TRAVEL					
CAV Impact Area	**Example Linkage to Metropolitan Washington Region Goals/Objectives**	**Opportunities**	**Risks**	**Considerations for Draft Principle Language**	**Applicable Draft TPB CAV Principles**
					Any deployment of CAVs in the National Capital Region should…
Access	• Fair access/mobility for persons with accessibility needs • Interconnected multimodal transportation system that provides convenient access with reduced automobile reliance • Comprehensive range of choices for regional travelers • Accurate and user-friendly real-time transportation system info available to all regardless of traveler's mode or language	• Increased mobility options for people who do not have the ability to drive • Avoid limitations of human drivers	• Exclusion of people from CAV zones • Ignoring accessibility/ADA needs	• Deployment of CAVs in the region should be done only in ways that maintain or increase accessibility and mobility options for all • Infrastructure design accommodates access for all	• #2 – increase accessibility and mobility options for all, in both design and operations. • #6 – ensure CAVs' benefits are available equitably to all people in the region.

TRAVEL					
CAV Impact Area	**Example Linkage to Metropolitan Washington Region Goals/Objectives**	**Opportunities**	**Risks**	**Considerations for Draft Principle Language**	**Applicable Draft TPB CAV Principles**
					Any deployment of CAVs in the National Capital Region should…
Active Transportation	• Convenient bicycle and pedestrian access • Reduced auto reliance in the regional core/activity centers	• Lower car ownership may = more active transportation • Repurposing parking space for active uses	• Tech limitations/glitches threatening B&P safety • Exclusion from CAV zones • Mix of CAV operations with pedestrians and bicyclists	• Deployment of CAVs in the region should be done only in ways that maintain or increase availability of B&P infrastructure, and safety of bicyclists and pedestrians	• #2 – increase accessibility and mobility options for all, in both design and operations. • #3 – maintain and enhance bicycling and walking in the region.
Public Transportation	• Reduced auto reliance in the regional core/activity centers	• Operational benefits of technology, especially connectivity (e.g. TSP) • Last-mile shuttles • Repurposing parking space for transit uses	• Facilitating low density living may reduce transit ridership • Increased congestion/ VMT/ emissions • Negative spiral of transit revenues and service levels	• The region will maintain priority for transit, and CAVs will have to live within that prioritization of transit; take advantage of CAV technologies to expand transit services	• #2 – increase accessibility and mobility options for all, in both design and operations. • #4 – bolster the priority and provision of transit.

TRAVEL					
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					Any deployment of CAVs in the National Capital Region should…
Goods Movement	• The Washington region will be among the most accessible in the nation for international and inter- regional goods movements	• Economic benefits of freight efficiency • Addressing driver shortages • Efficiencies in freight delivery parking (ability to find spaces)	• Jobs impacts • Net increase congestion/ VMT/ emissions • Last-mile freight delivery vehicles using/crowding pedestrian infrastructure	• The region will maintain its commitment to congestion management and reduction of VMT per capita • CAV freight as an enabler of livability • Work for efficiencies in freight movement that address urban space limitations • Improve the safety outcomes of freight vehicle movement	• #1 – increase the safety of everyone on or near transportation facilities. • #9 – ensure freight and goods movements that help minimize disruptions, and help enable livability of the region's communities.

TRAVEL					
CAV Impact Area	**Example Linkage to Metropolitan Washington Region Goals/Objectives**	**Opportunities**	**Risks**	**Considerations for Draft Principle Language**	**Applicable Draft TPB CAV Principles**
					Any deployment of CAVs in the National Capital Region should…
Safety	• Enhanced safety through effective enforcement of traffic/motor carrier laws, and appropriate safety features in facility design	• Increasing safety by reducing driver error • Avoid visibility/blind spot issues	• New challenges stemming from new technology; glitches • Mix of old and new vehicle technologies • Ensuring CAVs perform "as promised" • Failures of detection systems in detecting all road/infrastructure users	• All aspects of safety must be maintained or improved. • Reduce fatality and serious injury crashes – we want CAV to be a tool to do this	• #1 – increase the safety of everyone on or near transportation facilities. • #10 – bolster operational effectiveness, emergency and incident response, and safety of the transportation system. • #13 – include investment in traffic operations centers to ensure timely information is available to travelers, and travel conditions are reliable and safe. • #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response.
Travel Behavior	• Reduction of vehicle miles traveled (VMT) and increased non-auto mode share • Convenient bicycle and pedestrian access • Comprehensive range of choices for regional travelers	• Shared vehicles (if CASE) may reduce auto ownership, facilitating non-auto modes • CAVs may bolster opportunities for MaaS	• Increased travel due to willingness to travel further • Increased travel due to "zombie" ZOV VMT	• Ensure that CAVs do not cause unpaid externalities • CAVs need to pay their own way for the impacts they cause, plus mitigate equity impacts	• #2 – increase accessibility and mobility options for all, in both design and operations. • #5 – prioritize the reduction of vehicle miles of travel.

SOCIAL					
CAV Impact Area	**Example Linkage to Metropolitan Washington Region Goals/Objectives**	**Opportunities**	**Risks**	**Considerations for Draft Principle Language**	**Applicable Draft TPB CAV Principles**
					Any deployment of CAVs in the National Capital Region should…
Equity	• Reasonable access/cost for all in region • Accurate and user-friendly real-time transportation system info available to all regardless of traveler's mode or language • Users of all modes pay an equitable share of costs	• Reduce human bias in providing transportation. • Shared vehicles (if CASE) may improve equity through decreased per mile costs, especially for non-auto owners	• Expense of CAV technology may exacerbate inequality. • Market-driven biases in CAV availability • Negative spiral of transit revenues and service levels	• Deploy CAV only in ways that increase equity • Special efforts to provide CAV benefits to underserved communities	• #2 – increase accessibility and mobility options for all, in both design and operations. • #6 – ensure CAVs' benefits are available equitably to all people in the region.
Employment / Economic Development	• Economically strong regional core and activity centers	• Economic development opportunities of new technology	• Jobs impacts • Revenue impacts, especially transit	• Emphasize deployment of CAVs that have positive economic impacts, and that increase equity • CAVs need to pay their own way for the impacts they cause, plus mitigate equity impacts (new transportation revenue models e.g. VMT tax)	• #12 – bolster revenues and minimize costs for infrastructure and operations, and not cause undue costs for other modes of travel or for the region's communities.
Environment	• Meet federal clean air/water and energy conservation mandates • Protect sensitive locations from adverse traffic/development impacts • Reduction of VMT and increased non-auto mode share • Serve as a model for the protection and enhancement of natural, cultural, and historical resources	• Shared vehicles (if CASE) may reduce auto ownership, facilitating less polluting forms of travel	• Net increase in congestion/ VMT/ emissions • Facilitating low density living may increase sprawl, impacting protection of sensitive areas; and degrading regional ecosystems	• CAVs must be deployed in the region in ways that will help us meet our environmental goals • Electrification (CASE vehicles) is critical	• #5 – prioritize the reduction of vehicle miles of travel. • #7 – bolster regional environmental and land use objectives, including prioritizing shared vehicles and advancing decarbonization of the transportation system.

SOCIAL					
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					Any deployment of CAVs in the National Capital Region should…
Land Use / Urban Form	• Regional coordination of land use and transportation planning • Economically strong regional activity centers with a mix of jobs, housing, services, and recreation in a walkable environment	• Repurposing parking may benefit land use/urban form	• Facilitating low density living may increase sprawl • Demands that human accommodate CAVs rather than the other way around	• The region will maintain its commitment to land use and urban form goals • CAVs need to support and promote human values, uses, and participation in urban form, not the other way around of humans having to change or limit their behavior in order to accommodate CAVs	• #1 – increase the safety of everyone on or near transportation facilities. • #2 – increase accessibility and mobility options for all, in both design and operations. • #3 – maintain and enhance bicycling and walking in the region. • #4 – bolster the priority and provision of transit. • #5 – prioritize the reduction of vehicle miles of travel. • #7 – bolster regional environmental and land use objectives, including prioritizing shared vehicles and advancing decarbonization of the transportation system. • #9 – ensure freight and goods movements that help minimize disruptions, and help enable livability of the region's communities.

ORGANIZATIONAL					
CAV Impact Area	**Example Linkage to Metropolitan Washington Region Goals/Objectives**	**Opportunities**	**Risks**	**Considerations for Draft Principle Language**	**Applicable Draft TPB CAV Principles**
					Any deployment of CAVs in the National Capital Region should…
Data Coordination	• Full use of future advancements in transportation technology	• Robust data could help transportation planning and operations	• Cybersecurity • Challenges of handling big data – who, how, who pays? • Ensuring CAVs perform "as promised" • Ensuring data privacy of users	• Data from CAVs should be used in ways that bolster safety and operations, maintain privacy, and do not cause undue increases in costs • Public agencies must have access to CAV data needed for full and effective transportation planning and operations; transparency of data	• #8 – ensure security (including cybersecurity) and privacy. • #11 – bolster interjurisdictional coordination and technical interoperability among TPB member agencies. • #13 – include investment in traffic operations centers to ensure timely information is available to travelers, and travel conditions are reliable and safe. • #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response.

ORGANIZATIONAL					
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					Any deployment of CAVs in the National Capital Region should…
Emergency Preparedness	• Improved management of weather emergencies/major incidents	• Deployment of driverless vehicles in dangerous situation, avoid danger to human drivers	• Uncertainty on what CAVs will do in emergencies • Increased congestion • Cybersecurity • Dangers and vulnerabilities of electric and communications infrastructure and batteries (e.g. electromagnetic pulse, battery fire hazards, electrocution hazards for first responders)	• Use information generated by CAVs to improve emergency preparedness planning	• #8 – ensure security (including cybersecurity) and privacy. • #10 – bolster operational effectiveness, emergency and incident response, and safety of the transportation system. • #11 – bolster interjurisdictional coordination and technical interoperability among TPB member agencies. • #13 – include investment in traffic operations centers to ensure timely information is available to travelers, and travel conditions are reliable and safe. • #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response.

ORGANIZATIONAL					
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					Any deployment of CAVs in the National Capital Region should…
Funding	• A fiscally sustainable transportation system • Establish an enhanced funding mechanism for the region's growing mobility and accessibility needs	• Willingness to invest in infrastructure improvements to realize CAV benefits	• New infrastructure demands/costs outstripping ability to serve those demands	• CAV deployment must be done in ways to generate sufficient revenue to cover both infrastructure and equity impacts costs	• #12 – bolster revenues and minimize costs for infrastructure and operations, and not cause undue costs for other modes of travel or for the region's communities.
Infrastructure	• Adequate management of existing infrastructure assets	• Willingness to invest in infrastructure improvements to realize CAV benefits • Regional collaboration on infrastructure improvements for CAV	• New infrastructure demands outstripping ability to serve those demands • Vulnerabilities to infrastructure not in a state of good repair (even line painting)	• CAV deployment must be done in ways to generate sufficient revenue to cover both infrastructure and equity impacts costs • Regionally collaborate on infrastructure actions	• #12 – bolster revenues and minimize costs for infrastructure and operations, and not cause undue costs for other modes of travel or for the region's communities. • #15 – include robust efforts by TPB and member agencies to keep abreast of evolving technology to enhance support of TPB's goals.

ORGANIZATIONAL					
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					Any deployment of CAVs in the National Capital Region should…
Operations	• Reduction in congestion and congestion-related incidents • Improved reliability/predictability of operating conditions • Full use of future advancements in transportation technology • A user-friendly, seamless system with on-demand, timely travel information to users, and a simplified method of payment	• Reduced operational risks and uncertainties • Regional collaboration on connectivity, data sharing • More timely data for TMCs provided by CAVs improving response times	• New uncertainties, perhaps due to technical glitches • Infrastructure and vehicle vulnerabilities to failures due to attacks	• CAV deployment must be done in ways to improve operations and facilitate efficiency and safety • Regionally collaborate on operations considering CAVs	• #8 – ensure security (including cybersecurity) and privacy. • #10 – bolster operational effectiveness, emergency and incident response, and safety of the transportation system. • #11 – bolster interjurisdictional coordination and technical interoperability among TPB member agencies. • #13 – include investment in traffic operations centers to ensure timely information is available to travelers, and travel conditions are reliable and safe. • #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response.

ORGANIZATIONAL					
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					Any deployment of CAVs in the National Capital Region should…
Reliability	• Improved reliability and predictability of operating conditions	• Operations may be more reliable and predictable; reduce human error	• Systemic glitches/ failures may have greater impacts	• CAV deployment must be done in ways to improve operations and facilitate efficiency and safety	• #8 – ensure security (including cybersecurity) and privacy. • #10 – bolster operational effectiveness, emergency and incident response, and safety of the transportation system. • #11 – bolster interjurisdictional coordination and technical interoperability among TPB member agencies. • #13 – include investment in traffic operations centers to ensure timely information is available to travelers, and travel conditions are reliable and safe. • #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response.

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					Any deployment of CAVs in the National Capital Region should…
Security/Privacy	• Full use of future advancements in transportation technology	• Increased operational information may increase security	• Cybersecurity • Breaches of privacy • Infrastructure and vehicle vulnerabilities to failures due to attacks • Dangers and vulnerabilities of electric and communications infrastructure and batteries (e.g. electromagnetic pulse, battery fire hazards, electrocution hazards for first responders)	• Every effort must be put forth to ensure security and privacy in the deployment of CAVs in the region • Understand and address vulnerabilities	• #8 – ensure security (including cybersecurity) and privacy.
Travel Forecasting	• Full use of future advancements in transportation technology	• Increased data may aid travel forecasting	• Uncertainties in timing and extent of CAV deployment in the future challenge the viability of travel forecasting	• The range of possible futures must be acknowledged and understood as much as possible	• #14 – make data freely available to TPB member agencies to enhance planning, operations, and emergency preparedness and response. • #15 – include robust efforts by TPB and member agencies to keep abreast of evolving technology to enhance support of TPB's goals.