California High-Speed Rail Authority (HSR)
High-Speed Rail will have the state's fastest and highest capacity zero-emission vehicles and fleets. The fleet will be comprised of high-speed trainsets, intercity coaches, light, medium, and heavy-duty on-road vehicles, off-road equipment, and on-rail maintenance equipment. In addition, high-speed rail stations will serve as Zero Emissions Vehicle (ZEV) mobility hubs and provide infrastructure for ZEV charging.

Equity: Prioritize ZEV deployment and implementation in procurement contracts, develop station area plans with an economic development focus, create job training programs in a manner that benefits priority communities and creates more high-road jobs, and provide aid to zero emission vehicle partners.

A summary of California High-Speed Rail Authority's ZEV market development objections and actions are below.

HSR ZEV MARKET DEVELOPMENT OBJECTIVES

ZEV Mobility Hubs: Integrate multi-modal ZEV transitions at stations.
Direct Pillar Connection: Vehicles, Infrastructure, End Users, Workforce

System Resilience: Establish world-class resilience for California's rail system.
Direct Pillar Connection: Vehicles, Infrastructure, End Users, Workforce
Indirect Pillar Connection: Workforce

ZEV Fleet Contract Requirements: Reinforce ZEV state regulations and policies by requiring ZEV across multiple classes for construction and operation.
Indirect Pillar Connection: Vehicles, Infrastructure, End Users, Workforce

Market Growth. Support uptake of ZEV equipment in construction and workforce development.
Direct Pillar Connection: Vehicles, Workforce
Indirect Pillar Connection: Infrastructure, End Users

Vehicle Miles Traveled (VMT) Reduction. Deliver electrified system increments that provide travel times savings and incentivize automobile mode shift.
Direct Pillar Connection: Vehicles, End Users

Reduce Air Miles Travelled. Deliver an electric statewide system connecting intrastate air markets with travel times that incentivize air travel mode shift.
Direct Pillar Connection: Vehicles, End Users

1. **ZEV Mobility Hubs.** Integrate multi-modal ZEV transitions at stations.

   Key Collaborators: all stakeholders

   Key Results & Actions:

   a. **Station Area Plans.** Complete station area plans that enable multimodal access and include electrical charging hubs by December 2023.
      - **In Progress & On Track.** Continued development of access and electrical charging requirements for site planning & amended station related design

criteria. Currently working on incorporating charging infrastructure into the Fresno station area plan.

b. **Station Site Design.** Design the station sites to be easily adaptable in accommodating anticipated merging technologies by December 2021.
   - **In Progress & On Track.** Included specific values and success metrics for station sites related to topics of smart growth and future preparedness.
   - Target Due Date Change: Target due date updated to December 2023 from December 2021 to match the project schedule more closely.

c. **Ongoing Stakeholder Engagement.** Maintain stakeholder engagement with respect to reaching priority community representatives.
   - **In Progress & On Track.** Historical engagement occurred as part of the project's Environmental approval process. Current stakeholder engagement work includes community engagement regarding station area planning efforts. For instance, community and stakeholder outreach is occurring to inform the Fresno Station's Early Station Activation Plan.
   - Additionally, an Equity and Environmental Justice Gap Assessment is being completed to identify opportunities to improve the Authority's Environmental Justice and community outreach practices.

2. System Resilience. Establish world-class resilience for California's rail system.

Key Collaborators: CEC, Local & regional government, Electricity Providers, Caltrans

Key Results & Actions:

a. **Climate Adaptation Plan.** Complete a climate adaptation plan to establish and integrate climate hazards as another risk to the program in the mandatory risk assessment process for all system components by December 2021. Include the results of statewide climate change exposure assessments and identify mitigation measures to be included in the design, as well as operations and maintenance to boost overall project resilience.
   - **Completed.** A Climate Adaptation Plan was completed in May 2021 which:
     - Documents the Authority's work to date to analyze, understand, and prepare for climate change when delivering the CHSR; and
     - Outlines the path forward for incorporating climate adaptation into Authority decisions.
   - Lessons Learned: Meetings and workshops were successful tools for communicating the Climate Adaptation Plan but were not as effective for soliciting feedback. Instead, one on one meetings generated significantly more feedback

b. **Climate Policy.** Complete a climate policy that established and recognizes the Authority's commitment and leadership to reducing greenhouse gas emissions and adapting to an uncertain future by December 2021.
   - **In Progress & On Track.** A draft Climate Policy has been developed and is currently in the review process.

- Lessons Learned: The original scope of the Climate Policy needed to be expanded to allow for a more meaningful and detailed policy that more adequacy reflected the depth of the Authority's commitments.
- Target Due Date Change: Target due date updated from December 2021 to March 2022 to allow for holistic quality assurance reviews.

d. **Renewable Energy Strategy.** Complete technical and financial feasibility studies on potential behind the meter solar and battery storage systems by December 2021. In efforts to create an onsite, decentralized energy hub which will reduce risks and reliance on the grid and supply the statewide system with renewable energy.
   - **In Progress & On Track.** Continued to refine the solar photovoltaic and battery energy storage financial analysis and update the communication tools to suit a range of stakeholder audiences.
   - Lesson Learned: Continuous attention to tariff structures and regulatory process is vital during renewable energy studies.
   - Target Due Date Change: Target due date updated from December 2021 to December 2022 to allow for time to complete more detailed and complex documentation of the financial model and other analysis inputs and assumptions for each site that considers resilience requirements, financial structure, phasing, and right of way.

3. **ZEV Fleet Contract Requirements.** Reinforce ZEV state regulations and policies by requiring ZEV across multiple classes for construction and operation.

Key Collaborators: Vehicle Manufacturers and Supply Chain; Infrastructure Providers

Key Results & Actions:

a. **Procurement Mandates.** Require the procurement of low and no emissions vehicles through contract mandates.
   - **Completed.** The Track and Systems procurement package mandated the use of at least 25% of non-heavy duty on road vehicles, at least 1 heavy duty on-road vehicle be a ZEV, and that the maintenance fleet meet lower emissions standards. All future packages will at a minimum include the above procurement mandates.
   - Additionally, the Authority completed a ZEV Memo to evaluate the feasibility of requiring the procurement of ZEVs and equipment during the construction of the HSR. The results of this memo inspired a new policy adopted in April 2021 to mandate the following procurement requirements:
     - 100% ZEV for on road light and medium duty vehicles in all future procurement packages;
     - 100% ZEV for short hall and drayage by 2035, and 100% ZEV for all on road heavy-duty vehicles by 2045; and
     - 10% ZEV for off-road equipment be ZEV by 2035, and 100% ZEV for off-road equipment by 2045.

b. **Ongoing Knowledge Sharing.** Collect and share lessons learned from each construction package and provide progressively more stringent no and no emission vehicle mandates over time.
   - **Upcoming.** Action execution is planned to occur in 2022 and 2023.
   - Target Due Date Change: Target due date updated from December 2021 from December 2023 due to the delay in the award of the Track and Systems package. The revised due date will allow for time to analyze the lessons learned from the implementation of the upcoming package(s).

4. Market Growth. Support uptake of ZEV equipment in construction and workforce development.

Key Collaborators: Vehicle Manufacturers and Supply Chain; Infrastructure Providers; Organized Labor; Investors; Academia; International; Caltrans; NGOs; CARB, CEC; CWDB; SGC

Key Results & Actions:

a. **Just Transition.** Identify opportunities where new jobs can be created with a special focus on job development for priority communities, during the implementation of the HSR's ZEV Strategy and the state of California's Just Transition Roadmap by December 2022.
   - **Upcoming.** The economic impacts of the project, with a special focus on small businesses, continue to be extensively studied. Upcoming work to assess the impacts of the Authority's new ZEV policy on job creation is planned to occur in 2022.

b. **Market Research.** Proactively work with state agencies to understand incentives, with vehicle manufacturers to understand market availability, and with academic and international partners for technological advances in the industry. Lessons learned will be collected and used to create a whitepaper by December 2022, and new procurement requirements by December 2023.
   - **Completed.** The Authority completed a ZEV Memo that reviewed the current market availability and cost of ZEV on-road light-, medium- and heavy-duty vehicles, and off-road equipment for use during the construction of HSR. The intention of the study was to assess the feasibility of replacing vehicles and equipment with ZEV alternatives.
   - **In Progress & On Track.** The Authority's ZEV Memo inspired the adoption of a new ZEV policy (the policy mandates are summarized in Action 3.A). The project's Design Criteria Manual will be updated to include the changes to the procurement requirements and will be applicable to all future construction packages.
   - Lesson Learned: Continuous attention to market availability and government ZEV targets is vital to set interim goals for heavy duty vehicles and off-road equipment.

c. **Job Access.** Coordinate with the workforce development board to identify high-road job opportunities in the HSR supply chain and to create equitable job opportunities with livable wages by December 2023.

- **Manufacturer Coordination.** Coordinate among rail operators, intercity bus operators and vehicle manufacturers to discuss fleet needs and expectations by December 2022.
    - **Upcoming.** Collaboration with local manufacturers and suppliers to share expectations and identify opportunities to green supply chains is planned to occur in 2022.
- **Operations Coordination.** Work with partners to develop a workforce that can operate and maintain the system and fleet by December 2023.
    - **Upcoming.** Collaboration with Caltrans and local operators to share expectations, identify skills gaps, and develop training opportunities is planned to occur in 2022 and 2023.

5. **Vehicle Miles Traveled (VMT) Reduction.** Deliver electrified system increments that provide travel times savings and incentivize automobile mode shift.

    Key Collaborators: Vehicle Manufacturers and Supply Chain; Infrastructure Providers; Organized Labor; Investors; Academia; International; Caltrans; NGOs; CARB, CEC; CWDB

    Key Results & Actions:

    a. **Renewable Electric High-Speed Rail.** Operate the electric high-speed rail system using 100% renewable energy.
        - **In Progress & On Track.** The analysis and preliminary design of the renewable energy system is ongoing.

    b. **Create Seamless Local Transfers.** Create a plan to link the electrified high-speed rail journey with multiple types of local ZEV travel options (e.g. intercity coaches) to provide users with uniform ZEV end to end journeys by December 2023.
        - **In Progress & On Track.** Coordination work to begin developing local transfer plans was initiated in 2021 Fresno, Bakersfield and Kings/Tulare and will extend to Merced in 2022.

    c. **Reduce Transfer Penalties.** Reduce transfer penalties by working with the state to implement the state rail plan, as well as working with municipalities and local transit agencies to integrate the various transportation systems.
        - **In Progress & On Track.** Coordination work to begin developing seamless integration and transfers penalty plans was initiated in 2021 with Merced and will continue to grow with the addition of Bakersfield and Palmdale in 2022.

6. **Reduce Air Miles Travelled.** Deliver an electric statewide system connecting intrastate air markets with travel times that incentivize air travel mode shift.

    Key Collaborators: Vehicle Manufacturers and Supply Chain; Infrastructure Providers; Organized Labor; Investors; Academia; International; NGOs; CARB, CEC; CWDB

    Key Results & Actions:

a. **Renewable Electric High-Speed Rail.** Operate the electric high-speed rail system using 100% renewable energy.
    - **In Progress & On Track.** The analysis and preliminary design of the renewable energy system is ongoing.

b. **Environmental Clearance.** Complete all environmental clearance documents necessary for Phase I of the HSR by December 2022.
    - **In Progress & On Track.** As of August 2021, the following four regional segments had received environmental approvals: Merced to Fresno, Fresno to Bakersfield, Central Valley Wye, and Bakersfield to Palmdale. In November 2021, the Final Environmental Impact Report/Environmental Impact Statement for Burbank to Los Angeles was released.
    - Environmental clearance is expected to be completed by the target due date.

c. **Create Seamless Transfers.** Create a plan increase regional transportation connectivity between critical airports, regional rail lines, and the high-speed rail by December 2023.
    - **In Progress & On Track.** Coordination with relevant airports has taken place throughout the environmental planning phase; meetings with the Hollywood Burbank Airport as well as SFO continued in 2021; in 2022, as those environmental documents are finalized, more detailed design and access coordination discussions will advance in 2022 and 2023.