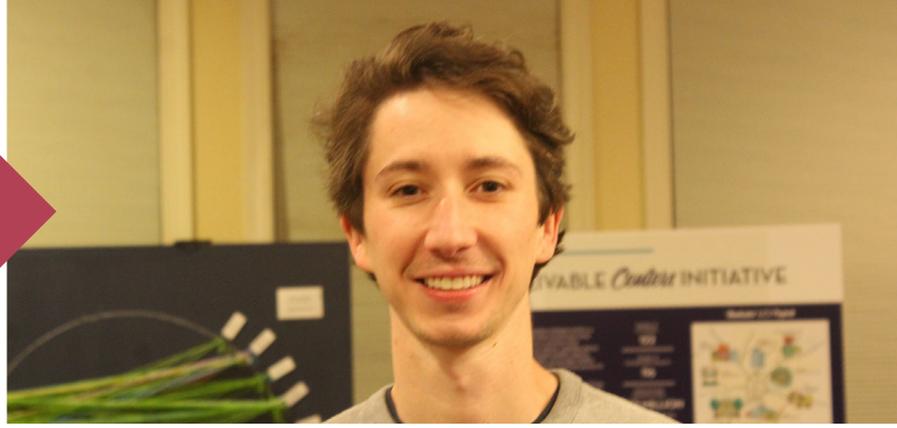


Atlanta is doing a great job with the Beltline, but it could definitely be expanded.

- JOSHUA L.



Source: Ryan Barrett Photography

The last-mile and first-mile connectivity are key, and I think that we need to not think that MARTA or that any one mode is going to be a one-size fits all for everybody. We've got to really get creative.

- SHERRY W.



Source: Ryan Barrett Photography

# FUTURE

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ARC's vision for the future includes supporting projects that create a safe, multi-modal, and resilient environment that adapts to technological advances for all residents.

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## A LIVING PLAN

The Atlanta Region's Plan is more than a static document updated every four years, and the RTP is no exception. While it does lay out a clearly defined set of policies, projects, and programs which are intended to help our region *Win the Future*, it does so from the perspective of a single point in time.

The true purpose of this plan is not to articulate every action to be undertaken in the future, but rather to define a general vision and set us on a reasonable path forward. While the path may have unexpected obstacles, the vision should remain constant. The commitment to creating world-class infrastructure, a competitive economy, and healthy livable communities should not change, although the most appropriate means to achieve that vision might. Even the definition of what each of these outcomes means may be different for somebody looking back from the future compared to us looking forward from today.

The Atlanta Region's Plan is intended to be adaptable and responsive to change. What seems practical, cost-effective and desirable today may not be so in the future, so course corrections will be made regularly. New strategies will be tried and those which become obsolete will be retired. The plan will undoubtedly evolve considerably in coming years, which is the way the process should and must work if we truly hope to *Win the Future*. This section explores some of the ongoing work at ARC that will enable the plan to evolve and to stay timely, relevant, and effective.

## ONGOING WORK IN THE REGION

Some nascent work at ARC is ongoing but not yet directly reflected in the projects and solutions outlined in the RTP. This work is vital to the evolution of ARC and its planning goals and will be incorporated in future updates to the RTP.

### HST PLAN

ARC completed an update to the Human Services Transportation Plan (HST) in 2017. The plan reviews a broad range of transportation options design to meet the needs of the region's residents with disabilities and/or low incomes, older adults, veterans, and individuals with limited English proficiency. The HST Plan identifies the unique needs of these communities and provides strategies and solutions to address those needs across the region. ARC is currently undertaking a follow up study to identify ways in which brokered trips can be provided more cost-effectively.

### TSMO

Transportation Systems Management and Operations (TSMO) is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. Many solutions are part of the TSMO toolbox including Intelligent Transportation System (ITS) and roadway design.

In 2016, ARC held a TSMO Capability Maturity Model Self-Assessment Workshop to evaluate the state of the practice and develop next steps in advancing the effectiveness of regional

TSMO efforts. Several next steps were outlined during the workshop including establishing a TSMO vision for the region and creating guidance for local partners on expanding their TSMO capabilities. ARC has researched data governance best practices and is working to identify pilot projects for advanced technology deployments. The ITS Architecture will be incorporated into the next major update.

### RESILIENCY

Planning to ensure a safe and reliable transportation system is a key objective outlined in the RTP. Resiliency planning works to minimize disruptions to the transportation system from increasingly extreme weather events like flooding, snow and ice storms, and heat waves, and from unpredictable and sudden disruptions like the I-85 bridge collapse.

In 2017, ARC hosted a resilient communities workshop to share best practices with stakeholders. Also in 2017, ARC completed its Vulnerability and Resiliency Framework that outlines the process for ARC to integrate resilience to disasters into the transportation planning process. Building on this work, ARC won an FHWA grant in 2018 to participate in the Extreme Weather and Durability Pilot program. The pilot focuses on studying hydrological challenges due to flooding and the impact of extreme heat on transportation infrastructure and its users. ARC is in the process of developing tools to assess these risks to the region.

## IMPLEMENTING VISION ZERO

ARC is committed to a regional safety approach to eliminate fatal and serious injury crashes that is data-driven, proactive, and aggressive. To that end, ARC has convened the RSTF to lead the region towards zero traffic deaths. The RSTF will help ARC establish a regional safety vision, identify actionable strategies and resources, track progress toward meeting regional safety targets, promote better transportation project development, and promote a culture of safety.

## MODELING AUTOMATED VEHICLES

The ARC ABM is the region's Travel Demand Model that replicates household-level and person-level travel choices to model future travel in the region. The ABM is continuously updated to reflect the most up-to-date travel patterns in the region. The model will be updated to reflect the advent of automated vehicles and their potential to disrupt travel patterns in the future. Until AV's are publicly available and in widespread use, the model's AV features will be based on academic research and assumptions.

## PLANNING FOR EQUITABLE OUTCOMES

ARC is careful to ensure that its policies and activities do not disproportionately impact members of the communities who, through federal guidance, have been identified as protected classes. The TEAG is one component of ARC's efforts to work towards a more equitable process. TEAG connects subject-matter experts

with transportation planners and agencies from around the region to help ensure that the voices of vulnerable populations are heard and considered throughout the planning process.

ARC developed two equity models to help the agency identify vulnerable populations and quantify the impacts of proposed projects on those populations. The Protected Classes Model identifies nine protected populations throughout the region. The EJ Model considers racial minority, ethnic minority, and low-income populations to highlight the areas of greatest potential inequality in the region. The TIP Project Evaluation Framework uses the results of the EJ Model to help score and rank proposed projects.

ARC will continue to update the analyses as annual census data is released and continue to apply the results to agency processes and practices.

### LEARN MORE:

- [HST Plan](#)
- [TSMO](#)
- [Resilience at ARC](#)
- [Regional Safety Task Force](#)
- [Transportation Equity Advisory Group](#)

## TECHNOLOGY ADVANCEMENTS AND DISRUPTIONS

While the RTP directly plans for the problems of today using available technology, it is prudent to keep current with technological advancements and disruptors that have the potential to impact future plans and developments. The list below is a selection of technologies and disruptors that ARC believes will impact future plans.

### AUTOMATED VEHICLES

Most vehicles manufactured today are partially automated and can maintain safe distances from other vehicles while in cruise control, alert drivers to obstacles, and stay inside lane markings. However, fully automated vehicles, which will be able to drive themselves under all conditions in any location with no direction from a human, appear to still be years if not decades in the future. The potential outcomes of a fully autonomous fleet include fewer crashes, faster speeds, and potentially higher VMT. In the Atlanta region several low speed autonomous shuttle pilot demonstration projects are already underway. These pilots help us learn more about the potential benefits and obstacles of implementation. In preparation for an autonomous future, ARC is setting the region up for success by ensuring our infrastructure is well maintained, solidifying our transit options, and encouraging healthy land use.

### CONNECTED VEHICLES

Connected vehicles can communicate with other vehicles (V2V), roadway infrastructure (V2I), or everything (V2X). Message systems in the vehicle alert drivers to dangerous situations or simply when a light will turn green. The Atlanta region has already embraced connected vehicle technologies for their positive impacts on safety, congestion, and air quality. ARC is now setting up a long-term partnership with GDOT to equip every signal in the region with connected technologies. While connected vehicles have their own benefits, they will also be necessary for a fully autonomous fleet to navigate challenging conditions such as complicated urban areas and work zones.

### SHARED MOBILITY

Transportation Network Companies (TNCs) like Uber and Lyft have become a popular mode of transportation for many people in the Atlanta region. TNCs complement other vehicle-for-hire modes like traditional taxis. These businesses will become more profitable with fully autonomous and electric fleets as it will reduce paid drivers and maintenance costs. The potential for having subscriptions to shared rides is often referred to as Mobility As A Service, or MaaS. The benefits of shared autonomous fleets are that they could mitigate some of the potentially harmful effects of personal autonomous vehicles, such as an increase in VMT from zero occupancy vehicles.

## **DOCKLESS MOBILITY**

The world of shared micro mobility has expanded a great deal in a short period of time. New options, like scooters and electric bikes have joined the traditional bike share model. The most disruptive aspect of these changes has been the shift to dockless systems. In traditional docked shares, the equipment must be returned to a dock or the rider is charged a fee. In a dockless system, apps are used to find the equipment, which can be left anywhere within the service zone. While greatly increasing the accessibility and convenience of these options, this has the potential to create clutter on sidewalks and potentially dangerous obstacles. ARC is encouraging local governments to conduct curbside management studies and partner with shared micro mobility companies to maintain their equipment and keep our infrastructure safe.

## **ALTERNATIVE FUELS**

The FAST Act required FHWA to establish a common understanding of alternative fuels in the US and to establish alternative fuel corridors. There are five recognized alternative fuels: electric vehicle charging, hydrogen, propane, liquid natural gas, and compressed natural gas. The existing alternative fuels corridor network covers more than 135,000 miles of the National Highway System. These designated corridors provide a sufficient number of facilities to allow for corridor travel using one or more alternative fuels.

Interstates 75 and 85 in the Atlanta region have been designated as alternative fuel corridors. ARC expects further development of alternative fuel facilities along these corridors and will continue to support local governments who are building supply infrastructure and transit operators who are testing electric and other alternative fuel vehicles.

Electric vehicles run on a battery and need to be plugged in to charge. Some advantages of true electric vehicles, as opposed to hybrid electric vehicles with an internal combustion engine, is that they have zero emissions and are low maintenance. While the overall air quality advantage of electric vehicles varies based on how the electricity was generated, vehicle emissions have outsized health impacts on people as they share the same space, particularly in urban environments. An electric vehicle's lack of an internal combustion engine also reduces its number of moving parts, reducing the amount and cost of maintenance.

These qualities along with the trend of better, cheaper batteries ensures the future of electric vehicles.

## PLANNING FOR AN UNCERTAIN FUTURE

Visioning and scenario planning play important roles in the long-range planning process.

Technology is rapidly evolving and could change the way we live our daily lives, from where we work to how we move around and socialize. We should not assume the trends of the past will continue in the future, but rather explore the underlying social, technological, economic, and political drivers of change to understand their potential impacts. These drivers of change will shape the future of the region.

### SCENARIO PLANNING

In previous efforts, ARC has used scenario planning to test many different land use and transportation scenarios to help policy-makers better understand the impact of growth on the region. Throughout 2016 and into 2017, leveraging the help of a USDOT SHRP2 grant, ARC undertook a scenario planning process to further explore global and regional drivers of change. This work began with the identification of nine key disruptive influences or “drivers of change” which are most likely to have major implications on our ability to *Win the Future*. Those drivers of change are:

- Ride hailing/car sharing
- Transportation finance structure
- Port traffic
- Autonomous vehicles
- Intelligent infrastructure

- Water supply
- Spatial, racial, and economic equity
- Aging of the population
- Climate change regulations

The next step in this exploratory scenario process involved identifying plausible relationships between key drivers of change and weaving them into four distinct alternate futures:

- Full Steam Ahead
- Technology Reigns
- Fierce Headwinds
- Green Growth

These scenarios represent a set of possibilities that were used to help guide future policy discussions. They were analyzed for transportation impacts using a variety of modeling tools. Key deliverables from this process were detailed scenario narratives, analysis results from the modeling, and an online tool which will allow individuals to estimate the likelihood of various trends. The online tool identifies which alternate future most closely aligns with the user’s responses and allow the user to explore that scenario (as well as the other three) in more detail.

## TRANSPORTATION TECHNOLOGY

Several of the key drivers of change relate to the impacts technology will have on mobility options. How will such technologies begin to transform the Atlanta region and how does this morph our long-term vision for transportation?

Recognizing the importance that technology has on current and future travel behavior, ARC began a robust review of technological trends in 2016. The resulting Regional Transportation Technology Policy Report includes a detailed look at how these trends might influence national and regional travel behavior and the implications for current policy. The report also recommends policy options that can guide these changes towards positive outcomes. These policies are grouped into six focus areas:

- Data sharing and support
- Infrastructure planning and investment
- Managing travel demand and mobility services
- Physical environment
- Workforce development and innovation
- Equitable access

The growth of technology is uncertain and ultimately unforeseeable. Just as the RTP responds to changes in land use and travel patterns, so too will the Regional Transportation Technology Policy Report respond to changes in the technological landscape. The focus areas we consider important and transformative today may have minor roles to play in the future. Likewise, topics that have not yet risen into our field of view may come to dominate the landscape in years to come.

### ➤ LEARN MORE:

- [Scenario planning at ARC](#)

# MOVING FORWARD

The recommendations contained herein collectively transform and progress the transportation landscape of the Atlanta region. They further our regional priorities of healthy livable communities, world-class transportation infrastructure, and a competitive economy.

The Atlanta region is the beating heart of the South – a place of movement, commerce, and culture. There is a powerful, pulsing rhythm of our streets and railways as they carry goods, ideas, and every kind of person into and out of our region. Our plan will enable us to continue growing and thriving far into the 21st century.

Together, we can Win the Future.







Atlanta Regional Commission