PREPARING FOR NEW MOBILITY

WRITING EFFECTIVE RESOLUTIONS

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Writing Effective Resolutions

Communities of all sizes realize disruptive transportation technology is not coming—it is here. Ridehailing and ridesharing companies like Uber, Lyft and Chariot are already developing new kinds of "micro-transit," while autonomous technology is on the streets of Las Vegas, Boston and Pittsburgh. Other smaller cities like Greenville, SC are laying the groundwork for partnerships and pilots.

Most cities and towns won't see fully autonomous cars and shuttles for several years, however, there are critical steps communities need to take NOW. Like any disruptive innovation, transportation technology will yield both benefits (expanded access, lower costs, greater safety) and negative impacts (job loss, revenue loss for local governments).

Communities can prepare now to harness the benefits of technology while limiting risks. When transportation technology companies do make contact with contracts in hand, your community wants to have its goals, priorities, and expectations in place. Most communities use formal resolutions to communicate goals, add certainty to policy development, and initiate action within and among city departments.

The purpose of this White Paper is to help cities prepare in advance for autonomous technology by passing formal resolutions and setting in motion Smart Mobility Plans. The document covers:

- Terminology

- Benefits and risks associated with autonomous technology

- Common autonomous vehicle deployment phases

- How changing transportation technology affects governance

- Approaches for harnessing benefits while limiting risks

- Examples

- Developing resolutions – local context

- Conclusion and sample resolution language

The sample language and bullet points can also be used for presentations, policy papers, Comprehensive or Transportation Plan updates and memos. Much of the information is also helpful when drafting policy on other types of technology, including ridehailing/sharing services and smart city technology (e.g., Internet of Things (IoT) and sensors).

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Terms

Mobility is the overall system of moving goods and people within transportation networks. With technology, **mobility refers not only to modes, but also to navigation, vehicle technology, communications and transportation demand management.**

Disruptive Transportation Technology: New options for mobility that (1) are simpler, cheaper, more reliable, and/or more convenient than current systems; (2) are rapidly adopted by travellers; (3) impact broad markets (as opposed to niche markets); (4) exert significant economic impact; and (5) render supporting policy and legal frameworks obsolete.

Active modes: Active modes refer to walking, biking and other human-propelled devices. Increasingly, semi-motorized options, such as e-bicycles and rideables like skateboards, are used for first and last mile access to transit stations.

New Mobility: New Mobility is the application of technology for communications, new vehicle design, connecting people to transportation options, and driverless vehicles.

Mobility on Demand: Mobility on Demand are technology-enabled services that enable a rider to hail or schedule a ride.

Shared-Use Mobility: According to the Shared-Use Mobility Center, shared-use mobility describes transportation services that are shared among users, including public transit; taxis and limos; bike sharing; car sharing (round-trip, one-way, and personal vehicle sharing); ride sharing (car-pooling, van-pooling); ride-sourcing/ride-splitting; scooter sharing; shuttle services; neighborhood jitneys; and commercial delivery vehicles providing flexible goods movement.

Transportation Network Companies: A transportation network company (TNC) connects paying passengers with drivers who provide the transportation in their own non-commercial vehicles. There are many terms used to describe services either scheduled or on-demand from a phone or smart phone app. Ridehailing describes summoning a ride. Ridesharing or ride-splitting describes a ride where several separate riders share a trip. Pick up and drop off are optimized to shorten overall trip times.

Autonomous Vehicles (AVs): An autonomous vehicle (also known as a driverless or self-driving) is a vehicle that is programmed to navigate roadways without human operators. Vehicles include small pods, cars, trucks and transit vehicles. SAVs refer to shared autonomous vehicles that serve multiple riders.

Levels of autonomy: Many cars on the road already have some level of driverless technology. The industry describes five levels of autonomy: Level 1 (cruise control) to Level 5 (fully autonomous). The "hands-off "features seen in many new models, such as self-parking, are considered Level 2. Level 3 allows the driver to hand off operations, but must be alert to take over. Level 4 is self-driving under a wide range of circumstances, but monitors driver behavior and takes action to park if needed. Level 5 is fully autonomous with no steering wheel or on-board operator needed.

V2X: The technology supporting autonomous vehicles is varied and describes how the vehicles communicate with other vehicles and surroundings. V2X is the catch-all term to describe V2V (vehicle-to-vehicle), V2I (Vehicle-to-Infrastructure), V2P (Vehicle-to-Pedestrian) and V2B (Vehicle-to-Bicycle). Experts predict a mix of channels. For cities, V2V is the most simple since the technology and operations onus is on vehicle and transportation operators. V2I requires more from local governments in the shape of infrastructure upgrades, maintenance, and operations.

Getting Ahead of Change

Over the past 20 years, computer technology, the internet and mobile telephones have transformed almost every aspect of daily life, work and communications. Technology for transportation, has likewise changed how we plan, navigate and pay for travel (including vehicle ownership choices). Experts forecast even greater change with increased vehicle and ride sharing, seamless payment systems and autonomous vehicles.

The forecasts envision both positive and negative implications for local governments. The following table lists common predictions of both a Utopian future with benefits, and a Dystopian future with risk and negative impacts.

TOPIC	BENEFITS	RISKS
Pedestrians	Reduction in crashes since AVs automatically stop for pedestrians (also V2P – or Vehicle to Pedestrian technology).	Pedestrians will be highly regulated to avoid constant stop-and-go AV traffic.
Bicyclists	Reduction in crashes and increased bike-sharing options.	Attention to individual AV vehicles prioritizes road space for cars.
Cars	Reduction in car use and ownership with shared, autonomous fleets.	Increased car use as travelers eschew active modes and transit for the ease of AVs.
Transit	AVs feed more riders to transit.	Transit suffers as riders switch to shared-use ridesharing and AVs.
Streets	Excess street space can be converted to parks and open space.	Cities will need to invest heavily in street repair and maintenance to avoid false signals for AVs using roadways.
Parking	Shared AVs need fewer spaces and parking can be located in otherwise inconvenient locations.	AVs will clog streets as they circulate – using streets like parking. Higher VMT from cars circulating or relocating to distant parking.
Freight & Deliveries	Faster deliveries for on-demand retail and lower delivery costs.	Job losses. Sidewalk congestion with driverless delivery pods
Revenue	Cities can rethink revenue sources as gasoline tax remittances shrink. The new frameworks can include incentives for active and low impact modes.	Job losses. Loss of office and hotel taxes as drivers use vehicles for overnight trips and work. Loss of auto permits, tickets and parking.
Safety	Fewer collisions between cars and pedestrians and bicyclists.	AVs can be hacked. Ethical considerations for unavoidable crashes.
Equity	Travel options for mobility-impaired populations such as teenagers, the elderly. Greater options outside city centers.	Cars can be programmed to avoid certain situations and geographic locations.

Deployment Phases

Prior to full deployment, there are several different paths of how driverless cars and shuttles will make their way to local streets. To date, most autonomous car trials have been in testing on closed courses with limited public involvement. Increasingly, the race to market among auto and software companies has led to demonstrations where the public can see and even take a ride in a fully autonomous vehicle. Pilot programs follow where shuttles and cars operate with limited operations that mimic full deployment.

Initial tests and demonstrations tend to occur on private or closed campuses where a land owner controls the streets. Testing usually involves vehicle companies and their software partners, as well as research partners. Many observers believe driverless technology will advance first on highways with trucks, though drivers will be needed in the near term to navigate local streets.

There are several critical testing thresholds and advances: with and without an operator, with and without passengers, and operation on public roads. Once on public roads, the technology will advance from simple, linear, fixed routes to complex, on-demand service.

For localities, one critical question is governance during the phase where driverless cars share the road with driver-operated vehicles. This can include insurance requirements, determining fault, law enforcement and priority lane assignments.

In January 2017, Las Vegas, Nevada tested small driverless shuttles on public streets Image: City of Las Vegas

Governing Changes on the Horizon

While the exact steps to autonomous travel are not fully clear, it is helpful to forecast how changes in transportation could impact governance. We can already document trends and use this information to set policy.

- **Service privatization:** Private companies will increasingly supply transportation and transit as a service. Transportation Network Companies (TNCs) are still defining their revenue models, and unlike public transit purveyors, can cease operations of unprofitable routes.

- **Revenue changes:** Traditional revenues from automobile ownership (federal gasoline taxes, permits, local taxes, fees, parking) will continue to decline as mobility services replace individual car ownership.

- **Sensors & data:** Cities and town will see a surge in urban instrumentation (sensors, imagery, drones) that poses questions on (1) who owns the data, (2) who monetizes the data, (3) who analyzes the data, (4) who protects the data, and most importantly (5) how do we make better decisions on this data?

- **Public acceptance:** Autonomous travel will not scale beyond small campus circulators unless the public embraces the technology. Hence deployment will likely occur in carefully designed phases through pilot programs, testing and deployment in small steps.

- **Forecasting:** Governments will need to shift planning approaches. Currently, cities tend to extrapolate growth from current baselines and conventional travel demand forecast models. With fast-changing technology, cities need to shift to scenario-based planning to address governance for a future of unknowns and transitions.

- **Parking:** Cities are already reconsidering the amount of parking needed. Cities with long-term bonds dependent on parking revenue may need to monitor and reconsider repayment options. **Cities with parking facility proposals under development may need to rethink strategies where parking needs are immediate, but demand over the next 20 years is uncertain.**

- **Urban/Community Design:** Depending on the transit/car fleet mix, traffic flows and street use will dramatically change. Autonomous delivery pods will put pressure on sidewalk use and interaction with pedestrians. Concurrent technology disruption in retail, workspaces and small scale manufacturing further complicate the future of building design.

- **Active Transportation:** Even with safety benefits and collision avoidance technology, pedestrians and bicyclists will still experience heightened sense of apprehension when traveling among higher speed, heavier vehicles. There is also the chance pedestrians will be heavily regulated at crossings to avoid stop and go traffic.

- **Transit Oriented Development:** Generally reserved for larger transit systems, TOD in the form of smaller hubs can host access via shared-used mobility (bikes, cars, rides) and active transportation. These can be hubs within cities providing first/last mile access to stations or new hubs in smaller cities that provide economic and mobility options.

- **Shifting Infrastructure Demand:** Cities will need to monitor and manage expected shifts in parking, loading and traffic. Managing pick-up and drop-off along curbs is already an issue with TNCs in some cities. Likewise, AVs will free capacity on some streets, while potentially adding VMT to others.

Harnessing Benefits while Limiting Risks

Communities need to balance multiple goals—and risks—while navigating the uncertainties of emerging technology. Resolutions establish priorities for the interlinking aspects of community design and governance.

Resolutions can offer high level aspirations, or include detailed information on policy and programs. At the higher level, cities can include concepts such as the following:

Priority on People + Places: Discussions on driverless tend to focus on cars. To ensure autonomous technology does not result in a second generation of planning solely for automobiles, **cities should adopt a "People + Places First" framework for implementing transportation technology.**

Harmonizing multiple modes and technology: Cities and towns can establish a planning framework that coordinates how active transportation, transit, and emerging technology work together to improve mobility options and access.

Working with your State: The federal government has taken a relatively hands off approach to regulating autonomous technology (at least for now). States are falling along a spectrum from highly permissive to stricter management when it comes to allowing pilot projects.

Policy Development: Technology can render current language obsolete for policy, funding and legal constructs that guide transportation systems development and operations. Resolution language can identify priorities to guide policy development, new funding models, and contract negotiations. Language should also recognize the need to adapt as technology evolves and changes.

Managing Disruption: Cities must focus on transitions to mediate technology disruption's impacts, to promote the public interest, to support innovation, and to meet changing demand for travel and real estate.

Online retailers are seeking first/last mile delivery options, including door to door shipment using autonomous pods. Image credit: Lisa Nisenson

Examples

BEVERLY HILLS, CALIFORNIA

Mayor John Mirisch promotes autonomous vehicles for economic development, transit and creating a culture of innovation. On April 5, 2016 the Beverly Hills City Council adopted a resolution to create a program to test and deploy a fleet of driverless municipal vehicles.

Beverly Hills' program is unique in that the city is creating its own municipal fleet, which allows greater oversight and integration among affected Departments (e.g., parking, maintenance, services). The city's two page resolution is structured to list the city's goals, to launch a testing program, and to launch a public forum.

- The opening clause establishes the main service objectives: (1) address "first and last mile" connections to future Metro Purple Line stations; (2) increase mobility within the City; (3) relieve traffic congestion; (4) improve parking; and (5) create options for transporting senior citizens.

- The second clause emphasizes the role of education from the onset of the program.

- The resolution lists three program elements: (1) Direction to initiate an autonomous vehicle program, (2) Host a public forum with panels and vehicle demonstrations, and (3) Certification by the City Clerk.

Resource: The Beverly Hills California Autonomous Vehicle page with resolution on Autonomous Vehicle planning.

SHARED-USE MOBILITY CENTER POLICY DATABASE

The Shared-Use Mobility Center hosts a growing, comprehensive data base of policies, plans, and studies related to shared-use mobility and autonomous technology.

Resource: Shared-Use Mobility Center's Policy Database

http://policies.sharedusemobilitycenter.org/#/

AUSTIN, TEXAS

On March 2, 2017, Austin, Texas passed a resolution to launch a New Mobility plan to include shared, electric, autonomous vehicles and prepare the city to take a leadership role. The five page resolution is comprised of four main parts:

- A preamble with 22 statements describing Austin's readiness for a new mobility program and plan;

- Direction to the City Manager to develop the New Mobility EV/AV Plan and prepare the City to take a state/national/global leadership role;

- Detailed plan components to include (1) opportunity to evolve with future technological advancements; (2) creating an executive position to act as Chief Officer of EV/AV transportation services; (3) Measure of savings and increased access to transportation options; (4) list of next steps and targets; (5) resources needed and potential funding options; (6) safety considerations; and (7) measurable interim greenhouse gas reduction targets to support the goal of reaching net zero community-wide greenhouse gas emissions by 2050.

- A deadline for plan submission by June 15, 2017.

Resource: Austin Texas 'New Mobility/Autonomous Vehicle Solution' resolution

STATE LEGISLATION

The National Conference of State Legislatures tracks enacted state legislation.

Resource: Autonomous Vehicles, Self-Driving Vehicles page

Developing Resolutions – Local Context

Resolutions will vary by community and what stage you are in the process of testing and adopting transportation technology. Resolutions can work for communities of any size or location. This section recommends "menus," with sample language in Appendix A.

For communities just getting started: In general a Resolution will summarize (1) why it is important to initiate activity, (2) a set of locally important goals, (3) initialize activity such as a working group, public outreach program and/or a program, (4) dates. Decision maker approval signals policy and resource dedication (usually staff time) for programs.

For communities hosting tests and pilot programs: For communities wishing to attract a test or pilot program, the resolution will (1) summarize the purpose for attracting a test such as economic development or mobility gains, (2) make the case for testing/pilot readiness and resources, (3) select and convene a workgroup, (4) hire consultant/dedicate staff to shape a proposal and/or scope of work, and (5) develop a program to conduct and possibly scale the test or pilot. Decision maker approval shows dedication to working with stakeholders that can include autonomous vehicle makers, Universities and land owners with test-ready roadways.

Communities preparing for technological disruption: This type of resolution frames a process for getting ahead of technology to harness benefits while limiting disruptive impacts. The resolution will (1) state the promise and peril of emerging transportation technology, (2) list local priority areas to exploit for benefits and manage for risks such as jobs or congestion management, (3) establish a process to align plans and policies, (4) signal changes needed in funding, revenue, budgeting to meet changing conditions, and (5) set deadlines. Decision maker approval establishes community priorities and directs Departments to work together in setting policy and programs. This type of resolution also can be used to prepare the public for coming change.

Communities signaling public interest and financial expectations: The resolution recognizes the investments required for safe, effective transportation. **Cities should not be required to underwrite the entire portfolio of investments such as broadband, street maintenance, and technology.** This resolution will (1) establish the public interest in public infrastructure and transportation, (2) recognize the growing public-private nature of transportation and transit, (3) list expectations for data, infrastructure finance, and operations/maintenance, and (4) initiate a Smart Mobility plan to coordinate activity.

Conclusion

Driverless technology is already serving travelers on local streets around the world. However, there are still many unanswered questions related to safety, liability and the ethics involved for unavoidable crashes. This places local governments in an uncomfortable position of setting policy for technology and adopting technology at the same time.

Local governments are also expected to frame today's policy with uncertain trajectories and disruptive change. While daunting, the best path in planning for change begins with establishing community priorities. Resolutions, created with the larger community, initiate the process. Appendix A presents sample Resolution statements for a variety of topics. Cities can adopt or adapt model language.

Finally, **new mobility is not about technology. It is about leveraging technology to move people and goods in ways that are safer, more efficient and more enjoyable than systems we now have in place.** To that end, walking and bicycling are still the original on-demand technology that deliver multiple benefits.

APPENDIX A

Model Resolutions and How to Use this White Paper

Resolutions have two main parts: (1) a preamble with clauses building a case for action leadings with "WHEREAS" and (2) operative clauses that direct action.

The language provides background information. Even if you are not interested in developing a resolution at this time, the sample language tees up conversations you need to start with the community, colleagues and elected officials who will eventually vote on a resolution.

The language in this White Paper is suggested. your community will likely see ways to adapt and customize statements. Not all sections may apply to your jurisdiction. Within each section, you may only choose to use a subset of sample clauses that fits your community. Because technology will evolve, we would appreciate your edits and additions over time to create a living document that meets community needs.

This White Paper covers many topics of near-term concern and planning. Other aspects of evolving transportation technology will require examination over time, such as liability, ethics, and intellectual property rights. Process-wise, states and local governments will need to track consistency and changes in modeling and analysis underlying planning and budget forecasts.

Opening Statements

Why? The opening section establishes the context for taking action on technology and mobility. This can include opening statements recognizing:

- Existing mobility partnerships.

- Reference to previously-adopted resolutions, policies and programs (e.g., Vision Zero, Complete Streets, Technology plans).

- Research and studies pointing to new mobility.

- New mobility as a strategy to address local challenges such as congestion relief or first/last mile solutions.

- Support for sustainability and resilience.

- Ties to economic opportunities, job growth, and the local technology sector.

- The need to get in front of technology to lower disruptive impacts, manage change and create opportunities for everyone in the community.

- Desire to allow city codes and ordinances to evolve and adapt to changing technologies.

Core Areas

PEOPLE + PLACES FIRST

Why? Vehicles don't make places, people do. While new technology promises mobility improvements, conversations can quickly focus only on technology and individual vehicles. Staking a priority on livable communities sets the tone for policy, planning and partnerships with transportation providers.

Sample clauses beginning with whereas:

- Community livability depends on places designed for people, interactions and connection to place.

- Mobility encompasses transport of people, goods, and opportunity.

- Access to reliable, affordable, efficient transportation is fundamental to success as a community, its businesses, residents and visitors.

- Active transportation, enhanced transit, and new technologies expand transportation choice to everyone in the community.

- Community investments in active transportation, walkable community design and trails create powerful economic, health and placemaking dividends.

PUBLIC INTEREST

Why? More private companies and public-private partnerships (P3s) will provide transport services as technology advances. These services rely on publicly-owned and maintained streets, highways, sidewalks and curbsides. Services will also generate data and information from (and about) the general public. Likewise, private companies have a right to keep critical business information private. Staking a position on the public's interest promotes the best use of publicly-financed and owned assets while recognizing legitimate business interests and the innovation process.

Sample clauses beginning with whereas:

- Transportation of all kinds uses public rights-of-way that serve the greater public: residents, businesses, visitors and government.

- The public infrastructure supporting mobility is governed and maintained in the public interest.

- Private companies and public-private partnerships will play a larger role in the transportation system.

- Local governments will need to balance requirements to promote the public interest in ways that do not stifle innovation.

- As financial and revenue models shift with innovation and technology, new funding, revenue, and payment systems must be sufficient, fair, transparent, efficient and sustainable.

- When negotiating use of public rights-of-way with private companies, the public interest takes priority with respect to safety, data, revenue (current and future), equitable service, and service programming.

- Software programs for autonomous vehicle tradeoff scenarios must take the public interest in mind, particularly for the most vulnerable travelers in the public right-of-way.

- As data becomes more important to monitor service and infrastructure, the public retains a right to make data publicly available for analysis and forecasting.

SAFETY

Why? Technology, particularly autonomous, holds both safety opportunities and concerns. Communities can promulgate a guiding framework to improve safety and enact safeguards. Communities can customize clauses by referring to local statistics, for instance automobile crash-related incidents.

Sample clauses beginning with whereas:

- Autonomous technology can substantially reduce the 38,000 deaths per year related to improper road design, human error, distracted and drunk driving that leads to automobile crashes.

- New technology can help cities meet "Vision Zero" goals for eliminating roadway deaths.

- The testing and piloting phases for deploying autonomous technology must be designed with strict performance standards to be met before expanding deployment.

- Street and land use design, coupled with technology, can minimize conflicts between vehicles and other travelers on or bicycles.

- Effective planning will consider mixed traffic where driverless vehicles and cars with drivers will operate simultaneously.

- Law enforcement procedures related to operations, searches, and impoundment will change with autonomous technology for driverless cars, drones, and delivery pods.

Mobility Themes

MOBILITY

Why? Mobility is a fundamental ingredient to economic, social, professional and community success. As options grow, statements on community priorities set a course for effective policy.

Sample clauses beginning with whereas:

- Transportation connects people and goods physically, socially, and economically.

- Mobility includes movement of goods people and opportunity.

- Shared-use mobility through car sharing, bicycle sharing and ride sharing is already expanding mobility options with healthy options and lower impacts to the overall transportation system.

- As the portfolio of modes, services and infrastructure changes with technology, community priorities include (1) infrastructure investments that deliver multiple benefits, (2) service expansion to areas with transportation gaps, (3) design that maximizes public space and can flex over time with technology changes.

- A robust market of public, public-private and private transportation providers is essential to deliver reliable, equitable and sustainable service at optimal, fair costs.

MOBILITY PRIORITIES

Why? Early discussions on technology center on individual cars. However, **congestion, parking demand and costs will continue if we only swap cars with drivers with cars without drivers.** While cars will still play a big role in mobility, communities can prioritize active modes and transit systems that deliver multiple benefits.

Sample clauses beginning with whereas:

- Public transit is the first and largest asset for shared-use mobility.

- A transit-first policy for shared-use and autonomous technology makes the most efficient use of existing public infrastructure.

- Active modes and transit are proven strategies to limit congestion while enhancing the economic value of place.

- Active and transit modes lower vehicle miles traveled and the associated costs of wear-and-tear, fuels and greenhouse gas emissions.

- Shared-use and autonomous technology hold promise for "first/last mile" feeds to higher capacity transit such as rail and bus rapid transit.

- According to a study by the Organization for Economic Cooperation and Development (OECD), fleets of shared, self-driving vehicles could remove up to 90 percent of vehicles on city streets and 80 percent of off-street parking.

- Shared-use and autonomous technology holds promise for more efficient delivery and freight movement for letters, packages and goods of all sizes.

- Shared-use mobility and ridesharing can improve service and lower costs of providing paratransit services.

SEAMLESS MOBILITY SYSTEMS

Why? Technology promises more convenient payment, access and travel. "One card" payment allows users to pay for all modes with one card. Seamless payment also helps knit together separate modes to create convenient trip planning, transfers and wayfinding. Statements can elevate the importance and priority of investing in seamless payment and mobility systems.

Sample clauses beginning with whereas:

- New technology will improve the transportation experience with seamless payment and transfer among modes.

- Technology can make transfers among modes and routes less cumbersome and time consuming, expanding transit's convenience.

- "One card" systems allow convenient payment for all modes such as bicycle and car share, parking, shared rides, and all modes of transit.

- Seamless payment systems must incorporate payment for the un- and underbanked community without access to credit and debit cards.

- Programs must be developed to overcome traditional barriers to seamless systems, particularly low income communities and vulnerable populations.

Planning

PLANNING FOR CHANGE

Why? Technology is already changing mobility in our communities. Emerging technology, especially autonomous vehicles, is expected to radically change systems, vehicles, employment, and investment decisions. Like any change, there will be benefits and downsides. Planning that gets ahead of disruption will help communities vision, plan and set strong policy.

Sample clauses beginning with whereas:

- Technology is rapidly changing transportation, freight movement and mobility options.

- Technology advances pose both risks and benefits to conventional transportation systems including congestion, infrastructure investments and jobs.

- Changes in mobility will disrupt local mobility-related sectors and jobs including taxis and livery services, public transit, delivery services, and trucking.

- Federal, state, regional and local governments, as well as their partners can choose policies, pilot programs, civic engagement and other activities to harness benefits while limiting risks.

- Communities will need new models of flexible street design and land use regulations as demand changes.

- Shared-use and autonomous technology have the potential to attract riders from public transit and active modes.

- Small autonomous delivery pods pose new demand on already crowded sidewalks.

BUILT ENVIRONMENT

Why? Transportation and land use are inexorably linked. Changes in technology are already forcing changes to land use and infrastructure demand. Competition for on-street parking, sidewalk and curb space will grow, forcing local managers to allocate, regulate and price rights of way in different ways.

Sample clauses beginning with whereas:

- Autonomous vehicle communications systems are still in early stages of development.

- Vehicle-to infrastructure communications place a higher burden on local governments than vehicle-to vehicle systems in the form of infrastructure planning and maintenance.

- Shared-use mobility and increases in urban living are increasing the competition for space on streets, sidewalks, curbsides and plazas.

- Cities are introducing new policies related to parking including pricing, parking location and the amount of parking required for new projects.

- Automated vehicles are predicted to change demands for parking. Local policies and plans will need to track changes and respond continuously to meet changing market conditions.

- Communities will need to fairly and effectively reallocate sidewalk and curb space for mobility, utilities, amenities, deliveries, business uses, and emergency response.

- Access for emergency responders and safe, convenient travel for pedestrians are the top priorities for sidewalk design and use.

- As technology promises to reduce the number of vehicles, new street design options can reallocate space for public use, minimize vehicle-pedestrian conflicts and efficiently move people and goods.

- New mobility creates new opportunity for mobility hubs that convene multiple transportation options in one place.

INTERCONNECTED MUNICIPAL PROGRAMS

Why? Planning in Departmental silos rarely yields great community design. As technology forces changes in transportation, land use, economic development and other sectors, set a course for enterprise-wide implementation up-front. Communities can customize by referring to current work and/or affected Departments and stakeholders.

Sample clauses beginning with whereas:

- Transportation programs span all levels of governance at the local, regional, state and federal levels of service.

- Every aspect of the municipal enterprise supports, and is supported by, mobility and transportation investment.

- Fast-moving technology advances require new tools for forecasting, goal setting and budgeting as conventional models and assumptions become obsolete.

Governing

GOVERNING & ETHICS

Why? Technology is not foolproof and poses new areas of risk and trade-offs. With autonomous driving, vehicles are programed ahead of time using code to anticipate events; currently humans use judgement to react in real time. In many cases this will save lives, but poses questions about which lives are protected when harm is unavoidable.

Sample clauses beginning with whereas:

- New technology will require an experimental approach that includes testing, metrics, monitoring, iteration and continuous improvement.

- A variety of issues will need to be addressed including, but not limited to, insurance requirements, Americans with Disabilities Act (ADA) accessibility, driver qualifications, permitting and vehicle inspections.

- Emerging technology requires reassignment of liability and responsibility.

- Public safety, in particular to travelers outside of vehicles, remains the top priority when testing and deploying autonomous vehicles.

DIGITAL RESILIENCE

Why? Communities can design programs to prevent and quickly recover from digital attacks. Attacks can be on the system itself or intrusion into the privacy of users.

Sample clauses beginning with whereas:

- User security is the top priority for transportation technology.

- System security shall be designed to prevent attacks to the extent possible, create agile backup systems, and recover quickly when outages and attacks occur.

- Data on the traveling public shall balance privacy and security with open, transparent and usable formats for data sharing and open source use.

- Active transportation modes are a low cost approach to "hackproof" mobility.

FINANCIAL

Why? Municipal funding and revenue models based on car ownership will shrink further with increased shared-use mobility and autonomous transit. States, regions and cities will need to determine new models of revenue replacement to build, upgrade, maintain and operate the public infrastructure on which these new public and private modes depend.

Sample clauses beginning with whereas:

- Shifts in mobility affect funding, financing and revenue models for transit, infrastructure, transportation and goods movement.

- Proper pricing is key to sustainably funding infrastructure, fairly compensating operators and service providers, and creating incentives to manage a successful transportation system.

- Shared-use and autonomous mobility are reducing car ownership, which in turn changes demand for street capacity and parking.

- Transportation Network Companies and other private transportation service providers will increasingly be the primary point of revenue collection for mobility services.

- Assumptions, design and financing for contemporary automobile-related infrastructure, such as parking structures and road expansions, are no longer secure long term public investments.

- As technology creates new demands on streets, sidewalks, curbsides and other public rights of way, cities can recognize new avenues for assessing value and related revenue streams.

- Private service providers that rely on well-maintained public infrastructure will need to play a larger role in funding, operations and maintenance.

CIVIC ENGAGEMENT

Why? Highly technical topics should not be left to engineers, but opened to the entire community of mobility users and stakeholders. New mobility and technology will expand options to users with limited choices such as the elderly, handicapped and teens. Maturing mobility systems are now expanding to suburban and rural areas bringing car/bike share and ridesharing benefits to wider audiences. Communities can customize programs by referring to better links to local Universities/colleges, campuses and other trip generators.

Sample clauses beginning with whereas:

- The public, businesses and visitors are critical users of the transportation system in the best position to provide comments on infrastructure, technology and service.

- The fast pace and unknown nature of emerging transportation technology requires scenario-based planning.

- New mobility systems offer expanded options for community members limited by age, handicap, geography and access to transportation.

Actions

The second section of a resolution includes directives for action, though cities and towns can also use resolutions to state an opinion or require further monitoring or research. In general a mayor, council or commission will direct the city, county or township management to initiate action and specific activities with a heading, "BE IT RESOLVED"

Examples for action include:

- **Delineation of priorities** – the resolution can communicate priorities in advance of taking more formal policy or program steps.

- **Initiate forums** - The resolution can call for a series of forums or strategy development workshops to assess the community's interest, readiness, and acceptance of driverless technologies.

- **Establishing a Work Group or Task Force** – the resolution can call for a task force to study the status, opportunities and risks of emerging technology, as well as potential partnerships and pilots programs. The task force can be internal or with external partners.

- **Inter-Departmental Action** – the resolution allows decision makers to direct separate Departments to work and allocate resources together.

- **Policy** – the resolution can initiate policy development for emerging technology. This can include shared-use mobility, planning for autonomous vehicles, and/or working with companies to test new technology for existing transit systems (e.g., smart phone apps, real time information, seamless payment systems)

- **Specific studies, plan updates and public engagement processes** – A resolution can initiate research, policy development, new programs or a public engagement process.

- **Smart Mobility Plan** - Initiate an overarching Smart Mobility plan to coordinate all facets of mobility, technology and finance/revenue now scattered across multiple Departments and regional agencies. This can help leverage resources and potential funding sources needed to adapt legacy programs and infrastructure.

- **Pilot programs** – the resolution can initiate analysis and recommendations on pilot project(s) in the city or region.

- **Deadlines** – Resolutions that direct specific reports or action should include deadlines.

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