

# Mobility and Infrastructure Introduction

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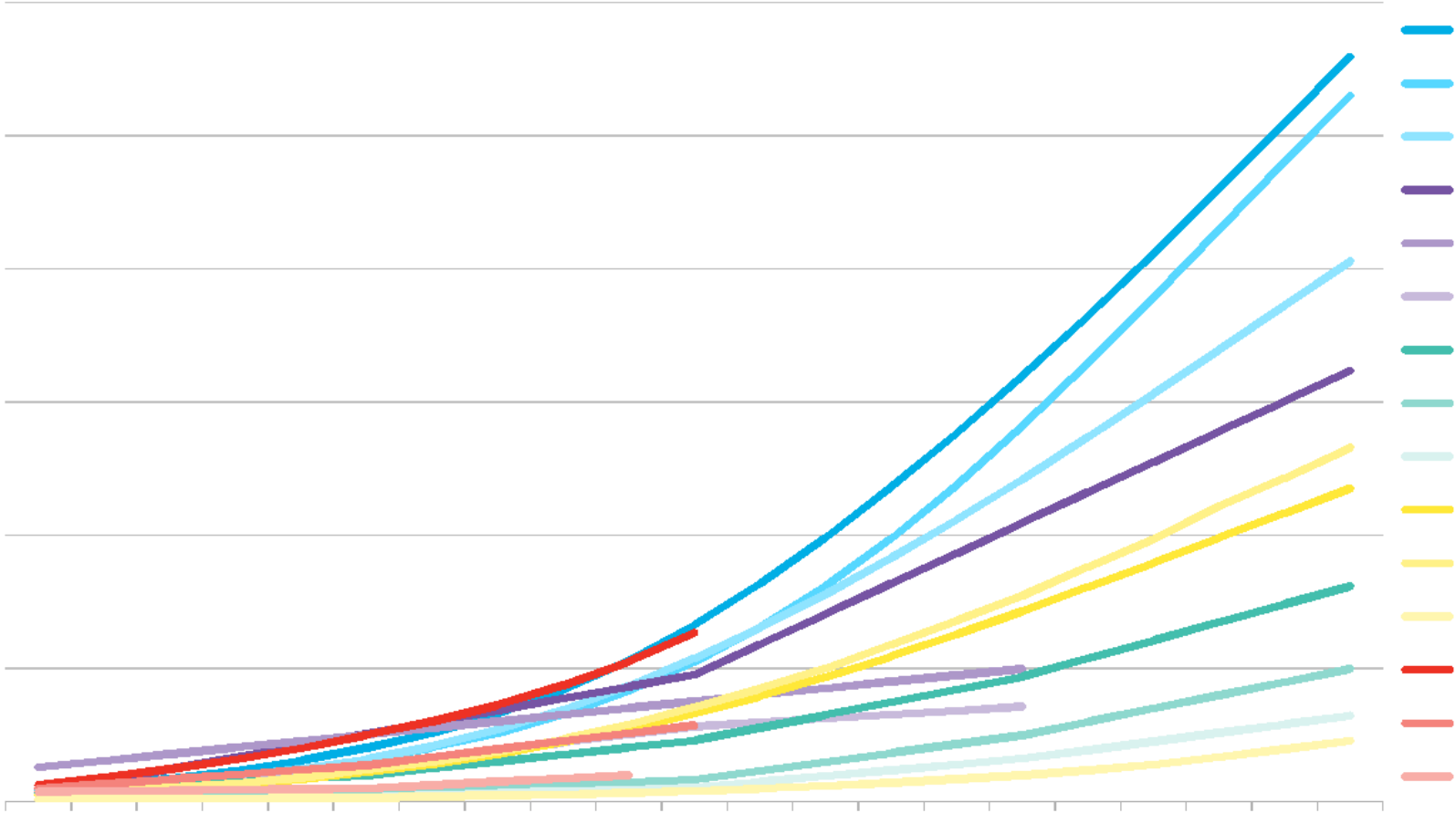
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# Long-term EV outlook continues to strengthen

Comparison of recent EV fleet forecasts

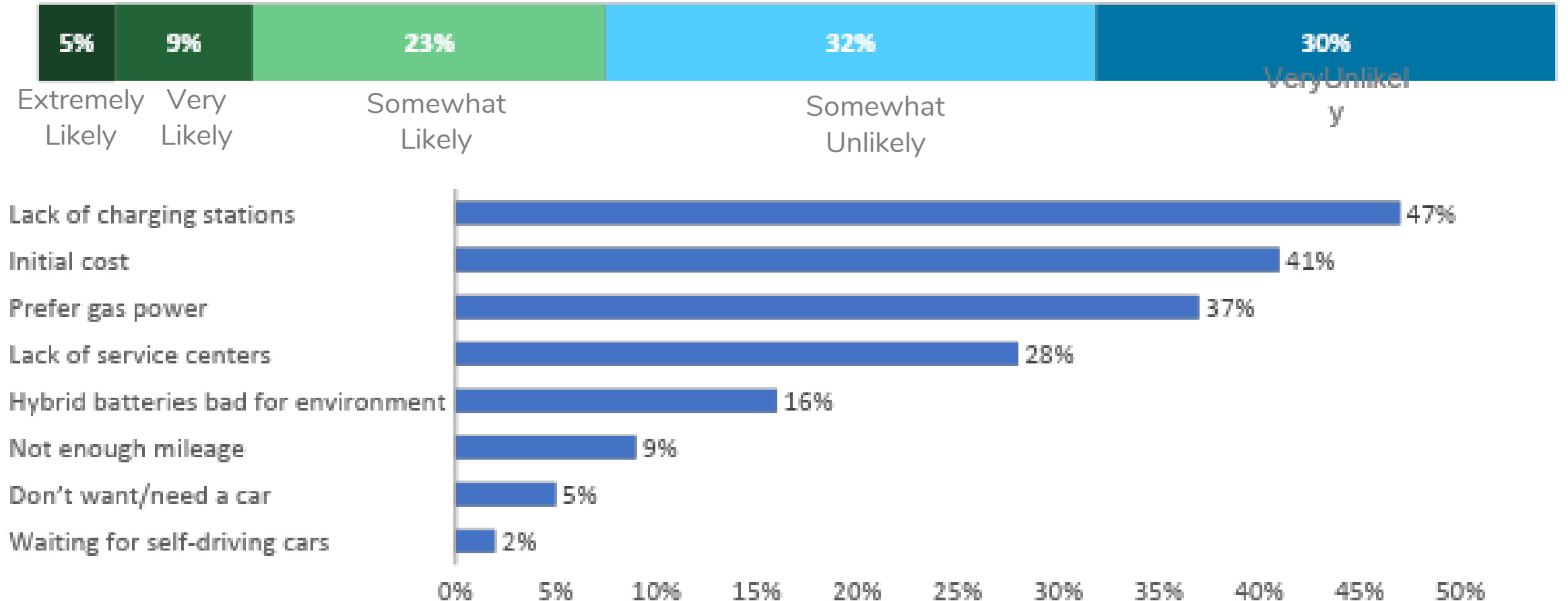


Source: Energy Impact Partners, Annual Meeting 2019



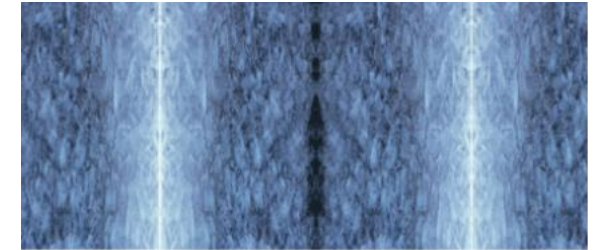
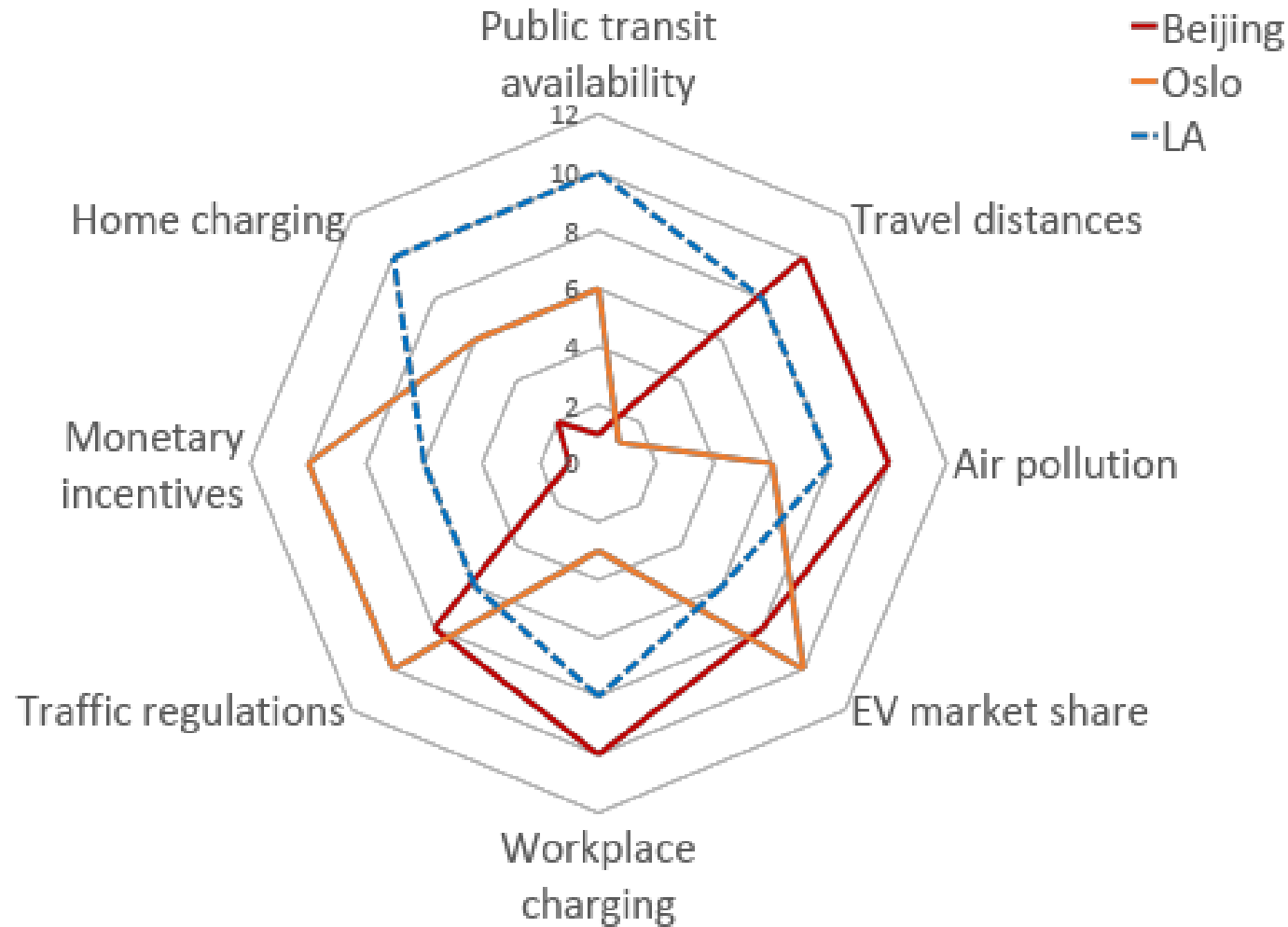
# Lack of perceived charging infrastructure hinders deployment

Utilities can accelerate adoption by supporting public charging



Source: Axios SurveyMonkey poll, May 2018, Energy Impact Partners 2019

# Dimensions of EV/EVSE deployment



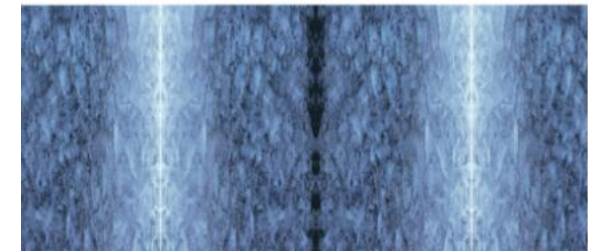
## MELTING THE ICE

Lessons from China and the West in the Transition from the Internal Combustion Engine to Electric Vehicles

The Critical Role of Public Charging Infrastructure

Editors

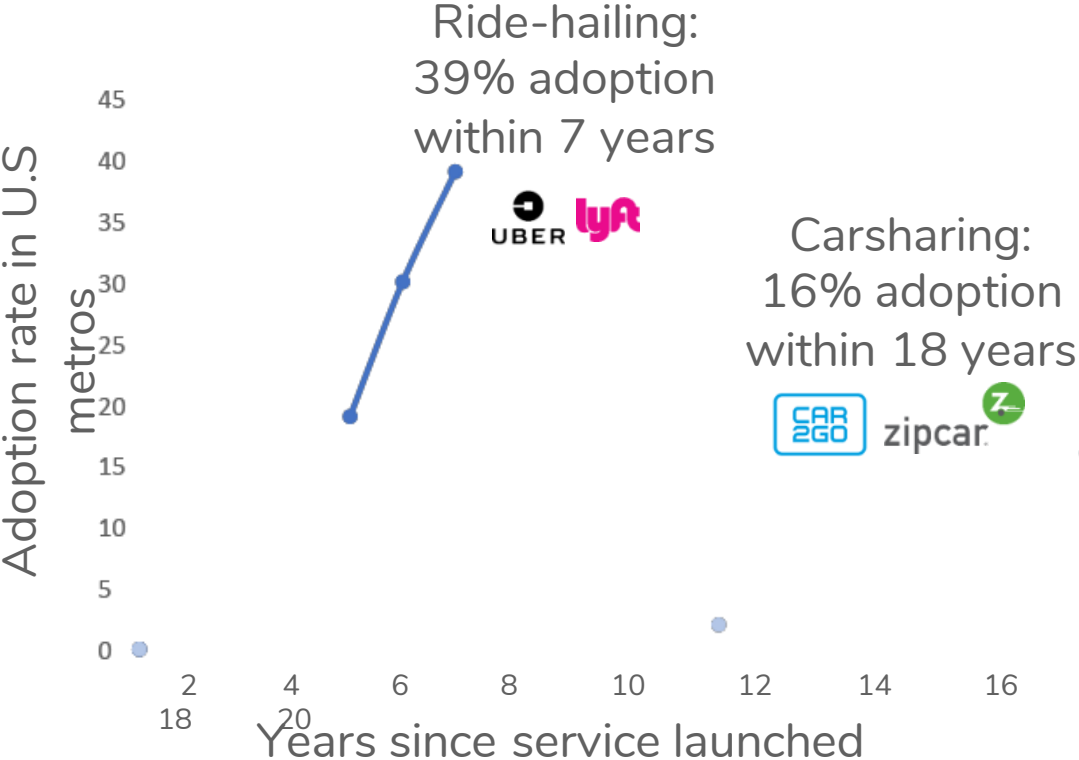
Peter Fox-Penner, PhD, Z. Justin Ren, PhD, and David O. Jermain



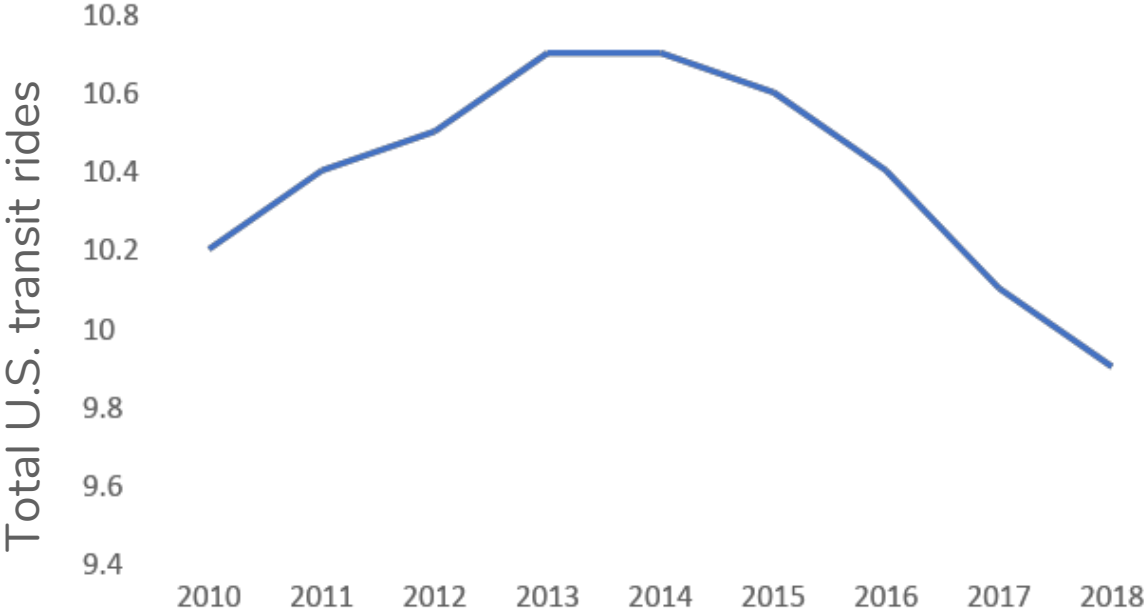
Source: Peter Fox-Penner, et al. (Eds.) "Melting the ICE: Lessons from China and the West in the Transition from the Internal Combustion Engine to Electric Vehicles"

# Mobility platforms and ridesharing are reshaping urban travel

Shared mobility options have taken off...



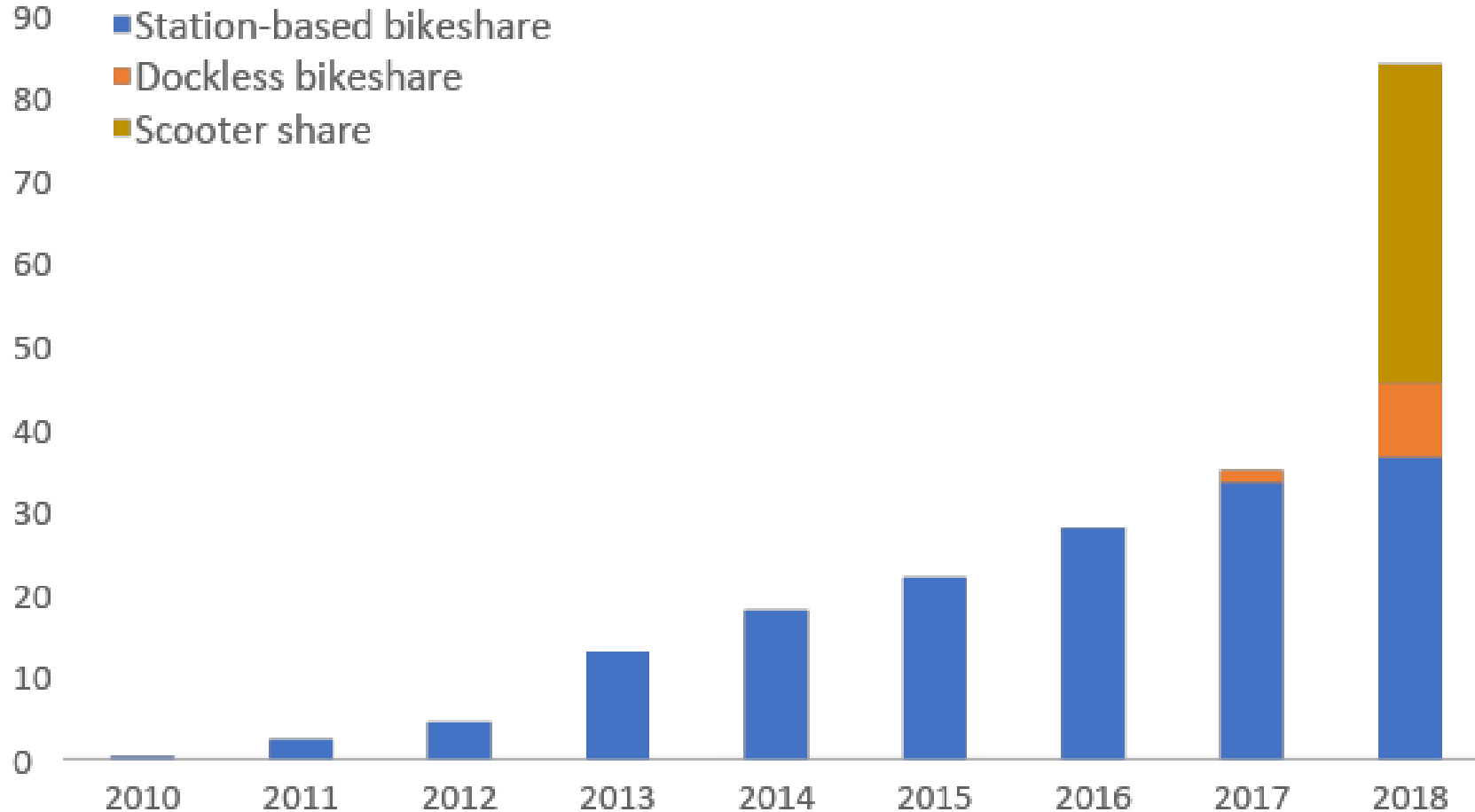
... while public transit ridership has plummeted



Source: shared mobility from Populus Groundtruth, Clewlow & Mishra, 2017; Clewlow, 2016; public transit ridership from Census Bureau

# Micromobility adoption continues to grow rapidly

84 million trips on shared micromobility in 2018



Source: National Association of City Transportation Officials, TechCrunch, Energy Impact Partners 2019



# Solving the Utility/Private Market EVSE Conundrum?

- Utility creates subsidiary “ChargeCo” that owns and operates EV chargers, subject to regulator oversight
  - Rates for charging set by regulators
  - Rate-base assets with proper ROE and cap structure
  - Public policy goal to advance electrification while honoring all other parts of the regulatory compact
- Utility offers to sell ChargeCo after 5 years subject to:
  - Regulators determine whether ChargeCo is sold as one or multiple companies
  - Sale occurs only when purchase bids pay book value or more; if no bids, offer again in 2 years

# Transport Recommendations - Carbon-Free Boston

For Mobility and Transportation to enable Boston's decarbonization goals we must first adopt these policies:

STRATEGY	MODEL SCENARIO ASSUMPTIONS
<b>SHIFT MODES</b>	
Citywide bike lane network	250 new miles of protected bike facilities, covering entire City with routes spaced a half-mile apart
<i>Go Boston</i> walking improvements	Walk and bike friendly main streets; <i>Vision Zero</i> priority corridors and safe crossings
<i>Go Boston</i> transit operational improvements	Improve speed and reliability
<i>Go Boston</i> transit infrastructure	42 new miles rapid bus & 35 new miles urban rail
Free/reduced cost transit	Free for walk-access transit, including rapid transit and local bus 50% fee reduction for drive-access commuter rail and ferry
Private vehicle pricing	
Smart mobility	\$1 per mile increase for ride-alone \$1 per mile decrease for shared-ride
Parking fee	\$5 /trip ending in non-home location in Boston
Cordon fee	\$5 per modeled trip (\$10 to \$15 per day) within cordon
VMT fee	\$0.20 per mile for all vehicle trips
<b>REDUCE DEMAND FOR TRIPS</b>	
Compact land use	75% of future population growth in transit-rich, walkable, and centrally located neighborhoods
Travel demand management (TDM)	20% increase in TDM market penetration
<b>ELECTRIFY VEHICLES</b>	
Electrify transit and fleet vehicles	Early action on buses and fleet vehicles Upgrade commuter rail when feasible
Expand charging infrastructure	Strategically install infrastructure that avoids prioritizing EVs over other uses of the urban landscape
Prohibit fossil-fuel based transport	100% of trips in light-/medium-duty vehicles

Source: CFB Report 2019 <https://www.greenribboncommission.org/wp-content/uploads/2019/01/Carbon-Free-Boston-Report-web.pdf>





# Thank You

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Please note. Dr. Fox-Penner holds equity in Energy Impact Partners, a utility-backed energy investment and innovation firm, and consults for Energy Impact Partners and The Brattle Group on energy technologies. Dr. Fox-Penner also conducts research in areas of interest similar to the business interests of Energy Impact Partners and The Brattle Group. The terms of this arrangement have been reviewed by Boston University in accordance with its financial conflicts of interest in research policies.