“If progress is to be steady we must have long term guides extending far ahead.”
WHY DO WE PLAN FOR THE FUTURE?

Does it really make a difference?
IT’S EASY TO GET THE FUTURE WRONG

We have a long history of it, in fact.
“Heavier-than-air flying machines are impossible.”

LORD KELVIN 1895
Mathematical Physicist
“Who the hell wants to hear actors talk?”

HARRY WARNER 1925
One of the Warner Brothers
“I think there is a world market for maybe five computers.”
WE CAN'T PREDICT THE FUTURE
But, we can identify signposts pointing in the right direction.
ONE OVERARCHING THEME
A shift from prediction to preparation

**TODAY**

**POINT FORECAST**
Planning for a short term point in time.

**RISK MANAGEMENT**
Identifying and planning for both short and medium term risks.

**SCENARIO PLANNING**
Looking out decades and letting the future drive the planning.

**PLANNING HORIZON**

**FUTURE 1**
Possible Scenario

**FUTURE 2**
Possible Scenario

**FUTURE 3**
Possible Scenario
MULTIPLE FUTURES
Alone or in combination?

MOMENTUM
America gets older and more diverse. Global trade booms. Domestic growth flattens.

GLOBAL CHAOS
Worldwide financial instability leads to negative growth. Extreme weather increases its impact.

TECH TRIUMPH
New tech radically changes transportation. Economy booms and U.S. becomes more self-reliant.

GENTLE FOOTPRINT
Public demands low-impact choices. Regulations reduce consumption, increase government control.
SOME QUESTIONS WE FACE TODAY

7 cross cutting questions

1. Will your organization work differently in the future?
2. Will the economy stay global?
3. What is resilient infrastructure and how much does it cost?
4. What if there is no more driving, but Vehicle Miles Traveled (VMT) still rises?
5. Where are the next boom towns?
6. Will cars fill up or plug in?
7. What’s the relationship between more senior Americans and transportation?
WHAT ELSE?
What are you seeing in the future?
FORESIGHT 750 SERIES

SIX REPORTS AT-A-GLANCE

SOCIO-DEMOGRAPHICS
Model and envision the transportation impacts of shifting socio-demographics.

ENERGY & FUELS
Identify and assess strategies for a variety of future energy scenarios.

SUSTAINABILITY
How to organize DOTs for a sustainable future.

CLIMATE CHANGE
How to prepare for extreme weather events.

FREIGHT
Explore and plan for the future of freight with a scenario planning toolkit.

TECHNOLOGY
Select the right technology investments at the right time.
VOLUME 1:
FREIGHT

Explore and plan for the future of freight with a scenario planning toolkit.
FREIGHT

Total U.S. e-commerce sales (in millions)

$4,984 in 1998

$226,878 in 2012

45x in 14 years
FREIGHT SIGNPOSTS

What to look for in the coming years.

VITAL SIGNPOSTS

**Volume:**
Will global freight trend up or down?

**Technology:**
Does a major advance in technology, like digital printers, fundamentally change how goods are delivered?

**Protectionism:**
Rising trade protectionism could shift global trade.

**E-commerce:**
With goods being delivered directly to consumers, what is the future of local retail stores?
VOLUME 2: CLIMATE CHANGE

How to prepare for extreme weather events.
CLIMATE CHANGE

Number of U.S. weather events (per year) costing over $1 Billion
CLIMATE CHANGE SIGNPOSTS
What to look for in the coming years.

VITAL SIGNPOSTS

Population Growth:
If global populations continue to boom, will technology come to the rescue?

Extreme Weather:
Does increased rainfall and drought, alongside increased extreme weather events change how infrastructure is built?

Sea Level Change:
Will rising waters in coastal areas alter where and how Americans live?
VOLUME 3: TECHNOLOGY

Select the right technology investments at the right time.
TECHNOLOGY
Years until technology was used by one-quarter of Americans

- ELECTRICITY: 46 years (1876)
- RADIO: 31 years (1926)
- TELEVISION: 26 years (1975)
- PC: 16 years (1983)
- WORLD WIDE WEB: 7 years (1991)
- TELEPHONE: 35 years (1897)
- MOBILE PHONE: 13 years (1991)

WHAT'S NEXT? faster adoption
TECHNOLOGY SIGNPOSTS
What to look for in the coming years.

VITAL SIGNPOSTS

Wireless Sensors:
How might smart infrastructure change the frequency of maintenance cycles if schedules can be better optimized?

Remote Working Capabilities:
Will the need for office space decline as secure file transfer needs increase? At what cost?

Vehicle Technology:
How will worker safety and training be impacted?
VOLUME 4: SUSTAINABILITY
How to organize DOTs for a sustainable future.
SUSTAINABILITY
A shift from short term needs to long term sustainability

LEVEL 0
Safe Mobility

LEVEL 1
Compliant Transportation

LEVEL 2
Green Transportation

LEVEL 3
Sustainable Transportation

LEVEL 4
Triple Bottom Line Sustainability

Focus on Societal Sustainability

Focus on Highway Transportation Only

Compliance/Short-term Focus

Sustainability/Long-term Focus

Foresight
Informing Transportation’s Future
SUSTAINABILITY SIGNPOSTS
What to look for in the coming years.

VITAL SIGNPOSTS

Population:
Size, geographic distribution, and change in characteristics.

Economic Growth:
Increase or decrease in U.S. GDP will be a major factor in resources available for transportation.

Energy:
Changes in how cars fill-up change how DOT’s are funded.

Technology:
Innovations may alter how vehicles use transportation infrastructure.
VOLUME 5: ENERGY & FUELS

Identify and assess strategies for a variety of future energy scenarios.
ENERGY & FUELS
U.S. alternative fueling stations

1998: 7,269
2000: 5,205
2002: 5,741
2004: 5,740
2006: 5,091
2008: 5,756
2010: 6,912
2012: 20,498
ENERGY & FUELS SIGNPOSTS

What to look for in the coming years.

VITAL SIGNPOSTS

Technology:
Does new fuel technology lead to fewer carbon emissions and less fuel consumption?

Driverless cars:
How quickly do self-driving cars become the norm? Will they be safer? Will they increase fuel efficiency?

Costs:
Will new fuel technology advances make personal vehicles more or less affordable? More cars? More transit?
Model and envision the transportation impacts of shifting socio-demographics.
SOCIO-DEMOGRAPHICS
U.S. population by age group

More in U.S. older than 35, than younger.

- 20.3% 20-34 years of age
- 20.7% 35-49 years of age
- 13.1% 65+ years of age
- 19% 50-64 years of age
- 26.9% 0-19 years of age
VITAL SIGNPOSTS

Life expectancy:
As people live longer, how does a growing senior population affect transit needs?

VMT:
With DOT budgets based largely on fuel tax, how do changing transportation needs affect VMT/fuel consumption?

Immigration:
Does immigration increase or decrease in the coming years? What will the transportation needs be for America’s new additions?
FORESIGHT 750 SERIES
Six reports designed to help you find future signposts

Visit TRB.org/NCHRP and search for Report 750 to find and read all six reports in the Foresight Series.
THANK YOU

See you in the FUTURE!