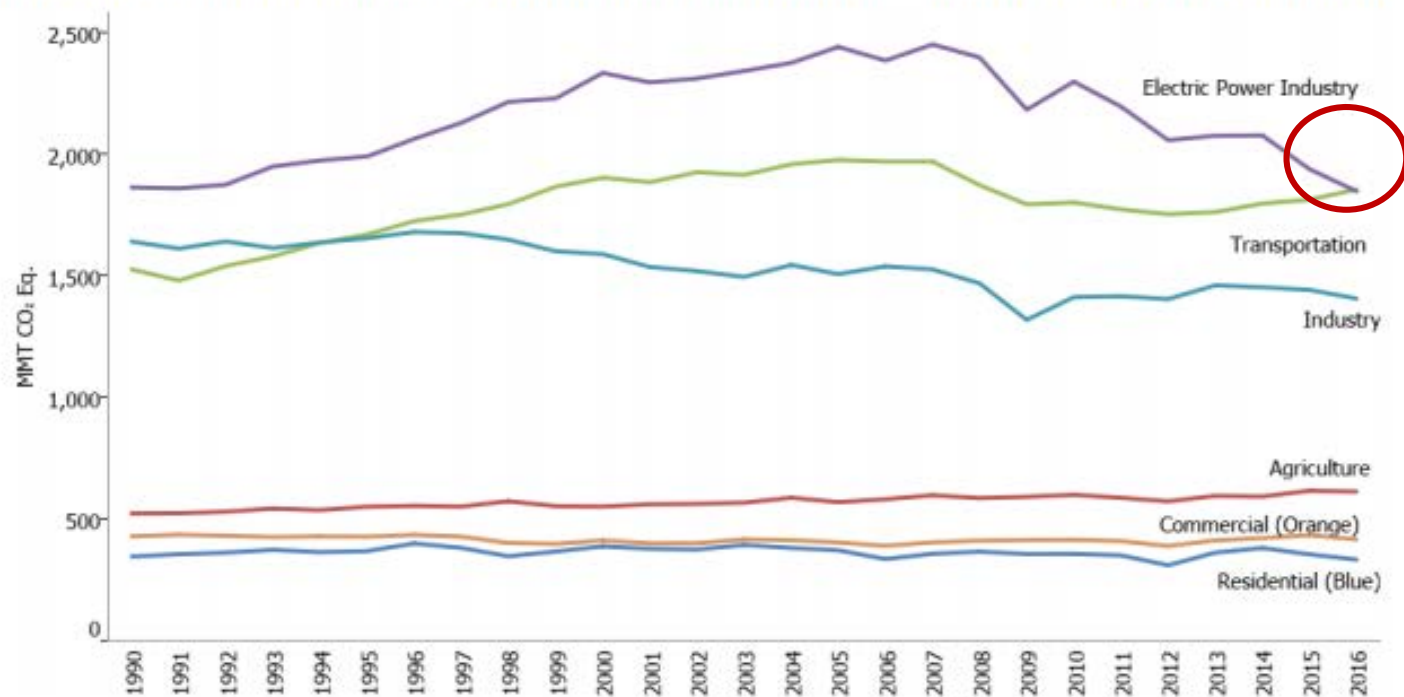# MSTRS: Future Mobility

May 22, 2018

Karl Simon

Director, Transportation Climate Division
United States Environmental Protection Agency

"Driving Innovation in Clean Transportation"

Transportation now leading source of GHGs

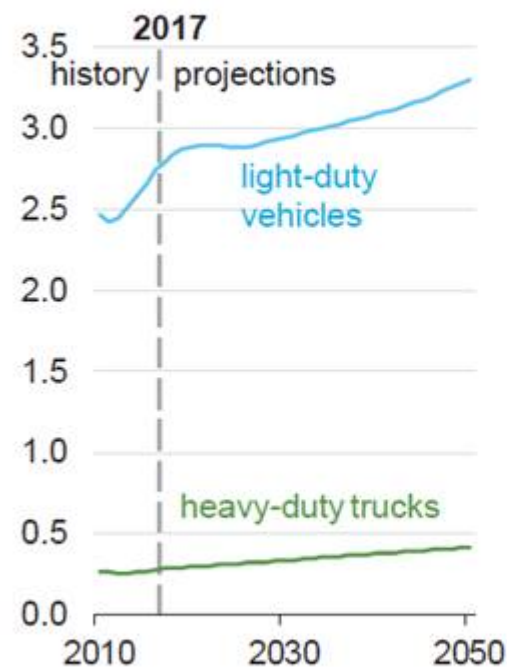**Figure ES-14: U.S. Greenhouse Gas Emissions Allocated to Economic Sectors (MMT CO$_2$ Eq.)**

Passenger Travel & Freight Movement Expected to Grow

Transportation travel statistics
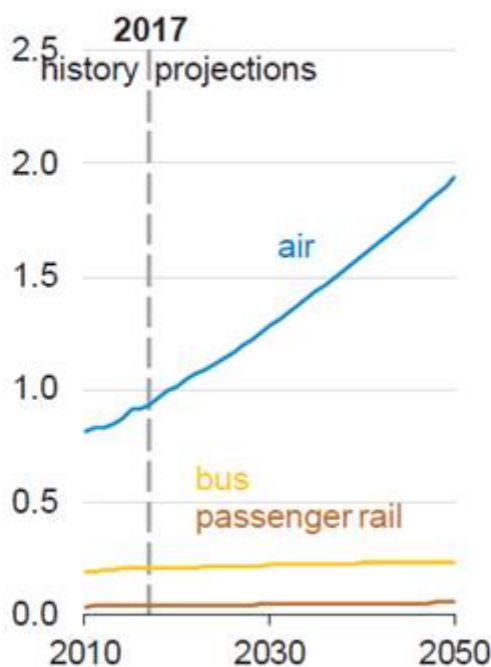
vehicle travel — trillion vehicle miles

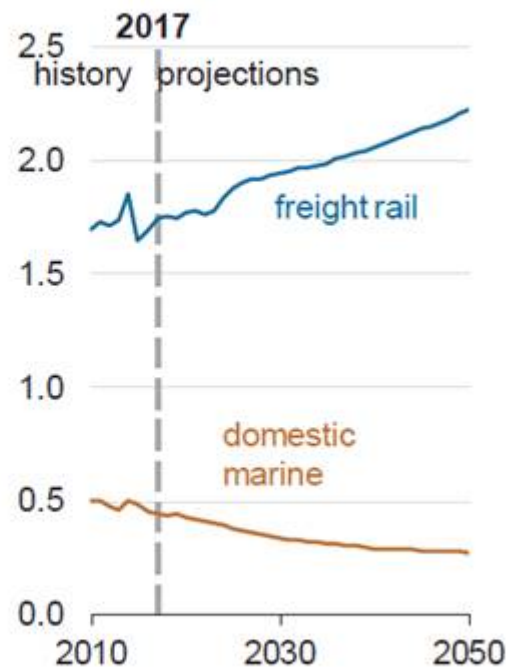**passenger travel** — trillion passenger miles

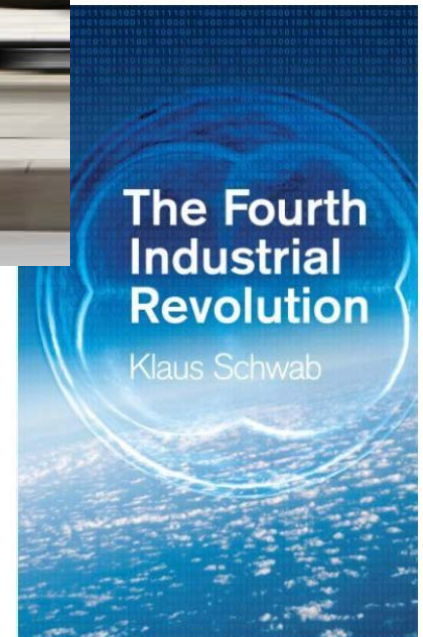**rail and domestic shipping** — trillion ton miles traveled
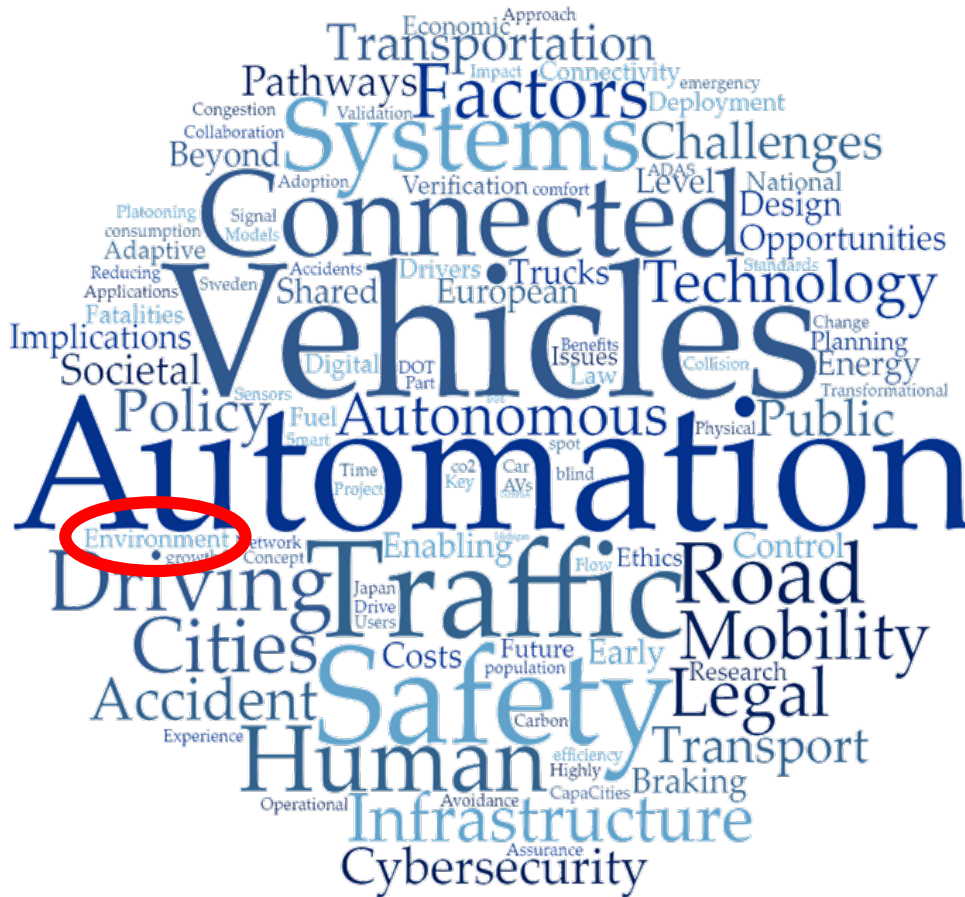
Making sense of it all

WHAT IF

– **What If More People Bought Groceries Online Instead of Driving to a Store?**

– **What If Garbage Fumes Powered More of Our Cars, Trucks, and Buses?**

– What If We Drove Our Most Efficient Car?

– What If We Kept Our Cars Parked For Trips Less Than One Mile? (PDF)

(2 pp, 361 K, EPA-420-F-15-021, June 2015, About PDF)

THREE REVOLUTIONS

STEERING AUTOMATED, SHARED, AND ELECTRIC VEHICLES TO A BETTER FUTURE

DANIEL SPERLING

The Fourth Industrial Revolution
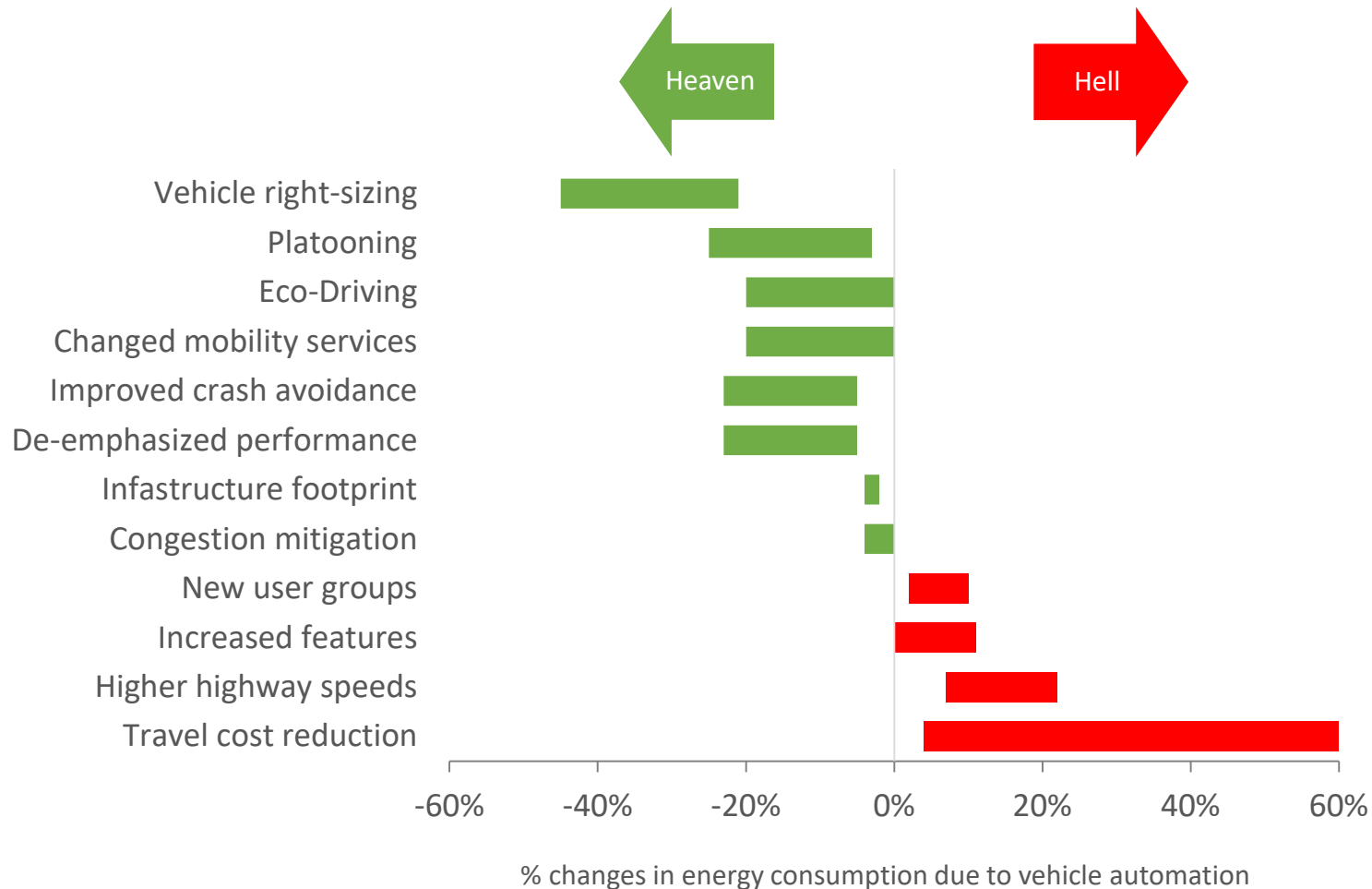
Klaus Schwab

What do <u>you</u> think the future of transportation will hold?
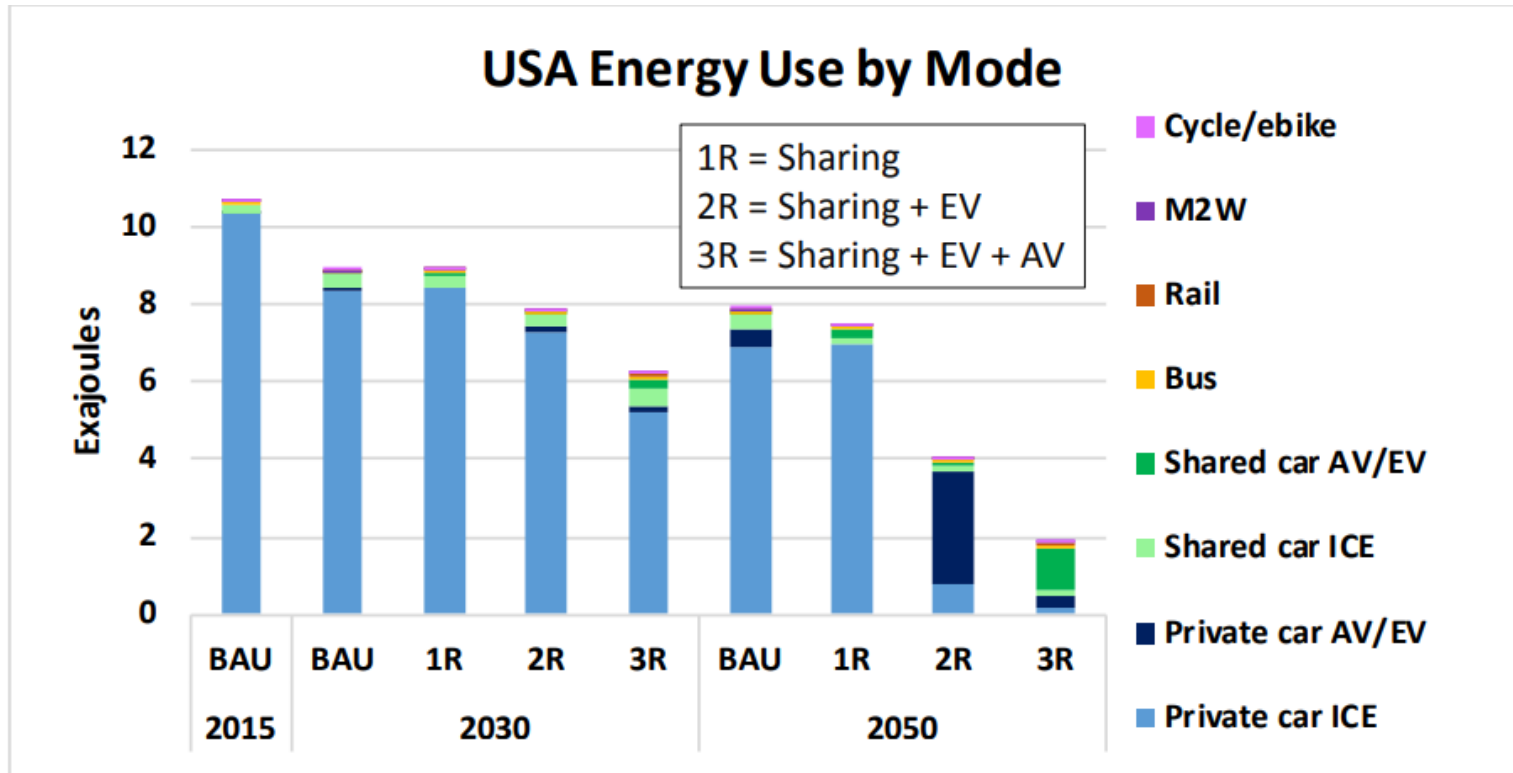

Word cloud created from AVS 2015 Proceedings and AVS 2016 Agenda

Automated vehicles (AVs) will impact emissions, but which direction?

% changes in energy consumption due to vehicle automation

Source: Wadud, Z.; MacKenzie, D.; Leiby, P. Help or Hindrance? The travel, energy, and carbon impacts of highly automated vehicles. Transportation Research Part A, 2016, 86, pp 1-18.

Sharing + EVs + AVs could sharply decrease energy & GHGs

Fulton et al, *Three Revolutions in Urban Transportation*, ITS-Davis (2017)

(from Dan Sperling 2018 TRB Webinar presentation)

...What Could Help Achieve this Outcome?

Why this matters to the environment

- Significant change will happen, it is a question of what and when
- It is important that this change result in a positive environmental outcome
  - What new policies can help bring about a beneficial environmental outcome?
  - What existing policies are in conflict with achieving the same outcome?
  - What are the important environmental impacts to understand?
  - What do the numbers tell us?
  - What are the key research questions?