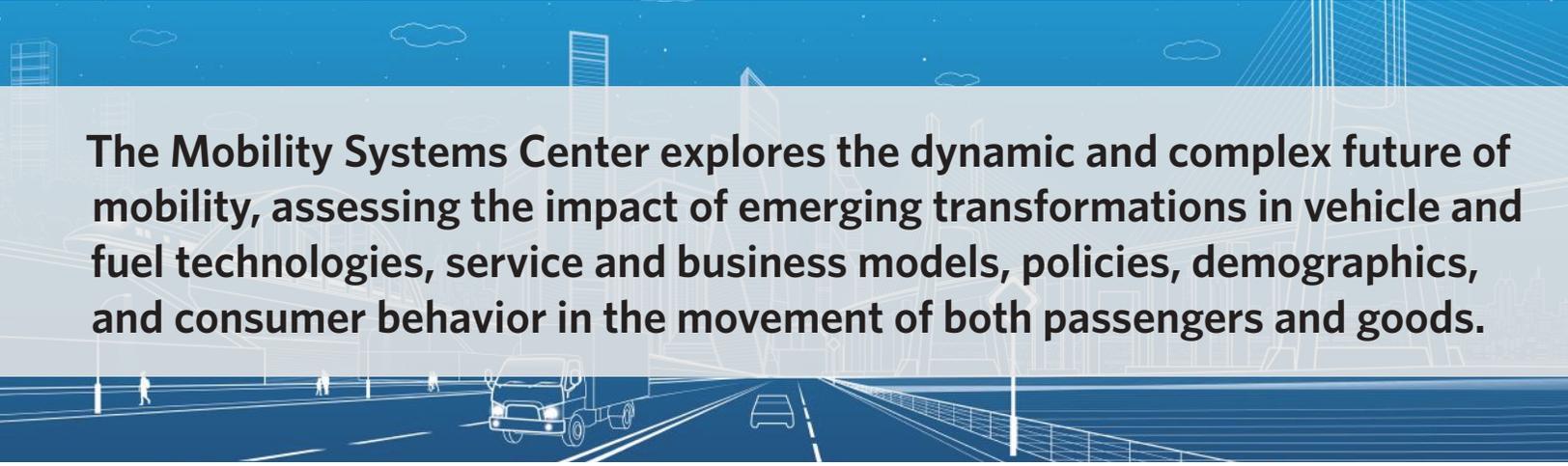


# Mobility Systems Center

An MIT Energy Initiative Low-Carbon Energy Center



The Mobility Systems Center explores the dynamic and complex future of mobility, assessing the impact of emerging transformations in vehicle and fuel technologies, service and business models, policies, demographics, and consumer behavior in the movement of both passengers and goods.

Mobility is changing in response to emerging technologies, disruptive business models, evolving demographics and consumer demands, as well as government policy and global sustainability goals. While the future of mobility is likely to look different from today, there is great uncertainty about how mobility systems will evolve in different parts of the world. Current mobility systems are highly heterogeneous and driven by local factors including pollution, congestion, population density, economic growth, infrastructure provision, energy security, and land use.

“The mobility sector is undergoing significant transformations; understanding the scale and scope of these transformations requires the Mobility Systems Center’s multidisciplinary approach, which brings together data scientists, engineers, economists, and environmental scientists.”

— Professor William H. Green  
Co-Director, Mobility Systems Center

The Mobility Systems Center, an MIT Energy Initiative Low-Carbon Energy Center, brings together MIT’s extensive expertise in mobility research to understand current and future trends in global passenger and freight mobility. Approaching mobility from a socio-technical perspective, we identify key challenges, understand potential trends, and analyze the societal and environmental impact of new mobility solutions. Through developing, maintaining, and applying a set of state-of-the-art scientific tools for the mobility sector, the Center aims to assess future mobility transformations from a technological, economic, environmental, and socio-political perspective.

The Center continues the multidisciplinary research started under MITEI’s *Mobility of the Future* study, which gave primary attention to the U.S. and China, light-duty passenger vehicles with four wheels, urban mobility, electrification, and greenhouse gas policies. The Mobility Systems Center has a broader scope and is designed to evolve in response to the interests of its members and emerging challenges in mobility systems.



## Goals and approach

The Mobility Systems Center analyzes trends in global passenger and freight mobility systems to guide them towards an efficient and sustainable future. Constructed as an industry-sponsored consortium, the Center brings together the diverse expertise of MIT faculty with the on-the-ground knowledge of industry partners. Funded by consortium members, MIT faculty evaluate the economic, social, and environmental impacts of emerging trends in mobility using state-of-the-art methods, including big data, machine learning, chemistry, engineering, economics, urban and regional planning, and business strategy. The ultimate goal of the Center is to provide insights and analyses that can guide member companies in developing and executing mobility business strategies that support sustainable economic growth.

## Research themes

The Mobility Systems Center brings together academia and industry to adopt a multidisciplinary and pragmatic approach to the study of mobility. Industry consortium members guide the Center leadership in identifying pressing topics that lead to insights into current and future trends in global passenger and freight ground transportation from technological, economic, environmental, political, and social perspectives. For the period 2019-2022, the Center's research is focused on the following four themes:



### Mobility evolution in high-growth countries

The growth of the middle class in high-growth developing countries will be the primary driver of future demand for mobility of people and goods. We outline the unique mobility context of these markets as well as analyze the potential impacts of policy and technology interventions to combat local challenges of congestion, road safety, and air pollution without curtailing growing accessibility.

### Freight ground transportation

Ground transportation of freight has a similar global energy demand to that of all light-duty vehicles. Freight transportation is expected to continue to grow. We analyze operational and technological approaches for improving economic and environmental efficiency of goods transport. Our analyses include long-haul freight by road and rail and urban delivery of goods.





## Clean fuels and propulsion systems

Various alternatives for clean fuels and propulsion systems can help mitigate greenhouse gas emissions as well as local air pollutants and their health and mortality consequences. We conduct techno-economic environmental analyses to assess tradeoffs in performance, cost, and environmental footprint of battery electric systems, fuel cell propulsion systems, and other clean

## Disruptive technologies and their supporting infrastructure

New business models and technologies are disrupting current mobility systems and shaping how they will evolve in the future. We assess how mobility-as-a-service, mobility-on-demand, and the vehicle sharing economy will continue to change consumer behavior and the transportation value chain. We also tackle uncertainties surrounding connected and autonomous vehicles, particularly the role of supporting infrastructure and issues of cybersecurity.

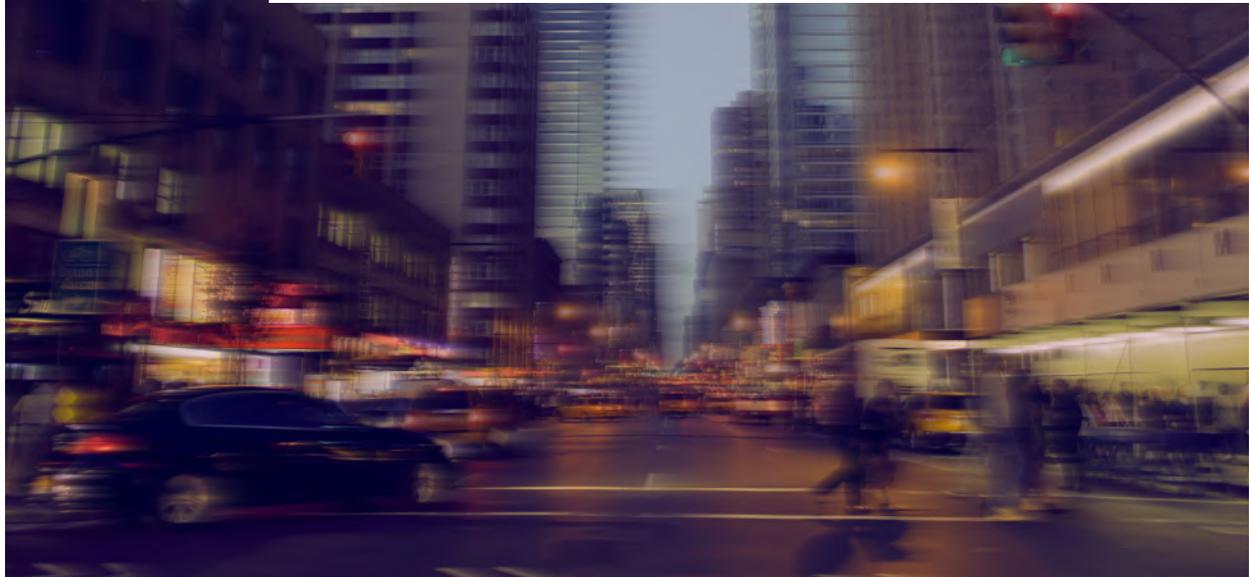


The Mobility Systems Center is building on decades of research at MIT in the transportation sector, including MITEL's recent *Mobility of the Future* study focused on the economics, global and municipal-level policies, and consumer behaviors around light-duty vehicles and urban mobility.

Read more at: [mobilitysystemscenter.mit.edu](http://mobilitysystemscenter.mit.edu)

“ The ultimate goal of mobility is to enable access to goods, services, and people; MITEL's Mobility Systems Center takes a systems approach to realizing this goal.”

— Associate Professor Jinhua Zhao  
Co-Director, Mobility Systems Center



# Interested in joining us?

## Membership benefits

- Agenda shaping: Nominate and vote on research topics and projects for the Center on an annual basis; help define and select the research themes that guide our Center every three years
- Access to research: Get early access to cutting-edge research, including pre-publication manuscripts, presentations, project reports, and more
- Semi-annual consortium meetings: Discuss the latest research results and interact with professors, students, and other consortium members
- Project advisory committees: Participation in project advisory committees for in-depth discussions with project teams through in-person meetings and video conferences
- Option to directly fund additional projects: Extend your insights beyond the scope of the consortium-funded program by directly funding projects not selected by the consortium members
- Associate MITEI Membership: Enjoy various MITEI member events, including the MITEI Annual Research Conference

### Co-Directors:

**Jinhua Zhao**, Edward H. and Joyce Linde Associate Professor in the Department of Urban Studies and Planning, Director of JTL Urban Mobility Lab, Director of MIT Transit Lab, and Director of MIT Mobility Initiative

**William Green**, Hoyt C. Hottel Professor in Chemical Engineering

### Executive Director:

Randall Field, MIT Energy Initiative

### Business Development Manager:

Florian Allroggen, MIT Energy Initiative

### Research Program Manager:

Joanna Moody, MIT Energy Initiative

### Asia-Pacific Energy Partnership Program Director:

Wendy Duan, MIT Energy Initiative

### For additional information or to join the Mobility Systems Center, please contact:

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