Level Boarding: Decisions

14 October 2013

Clem Tillier

Why level boarding? Faster

- It speeds up service
- Consider a weekday all-stops local running from San Francisco to San Jose:
  - Diesel, no level-boarding: 1 hour 31 minutes
  - Electric, no level-boarding: 1 hour 21 minutes **(-10')**
  - Electric, with level-boarding: 1 hour 16 minutes **(-5')**

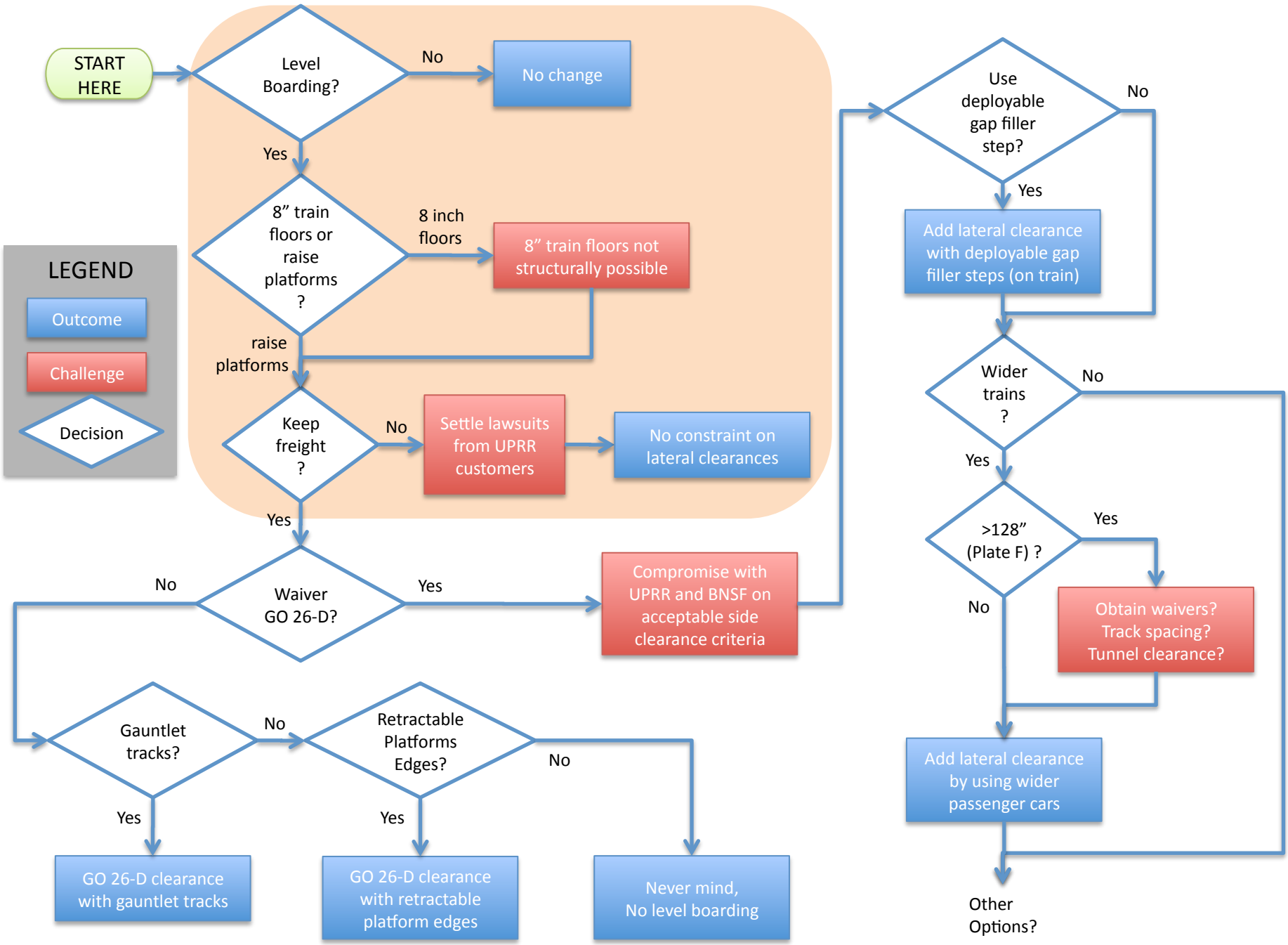
Level boarding is 50% as effective as electrification

Why level boarding? More reliable

- Predictable station dwell times make service more reliable
  - Transfers to BART, VTA, HSR are more robust (closely timed and reliable)
  - Capital-intensive infrastructure such as passing tracks for the blended system can be shorter (and cheaper to build) because tighter overtake timing is possible without risking delays
  - Less timetable padding → even faster service

Level boarding is important for blended operation

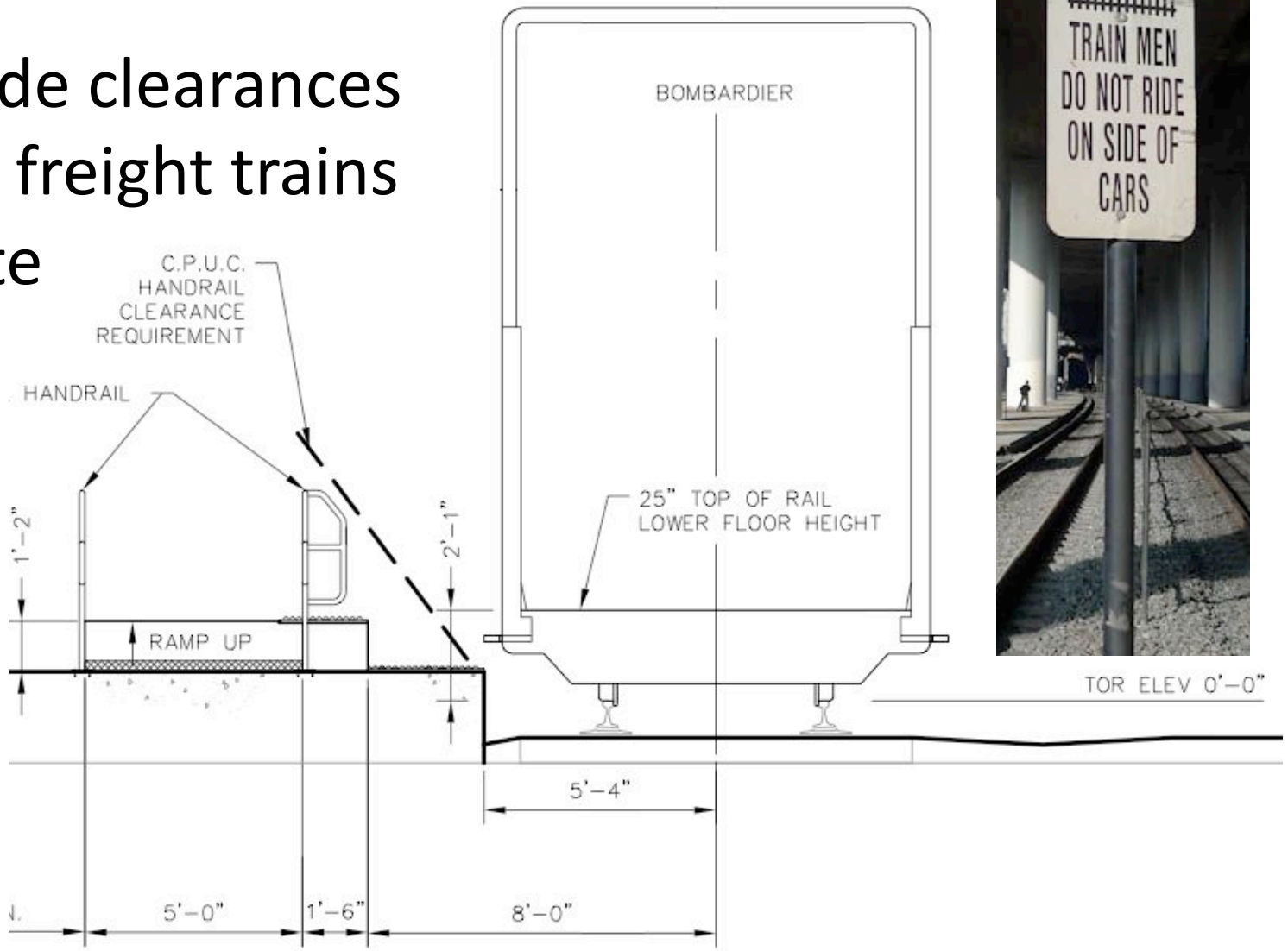
DECISIONS REGARDING INTEROPERATION WITH FREIGHT

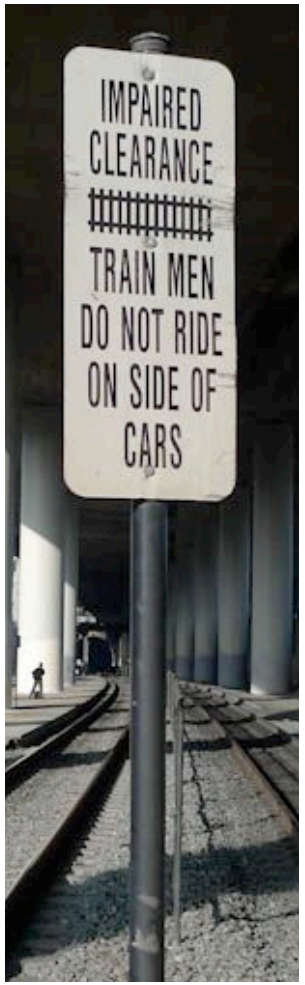


CPUC General Order 26-D

CPUC = California Public Utilities Commission

- Sets side clearances where freight trains operate

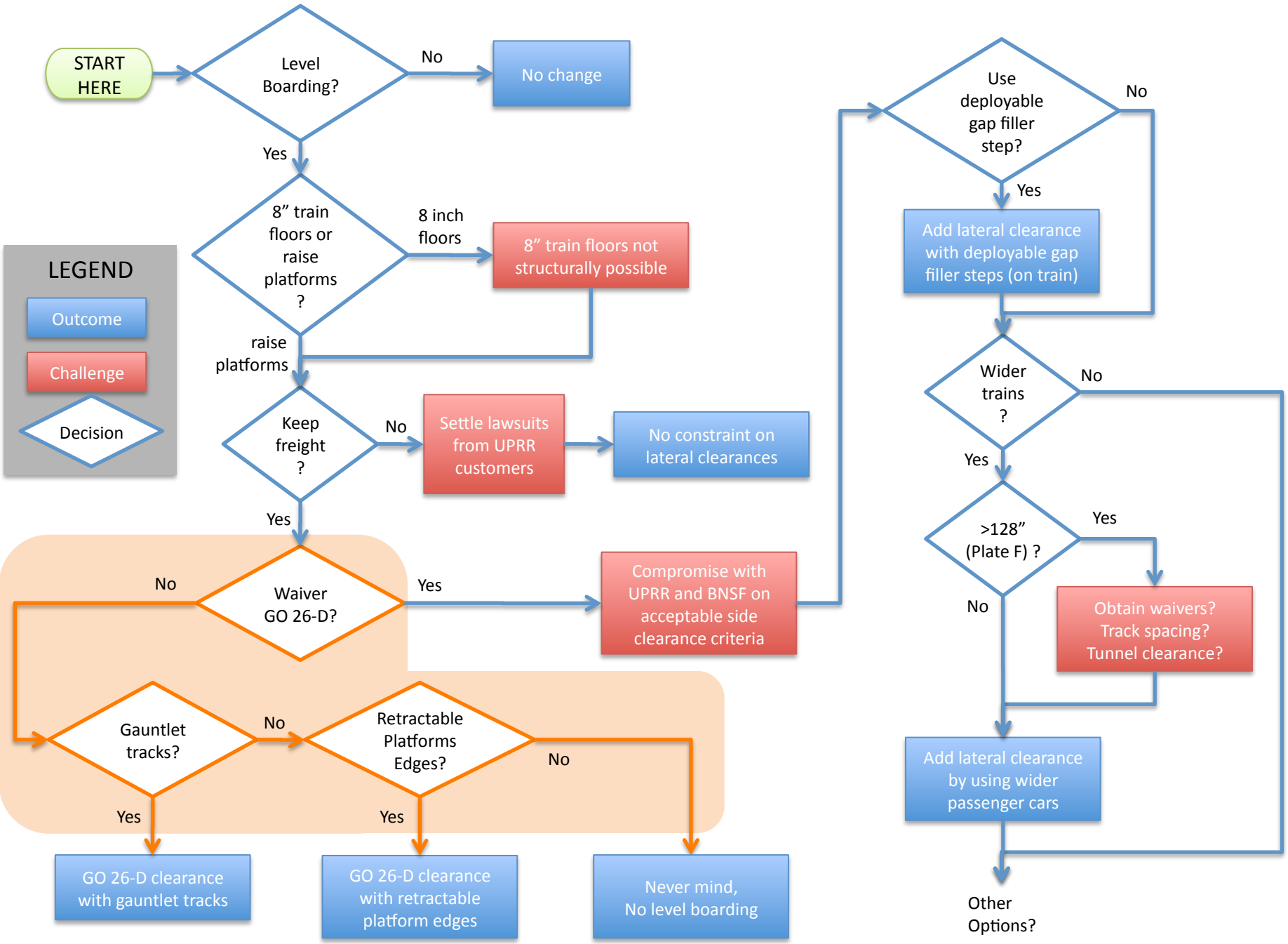




What 26-D is intended for

All of this is irrelevant to the SF peninsula

DECISIONS REGARDING INTEROPERATION WITH FREIGHT



Gauntlet tracks

- Required at every platform
- Capital cost: $$$
- O & M cost: $$
  - O & M = Operating & Maintenance
- Service impact: negative
  - Train must slow to a crawl entering and leaving each station

Expensive, slow and unreliable

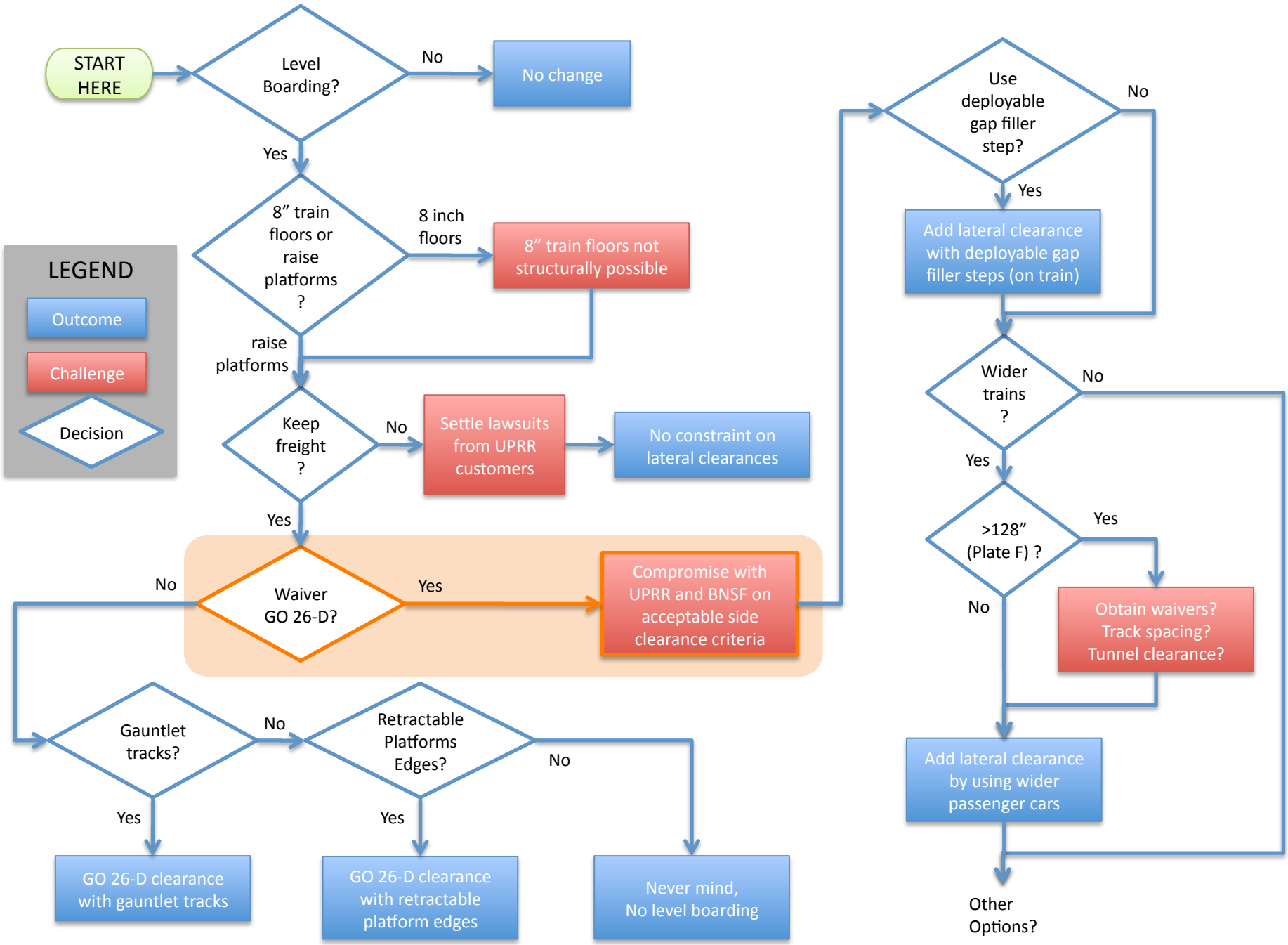
Retractable platforms

- Required at every platform
- Capital cost: $$$
- O & M cost: $$
- Service impact: none

Folded up for freight

Expensive and unreliable

DECISIONS REGARDING INTEROPERATION WITH FREIGHT



What compromise might look like

- 26-D side clearance: 2’ 8” of clearance beyond standard freight car width
- Could we compromise with platforms at…
  - 6 inches of clearance beyond standard car width?
  - 9 inches? A foot?
  - Compromise may also involve liability for “platform strikes”
- ADA allows only 3 inches from car to platform

Any compromise still leaves a gap > 3 inches

Waiver of General Order 26-D

- NOT AVOIDABLE if we are seeking an effective and affordable level-boarding solution

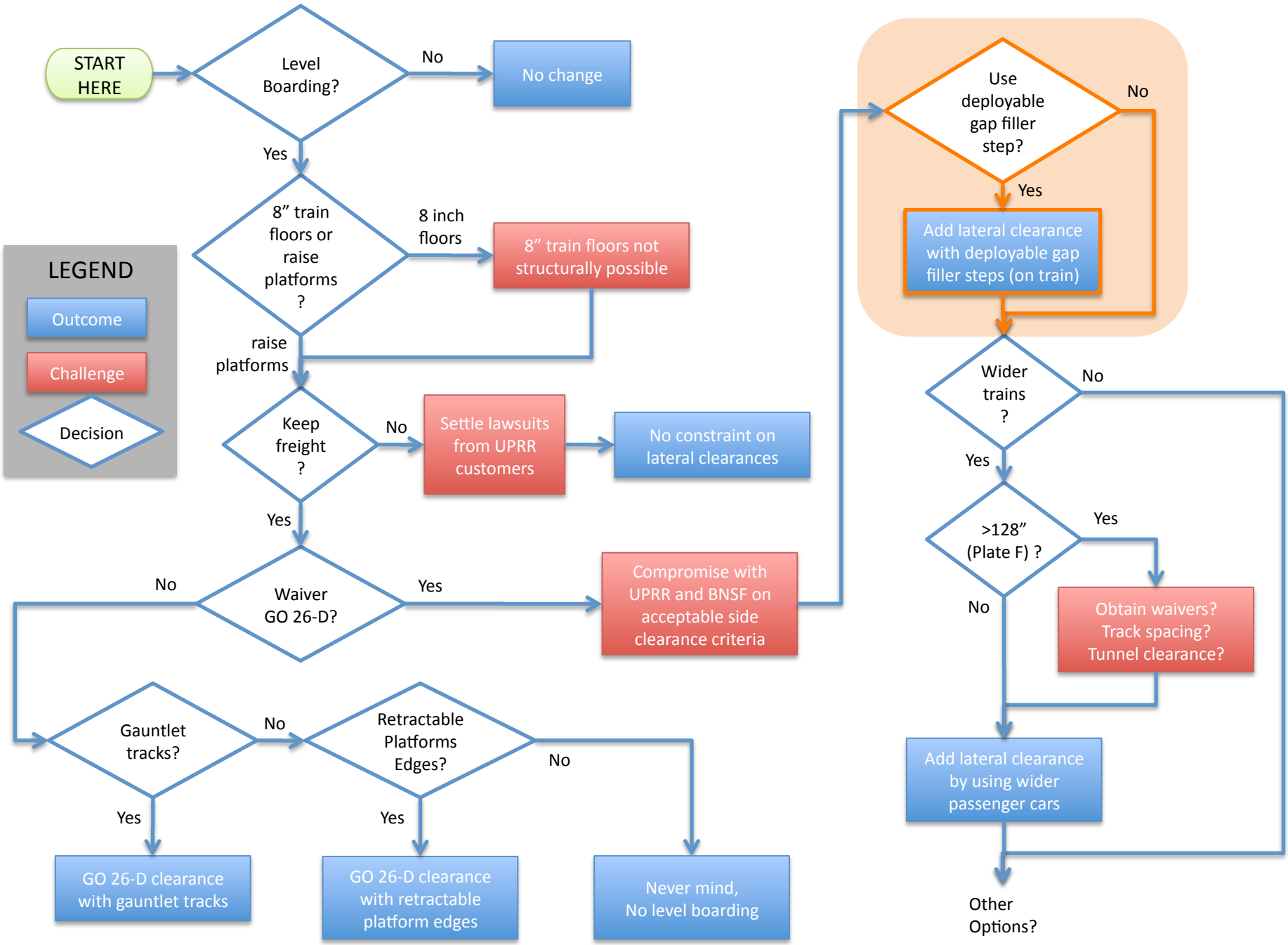
Peninsula Freight Rail Users Group

UNION PACIFIC

California Public Utilities Commission

The time to initiate the waiver process is now

DECISIONS REGARDING INTEROPERATION WITH FREIGHT



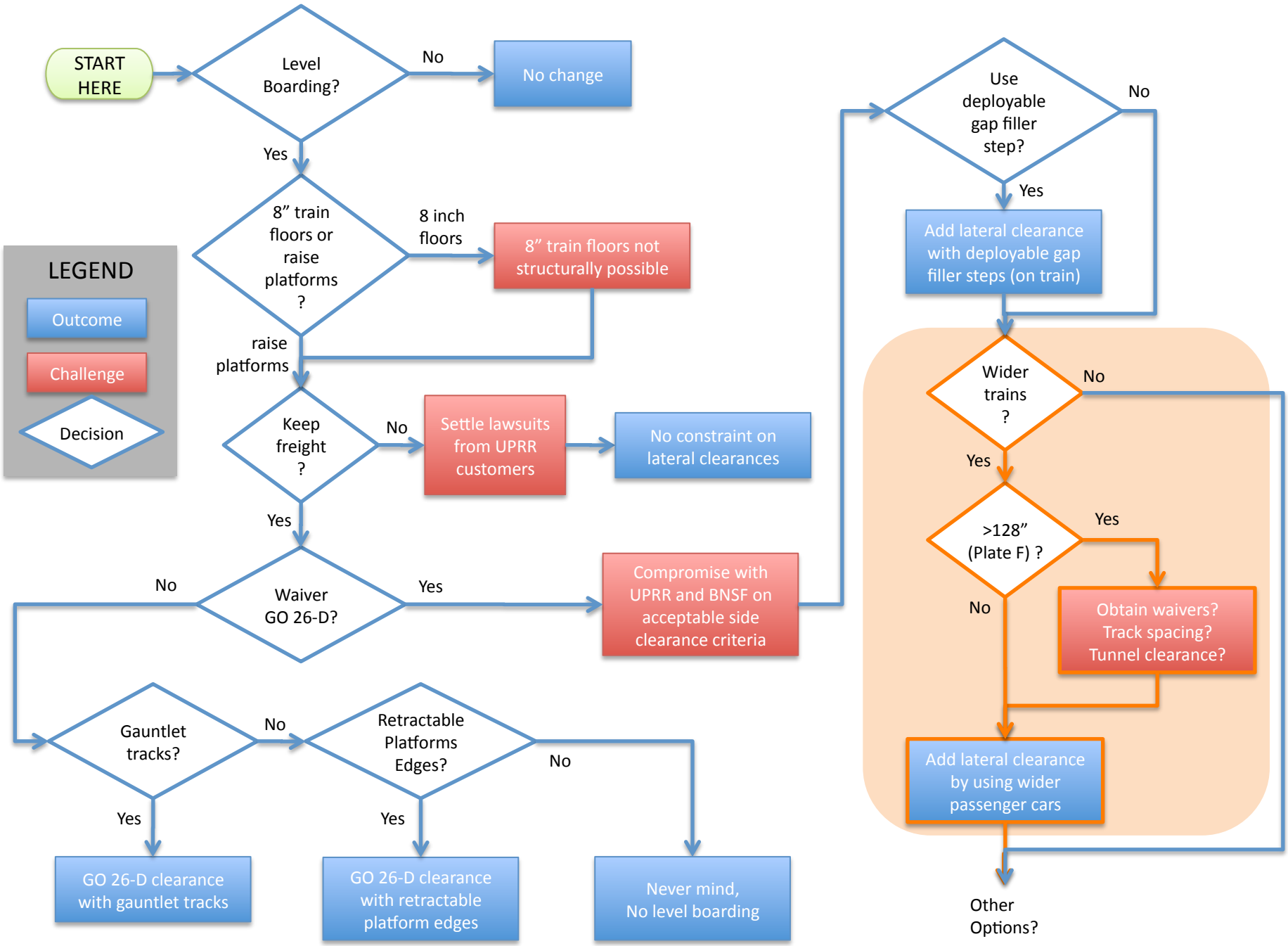
Gap-filler steps

Capital costs: $
O&M costs: $

- Deploy automatically from train, filling platform gap

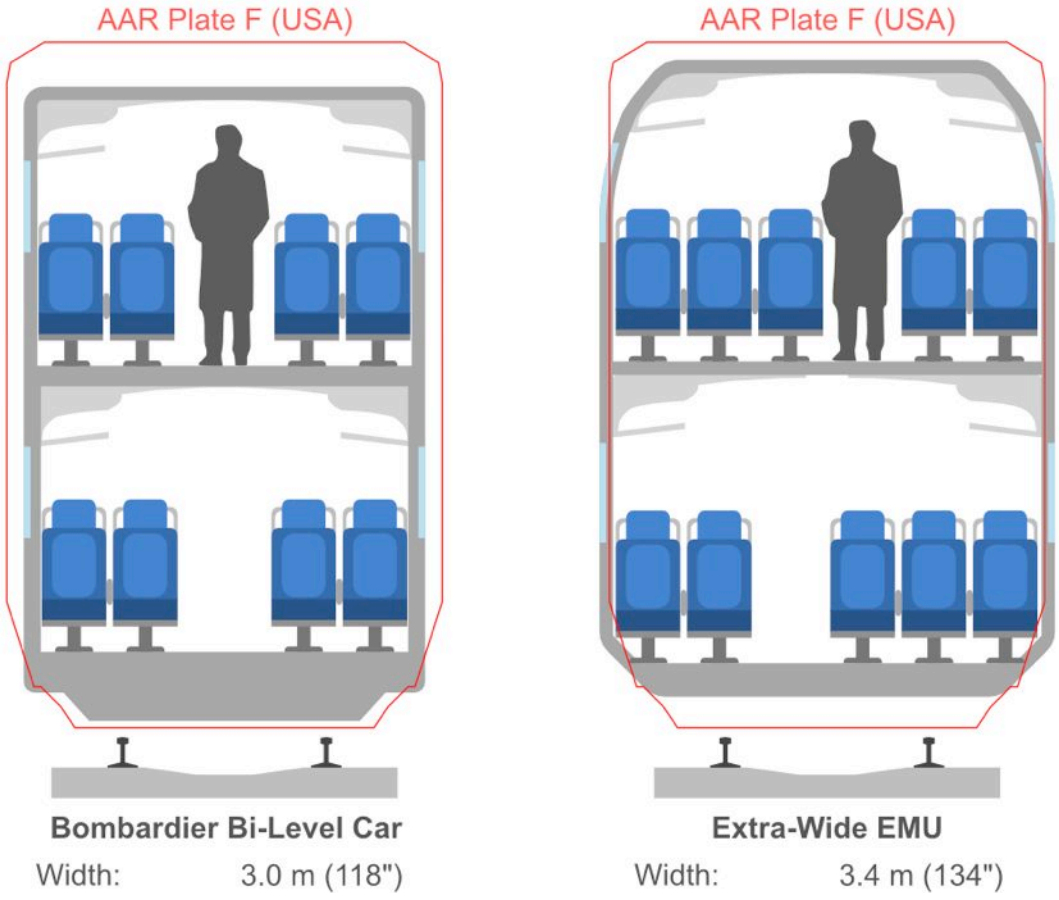
Common in Europe

DECISIONS REGARDING INTEROPERATION WITH FREIGHT



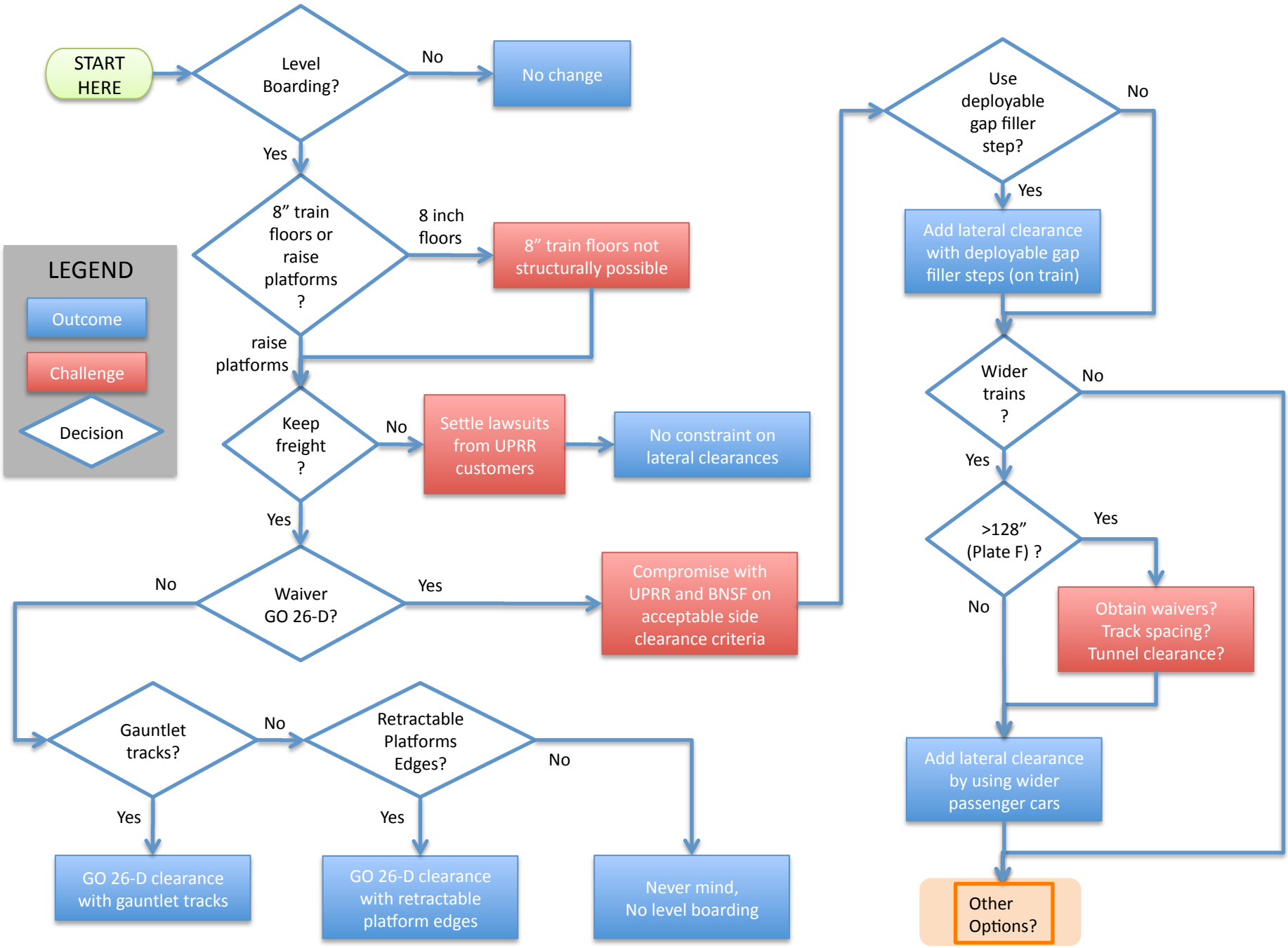
Extra wide trains

- Wider vehicle → narrower gap
  - Capital cost: $
  - O & M cost: zero
  - Service impact:
    - More space
    - More seats
    - More passengers



An attractive option when traffic is maxed out

DECISIONS REGARDING INTEROPERATION WITH FREIGHT



Level boarding conclusions

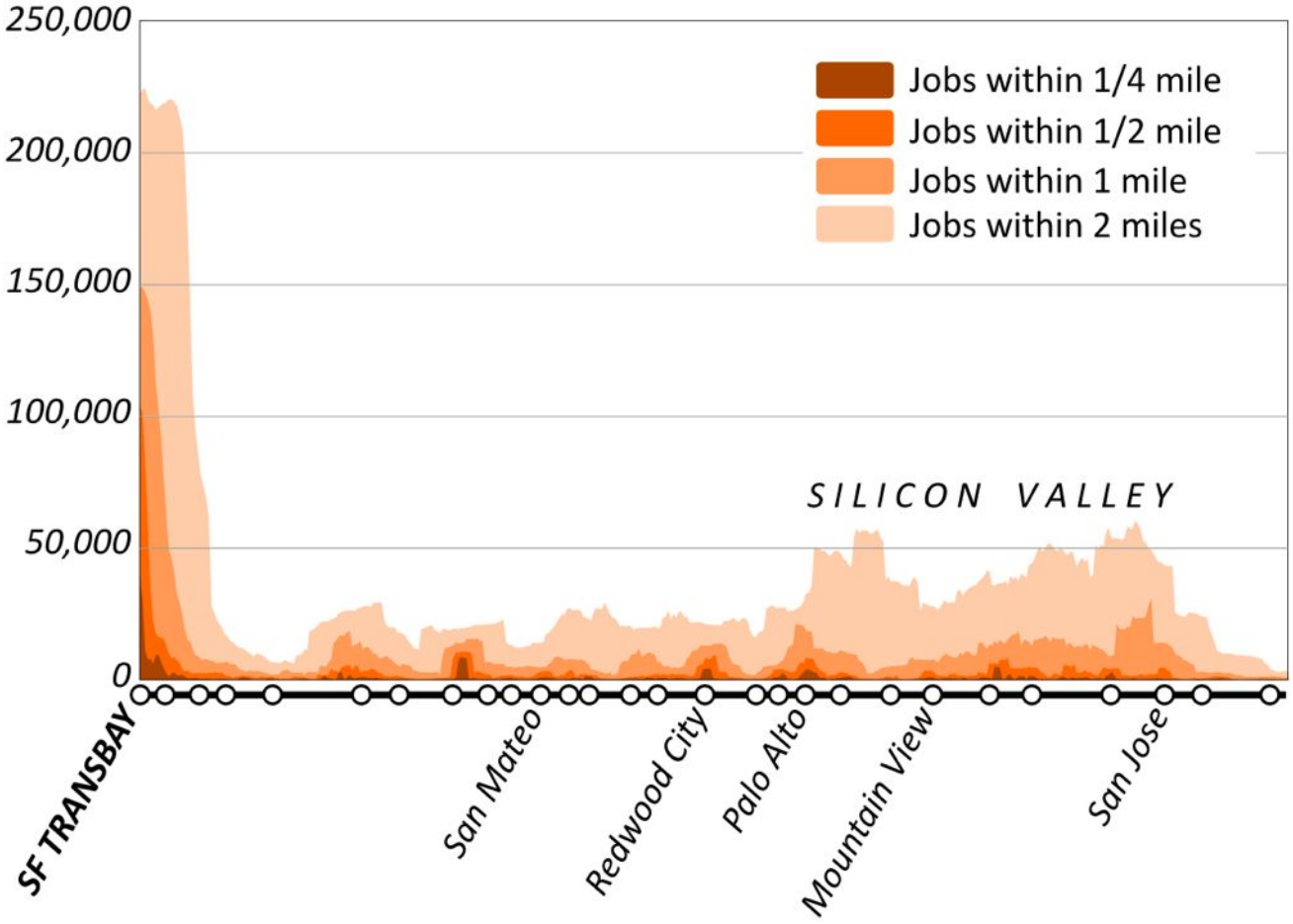
- Level boarding is valuable
  - Cost-effective for reducing trip times and creating a reliable blended system
  - A waiver of General Order 26-D is the first step
  - Even with a waiver, it will take time and money

The community and elected officials should provide the support needed for Caltrain to achieve level boarding

Beyond Level Boarding: Platform Sharing

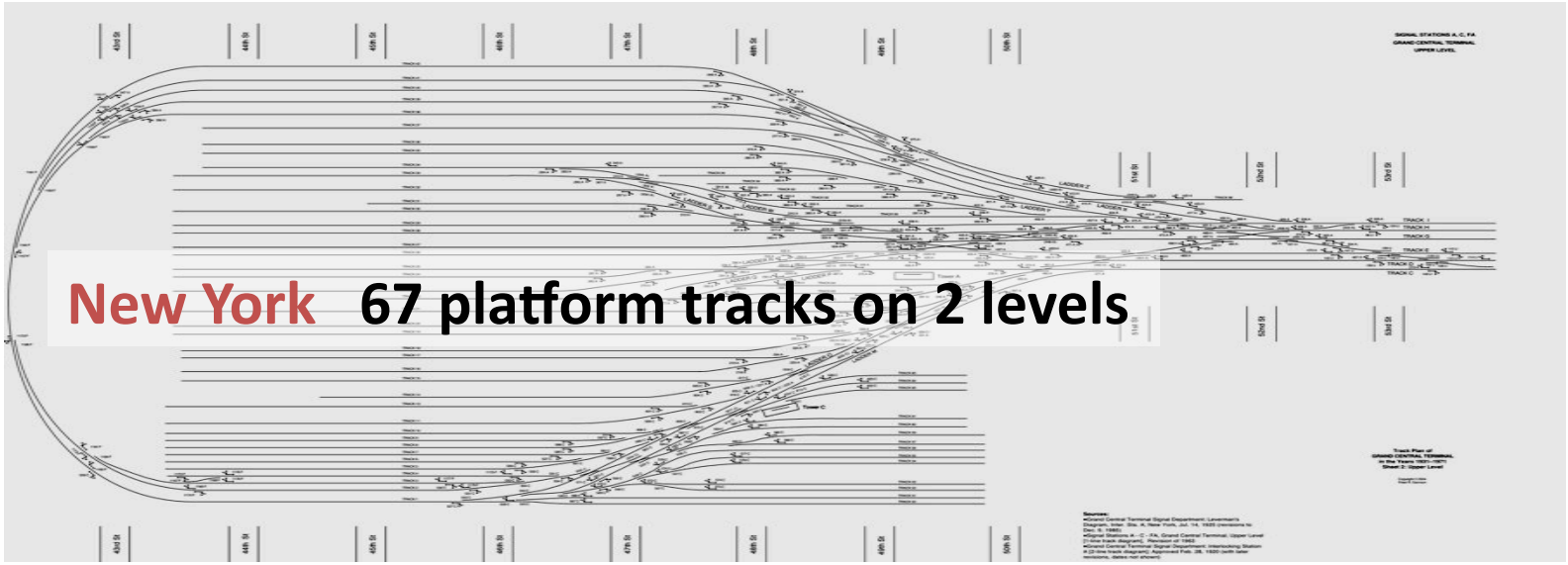
Jobs, jobs, jobs at Transbay

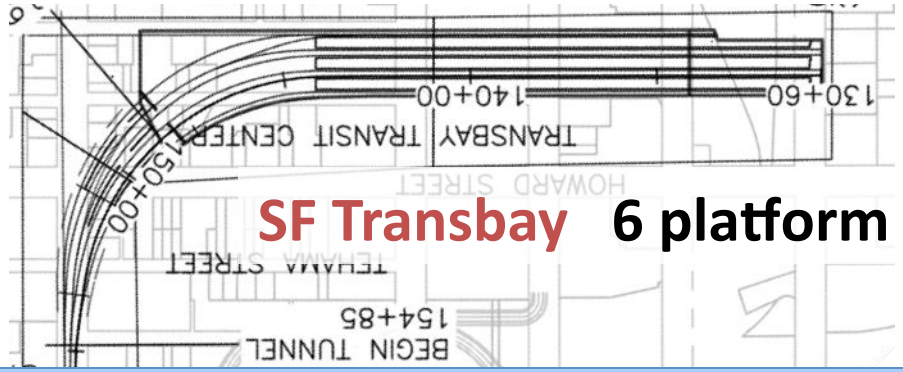
There are more jobs within ½ mile of Transbay than within ½ mile of all Caltrain stations *combined !*



All Caltrain and HSR should serve SF Transbay

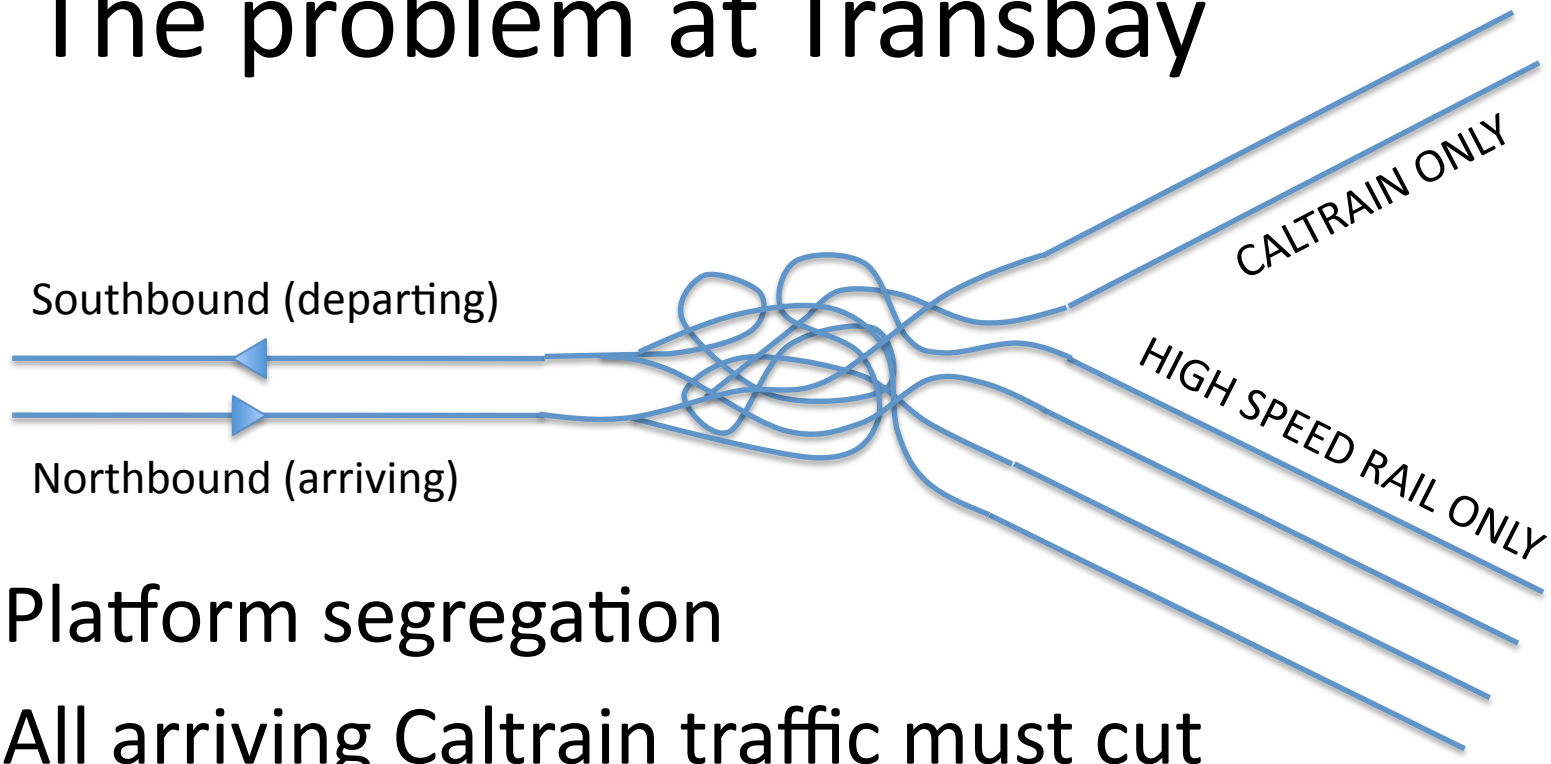
Grand Central of the West?





SF Transbay is a very small and cramped terminal

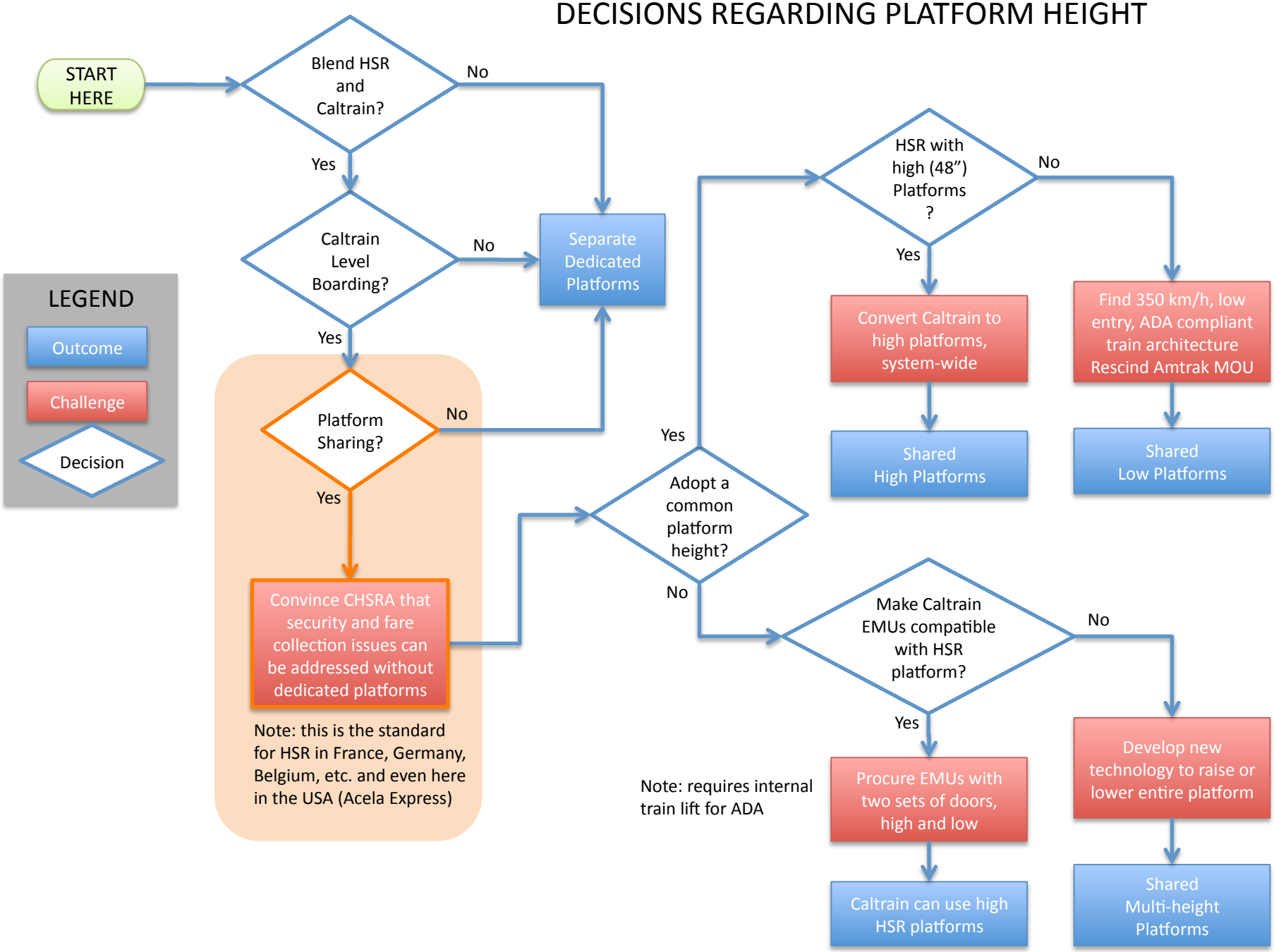
The problem at Transbay



- Platform segregation
- All arriving Caltrain traffic must cut across (and delay) all departing HSR traffic, and vice versa

Two separate mini-terminals are even worse!

DECISIONS REGARDING PLATFORM HEIGHT



Platform sharing

- Practiced everywhere in the world where track gauge does not preclude it

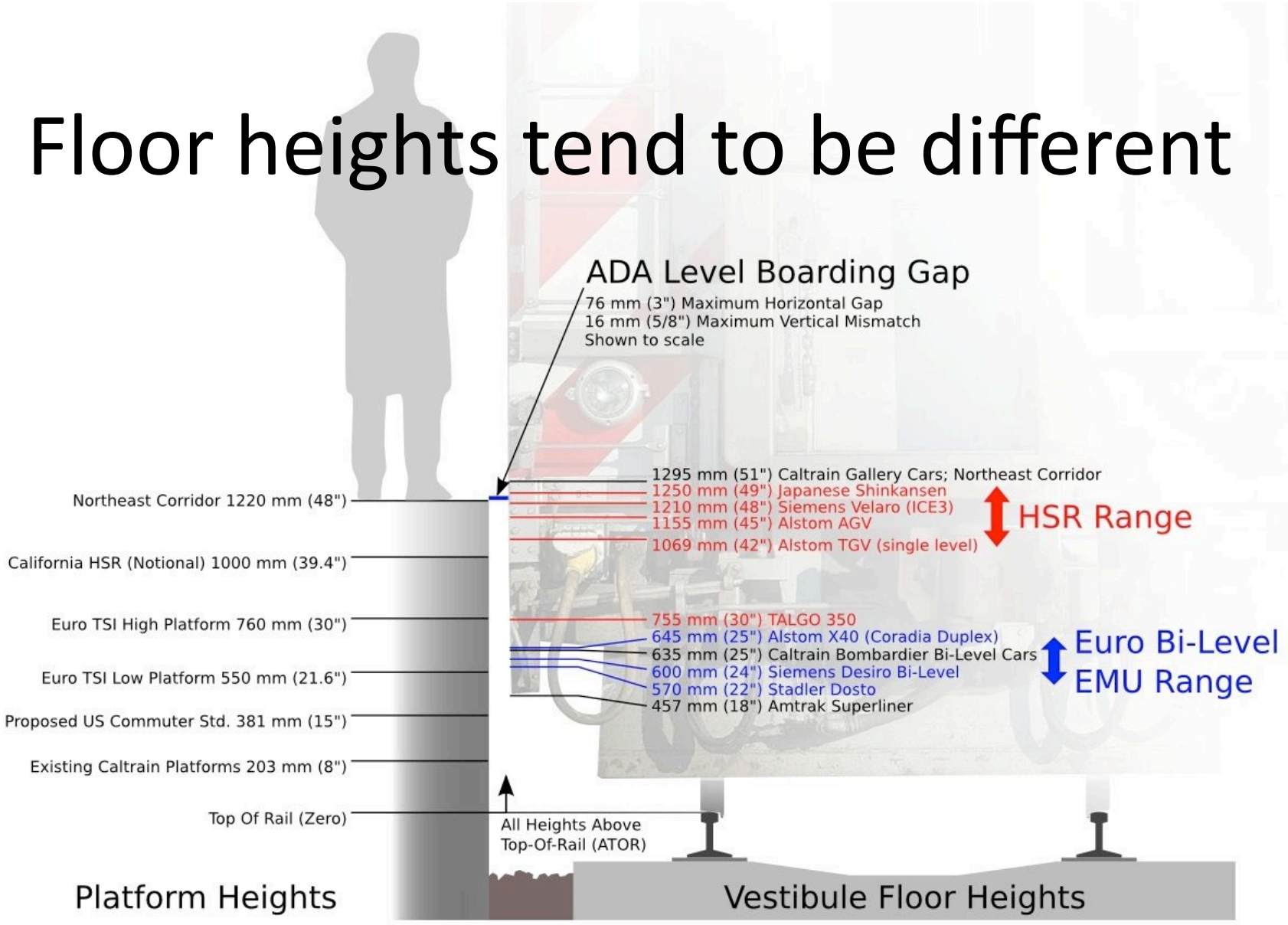
Platform sharing is common

Platform sharing for Transbay

- Reduces the number and frequency of conflicts (i.e. delays) in the station approach tracks
- Increases the overall throughput of the terminal, which sets the limit for all of California HSR
- Allows a scarce resource (platforms) to be dynamically allocated to actual (as opposed to predicted) demand patterns as they develop

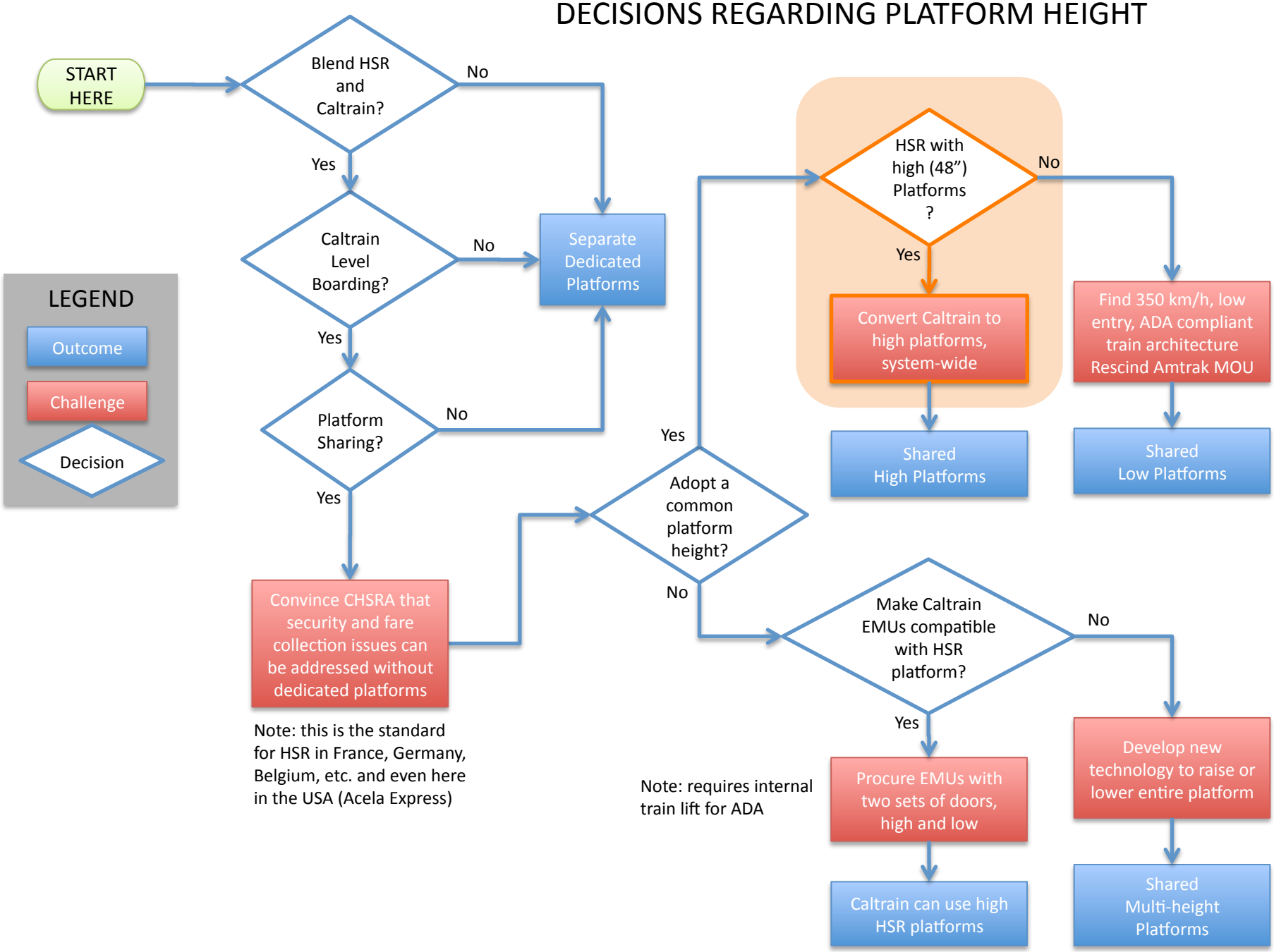
Platform sharing can make Transbay “bigger”

Floor heights tend to be different



For shared platforms, *someone* must compromise

DECISIONS REGARDING PLATFORM HEIGHT

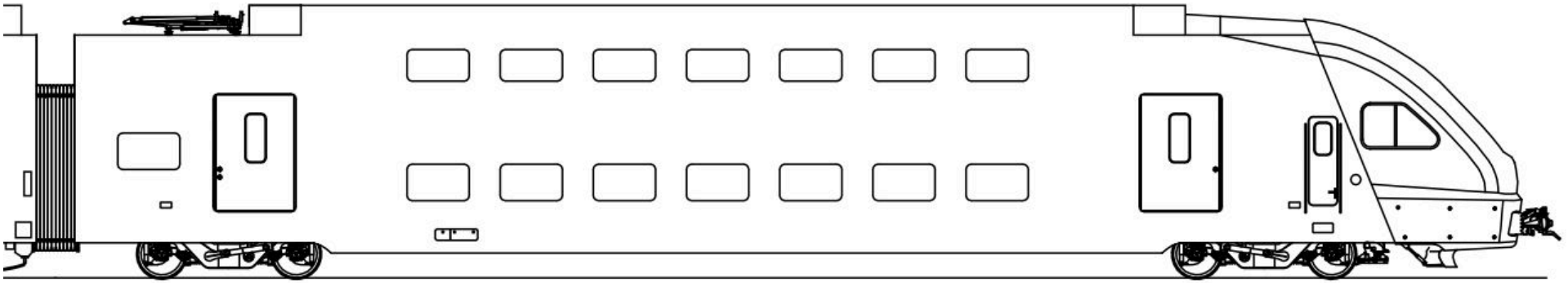


Bi-level, high-platform EMU

Sydney

Paris

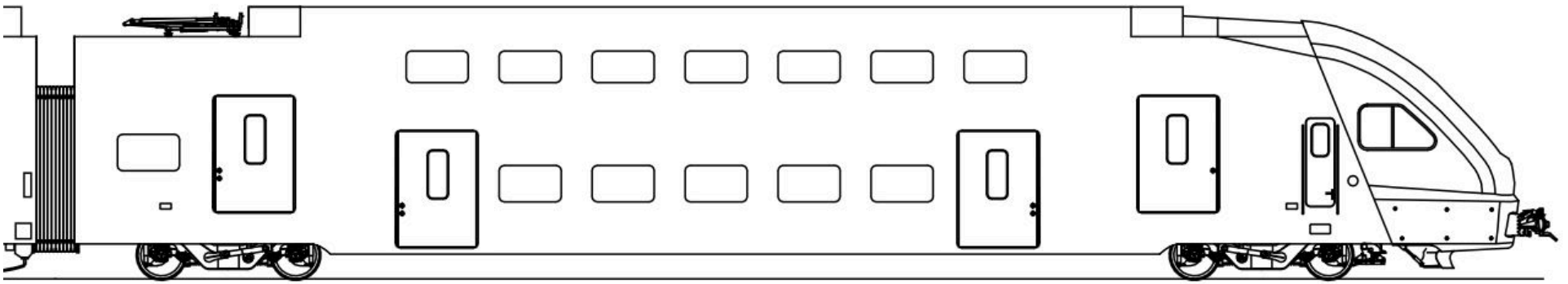
Moscow



They do exist!

Transition to high boarding

- Need to keep operating through transition
- Trains serve both high and low platforms
- Replace low doors with seats when done



Use EMU fleet to enable height transition

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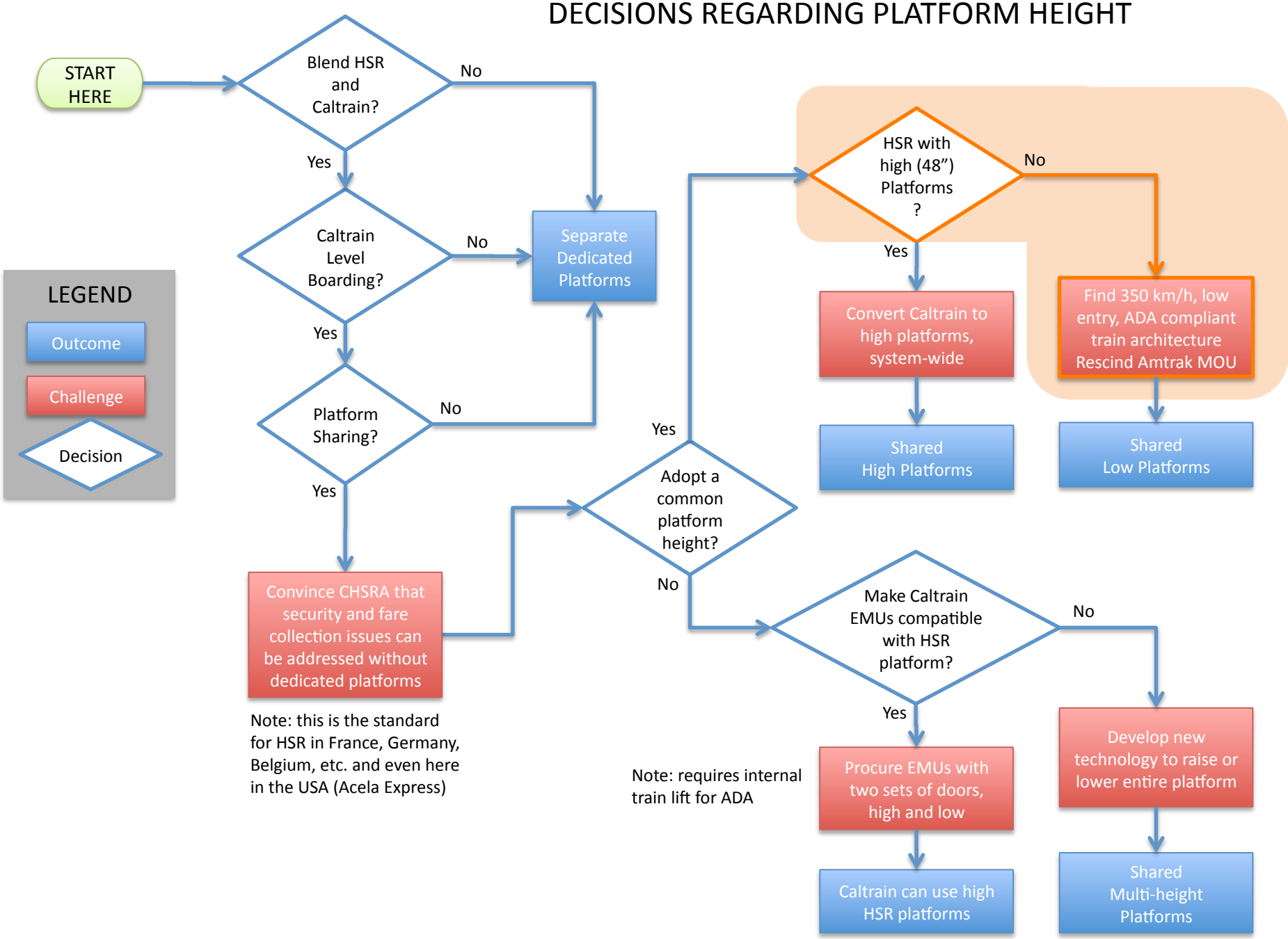
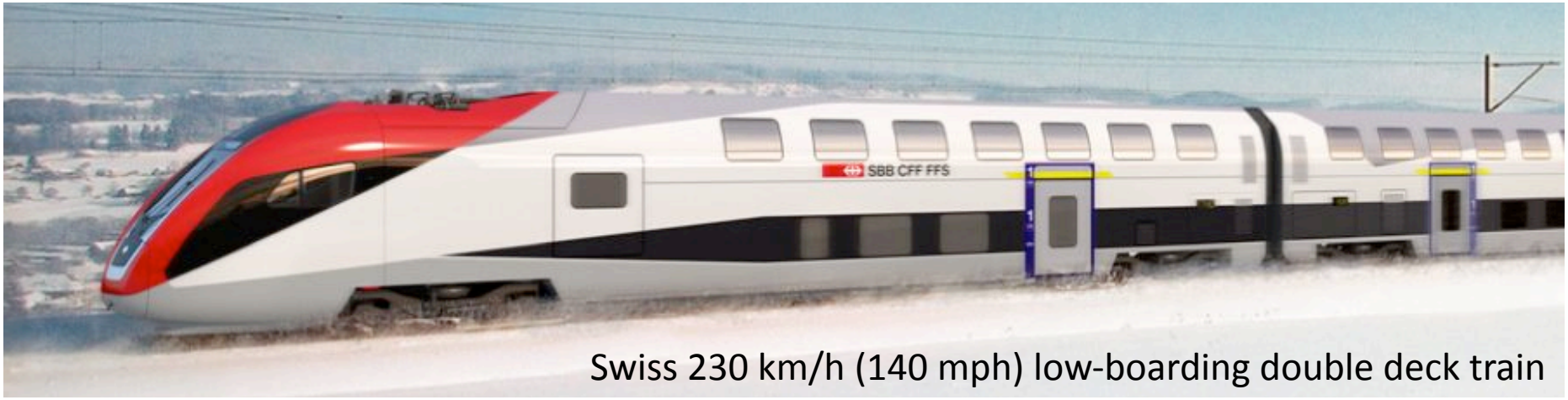


HSR for low platforms

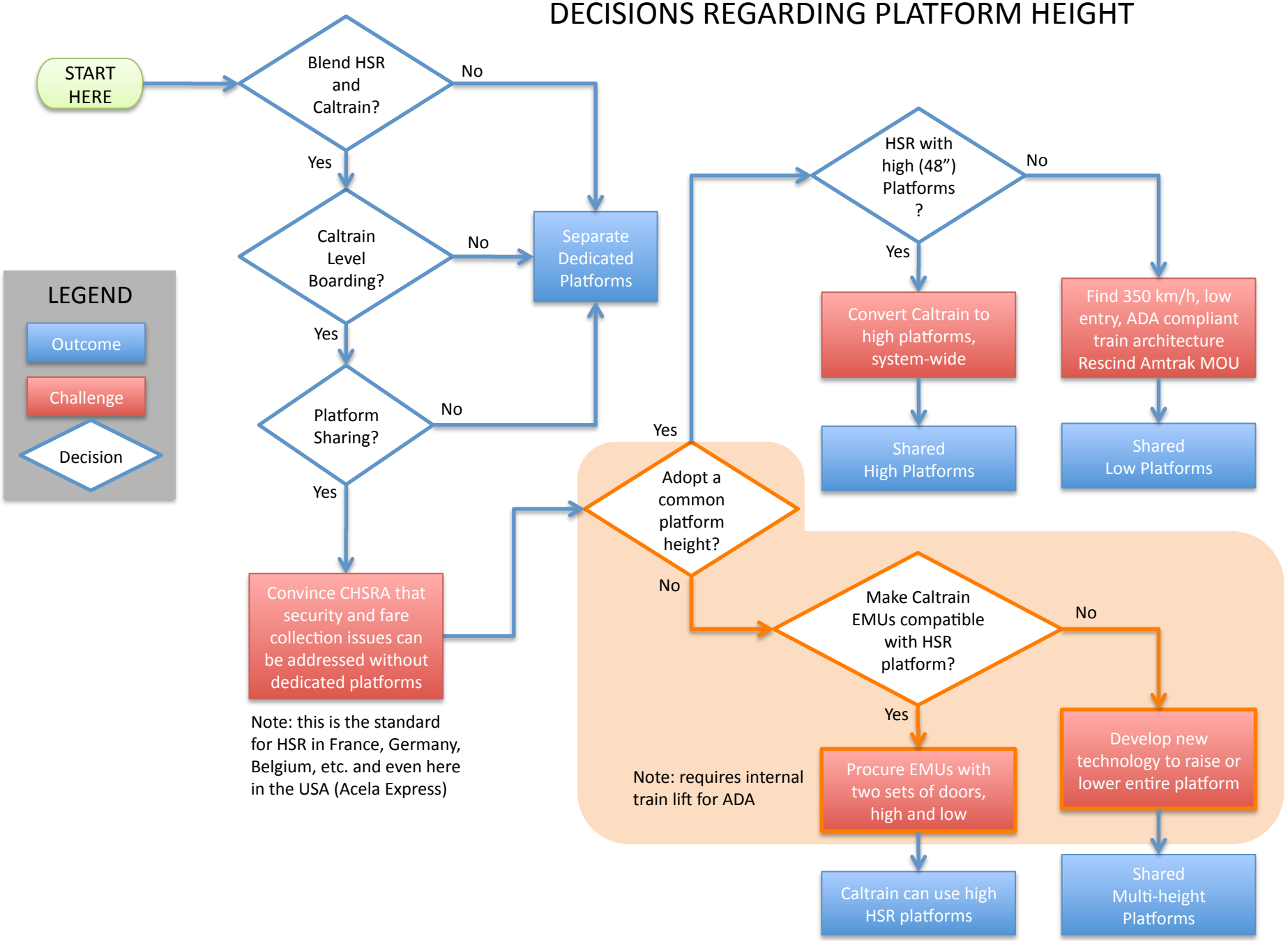


Swiss 230 km/h (140 mph) low-boarding double deck train

- Doesn't exist (yet… since nobody asked for it)
- Could enable bi-level, higher capacity trains
- Diverges from Amtrak joint procurement

If CHSRA requests info, builders will answer the call

DECISIONS REGARDING PLATFORM HEIGHT



Shared platform benefits for San Francisco

- More train traffic
- More ridership
- More economic activity
- More commercial success at Transbay

Shared platforms are great for San Francisco

Shared platform benefits for the Bay Area

- Lower capital costs in Millbrae
  - No need for underground facilities
- Lower capital costs in San Jose
  - No need for a massive double-deck HSR station (ACE and Amtrak need only 2 tracks)

- Easy to add a mid-peninsula stop… just make the Caltrain platform long enough (400 m)

Shared platforms are great for the Bay Area

What matters

- What matters:
  - Transbay capacity – sets statewide HSR throughput
  - Schedule reliability – key to blending Caltrain and HSR
  - Cutting capital costs – Millbrae, SJ and mid-peninsula
  - Multi-vendor solutions – no vendor lock-in
- What matters less:
  - The height of shared platforms – provided they're shared
  - Designing around the current Caltrain fleet (25 inches)
  - Compatibility with Amtrak and ACE – segregate in SC/SJ
  - Compatibility with Amtrak's Northeast Corridor HSR

Shared platforms will be controversial and difficult

Compatibility… can we do it?

- Higher passenger capacity
- Lower costs
- A better passenger experience

CALIFORNIA High-Speed Rail Authority

Caltrain

Caltrain HSR Compatibility Blog: http://caltrain-hsr.blogspot.com

BACKUP

DECISIONS REGARDING ADA COMPLIANCE