Table 7: ACES Potential Scenarios: Impacts on Progress toward Planning Goals

	LRTP Goal	Slow Roll	Niche Service Growth	Ultimate Traveler Assist	Managed Automated Lane Network	Competing Fleets	RoboTransit
		Minimum plausible change - Nothing beyond currently available technology and investments already in motion is adopted. (Baseline for comparison)	*Innovation proliferates, but only in special purpose or "niche" AV zones, including retirement communities, campuses, transit corridors, urban cores, and ports.*	*CV technology progresses rapidly, but AV stagnates – 85% of vehicles have V2X capability by 2035 due to NHTSA mandate allowing DOTs to manage congestion aggressively.*	*Certain lanes become integrated with CV and AV – 50-60% of vehicles (75% of trucks) have automation capability for platooning in controlled settings.*	*Automated TNC-like services proliferate rapidly, but do not operate cooperatively. VMT doubles due to induced demand and empty vehicle repositioning.*	*On-demand shared services proliferate and integrate with other modes via cooperative data sharing, policies, and infrastructure.*
ACES Shares - 2035	*AVs – L2*	50 – 60%	50 – 60%	50 – 60%	30 – 40%	30 – 40%	30 – 40%
	AVs – L3	0%	0%	0%	20%	1%	0%
	AVs – L4	0% / 0%	1 – 5% / 1 – 5%	0%	1%	30%	30%
	CVs in Fleet	40%	40%	85%	75%	75%	75%
	EV Sales (urban/all)	15% / 5 – 10%	15% / 5 – 10%	15% / 5 – 10%	15% / 5 – 10%	85% / 85%	85% / 85%
	Shared Trips (urban/all)	20% / 5 – 10%	20% / 5 – 10%	20% / 5 – 10%	20% / 5 – 10%	85% / 85%	85% / 85%
1.	*Safety & Security*	Level 2 driver assist features (e.g. lane tracking, automatic braking) reduce fatalities and serious injuries.	Prevalence of AVs allows "Vision Zero" goals to be realized in AV zones. Level 2 features improve safety elsewhere.	V2V communications enable 80% reduction in crashes systemwide.	V2V communications enable significant (but less than 80%) reduction in crashes systemwide.	Automated fleets and V2V communications enable 80% reduction in crashes systemwide, including realization of "Vision Zero" in urban areas.	Automated fleets and V2V communications enable 80% reduction in crashes systemwide, including realization of "Vision Zero" in urban areas.
2.	*Maintenance and Operations*	Truck platooning is common on rural interstate highways.	Improvements to lane markings, pavement maintenance and new V2X infrastructure are concentrated in AV zones.	CV roadside units proliferate to cover all roads with V2I infrastructure.	AV-only lanes on rural interstates and urban expressways and separate freight corridors allow for safe, efficient and automated travel. Eco-signal corridors reduce congestion and emissions in urban cores. Cooperative use of CV data allows DOTs to improve network operations systemwide.	Suburban freight centers are interface between automated long-haul trucking and local delivery. Evenly distributed EV charging network serves fleets. Maintenance of lane markings and pavement improves for AVs. Restricted data sharing prevents optimization of road capacity, increasing congestion.	Suburban freight centers are interface between automated long-haul trucking and local delivery. Evenly distributed EV charging network serves fleets. Maintenance of lane markings and pavement improves for AVs. Cooperative use of CV data allows DOTs to improve network operations systemwide, nearly eliminating congestion.
3.	*Mobility and Connectivity*	Mobility services reduce car ownership near urban cores, while increasing travel by elderly and disabled populations everywhere.	Car ownership falls dramatically in AV zones as residents shift to local mobility services.	Public transit improves efficiency, competitiveness and customer service due to real-time pricing, universal trip planning and multimodal integration.	Mobility services reduce car ownership near urban cores, while increasing travel by elderly and disabled populations everywhere. Transit becomes less competitive with managed lanes.	Vigorous competition between mobility service providers drives many toward car-free lifestyles. Door-to-door, transportation as low as $0.20/mile is available in most contexts, outcompeting traditional transit.	Personal mobility becomes a commodity, integrating door-to-door and fixed guideway transit in urban corridors. Automated long-haul and local freight makes immediate consumption universal. Regions offer universal shared mobility services as low as $0.20/mile.
4.	*Economic Competitiveness*	Widespread use of real-time travel info reduces costs of congestion.	AV zones gain significant advantages from efficient transportation, leading to increased desirability and rising real estate values.	Near elimination of congestion through cooperative dynamic routing and pricing incentives improves economic productivity.	Reduced congestion and automated trucking improve economic productivity.	Costs of local travel and long-haul trucking plummet due to automation, increasing economic productivity. Induced demand offsets savings with congestion costs.	Near elimination of congestion through cooperative dynamic routing and pricing incentives, combined with driverless travel, dramatically improves economic productivity.
5.	*Community Livability*		Quality of life improves in AV zones, leading to concerns about equitable access to technology benefits outside niche areas.		Businesses locate outside of the urban core and people to move to the suburbs and exurbs near managed lanes.	Parking is converted to other uses in urban and suburban areas.	Parking is converted to other uses in urban and suburban areas. Walkable mixed-use development dominates in transit corridors.
6.	*Environmental Stewardship*	Electrification trend continues, decarbonizing the transportation sector and reducing emissions.			Automation of long-haul trucking reduces rail mode share and convenience of driving reduces transit mode share, increasing VMT and emissions.	Fleets use EVs exclusively, making 85% of urban VMT (plus 50% suburban and 5% rural) electric, greatly reducing emissions. Gains are offset by VMT increases.	Fleets use EVs exclusively, making 85% of urban VMT (plus 50% suburban and 5% rural) electric, greatly reducing emissions. Shared use reduces offsetting VMT gains.

Source: Adapted from FHWA, Scenario Planning for Connected and Automated Vehicles, November 6, 2017.