



CALIFORNIA
High-Speed Rail Authority

Upcoming Procurements Track, Systems, Trainsets, & Related Procurements

Bruce Armistead
Chief of Rail and
Operations Delivery

Bill Casey
Chief Operating
Officer

BACKGROUND

The Authority will need to advance key procurements in the second half of 2023 and early 2024 to deliver an operation schedule consistent with the timelines in the Project Update Report and our agreements with the Federal Railroad Administration.

Procurements include:

- » The design and installation of track and systems where civil works are completed
- » Trainsets (i.e., rolling stock) for testing, commissioning, and in-service operations
- » Related procurements, including construction management, independent cost estimator, integrator, independent safety assessor, design and construction of depots/ maintenance facilities, and others

These procurements will implement a strategy that incorporates lessons-learned and updated industry input. The strategy includes smaller contracts, increased flexibility, and an emphasis on maximizing qualified bidder pools.

LESSONS LEARNED

These upcoming procurements **will not repeat the past.**

The upcoming Track and Systems procurements follow these **core principles:**

- » Pursue a higher-number of contracts each with a reduced size (initial focus on Construction Package 4). Authority will only authorize further work packages as we are ready for them
- » Procure scope under multiple packages – the prior track and systems procurement sought a single large contract
- » Use innovative, flexible delivery methods, as appropriate for each scope element
 - Minimize risk of change orders that can arise under a lump-sum, fixed price approach
 - Industry is shifting away from traditional fixed price delivery models such as fixed-price design-build
 - Increase flexibility and Authority control of design where appropriate
 - Manage schedule and meet federal grant deadlines
- » Recognize which risks should be retained by Authority to deliver a certified, safe high-speed railroad

AUTHORITY PROCESS

- The recommended procurement strategy approach:
 1. represents nearly **9 months of intense work by the Authority team** and international high-speed rail experts, with significant input from industry and various peer agencies
 2. takes into account post-COVID **market conditions**, feedback from prior track and systems debrief meetings, and **market sounding feedback** from a broad group of industry participants
 3. Assures Authority interests are **PARAMOUNT** and risks are minimized
 4. takes into account **LESSONS LEARNED**, including from:
 - » the current civil construction packages
 - » prior track and systems procurement
 - » other projects/ owners (both US mega-projects and international high-speed rail projects)



Track and Systems Infrastructure Delivery Methods



Track and Systems Infrastructure Delivery Methods

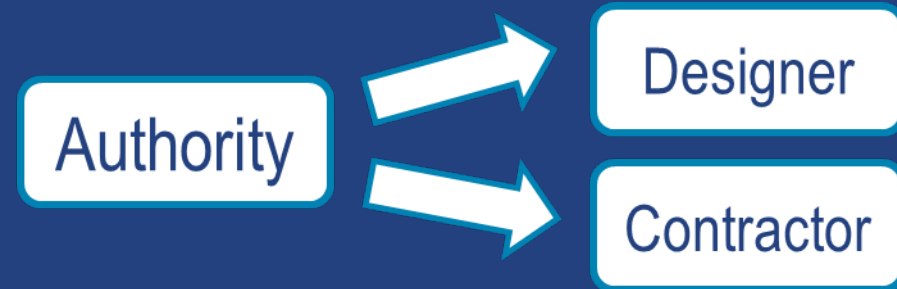
Proposed Delivery Methods

- Design Bid Build
 - Design consultant selected through an RFQ Process
 - Contractor selection through a competitively bid process.
 - Ex. Depots/facilities
- Construction Manager/General Contractor (CM/GC)
 - Design consultant selected through an RFQ Process
 - Contractor selection through a RFQ process with negotiated pricing to construct the work.
 - Ex. Track civil works, track bed, track, and OCS
- Progressive Design Build (PDB)
 - Design services and Contractor selected as a single entity through a RFQ process with negotiated pricing to construct the work.
 - Ex. Signaling, train control, core communications, traction power, etc.

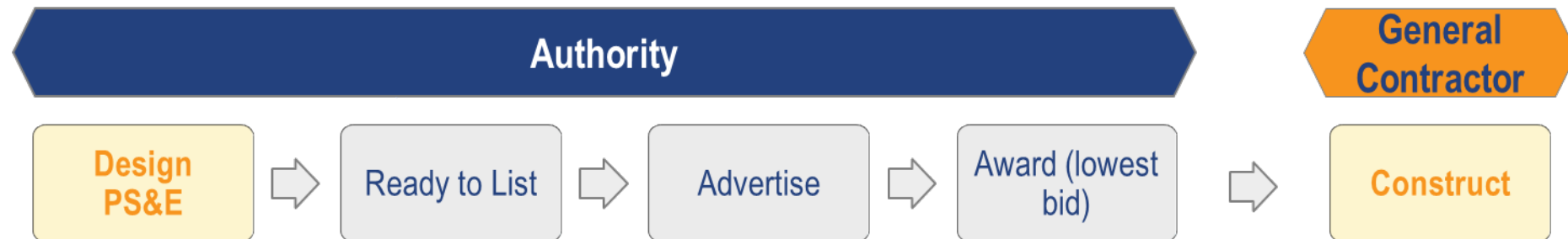


Design Bid Build

- Traditional delivery process
- Involves Two Procurements
 - » The Authority manages two separate contracts; one for design and one for construction.



- Design plans, specifications, and estimates (PS&E) completed prior to construction contract advertisement



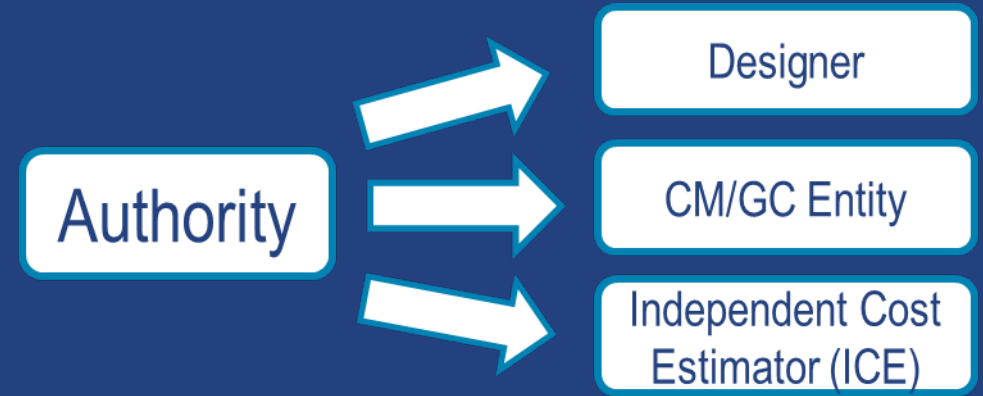
Design Bid Build

- Benefits:
 - » The Authority takes control of the design process.
 - » Construction contract awarded to the lowest responsible bidder (hard bid)
 - » Provides for more competition and fairness to bidders
 - » Competition establishes market prices for the work
- Challenges
 - » Unilateral construction contract has the potential for more contractual disagreements.
 - » The Authority becomes the mediator, settling disputes between the designer and the contractor. The designer and contractor can easily blame one another for cost overruns and other problems.
 - » Contractor has no input in to the design process which limits contractor innovation.

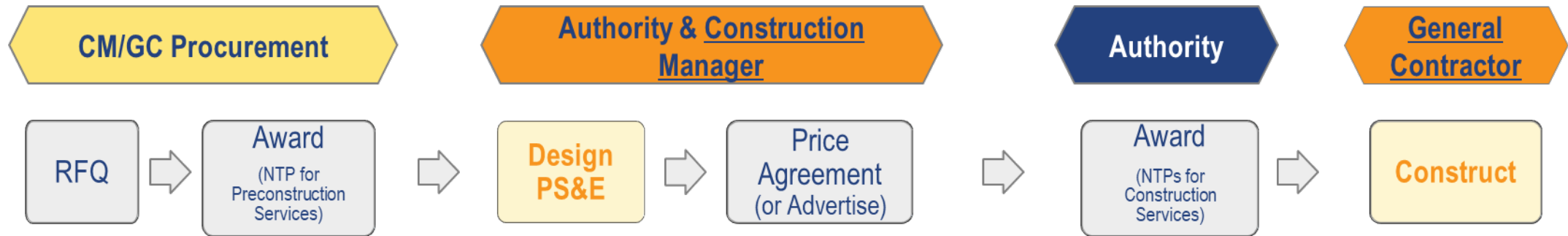


Construction Manager/General Contractor (CM/GC)

- Alternate delivery process
- Involves three procurements
 - » The Authority manages three separate contracts; one for design and one for the CMGC entity, and one for an Independent Cost Estimator (ICE).



- Design plans, specifications, and estimate (PS&E) completed prior to the issuance of a construction contract.



Construction Manager/General Contractor (CM/GC)

Two-Phase Contract

PRE-CONSTRUCTION SERVICES

Construction Manager

Professional Services

- Cost Estimating
- Subcontracting Plan
- Scheduling
- Material Procurement
- Utility Coordination
- Construction Phasing
- Constructability Review
- Risk Analysis
- Quantity Verification
- Third Party Approval

CONSTRUCTION

General Contractor

Construction Services

- Negotiated Price Agreement
- Construct the Work
- Allows for early work packages (NTPs).

Preconstruction Services - Construction Manager

- Open and transparent
 - » Authority share plans, specs, etc.
 - » Open book estimating... Contractor provides detailed pricing including assumptions and risks.
- Collaboration
 - » Contractor assists in developing solutions.
 - » Proactive approach to Project Risks
 - Early identification of risk
 - Impacts and cost can be determined before the final schedule and cost of the project is determined
 - Collaboratively manage risk that can impact schedule and budget

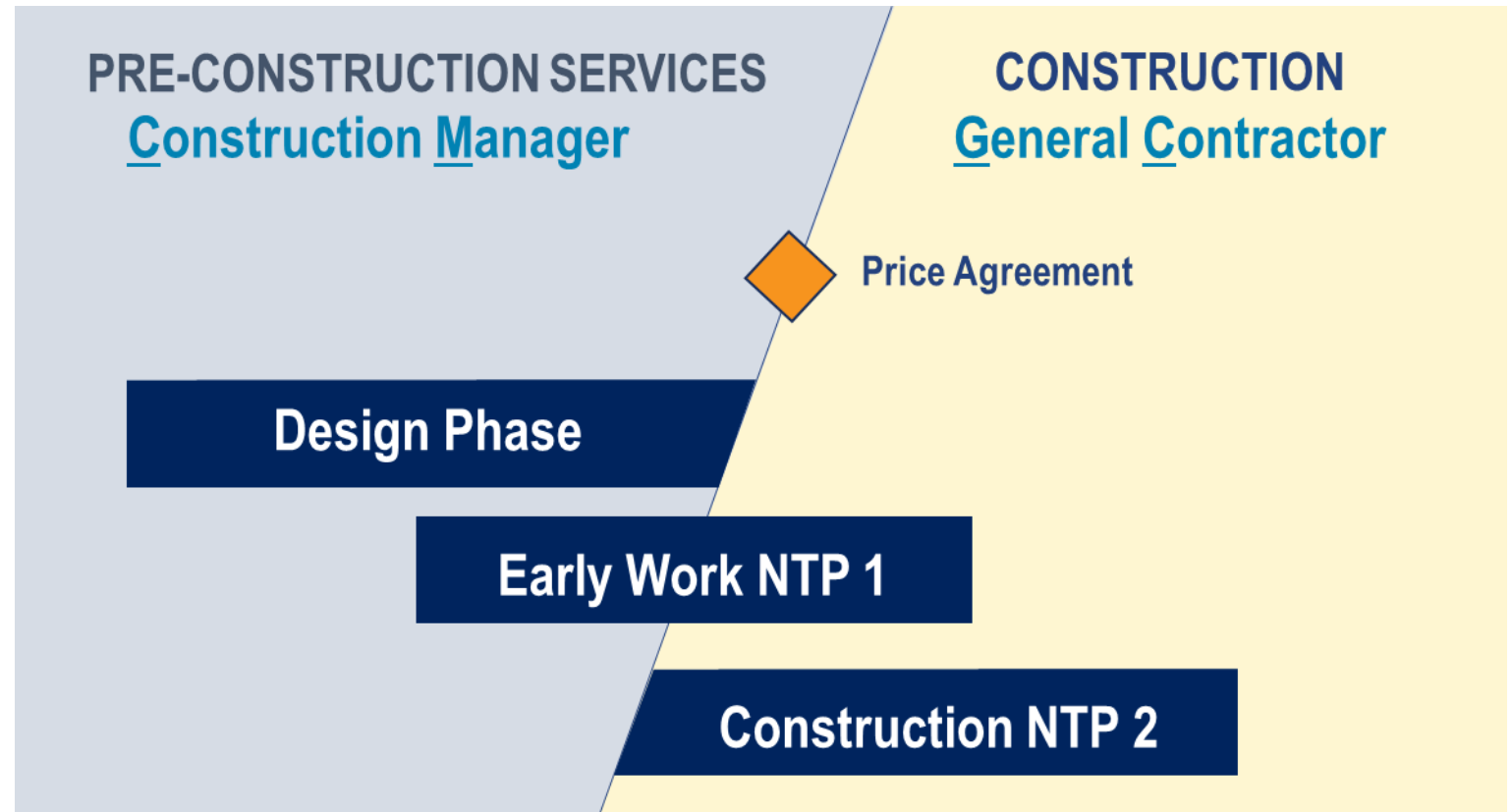
Early Work Packages

Commonly used for:

- Securing long lead material
- Early utility work
- Constructing an independent portion of the project

Key Considerations:

- Clearly define scope and schedule
- Establish independent utility among other work
- Maintain severability option
- Define package size that maintains CMGC engagement in remainder of project



CM/GC Price Agreement – Construction Manager

When design of project or portion is complete:

Three Estimates:

1. Authority's Cost Estimate
2. Construction Manager's Cost Estimate
3. Independent Cost Estimate (ICE)

Two Possible Outcomes:

1. Authority gets fair price – proceed with a construction contract (NTP)
2. Authority doesn't get fair price – “off ramp” and proceed to a competitive bid process

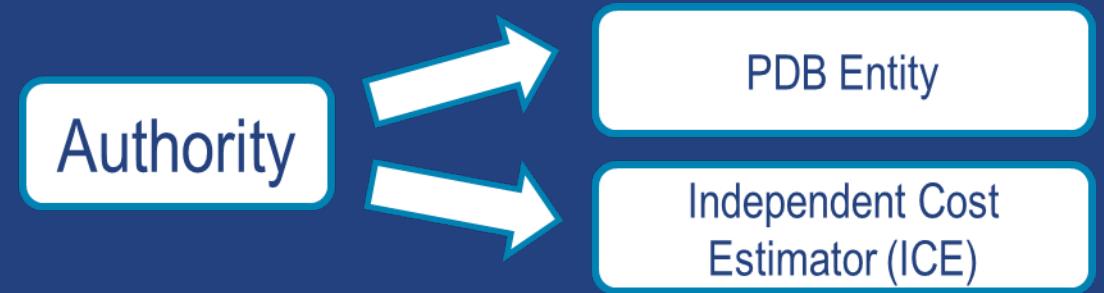
Construction Manager/General Contractor (CM/GC)

- Benefits:
 - » Faster delivery by eliminating the construction contract advertisement period and ability to perform early work packages
 - » Design quality improves through collaboration with the contractor
 - » Creates more opportunity, innovation, and value engineering during the design phase
 - » Specialized qualifications (ability to prequalify subcontractors)
 - » Risk mitigation
 - » If the Authority does not agree on price we can “off ramp” to a competitive advertisement process
 - » Higher degree of cost and schedule certainty leading to less cost and schedule growth
- Challenges
 - » Estimate reconciliation (low bid-based pricing vs. negotiated pricing estimates)
 - » Higher support costs during the preconstruction phase (Contractor and ICE)
 - » Negotiating price with a single “bidder”

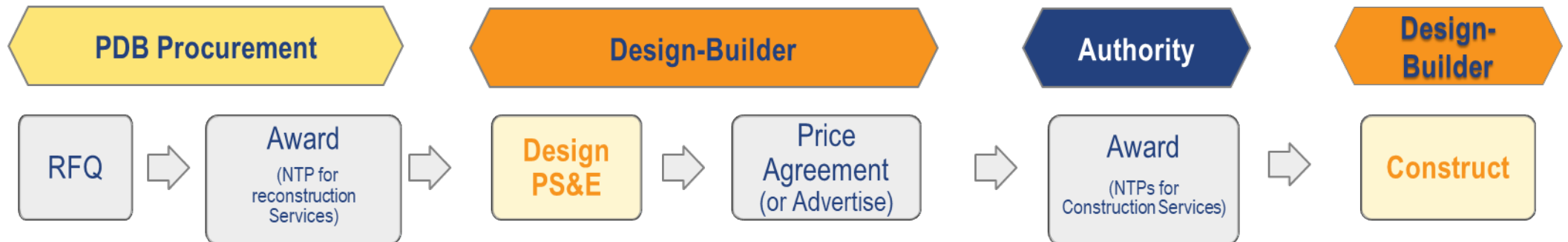
Progressive Design Build (PDB)

- Alternate delivery process similar to CM/GC
- The major difference is that the designer and contractor are a single entity.

» The Authority manages two separate contracts; one for the PDB entity (design and construction), and one for an Independent Cost Estimator (ICE).



- Design plans, specifications, and estimate (PS&E) completed prior to the issuance of a construction contract.



Progressive Design Build (PDB)

Two-Phase Contract

PRE-CONSTRUCTION SERVICES

Design

Professional Services

- Develop Complete Design
- Cost Estimating
- Subcontracting Plan
- Scheduling
- Material Procurement
- Utility Coordination
- Construction Phasing
- Constructability Review
- Risk Analysis
- Quantity Verification
- Third Party Approval

CONSTRUCTION

Builder

Construction Services

- Negotiated Price Agreement
- Construct the Work
- Allows for early work packages (NTPs)

Progressive Design Build Price Agreement

When design of project or portion is complete:

Three Estimates:

1. Authority's Cost Estimate
2. Design Builder's Cost Estimate
3. Independent Cost Estimate (ICE)

Two Possible Outcomes:

1. Authority gets fair price – proceed with a construction contract
2. Authority doesn't get fair price – “off ramp” and proceed to a competitive bid process

Progressive Design Build (PDB)

- Benefits:
 - » Single point of responsibility for design and construction
 - » Faster delivery by eliminating the advertisement period and ability to perform early work packages
 - » Creates more opportunity, innovation, and value engineering during the design phase
 - » Specialized qualifications (ability to prequalify subcontractors)
 - » Risk Mitigation
 - » If the Authority does not agree on price we can “off ramp” to a competitive advertisement process
 - » Higher degree of cost and schedule certainty leading to less cost and schedule growth
- Challenges
 - » Estimate reconciliation (low bid-based pricing vs. negotiated pricing estimates)
 - » Higher support costs during the preconstruction phase (ICE)
 - » Negotiating price with a single “bidder”



Track and Systems Overview of Packaging



OVERVIEW OF PACKAGING AND ANTICIPATED DATES

Package	Scope	Description	Indicative Timing
Package 1 <i>(broken up into two separate contracts)</i>	Track and Overhead Contact System (OCS) <i>(Track Civil Works, Track Bed, Track, and OCS)</i>	Package 1A: Design <i>Architectural & Engineering contract</i>	Q3 2023
		Package 1B: Construction Manager/General Contractor (CM/GC) <i>CM/GC contract</i>	Q4 2023
Package 2	Systems <i>(Signaling, train control, core communications and traction power system, Supervisory Control and Data Acquisition)</i>	Package 2: Systems <i>Progressive Design-Build contract</i>	Q4 2023
Package 3	Trainsets	Package 3: Trainsets <i>Supply-Maintain contract</i>	RFQ: Q3 2023 RFP: Q1 2024
Package 4	Depots/Facilities	Package 4: Depots/facilities <i>[Packaging and scope of depots/facilities subject to ongoing discussion]</i>	2025
Additional Contracts	Program-wide support for Track and Systems	Independent Cost Estimator (ICE)	Q4 2023
		Construction Manager	Q4 2023
		Integration Support	Q4 2023
		Independent Safety Assessor (ISA)	Q3 2023

PACKAGE 1 – FURTHER DETAIL

Package	Scope	Description	
Package 1	Track and Overhead Contact System (OCS) (Track Civil Works, Track Bed, Track, and OCS)	1A Design contract	<ul style="list-style-type: none"> • Single design contract for 171-miles • Allows Authority to maintain design control and to align phasing to construction schedules
		1B Construction Manager/General Contractor (CM/GC) contract	<ul style="list-style-type: none"> • Focus on constructability reviews of design and delivery of Construction Package 4, with a framework to continue with the CM/GC through negotiation of further packages and notices-to-proceed for construction and installation for the 119-miles (i.e. to obtain certification) • Clear hold point at end of Construction Package 4, with potential to off-ramp and procure future works under separate procurements (design-bid-build) • Provides framework to add further extensions to Merced and Bakersfield (171-miles) • Long-lead materials either Authority-furnished or under CM/GC as an early works package

Procurement of a separate Designer and Construction Manager/General Contractor for Track and OCS works allows Authority to:

- » Own and control design
- » Start small with Construction Package 4 and long lead items
- » Only progress to authorize future sections when Authority is ready and if Contractor is performing
- » Ensure early collaboration between the designer and the contractor that will be responsible for construction and installation
- » Manage interfaces and integration between contract packages

PACKAGE 2 – FURTHER DETAIL

Package	Scope	Description
Package 2	Systems (Signaling, train control, core communications and traction power system, Supervisory Control and Data Acquisition)	<ul style="list-style-type: none">• Single contract with progressive delivery for technically complex elements for 119-miles, with progressive authorization of work packages and notices to proceed• Provides framework to add further extensions to Merced and Bakersfield (171-miles)• Includes relevant design work for Package 2

Single contract for systems design and installation with progressive delivery allows Authority to:

- » Manage progress of work within our program’s capacity and based on availability of Construction Packages
 - Negotiate work packages progressively (instead of an upfront lump sum price)
- » Manage interfaces and integration between contract packages
- » Be involved in design decisions and maintain flexibility to make changes
- » Combine design with supply/ installation/ construction to better mitigate integration, commissioning, and certification risk
 - Necessary given technically complex and proprietary nature of systems scope

PACKAGE 3 – FURTHER DETAIL

Package	Scope	Description
Package 3	Trainsets	<ul style="list-style-type: none">• Single supply-maintain contract• Includes relevant design work for Package 3• 6 trainsets, with options for more

- The Authority plans to procure high-speed trainsets capable of operating at 220 mph that will be Buy America and FRA Tier III compliant
- The order will include two prototype trainsets scheduled to be delivered by 2028 to support static/ dynamic testing and trial running, followed by delivery of four additional trainsets by the end of 2030 to support revenue operations
- The Authority will need the trainset designs and prototypes to progress together with the design and installation of track and systems to mitigate issues with critical interfaces. This means that the trainset procurement will need to align with the track and systems procurements

NEXT STEPS

- Regular Board updates with additional information and detail
- We anticipate bringing the following procurements to the Board for approval in 2023 and early 2024
- Notifications to the Legislature under SB 198 of 2022
- Other approvals as required. For example, Federal Railroad Administration

No.	Package	Indicative timing
1.	Package 3: Trainsets (Request for Qualification)	Q3 2023
2.	Package 1A: Track and Overhead Contact System - Design	Q3 2023
3.	Independent Safety Assessor	Q3 2023
4.	Integration Support Services	Q4 2023
5.	Independent Cost Estimator	Q4 2023
4.	Package 1B: Track and Overhead Contact System - Construction Manager/General Contractor (CM/GC)	Q4 2023
5.	Package 2: Systems	Q4 2023
7.	Construction Manager for Track and Systems	Q4 2023
8.	Package 3: Trainsets (Request for Proposal)	Q1 2024

THANK YOU

Comments and Questions

