

**FTA/FRA Readiness for Revenue Service  
Coordination on the Denver RTD  
Eagle Commuter Rail Project**

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## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Eagle Federal/Non Federal Project Description

- \$2.7B Design-Build-Finance-Operate-Maintain (DBFOM) 34 Year Concessionaire Agreement of which \$2.043B part of FTA Full Funding Grant Agreement (FFGA)
- 36 Miles of **new Commuter railroad** most on shared freight right of way.
  - 22.8 Mile East Line
  - 5.5 Mile Initial Northwest Line Electric Section (not part of FFGA)
  - 11.2 Mile Gold Line (3.5 miles are shared line with NW Line)



## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Eagle Federal/Non Federal Project Description (Continued)

- 98 Car Commuter Rail Maintenance Facility (CRMF) - 50% FFGA



## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Eagle Federal/Non Federal Project Description (Continued)

- Initial 50 Electrical Multiple Unit (EMU) car purchase from Hyundai Rotem that are assembled in Philadelphia.
- Only 44 covered in scope of FFGA.
- Option exercised for 16 additional cars.
- Similar to SEPTA Silverliner.
- Operate only in married pairs.



# FTA/FRA Eagle Commuter Rail Project Readiness for Revenue Service Coordination

## Eagle Federal/Non Federal Project Description (Continued)



- Current Status (based on Budget):
  - East Line - 78% Complete
  - Gold Line - 74% Complete
  - CRMF - 77% Complete
  - Northwest – 75% Complete
- CA Revenue Service Dates:
  - East Line & CRMF – April 2016.
  - Northwest - August 2016
  - Gold Line – October 2016
- FFGA Revenue Operations Date – December 31, 2016 (East and Gold Lines)

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Eagle DBFOM Delivery Method Challenges

- Concessionaire required to develop all operating rules and requirements; however, RTD is the railroad of record.
- No existing railroad rules, operators, vehicles, or track to test on.
- No opportunity for review hold points without impacting completion dates. Things going on everywhere.
- Concessionaire does not start getting paid for financed capital costs until revenue service. May be willing to accept some risks to get there.

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### FTA, FRA, and CPUC Readiness Players (not all inclusive)

- FTA Headquarters
  - TPM-20 & TSO-20, RERO Guidance to Region
- FTA Region 8
  - Project Engineer and PMOC ACOR (Oversight and PMOC Direction)
  - Project Management Oversight Contractor (PMOC) (Burns) - Technical Oversight
- FRA Headquarters
  - Passenger Rail Division (Liaison/Coordination, PTEP, HA, SSPP)
  - Signal & Train Control Division (PTC)
  - Rail & Infrastructure Integrity Division (Bridge, CWR)
  - Highway-Rail Grade Crossing & Trespass Prevention Division (Quiet Zones)
  - Operating Practices Division (Engineer/Conductor Certification, D&A, Rules and Training)
- FRA Region 6 – (Local Coordination, Inspection and Compliance)
- Colorado Public Utility Commission (CPUC)
  - Rail/Transit Section (Highway-Rail Crossings)

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### FRA Objectives and Code of Federal Requirements (CFRs)

#### Objectives

Ensure that railroads develop and implement minimum safety and training requirements prior to beginning rail operations for track and roadway workers, use of wireless communications, operating rules and practices, etc.

#### 49 CFR Parts

- 213 – Track Safety Standards
- 214 – Railroad Roadway Workplace Safety
- 217 – Railroad Operating Rules
- 218 – Railroad Operating Practices
- 219 – Drug and Alcohol Testing
- 220 – Radio Rules and Communication
- 221 – Rear End Marking Devices

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### 49 CFR Parts (continued)

- 222 – Locomotive Horns at Grade Crossings (Quiet Zones)
- 223 – Safety Glazing Standards
- 225 – Railroad Accident/Incident Reporting
- 228 – Hours of Service
- 229 – Locomotive Safety Standards
- 231 – Railroad Safety Appliance Standards
- 234 – Grade Crossing Signal
- 237 – Bridge Safety Standards
- 238 – Passenger Equipment Safety Standards
- 239 – Passenger Train Emergency Preparedness
- 240 – Engineer Certification
- 242 – Conductor Certification
- 270– NPRM Dated 9-7-12, System Safety Program

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### FTA Objectives and Code of Federal Requirements (CFRs)

#### Objectives

**Early** review of safety, security, operations, and maintenance planning and implementation activities to avoid “11<sup>th</sup> Hour” problems. The planning activities include the Project Management Plan and Sub-plans, Operations Hazard Analysis, System integration Test (SIT) Plans, and Pre-Revenue Operations (PRO) Plans.

#### 49 CFR Parts

- 633, Project Management Oversight
- 659, State Safety Oversight (Non-FRA Regulated Rail Fixed Guideways)

# FTA/FRA Eagle Project Readiness for Revenue Service Coordination

## FTA/FRA/CPUC Readiness Monitoring & Oversight Activities.

### FTA

- Monthly FTA/FRA/PMOC Meetings
- Monthly PMOC Technical Specialist Oversight Reviews/Visits
- Monthly PMOC Oversight Meeting Attendance
  - Bi-Monthly System Testing and Commissioning
  - System Safety Working Group
  - Monthly RTD/Concessionaire FRA Coordination Meeting
- FTA Quarterly Project Review Meetings
- Readiness for Revenue Service Reviews (*Matrix that Breaks out FTA and FRA Responsibilities by OP54 Review Areas provided separately*)
  - East Line (Three Phases: Phase I covering SIT Plan, OCS Energization, and Vehicle Test Section completed.
  - Gold Line (Two Phases, Pending)

# FTA/FRA Eagle Project Readiness for Revenue Service Coordination

## FTA/FRA/CPUC Readiness Monitoring & Oversight Activities (Continued)

### FRA

- Region 6 Inspectors out almost least weekly
- Monthly FTA/FRA/PMOC Meetings
- Tracking and Review of 141 Eagle CFR required deliverables.  
(Copy of Project Generic FRA Tier 1 Passenger New Starts Deliverable Sheet, provided separately)
- FRA Specialists Witnessing Numerous Field Tests
  - Continuous Welded Track Inspection Procedure
  - Step Grade Testing
  - Vehicle Braking Tests
- Attend FTA Quarterly Project Review Meetings

### CPUC

- Review and Approve Highway Grade Crossings
- Validates Completion and Approves Use

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Current Issues.

- Number of Crew Members on Trains.
- Detection of Bicycles in Grade Crossings
- PTC Timeline and Resource Availability.
- Slow Construction Conformance Certification.

## FTA/FRA Eagle Project Readiness for Revenue Service Coordination

### Readiness Lessons Learned and Best Practices (In Process)

- Safety/Readiness Review Hold Points in DBFOM Contract.
- Grantee DBFOM Oversight Plan.
- FTA and FRA Agencies Priorities Established at Start of Construction.
- Early Definition of Operational Timelines for FRA Requirements.
- Define FTA and FRA Testing and Safety Oversight Coordination Prior to Testing.

Attachment A - Agency Commuter Rail Project Readiness for Revenue Operation Review Requirements by Project Readiness Phase

FTA OP54 Readiness for Revenue Operation Review Requirements		Corresponding FRA Operations Review Requirements			Requirements by Eagle Project Phase		
OP-54 Sec #	OP-54 Description	FRA 49 CFR #	Additional 49 CFR Description and/or FRA Guidelines	Lead Reviewer	I	II	III
6.1	<b>Systems Integration Testing</b>						
6.1.1	Systems to be Tested			FTA	●	□	□
6.1.2	Plan for Testing	238	Pre-Revenue Service Acceptance Test Plan	FRA	▲	●	□
6.1.3	SIT Plan			FTA	●	□	□
6.1.4	Schedule for Testing	229,233,234 236,238	FRA will witness on-site testing for Highway-Rail crossing signals, rolling stock, braking, ride quality, signal, etc.	FRA	▲	●	□
6.1.5	Test Procedures	238	Part of Pre-Revenue Testing Plan	FRA	●	□	□
6.1.6	Test Reports	238	Document test results	FRA	▲	●	●
6.1.7	Completion and Recording			FTA	▲	▲	●
6.2	<b>Project System Safety and Security Validation</b>						
6.2.1	Safety and Security Organization			FTA	▲	●	□
6.2.2	Safety and Security Planning			FTA	▲	●	□
6.2.2a	System Safety Program Plan (SSPP)	270	Proposed FRA SSPP Rule	FRA	▲	●	□
6.2.2b	Safety and Security Management Plan			FTA	▲	●	□
6.2.2c	Preliminary Hazard Analysis		Collison Hazard Analysis (CHA) Guide 2007 Steep Grade Hazard Analysis Overall Hazard Analysis	FRA	▲	▲	●
6.2.2d	Threat and Vulnerability Analysis			FTA	▲	●	□
6.2.2e	Operation Hazard Analysis			FRA	▲	●	□
6.2.2f	Grade Crossing Analysis/Reports		Review and approval of grade crossing except at stations comes under the jurisdiction of the Colorado Public Utilities Commission (PUC).	PUC	▲	●	□
6.2.2g	Safety and Security Certification Plan			FTA	▲	●	□
6.2.2h	Certifiable Items Lists			FTA	▲	●	□
6.2.2i	Construction Punch-lists			FTA	▲	▲	●
6.2.3	Review of Risks and Mitigation			FTA	▲	●	□
6.3	<b>Pre-Revenue Operation</b>						

Attachment A - Agency Commuter Rail Project Readiness for Revenue Operation Review Requirements by Project Readiness Phase

6.3.1	Pre-Revenue Operations Planning			FTA	▲	●	□
6.3.2	Rule Book and Standard Operating Procedures	217,218	Operating Rules, practices and Procedures	FRA	▲	●	□
		229,238	Operating Locomotive Standards and Inspections; Operating Procedures for vehicle maintenance and periodic inspections	FRA	▲	●	□
		213	Operating Procedures for inspecting track, Continuous Welded Rail Plan, PTC.	FRA	▲	●	□
		214,217,218	Procedure for Roadway Worker Protection	FRA	▲	●	□
		220,222	Procedures for Communication, Electronic Devices, Horns	FRA	▲	●	□
		233,234,236	Procedures for Signal System Reporting, Railroad Safety Program Plan (RSPP), Product Safety Plan (PSP)	FRA	▲	●	□
		237	Procedure for Accident Reporting Injuries	FRA	▲	●	□
6.3.3	Operator and Maintenance Staff Training	217,218,219 220,234,236 239,240,242	Training and Qualification Program, Locomotive Engineers, Conductors	FRA	▲	●	□
		219	Drug and Alcohol Plan	FRA	▲	●	□
		225	Procedures for Accident Reporting, Injures	FRA	▲	●	□
		228	Procedures for Hours of Service	FRA	▲	▲	●
6.3.4	Emergency Preparedness	239	Passenger Train Emergency Preparedness Plan (PTEPP)	FRA	▲	▲	●
6.3.5	Security System			FTA	▲	▲	●
6.3.6	Public Education and Safety Awareness			FTA	▲	●	●
6.3.7	Spare Parts Requirements and Inventory			FTA	▲	▲	●
6.4	<b>Evidence of Management Capacity and Capability</b>						
6.4.1	Project Management Plan & Sub-Plans						
6.4.1.a	Project Management Plan (PMP)			FTA	●	□	□
6.4.1.b	Operations and Maintenance Plan (O&MP)	229,238	Policies for Locomotive/Coach/Cab Car Hardware/Software Safety Program, Fire Safety Analysis, Mechanical Services Plan, and several other standards.	FRA	▲	●	□
6.4.1.c	Rail/Bus Fleet Management Plan			FTA	▲	●	□

Attachment A - Agency Commuter Rail Project Readiness for Revenue Operation Review Requirements by Project Readiness Phase

6.4.1.d	Safety and Security Plans			FTA	●	□	□
6.4.2	Third Party Agreements			FTA	▲	▲	●
6.4.3	Quality Management			FTA	●	□	□
7.0	<b>Coordination with Other Review Agencies</b>						
7.1	Validate FRA requirements have been meet.			FRA	▲	▲	●
7.2	Validate SSOA requirements have been meet.			FTA	●	□	□
7.3	Check that other external agency requirements have been meet.			FTA	▲	▲	●

Symbol Key: ▲ - Preliminary information required; ● - Element to be completed; □ - Element to be modified or augmented with additional information as necessary.

Phase Definitions:

- I. Completion of all System Testing and Commissioning Plans and schedules. Completion of OCS (DUS throat to DIA) and vehicle test section (between DIA and 40<sup>th</sup> and Airport Station) certifiable items, design criteria conformance checklists, construction specification conformance checklists, and safety critical items, and prior to completion of integrated testing.
- II. Substantial completion of construction activities and transition from a project construction to operation lead.
- III. Completion of all line pre-revenue operations, completion of all operational drills, and readiness for performance demonstrations.