



**BRIEFING: August 4, 2015, BOARD MEETING AGENDA ITEM #4**

**TO:** Chairman Richard and Board Members

**FROM:** Jon Tapping, Risk Director

**DATE:** August 4, 2015

**RE:** Informational Presentation on the Planned Safety and Security Systems for California High-Speed Rail

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**Background**

Safety and security is the California High-Speed Rail Authority's highest priority for the design, construction, and operation of the California High-Speed Rail System (System). The goal of the Safety and Security Program is to implement appropriate safety and security principles and processes to ensure the highest level of safety and security practicable, using best practices learned from international high speed rail systems and domestic rail systems.

**Safety and Security Program Scope**

The Safety and Security Program scope encompasses and integrates all elements of the System including:

- System-Wide Elements such as the trainsets, train control and signaling, communications;
- Fixed Facilities such as rail stations, pedestrian passageways, tunnels, elevated structures;
- Safety and Security Program plans such as Safety and Security Management Plan, Safety and Security Certification Plan, Safety and Security Design Criteria, Passenger Train Emergency Preparedness Plan, System Safety Program Plan, and System Security Program Plan; and
- Procedures and Strategies such as hazard management, policing, operations and maintenance plans, procedures, rulebooks and manuals; and training.

The fundamentals of the Safety and Security Program are identified in a *Safety and Security Policy Statement* that applies to all employees, contractors, and other persons associated with the development of the System.

## **Safety and Security Program**

The Safety and Security Program implements risk-based principles and strategies for determining safety and security risk throughout the system life cycle, from the design phase through operation. The Safety and Security Program defines processes for identifying, evaluating, and resolving safety and security hazards associated with operations prior to the start of service, focusing on prevention where possible. This risk-based process helps to ensure the achievement of the highest practical level of safety and security for passengers, employees, and the public and the reduction of risk to the program.

The Safety and Security Program defines safety and security activities of the System and establishes responsibility and accountability for safety and security during the preliminary engineering, final design, construction, testing, start-up and operation of the system.

Safety and Security is planned for the System through implementation of several initiatives. These include:

- A risk-based approach to hazard management which identifies, evaluates and documents safety hazards and security vulnerabilities at the earliest possible phase of System development, applying the Prevention through Design principle;
- Establishing specific safety and security requirements for the System based on applicable safety and security regulations, codes, standards, guidelines, risk-based hazard assessments, and recognized best practices both domestically and internationally;
- Verification and validation of all final drawings, specifications, construction and equipment installation conform to the established safety and security requirements to result in a System Safety and Security Certification;
- Implementation of construction safety and security programs in conformance with established construction safety and security requirements and complying with the California Occupational Safety and Health Administrative safety regulations;
- Coordination with the Federal Railroad Administration, the California Public Utilities Commission, the Federal Transportation Security Administration, the California Highway, the California Highway Patrol, and the California Office of the State Fire Marshal, as well as other State and local authorities concentrated in the Central Valley;
- Regular committee meetings, workshops, training and exercising of emergency response personnel on emergency procedures, equipment, and operations; and
- Documenting safety, security, and emergency rules and procedures, rulebooks, standard and emergency operating procedures.

## **Safety and Security Implementation**

The Safety and Security Program has the benefit of consideration of hazards and mitigations prior to design and construction, learning from current international and domestic rail systems, and implementation of the newest technologies and processes. Not only does this provide for a safer and more secure environment, but ensures that the integration of the systems is robust and effective. Existing high-speed rail systems abroad have been able to take advantage of many of the same benefits resulting in excellent safety records with few incidents or fatalities. It is critical to the success of the Safety and Security Program to use the “green field” advantage by

learning from existing systems, researching and implementing tested technologies and coordinating with regulatory authorities and other stakeholder organizations to design-out hazards and vulnerabilities and design-in protective enhancements. The “green field” advantage is most prevalent in the exclusive-use corridor between San Jose and Burbank; the blended-use corridors in the San Francisco and Los Angeles regions will require careful consideration and close coordination and integration with the host railroads.

Key safety and security elements to be incorporated in the design, construction, and implementation of the exclusive use corridor include:

- Automatic Train Control System in full compliance with FRA requirements for Positive Train Control to prevent collisions between trains, over-speed derailments, and incursions into work zones;
- Elimination of highway-rail grade crossings through grade separations and crossing closures;
- Dedicated right-of-way with controlled access and operations and maintenance programs exclusive to California High-Speed Rail needs and characteristics;
- A robust fire and life safety and security program to facilitate safe evacuation routes and appropriate access for emergency responders;
- Policing strategy appropriate to the community-based needs of the System and the unique characteristics of rail transit; and
- Seismic safety program, including earthquake early warning and appropriate operational responses.

### **System Safety and Security Strategies and Technologies**

Hazards are considered in the context of the overall System, ensuring that both direct and ancillary effects are addressed appropriately and that unintended consequences are avoided through the consideration of all System elements. Using the risk-based approach, hazards are identified and evaluated resulting in mitigations to reduce risk. This approach results in solutions and strategies that strengthen safety and security and ensures that resources are applied where the risks are the highest.

Derailment is a significant hazard for all rail operations. Applying a suite of mitigations diminishes the risk of derailment: rail cars designed to stay upright and in place, anti-derailment technology, securing the corridor, intrusion detection, robust maintenance practices and early earthquake warning systems. Other high-speed rail systems have proven these mitigations to be effective. Many other safety and security hazards are being mitigated in a similar manner.

### **Proven and Approved Approach**

The risk-based, system safety and security approach was developed in coordination with the Federal Railroad Administration, the California Public Utilities Commission, the California Office of State Fire Marshal, and the Federal Transportation Security Administration. This coordinated approach ensures that the Safety and Security Program meets current and projected regulations and industry guidance.

### **Recommendation**

There is no recommended action; this item is informational only

### **Attachments**

- PowerPoint Presentation on Safety and Security