



## **CAC Technology & Innovation Ad Hoc Committee**

550 S. Main Street, Orange CA, Room 07 Sep  
September 18, 2017 | 11:00 a.m. – 12:30 p.m.

### **AGENDA**

- 1. Welcome**
- 2. Presentation and Discussion Items**
  - A. Role of Autonomous Vehicles (*10 minutes*)  
Lloyd Sullivan, Dept. Manager, Enterprise Business Solutions
  - B. I-405 Interactive Map (*15 minutes*)  
Christina Byrne, Acting Department Manager, Public Outreach  
Anna Finley, Simon Wong Engineering
  - C. Demand Responsive Service – Micro Transit (*30 minutes*)
    - Goals/Objectives - Gary Hewitt Section Manager, Transit and Non-Motorized Planning
    - Market Research - Alice Rogan, Director of Marketing and Public Outreach
    - Technology - Lloyd Sullivan, Dept. Manager, Enterprise Business Solutions
  - D. Future of Transportation Discussion (*15 minutes*)  
Group Discussion
- 3. OCTA Staff Updates (*10 minutes each*)**
  - A. ACCESS Updates - Curt Burlingame, Manager, Contracted Services, Contracted Services
  - B. Other
- 4. Chair / Vice-Chair Remarks**
- 5. Committee Member Comments**
- 6. Public Comments\***
- 7. Adjournment**

#### **Agenda Descriptions/Public Comments on Agenda Items**

The Agenda descriptions are intended to give notice to members of the public of a general summary of items of business to be transacted or discussed. Members from the public wishing to address the Committee will be recognized by the Chair at the time the Agenda item is to be considered. A speaker's comments shall be limited to three (3) minutes.

Any person with a disability who requires a modification or accommodation in order to participate in this meeting should contact the OCTA at (714) 560-5611, no less than two (2) business days prior to this meeting to enable OCTA to make reasonable arrangements to assure accessibility to this meeting.



**CAC Technology & Innovation Ad Hoc Committee  
Meeting Notes**

May 18, 2017 | 11:30 a.m. – 1:00 p.m.  
550 S. Main Street, Orange CA, Room 07

**1. Welcome**

Chair Roy Shahbazian welcomed everyone to the Orange County Transportation Authority (OCTA) Citizens Advisory Committee (CAC) Technology Ad Hoc Committee meeting at 11:38 a.m.

**2. Presentation and Discussion Items**

**A. Future of Transportation**

*This item was postponed to a future meeting.*

**B. Signal Communications Technology (V2I)**

Kurt Brotcke presented information on Signal Communications Technology.

Dan Kalmick asked if the Federal Communications Commission has allocated bandwidth for this technology to work. Kurt Brotcke said yes, but the federal rule making is done by the National Highway Traffic Safety Administration and it has bandwidth reserved for Intelligent Transportation Systems (ITS).

Michael McNally asked if there is a way to control speed on autonomous vehicles to maintain traffic flow. Kurt Brotcke said it is part of some systems, but it is not deployed yet.

Dan Kalmick asked if there is a mechanism to get maps updated with mapping companies via public agencies based on construction work. Kurt Brotcke said this is not currently available, but discussions are under way.

Paul Adams asked how signal communications technology works with bicycles. Kurt Brotcke said there is a vehicle to pedestrian and vehicle to bicycle component. He said there is discussion of taking the technology and shrinking it down for bikes. On the pedestrian side there is talk, but nothing available yet. Paul said his main concern is for bikes in traffic.

Dan Kalmick asked if OCTA has considered putting fiber in the ground on projects for future use. Kurt Brotcke said fiber and conduit installation is an eligible project under the V2I program. He said OCTA would be looking to local agencies to pick up the cost. Dan said he would like to see it incentivized.

Mark Paredes asked how this technology works with motorcycles. Kurt Brotcke said he is unclear how it works with motorcycles at this time.

Roy Shahbazian is concerned about bicyclists and pedestrians making eye contact with people in the driver's seat of autonomous vehicles, but they are not actually driving.

C. OCTA Leadership Development Academy – Innovation Team Project Discussion  
Ryan Armstrong provided background information on OCTA's Leadership Development Academy and asked the committee questions to help his team with their project.

Ryan Armstrong asked the committee where they see innovative opportunities to adapt to the changing consumer attitudes and expectations towards mobility.

- Jeff Thompson said land use needs to be looked at as it pertains to mobility. He also mentioned how the online retail industry is changing mobility. He says OCTA needs to figure out how online retail and experiential travel affect mobility.
- Jeff Thompson said mobile applications are changing mobility (ie: Lyft, Uber, Waze).
- Mark Paredes said innovations are making it so people do not have to travel as much. He said when they do travel it is often for an experiential purpose. Mobile applications also help travelers get the most out of their day, by finding the best routes.
- Dan Kalmick suggested OCTA could look into creating a partnership with Amazon to make deliveries along routes.
- Dan Kalmick said OCTA needs to get away from the bus as it is currently known – the system needs to be something different. He said maybe smaller on-demand buses. Dan said that in Huntington Beach he hears about empty buses, mostly because they are at the end of the bus routes. He said there should be a “super computer” that builds bus routes based on ridership needs.

Ryan asked what innovative partnerships, technology or new service models the committee has seen in transportation world.

- Paul Adams said in Los Angeles he sees electric vehicle charging stations next to bike share racks at Metro parking areas. This combines two technologies that are green and putting them together.
- Paul Adams said he agrees with the earlier conversation, OCTA could get into the delivery side of things and have lockers where people could receive packages when getting off the bus or train.
- Michael McNally said he does not see the reasoning behind having private companies do the work that the public sector can do. For instance toll roads. If the public sector builds them then the money would go to the public sector. He said the public sector could have partnerships with the private sector, but the public sector should remain the lead.
- Jeff Thompson suggested OCTA strengthen or encourage carpooling/ridesharing with partnerships with on-demand providers or mapping applications like Waze.
- Jeff Thompson said OCTA could also work with goods movement to use roads at specific times.

- Jeff Thompson said he is amazed Los Angeles and Orange County do not have a link to rail from the airports.
- Mark Paredes said it comes down to price point. He said on-demand transportation offers discounts for sharing the ride.
- Mark Paredes said it also comes down to expectations. He said if he expects a bus at a certain time and it is there at that time, it encourages him to take the bus. He said the innovation of the new OCTA mobile application can help with this.
- Roy Shahbazian said when dealing with transit the incentive/disincentive of price and time needs to be looked at.
- Dan Kalmick said ridesharing on-demand services should be incentivized. Lyft was going to offer an incentive to walk out to a main road to catch a ride, rather than go into the communities. He said it was labeled Lyft Line.

Ryan Armstrong asked the committee if they have ideas with regards to innovation in serving the aging and disabled populations.

- Michael McNally said he believes the private sector or community/faith based groups could help with this area of transportation.
- Paul Adams said Florida is running autonomous vehicles from the senior communities on specialize routes to downtown. He said this is a village for seniors.
- Mark Paredes said to consider working with hospitals and other key services to provide transportation for seniors.
- Dan Kalmick said autonomous vehicles and land use will need to be built to accommodate everyone.
- Jeff Thompson said Uber is developing a platform giving the option for ADA services. He asked how OCTA can encourage this type of partnership.

Ryan Armstrong asked if committee members know of companies doing innovative things to improve ridesharing.

- Michael McNally said start talking to tech companies. He suggested OCTA provide an Uber type service.
- Mark Paredes suggested OCTA partner with developers to limit parking lots and focus on ridesharing facilities at entertainment venues.
- Dan Kalmick said the developer of the Grove in Los Angeles is now making parking structures ready to be turned into residential apartments, so when there are less people traveling in their own car to destinations the parking can be converted.
- Dan Kalmick said people need to get used to the idea of ridesharing. He said it could be like riding in first class on an airplane with dividers or pods.
- Roy Shahbazian said some communities have informal ridesharing. He suggested OCTA look at what attributes make those programs successful.

Ryan Armstrong thanked the committee and said his group would appreciate if the committee would fill out a survey that will be sent to them via email.



**D. Autonomous Vehicle Public Policy/Regulations**

Lloyd Sullivan talked about autonomous vehicle public policy and regulations, and showed two videos – one of autonomous bus testing and another by Moral Machines on programming autonomous vehicles to make “moral” decisions.

Michael McNally said the primary liability sits with those who own the control systems. He said when the vehicle takes over it might reduce liabilities for local areas.

Dan Kalmick asked if the think tank Lloyd referred to has taken into account healthcare is a big part of auto insurance and the possibility that will go down. Lloyd Sullivan said yes they are looking at this.

Dan Kalmick asked what happens if the autonomous vehicles in test communities are un-manned, what deters someone from taking the vehicle. Lloyd Sullivan said initially there would be someone paired with the vehicles.

Dan Kalmick said when Lloyd talks about up to 75 percent more cars on the road it does not mean there is 75 percent more traffic. Dan said it is possible that traffic could be less even with more cars on the road due to correlating speeds, making roads run smoother.

Paul Adams asked who will own the data that comes from the vehicles. He said data has value, but it has inherently been owned by the Department of Motor Vehicles (DMV). Lloyd Sullivan said the data would be owned by the manufacturer and then provided to the DMV. Paul said if the owner could sell the data it could be even more valuable.

Michael McNally said it is interesting that autonomous vehicles are supposed to save lives, but after seeing the Moral Machines video instead the discussion seems to be about who should be kept safe and who should not.

**3. OCTA Staff Updates**

**A. On-Demand Services**

Lloyd Sullivan gave a brief presentation on on-demand services and their relationship with OCTA. He said the problem with these providers is they will not share the data and they are also not ADA compliant. Lloyd said OCTA is looking into the possibility of doing a micro transit system. He said it is more expensive than running an Uber or Lyft service, but less expensive than running a big bus.

Paul Adams asked if Lloyd could get someone from the Sacramento DMV out to talk to the committee. Lloyd Sullivan said he would look into that.

**B. Autonomous Vehicle Pilot Opportunities**

Lloyd Sullivan said he already covered this in the previous item.

C. Other

Alice Rogan said this committee will not have regularly quarterly meetings, but have meetings as needed. She said the next meeting will probably be in September.

**4. Chair / Vice-Chair Remarks**

There were no remarks.

**5. Committee Member Comments**

No other comments.

**6. Public Comments**

No one from the public spoke.

**7. Adjournment/Next Meeting**

The meeting adjourned at 1:16 p.m. Emily Mason will send out a poll to determine the date of the next meeting.

## CAC Technology & Innovation Ad Hoc Committee Fiscal Year 2016-2017 Attendance Record

● = Present

⊙ = Absent

R = Resigned

Members		
	2/28/17*	5/18/17
Adams, Paul	●	●
Cox, Brian	●	⊙
Sue Gordon	●	⊙
Wayne Heidle	●	⊙
Kalmick, Dan	●	●
Michael McNally	●	●
Paredes, Mark	●	●
Shahbazian, Roy	●	●
Thompson, Jeff	●	●

\*First meeting

*News*  
*Articles*

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Kansas City hopes to bring interactive kiosks to its poorer neighborhood to help spur economic development. // The Kansas City Area Development Council (KCADC)

## What Makes a Smart City Truly Smart?

**LINDA POON** SEP 5, 2017

**Kansas City has streetlights equipped with sensors and plans to make roads pay for themselves. But its chief innovation officer says there's nothing smart about them.**

Kansas City, Missouri, may have lost last year's DOT Smart City Challenge to Columbus, Ohio, but that hasn't slowed its momentum toward becoming "the world's most connected smart city." Nor has it curbed the enthusiasm of its chief innovation officer, Bob Bennett. When CityLab caught up with Bennett last week at the U.S. Commerce Department's Global City Teams Challenge Expo, he exuded a kind of energy that would otherwise be hard to find on a dreary Tuesday in Washington, D.C.

Already, Kansas City has teamed up with Cisco and Sprint\* to cover 50 blocks of its downtown district with public Wi-Fi, and it's got 125 smart streetlights with sensors to monitor both vehicle and foot traffic. In the heart of downtown, interactive kiosks dot the streets to deliver information about nearby attractions and other city information (not unlike the [LinkNYC kiosks](#) that replaced New York's phone booths). Meanwhile, its extensive data portal has earned the city accolades from the likes of Bloomberg Philanthropies and Sunlight Foundation, which advocates for open data.

Next up, the city's department of transportation is dipping its toe into the future of driverless cars with a pilot project to turn a 1.5-mile stretch of pavement into a smart road that may pay for itself. Yet despite all the futuristic tech in the works, Bennett says none of it is actually smart. "It's not about the gadgets," he tells CityLab in an interview during which he spoke about the city's latest projects and his plans to loop [Prospect Avenue](#), a predominantly black neighborhood that's been largely been neglected, into the smart city plan.

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**"Any city can be a smart city, or a smarter city, just by getting better control of their data."**

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**It's easy to get fixated on all the "smart" innovations out there—roads that talk to you, cars that talk to the road, and all kinds of sensors. But if it's not the gadget that makes a city smart, then what does?**

What we have learned over the course of last year is that all these tools, these technologies, they're cool but there's nothing smart about them. The heart of a smart city is actually the data and the brain is using that data to change your decision-making process, to make you react faster in cases where the city needs to react, to make you predictive where you can be to save money or provide a better service, or to give you a better appreciation of what's happening in your city.

We've figured out that 85 percent of the data that you need to run a smart city, you've probably already got. Any city can be a smart city, or a smarter city, just by getting better control of their data and by understanding what it's saying to them. And it's going to say something different to every city, because every city has different needs and requirements, and different governance structures.

### **What's next on your agenda?**

The next thing we want to do is expand [our smart cities approach] to the neighborhoods in the part of the city that's been disaffected for the better part of the last 30 years. The expansion is a seven-fold increase in terms of space, which would be a grand total of about 12 square miles when all is said and done. It is going to [have] public Wi-Fi, which we already have in the heart of the downtown right now. We will have sensorization throughout that zone so we can have [ShotSpotter](#) there, which allows us to use an acoustic radar to triangulate where a gunshot came from. We've learned that frequently, where it's a crime of passion, the first gunshot is relatively ineffectual. It's the second shot that's tragic. So if the data can quickly get police to the scene, we can prevent that second gunshot.

**One of the things we've discussed at CityLab in regard to putting sensors in low-income and majority-black neighborhoods is this concern about racial disparity in surveillance. How do you ensure the community that these sensors aren't here to invade their privacy?**

We had a smart city data privacy policy six months before we turned on the first sensors, in October 2015. We modeled it after Seattle's and as a city, we have to tell people what data we're collecting, why we're collecting it, and we have to share it with them. So that helps us to improve the trust issue.

We've also had several public meetings in the community to ask what they wanted. ShotSpotter actually was a local initiative that they wanted to see—they as in community activist organizations, the school district, and business leaders on the East Side because there is a burgeoning small business community over here.



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LINDA POON  
MAR 28, 2017

**Which brings us to these kiosks that that the city has mentioned in its proposal for the Smart City Challenge. What's the goal in planting them along Prospect Avenue?**

We did not come to them and say, "Here's a kiosk, it's yours." Instead we said, "How do you want this channel to work for you?" The content going in them reflects a great pride of place along Prospect Avenue. That's where jazz came of age in the Midwest. A lot of musicians would come up from New Orleans, and Kansas City is where they would stop on their way to Chicago or on their way east. Ella Fitzgerald played there, as did Louis Armstrong and Charlie Byrd—I mean lots of amazing musicians played in that neighborhood. So they want to be able to highlight the pride and the place, and make sure folks know there is history here.

The kiosks are going to be integrated into the bus structure itself, because residents told us that that way, they're not going to be mishandled or mistreated. They become part of the structure that offers a public good. So we got that from the community who told us what they want, and we're doing it.

**Meanwhile, the Integrate Roadway project, for which construction could cost billions, has been making a buzz. The startup founder Tim Sylvester recently said he expects construction to begin next spring. How will it pay for itself?**

There will be conduits embedded into these road segments, which he will lay them down on the road like Legos. Inside, there are sensors and bluetooth beacons, and some other things that advertisers can [use] to purchase ad space. So if you're driving down the road in a connected car and your gas gauge hits a quarter tank, it can tell you you're running out of gas. The beacon underneath you would say, "Oh by the way, the next exit has two gas stations, and the price of gas is this." And it can tell you about other amenities like restaurants, and boom, you get advertising.

### What's really enabled Kansas City to launch all these different initiatives?

It's about \$20 million worth of infrastructure in the 51 blocks today; the city paid \$3.8 million. Everything else is paid for by our public partners, and they now have a stake in this. So we are getting the best effort from some of the most technologically advanced firms in the country and a couple of entrepreneurs who are just absolute big-idea thinkers.

So this city is part of the ecosystem, as opposed to us trying to manage the ecosystem or telling people how we're going to run our city. It's now a much more collaborative environment. And that's really fun.

*\*CORRECTION:* This article originally misstated the partners for Kansas City's public Wi-Fi initiative in its downtown district.



### About the Author

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## Linda Poon

[@LINPOONSAYS](#) / [FEED](#)

Linda Poon is an assistant editor at CityLab covering science and urban technology, including smart cities and climate change. She previously covered global health and development for NPR's Goats and Soda blog.



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## What the transportation revolution may mean for drivers

- By DAVE GILREATH

Sep 1, 2017, 9:33 AM ET

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Getty Images

The advent of ride-hailing companies such as Uber and Lyft and the emergence of autonomous automobile technology could be signs that the century-old American love affair with cars (as we know them) and car ownership is fading.[more +](#)

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Some observers say our culture is entering a revolution in personal transportation. They cite the advent of ride-hailing companies such as Uber and Lyft, the availability of shared cars and bicycles, and the emergence of autonomous automobile technology as signs that the century-old American love affair with cars (as we know them) and car ownership is fading.

Decades from now, these observations could prove to be correct. But for now, domestic car sales remain strong overall. Total vehicle sales in July — 16.77 million — were up slightly over June. Since then, sales have registered a slight downtick, but this may be a

normal fluctuation and probably doesn't augur a reversal of robust sales in recent years. In 2015, U.S. sales beat the record set 15 years ago.

While predictions that the transportation revolution will hurt auto sales may be premature, forces in play could prove these predictions correct over a decade or two. Autonomous cars will eventually be a commercial reality with broad consumer acceptance, but this likely won't happen as soon as many predictions hold. Some say that in five years we'll all be dropped off at work by our autonomous vehicles which, instead of parking themselves, will wait at home for one spouse or the other to summon them with smartphones. Thus, today's two-car families would be able to do just fine with one car, and cars sales will decline.

There are clear signs that this scenario will likely be much further than five years away. Profound social impact is probably more like 30 years off, when 95 percent of all U.S. passenger travel will probably come from self-driving fleets, ending the current model of car ownership, according to a study by RethinkX, a technology analysis group. But in the interim, while ownership persists, this evolution may not hurt auto industry revenue much, as autonomous cars will likely be frightfully expensive.

Daniel Ammann, president of General Motors, recently predicted that forces including autonomous cars and ride sharing will mean greater change in the auto industry in the next five years than it has seen in the last 50. Yet some analysts, including Tony Hughes of Moody's Analytics, point out that the eventual impact of these factors on the industry might not be significant if driving habits don't change. If people persist in parking their cars instead of summoning them when needed, demand wouldn't change much.

Currently, all-electric cars such as Tesla and its ilk are spurring new related industries in which winning companies will offer significant investment opportunities. In a nation where there's much work to be done on the power grid, demand for lighter, long-lasting batteries will continue to rise. And to catch up with the future, the fossil fuel engine industry will have to be nimble. An example is Cummins Engines, a diesel engine company that recently announced that it will also be supplying all-electric and plug-in hybrid powertrains by 2019.

Cummins' 18,000-pound cab Aeos (named after one of the winged horses pulling the chariot of the Sun god Helios in Greek mythology) is designed to haul a 22-ton trailer, with a 100-mile range, for local deliveries. The engine can be recharged in about an hour, and Cummins has stated its goal is to reduce this to 20 minutes by 2020.

Tesla is expected to unveil its own all-electric heavy truck cab soon.

If history is any guide, the realization of predictions for the personal transportation revolution is likely to follow the patchwork pattern of many Brave New World predictions. Different car technologies will overlap and co-exist, driven variously by early adopters and old-school holdovers. If the nation's electric grid is improved in the next 10 years, drivers on long trips will probably be charging their car batteries at fuel stations where

gasoline is still sold. So goes the herky-jerky pattern of social change following new technology.

**Vox**

## Unless we share them, self-driving vehicles will just make traffic worse

A carbon-free, autonomous car is still a car; it still takes up space.

Updated by David Roberts | @drvox | david@vox.com | Jul 24, 2017, 10:25am EDT



Cute, but still a piece of traffic. | (Shutterstock)

After decades of relative stagnation, the world of transportation is on the cusp of multiple revolutions. The biggest three:

1. **Electrification:** a shift from internal combustion engine (ICE) vehicles to electric vehicles (EVs)
2. **Automation:** a shift from human-piloted vehicles to automated vehicles (AVs) that drive themselves
3. **Ride-sharing:** a shift from privately owned, often single-occupant vehicles to fleets of shared cars, vans, and small and large buses



There has been a great deal of discussion about how these revolutions will proceed. (I have written about them [here](#); Vox's Tim Lee wrote about them [here](#).) Among the questions are how fast they will develop and how they will interact with one another and with current infrastructure.

Urbanists, who have been fighting for decades to shift the focus of urban planners away from cars to a more holistic vision, with a wider variety of transportation options (“multimodal”) and more land devoted to pro-social uses, are particularly interested in these interactions.

For urbanists, these coming transportation revolutions might portend heaven — fewer cars, less parking, more places for biking, walking, and gathering — or they might portend a hell of more cars, more vehicle miles traveled, worse congestion, and more sprawl.

Which of these two futures comes to pass, or what mix of the two, does not depend on technology. It depends on us — our willingness to discuss, debate, and plan for the future we want.

This need for planning runs counter to the persistent strain of anti-government, anti-regulation ideology in the US. The whole notion of designing a future, rather than trusting “the market,” sticks in many Americans' throats.

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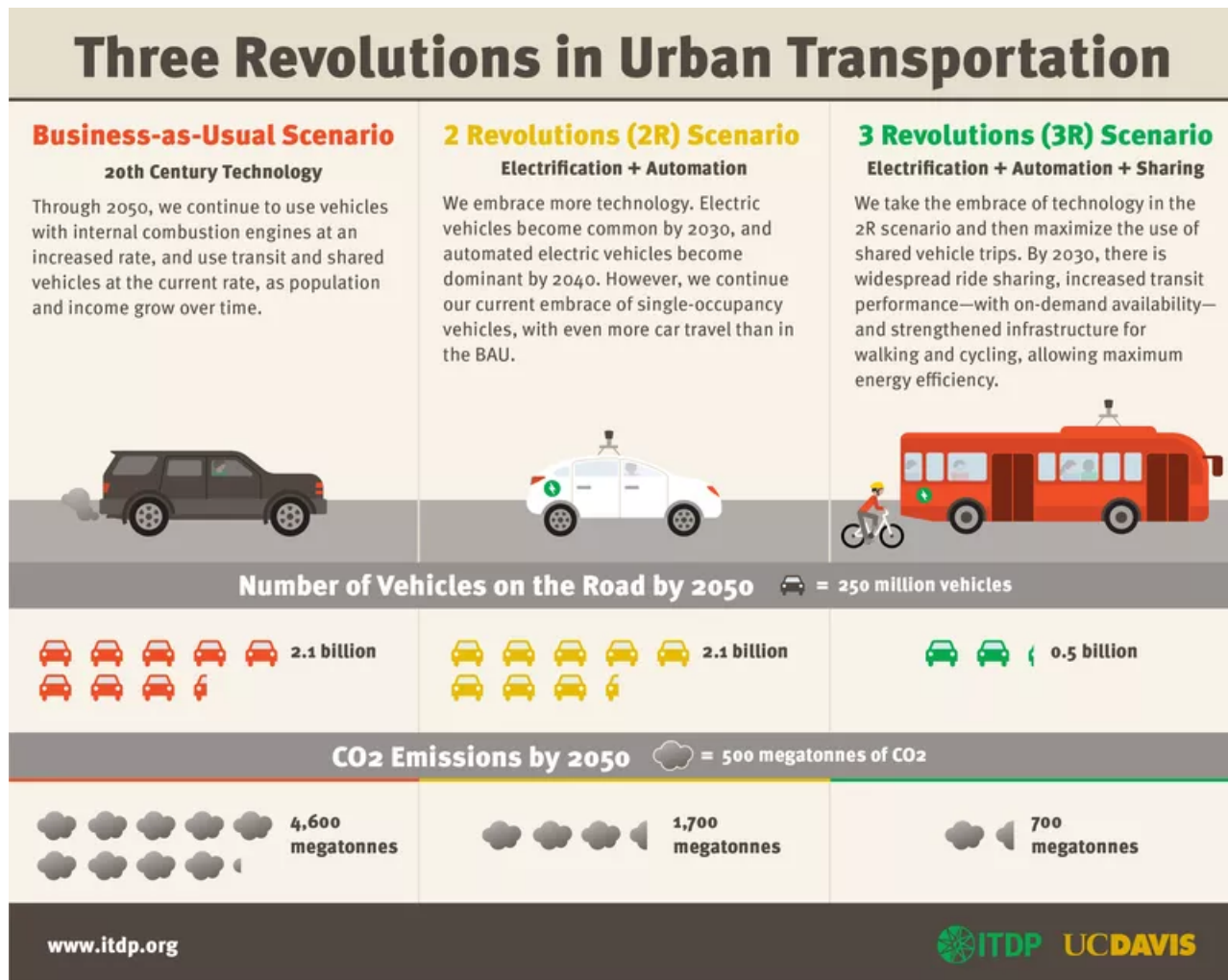
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But as a new study makes clear, we're going to have to get over that.



(ITDP)

## A new study compares three transportation revolutions

In late April, the University of California Davis and the Institute for Transportation and Development Policy released a report, **“Three Revolutions in Urban Transportation,”** that attempted to put some numbers on how these revolutions will play out.

At the heart of the study are three scenarios, running out to 2050.

In the first, business-as-usual (BAU) scenario, there are no revolutions. Privately owned, low-occupancy ICE vehicles continue to dominate, meeting the surging growth in demand in the developing world.

In the second, two revolutions (2R) scenario, electrification and automation take off. EV sales rise from 750,000 in 2016 to 5 million in 2020 and rocket up thereafter. Full automation becomes commercial around 2020 and takes off in 2025. In both cases, costs fall rapidly and automated electric vehicles (AEVs) dominate new car sales by 2040. Oh, and the electricity sector mostly decarbonizes (an important caveat!).

Meanwhile, ride-sharing does *not* take off and most cars remain privately owned and low occupancy. Because automation makes personal vehicle travel easier and more convenient, there is a 10 to 15 percent increase in overall vehicle travel and no reduction in the number of cars on the road.

In the third, three revolutions (3R) scenario, electrification and automation take off *and* ride-sharing is prioritized, alongside a suite of policies that encourage multimodal urban transportation, resulting in “an ‘ecosystem’ of public transport and ride-hailing services that are harmonious and complementary.” Private ownership declines precipitously, the average occupancy of vehicles (especially in places like the US, where it is typically low) rises, and the number of cars on the road plummets.

Obviously, none of these scenarios is likely to play out as described. It is impossible to predict how policy, technology, and social change will develop and interact, especially in a time of such tumult.

But the scenarios can serve as signposts, rough indicators of the consequences of various choices. And they can tell us a lot about the political economy of the changes to come.



Even robots hate traffic. | (Shutterstock)

Let's pull out a few key lessons.

### **Lesson one: the carbon work is mostly done by electrification, the urbanist work by ride-sharing**

The bulk of the decarbonization work — 2,900 metric megatons of reduced emissions — is done by **cleaning up electricity and electrifying the vehicle fleet**. The 3R scenario achieves another 1,000 metric megatons, which is not nothing, but only because it assumes some residual carbon in electricity. (If AEVs still represent some emissions, then reducing the number on the road reduces emissions.)



If electricity is completely decarbonized by 2050, then electrification will effectively be doing *all* the climate work. Cars will have a free pass on carbon.

Meanwhile, the urbanist work -- reducing the number of cars on the road, improving urban livability -- is done entirely by ride-sharing.

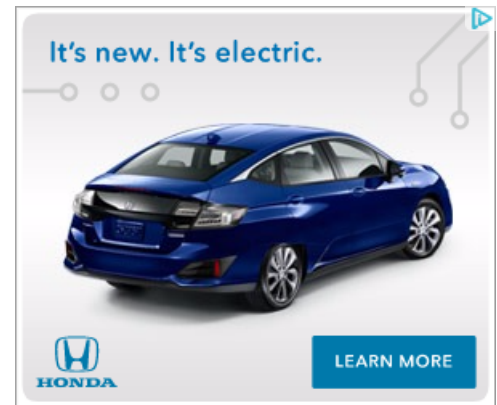
The overlap between the two is, lamentably, fairly small.

Climate hawks and urbanists have slowly been developing a closer relationship, which is all to the good. Urbanists try to recruit climate hawks to their cause by pointing out that **smart density reduces carbon emissions**. And it is true!

Nonetheless, if your primary goal is to reduce transportation carbon emissions, urbanism is not the most impactful strategy. Electrification is, by a wide margin.

This will be important to how the politics of these efforts play out.

Urbanists are hoping to draft on the widespread appetite for decarbonization, but I think they may not get as much out of it as they hope. Ultimately urbanism will have to be sold on its own merits (which are myriad!).



A plaza in Barcelona with no cars, autonomous or otherwise. | (Shutterstock)

## Lesson two: the scenario with the greatest social benefits requires the most policy support



The researchers found that the 3R scenario had the greatest cumulative social benefits — less energy use, less pollution, fewer cars, more multimodal, mixed-use urban space — and also, somewhat surprisingly, the lowest total costs.

And they didn't factor in the costs of avoided air pollution or carbon emissions, just infrastructure costs, labor costs (no drivers!), maintenance costs, capital costs, and the like. Because there will be many fewer cars in the 3R scenario, all those costs will be much lower.

So 3R offers the greatest social benefit at the lowest total cost. What's the catch?

It also requires the most policy support.

The 2R scenario requires more policy support than BAU. And 3R requires much more than 2R. It requires aggressive policymaking at all levels, as summarized by this daunting list:



### 3R Scenario: Assumed Policy Summary

- Continuation of policies that support vehicle electrification and automation, as in the 2R scenario
- New policies on EVs and AVs
  - Discourage or restrict the operation of zero-occupant vehicles
  - Discourage or restrict private ownership of AVs
- Strong support for trip sharing, public and active transport
  - Fees added for vehicular travel, or vehicle kilometers traveled, potentially variable to achieve the desired level of movement, and with higher fees charged for vehicles with lower occupancies and higher negative environmental and traffic impacts
  - Conversely, vehicle kilometer subsidies could be applied to very high-occupancy vehicles (buses and trains), particularly during high-congestion times on more congested routes
  - Support and incentives for public transport operators to better match passenger demand with vehicle size, through smaller automated electric vans and shared taxi-like vehicles
  - Government support for driverless buses and rail, dramatically reducing the operating costs and fares, while improving frequency and reliability for these shared modes
  - As the nature of transit services changes, ensure mobility opportunities remain available and affordable for traditional transit customers and for those with disabilities, older adults, and low-income passengers
  - Close attention to the labor and equity impacts of automation and shifts to shared mobility; ongoing tracking and research into minimizing negative societal impacts of these revolutions
- Policies on urban planning
  - Mixed use, transit-oriented planning to encourage shorter, less car-dependent trips
  - Better metropolitan area coordination of regional land-use and transportation decisions
  - Increased, ongoing investments in walking, cycling, and public transport infrastructure and systems
  - Improved safety as well as legal protection for walking, cycling, and public transit users
  - Implementation of bike and e-bike sharing programs in urban areas with sufficient density
  - Elimination of policies that increase motor vehicle use, such as minimum parking requirements, free parking on public streets, and fuel subsidies
  - Government coordination of mobility-as-a-service, linking many transportation options into a seamless network of trip planning and payment via a single interface
  - Increased use of local development impact fees; e.g. charges that account for car dependence and other negative externalities, and these fees fund investment in sustainable transport
  - Global institutions, such as development banks, change lending practices to shift investment from urban roads toward public transport, walking, cycling, and other more sustainable modes

(ITDP)

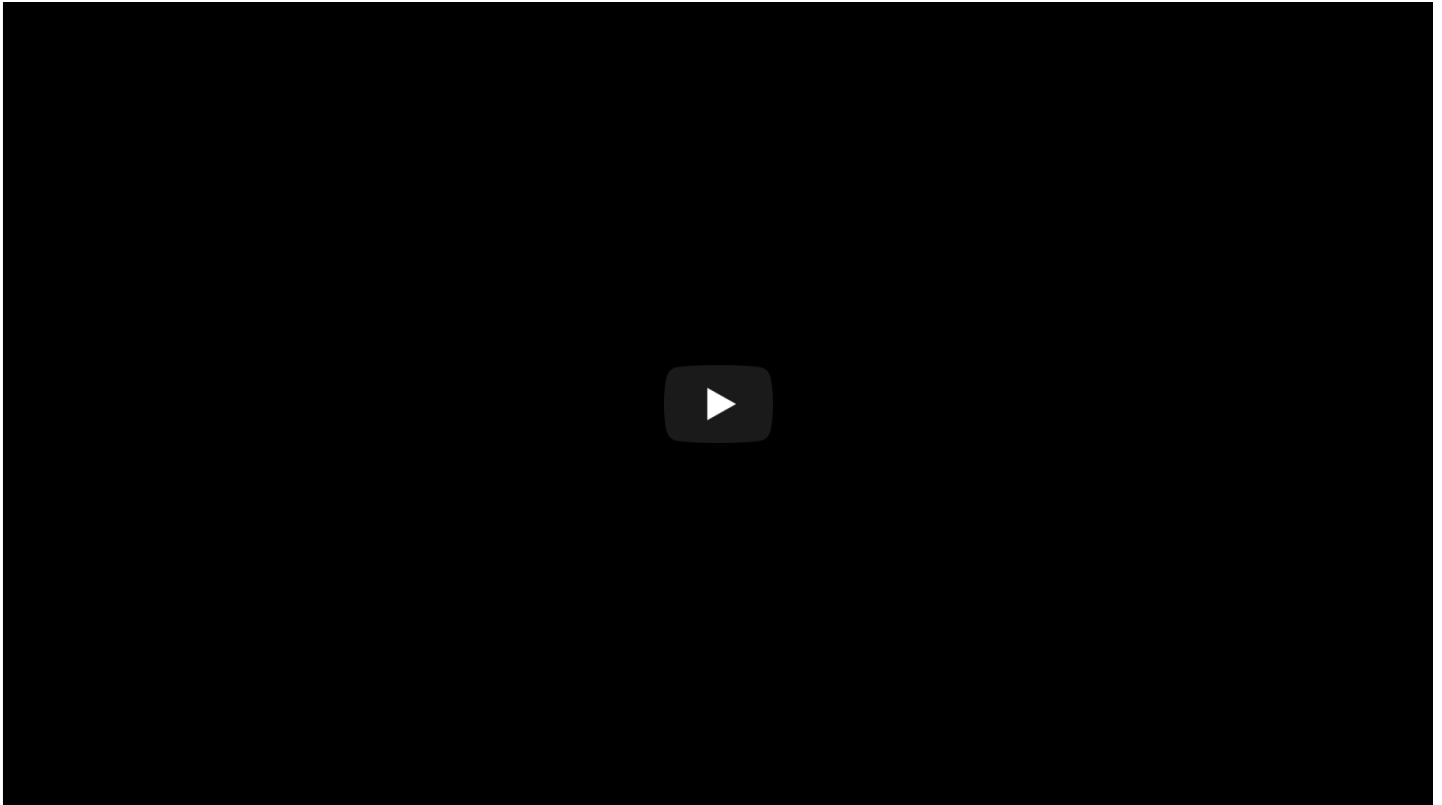
All things being equal, if AEVs get comfortable and affordable, people will want to own one. The more affordable they get, the more tempting individual ownership will be. The only way to counteract that is through policy to “discourage or restrict private ownership of AVs,” like it says on the list — or to develop shared alternatives that are so convenient and attractive that private ownership declines naturally.

Meanwhile, governments will need to support the growth and development of fleets of 12- or 18-seat minibuses, to supplement (rather than replace) public transit systems, which they will also need to support.

I find it a little difficult to envision. I can imagine central government policies supporting electrification and automation. I have more difficulty imagining a passion for urbanism sweeping across the world, playing out at the state/province and city level, everywhere at once, by 2050. But I like the idea!

### Lesson three: geometry requires sharing

Earlier this year, urbanist Jeff Speck gave a fantastic talk at the US Conference of Mayors called “Autonomous vehicles: the right answer to the wrong problem.”

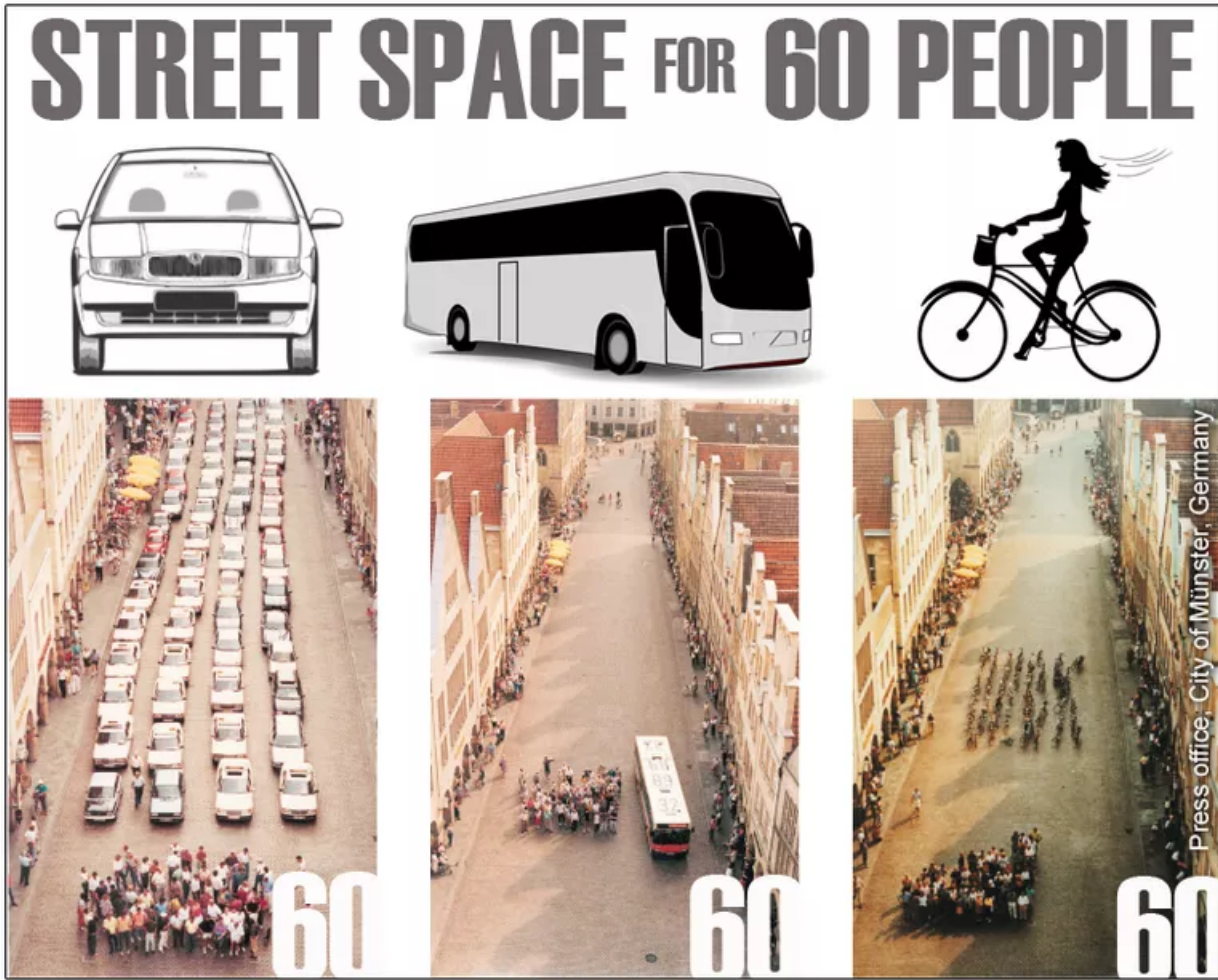


The wrong problem is: How do we make cars better?

The right problem is: How do we make cities better? And when it comes to cities, there are simple limitations of geometry.

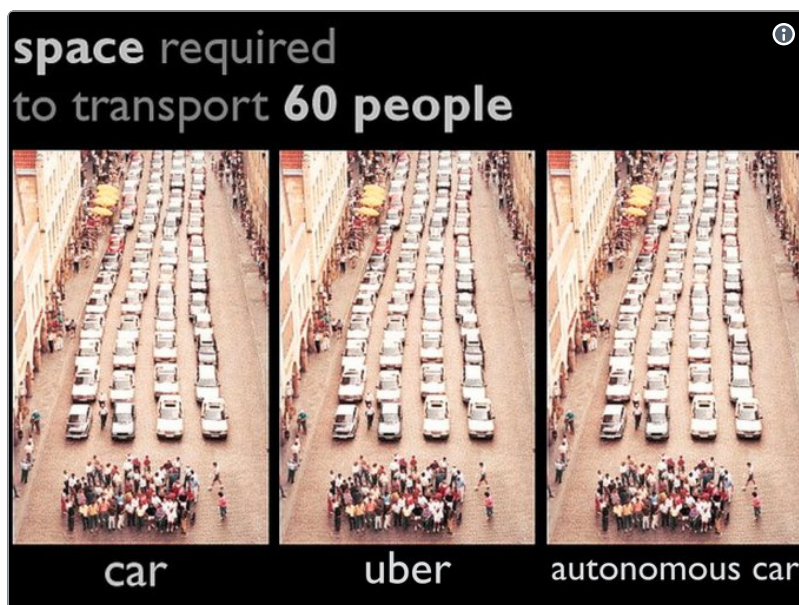
Two pictures make the point. Here's one that has bounced around the internet forever, apparently tracing back to the City of Münster, Germany, press office:





(Carlton Reid, via Flickr)

And here's urbanist Jon Orcutt's droll update:



 **Jon Orcutt**  
@jonorcutt

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78 1,818 1,729

The point is, a single person in a four-seater AEV takes up exactly as much space as a single person in a four-seater ICE vehicle. And there's only so much space. Urbanist Jarrett Walker **puts it this way**:


The scarcity of space per person is part of the very definition of a city, as distinct from suburbia or rural area, so the efficiency with which transport options use that space will always be the paramount issue.

That's why the UCD-ITDP report is very clear that when it talks about the ride-sharing revolution, it is not merely talking about ride-*hailing* — services like Uber and Lyft. Personal, point-to-point transportation does not solve the problem of geometry.

Theoretically AEVs could free up some road space, through efficiency of dispatch and efficient driving, but not nearly enough to compensate for a large increase in vehicles. The only way to solve the geometry problem is to get multiple people into shared vehicles. That's what subways and buses do — move lots of people using relatively little space.

If they are to help at all in urbanist terms, AEVs must supplement and strengthen, not replace, fixed-route, high-capacity public transit.

The report envisions a system like that: high-capacity, fixed-route rail and buses as the backbone, supplemented by shared, dispatchable AEVs in a range of sizes, from 18- or 12-passenger minibuses down to single-person pods. Vehicles can be “right-sized” for trips and routes can be optimized to minimize the number of needed vehicles.



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The Olli, an autonomous bus. | (Local Motors)

Fewer vehicles, far more intensively used (and thus rarely parked), free up a ton of road and parking space that can be turned over to walking, biking, or socializing. And freedom from private ownership will collectively save trillions of dollars a year on costs.

It's a nice vision. But to be realized it must overcome two barriers. One is US aversion to active government. The other is an enormous amount of accrued habit and behavior on the part of affluent Westerners, particularly in the US, who are attached to the current system of private ownership and low occupancy.

An alternative future that serves both climate and urbanist goals is possible, but only with farsighted planning and steady policy support. It will not happen on its own.

**Was this article helpful?** 



# L.A. bus ridership continues to fall; officials now looking to overhaul the system



Metro is now embarking on a study to “re-imagine” the system’s 170 lines and 15,000 stops

LA  
Times

L.A. officials have long said declining bus ridership was out of their control. (May 23, 2017) (Sign up for our free video newsletter here <http://bit.ly/2n6VKPR>)



By **Laura J. Nelson**

MAY 23, 2017, 4:00 AM

**A**s ridership on Southern California’s largest bus network has **dropped steadily** over the last few years, transportation officials have expressed confidence that the decline was temporary and riders would soon return.

The Metropolitan Transportation Authority attributed the drop to factors beyond its control, including more people buying cars, cheap gas and a recent state law that allows immigrants who are in the country illegally to obtain driver licenses.

Now, transportation officials are considering another explanation for why riders have stopped taking buses: The service isn’t good enough.

After months of preliminary research, Metro officials acknowledge that Los Angeles County’s sprawling bus system isn’t working as well for riders as it once did.

Metro bus ridership fell 18% in April compared with April 2015. The number of trips taken on Metro buses annually fell by more than 59 million, or 16%, between 2013 and 2016.

A recent survey of more than 2,000 former riders underscores the challenge Metro faces. Many passengers said **buses didn’t go where they were going** — or, if they did, the bus didn’t come often enough, or stopped running too early, or the trip required multiple transfers. Of those surveyed, 79% now primarily drive alone.

In an attempt to stem the declines, Metro is embarking on a study to “re-imagine” the system’s 170 lines and 15,000 stops, officials said. Researchers will consider how to better serve current riders and how to attract new customers, and will examine factors including demographics, travel patterns and employment centers.

“We’re misaligned with current travel demands,” said Conan Cheung, a senior executive officer at Metro. The agency hasn’t overhauled the bus system in more than 25 years, since the county’s first modern rail line began running between Long Beach and downtown Los Angeles, he said.

Since then, the region has added more than 100 miles of passenger rail, as well as 538 miles of commuter rail lines connecting six counties.

The results of the study, expected in April 2019, could lead to a possible overhaul of the bus network, including where buses go, what time they run and how often they arrive.

Metro, which runs the country’s second-busiest bus system, is hardly alone in its ridership losses. Cities including Phoenix, Miami and Orlando reported double-digit declines last year.

But no region is poised to invest more aggressively in transit construction than Los Angeles County, where voters recently [approved a sales tax increase](#) worth an estimated \$120 billion over four decades for rail construction, bus improvements and system repairs.

High ridership on new rail lines, including a planned route through the Sepulveda Pass, will require a well-organized bus network, experts say. Buses will also continue to play an important role along busy corridors, and in neighborhoods where rail won’t be built.

Buses are still the backbone of the Metro system, accounting for about 72% of trips taken last year.

Experts have theorized that Metro has lost a relatively small number of dedicated riders, who formerly took buses for every kind of trip, including commuting and running errands. Because those passengers took multiple trips per day, their departure has had an outsized effect on overall ridership.

“The decline in ridership isn’t coming from people who use transit a few times a week who’ve shifted to Uber and Lyft,” said Juan Matute, the associate director of UCLA’s Institute of Transportation Studies.

The reason those riders have left may vary, but officials believe many of them are now driving. California’s booming economy has helped some low-income families afford a car, while a law that took effect in 2015 allows immigrants in the country illegally to apply for driver’s licenses.

Transit may take too long now because the routes have been altered, or because buses are getting stuck in traffic, Cheung said. With the rise of telecommuting, flexible shifts, and multiple part-time jobs, other riders have found that bus schedules don’t work for them.

“If you look at a two-dimensional map, it looks like we serve everyone,” Cheung said. “But you have to layer other dimensions in there. Is there enough frequency? Are we there at the hours people want to travel? Does it require several transfers to get from origin to destination?”

Every part of the county is within reach on Metro’s local buses, but they don’t come often enough, particularly in the San Fernando Valley and the South Bay, said Richard Snyder, 32, of North Hollywood.

“You have to wait half an hour, 40 minutes,” said Snyder, a video game tester who has relied on transit since he moved to Los Angeles three years ago. “You can’t live a very normal existence, especially when you consider there are quite a few places not covered by the trains.”

Infrequent stops make any trip involving an orange local bus “harder than it should be,” Snyder said. A wait of 15 minutes or longer makes other options more attractive, he said, such as walking to a rail station, or calling an Uber.

After enduring a commute from Canoga Park to Torrance that required three transfers and took two hours each way, Snyder moved to North Hollywood, within walking distance of the Metro station.



Metro will work with the 16 largest bus operators in the county on strategies to retain riders and attract new ones. Many of those carriers, including Long Beach Transit and Santa Monica's Big Blue Bus, have also seen ridership declines.

The study will include other transportation options, including bicycle sharing and smaller, shuttle-like vans, called "micro-transit," which can be used to carry riders from stations to their destinations.

"Transit is not a one-size-fits-all market anymore," Cheung said. "We have to understand what people's travel patterns are for various trips and purposes."

[laura.nelson@latimes.com](mailto:laura.nelson@latimes.com)

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# World's first light rail on a floating bridge: For I-90, Sound Transit had to invent 'a brilliant solution'

Originally published May 11, 2017 at 6:00 am | Updated May 13, 2017 at 1:55 pm



Light-rail trains will occupy the current reversible lanes of the Interstate 90 floating bridge, where marathoners ran in 2013. Carpool lanes will be added to help accommodate the mainline traffic. (Erika Schultz/The Seattle Times)

**Sound Transit's consultants have invented a flexing track connection, using earthquake science, to safely move future light-rail trains on the I-90 floating bridge.**

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Sound Transit will soon try something unprecedented — building and operating train tracks on a floating bridge.

The work begins June 3 in the center express lanes of Interstate 90, after carpools, buses and Mercer Island motorists are kicked out to make room for light-rail contractors. Passenger service between Seattle, Bellevue and Overlake is scheduled to begin in 2023.

The [technical challenges](#) are daunting.

Engineers have to ensure the bridge will remain buoyant when a pair of 300-ton trains pass each other, and that the high-voltage current that powers the trains won't stray into the bridge's pontoons and corrode its steel rebar. They spent \$53 million just to design the section across Lake Washington.

The most difficult task is adapting the rails to the movements of the bridge.

Train tracks will cross the hinges and sloping spans between the bridge's fixed sections and the 1-mile floating deck, like someone walking down the gangway to [a boat marina](#).

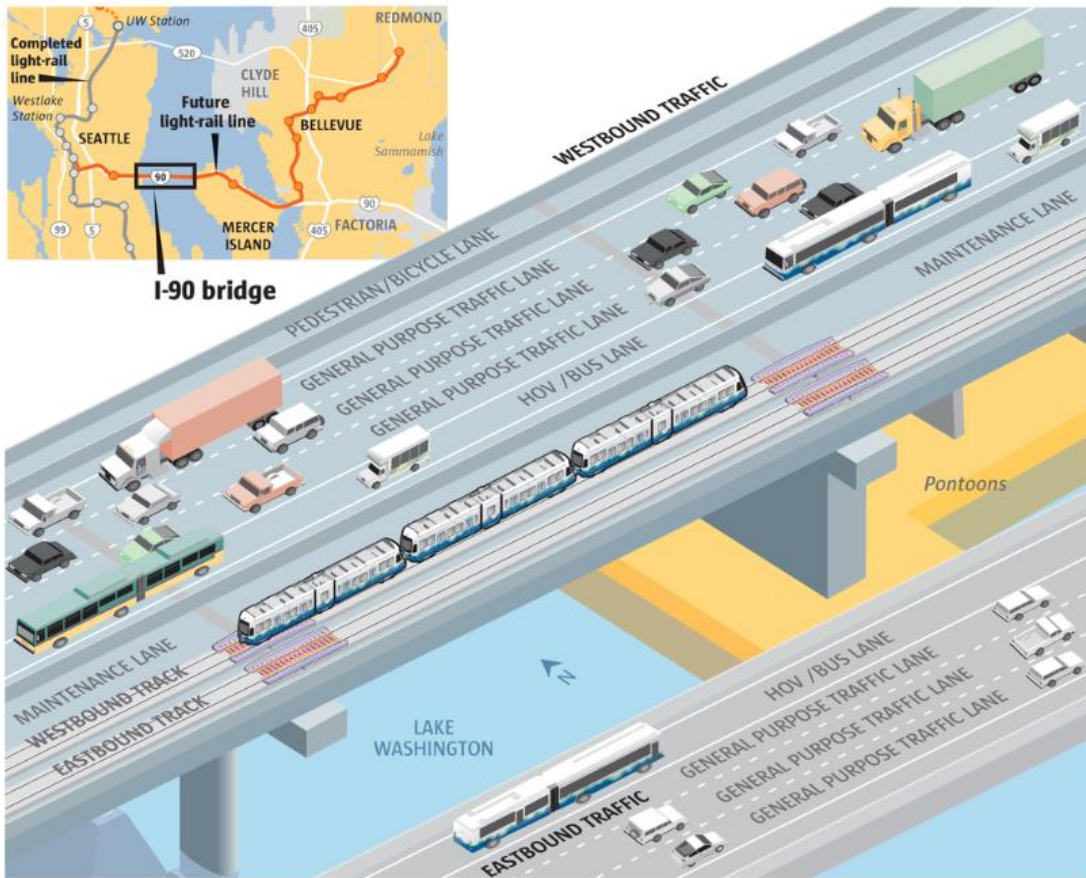
Lake levels rise and fall two feet a year. Waves, wind and traffic create slight twisting. A full train is heavy enough to plunge the pontoons eight inches. So the railbed must both resist and absorb roll, pitch and yaw.

Failure is not an option.

A derailed train could sink 200 feet to the lake bed. If track components break or wear out, transit service would be halted for maintenance, or subjected to slowdowns.



[From the archives: A look back at the I-90 floating bridges »](#)



Source: Sound Transit, Parsons Brinckerhoff

Reporting by MIKE LINDBLOM, Graphics by MARK NOWLIN / THE SEATTLE TIMES

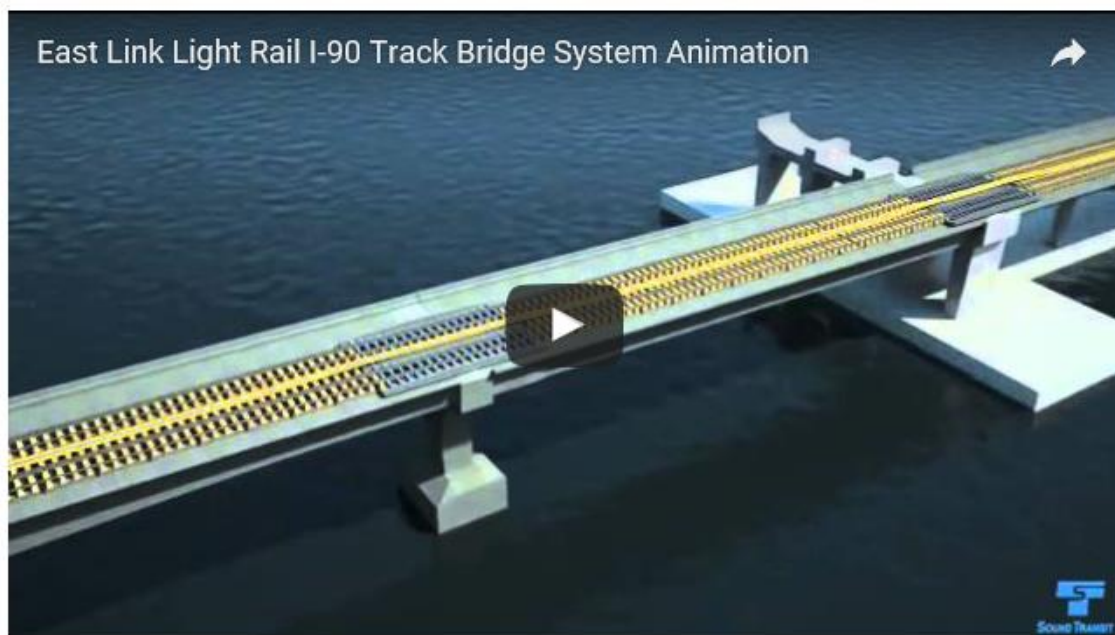


The good news is, engineers have invented and [field-tested](#) a new kind of rail joint they say will provide a smooth ride at full speed, instead of a reduced rate of 30-35 mph as once feared.

It borrows a philosophy from earthquake planning: Don't fight the forces.

Instead, thousands of trains will roll atop the same kinds of high-strength bearings that allow buildings and fixed bridges to flex in a quake.

Just in time for scheduled construction, [Tom Baker](#), chief [bridge and structures engineer](#) at the Washington State Department of Transportation, [signed off on the final design in April](#), affirming light rail will be safe and not wear out the bridge prematurely.



## Could it even be done?

Sound Transit took a calculated risk in 2008, when it sent the cross-lake corridor called East Link to voters in the ST2 sales-tax measure.

Way back in 1976, federal and local government leaders signed a pact that high-capacity transit, either rail or bus, would someday be added to I-90's Homer Hadley Bridge, the north span that includes express lanes, completed in 1989.

Bridge engineers assured it would be stout enough for trains, but they deferred the questions about bridge hinges and motion to future generations, recalls Chuck Ruth, a structural engineer on that team.

WSDOT later simulated loaded trains by driving flatbed trucks loaded with concrete slabs across I-90, for [three nights in 2005](#), to ensure the bridge could handle the weight.

Nonetheless, state review panelist Alan Kiepper, retired president of New York City Transit, worried in 2006 that heavy trains would load the span to 97 percent of capacity. He even mentioned the original Tacoma Narrows Bridge, the infamous Galloping Gertie, which collapsed in 1940 in a case of hubris by engineers.

The panel concluded the project was still possible.

Redmond Mayor John Marchione, a longtime transit-board member, recalls being nervous enough that after the ST2 win in 2008, he said in speeches that if the crossing didn't work, he'd settle for a Redmond-Bellevue segment, to serve Eastside-only trips.

"I feel more confident," he says now. "I'm never going to feel 100 percent confident until they get the real train on the real track."



Traffic Lab is a Seattle Times project that digs into the region's thorny transportation issues, spotlights promising approaches to easing gridlock, and helps readers find the best ways to get around. It is funded with the help of community sponsors Alaska Airlines, CenturyLink, Kemper Development Co., Sabey Corp., Seattle Children's hospital and Ste. Michelle Wine Estates. Seattle Times editors and reporters operate independently of our funders and maintain editorial control over Traffic Lab content.

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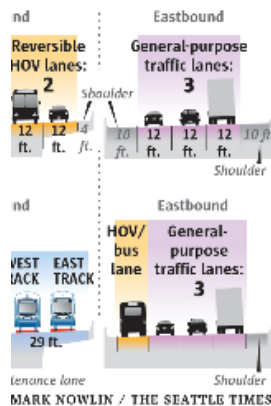
“We are applying science every day to make this crossing work. If it weren’t I-90 it would be 520,” he said. “It’s the only way to get across Lake Washington, is a floating bridge.”

Sound Transit never proposed going around the lake, preferring a direct connection between Seattle and Bellevue.

Fortunately, the express lanes are protected from common storms from the south, by the other I-90 span. Train service would be halted in a **sustained north wind of 40 mph or higher**, which happens once a decade, or a south wind of 50 mph.

**I-90 express lanes**

will be narrowed, varying between 10 to 10.75 feet across the floating spans.



Sound Transit will be making the bridge way a few inches wider on the shoulders can be wide responders during high-occupancy vehicle each direction, to make up for express lanes. Train in 2023.

To keep buoyancy, some ballast gravel will be removed from the bridge pontoons.

In a last-minute design addition, steel frames will be built within the pontoons, so that cables can be pulled through lengthwise. When force is applied at the bridge ends, that should tighten the concrete in the midsections of the pontoons. The goal is to prevent microcracks and assure the 100-year life span of the structure.

But the critical points for safety and comfort are eight 43-foot-long “track bridges.” These steel devices soften the angles where rails will cross over hinges that connect the floating and fixed structures.

That way, the trains won’t go ka-thunk.

Easier said than done.

During the 2008 campaign, transit executives showed the public a **conventional “three beam” solution**, where a sliding segment of track moves east-west, between fixed

track pieces on either side. It’s like interlacing your fingers.

To show the I-90 project was possible, transit officials cited Vancouver, B.C., where Sky Train crosses a **cable-stayed**



Fraser River bridge, and trains in Lisbon, Portugal that travel on a suspension bridge. However, their movements are mainly lengthwise and less variable than the I-90 bridge.

Sound Transit's own engineers worried that sliding east-west rails would need to be hugged by springs on either side, to control north-south shimmying. Those springs can wear out.

Under that design, trains might even have to go half-speed.

## Testing on solid ground

While studying that dilemma, a track design specialist in England named Andy Foan conceived another solution.

If the I-90 tracks rested on twin curved platforms, set side-by-side, those platforms would rotate slightly when lake levels change. The rotation would cause the rails to either crown or sag a few inches, evening out the movements of the decks and hinges across the 43-foot rail section.

That ought to be more durable than three-part sliding tracks.

"The invention was born of necessity," Foan recalls.

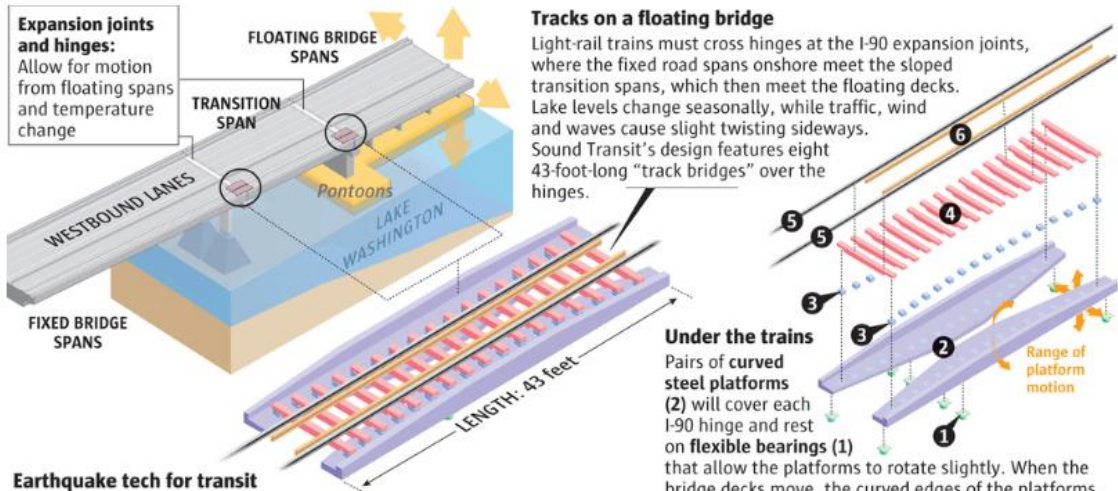
Foan's ideas were near impossible to depict in words. On a Seattle trip, he gathered wooden stir sticks from a downtown cafe and built a makeshift model for engineers.

"We're not worthy!" thought John Sleavin, a senior technical director at Sound Transit.

"He came up with that, it was so simple, and in some ways so obvious to geometric engineers," Sleavin said. "It was like, wow, that showed a lot of promise!"

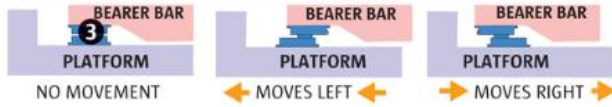






**Earthquake tech for transit**

**Pivoting bearings (3)** are wafer-shaped with a spherical center. They enable the steel railroad ties, here called "bearer bars," to remain stable while the platforms move beneath, as shown in this exaggerated diagram.



Source: Sound Transit, Parsons Brinckerhoff

Reporting by MIKE LINDBLOM, Graphics by MARK NOWLIN / THE SEATTLE TIMES

**Tracks on a floating bridge**

Light-rail trains must cross hinges at the I-90 expansion joints, where the fixed road spans onshore meet the sloped transition spans, which then meet the floating decks. Lake levels change seasonally, while traffic, wind and waves cause slight twisting sideways. Sound Transit's design features eight 43-foot-long "track bridges" over the hinges.

**Under the trains**

Pairs of curved steel platforms (2) will cover each I-90 hinge and rest on flexible bearings (1) that allow the platforms to rotate slightly. When the bridge decks move, the curved edges of the platforms will rise or fall. This translates the deck motion into vertical curvature in the rails, causing the tracks to crown or sag up to 3.6 inches. Atop the platforms are pivoting bearings (3) where the steel railroad ties (4) are attached. These 34 bearings move, so the tracks (5) stay parallel. All of these parts working together are designed to spread the bridge movements uniformly over the 43-foot track bridges so riders would barely feel them. Guard rails (6) between the tracks are a precaution to prevent derailments.

Next came computer models, two prototypes, component testing at UW, and finally live trials with full-sized, two-car trains at [a railroad research facility in Pueblo, Colo.](#)

“I think they tested everything they possibly could to have the biggest assurance of success with the track bridge system,” says Ruth, who chaired a WSDOT panel and later worked on the engineering team.

A few problems emerged.

Even a one-eighth-inch error could throw components off balance. Steel bars and even some bolt holes needed to be repositioned, according to Travis Thonstad, who documented the tests in [his UW master’s thesis.](#)

Eventually the system worked, even at three times I-90’s normal twisting.

“I’m ecstatic,” Sleavin says. “I was hoping that we could get the trains [to run across at 35 mph.](#) What we found was that at 55 mph, that was probably the softest, smoothest ride.”

Of course, the rails themselves need to stay parallel, despite all the other motion. How?

Under the rails are sets of crosswise steel bars, like railroad ties, to hold them in place.



These ties sit on [bearings](#) that rock and roll in all directions, but only a couple inches. The curved 43-foot platforms also sit on pivoting bearings. They will adapt to bridge motion, and isolate train riders from the vagaries of the lake.

“I’ve never seen anything like it before. I don’t think the world has seen anything like it. It’s a brilliant solution,” says John Stanton, a University of Washington civil-

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*in Sleavin, a senior technical director at  
und Transit, holds one of the pivoting bearings  
it will help support the light-rail tracks on the  
o floating bridge over Lake Washington.  
eve Ringman/The Seattle Times)*

engineering professor and seismic expert who observed some of the design work.

A similar principle protects Seahawks and Sounders FC fans at CenturyLink Field.

Bearings under the roof columns allow it to “give” during a quake so the roof won’t be whipsawed by ground motion.

“CenturyLink Field is a 720-foot span. It’s more like a bridge than a building,” says Jon Magnusson, whose Seattle-based firm Magnusson Klemencic Associates engineered the city’s major sports stadiums. “[These applications](#) are taken from the bridge world.”

Because the I-90 trains will roll across 34 bearings per hinge crossing, each shoulders only a fraction of the weight, an advantage for safety and durability, Magnusson said.

If any wear out, a crew needs about four hours to install a substitute, said Sleavin. He predicts they might never wear out.



*John Sleavin, a senior technical director at Sound Transit, looks at the track bridge system that will transition the light-rail track from I-90's fixed span to the floating-bridge span. (Steve Ringman/The Seattle Times)*

## **Intricate design**

Dryland tests are one thing, but will this work on a lake?

Participating engineers say every component has been safely used someplace else. Sound Transit is merely combining them in a new way.

“This beast is a little bit of a Swiss watch,” says Stanton. “Its machinations depend on all the pieces working together. If you have a couple of cowboys out there installing it, you’re going to have difficulty getting the pieces to work properly.”



Only eight of the track bridges will be made, making quality assurance difficult, Stanton says. By comparison, a Boeing jet undergoes exhaustive flight tests followed by thousands of identical units sold to customers, who give constant feedback, he said.

He praises a decision to assemble the track bridges in controlled conditions at Jesse Engineering in Tacoma, and truck them whole to I-90, so movements and weather don't mess up the installation.

Before passengers cross the lake, the trains will run at least **three months** empty, as track movements are constantly recorded.

John Niles, a transportation consultant who has **watchdogged the design** since 2006, has come to believe it will work. However, he predicts the crossing "may have very high maintenance requirements, higher than they expect."

Opponents like him still argue that WSDOT was foolish to sell off two express lanes of freeway capacity for a bargain price of \$173 million to Sound Transit. The deal was **challenged by Bellevue developer Kemper Freeman** but affirmed by the state Supreme Court.

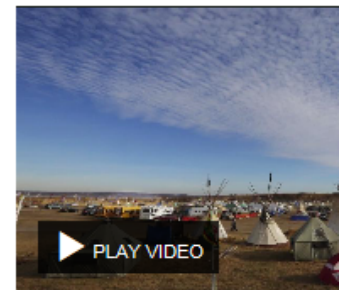
An additional \$283 million is being spent to squeeze high-occupancy lanes into the freeway mainlines, as a prerequisite to moving buses and carpools out of the future train deck.

Now that the full design is known, Sound Transit had to increase the construction contract by **\$225 million** to a total of \$712 million, to build trackway and two stations from Chinatown International District to Bellevue Way. That will eat into the project's contingency funds.

The entire 14-mile corridor from Seattle to Overlake,



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including stations, trains and signal systems, is budgeted at \$3.7 billion.

Despite the expense to tame the lake, the I-90 crossing will cost far less than building another bridge.

The lake is considered too deep to install columns for a fixed bridge. It's also too deep for a tunnel under the lake or along the lake bottom. A train-only floating bridge would require pontoons far wider than the 29-foot railbed, to spread the weight.

“It's cheaper to do the rail and road bridges together than to separate them,” Marchione said.



*John Sleavin, a senior technical director at Sound Transit, walks out from the track bridge system that will transition the light-rail track from Interstate 90's fixed span to the floating-bridge span. (Steve Ringman/The Seattle Times)*

RAIL

## Alstom-Developed Automatic Train Operation System Successfully Enters Service on the RER A

ALSTOM

SOURCE: ALSTOM TRANSPORT MAY 11, 2017



*Alstom commissioned Automatic Train Operation system.*

*Photo credit: Alstom*



Alstom has commissioned the Automatic Train Operation system on the central section of the RER A between Nanterre-Préfecture, Val-de-Fontenay and Fontenay-sous-Bois. Since 27 April, a double-deck MI09 train has been running under automatic operation, a kind of speed control, developed and supplied by Alstom. The addition of this system to the SACEM system installed in 1989 is designed to reinforce the performance and frequency of the RER A, which is Europe's most heavily frequented regional line and transports 1.2 million passengers per day.

Automatic operation will be implemented progressively between now and November 2018 on the entire fleet of 183 two-level trains (MI2N and MI09) currently in circulation on line A of the RER.

In January 2015, Alstom was selected by the RATP, the STIF and the Ile-de-France Region to develop and install the automatic operation system on line A of the Parisian RER network. The contract, worth a total of approximately 20 million euros, includes detailed studies, manufacture of the prototype and equipment for the trains, testing and project assistance.

"Alstom is very proud to participate in this project, which is vital for mobility in the Ile de France region. Alstom's French signalling teams, based in Saint-Ouen and Villeurbanne, are putting all their expertise and enthusiasm into providing an innovative, reliable solution capable of operating with an older system. This project will be an impressive showcase for Alstom's signalling know-how," said Jean-Baptiste Eyméoud, president of Alstom France.

Alstom thus takes on a real technical challenge: to install, in less than two years, an automatic control system on an existing 30-year-old system, technically complex given the interfacing with two types of existing trains. This is also the first time ever that automatic operation to be installed on heavy trains. This solution, integrated into SACEM, will improve the regularity of the line, providing time savings of approximately 2 minutes on average journey between the stations of Vincennes and La Défense, representing an increase in commercial speed of 5 km/h.

Since 1989, the SACEM system has been ensuring the performance and safety of Line A of the RER by continuously controlling the speed and spacing of the trains. Alstom has actively participated in the development and implementation of this solution. Alstom also has also deployed solutions for SACEM in Mexico and Hong Kong.



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# New York to allow self-driving car testing

BY ALI BRELAND - 05/10/17 04:31 PM EDT

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New York Gov. Andrew Cuomo (D) announced on Wednesday that the state would open applications for companies looking to test autonomous vehicles.

"New York has emerged as one of the nation's leading hubs for innovation, and as we invite companies and entrepreneurs to reimagine transportation technology, we will encourage the development of new, safe travel options for New Yorkers," Cuomo said.

Applicants who obtain permits will be allowed to test vehicles in New York until April 1, 2018.



The state will require drivers to be present in the cars while they're being tested. Autonomous vehicle testing permit holders must also give reports of their tests to the New York Department of Motor Vehicles by March 1, 2018.

New York's DMV expressed that the state would be taking a cautious approach with the new technology.

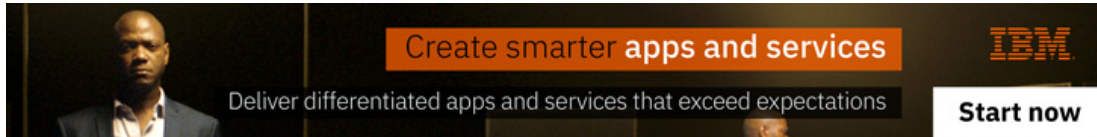
"We need to make sure these vehicles are safely tested on our roads, while providing opportunities for the public to become familiar with this technology," said DMV Executive Deputy Commissioner Terri Egan "This is a balanced approach consistent with New York's long track record of highway safety as well as innovation."

Companies such as Uber and Alphabet subsidiary Waymo have ramped up their driverless car testing efforts over the past year as the industry continues to advance the technology.

An Uber spokesperson said that they're currently reviewing New York's application. A representative from Waymo did not immediately respond to a request for comment on if they would apply to test in the state.

Lawmakers have considered moves this year which could help speed the development of self-driving cars, including easing certain safety standards.





**Bruce Japsen** Contributor

*I write about healthcare business and policy*

Opinions expressed by Forbes Contributors are their own.

PHARMA & HEALTHCARE 5/10/2017 @ 8:00AM | 18,831 views

## Lyft And Blue Cross Partner To Get Patients Rides To The Doctor

Blue Cross and Blue Shield plans will partner with the ride-hailing company Lyft to provide certain health plan enrollees “no-cost” transportation to the doctor’s office in an effort to improve compliance with healthcare appointments.

[The Blue Cross Blue Shield Association](#) sees an opportunity to reduce costs and improve outcomes for commercially insured enrollees who don’t have adequate access to transportation. Blue Cross plans are moving away from fee-for-service medicine to value-based care and population health models that make sure patients are getting quality care in the right place and at the right time. Financial terms of the Lyft-Blue Cross partnership weren’t disclosed.



A Lyft driver places the Amp on his dashboard on Jan. 31, 2017 in San Francisco. (Photo: Kelly Sullivan/Getty Images for Lyft)

“We can no longer ignore these barriers in healthcare called social determinants of health,” Blue Cross Blue Shield Association Chief Medical Officer Dr. Trent Haywood said in an interview.

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“You see high emergency room utilization rates where you have poor infrastructure. You need to be in every community to pull off what we are trying to pull off.”

Using Lyft’s ride sharing services to “reduce missed appointments,” the Blue Cross association said it will better reach its members for “non-emergency care.” Blue Cross has a database of 106 million of its health plan members that includes “zip code-level” community information such as transportation, nutrition and environment.

“A strategic alliance with Lyft will allow us to positively impact and improve American’s health nationwide,” Haywood said [in a statement](#). “Many Americans live in areas where medical care is beyond the reach of walking, biking or public transportation. As a result, they struggle to access critical healthcare services, even when they have health insurance.”

Transportation barriers result in “missed or delayed medical appointments” for more than 3.5 million Americans, the association said. Though there is coverage under Medicaid in many states, the association said there are still millions of Americans unable to access care where and when they need it.

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The association said its members will later this year begin rolling out the partnership in yet-to-be disclosed pilot markets in announcements to be made by local Blue Cross and Blue Shield companies.

Health plan members will schedule a ride through their medical provider or Blue Cross plan, which will book the appointment for the enrollee through Lyft. Health plan enrollees will receive confirmations and alerts on their phones about the scheduled ride.

The companies said the pilot program will use Lyft’s concierge service platform that focuses on



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giving senior citizens rides to medical appointments. It will not be accessible through the regular Lyft app, the companies said.

Over time, Blue Cross executives say member companies will be able to expand the Lyft services from commercially insured enrollees to patients who are covered by Medicaid or Medicare benefits Blue Cross plans administer.

The Blue Cross and Blue Shield Association is a national association and lobby of 36 independent health insurance companies, including Health Care Service Corp. and Anthem, that operate under the Blue Cross and Blue Shield brand.

Given the reach of the Blue Cross member plans, Lyft expects to reach patients across the country.

“Lyft has been working closely with healthcare providers to get more people to the doctor when they need it, and a partnership this size with [Blue Cross Blue Shield] allows us to reach all 50 states,” Lyft president John Zimmer said. “This type of cross-industry partnership is a critical way to help make our communities stronger and families healthier.”

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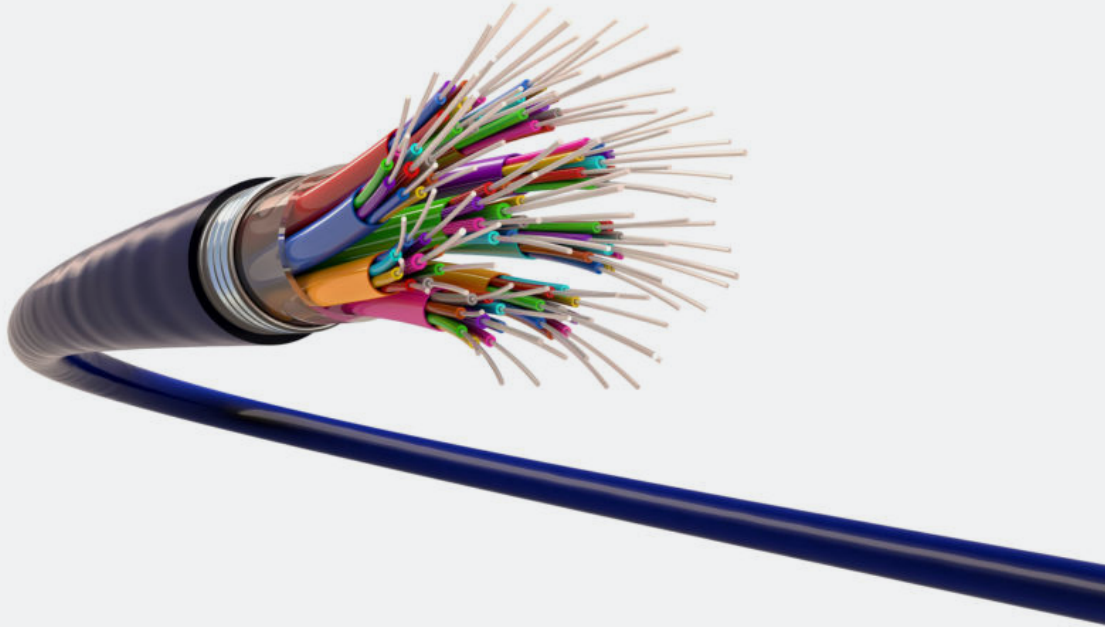


A RARE AGREEMENT —

# "Dig once" bill could bring fiber Internet to much of the US

Unlike net neutrality, "dig once" puts Democrats and Republicans on same side.

JON BRODKIN - 3/22/2017, 10:38 AM



Enlarge

Years in the making, a proposal to mandate the installation of fiber conduits during federally funded highway projects might be gaining some new momentum.

If the US adopts a "dig once" policy, construction workers would install conduits just about any time they build new roads and sidewalks or upgrade existing ones. These conduits are plastic pipes that can house fiber cables. The conduits might be empty when installed, but their presence makes it a lot cheaper and easier to install fiber later, after the road construction is finished.

The idea is an old one. US Rep. Anna Eshoo (D-Calif.) has been proposing dig once legislation [since 2009](#), and it has widespread support from broadband-focused consumer advocacy groups. It has never made it all the way through Congress, but it has bipartisan backing from lawmakers who often disagree on the most controversial broadband policy questions, such as net neutrality and municipal broadband. It even got a boost from Rep. Marsha Blackburn (R-Tenn.), who has frequently clashed with Democrats and consumer advocacy groups over broadband—her "[Internet Freedom Act](#)" would wipe out the Federal Communications Commission's net neutrality rules, and she [supports state laws](#) that restrict growth of municipal broadband.

Blackburn, chair of the House Communications and Technology Subcommittee, put Eshoo's dig once legislation on the agenda for [a hearing](#) she held yesterday on broadband deployment and infrastructure. [Blackburn's opening statement](#) said that dig once is among the policies she's considering to "facilitate the deployment of communications infrastructure." But her statement did not specifically endorse Eshoo's dig once proposal, which was presented only as a discussion draft with no vote scheduled. The subcommittee also considered a discussion draft that would "creat[e] an inventory of federal assets that can be used to attach or install broadband infrastructure."

## Democrats and Republicans agree—but will they vote?

Dig once legislation received specific support from Commerce Committee Chairman Greg Walden (R-Ore.), who [said](#) that he is "glad to see Ms. Eshoo's 'Dig Once' bill has made a return this Congress. I think that this is smart policy and will help spur broadband deployment across the country." Like Blackburn, Walden is an opponent of the FCC's current net neutrality rules and a [supporter of state laws](#) that limit municipal broadband.

At the FCC, dig once has support from Democrats and Republicans. Former Chairman Tom Wheeler, a Democrat, [endorsed the policy](#), and so has the current chairman, Republican Ajit Pai. Pai [said last year](#) that "government officials should adopt 'dig once' policies so that broadband conduit is deployed as part of every road and highway construction project."

We asked Blackburn's office if she supports the dig once legislation and whether she plans to schedule a vote on it, and we'll provide an update if we get one. Specifically, the [dig once bill](#) requires states to evaluate the need for broadband conduit any time they complete a highway construction project that gets federal funding. Conduit must be installed if the evaluation, done in consultation with local and national telecom providers and equipment makers, "reveals an anticipated need in the next 15 years for broadband conduit." Projects should include enough conduits "to accommodate multiple broadband providers," the bill says.

Dig once doesn't have to be just for state and federal projects, as [cities such as Boston and San Francisco already require it locally](#).

## Big benefit for a “tiny cost”

TechFreedom, a libertarian think tank that has often criticized Democratic telecommunications policies, is also on board with dig once.

"Failure to implement Dig Once means more construction, more disruption, and much higher costs for private providers—who may simply decide not to deploy in an area where the economics don't work," TechFreedom and other groups [wrote in a letter](#) to lawmakers. "The tiny cost of installing conduit (about 1 percent in added costs) pales in comparison to the taxpayer burden of unnecessary digs, traffic congestion, and the opportunity cost of not having high-speed networks that both help support public services and grow the economy."

Last year, the dig once proposal was dropped from a larger broadband bill. At the time, community broadband consultant Stephen Blum [offered some speculation](#) on why the legislation stalled.

"Dig once requirements are often opposed by deep pocketed incumbent telephone and cable companies, who build their own infrastructure and would prefer that smaller competitors not have access to cheap and freely available conduit," he wrote. "Transportation agencies and public works people will also tend to oppose dig once rules on occasion, because it adds costs and extra hassles to road projects that are already expensive and complicated."

But if the Republican-led Congress decides to implement dig once legislation, it can point to public support from some ISPs and broadband industry lobbyists. CTIA, which represents the nation's largest mobile carriers including AT&T and Verizon Wireless, supported dig once in a [letter yesterday](#), pointing to government data that suggests the policy "can cut broadband costs by up to 90 percent." Dig once also got support from CenturyLink, [which said](#) conduit deployment requirements "could be especially helpful where fiber upgrades must cross bottleneck facilities, such as bridges or tunnels, where only one practical route is available."

Competitive Carriers Association CEO Steven Berry, who represents nearly 100 smaller wireless carriers, [told lawmakers yesterday](#) that it's time to "establish 'dig once' policies, once and for all."

### Promoted Comments

Z06 Vette Wise, Aged Ars Veteran

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This has long term benefits. As an example, the last time my company moved, we purchased an office park. I was in need of running fiber between the buildings, so I decided to walk the facilities to see what it would take. I found that a previous tenant had already run a conduit for cat3 phones between the buildings. So I had the option of running the fiber through that.

My estimated price drop from thousands (to dig up the parking lot), to 2 hours of my time and the cost of the fiber.

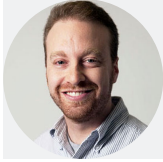
130 posts | registered 4/21/2016

b3astofthe3ast Ars Centurion

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Sounds like a great idea, with a few details that need ironing out. Who decides who gets access? Can one company try and block a competitor from using these pipes? How many cables does a company get to put in?

225 posts | registered 9/22/2014



**JON BRODKIN**

Jon is Ars Technica's senior IT reporter, covering the FCC and broadband, telecommunications, wireless technology, and more.

**EMAIL** [jon.brodtkin@arstechnica.com](mailto:jon.brodtkin@arstechnica.com) // **TWITTER** [@JBrodtkin](https://twitter.com/JBrodtkin)

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A boy sits on the swing and reads one of the books available at Singapore's experimental bus stop. // Courtesy of Infocomm Media Development Authority

## Singapore May Have Designed the World's Best Bus Stop

**MIMI KIRK** MAR 1, 2017

**An architecture firm and the government collaborated on a bus stop with books, a rooftop garden, and a swing.**

While the U.S. is known for its sorry bus stops—despite creative grassroots efforts to improve them—Singapore's bus stops are already pretty decent. In the year and a half I lived there, I never came across one without seating and a roof—vital in a tropical climate prone to downpours. Still, they're pretty humdrum affairs, and not places you'd want to spend much time in.



What if the humble bus stop could be a place you actually looked forward to frequenting? That's the question the Singaporean firm DP Architects aimed to answer. "We wanted to redesign a commonplace thing we take for granted," says Seah Chee Huang, the firm's director.

Now, thanks to DP Architects in collaboration with various agencies of the Singaporean government, there's a bus stop in Jurong, an area in the southwest of the island city state, that has elements you might find in a café, park, or your living room—all places you'd probably prefer over a bus stop.



(Courtesy of Infocomm Media Development Authority)

The stop features ample seating, a rack of books geared for all ages, from Enid Blyton to Ray Bradbury, bicycle parking, a swing, artwork by the local illustrator Lee Xin Li, and a rooftop garden, complete with a small tree.

The space is also hyperconnected. In addition to the print books, users can scan a QR code to download e-books from the National Library, charge their phones, and peruse interactive digital boards that provide arrival times and a journey planner to find the fastest route. Screens also broadcast information on weather, news, and local events. Solar panels help offset electricity use.

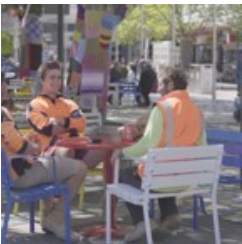
It's no accident that the bus stop is in Jurong. The government has made this area a testing site for "smart" innovations, in line with its initiative, launched in 2014, to make Singapore a "smart nation." Technologies being developed include driverless vehicles, lights that dim or brighten in response to motion, and an automated system that senses when trash bins need emptying.



Students engage with the bus stop's interactive features. (Courtesy of Infocomm Media Development Authority)

The bus stop has been in operation for six months, and in another six the government will determine which of its features to potentially include in other stops. Much depends on the public's feedback, says Khoong Hock Yun, the assistant chief executive officer of the government's Infocomm Media Development Authority, which has a hand in the project.

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Khoong says that so far, it's clear that one of the most popular elements is the phone charging station. "Cell phone batteries are never updated fast enough for us," he laughs. "People always need chargers." Passengers are also making good use of the interactive boards, he says.

Seah of DP Architects hopes his firm will have the opportunity to design more stops. "We want to make waiting for Singapore's buses a joyful and enriching experience," he says.

About the Author



**Mimi Kirk**

**@MARIONEKIRK / FEED**



Mimi Kirk is a contributing writer to CityLab covering education, youth, and aging. Her writing has also appeared in *The Washington Post*, *Foreign Policy*, and *Smithsonian*.

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