

# Transforming Tomorrow Today

Philly Tech Week | Greater Philadelphia Futures Group | 05.03.16

# FUTURE

Greater Philadelphia

**FUTURE  
FORCES**

# FORCES



CONNECTIONS  
**2045**

# Today's Meeting

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- Kick-off The Futures Group 2.0
- Learn about Greater Philadelphia Future Forces
- Hear your technology vision for the future
- Make new connections
- Listen and learn

# What is DVRPC?

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- Federally-designated MPO for nine-county Philadelphia region in PA and NJ
- Created in 1965 to plan for “orderly growth and development”
- Transportation, land use, open space, housing and economic development
- Short, medium and long term transportation plans provide funding for projects

# Region by the Numbers

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Population = 5.7 million people  
Employment = 3.0 million jobs  
Governance = 351 municipalities  
Daily traffic = 107 million VMT  
Transit = 1 million trips / day

# Coronation of a Pope

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Benedict



Francis

From *The Atlantic*

**CITYLAB**

# The Most Important Transportation Innovation of the Decade Is the Smartphone

So why don't cities and transit agencies take more advantage of it?

ERIC GOLDWYN | [@ericgoldwyn](#) | Sep 4, 2014 | [34 Comments](#)

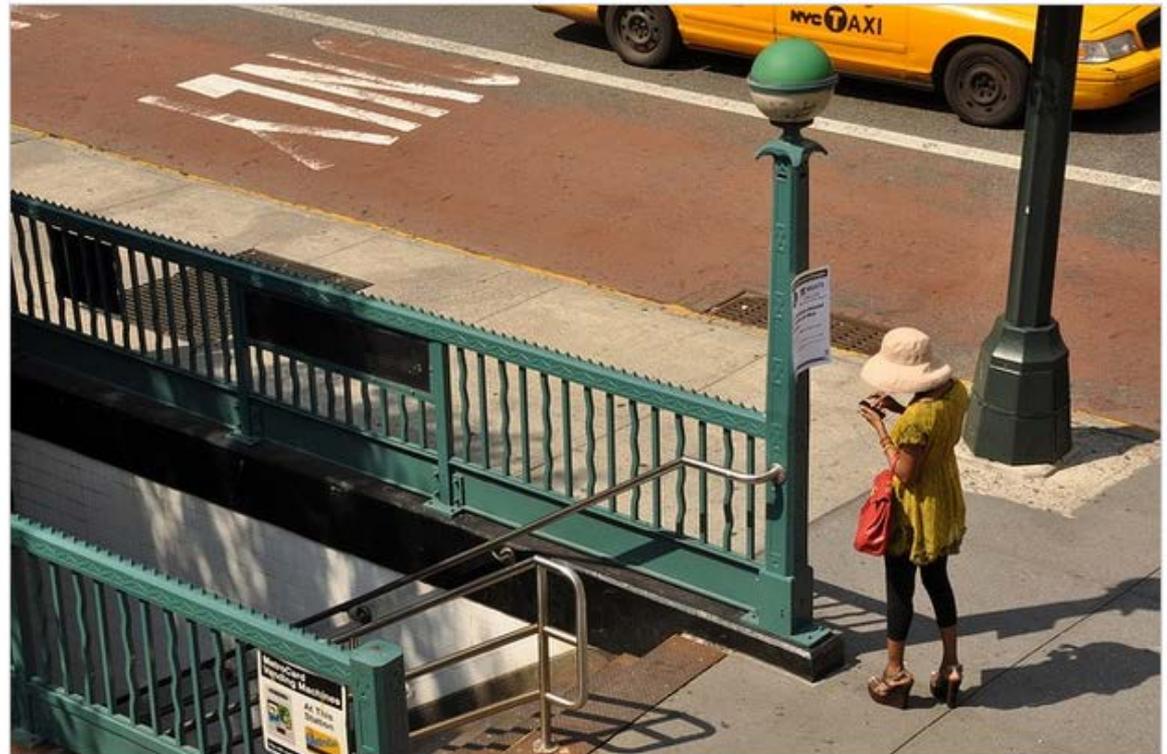
1.6k  
Shares



Share on Facebook

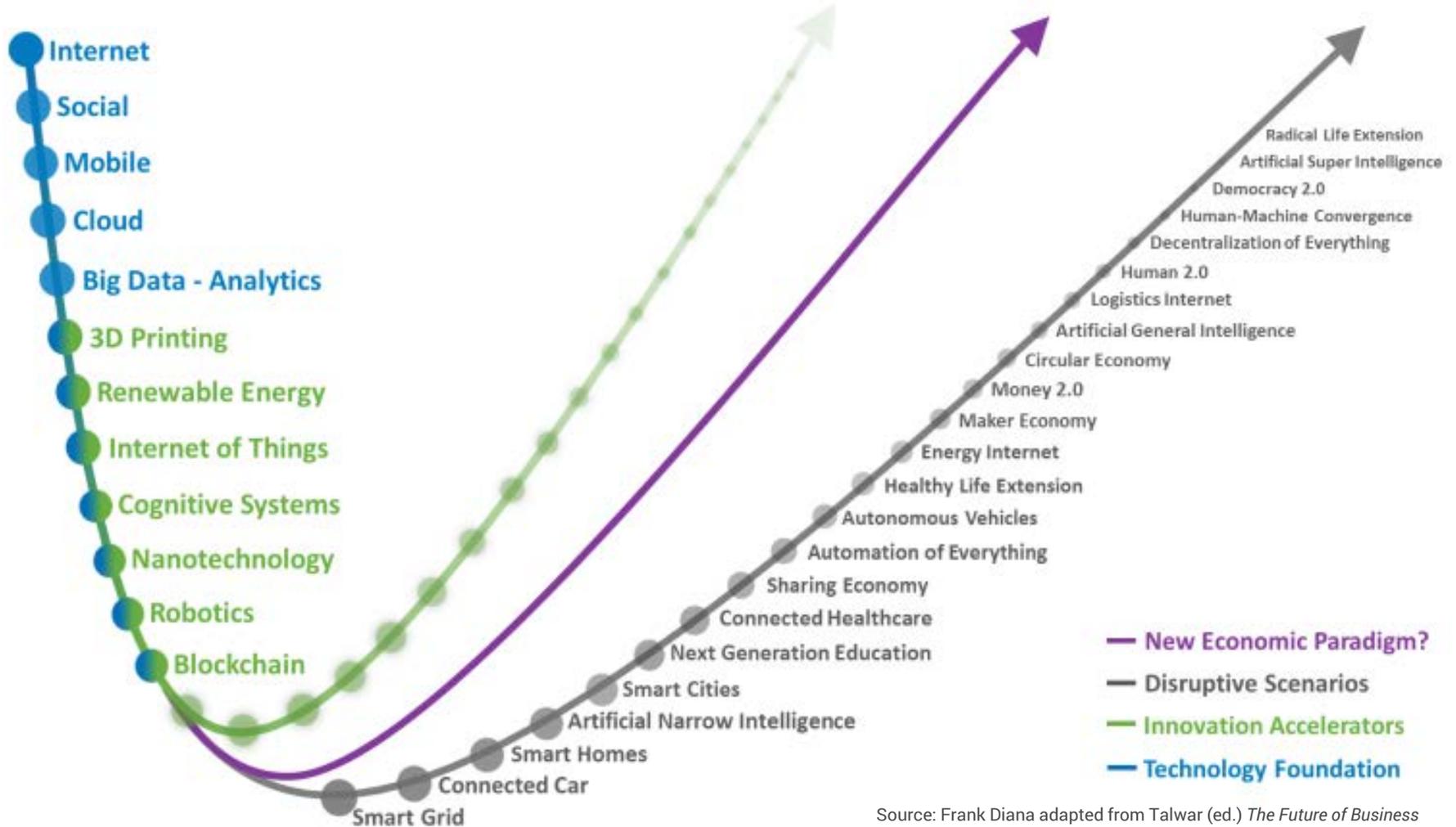


Tweet



[momentcaptured1 / Flickr](#)

# The Digital Revolution?



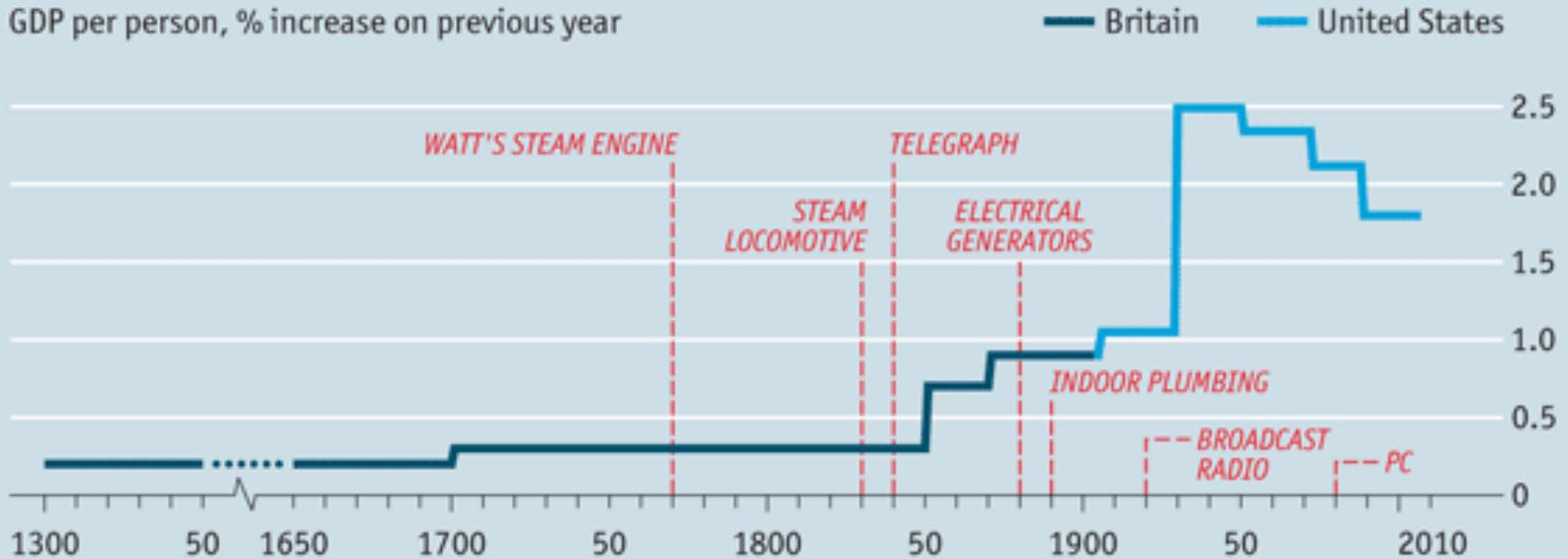
Source: Frank Diana adapted from Talwar (ed.) *The Future of Business*

# Has the ideas machine broken down?

The idea that innovation and new technology have stopped driving growth is getting increasing attention. But it is not well founded

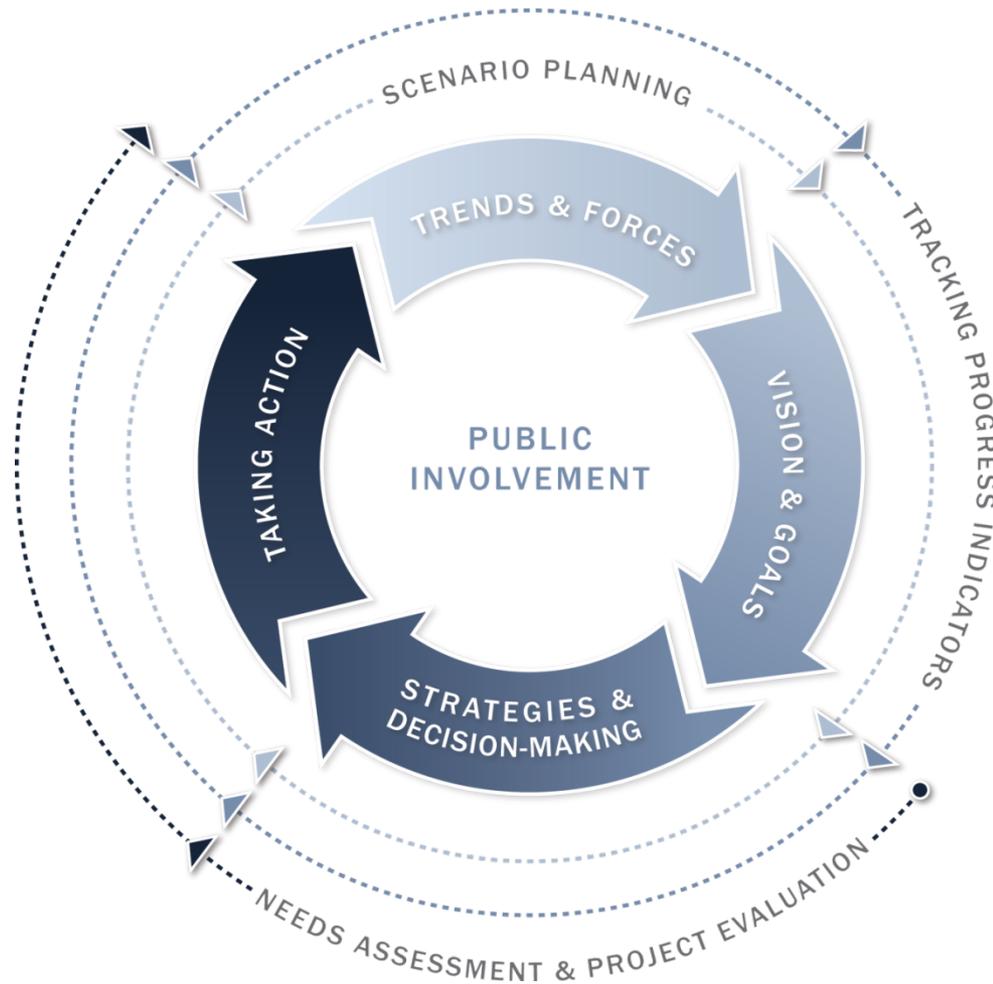
## One big wave

GDP per person, % increase on previous year

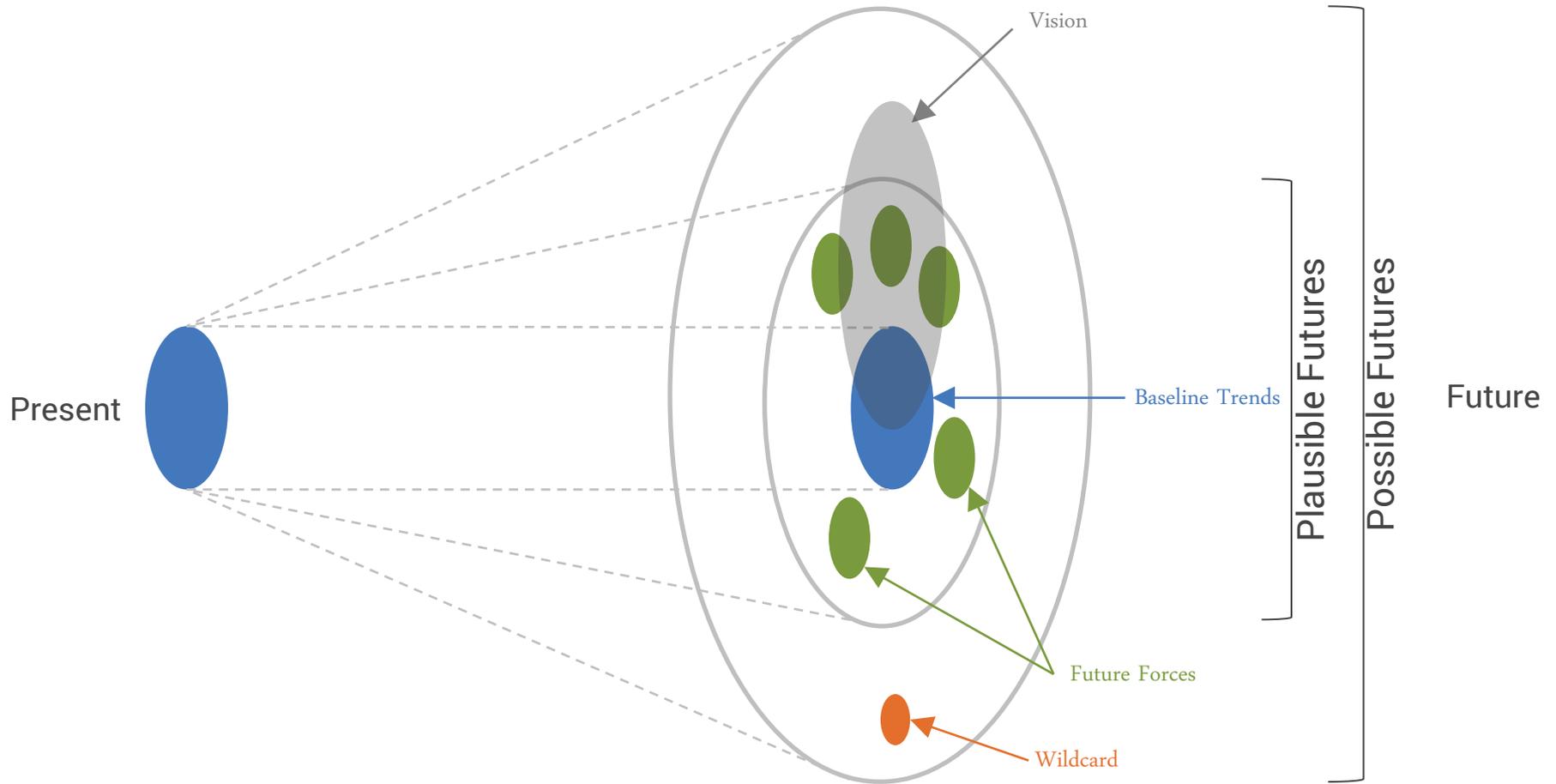


Sources: "Is US Economic Growth Over?", by Robert Gordon, NBER Working Paper, 2012; *The Economist*

# DVRPC's Long-Range Planning



# Scenario Planning



# FUTURE FORCES

POLITICAL

SOCIAL

ENVIRONMENTAL

TECHNOLOGICAL

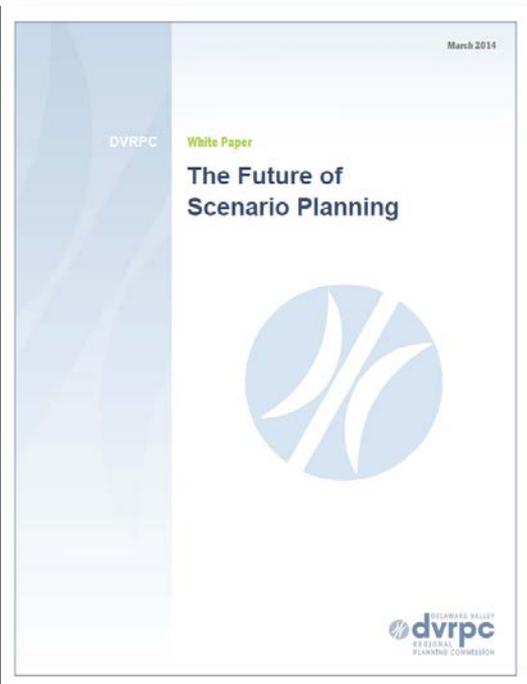
ECONOMIC



- 🏠 LIVABLE COMMUNITIES
- 💧 GROWTH MANAGEMENT
- 💰 ECONOMIC COMPETITIVENESS
- 🚗 MULTIMODAL TRANSPORTATION

# Futures Group Tasks

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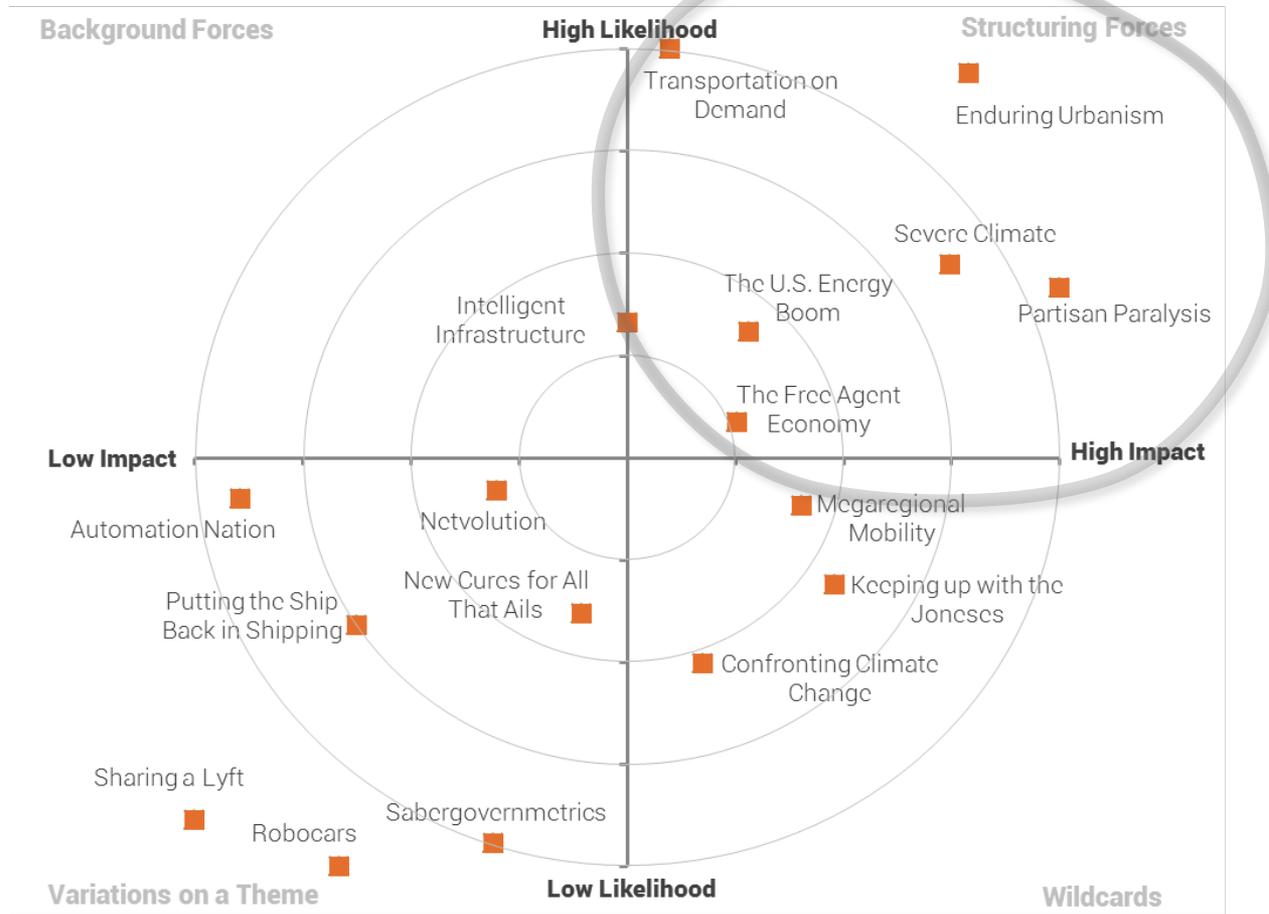


1. Brainstorm Future Forces of change
2. Vote on their impact and likelihood
3. Use Forces to create 4-5 highly differentiated What-If Scenarios
  - a. Create robust visions of the future
  - b. Analyze probable implications
4. Identify universal actions and contingent actions
5. Determine leading indicators for each Force
6. Create a short, graphic publication, and incorporate into Choices & Voices

# Greater Philadelphia's Future's Group



# Impact-Likelihood Voting Results



# Forces the Futures Group Identified



People and jobs moving to walkable communities is the start of a long-term trend.



Increased outsourcing and automation means individuals must create their own economic opportunities.



Continued rise in atmospheric carbon levels lead to significant disruptions from climate change.



Smartphones, apps, and real-time info help people get around using new and existing transportation modes.



An abundance of domestically produced oil and natural gas keeps the cost of energy low.

# Background Forces

Partisan Paralysis

Intelligent Infrastructure (Internet of Things)

Connected Vehicles

Technology Enhanced Health / Chronic Health Conditions

Aging Population

Sharing Economy

Panama Canal Widening

Demand for Same-Day Delivery

Improving Freight Logistics

School Quality Driving Family Location

More Immigration

Declining Water Quality (Suburban)

Some Degree of Climate Change

Flat/Declining Transportation Funding

Worsening Infrastructure Conditions

“Prediction is hard, especially  
about the future.”

Danish Proverb

# Models

Futures  
Group



**NCHRP**  
PROJECT 20-83

NATIONAL  
COOPERATIVE  
HIGHWAY  
RESEARCH  
PROGRAM

**IMPACTS 2050:**  
Dynamic Analysis of  
Socio-Demographic  
& Travel Scenarios

 **TravelWorks**  
*Advanced Travel Analysis Tools*

**RapidPolicy**  
ASSESSMENT TOOL



“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

# Universal Actions

Build lifelong communities

Data-driven governance

Develop the impact economy

Enhance freight and goods movement

Expand broadband infrastructure

Green infrastructure and stream buffer ordinances

Increase regional transportation funding

Infrastructure resiliency

Immigrant-friendly policies

Megaregional collaboration and cooperation

Mixed-use infill development

Modern, multimodal transportation system

Universal pre-kindergarten and other k-12 programs

Vision Zero



How will **CLIMATE CHANGE** impact our region?

Will our **CITIES AND TOWNS** thrive?

How will I **GET AROUND** in 2045?

How much will **ENERGY** cost in the future?

What will my **JOB** look like in 25 years?



# What-if Scenarios



# What-If Scenario

© BLT ARCHITECTS 2014

Image: BLT Architects



## Walkable Centers



What-If Scenario

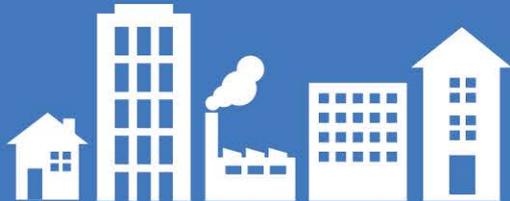
Image: SHoP Architects, West 8



Regional Amenities



## What-If Scenario



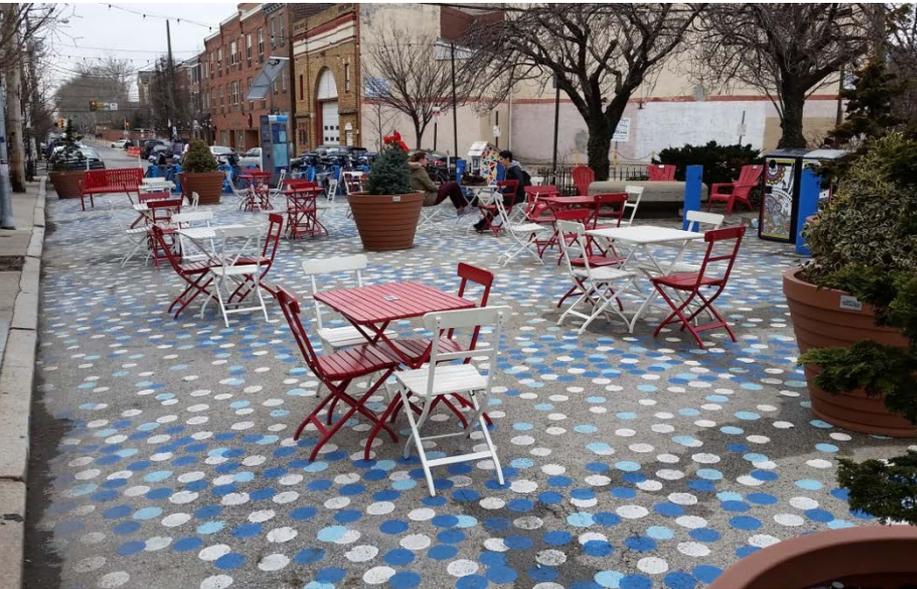
ENDURING URBANISM



Blurring of City  
and Suburb



# Contingent Actions

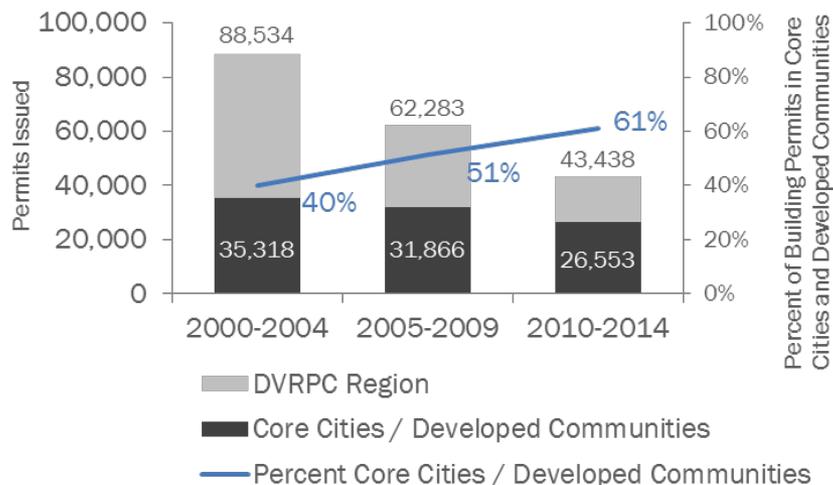


- (Re)Develop without displacement
- Living streets / protected bike lanes / pedestrian plazas
- Increase transit service
- Redevelop suburban office parks as mixed-use centers
- Protect industrial zones

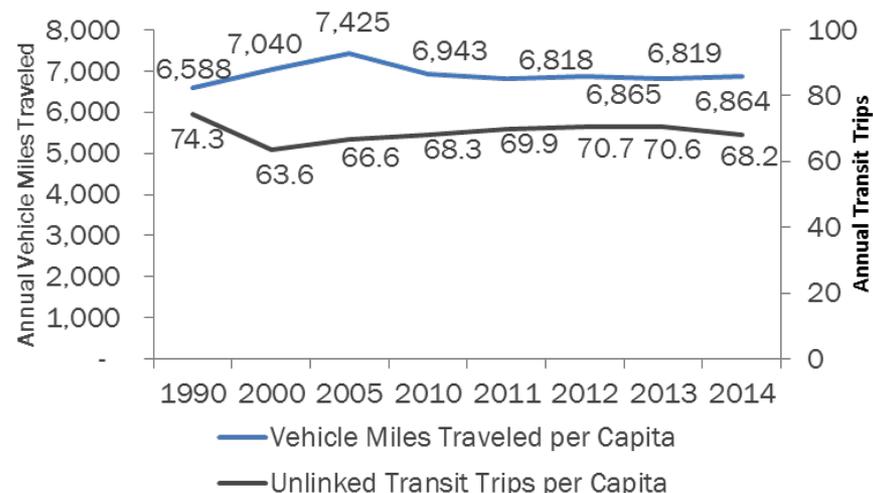


# Leading Indicators

## Percentage of Residential Building Permits in Core Cities and Developed Communities



## Annual Vehicle Miles Traveled and Transit Trips Per Capita



**Sources LEFT:** U.S. Census, Construction Statistics Division, 2000–2014.

**RIGHT:** Pennsylvania Department of Transportation, 1980–2014; New Jersey Department of Transportation, 1980–2014; National Transit Database, 1990–2014; U.S. Census, 1980, 1990, 2000; American Community Survey, 2005 (1-year estimate), 2007 (1-year estimate), 2010–2014 (5-year estimates).



# What-If Scenario

Photo: Benjamin's Desk



FOR HIRE

THE FREE AGENT ECONOMY



Careers → Jobs → Gigs



# What-If Scenario

Rendering: Rent Philly



FOR HIRE

THE FREE AGENT ECONOMY



## People Move About More Often



# What-If Scenario

Photo: University of Pennsylvania



FOR HIRE

THE FREE AGENT ECONOMY



## Universities Disrupted & Reimagined



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THE FREE AGENT ECONOMY

# Contingent Actions



Source: PennConnects

- 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
- Build more middle-class housing

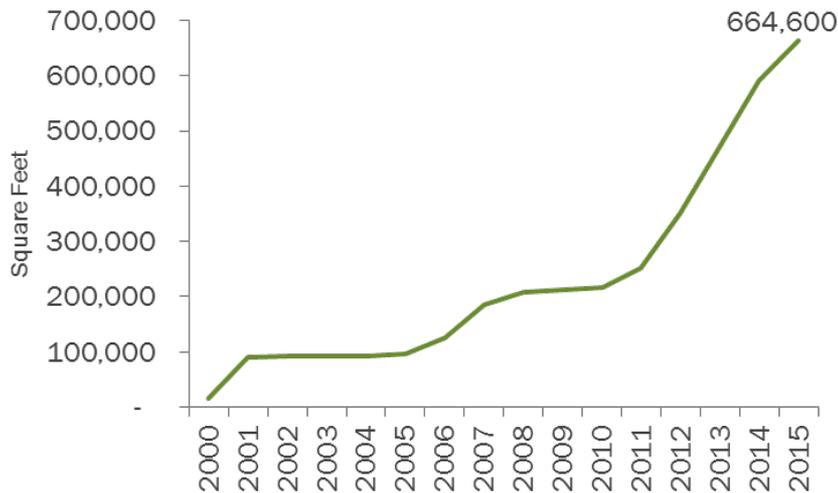


FOR HIRE

# THE FREE AGENT ECONOMY

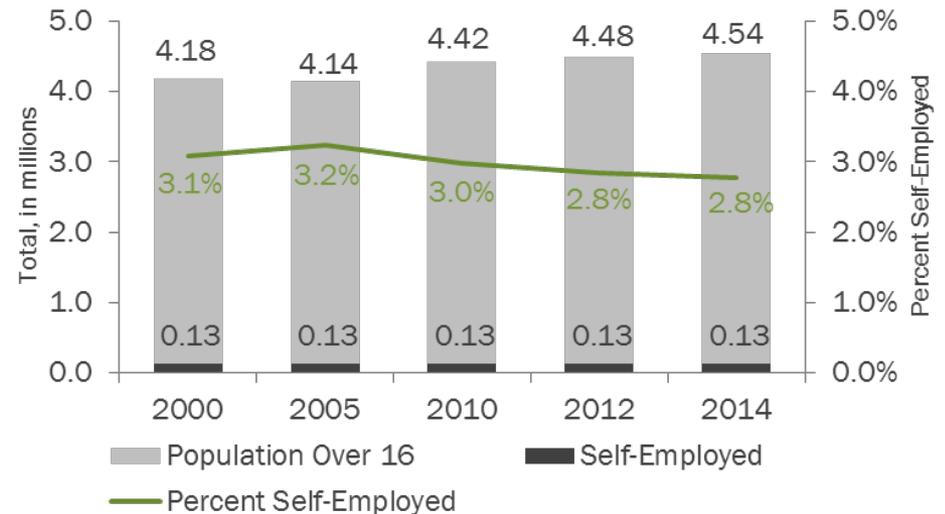
# Leading Indicators

## Shared and Co-Working Office Space



+200,000 Sq. Ft. Early 2016

## Self-Employed Workers



Sources LEFT: Jones Lang LaSalle and Costar, 2000-2015.

RIGHT: U.S. Census 2000, American Community Survey 2005 (1-year estimate), 2010-2014 (5-year estimates); Bureau of Labor Statistics, 2000-2014.



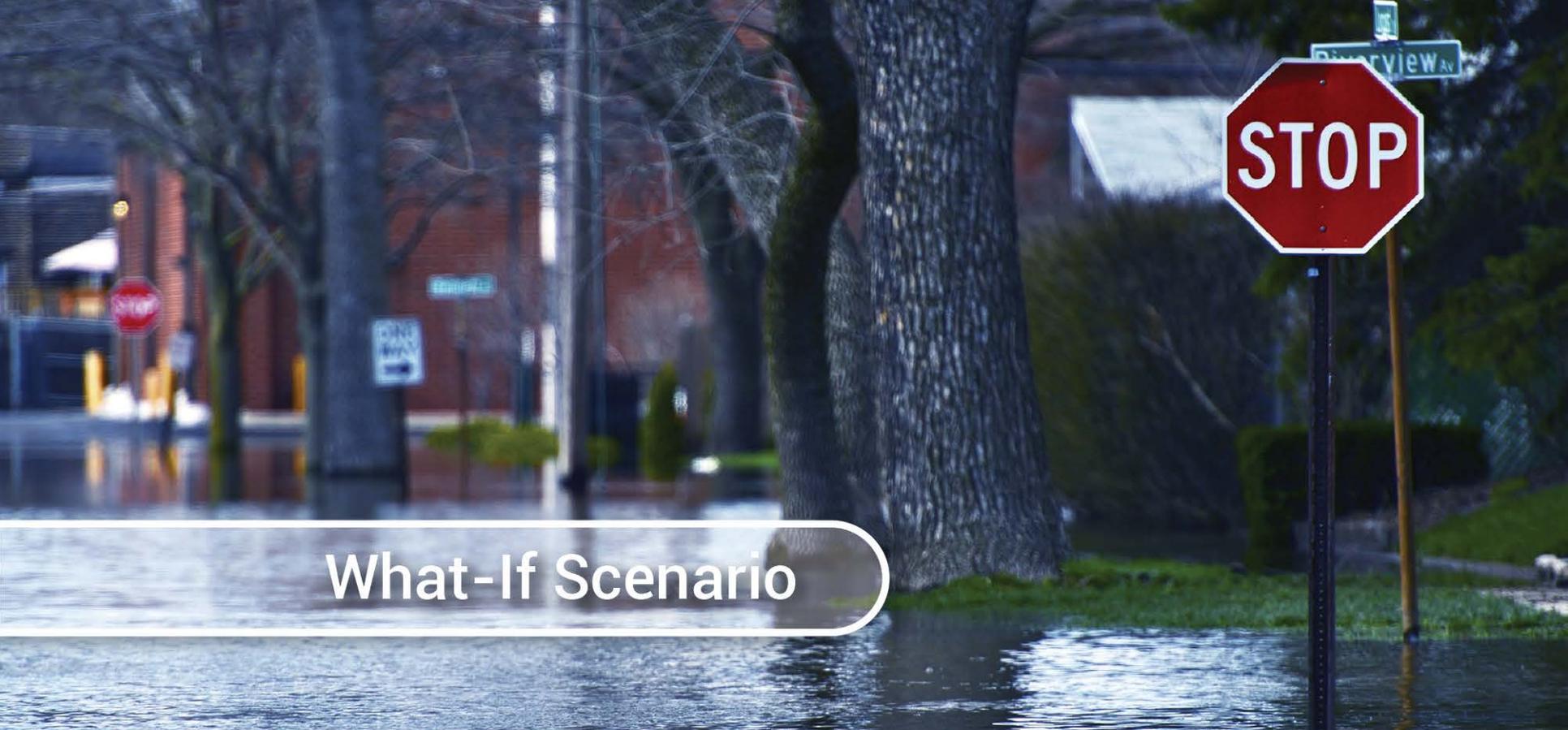
## What-If Scenario

Photo: <http://static3.businessinsider.com/image/533898a46da811323e517b74/major-un-report-the-world-is-completely-unprepared-for-the-effects-of-climate-change.jpg>



 **dvrpc**

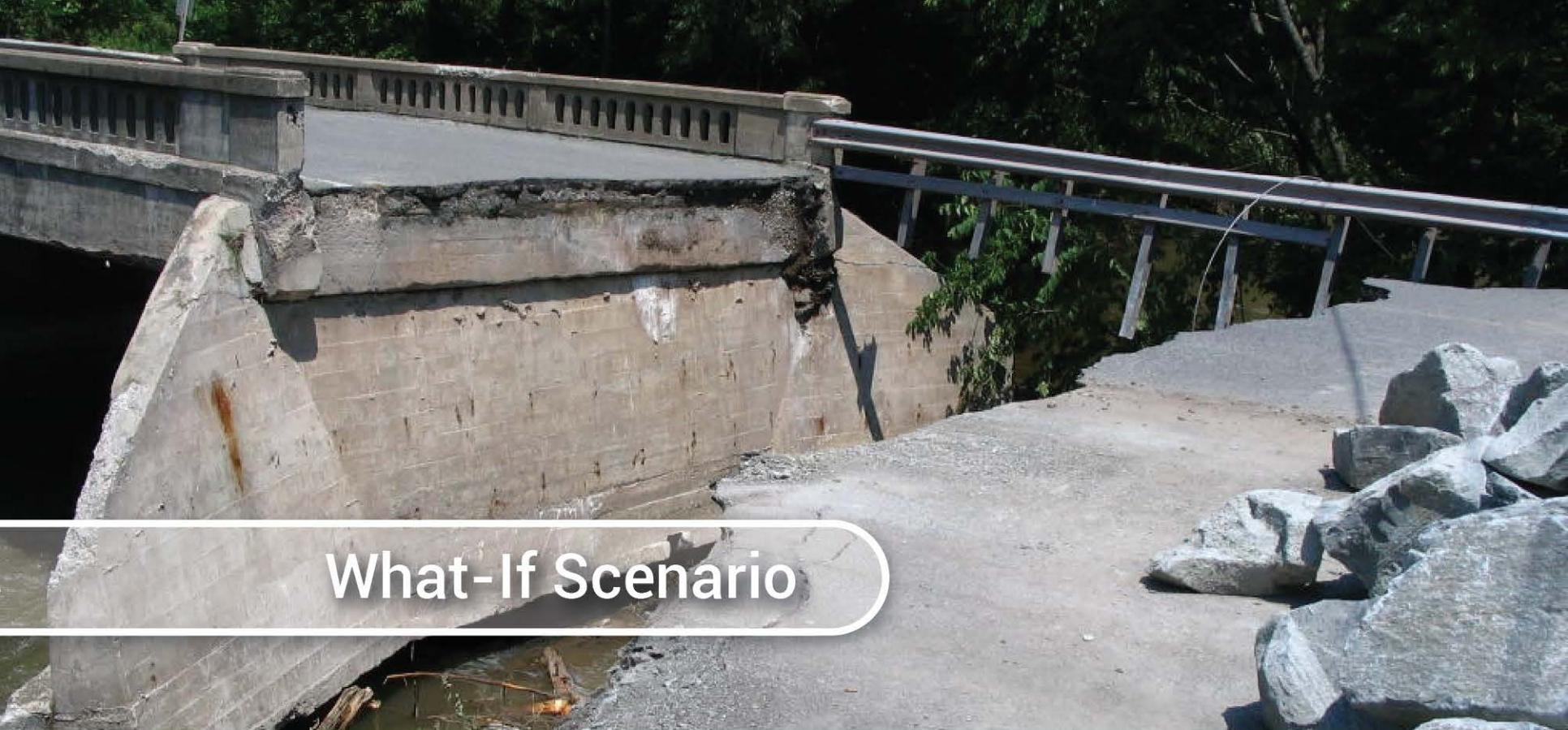
## Rampant Climate Change Around the World



## What-If Scenario



The Region's Forecast:  
Hotter and Wetter  
Weather



## What-If Scenario

Photo: <http://www.genebitsystems.com/david/vacation2006/PA2VT.htm>



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## Significant Disruptions



# Contingent Actions



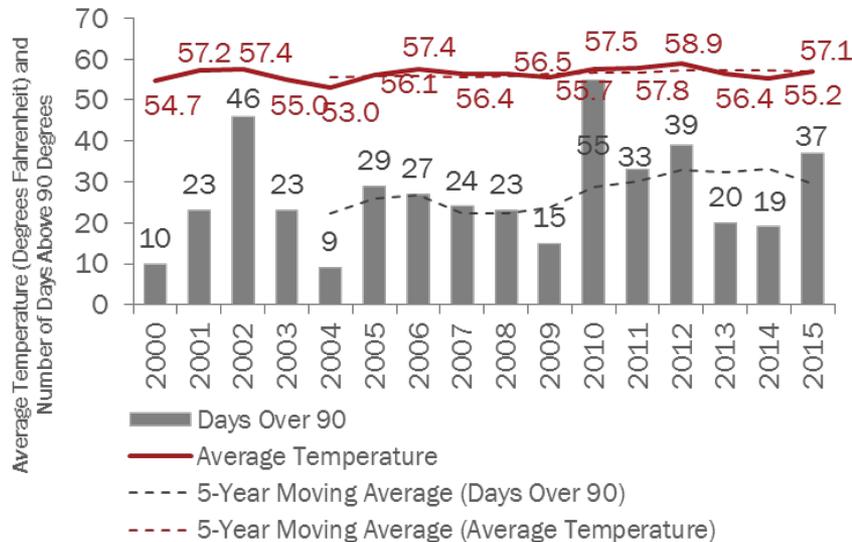
Source: SEPTA

- Increase intergovernmental coordination
- More funding for infrastructure resiliency projects
- Improve emergency preparedness
- Preserve farmland and promote regional food production
- Invest in alternative energy & move to lower carbon electricity

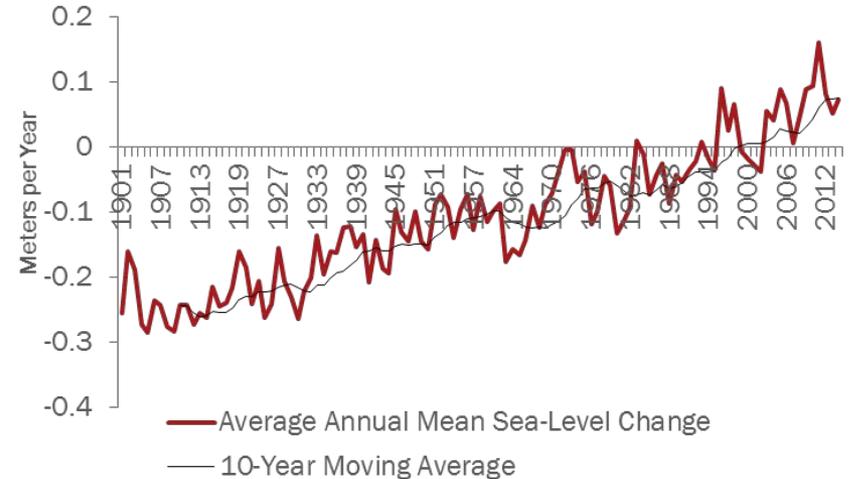


# Leading Indicators

## Average Regional Temperature and Days over 90 Degrees Fahrenheit



## Annual Regional Sea Level Change



**Sources LEFT:** Source: U.S. Climate Data, 2000–2015 [[www.usclimatedata.com/climate/philadelphia/pennsylvania/united-states/uspa1276](http://www.usclimatedata.com/climate/philadelphia/pennsylvania/united-states/uspa1276)].

**RIGHT:** National Ocean and Atmospheric Administration (NOAA) station 8545240, Philadelphia, PA [[www.tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml](http://www.tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml)].



## What-If Scenario



**TRANSPORTATION  
ON DEMAND**

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Mobility as a Service



## What-If Scenario



**TRANSPORTATION  
ON DEMAND**

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Less Car Ownership,  
More Mobility



## What-If Scenario



**TRANSPORTATION  
ON DEMAND**

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Internet of Things  
Robotics & Artificial  
Intelligence  
→ Autonomous Vehicles



TRANSPORTATION  
ON DEMAND

## Contingent Actions



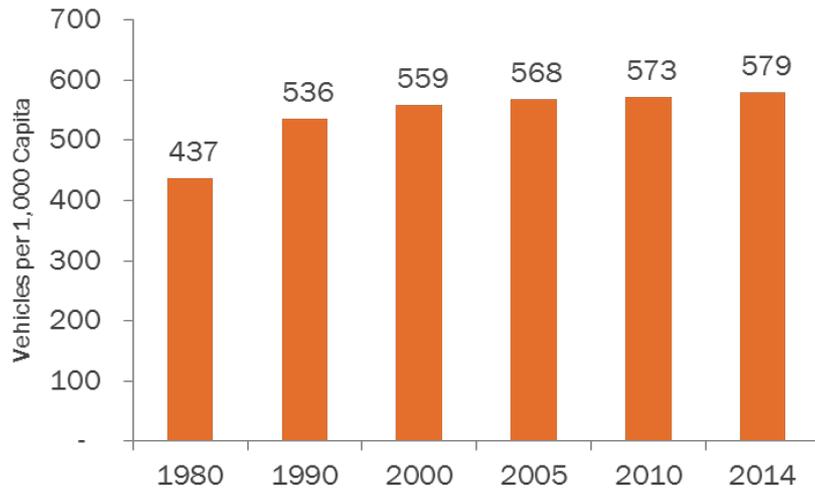
Source: PennConnects

- Invest in new multimodal hubs and universal payment cards
- Evacuation plans for carless households
- Incentivize P3s to speed up project delivery and incorporate new technology
- Legalize ride sourcing
- Improve work access for low-income individuals

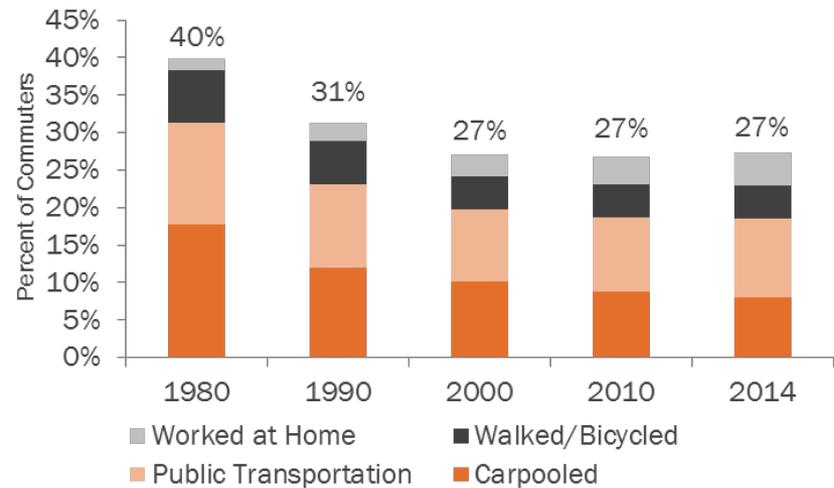


# Leading Indicators

## Regional Car Ownership per 1,000 Capita



## Non-Single Occupant Vehicle Commute Mode Share



**Sources LEFT:** U.S. Census, 1980–2000, American Community Survey, 2010–2014 (5-year estimates).

**RIGHT:** U.S. Census, 1980, 1990, and 2000; American Community Survey, 2005 (1-year estimate), 2010 and 2013 (5-year estimates).



# What-If Scenario



**THE U.S. ENERGY BOOM**



**Increased Global Trade**



# What-If Scenario

Photo: Philadelphia Energy Solutions



## Regional Growth Around Energy Hub



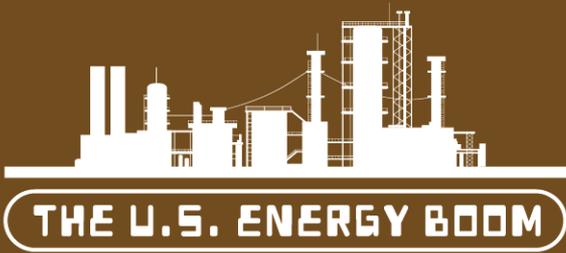
## What-If Scenario



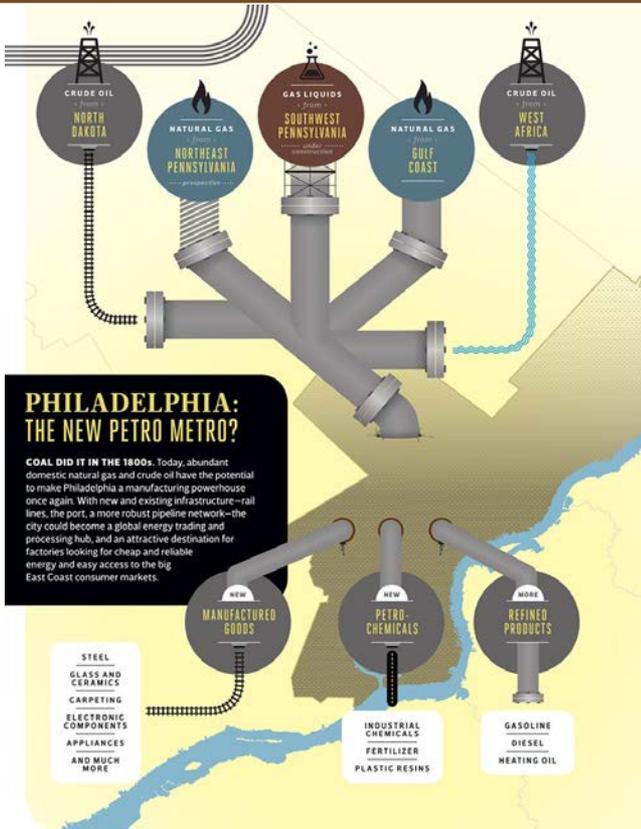
THE U.S. ENERGY BOOM



Increased Wages but  
Environmental and  
Health Concerns



# Contingent Actions



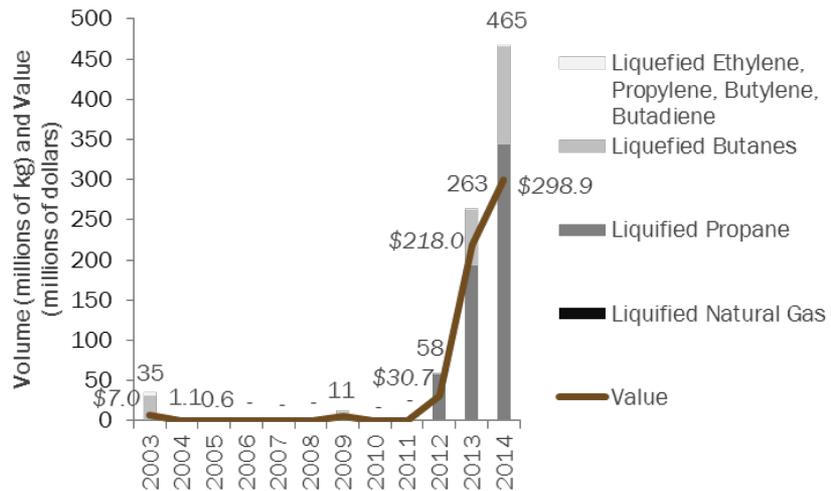
Source: Philly Magazine

- Market the region as an energy hub
- Consider safety, environmental, and health costs
- Continue to invest in alternative energy
- Use natural gas as an intermediate energy source
- Add capacity to Airport Rail Line

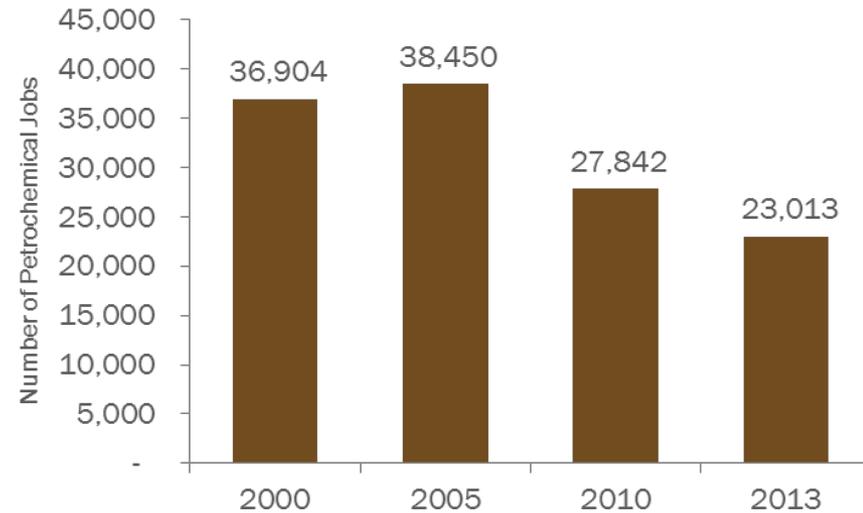


# Leading Indicators

## Annual Natural Gas Exports from the Region



## Regional Petrochemical Jobs



Sources LEFT: U.S. Census, Import and Export Merchandise Trade Statistics, 2003–2014.

RIGHT: U.S. Census, 2000–2013.

# Key Takeaways

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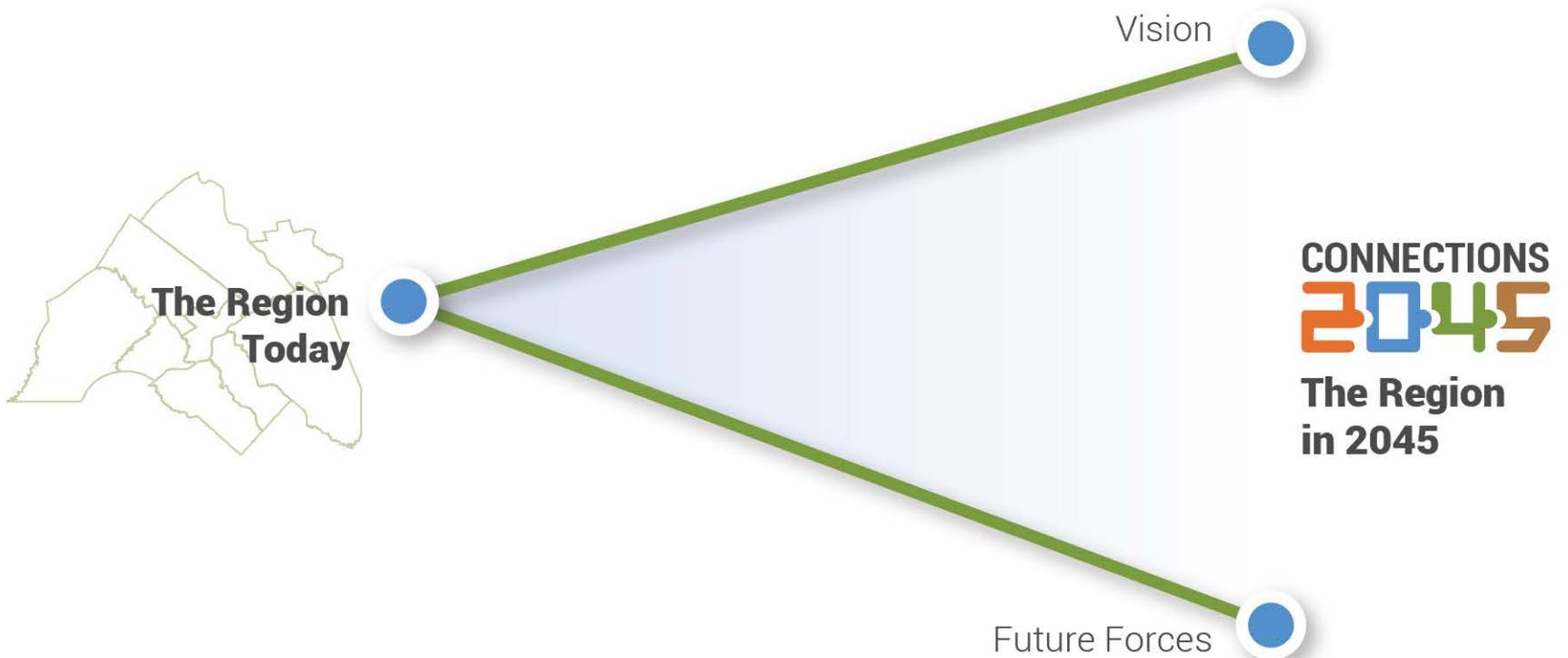
- The Future is increasingly uncertain.
- This process identified a set of Future Forces that may create new challenges and opportunities in Greater Philadelphia.
- There is much we can do to prepare for these forces
  - Universal Actions
  - Contingent Actions

# More Understanding Needed

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1. On-Demand Outsourcing vs. Automation
2. Abundant, Low-Cost Energy Future
3. Reconstruct, Modernize, and Make Infrastructure More Resilient Within Current Funding Constraint
4. Interplay Between the Forces
5. Recent Past no Longer a Useful Guide for the Future

# Future Force vs. Vision



# Discussion

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Greater Philadelphia  
**FUTURE**  
**FORCES**

**CONNECTIONS**  
**2045**  
*Plan for Greater Philadelphia*

# Question 1

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How does technology  
relate to the Future  
Forces?

# Question 2

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How can we use  
technology to improve  
quality of life in Greater  
Philadelphia?

# Question 3

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What is your vision for the tech community in Greater Philadelphia?

# Question 4

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What does the tech community need in order to grow and thrive in Greater Philadelphia?

# DRAFT Futures Group Mission

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1. Recognize the future is increasingly uncertain.
2. Help to understand and anticipate how and where change is occurring in Greater Philadelphia.
3. Identify actions to strategically position the region going forward.

# Next Steps – Futures Group

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1. Survey on general interest(s)
2. Topics for future meetings?
  - a. Update Choices & Voices
  - b. Sustainable Transportation
  - c. Ride sourcing & urban design
  - d. Big data
  - e. New technologies (IoT, Autonomous Vehicles, etc.)
3. Working Group exercise

# Other Ways to Stay Involved!

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- Upcoming LRP Public meetings:  
Philadelphia on 5/24:  
**[dvrpc.ticketleap.com/connections-2045-phila/](http://dvrpc.ticketleap.com/connections-2045-phila/)**  
More workshops this Fall/Winter
- Sign up for DVRPC's newsletter and email lists
- Follow us on social media: **@dvrpc**
- Visit **[www.dvrpc.org/Connections2045](http://www.dvrpc.org/Connections2045)** for updates on the Long-Range Planning process
- Review the draft LRP document in late Spring 2017

# Thank You!

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[www.dvrpc.org/connections2045](http://www.dvrpc.org/connections2045)