Delaware Valley Regional Planning Commission
“The only relevant discussions about the future are those where we succeed in shifting the question from whether something will happen to what would we do if it happened”

- Arie de Geus
Shell International Petroleum Company
The Coronation of a Pope...

Benedict 2005

Francis 2013
“It’s tough to make predictions, especially about the future.”

- Yogi Berra

“The key to making a good forecast is to not limit yourself to quantitative information.”

- Nate Silver
Greater Philadelphia Futures Group
Impact-Likelihood Voting Results
Future Forces

Enduring Urbanism

The Free Agent Economy

Severe Climate

The U.S. Energy Boom

Transportation On Demand
Background Forces

- Connected Vehicles
- Intelligent Infrastructure (the Internet of Things)
- Panama Canal Widening
- Demand for Same-Day Delivery
- Improving Freight Logistics
- Partisan Paralysis
- Flat/Declining Transportation Funding
- Worsening Infrastructure Conditions
- Some Degree of Climate Change
- Increasing Chronic Health Conditions
- Aging Population
- School Quality Driving Family Location
- Declining Water Quality
Universal Actions

- Modern, Multimodal Transportation System
- Megaregional Collaboration and Cooperation
- Increase Regional Transportation Funding
- Enhance Freight and Goods Movement
- Vision Zero
- Infrastructure Resiliency
- Data-Driven Governance
- Mixed-Use Infill Development
- Build Lifelong Communities
- Green Infrastructure and Stream Buffer Ordinances
- Universal Pre-Kindergarten and Other K-12 Programs
- Expand Broadband Infrastructure

Source: Nevue Ngan and Associates
Enduring Urbanism

Moving Back to Walkable Centers is the Start of a Long-Term Trend
Contingent Actions

- Complete Streets / Protected Bike Lanes / Pedestrian Plazas
- Increase Transit Service
- Protect Industrial Zones
- (Re)Develop without Displacement
- Redevelop Suburban Office Parks as Mixed-Use Centers
The Free Agent Economy

Individuals Must Create Their Own Economic Opportunities
Contingent Actions

- Expand Business Incubators / Accelerators
- Simplify Business Tax Collection, Licensing, and Permitting
- Zoning for Shared / Co-Working Office Space
- More Off-Peak and Intra-Suburban Transit Service
- Regional Cooperation for Reducing Poverty and Homelessness (Build More Middle-Class Housing)

Source: PennConnects

Gestation Start-up Pilot Roll-out
Incubation Period
Maturity
Expansion
Growth

revenue
time

dvrpc
Severe Climate

Increasing Atmospheric Carbon Levels Lead to the Worst-Case Outcomes of Climate Change
Contingent Actions

- More Funding for Infrastructure Resiliency Projects
- Improve Emergency Preparedness
- Increase Intergovernmental Coordination
- Preserve Ag Lands and Promote Regional Food Production
- Invest in Alternative Energy & Accelerate Phase-Out of Coal and Petro Power Plants

Source: SEPTA
The U.S. Energy Boom

An Abundance of Domestically Produced Energy Keeps the Cost of Energy Low
Contingent Actions

- Market the Region as an Energy Hub
- Invest in Pipelines and Related Infrastructure
- Continue to Invest in Alternative Energy
- Convert Municipal and Goods Movement Vehicles to Run on Natural Gas
- Add Capacity to Airport Rail Line

Source: Philadelphia Magazine
Transportation on Demand

Smartphones, Apps, and Real-Time Information Help People Get Around
Contingent Actions

- Invest in New Multimodal Hubs, Real-Time Information, and Universal Payment Cards
- Reevaluate Need for Parking and Convert to Pick-Up /Drop-Off Zones
- Promote Coordination between Public and Private Transportation Service Providers
- Incentivize P3s to Speed Up Project Delivery and Incorporate Latest Technology
- Evacuation Plans for Carless Households
Transportation Options

THEN

NOW

Indego  Spinlister  TRANSfix  Convey

uber  uberPOOL

lyft  curb  zTrip

instacart  Eats  caviar  POSTMATES  grubHub
Transportation Networking Companies

TODAY
- Indego
- Company
- Z
- instacart
- Spinlister
- TRANSFIX
- POSTMATES
- Turo
- grubHub
- Turo CarShare

TOMORROW
- All your transport
- Bundling
- Routing
- Service Promise
- Payments
- Customer Experience
- Transportation Providers
- Infrastructure

Source: http://maas.global/maas-as-a-concept/
‘Digitization’ of Transportation

Source: FHWA
# Competing Transportation Theories

<table>
<thead>
<tr>
<th>Overall Goal</th>
<th>Increase Mobility</th>
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## Competing Transportation Theories

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## Competing Transportation Theories

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<td>Live/Work Where You Want; Recognition That Density Provides Network Effects</td>
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<tr>
<td>High Speed</td>
<td>Shorten Trips; Get Exercise</td>
<td>Customization; Cost, Reliability; Use Time Other Than For Driving</td>
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<td>Safe Mobility</td>
<td>Vision Zero</td>
<td>Connected Technologies, Warning Systems, Feedback Loops, and Data Enhance Safety</td>
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<td>Level-of-Service;</td>
<td>Bike/Ped Level-of-Service; Trip Length; Total Travel Time; Vehicle Miles Traveled; Greenhouse Gas Emissions; Transit Trips</td>
<td>Real-Time Data; Person Throughput; Wait Time; Personal Ratings; Big Data and Analytics</td>
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<td>Connections Between Modes; Walking, Biking, and Transit Facilities</td>
<td>Multimodal Smart Roads That Increase Safety and Efficiency</td>
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<td>Create an Integrated, Multimodal Network; Profit (Private Market)</td>
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TNC Future Scenarios

- A Tale of Two Regions
- Transportation Reinvented
- Slower Growth
- Faster Growth
- Cooperative, Partnerships
- Filling a Niche
- Individualistic, Fragmented
- The TNC Takeover
Filling a Niche

Despite bursting onto the scene, TNC operators never manage to grow beyond specialized trips. Transit service is little affected by TNCs, with no substantial change in ridership.
Transportation Reinvented

Transit redefines its operations, creates cooperative partnerships with new private market TNC services, and becomes the backbone of an integrated transportation network. Aggressive service expansion and big venture capital investments fuel long-term, rapid TNC growth.
The Scenario We Aren’t Getting Into...Yet
Preliminary Thoughts on AVs

- Will Operate in Existing Infrastructure
  - Will Be Safer with Better Lane Markings & Signs
  - Unlikely to See Significant Benefits in Shared Facilities

- No Guarantee They Will Be ‘Shared’
  - Major Changes to TNC Business Models

- Unknown Land-Use Implications

- Full AV Fleet May Double Regional VMT
  (Models Showing 12% to 68% Increase)

- Will They Be Connected?
“We are called to be architects of the future, not its victims.”

- Buckminster Fuller
Questions? or Comments!

For more information, visit:

www.dvrpc.org/Connections2045