

THE FUTURE OF TRANSPORTATION



Malcolm Dougherty, P.E., National Practice Executive, Transportation

Transportation projects have been core to Michael Baker International for nearly 80 years, shaping our country and connecting our communities. As we continue to look at the future of our industry, Malcolm Dougherty provides insights on the trends and technologies that will shape the road ahead.

COVID-19 has made an impact on every industry. What do you see changing in transportation?

From a Company standpoint, with a few exceptions, the existing work and existing transportation tasks that we've been given by our clients are largely uninterrupted. Design continues. Most of the construction work continues. We are fortunate that transportation improvements have been labeled by most states as essential business and we continue to stay close to our clients as they navigate current and future challenges. Transportation revenues, through gas tax and other streams, however, are on the decline and will have an impact on programs this year, and potentially over the next 18 months. Any economic stimulus package revises this scenario and creates opportunities.

What happens when we are over the hump with this virus? Are people going to be reluctant to go into major public spaces and ride public transit? Are travel patterns going to be different than they were before? Will there be more traffic congestion? Will people want to use shared mobility options to the same levels that they were before? These are all questions that factor into the future of transportation.

We used to consider the future the next five, 10 or 20 years. Now, we need to think about the next 12-18 months too.

This pandemic is forcing us all to try different work alternatives and potentially see the benefits of reduced commute congestion and more balance between personal and work life without a loss in productivity. In some areas, I think it will accelerate the implementation of alternative solutions, which could have a real impact on the transportation system. Let's say 5-6 percent of work hours were performed from home before this pandemic. As a result of coronavirus, maybe that number increases to 15 percent of work hours and the strain on the transportation system just got eased without adding capacity. You are relieving traffic without increasing infrastructure. Now, the infrastructure you do need is broadband. People don't necessarily think of broadband as part of infrastructure, but it is all tied together.

What are the benefits of investing in our country's transportation infrastructure as part of a coronavirus stimulus package?

Investing in the U.S. transportation infrastructure today will undoubtedly have a massive positive impact on jobs and the economy in the short term. However, the lasting benefit over the next few years and even decades of an expanded transportation system will be even greater than the short-term benefits in terms of mobility of people, reduced traffic congestion, improved access and smoother flow of goods. Ultimately, it will help position our country as a whole for economic competitiveness and long-term growth and success.

What are some of the most significant changes in the transportation industry over the last 80 years?

The dominance of the automobile over the last 80 years can be seen everywhere. As the U.S. shifted into an automobile nation, we designed, built, maintained and bolstered the interstate system to connect our communities from coast to coast. And then, as metropolitan living re-gained popularity – where living close to work and entertainment was a priority – the concept of shared mobility took a new form. No longer were you limited to trying to take a train or a bus as new options emerged. All you have to do is open up your smartphone and press a button for someone to pick you up exactly where you are and take you to exactly where you want to go – and you never have to worry about parking a car. Now, we look more at mega-regions and determining the most effective way to move people and goods efficiently throughout, utilizing all modes and shared mobility options.

What will the "transportation of the future" look like?

We will continue to see an increase in technology-rich, connected and autonomous vehicles. Think of driver-assist features that allow a car to follow the vehicle in front of it, as well as adaptive cruise control and lane-keep systems that assist the driver and will, over time, become primary driving functions.

We will also see completely autonomous, lower speed shuttles – no driver, no steering wheel – to take you around center cities, college campuses, airport parking lots and industrial parks. These will

graduate from demonstrations to full deployments. With the recent pandemic, there is also likely to be new thinking and innovations around travel patterns and the design and materials used in these kinds of vehicles so they support the health, safety and well-being of travelers.

Our infrastructure will continue to become smarter. Some of the work we're already doing with clients in this area involves adding sensors and intelligent transportation technologies to roads and bridges. The George Washington Bridge in Fort Lee, New Jersey, is an example where we integrated new field devices with an Operations Control Center to manage traffic flow and share real-time information with motorists and operators to maximize travel throughput and improve safety. I also see a future where cars will be able to talk to the traffic signal controllers as drivers approach an intersection and vehicles are informed of signal timing. Much like we have frontal crash avoidance technology in some vehicles today, advanced features will become more common and expanded, such as the ability to stop drivers from running red lights.

Lastly, I think the future will include connected vehicles communicating with smart infrastructure in a way that provides a rich real-time image of the infrastructure itself. If there's a pothole developing on Main Street, this kind of connected transportation system can improve safety, help owners operate more efficiently, and even report conditions such as potholes.

What are the biggest challenges you see to achieving that future?

Many challenges lie ahead. The technology will advance, transportation system owners and auto manufacturers will invest and deploy. There are regulatory challenges that must be overcome with vehicle-to-vehicle spectrum availability. Privacy and security will always need to be addressed. Another big challenge to autonomous vehicles will be the public's comfort level and acceptance. Will people be willing to jump into a driverless vehicle? I think entry-level options like low-speed shuttles and more advanced cruise control features will increase familiarity and help ease consumer reluctance, but are we ready to get in the back of an Uber or Lyft without a driver? 🐞



About Malcolm Dougherty

Malcolm Dougherty is National Practice Executive, Transportation, for Michael Baker International. He is responsible for the strategic direction across all aspects of the transportation market from planning and design to construction services. Michael Baker's Transportation Practice spans the entire breadth of mobility and ways communities are connected, including Highway and Bridges, Intelligent Transportation Systems (ITS), Aviation, Railroad/Transit, Emerging Technologies, Traffic and Toll Services.

Dougherty brings more than 26 years of transportation industry experience to Michael Baker. As Director of the California Department of Transportation (Caltrans), he was responsible for the maintenance and operations of more than 50,000 lane miles of roadway in the State Highway System and the delivery of an \$11.4 billion construction portfolio. He also had overall fiscal responsibility for the Department's budget of more than \$10 billion and 20,000 employees.

Dougherty has held numerous affiliations and certifications, including: Past Chair of the Transportation Research Board's (TRB) Executive Committee, Past Chair of the American Association of State Highway and Transportation Officials (AASHTO) Committee on Construction, Past Chair of the California Toll Bridge Program Oversight Committee and Past Member of the California Public Works Board. He also is a member of the Board of Directors for the Intelligent Transportation Society (ITS) of America and the American Society of Civil Engineers. He earned a Bachelor of Science degree in Civil Engineering from Rutgers University in New Brunswick, New Jersey.

