Smart City of the Future
Technology Acceleration Curve
Autonomous Vehicle Acceleration Curve

- Radio controlled "driverless" car (1925)
- GM Firebird with road cruise control (1956)
- Chrysler Imperial with cruise control (1958)
- Stanford Cart with video processing (1979)
- CMU autonomous truck test drive (1986)
- VaMP autonomous vehicle (1995)
- CMU autonomous truck test drive (1986)
- UBER self-driving PGH launch (2016)
- Google Self Driving Car project (2009)
- Las Vegas AV Shuttle demo (2017)
- UBER ATG (2015)
- Fatal UBER Crash Tucson (2018)

Adapted from Engineering.com "Road to Driverless cars"
ARE WE THERE YET?

Adapted from Engineering.com "Road to Driverless cars"
What we [think] we know

- 3 years of on-street testing
- 5 companies
- 30 (of 90) neighborhoods
- ~80 self-driving vehicles
- 10,000s of miles of on-street testing
- Broad exposure / growing confidence
- ~65% of population report personal interaction with AVs
- ~75% of pedestrians/bicyclists prefer self-driving vehicles over humans
- Uncertain use case and disruption in Pittsburgh
What we have done
[Mayor’s Order]

- Register; provide ODD, driver training protocol, vehicle quantity, etc.
- Have 2 operators in vehicle at all times (one driving, one noting observations)
- Provide monthly (consolidated) data
- Acknowledge “Pittsburgh Principles”
- Attend quarterly meetings with City
- Adhere to policy
  - Operate at speeds <25 MPH on city streets
  - Testing only; no commercial operation
What We’ve Learned

• So far, the future looks a lot like the (recent) past
• It may get worse before it gets better
• We need to stay focused on our goals and ensure AVs help us meet them
• Active policies (guiderails) are needed to preserve our principles
• There is still a long ways to go.
What are we solving for?
PITTSBURGH MOBILITY GOALS

Goal 1: No one dies traveling on city streets.

Goal 2: All households can access fresh fruits and vegetables within 20 minutes travel of home, without requiring a private automobile.

Goal 3: Walking and bicycling are the most joyful mode for short distance trips.

Goal 4: No household must spend more than 45% of household income for basic housing and mobility.

Goal 5: Pittsburgh streets and right of ways reflect the values of our community.
Pittsburgh Principles for shared + Autonomous Mobility

1. Put people and destinations close to each other.
2. Prioritize people over cars.
3. Protect public mobility and mass transit.
4. Enhance access across both city and region.
5. Ensure equitable service.
6. Promote shared, higher occupancy.
7. Pursue fair user fees.
8. Open and share data (while protecting civil liberties).
9. Integrate systems.
10. Empower stakeholders as shared leaders.
Pittsburgh Bike(+) Plan 2020

• >5 years in development

• >750 people engaged, providing >1,500 discrete comments

• 1/3rd of Pittsburghers bicycle, at least occasionally; many would do so more if they felt safe

• 123 planned miles of on-street facilities (out of 1,200 miles of city streets)

• Bike+ reflects emerging mobility
All Ages
All Abilities

Majority of people are “interested, but concerned” bicycle users

- Often not comfortable in conventional bike lanes
- Shy of adjacent traffic
- Prefer protected/separated facilities or quieter streets
- Will ride on sidewalks if no comfortable facility is provided

28% - 40% will “no way, no how” utilize a bicycle; bicycle facilities improve the street for them as well

- Increase predictability
- Protect and preserve sidewalks for pedestrians

BICYCLIST DESIGN USER PROFILES

Interested but Concerned
51%-56% of the total population

Often not comfortable with bike lanes, may bike on sidewalks even if bike lanes are provided; prefer off-street or separated bicycle facilities or quiet or traffic-calmed residential roads. May not bike at all if bicycle facilities do not meet needs for perceived comfort.

Somewhat Confident
5-9% of the total population

Generally prefer more separated facilities, but are comfortable riding in bicycle lanes or on paved shoulders if need be.

Highly Confident
4-7% of the total population

Comfortable riding with traffic, will use roads without bike lanes.
Impact on Emergency Vehicle Delay and Pedestrian Survival

The odds of death for a pedestrian struck at 20 MPH is 18%

The odds of death for a pedestrian struck at 30 MPH is 50%

The odds of death for a pedestrian struck at 35 MPH is 64%

Mini circles are effective at reducing speed 4 – 6 MPH when used in succession along a corridor.

Adapted from Emergency Response: Traffic Calming and Traditional Neighborhood Streets
New Program
PGH Mobility Collective
• Nearly 40% of all vehicle trips made in the city are for distances shorter than 2 miles. Nearly one-quarter of all trips made in vehicles are less than a mile.
The Opportunity for Impact

Short distance vehicle trips

- 23% 0-1 miles
- 17% 1-2 miles
- 11% 2-3 miles
- 49% 3+ miles
Mobility Hubs + Charging Infrastructure
Micromobility is a category of modes of transport provided by generally low-speed, very light vehicles with gross vehicle weight less than 500lb (~250 kg) and travel speeds <30MPH. Used for human transport or freight. They may be human-powered or fully or partially powered by a motor. They may be electric or combustion. They may be provided in a shared, connected fleet or privately owned and operated. Does NOT include mobility assistance devices for persons with disabilities.
IF ITS NOT FOR ALL, ITS NOT FOR US

- MAYOR WILLIAM PEDUTO
Department of Mobility & Infrastructure