% package deliveries
- +80% e-commerce retail sales
FUTURE OF MOBILITY IN THE DENVER REGION
A Growing Region

Population
- 2015: 3,139,193
- 2020: 3,415,792
- 2030: 3,906,507
- 2040: 4,316,766

Population increase: 38% from 2015

Employment
- 2015: 1,711,617
- 2020: 1,824,564
- 2030: 2,079,395
- 2040: 2,384,785

Employment increase: 39% from 2015
Trends and Forecasts in Roadway Travel

Vehicle Miles Traveled:
- 2000: 60
- 2005: 70
- 2010: 72
- 2015: 79
- 2020: 85
- 2025: 92
- 2030: 98
- 2035: 105
- 2040: 111

VMT per Capita:
- 2000: 120
- 2005: 123
- 2010: 125
- 2015: 128
- 2020: 130
- 2025: 132
- 2030: 134
- 2035: 136
- 2040: 138

Increase Percentages:
- Vehicle miles traveled: +43%
- Person hours of delay: +131%
- Lane miles of roads congested for 3+ hours: +89%
Metro Vision

<table>
<thead>
<tr>
<th>Overarching Themes</th>
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<tbody>
<tr>
<td>An Efficient and Predictable Development Pattern</td>
</tr>
<tr>
<td>A Connected Multimodal Region</td>
</tr>
<tr>
<td>A Safe and Resilient Natural and Built Environment</td>
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<tr>
<td>Healthy, Inclusive and Livable Communities</td>
</tr>
<tr>
<td>A Vibrant Regional Economy</td>
</tr>
</tbody>
</table>
Mitigating impacts of congestion

How to Mitigate Congestion

Avoid it
- Real-Time Information
- Extra Night in Mountains
- Flexible Work Hours
- Telework

Adapt to it
- Mobility Choices:
  - Alternative modes
  - Transit, Walk, Bicycle
  - Car/Vanpool
- Real-Time Information
- Efficient Land Use Designs

Alleviate it
- Add Lanes / Capacity
- Improve Operations:
  - Traffic Signals
  - Signing and Striping
  - Access Management
  - Incident Management
- Expand Transit Facilities
Ozone Precursor Emissions - Vehicle Technology

**VOC Emission Results**

- 2020: 47
- 2030: 29
- 2040: 22

**NOx Emission Results**

- 2020: 61
- 2030: 25
- 2040: 17

~1 million more people
~26 million more VMT
Greenhouse Gas Emissions from On-road Vehicles in DRCOG

**Total Tons Per Day of GHG Emissions**

- ~1 million more people
- ~26 million more VMT

**Tons per Day of GHG Emissions per Capita**

- 37% decrease from 2010
Electric Vehicles

Colorado EV Sales Over Time By Scenario
Includes BEV and PHEV

DRCOG partners and funds programs with the Regional Air Quality Council
Unpredictable impacts of new mobility services and technology

- Personal habits and preferences
- Mobility services, transit evolution, TNCs, micromobility
- Alternative fueled vehicles
- Connected vehicles
- Automated vehicles
Mobility Choice Blueprint

- Regional Collaboration
- Shared Mobility
- Driverless Vehicle Preparation
- System Optimization
- Mobility Electrification
- New Transportation Funding
- Data Security & Sharing
Other plans and projects

- Regional Vision Zero: Safer streets for Metro Denver
- Road Usage Charge Pilot Program
- Reimagine RTD: Together, let’s explore and redesign transportation
- Colorad Express Lanes Master Plan
- Micromobility Work Group
- HOP ON BOARD: RTD is conducting a feasibility study to prioritize locations for bus rapid transit in the Denver metro area
What could the future look like? Development of 2050 MVRTP

**Land Use Scenarios**

- Baseline
- Infill
- Centers

**Transportation Scenarios**

- Baseline
- Transit
- Regional Highway & Operations
- Freeway/Interstate Congestion
- Technology/Connected Vehicles
- Travel Choices
QUESTIONS?