Innovating Mobility

Randy Iwasaki
Executive Director
Contra Costa Transportation Authority
November 16, 2017
Who We Are

- CCTA is a public agency formed by voters in 1988 to manage the county’s transportation sales tax program and to lead transportation planning efforts.
- We are responsible for maintaining and improving the county’s transportation system by delivering critical transportation infrastructure projects to safely and efficiently get people where they need to go.
- Managing entity of autonomous vehicle (AV) testing site: GoMentum Station.
Measure C

- Passed by voters in 1988, Measure C provided for a half-cent on the dollar sales tax for 20 years (through March 2009) to pay for an ambitious list of transportation projects and programs.

- An estimated $1 billion was generated by this Measure, for a BART extension, freeway improvements, better bus service, enhanced bicycle facilities and more transportation options for senior citizens and people with disabilities.
In November 2004, 71% of Contra Costa voters approved Measure J. The measure provided for the continuation of our county’s half-cent transportation sales tax until 2034, and will provide approximately $2.0 billion for countywide and local transportation projects and programs for the life of the measure.
What We Do

**PEDESTRIAN**
Make improvements to sidewalks, crosswalks, trails, and paths

**LOCAL STREETS**
Smooth traffic flow on major roads and invest in improvements such as repairing potholes and road surfaces

**BUSES**
Invest in a reliable, comfortable and convenient bus network

**SAFE ROUTES TO SCHOOLS**
Focus on programs and projects aimed at bicycle and pedestrian safety for K-12 students

**FERRIES**
Expand the Bay Area ferry system by looking to ferries as an alternate commute method between West County and San Francisco

**BICYCLE**
Invest in safe routes and infrastructure improvements for cyclists

**BART**
Improve BART service and stations, extend routes and increase parking at stations

**HIGHWAYS**
Complete Contra Costa's highway system, and improve air quality and noise protection along these corridors

**CARPOOL/RIDESHARE**
Implement programs to reduce traffic congestion by encouraging carpooling and ridesharing

**PROGRAMS FOR SENIORS AND PEOPLE WITH DISABILITIES**
Enhance transit options to improve mobility for seniors and people with disabilities
Prudent Financial Stewardship

- **Highly Rated**
  - AA+ Bond Rating by Fitch
  - AA+ by Standard & Poor’s
  - Recipient of “Excellence in Government Financial Reporting” by Government Finance Officers Association

- **Responsible management through recession**
  - 29.14% cumulative growth in sales tax revenues since 2010

- **Lean Organization**
  - 20 employees
  - Established budget controls – 1% limitation on administration costs
  - Conservative pension plan – no spiking, no unfunded liability
  - Low debt levels

- **Last bond sale – September 30th**
  - Provides continued funding for capital projects in the County
  - $100 million tax-exempt bonds through 2034
  - Local underwriter was Alamo Capital in Walnut Creek
Measure J Delivery – 25 in 10

Measure J Revenues and Expenditures ($ millions)

- Actual Project Delivery
- Programs
- Projects

Measure J Revenues
- Programmed Measure J funds for Capital Projects

- Measure J Revenues
- Measure J Revenues - Capital Projects
- Programmed Measure J funds for Capital Projects
How We Are Innovating
Online Bidding

Receive sealed, secure digitally-signed bids

Offer Plans Sheets and bid documents online

Instantly communicate with bidding communities
Paperless Contracting

Mobile accessible – tablets/smartphones

Digital & Electronic Signatures
Electronic Inspection
Visual Simulation
Asset Management
Drone Integration

- Generate high-resolution videos and photos of jobsite
- Use of LiDAR (light detection and ranging) to assist with quantity measurements
- Monthly photogrammetry data collection
- Will be used as a check to determine final import fill.
Redefining Mobility in Contra Costa County
TDM Pilot Projects

Special offer for Contra Costa residents

Download the app and save $2 per ride

DriverMiles
Seven Strategies

1. Cool Corridor “Hot Spots”
2. Complete HOV/Express Lanes
3. Increase Bus Service Efficiency
4. Innovative Operational Strategies
5. Prepare the Corridor for the Future
6. First Mile & Last Mile Connections
7. Transportation Demand Management
Four Projects

- Advanced Technologies
- Bus-on-Shoulder
- Transit Improvements
- HOV/Express Lane Gap Closure
Project Schedule

2018-2021
- **EXPAND** Express Lane Network
- **ENHANCE** TDM strategies
- **IMPLEMENT** Initial IOS strategies/adaptive ramp metering
- **TESTING** of SAV FM/LM Concept Prototype

2021-2023
- **COMPLETE** Planned Express Lane Network
- **IMPLEMENT** Express Bus on Shoulders
- **COMPLETE and IMPLEMENT** IOS features
- **DEPLOY** SAV for FM/LM connections

2023-2025
- **ADDRESS** Traffic Bottlenecks & Cool Traffic Hotspots
Shifts in Transportation Funding

- Senate Bill 1 (SB1)
- Active Transportation Program
- State Transportation Improvement Program (STIP)
- State Highway Operations and Protection Program (SHOPP)
- Congestion Mitigation and Air Quality (CMAQ) Improvement
- Infrastructure for Rebuilding America (INFRA)
- Transportation Investment Generating Economic Recovery (TIGER)
Leveraging Local Funding for Project Delivery
Transportation Planning
Regional Transportation Planning Committees

- Four Distinct Sub-regions
- Responsible for prioritizing local projects and programs
- Develop Action Plans for Routes of Regional Significance
Travel Demand Forecast Modeling

- Used to determine impacts of land use developments and transportation improvements through year 2040
- Model assumes increased capacity of existing roadways due to automated/connected vehicles
- Accounts for clean vehicle deployment over time
- Model provides future forecasts of GHG emissions, Vehicle Miles Traveled and Vehicle Hours of Delay under various scenarios
Planning for the Future – The Countywide Transportation Plan

- Updated Every 4-5 Years
- Documents the Authority's Goals, Vision, and Strategies
- Action Plans are Developed by the Regional Committees
- Includes 10- and 20-Year Financially Constrained Project Lists
Implications of Urban Mobility Planning

- 6% Consider impact of driverless car technology
- 3% Consider impact of Uber and Lyft
- 20% Consider impact of roadway diets
- 50% Consider explicit recommendations of new highway construction
- 12% Consider no new highway construction

Source: National League of Cities
Climate Change and Transportation

- Authority’s plans build upon California’s strong GHG emission reduction policies

- Includes accelerated clean vehicle deployment and automated vehicle technology
Design Procurement & Standards
Do we need ever to widen a roadway & highway?
Do we need to design 12 foot lanes anymore?

As shown in this diagram, this Alternative allows for 12 foot traffic lanes, a 12 foot center turn lane, shoulders 2 feet wide, and a sidewalk on one side of the road, separated from the road shoulder by a 6 inch strip.

(Graphic courtesy Idaho Transportation Department)
Shoulder Lane Utilization?

outside shoulder

inside shoulder
Complete Streets

“Complete Street” Design Create a Safe Environment

Street modifications can have a significant positive impact on safety.
3M Striping
How Cities Have Evolved
City 1.0
City 2.0
City 3.0
City 5.0

Data Driven Mobility

Sensible & Digital City

Intermodal Innovations
City 5.0 Environment
Connectivity Emerging Faster

Number of Devices in Billions

<table>
<thead>
<tr>
<th>Year</th>
<th>Devices (Billions)</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td>0.14</td>
</tr>
<tr>
<td>2000</td>
<td>0.4</td>
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<tr>
<td>2010</td>
<td>1.8</td>
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<tr>
<td>2017</td>
<td>3.5</td>
</tr>
<tr>
<td>2020</td>
<td>5</td>
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Source: http://www.internetlivestats.com/internet-users/#trend

Vehicles account for 1/3 of new cellular devices (2016)
Mobility Revolution
Why Autonomous Vehicles?

- Safer Roads
- Less Congestion & Better Air Quality
- Increased Accessibility & Opportunity
ACCIDENTS DUE TO HUMAN ERROR (2015)

39,492

Safer Roads

*NHTSA Survey, Feb 2015*
Less Congestion, Better Air

* Operations of a Shared Autonomous Vehicle Fleet for Austin, Texas Market - Fagant, Kockelman, Bansal
Increased Accessibility, Opportunity

Studies show that commute time is the key factor in social mobility, more so even than factors related to crime or education.*

*Transportation Emerges as Crucial to Escaping Poverty, NY Times May 2015
GoMentum Station
One of Ten

GoMentum is 1 of 10 federally approved AV test sites in U.S.
Global Test Centers

GoMentum Station is an International Entity
GoMentum Station

DOT designated testing site with more than 5,000 acres

2,100 acres currently available for testing
Paved Roads

Over 20 miles of paved roadways including a 7-mile long spine road for high speed testing.
Tunnels

Two 1400-ft. long tunnels ideal for testing guidance, sensors & communications technologies
Bridges

Freeway underpasses and variable roadway geometrics
Parking Lots

Several parking lots for testing by multiple users
Goals of GoMentum

- **Economic Growth & Job Creation**
- **Efficient Mobility**
- **Enhanced Safety**
- **Healthier Environments**

21st Century Transportation
Testing Partners
Shared Autonomous Vehicle (SAV) Project
### Project Progress

- Proposed and passed Assembly Bill 1592 (Bonilla, 2016) authorizing pilot project of vehicle with no steering wheel, brake pedal or operator.
- Secured Bishop Ranch as partner and shared autonomous vehicles.
- Obtained City permission to operate on public streets.
- Obtained waiver from National Traffic Highway Safety Administration (NHTSA) to operate on public streets.
- Currently collaborating with California DMV on obtaining permission to operate on public streets.

### Test Phasing

Testing for EasyMile shuttles began in fall 2016 and is structured to happen in three stages, with the final phase complete in early 2019.

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
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<tbody>
<tr>
<td>At GoMentum test bed.</td>
<td>On private property at Bishop Ranch in San Ramon, CA.</td>
<td>Around the entire Bishop Ranch campus, including public streets.</td>
</tr>
</tbody>
</table>

*EasyMile @ Bishop Ranch*

*Imagine how autonomous shuttles could improve your world.*
SAV Partners
Impacted Industries
GoMentum Station CV/AV Program

- Insurance
- Auto Repairs
- Professional Drivers
- Hotels
- Airlines
- Auto Parts
- TNCs
- Public Transit
- Parking lots
- Fast Food
- Gas Stations
- Real Estate
- Media
- Auto Industry

Source: https://www.cbinsights.com/blog/13-industries-disrupted-driverless-cars/
The Challenges
87% of U.S. adults favor a requirement that all driverless vehicles have a human in the driver’s seat who can take control if needed.

PEW RESEARCH CENTER
Regulating Innovation

Conflicting laws and incompatible regulations are the enemy of innovation.
Regulatory Considerations

- Liability
- Licensing
- Insurance
- Registration of Vehicles
- Technical Standards
- Security/Safety Requirements (operators)
- Cybersecurity
CCTA’s Challenges

- Liability agreements
- Lack of funding (staffing and improvements to site cost money)
- Recordkeeping requirements are cumbersome
- Personal security (of riders)
- No roadmap for this work - lack of precedent
Preparing for the future
The Path Forward

- Education & Outreach
- Planning Process
- Engagement
- Flexibility
- Leverage
- Consistency
- Collaboration
- Partnerships
2018 redefining MOBILITY SUMMIT

March 29
Be there.
Thank you

Randell Iwasaki
Executive Director
Contra Costa Transportation Authority
riwasaki@ccta.net

@riwasaki2