The Top 5 Things Planners Need to Know About Self-Driving Vehicles

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The Top Five Things Planners Need to Know About Self-Driving Vehicles

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http://www.camsys.com/automated-connected-vehicles.htm
Every day you hear a story in the news about connected vehicles, automated vehicles, or self-driving cars and how these vehicles will transform mobility in the United States.
These stories talk about things like Shared Economy and Disruptive Technologies.
And they give conflicting predictions:

Some say \textit{VMT} will go up...

Some say \textit{VMT} will go down...

And some folks are now talking about \textit{VMD}... What the heck is that?
Lots of moving parts and lots of hard technical problem-solving still left to be done.
But there are some things that we as planners need to know today... about these vehicles of tomorrow.
TOP 5

things planners need to know about self-driving vehicles
1) Self-Driving Vehicles Will Happen

2) It’s Connected AND Autonomous

3) Commercial Vehicles Will Be First

4) Capacity Expansion May Be a Thing of the Past

5) The Shared Economy Will Play a Huge Part in the Mobility of the Future
1. Self-Driving Vehicles Will Happen
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It really is time to accept it....

it is no longer a matter of if,
it is now a matter of when.
1. Self-Driving Vehicles Will Happen

The falling cost of sensors, radars, and other devices, coupled with dramatic increases in software capabilities, have provided the tipping in providing this functionality in a vehicle.
1. Self-Driving Vehicles Will Happen

How it will happen is not the important question.
1. Self-Driving Vehicles Will Happen

The important question is...

what happens when they do?
Now is the time to start developing new forecasts based on these vehicles being in the fleet.
1. Self-Driving Vehicles Will Happen

And answering some of the larger questions:

Will this increase or decrease VMT?

What happens to Transit?

How will LAND USE change?

How do we need to UPDATE our modeling techniques to better capture the IMPACT of these VEHICLES?
2. It’s Connected AND Autonomous
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Although there are two distinct approaches to achieving self-driving vehicles, they are really two sides of the same coin.
2. It's Connected AND Autonomous

Alone they both provide significant improvements toward mobility, but combined they allow these new vehicles to reach the full potential of their transformative capabilities.
2. It’s Connected AND Autonomous

So don’t get caught up in choosing sides or thinking one way is better than another.

THIS

OR

THAT
2. It’s Connected AND Autonomous

Instead, educate your agency about how both of these approaches work and begin the real work of understanding how it will affect your region.
And don’t forget to **start building relationships** with these new technology companies and traditional car makers, you will need them to more fully understand the impact of these vehicles.
3. Commercial Vehicles Will Be First
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Which type of vehicle (trucks or cars) comes to market first will depend a great deal on who has the **greatest demand** for such a machine.
3. Commercial Vehicles Will Be First

The Goods Movement and Logistics sectors have intense *pressures* motivating them to be an early adopter.
3. Commercial Vehicles Will Be First

The driver shortage in the country is only going to get worse...

and shippers (the ultimate customer) are always looking for ways to reduce costs and increase reliability/efficiency.
3. Commercial Vehicles Will Be First

These new vehicle types provide this entire sector with a path toward significantly reducing costs.

Therefore, they will be the sector pushing hardest to bring these vehicles to market quickly.
3. Commercial Vehicles Will Be First

**Understanding** these types of vehicles first allows us as planners to prioritize our efforts and think about how elements of our transportation network and economy could change.

(i.e., will there be a need for so many roadside services built to support truck drivers?)
4. Capacity Expansion May Be a Thing of the Past
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When the majority of the fleet is both **connected and automated**, there will be significant decreases in crashes, resulting in significant increases in safety and reliability.
4. Capacity Expansion May Be a Thing of the Past

It also will lead to **significant decreases** in non-recurring congestion, which as we know is over 50% of total congestion.
3. Capacity Expansion May Be a Thing of the Past

With these decreases in congestion we could get **more capacity** out of the existing system, lessening the need for expensive, time-consuming capacity expansion solutions.
3. Capacity Expansion May Be a Thing of the Past

Planners today need to start thinking about where to invest given these new developments.
5. The **Shared Economy**
Will Play a Huge Part
in the Mobility of the Future
Many signs point toward the shared economy growing rapidly over the next 20 years.
Many forecasters believe that by combining self-driving functionality with ride-sharing flexibility, you have the potential to radically change the way people use our transportation system.
Along with buying cars like they do now, people would also have mobility through subscription-based shared vehicle fleets.
5. The Shared Economy Will Play a Huge Part in the Mobility of the Future

As planners we need to start now, trying to understand the effects of this new mobility as a service concept.

If there are less cars in the total fleet, but they are more highly utilized, what does that mean to congestion?
Update

Our first version of this was developed over a year ago – how is it going?

1. Self Driving Vehicles Will Happen
   » Yes – the money is following in a big way but still a matter of how fast
   » State regulations vary but generally supportive

2. It’s Connected and Autonomous
   » Yes – distinctions continue to blur with technology evolution

3. Commercial Vehicles Will Happen First
   » Maybe – platooning with driver in vehicle most likely early application
   » Lots of interest in consumer market may speed up adoption
Update

Our first version of this was developed over a year ago – how is it going? (continued)

4. Capacity Expansion May be a Thing of the Past
   » Eventually – but in the meantime VMT and crash rates have started increasing again creating pressure for expansion
   » Can expansion projects be designed for future modification if excess capacity is no longer needed?

5. The Shared Economy will Play a Huge Part in the Mobility of the Future
   » Certainly looks that way – important developments such as Uber automated vehicle service in Pittsburgh and many others scrambling to get in the game