November 10, 2016

Item #1

CITIZENS PARTICIPATION
Item #2

APPROVAL OF MINUTES

Item #3

OVERVIEW OF TRAC AGENDA
Committee Goals

- Learn about the RTC transit system, as well as transit systems of other western regions.
- Provide input on RTC transit priorities, projects, and new technologies.
- Determine if additional funding is necessary and if so, provide recommendations on short and long term funding mechanisms for projects.

TRANSIT FRAMEWORK

October 2016 – Value of transit globally, evolution of transit locally


December 2016 – Transit planning & future projects

January 2017 – Transit funding & regional comparisons

February 2017 – Recap on transit planning & funding
DISCUSS FUEL REVENUE INDEXING

Item #5

RECEIVE AN UPDATE ON ONLINE TOOL & GIS-BASED PROJECT MAP
Project Analysis Tool (PAT)

SACOG - Online Data Support for Outcomes
Welcome Screen/Disclaimer

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Risk of use is governed by the RTC of Southern Nevada (RTC) disclaimer.

Data Disclaimer: All maps and data created and produced by the RTC are not meant for transportation decision making. The RTC makes no guarantee of the accuracy of the maps and data, and will not be liable for any direct, indirect or consequential damages arising from any use of the maps and data. All maps and data created by the RTC are subject to change accordingly. The adopted transportation system includes stressful routes and accounts that are not meant for decision making without adequate notice and accuracy. The maps and data created by the RTC are not intended to be used for any decision making, and the RTC is not liable for any damage or consequential damages arising from any use of the maps and data.
Layers Menu

Safety Data Layers
Safety – Serious Crash Density

Zoom – Boulder Hwy & DI
Congestion – Traffic Counts

Congestion – # of Lanes
Change Layers to Multi-modal

Multimodal Data Layers
Change Layers to Maintenance

Maintenance Data Layers
Maintenance – Clark County

Change Layers to Pop & Employment
Pop & Employment Data Layers

Population – 2015 Population
Population – 2015 Population

Population – Population Change
Change Basemap

Basemap Data Layers
Tool Application: Safety + Multi-modal + Project

Tool Application – Underlying Data
Questions?

Regional Project Coordination Video
Regional Project Coordination Video
Item #6

RECEIVE AN UPDATE ON MAJOR PROJECTS AND TRANSPORTATION INFRASTRUCTURE
Item #7

RECEIVE AN OVERVIEW OF DISRUPTION AHEAD PRESENTATION
What is happening now?

What can we expect in the next 5 years?

How can we prepare for it now?

Transportation Just Got Really Exciting!

Frank and Ernest

My belief (glass half full!):
We are on the cusp of a technological tidal wave that will result in a paradigm shift* in transportation.

Think of AVs as the ‘Physical Internet’

("a radical change in underlying beliefs or theory")
“In the seven-and-a-half years of my presidency, self-driving cars have gone from sci-fi fantasy to an emerging reality with the potential to transform the way we live.”

President Barak Obama
Is how a City deals with Uber, a strong indicator of how it will deal with AVs?
Suncor Autonomous Truck, Alberta

Tested in 2014. 175 ordered in 2015.

1st AV Service on an Industrial Site, EDF Civaux

6 shuttles, 2k people save 20-25min & €3M/yr
By 2019? - Google Prototype Vehicle (NEV)

25mph – same as NYC default speed limit...

Imminent? - Peloton: Automation and Platooning

Solving accidents and fuel use
Mercedes Benz Future Truck 2025

Daimler Freightliner now licensed to test in NV

Otto (now Uber) – testing in Nevada

Looking for 1,000 volunteers to have L3 kits installed.
Safety – 93% of crashes involve driver error

**U.S.**
- 1.9% to 6.0% GDP
- 32,479[^2011] deaths
- 33,561[^2012] deaths
- 2,220,000[^2011] injured
- 2,360,000[^2012] injured
- $277bn[^2010] economic cost
- $871bn[^2010] total societal cost

**CANADA**
- 4.9% GDP[^2007]
- 2,006[^2011] deaths
- 2,166[^2012] deaths
- 166,275[^2011] injured
- 175,360[^2012] injured
- $62bn[^2007] economic cost
- $62bn[^2007] total societal cost

What is happening now?

**What can we expect in the next 5 years?**

How can we prepare for it now?
AVs: How quick for market penetration?....

New York City, 5th Ave, 1900

The automobile didn’t need decades.

New York City, 5th Ave, 1913
When?

US Secretary of Transportation Anthony Foxx:

“When will we see fully autonomous cars on the road?” “I think we’re going to see it within five years. That doesn’t mean 100 percent penetration; that just means market availability. But I actually think we’re going to see it within five years.”

re/code interview

“Widespread adoption of automated vehicles would change transportation as we know it.”

Thinking Highways magazine

Ford Mass-Producing AVs by 2021

“...fully autonomous vehicle for ride sharing...”
AVs will be disruptive

“The auto industry is a century-old ecosystem being ogled by outside players hungry for a slice of a $10-trillion mobility market,”

“The car, on our estimates, is the world's most underutilized asset.”

“We believe it’s the most disruptive business on earth.”

Adam Jonas, Morgan Stanley

“That Uber, a five-year-old company has the potential to be disrupted if we don’t do this [AVs] right, is super fascinating,”

Travis Kalanick, CEO Uber

Possible AV Capability in 5 Years Time

Likely constraints
- SAE Level 4 – capable of unmanned operation
- Low Speed in dense urban areas
- Geo-fenced
- Adverse weather issues
- On-ramp to off-ramp

Note:
- This would cover the majority of trips in a city
- Consider NYC has lowered default speed limit to 25mph and that Google prototype meets NEV regs. (25mph)
Uber

- Already being asked by some cities to take over peripheral and non-economic bus routes (Altamonte Springs, Orlando, FL)
- uberPOOL (carpooling) in 1st eight months took 7.9 million miles off LA roads & 1,400 metric tons of CO2
- Have Uber started to set the scene for the disruption of public transit?
Not in future plans

- Transportation
- Municipal
- Parking
- Transit
- Fleet replacement
- Trucking
- High speed rail
- Government depts.
- Pensions

...and insufficient standards or guidelines
AV Impacts on Transit in Different Cities

If we promote ride-sharing and raise AVO from 1.2 to 1.8, then for peak period commuting:
- City A: Now 80% Car, 20% Public Transit
- City A: Future: 120% SAV, ??% Public Transit
- Conclusion: Public Transit Disrupted
- City B: Now 40% Car, 60% Public Transit
- City B Future 60% SAV, 40% Public Transit
- Conclusion: Public Transit Significantly Impacted
- City C: Now 20% Car, 80% Public Transit
- City C: Future SAV 30%, 70% Public Transit
- Conclusion: Public Transit Key

What is happening now?
What can we expect in the next 5 years?
How can we prepare for it now?
“In 1898, DELEGATES FROM ACROSS THE GLOBE gathered in New York City for the world’s first international urban planning conference. One topic dominated the discussion. It was not housing, land use, economic development, or infrastructure. The delegates were driven to desperation by…

Pop Quiz?
Who knows what made them so desperate?

“...horse manure."  
“...in the city would be buried nine feet deep in horse manure. One New York prognosticator of the 1890s concluded that by 1930 the horse droppings would rise to Manhattan’s third-story windows.”
Direct Employment Displacement

- Auto-body repair
- Auto-insurance
- Bus drivers
- Courier service drivers
- Driving instructors / trainers
- Health staff involved with organ and tissue donation
- Lawyers, staff involved with car collision litigation
- Medical staff involved in car crash victim rehabilitation
- Road safety professionals
- Taxi drivers / chauffeurs
- Tow-truck drivers
- Traffic police
- Transport truck and
- Trauma surgeons

Urban Governance, Planning

- Changes in where people live and work
  - More intensification and more sprawl
- Change in design of homes
- Reduced focus on Transit Oriented Development
- Less pollution + less parking spaces = greener cities
- AV-only zones
- Improvements to ranking on liveability index
Infrastructure Design Considerations

- Review all plans/designs in light of AV impacts
- Balance parking needs now, increase demand for 5 years, then rapid decrease in demand = oversupply
- Can parking lots/structures be re-purposed?
- Move from parking focus to pick-up/drop-off focus
- Consider road-diets and addition of bicycle/ped lanes
- Understand zoning and land value changes
- Plan for EVs and electricity generation and distribution

*This technology is coming like a freight train. If we’re ready, great. If we’re not, tough. It’s coming anyway.*

- Paul Godsmark
Maybe it's not an elephant....

...could it be an 800 lb gorilla?

**TRAC** Item #8

RECEIVE A PRESENTATION ON THE VALUE OF TRANSIT
What is the Value of Transit to Residents?

Residents

- **180K** Daily Ridership
- **65M** Annual Ridership
- **78%** Of All Riders Are Local
Residents

- 67% Do NOT Own a Personal Vehicle
- 55% Do NOT Have a Valid Driver’s License
- 50% Ages 18 to 34
- 65% Reported Less Than $40k/Year Income
- 50% Households Include 2+ Adults Working Full or Part Time
What is the Value of Transit to our Workforce?

60% Of Trips Are Made To/From Work/Home

40% Of Trips Are Recreational, Medical, Social, Shopping or Educational

Connecting Our Community
Workforce

74% Of All Transit Riders Are Employed

11% Are Unemployed, But Seeking Jobs

Workforce Testimonials
Workforce Testimonials

What is the Value of Transit to Tourists?
Tourists

40K Daily Ridership

$23M Annual Revenue

14M Annual Ridership

Las Vegas Strip Video
Las Vegas Strip Video

What is the Value of Paratransit?
What is the Value of Transit to Seniors?

Seniors

Targeted Trips:

- **56k** Annual Trips
- Sun City Communities
- Senior Living Residences
- Shopping Centers
- Nonprofit Partners
What is the Value of Transit to Veterans?

Veterans

1,700
Veteran IDs for Reduced Fare

1,400
VMTN* Clients
*Veterans Medical Transportation Network
Rider Testimonial - Nevin

Rider Testimonial - Nevin
Where public transportation goes, our community grows.
Item #9

DISCUSS TRANSIT FUNDING

Transit Funding
Sales Tax Distributions

1992
All to Transit

Sales Tax
0.25%

2002 1992
Half to Transit
Half to Streets & Highways,
FAST & Air Quality
Sales Tax Distributions

Streets & Highways, FAST & Air Quality

TRANSIT

0.25% + 0.25%

Sales Tax Distributions

0.5%

TRANSIT

0.375%

0.25%

Streets & Highways, FAST & Air Quality

0.25%
FY 2016 Transit Operating Revenue Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Millions $</th>
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</thead>
<tbody>
<tr>
<td>Sales Tax</td>
<td>$141.7</td>
</tr>
<tr>
<td>Fares</td>
<td>72.7</td>
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<tr>
<td>Advertising</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>217.2</strong></td>
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</tbody>
</table>

Fixed Route Contracts Cost & Fixed Route Service Hours

<table>
<thead>
<tr>
<th>Year</th>
<th>Contracts Cost</th>
<th>Service Hours</th>
</tr>
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<tbody>
<tr>
<td>FY09</td>
<td>$97</td>
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<tr>
<td>FY10</td>
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<td>$96</td>
<td>1.55</td>
</tr>
<tr>
<td>FY17</td>
<td>$105</td>
<td>1.63</td>
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</tbody>
</table>

Budgeted
**Paratransit Contracts Cost**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (Millions $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY09</td>
<td>29</td>
</tr>
<tr>
<td>FY10</td>
<td>29</td>
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<tr>
<td>FY11</td>
<td>34</td>
</tr>
<tr>
<td>FY12</td>
<td>38</td>
</tr>
<tr>
<td>FY13</td>
<td>42</td>
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<td>43</td>
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<tr>
<td>FY15</td>
<td>40</td>
</tr>
<tr>
<td>FY16</td>
<td>42</td>
</tr>
<tr>
<td>FY17</td>
<td>46 (BUDGETED)</td>
</tr>
</tbody>
</table>

**FY16 Transit Operating Expenses**

- **Fixed Route**: $96,516,784 (49%)
- **Paratransit**: $41,462,048 (21%)
- **Other**: $19,429,578 (10%)
- **Salaries & Benefits**: $13,367,015 (7%)
- **Transfers**: $10,200,000 (5%)
- **Security**: $8,365,921 (4%)
- **Fuel**: $7,023,902 (4%)

Total: $196,365,248
<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditures</td>
<td>$68.3</td>
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<tr>
<td>Grant Reimbursement</td>
<td>54.6</td>
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<tr>
<td>Local Share</td>
<td>13.7</td>
</tr>
</tbody>
</table>

**FY16 Transit Capital**

**NATIONAL TRANSIT DATABASE**

RTC RANKED **NUMBER 1**

- **Operating Cost** @ $2.10
- **Subsidy** @ $1.02
- **Fare Recovery** @ 51.9%
Rider Cost & Revenue on the Strip
National Transit Database, 2015

<table>
<thead>
<tr>
<th>Las Vegas Strip Routes</th>
<th>Cost Per Rider</th>
<th>Revenue per Rider</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$1.00</td>
<td>$1.63</td>
</tr>
</tbody>
</table>

Paratransit & Fixed Route Passenger Trip
National Transit Database, 2015

<table>
<thead>
<tr>
<th></th>
<th>Cost Per Rider</th>
<th>Revenue per Rider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paratransit</td>
<td>$32.94</td>
<td>$1.64</td>
</tr>
<tr>
<td>Fixed Route</td>
<td>$2.12</td>
<td>$1.10</td>
</tr>
</tbody>
</table>
EXPANSION?
RECEIVE A PRESENTATION ON UBER

UBER’S IMPACT ON CITIES
How Technologies Have Benefitted Our Professional and Personal Life

NOVEMBER 2016
Agenda

Uber overview
How Uber impacts cities
Working with transit agencies
Looking ahead

Uber Overview
Rider App
Connecting riders to reliable, on-demand, mobility services at the touch of a button

- With Uber, riders can push a button on their smartphone and get a ride within minutes, 24/7, 365 days a year.
- With options for all budgets and occasions, Uber is a safe, affordable, and reliable way to get wherever you’re going.
Driver App
People choose to partner with Uber for the flexibility, control and independence it offers.

- Flexible earning opportunities
- 'Be your own boss' with an ability to set your own hours
- Greater efficiency by connecting riders and drivers with technology

How Uber Impacts Cities
5 Ways Uber Impacts Cities

1. Increasing mobility options in underserved communities
2. Reducing congestion & pollution
3. Improving safety with technology
4. Providing an alternative to private car ownership
5. Extending the reach of public transit

Service in the suburbs

Uber is providing an alternative to the car, even in car-centric suburbs
A ride when you need it
Any time of night.

Increasing Mobility Options
Providing services in underserved areas and growing the overall pie for point-to-point mobility services.

NYC YELLOW TAXI & UBER PICKUPS IN 2015

Each dot represents the location where a trip started. Taxi trips are overplotted on Uber trips.
Reducing congestion with uberPOOL

More people in fewer cars.

More efficient.

Drivers spend more time per hour earning money on longer trips—without the downtime between passengers.

More cost-effective.

Riders share the cost between them, while adding only a few minutes of time per trip.

uberPOOL: How it Works
uberPOOL makes up 20% of our trips globally today, in cities where it’s available
Improving road safety

We are constantly developing and testing new solutions to predict, prevent and reduce safety risks. Some examples of ongoing tests include:

- **GPS and accelerometer data** identifies hard braking and fast acceleration.
- **Gyrometer data** identifies small movements and informs if a phone mount is being used.
- **Facial matching technology** confirms that the driver using the app matches the account on file.

The more people use shared modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall.

American Public Transportation Association

*Shared Mobility*

The more people use shared modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall.
An alternative to private car ownership

By getting more people into fewer cars, we can provide a more affordable alternative to car ownership.

- Most negative impacts of current urban mobility patterns stem from the extraordinarily inefficient use of the private car
- While a car is one of the most capital-intensive investments households make, on average it is used 50 minutes out of 24 hours and carries 1.2 to 1.6 passengers

Extending the reach of public transit

Connecting the first and last mile.

54% of Uber trips in Singapore are one-way
Extending the reach of public transit

When London launched Night Tube, offering Tube service late at night on the weekends, trips starting near tube stations in central London decreased while trips starting near stops further out increased nearly 66%.

**Change in Uber trips starting near station:**

- 20-40% DECREASE
- 10-20% DECREASE
- UP TO 10% DECREASE
- UP TO 100% INCREASE
- 100-300% INCREASE
- GREATER THAN 300% INCREASE

**SAN FRANCISCO BAY AREA**

UberPOOL trips that dropped off within 1/8 mile of a BART stop during morning commute hours over the course of a month.
EAST BAY

Riders who were picked up or dropped off within ⅛ mile of an East Bay BART Station

Caltrain

Riders who were dropped off near one Caltrain station and picked up near a different station within 3 hours.
Working with transit agencies

Subsidizing trips to transit stations

Pinellas Suncoast Transit Authority (Pinellas Park, FL)

Partnership details:
- PSTA will pay half the cost of any trip costing up to $6 to and from designated transit stops

“Once we make it easy for someone to get to the bus stop, riding the bus becomes a real transportation alternative”

– Brad Miller, CEO for the PSTA.
Providing an alternative to building a parking lot

City of Summit, New Jersey

Partnership details

- During commuting hours, residents enrolled in the existing parking program, can ride Uber to a NJ Transit hub for FREE!
  - Residents who aren’t enrolled, are charged a flat $2.

“As an alternative transportation option, ridesharing is not new. But our program is the first of its kind in the United States to use ridesharing technology as a parking solution. Our innovation has the potential to shape how municipalities think about and implement parking options in the future.”

- Summit Mayor Nora Radest

Encouraging car-free city living

San Francisco, California

Partnership details

- New residents are eligible for a $100 monthly stipend toward multimodal transportation, including Uber and public transit.
-uberPOOL fares to and from nearby public transit stations are capped at $5.

“I am excited to see Uber enter into this creative partnership to enhance urban mobility, recognizing their role in completing first and last mile trips while allowing transit to focus on what they do best. It is great to see business and public interests aligning so that city dwellers can truly take advantage of a suite of mobility services, weaning people off of personal cars, and allowing cities to rethink parking needs.”

– Dan Sperling, Founding Director of the Institute of Transportation Studies at the University of California, Davis
Looking ahead

Building more livable cities

- **Encourage sharing a ride**
- **Re-think parking**
  - Minimum parking requirements
  - Dynamic pricing for parking
  - Develop efficient drop-off/pick-up zones
- **Develop infrastructure with sharing in mind**
  - HOV lanes
  - Shared parking
Thank you

Item #11

DISCUSS THE VALUE OF TRANSIT AND INNOVATIVE TRANSPORTATION SOLUTIONS
Item #12

FINAL CITIZENS PARTICIPATION