



Appendix E

CAAP Implementation Tables

Adaptation Actions Implementation Table

Action	Lead Division or Dept.	Implementation Timeframe
Cross-Cutting Adaptation Actions (CC)		
<u>AD-CC-1.1:</u> Engage with Cal OES, Santa Clara County Office of Emergency Management, and Valley Water and participate in planning and response coordination sessions related to climate hazards for the transportation sector.	System Safety & Security	Variable
<u>AD-CC-1.2:</u> Develop, update, share, and coordinate emergency management plans with VTA member agencies. Conduct outreach to clarify response elements of plans and highlight VTA's capabilities to support emergency response efforts within its service area, such as providing free rides to cooling and warming centers.	System Safety & Security	Near-Term
<u>AD-CC-1.3:</u> Review after-action reports from past evacuation efforts to identify targeted resiliency opportunities for communities in VTA's service areas and improve future evacuation efforts.	System Safety & Security	Near-Term
<u>AD-CC-1.4:</u> Establish and maintain contingency contracts with relevant suppliers who provide prioritized access to resources to enable more reliable and rapid access to services and supplies needed during an emergency response effort.	System Safety & Security	Variable
<u>AD-CC-1.5:</u> Maintain the organization, including staff roles and responsibilities, and procedures of the VTA EOC to respond to emergency situations which may require deploying maintenance and repair teams to locations prior to, during, or following a climate hazard event or as indicated in Incident Action Plans. Ensure the EOC is staffed and operated at a level proportionate to the emergency.	System Safety & Security	Variable
<u>AD-CC-1.6:</u> Develop climate hazard scenario-specific response plans with consideration of the unique set of circumstances related to each scenario and how they may affect VTA operations, power supply, and other considerations.	System Safety & Security	Mid-Term
<u>AD-CC-1.7:</u> Conduct emergency response exercises with both internal and external partners by inviting member agencies and other partners to join emergency management table-tops and full-scale exercises conducted by VTA and have VTA staff participate in drills and exercises being hosted by member agencies and other partners.	System Safety & Security	Variable
<u>AD-CC-1.8:</u> Develop training for VTA staff and customer service representatives to better manage concerns of riders and the broader community during climate hazard events.	External Affairs	Mid-Term

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-CC-1.9:</u> Improve digital infrastructure to better communicate emergency and service disruption information to riders, which may include a suite of actions, including the installation of electronic signage in trains, buses, and at VTA facilities that displays real-time information, enhancing SMS-based alerting capabilities, further leveraging mobile applications (such as the "VTAlerts" app), and including audible indicators, where feasible.	System Safety & Security	Mid-Term
<u>AD-CC-1.10:</u> In collaboration with member agencies, develop uniform methods to communicate to the public about the closure of bicycle and transit facilities and trails due to climate hazards or maintenance activities.	External Affairs	Mid-Term
<u>AD-CC-2.1:</u> Develop content for and install multilingual signage at stations to inform the public about VTA climate resilience initiatives and personal climate hazard preparedness.	External Affairs	Mid-Term
<u>AD-CC-2.2:</u> In collaboration with member agencies, educate community neighbors on how to prepare for and respond to climate hazards. For example, underscoring the importance of shade and hydration during extreme heat events, or the need for vegetation control to reduce risk of wildfire ignition and spread.	External Affairs	Mid-Term
<u>AD-CC-2.3:</u> Create a web-based dashboard that underscores vulnerability assessment findings and actions that can be taken to improve resilience to better inform riders and the broader community about adaptation-related needs that would be mutually beneficial for all parties that use or otherwise rely on VTA's transportation network.	External Affairs	Mid-Term
<u>AD-CC-2.4:</u> Leverage and potentially modify existing mobile applications (e.g., "VTAlerts" app), along with social media accounts, to inform the public on climate hazards (e.g., extreme heat, flooding), alternative routes, and climate resilience initiatives, and to provide real-time reports from the public to help VTA respond to a hazard event.	External Affairs	Mid-Term
<u>AD-CC-3.1:</u> Identify alternative transit routes and modes of transportation and develop protocols for service disruptions or temporary closures during climate hazard events (e.g., wildfire, flooding), ensuring effective communication with riders and VTA staff.	System Safety & Security	Mid-Term
<u>AD-CC-3.2:</u> Consider and fully understand all aspects of VTA's transportation network and how they will perform under evacuation scenarios (e.g., locations of chokepoints, expected roadway volumes and timing, potential evacuee characteristics, typical origin-destination numbers and patterns of travelers, capacity of roadways).	System Safety & Security	Variable

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-CC-3.3:</u> Enhance intermodal connectivity between different forms of transportation to provide multiple options for riders and VTA staff, which can include improving transfer facilities, developing multimodal hubs, and optimizing transit schedules to facilitate seamless transfers.	Operations	Long-Term
<u>AD-CC-3.4:</u> For any scheduled maintenance or repairs to improve safety and reliability within VTA's transportation network, continue to implement and expand efforts to ensure that riders can still efficiently get around. For example, VTA's Rail Rehabilitation and Replacement Program, which includes rehabilitation and replacement projects for overhead power wires, concrete panels, switches, rail, and special track work, also ensures that riders can still get around during these scheduled closures via bus bridges.	Operations	Near-Term
<u>AD-CC-3.5:</u> Bolster the capacity of VTA ACCESS Paratransit services to be prepared for potentially more frequent requests during future climate hazard events.	Operations	Mid-Term
<u>AD-CC-3.6:</u> Coordinate with member agencies to help identify roadways, bridges, and electrical signal equipment that may be damaged or deteriorating to help expedite repairs and ensure continued sustenance and minimal disruptions of VTA's bus and paratransit operations.	System Safety & Security	Variable
<u>AD-CC-3.7:</u> Expand bus, paratransit, and light rail staff and fleets to account for enhanced intermodal connectivity and projected future ridership, and to minimize disruptions to VTA's transportation network. Consider resiliency in decisions related to future fleet planning and facility master plans.	Operations	Mid-Term
<u>AD-CC-3.8:</u> Collaborate with member agencies and other regional transportation partners to establish, update, and maintain cooperative agreements and mutual aid protocols, which can facilitate resource sharing, alternative routing, and coordinated response efforts during emergencies.	System Safety & Security	Near-Term
<u>AD-CC-4.1:</u> Create an internal technical advisory group or task force to oversee all climate resilience efforts and support internal and external collaboration, outreach, and implementation of strategies. The group should include a representative from relevant VTA departments and will be responsible for leading implementation of adaptation projects through dedicated budget allocation and applications for grants and other external funding (e.g., FEMA BRIC grants). Additionally, the group will be responsible for data sharing throughout VTA and beyond.	Engineering & Program Delivery	Near-Term

Action	Lead Division or Dept.	Implementation Timeframe
<p>AD-CC-6.1: Update policies (e.g., Green Building Policy) and design manuals, such as VTA's CDT Manual and the Design Criteria Manual for Stormwater and Landscaping, to further include climate change considerations based on vulnerability assessment findings and other known risks, to ensure that investments made now increase system resilience and sustainability. Consider including climate-resilient design features such as special sealants and other materials on roadways to help prevent roadways from softening during extreme heat and specific pavement options to reduce the heat island effect of parking lots, where applicable and in coordination with Caltrans and others. Improve the building envelope performance by increasing insulation value, glazing performance, window shading, thermal breaks, cool color technology on exterior building finishes, and other voluntary reach codes identified for non-residential projects in CALGreen. Stakeholders should provide feedback so that updated policies and design standards are feasible, have buy-in, and will be implemented by staff and member agencies.</p>	Engineering & Program Delivery	Variable
<p>AD-CC-7.1: Monitor climate impacts on assets and operations, as well as resulting costs and economic impacts, to justify the need for climate adaptation strategy implementation. Determine data sources and streamlined tracking methods, as appropriate, for different assets, operations, and related departments (e.g., data collection tools, work orders, labor tracking systems, inspection routines) to contribute to regular reporting by monitoring items including, but not limited to: 1) rail temperatures and track alignment to identify patterns related to extreme heat; 2) storm events and related power shutdowns to understand service impacts; 3) ridership complaints related to hazard events and associated costs; 4) impacts of hazardous conditions (e.g., poor air quality from wildfire smoke) on VTA workers through missed work days, compensation claims, etc.</p>	System Safety & Security	Variable
<p>AD-CC-8.1: Conduct detailed, tailored vulnerability assessments specific to key individual assets and operations and develop a series of adaptation actions that can be taken over time based on changing conditions. This series of actions, also known as "adaptation pathways," establish specific triggers and evaluation metrics that lead into the next appropriate action that should be taken. This approach is intended to be flexible and easily modified as conditions change, climatic or otherwise.</p>	Engineering & Program Delivery	Variable

Action	Lead Division or Dept.	Implementation Timeframe
<p><u>AD-F-1.1:</u> Install cooling amenities in areas where they do not yet exist and where feasible, such as: hydration stations on station platforms and in maintenance areas to ensure riders and VTA staff have access to drinking water; additional seating under pre-existing shade platforms; additional shaded areas at park-and-ride lots, bike racks, and platforms; air conditioning in indoor waiting areas; and misters in outdoor waiting areas.</p>	Engineering & Program Delivery	Mid-Term
<p><u>AD-F-1.2:</u> Where feasible, increase shading and use heat-mitigating materials around VTA facilities, such as in park-and-ride lots, bus and paratransit stops, stations, transit centers, facility entry areas, pedestrian walkways, and bicycle facilities. For example, build bus shelters or plant trees to provide shaded areas where transit users can wait for transit in more comfortable conditions. Prioritize plantings in high-traffic areas and/or areas identified as lacking canopy tree cover according to local surveys.</p>	Engineering & Program Delivery	Near-Term
<p><u>AD-F-1.3:</u> Reduce wait times for transit service to reduce exposure to passengers during extreme heat events and poor air quality conditions during wildfires. This can be done by providing faster and more frequent service.</p>	Operations	Mid-Term
<p><u>AD-F-1.4:</u> Consider installing heat-reducing roofs or roof treatments such as green roofs, cool roofs, or using other high-albedo materials for VTA facilities, along with installing awnings on buildings and operator break rooms and ensuring buildings are well insulated, to help reduce cooling needs and costs and the urban heat island effect.</p>	Engineering & Program Delivery	Long-Term
<p><u>AD-F-1.5:</u> Pilot "cool pavement" projects that use lighter materials or lighter colored aggregate in asphalt paving mixes. Monitor progress of achieving potential benefits like reduced ambient air temperatures, reduced maintenance, and increased longevity. Pilot success should help determine the feasibility of this as a solution that could be brought to scale across park-and-ride lots that are not exposed to temporary flooding where permeable pavement should be installed instead.</p>	Engineering & Program Delivery	Variable
<p><u>AD-F-1.6:</u> Ensure light rail, bus, and paratransit fleets are equipped with thermal insulation coatings and tinted windows.</p>	Operations	Mid-Term
<p><u>AD-F-1.7:</u> Increase natural ventilation and passive cooling of facilities through changes in operation and positioning of doors and windows and installing additional vents or louvers.</p>	Operations	Near-Term

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-F-2.1:</u> Establish policies for when to perform zero-stress temperature adjustments based on temperature fluctuations, and stress newly installed and existing rail with a rail zero-stress temperature that is calculated based on projected temperatures for the lifetime of the rail, rather than on current or historic conditions.	Operations	Near-Term
<u>AD-F-2.2:</u> Develop official protocols for managing and protecting light rail operations during extreme heat events, such as frequent track walking inspections and adopting specific criteria for when to issue rail slow/stop orders to prevent or reduce overheating.	Operations	Near-Term
<u>AD-F-2.3:</u> Install sensors to indicate potential kinking and rail defects, which may include thermometers that can be remotely monitored (which can reduce operational rail costs associated with rail inspection requirements during hot weather), or motion sensors that can identify a thermal misalignment when it occurs and automatically halt trains.	Operations	Mid-Term
<u>AD-F-2.4:</u> Reduce risk of thermal misalignment through a suite of actions, which may include: replacing wood ties with concrete ties, which are heavier and more resistant to movement; reducing tie spacing, which provides additional weight to the track structure and increased lateral resistance because of increased exposure to shoulder ballast; re-tamping ballast to increase ballast density, which increases lateral resistance; and/or increasing the width of the ballast shoulder, which will increase lateral resistance.	Operations	Long-Term
<u>AD-F-3.1:</u> Prioritize nature-based solutions to address flooding. This may include coordination with other agencies to restore wetland and riparian habitats on floodplains to further slowdown the flow of floodwaters and hold soil in place. Additionally, this may also include drainage improvements, such as bioswales, bioretention basins, retention/detention ponds, incorporation of permeable surfaces, and improvements to culverts, as strategies for reducing peak stormwater flooding in locations where geotechnical conditions are appropriate and/or with adequate foundation/substrate. Choose low maintenance, non-invasive plant species. Improvements to drainage and stormwater infrastructure should be considered at park-and-ride lots, landscaping around VTA facilities, and along track in VTA's right-of-way, and in partnership with the County of Santa Clara and other agencies.	Engineering & Program Delivery	Mid-Term

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-F-3.2:</u> Armor subgrade and sub-ballast with riprap or other materials to prevent light rail track structure from weakening because of saturation or washout. This can be done as new substructure is being placed and/or when older ballast is replaced.	Operations	Mid-Term
<u>AD-F-3.3:</u> Where exposure to temporary flooding is prevalent, research and treat light rail system and track components, along with bus/paratransit stops and infrastructure components, with protective coatings or sealants to minimize the risk of potential rusting and promote stronger performance and longevity, where appropriate.	Operations	Mid-Term
<u>AD-F-3.4:</u> Where feasible, explore elevating electrical (e.g., substations), mechanical, and information technology (IT) equipment (including Data Centers, Backup Data Centers, SCADA rooms, and IDF and MDF networking closets) that are vulnerable to current and future flood elevations, such as those at Cerone Bus Division and River Oaks. Some considerations should include accessibility and safety (e.g., ensuring maintenance personnel can access equipment), importance to VTA's operations, elevation techniques and engineering design, and compliance with building codes and regulations.	Operations	Long-Term
<u>AD-F-3.5:</u> Install permeable pavement to minimize flood risk in park-and-ride lots that are exposed to temporary flooding, but also to reduce peak flows, lessen the strain on drainage systems, and recharge groundwater where it can be filtered naturally by the soil.	Engineering & Program Delivery	Mid-Term
<u>AD-F-3.6:</u> Develop and practice a suite of post-wildfire debris removal strategies, in collaboration with others, to reduce the severity of flood-after-fire and other debris flow events, including replanting lost vegetation immediately after a wildfire event, establishing and continuing to maintain barriers in areas determined to be susceptible to future debris flows, and employing best-available data to predict future debris flows.	System Safety & Security	Near-Term
<u>AD-F-3.7:</u> Procure additional and appropriate temporary flood protection barriers for different types of assets (e.g., sandbags, Tiger Dam™, AquaFence®) to be better prepared during a temporary flood event. Where feasible and appropriate, explore more permanent forms of wet or dry floodproofing for facilities.	Operations	Mid-Term

Action	Lead Division or Dept.	Implementation Timeframe
<p><u>AD-F-3.8:</u> Collaborate with member agencies and other partnering organizations to encourage and expedite shoreline protection and restoration projects (e.g., South San Francisco Bay Shoreline Project, led by the Santa Clara Valley Water Agency) to reduce the overall vulnerability of VTA's transportation system to the effects of permanent inundation and coastal flooding. Support community participation in these efforts.</p>	Engineering & Program Delivery	Variable
<p><u>AD-F-3.9:</u> Incorporate future sea-level rise, permanent inundation, and precipitation projections into long-term infrastructure planning processes, influencing decisions on expansion, relocation, or retrofitting of assets. For example, many of VTA's facilities and other assets are highly vulnerable to future permanent inundation and coastal flooding, such as Lockheed Martin Transit Center, light rail routes and supporting infrastructure (e.g., grade crossings, frogs, turnouts), and bus stops, among others. Potential relocation of these assets should be considered and planned for well in advance of implementation.</p>	Engineering & Program Delivery	Long-Term
<p><u>AD-F-4.1:</u> Complete upgrades to vehicle washing facilities (e.g., replace original train wash facility at Guadalupe Yard), wastewater treatment systems, and irrigation equipment, targeting higher usage areas. This may include replacing traditional sprinkler systems with drip irrigation systems, retrofitting water fixtures in yards used for washing trains, buses, or other service/maintenance activities so that water sprays are at higher pressure but lower volume, and replacing water fixtures, toilets, and urinals in station and facility restrooms with low-flow options.</p>	Operations	Long-Term
<p><u>AD-F-4.2:</u> Consider maintaining reduced vehicle washing and irrigation schedules imposed during drought emergencies as regular practice.</p>	Operations	Near-Term
<p><u>AD-F-4.3:</u> Explore the feasibility of automated data communications and leak detection systems to provide real-time water consumption information and leak alerts to facility managers.</p>	Operations	Mid-Term
<p><u>AD-F-4.4:</u> Educate and engage relevant staff on ideas for water conservation in the workplace, which may include improvements to cleaners, manual scrubbers, and power washing, and ensuring that leaky hydrants are turned off.</p>	Operations	Near-Term
<p><u>AD-F-4.5:</u> Explore opportunities for connecting station and facility irrigation systems to recycled water lines, collaborating with water agencies to determine feasible locations.</p>	Engineering & Program Delivery	Long-Term

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-F-4.6:</u> Further integrate and regularly update water conservation approaches into contractor requirements to better mitigate water use impacts from construction through operations.	Engineering & Program Delivery	Near-Term
<u>AD-F-5.1:</u> At VTA facilities that require significant irrigation for landscaping and aesthetics (e.g., park and ride lots, stations, and transit centers), identify and install non-invasive plant species that are native or climate appropriate and are more tolerant to climate hazards to reduce water use and improve resilience.	Engineering & Program Delivery	Mid-Term
<u>AD-F-5.2:</u> Support tree planting in lower wildfire risk, heat vulnerable areas where potential disturbances (e.g., fallen trees) would not greatly impact VTA assets and operations (e.g., not planting in locations directly adjacent to rail track). Ensure trees are properly maintained and watered to survive drought conditions.	Engineering & Program Delivery	Near-Term
<u>AD-F-5.3:</u> For VTA assets that are located in higher wildfire risk areas, manage adjacent trees and vegetation in a way that minimizes risk of wildfire ignition and spread. This may include removing invasive species (e.g., stinkwort, eucalyptus, tree of heaven) and removing and/or replacing trees with other forms of vegetation or hardening features (e.g., fire-resistant materials) that would reduce fire risk, ensure adequate defensible space, and protect native, urban ecology. Ensure this work aligns with the Community Wildfire Protection Plan, prepared by the Santa Clara County Fire Safe Council.	Operations	Mid-Term
<u>AD-F-5.4:</u> Install tree wells, paired with permeable surfaces, where feasible, to promote long-term tree health.	Engineering & Program Delivery	Mid-Term
<u>AD-F-6.1:</u> Shift outdoor physical labor hours to earlier in the morning during extreme heat events, and allow for flexible hours and remote work, in general (where possible), to ensure safety during other climate hazard events.	Operations	Near-Term
<u>AD-F-6.2:</u> Conduct safety audits and inspections across VTA's transportation system (e.g., facilities, buses) to identify and address potential safety risks to riders and VTA staff that would be caused or exacerbated by climate hazards.	System Safety & Security	Variable
<u>AD-F-6.3:</u> Develop and update trainings for VTA staff that promote safety during hazard conditions, which may include how to safely operate vehicles and equipment during flood conditions and how to recognize and respond to heat-related illnesses, among others. Provide tips to riders on how to stay safe during floods, heat waves, and other hazard conditions.	System Safety & Security	Near-Term

Adaptation Actions

Action	Lead Division or Dept.	Implementation Timeframe
<u>AD-F-6.4:</u> Ensure indoor facilities, buses, and trains are equipped with air filtration systems to protect public health from wildfire smoke and the harmful effects of particulate matter pollution.	System Safety & Security	Mid-Term
<u>AD-F-6.5:</u> Develop and share emergency preparedness tips and safety communications with employees.	External Affairs	Variable

GHG Reduction Measures Implementation Table

Measure	Lead Division or Dept.	GHG Reduction Potential	Implementation Timeframe
Transportation and Land Use (TL)			
<u>GHG-TL-1.1:</u> Assist VTA member agencies in implementing SB 743 and mitigating VMT from new land development projects and transportation projects.	Planning & Programming	Medium	Mid-Term
<u>GHG-TL-1.2:</u> Continue to build out the countywide Express Lane network to use roadway pricing as a tool to provide reliable travel options and generate a revenue stream for projects that improve the operations of HOV lanes and transit.	Engineering & Program Delivery	Medium	Mid-Term
<u>GHG-TL-2.1:</u> GHG-TL-2.1: Implement bicycle and pedestrian infrastructure that reduces VMT or improves the safety of existing facilities, prioritizing investments for disadvantaged communities.	Planning & Programming	Medium	Variable
<u>GHG-TL-2.2:</u> Encourage and support efforts to plan and build walkable and bikeable communities for people of all income levels, races, and abilities.	Planning & Programming	Low	Variable
<u>GHG-TL-2.3:</u> Support local, county, state, and federal efforts to promote use of electric bicycles/scooters (or similar devices) as an alternative to driving.	Planning & Programming	Low	Variable
<u>GHG-TL-2.4:</u> Support education and encouragement programs that promote replacing polluting travel with low-emission travel.	Planning & Programming	Low	Variable
<u>GHG-TL-3.1:</u> Improve reliability and convenience of existing transit services through increased frequency of service, extended service hours, and improved facilities at stops and stations, prioritizing improvements that serve disadvantaged communities.	Operations	High	Mid-Term
<u>GHG-TL-3.2:</u> Increase transit travel speed and reliability through transit-signal priority, dedicated bus lanes, and new or expanded Rapid bus service.	Planning & Programming	Low	Mid-Term
<u>GHG-TL-4.1:</u> Collaborate with member agencies in advanced planning efforts to increase residential and employment densities and expand mixed-use development potential near rail stations, along Frequent Network bus routes, and in priority development areas (PDAs).	Planning & Programming	Low	Variable
<u>GHG-TL-4.2:</u> Increase development around transit stations and along transit corridors to facilitate multi-modal, carbon-neutral neighborhoods that are sustainable and resilient.	Planning & Programming	Low	Variable

Measure	Lead Division or Dept.	GHG Reduction Potential	Implementation Timeframe
<u>GHG-TL-4.3:</u> Strategically repurpose underutilized parking lots or other vacant lots at or near VTA transit stations and major transit stops into lively mixed-use, transit-oriented communities with activated ground floor uses that increase transit ridership, help provide revenue for transit capital investments and operations, and reduce VMT.	Finance, Budget, & Real Estate	Medium	Variable
<u>GHG-TL-4.4:</u> Provide people of all generations and backgrounds with affordable housing and access to the necessities of daily life available within a short walk, bicycle ride, or transit trip.	Finance, Budget, & Real Estate	Medium	Variable
<u>GHG-TL-4.5:</u> Work with member agencies and other partners to focus development where it already exists (i.e., promote infill development) and reduce the impact of development and transportation infrastructure on the environment by protecting open space, conserving and restoring habitat, enhancing biodiversity, increasing carbon sequestration, and improving wildlife connectivity.	Planning & Programming	Low	Mid-Term
<u>GHG-TL-5.1:</u> Support local efforts to reduce or eliminate minimum parking standards and institute parking maximums, require “unbundling” of parking costs from commercial leasing or residential rental rates, support shared parking, and introduce demand-based parking pricing in public on- and off-street parking facilities.	Planning & Programming	Low	Variable
<u>GHG-TL-5.2:</u> Provide charging infrastructure at VTA parking facilities open to the public.	Engineering & Program Delivery	Low	Near-Term
<u>GHG-TL-6.1:</u> Increase participation in smart commute and mobility options throughout the County including bicycle sharing, ridesharing, car-sharing, mobility-as-a-service, guaranteed ride home programs, carpools, vanpools, and other emerging options.	Planning & Programming	Medium	Variable
<u>GHG-TL-6.2:</u> Expand TDM programs and services in partnership with member agencies, employers, schools, and residential communities.	External Affairs	Medium	Variable
Buildings and Facilities (BF)			
<u>GHG-BF-1.1:</u> Decarbonize existing VTA buildings by phasing out fossil fuel usage and electrifying water heating and space heating or using renewable fuels such as renewable natural gas where appropriate.	Engineering & Program Delivery	Medium	Mid-Term
<u>GHG-BF-1.2:</u> Increase renewable energy, battery storage, and microgrid installations in existing VTA buildings, and/or procure 100% renewable options through local CCE providers, where applicable.	Engineering & Program Delivery	Medium	Mid-Term

GHG Reduction Measures

Measure	Lead Division or Dept.	GHG Reduction Potential	Implementation Timeframe
<u>GHG-BF-1.3:</u> Require all new VTA buildings to be 100% electric and include on-site renewable energy systems with battery storage and microgrids and achieve net-zero standards where feasible.	Engineering & Program Delivery	Low	Mid-Term
<u>GHG-BF-1.4:</u> Increase use of electricity and alternative fuels in construction equipment on VTA projects.	Engineering & Program Delivery	Low	Near-Term
<u>GHG-BF-2.1:</u> Upgrade outdoor lighting at VTA buildings, and at park-and-ride lots and stations to LEDs or other high-efficiency lighting.	Engineering & Program Delivery	Low	Mid-Term
<u>GHG-BF-2.2:</u> Reduce energy use in VTA buildings through conservation best practices consistent with LEED®, ENERGY STAR®, or other standards.	Engineering & Program Delivery	Low	Mid-Term
Fleet and Employee Commute (FE)			
<u>GHG-FE-1.1:</u> Replace VTA diesel trucks and other non-revenue VTA vehicles to ZEVs.	Operations	High	Variable
<u>GHG-FE-1.2:</u> Expand EV and electric bicycle charging infrastructure at VTA buildings to support VTA fleet EVs and employee bicycles.	Engineering & Program Delivery	Medium	Variable
<u>GHG-FE-2.1:</u> Use cleaner fuel, such as renewable diesel, for off-road equipment and construction equipment where feasible.	Engineering & Program Delivery	Low	Near-Term
<u>GHG-FE-2.2:</u> Require ZEV or LEV equipment in VTA projects.	Engineering & Program Delivery	Low	Near-Term
<u>GHG-FE-3.1:</u> Maximize the operational efficiency of VTA vehicles, including reducing vehicle idling.	Operations	Low	Near-Term
<u>GHG-FE-4.1:</u> Monitor employee commute patterns to understand employee behaviors, needs, and overall contributions to VTA's operational GHG inventory.	Human Resources	Low	Variable
<u>GHG-FE-4.2:</u> Encourage and enable VTA employees to use transit, carpool, bike, and telecommute to work to reduce single-occupancy vehicle commute trips and VMT.	Human Resources	Medium	Variable
Materials and Waste (MW)			
<u>GHG-MW-1.1:</u> Require procurement and operational practices that avoid generation of waste (e.g., reusable materials, reduced packaging, and compostable products).	Finance, Budget, & Real Estate	Low	Near-Term
<u>GHG-MW-1.2:</u> Increase recycling and organic waste diversion at all facilities.	Operations	Low	Near-Term
<u>GHG-MW-1.3:</u> Reduce the generation of construction and demolition waste in VTA projects, and increase sustainable materials use and recovery.	Engineering & Program Delivery	Low	Variable