



JPB Community Advisory Committee

Meeting of October 21, 2026

Correspondence as of October 20, 2026

- | # | <u>Subject</u> |
|----|--|
| 1. | National Survey of Transit Fare Enforcement — Response Needed |
| 2. | Unable to start BATAC Zoom transcript |
| 3. | What went wrong during Caltrain's BEMU battery testing and why Battery Electric Locomotives (BELs) are inherently safer |
| 4. | CHSRA rolling stock conflict with 550mm European Technical Standard for Interoperability (TSI) |
| 5. | Faster boarding: next steps for the November CAC update |
| 6. | Business Case for Stadler change order pivoting from a failed BEMU experiment to 6 MWh Battery-Electric Locomotives (BELs) |

From: [Jason Dayvault](#)
To: [Eccleston, Tucker](#); [cacsecretary \[@caltrain.com\]](#); [Board \(@caltrain.com\)](#)
Cc: [HASNINE, MD SAMI](#); [Badhon, Farhan Anjum](#)
Subject: RE: National Survey of Transit Fare Enforcement — Response Needed
Date: Thursday, September 17, 2026 3:07:35 PM

Good afternoon Mr. Eccleston,

Thank you very much for reaching out.

Ted Burgwyn, Caltrain's COO, has agree to participate in the survey below. We will reach out directly if we have any questions.

Best wishes in your research!

All the best,
Jason

Jason Dayvault, Business Operations Project Manager (he/him)

166 N Rollins Rd, Millbrae, CA 94030

Cell: 650.730.7415 | Email: dayvaultj@caltrain.com

Website: [Caltrain](#)

Caltrain logo with Safety Tagline



From: Eccleston, Tucker <tuckereccleston@vt.edu>
Sent: Wednesday, September 16, 2026 5:00 AM
To: [cacsecretary \[@caltrain.com\]](#) <cacsecretary@caltrain.com>; [Board \(@caltrain.com\)](#) <board@caltrain.com>
Cc: [HASNINE, MD SAMI](#) <hasnine@vt.edu>; [Badhon, Farhan Anjum](#) <farhananjum@vt.edu>
Subject: National Survey of Transit Fare Enforcement — Response Needed

Some people who received this message don't often get email from tuckereccleston@vt.edu. [Learn why this is important](#)

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Hi Caltrain Board and Secretary's Office,

My name is Tucker Eccleston and I'm a researcher at Virginia Tech. We're working with the Transit Cooperative Research Program (TCRP) to conduct a national study of transit fare enforcement policies, technologies, and outcomes (TCRP Project A-54).

Although this message is being sent to Caltrain's general board and secretary addresses, we are specifically hoping that Theodore Burgwyn, Chief Operating Officer and/or Bruce Thompson, Fare Programs Operations Manager can respond to the following survey (linked below) or direct it to the appropriate person. Given their roles, we'd especially value their perspectives on Caltrain's fare enforcement policies, fare-program operations, and related practices. The results will help the TCRP produce guidance for the transit fare enforcement policies and methods of the future.

Survey: https://virginiatech.qualtrics.com/jfe/form/SV_50AXHH9b6hHx98a

This survey has been reviewed and approved by the Virginia Tech Institutional Review Board, and you are welcome to share with colleagues of a similar background. If you have any questions, you can reply back here or email Dr. Md Sami Hasnine at hasnine@vt.edu. We're appreciative of your consideration and participation.

Kind Regards,
Tucker Eccleston, EIT

BS '26 | MS '27
Virginia Tech Civil Engineering
Graduate Research Assistant, *The Hasnine Lab*
President, *ITE Student Chapter at Virginia Tech*
tuckereccleston@vt.edu

From: [Roland Lebrun](#)
To: [cacsecretary \[at\] caltrain.com](#); [Brent Tietjen](#)
Subject: Unable to start BATAc Zoom transcript
Date: Thursday, September 17, 2026 6:03:47 PM
Attachments: [image.png](#)

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Dear BATAc Secretary,

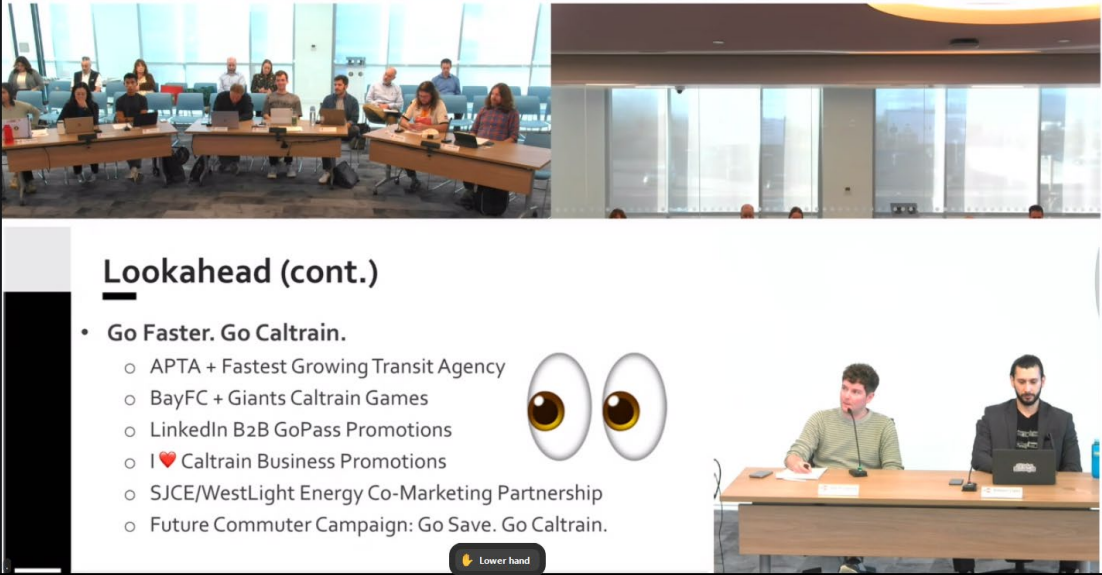
Could someone please enable the Zoom transcript button for the attendees?

Thank you

Roland Lebrun

zoom Workplace JPB Bicycle and Active Transportation Advisory Committee (BATAc)

REC Sign in



Lookahead (cont.)

- **Go Faster. Go Caltrain.**
 - APTA + Fastest Growing Transit Agency
 - BayFC + Giants Caltrain Games
 - LinkedIn B2B GoPass Promotions
 - I ♥ Caltrain Business Promotions
 - SJCE/WestLight Energy Co-Marketing Partnership
 - Future Commuter Campaign: Go Save. Go Caltrain.

Lower hand

Lower hand Show captions Settings

Leave

5:56 PM 9/17/2026

From: [Roland Lebrun](#)
To: [Board \(@caltrain.com\)](#)
Cc: [MTC-ABAG Info](#); [Baltao, Elaine \[board.secretary@vta.org\]](#); [SFCTA Board Secretary](#); [SFCTA CAC](#); [cacsecretary \[caltrain.com\]](#)
Subject: What went wrong during Caltrain's BEMU battery testing and why Battery Electric Locomotives (BELs) are inherently safer
Date: Tuesday, September 22, 2026 4:11:21 AM

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Gemini response

During the preliminary testing and commissioning phases of the **Caltrain Battery-Electric Multiple Unit (BEMU)** demonstration project, **battery thermal runaway propagation testing** was identified as one of the primary technical and safety risk factors. [1, 2]

The issues tracking around this specific testing phase revolve around the following core concerns:

1. The Core Concern: Thermal Runaway Cascade

A propagation test evaluates whether a catastrophic failure—specifically **thermal runaway**—in a single lithium-ion battery cell or module will cascade and spread to adjacent cells or modules within the large on-board traction battery packs. In large-scale passenger rail applications, containing an isolated cell failure to prevent a wider pack fire is crucial for rolling stock safety certification. [3, 4]

2. "First-of-its-Kind" Design Complications

Because this is a national demonstration project featuring the world's first **bi-level battery-equipped KISS trainset** from Stadler, there is no preexisting domestic blueprint for passing these specific structural and safety standards. The physical configuration—a **four-car trainset where passenger cars are paired alongside dense battery and power housing components**—means that energy containment and mitigation protocols must be designed and validated from scratch to satisfy stringent general railroad safety regulations. [3, 5, 6]

3. Impact on Project Timeline and Risks

As highlighted in Caltrain's recent **Peninsula Corridor Joint Powers Board (JPB)** project updates, battery technology and its associated propagation validation remain top-tier project risks alongside Union Pacific Railroad (UPRR) corridor alignment and supply chain/tariff impacts. Delays or structural adjustments required to pass the propagation metrics directly influence the timeline for moving the BEMU from standard overhead contact system (OCS) electrified testing into its intended non-electrified trial service down to Gilroy and Salinas. [1, 2, 3, 7]

Would you like to explore how **Caltrain and Stadler** plan to address these design risks, or do you want more details on the planned **Gilroy and Salinas demonstration routes**? [3]

[1] <https://www.caltrain.com>

[2] <https://www.caltrain.com>

[3] <https://www.caltrain.com>

[4] <https://belmontscientific.com>

[5] <https://www.railwayage.com>

[6] <https://www.caltrain.com>

[7] <https://www.caltrain.com>

Can you compare how Roland LeBrun's BEL proposal could potentially be safer than Caltrain's BEMU in a battery fire event?

Regional rail advocate **Roland LeBrun** has frequently lobbied the **Caltrain Peninsula Corridor Joint Powers Board (JPB)** to abandon the Stadler BEMU pilot. Instead, he advocates for utilizing heavy **Battery-Electric Locomotives (BELs)**—such as those manufactured by [Wabtec](#) or [Progress Rail](#)—to haul standard, unpowered passenger coaches. [1, 2]

From a fire-safety engineering standpoint, **LeBrun's BEL proposal features several structural safety advantages over Caltrain's BEMU configuration during a thermal runaway fire event:**

1. Complete Physical Separation from the Passenger Cabin

- **Caltrain's BEMU Design:** The Stadler BEMU integrates heavy traction batteries directly into a passenger-carrying trainset. In its current layout, batteries are positioned inside an attached "power car" or converted cab cars, putting massive energy packs immediately adjacent to or under passenger areas. **If a thermal runaway cascade occurs, poisonous gas, extreme heat, and fire are a direct threat to the passenger envelope.** [3, 4]
- **LeBrun's BEL Proposal:** A battery-electric locomotive is a detached, isolated power unit pulling unpowered passenger cars. If a battery pack catches fire, the entire hazard is structurally sealed inside an unoccupied locomotive shell, completely away from passengers. [3]

2. Simplified Emergency Uncoupling (Decoupling the Threat)

- **Caltrain's BEMU Design:** Because an electric multiple unit is a semi-permanently coupled, integrated trainset, **a fire in one section cannot be easily separated from the rest of the train while out on the corridor.** Passengers must rely on internal fire barriers and rapid evacuation at a standstill.
- **LeBrun's BEL Proposal:** Traditional locomotive-hauled configurations allow train crews

to quickly uncouple the locomotive from the rest of the passenger coaches. In a catastrophic battery fire, a crew could theoretically isolate and detach the burning BEL, leaving it safely away from the passenger cars to mitigate risk.

3. Industrial-Grade Containment Enclosures

- **Caltrain's BEMU Design:** Weight distribution is highly sensitive on passenger multiple-unit trainsets, meaning battery enclosures must balance structural fire containment walls against the strict axle-load limits of passenger railcars.
- **Lebrun's BEL Proposal:** Freight-derived battery locomotives (like the Wabtec FLXdrive) are built to heavy-duty locomotive standards where excess weight can actually aid in tractive effort. This allows for significantly thicker blast-resistant framing, heavy firewalls, and dedicated external venting systems designed to channel runaway thermal energy straight up into the air, rather than outward toward a passenger car body. [5]

Direct Comparison

Safety Aspect	Caltrain BEMU (Integrated Trainset)	Lebrun BEL Proposal (Isolated Locomotive)
Proximity to Passengers	Highly adjacent; batteries share the trainset frame.	Completely isolated; zero passengers inside the power unit.
Containment Strategy	Relies on passing cell-to-cell propagation testing inside a multi-use car.	Uses structural locomotive framing and venting away from coaches.
Emergency Mitigation	Passengers must evacuate the train onto the right-of-way.	The burning power source can be physically uncoupled from coaches.

Would you like to review **Roland Lebrun's specific cost and capacity arguments** against the BEMU, or should we look at how standard **FRA safety regulations** view battery locomotives versus multiple units? [1, 6]

[1] <https://www.caltrain.com>

[2] <https://www.caltrain.com>

[3] <https://www.caltrain.com>

[4] <https://www.railwayage.com>

[5] <https://www.caltrain.com>

[6] <https://www.caltrain.com>

Q: How standard FRA safety regulations view battery locomotives versus multiple units

The **Federal Railroad Administration (FRA)** evaluates battery locomotives and battery multiple units through two distinctly different regulatory lenses. While the United States lacks a unified, codified "battery-specific" safety statute, the FRA handles new alternative-propulsion systems by applying established, rigid structural paradigms based on vehicle classification. [1, 2]

The FRA framework distinguishes between standalone battery locomotives and integrated battery multiple units (BEMUs) through the following key principles:

The type of vehicle dictates the primary set of federal safety guidelines that must be met:

- **Battery-Electric Locomotives (BELs):** Regulated under [49 CFR Part 229 \(Railroad Locomotive Safety Standards\)](#). This section focuses heavily on heavy-duty vehicle chassis integrity, structural crashworthiness, control stand failsafes, and power-cutoff stability. [1, 2, 3, 4]
- **Battery-Electric Multiple Units (BEMUs):** Regulated under [49 CFR Part 238 \(Passenger Equipment Safety Standards\)](#). Because a BEMU features integrated traction batteries embedded within passenger-carrying vehicles, it must meet incredibly granular, complex passenger-protection criteria, including strict fire safety, emergency evacuation, and specialized structural deformation limits. [2, 5]

The FRA subjects these two configurations to fundamentally different physical tests to verify crashworthiness: [2]

- **Locomotives (BELs):** Under Part 229 and industry guidelines like AAR S-580, locomotives utilize massive bulkheads and internal framing designed to withstand extreme impact forces. For a battery locomotive, the massive steel envelope acts as an armored box. The FRA treats the battery containment area similarly to heavy internal equipment or fuel storage, requiring it to resist crushing and prevent puncture from catastrophic collisions. [2, 4, 6]
- **Multiple Units (BEMUs):** BEMUs must adhere to Tier I or Tier II passenger crashworthiness requirements under Part 238. This includes strict **Crash Energy Management (CEM)** systems, which integrate crumple zones at the ends of the cars. The FRA's primary concern with a BEMU is ensuring that a structural impact does not deform the battery compartments, puncture a cell, or introduce toxic thermal runaway gasses into the passenger breathing zone. [2, 5]

Because neither Part 229 nor Part 238 natively anticipates high-voltage lithium-ion thermal runaway dynamics, the FRA relies heavily on **case-by-case engineering approvals** and alternative design waivers. [1, 4]

- For **BELs**, the FRA expects a comprehensive product safety analysis covering traction

electronics, vehicle/track interaction due to the extreme shifting center of gravity, and battery fluid isolation.

- For **BEMUs**, the FRA demands a far more exhaustive system hazard analysis. This requires builders like Stadler to rigorously prove to the FRA that an onboard failure cannot compromise passenger emergency preparedness, egress routes, or interior air quality. [1, 2, 7]

To bridge this regulatory gap, groups like the American Public Transportation Association (APTA) have established dedicated working groups to standardize **Battery-Electric Passenger Rail Equipment Safety Practices**, explicitly targeting risk mitigation for onboard energy storage systems. [7]

Regulatory Dimension	Battery Locomotive (BEL)	Battery Multiple Unit (BEMU)
Primary Regulation	49 CFR Part 229 (Locomotive Standards)	49 CFR Part 238 (Passenger Equipment)
Safety Philosophy	Protect the crew; isolate heavy infrastructure inside an unoccupied shell.	Protect the passengers; safely manage energy storage embedded in the cabin frame.
Impact Testing Focus	Rigid chassis protection, collision posts, and heavy-duty object deflection.	Structural deformation control, crumple zones, and battery enclosure non-intrusion.
Fire/Smoke Mandates	Standard industrial venting away from control cabs.	Demanding cell-level propagation mitigation and strict smoke/gas containment barriers.

Would you like to dive deeper into the specific **APTA safety practices** regarding battery fires, or look at how the FRA evaluates **Tier I versus Tier II crashworthiness** for passenger trainsets?

[1] <https://www.trains.com>

[2] <https://www.railwayage.com>

[3] <https://www.ecfr.gov>

[4] <https://www.ecfr.gov>

[5] <https://railroads.dot.gov>

[6] <https://downloads.regulations.gov>

[7] <https://www.railwayage.com>

From: [Roland Lebrun](#)
To: [MTC-ABAG Info](#)
Cc: [CHSRA Board](#); [Board \(@caltrain.com\)](#); [Transbay Program](#); [TJPA CAC](#); [cacsecretary \[at\] caltrain.com](#); [SFCTA Board Secretary](#); [SFCTA CAC](#); [ccjpaboard@capitolcorridor.org](#); [clerk@sjrrc.com](#); [boardsecretary@scrra.net](#)
Subject: CHSRA rolling stock conflict with 550mm European Technical Standard for Interoperability (TSI)
Date: Tuesday, September 29, 2026 5:35:54 PM
Attachments: [Outlook-ts2kvvt](#)
[PRG-letter-of-7-Feb-2017-Reduced.pdf](#)
[Map_Europe_railway_platform_height.svg](#)

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Dear Chair Noack and Commissioners,

The intent of this email is to substantiate and elaborate on the comment I made during last week's Commission meeting, specifically that the California High Speed Rail Authority's rolling stock procurement plans conflict with a [Peer Review Group February 7th 2017, letter addressed to the Legislature](#) (attached for your convenience) which reads as follows:

*"A pertinent example of Caltrain/HSRA interaction is the recent announcement by HSRA that it may shorten its platforms in order to reduce the initial capital cost of the system. **Shortening the platforms and trains leaves open the possibility that demand will eventually exceed the reduced station capacity, especially in the "bookend areas".***

An alternative potential response would be to use bi-level trains at the outset for HSRA service. We have recommended in past letters that the Authority consider adopting bi-level trains from the outset because the loading platform level would be consistent with the lower level used by Caltrain and Metrolink (and ACE if there are joint operations in future). In our discussions, the Authority indicated that they will consider inputs from the new system operator (discussed below). ***We recommend that this issue be addressed carefully before HSRA commits itself to a rolling stock fleet design.***"

Please note that there were encouraging news emanating from Berlin last week where Mr. Choudri was quoted as follows:

"Choudri noted that the project is drawing heavily on established European railway technology rather than developing an entirely separate technical model for the US market. This includes ETCS-based signalling and train control, alongside the foundation of European standards to enable high-speed operations. By collaborating with European companies, he aims to avoid "reinventing the wheel."

To succeed, California High Speed Rail anticipates the use of European products and technical standards."

<https://railway-news.com/california-high-speed-rail-leads-us-rail-push-at-innotrans-2026/>

The specific Technical Standard I was referring to is the [European 550mm Technical Standard for Interoperability \(TSI\)](#), which makes it possible for any compliant train (including the French TGV duplex AKA "TGV M") to achieve level boarding at the majority of rail platforms in Europe, including the Paris Regional Express Rail (RER) network.

<https://commons.wikimedia.org/w/index.php?curid=15294255>

Please consider following up on this interoperability issue with Mr. Steve Kawa, the Chairman of the High Speed Rail Authority at your earliest convenience.

Respectfully presented for your consideration.

Roland Lebrun

Application of the [European Union](#)'s standard heights for new construction: Green =550mm, Blue=760mm, Turquoise=both, Dark gray = New builds in other heights than the EU standards

https://commons.wikimedia.org/wiki/File:Map_Europe_railway_platform_height.svg



California High-Speed Rail Peer Review Group

Gary Gallegos

Stacey Mortensen

Lou Thompson
Chairman

Martin Wachs

February 7, 2017

The Honorable Kevin de León
Senate President Pro Tem
State Capitol Building
Room 205
Sacramento, CA 95814

The Honorable Anthony Rendon
Speaker of the Assembly
State Capitol Building
Room 219
Sacramento, CA 95814

The Honorable Jean Fuller
Senate Republican Leader
State Capitol Building
Room 305
Sacramento, CA 95814

The Honorable Chad Mayes
Assembly Republican Leader
State Capitol Building
Room 3104
Sacramento, CA 95813

Dear Honorable Members:

Members of the Peer Review Group met with officials of the High-Speed Rail Authority (HSRA) on December 7, 2016, to discuss two issues: the Subdivision (d) Funding Plans covering the Central Valley Segment and the San Francisco to San Jose Peninsula Corridor, along with the related reports of the independent financial advisor (Project Finance Advisory Ltd – PFAL); and the Request for Qualifications (RFQ) to acquire early operator services. The documents referenced in this letter are listed in Appendix A.

THE FUNDING PLANS

The Subdivision (d) Funding Plans appear to be complete and in substantive compliance with the requirements of the law, though we take no position on potential issues of litigation. They address whether funds and fund sources already identified, authorized and appropriated and the scope, schedule and budgets are within the envelope defined by the 2016 Business Plan. The PFAL reports conclude that the projects covered by the plans can feasibly be completed within

the existing schedules and budgets. The reports conclude that the Authority is learning from experience and that the identifiable potential problems and risks can be addressed by professional management. There are points we believe the Legislature may want to consider when assessing these reports.

General Issues

The Subdivision (d) plans deal with planning, financing and constructing the Caltrain electrification work between San Francisco and San Jose Diridon station, part of which is being financed by HSRA, and 119 miles of new work between Madera and Poplar Avenue in Shafter (approximately 18 miles north of Bakersfield). Because HSRA does not intend to operate stand-alone service on either of these sections, issues of demand, revenue, operating costs and operating subsidy are not addressed. The San Jose to San Francisco financing will contribute to electrified lines between San Jose and San Francisco that HSRA trains will eventually be able to use, and the lines should be in place by the time that HSRA might reasonably need to use them. The Central Valley financing will yield a 119 mile electrified line with two stations that will permit testing of HSRA trains at 220 mph, but no actual HSRA revenue service. It would be possible to re-route the San Joaquin service to the new line to save 40 minutes between Sacramento and Bakersfield. Inauguration of HSRA revenue service will await completion of the Madera to San Jose link through the Pacheco Pass. Completion of service into the planned Bakersfield station depends on acquiring the \$2.9 billion in added money discussed in the 2016 Business Plan.

Implementation of both Funding Plans also depends on the Authority's receipt of a significant part of the Cap and Trade funding as projected. This issue was highlighted in our letter to the Legislature of August 24, 2016. Although the Cap and Trade receipts fill a critical gap in nearer-term financing, auction receipts have been volatile and may be unstable in the light of possible changes in emission reductions policies at the Federal level. We would like to repeat our recommendation in that letter that "...the Legislature ask the appropriate agency of government to develop an accepted estimate of Cap and Trade results under appropriate assumptions so that future Business Plans [and Subdivision (d) Funding Plans] by the Authority ... will reflect a commonly agreed estimate for both potential receipts and risks related to those receipts."

San Jose to San Francisco Electrification

The "blended system" for joint operations by Caltrain and HSRA between San Jose and San Francisco: would not be possible without Caltrain electrification. The Funding Plan and the PFAL report generally indicate that the necessary work is now underway and that Caltrain should be able to deliver the system for HSRA operation by the time that it is needed, assuming that the planned Federal funding agreement is completed and implemented.

We believe that the operating agreement between Caltrain and HSRA needs further definition, as outlined in Article IV of the Funding Agreement signed by the Peninsula Corridor Joint Powers Board (PCJPB) and the Authority on August 9, 2016. The Memoranda of Understanding to date focus on facilities and money, but have not defined how the operating relationships will work. Who will do scheduling and train dispatching and under what priorities? Who will manage track

maintenance work and who will pay what share of the maintenance? How will the pricing and marketing of Caltrain and HSRA services interact? How will the HSRA and Caltrain operators be coordinated? These operating provisions will have a very strong influence on how the facilities will be used and should receive more immediate attention as system planning and construction proceed. We understand that the PCJPB and the Authority are now starting work on the operating provisions and we encourage them to accord high priority to the work in the process of completing the project level environmental requirements.

A pertinent example of Caltrain/HSRA interaction is the recent announcement by HSRA that it may shorten its platforms in order to reduce the initial capital cost of the system. Shortening the platforms and trains leaves open the possibility that demand will eventually exceed the reduced station capacity, especially in the "bookend areas." We understand that the Authority will try to acquire the property needed for future extension of the platforms if needed.

An alternative potential response would be to use bi-level trains at the outset for HSRA service. We have recommended in past letters that the Authority consider adopting bi-level trains from the outset because the loading platform level would be consistent with the lower level used by Caltrain and Metrolink (and ACE if there are joint operations in future). In our discussions, the Authority indicated that they will consider inputs from the new system operator (discussed below). We recommend that this issue be addressed carefully before HSRA commits itself to a rolling stock fleet design.

More generally, we do not believe that the critical nature and the extreme complexity of the Caltrain electrification project have been fully reflected in the progress reports that the Legislature has received on the project. The Legislature may wish to consider hearing joint testimony from the two parties addressing progress and complications on the project. Similar issues may arise as HSRA develops closer relations with Metrolink in the Los Angeles Basin area.

The Central Valley Segment

As discussed above, this Funding Plan addresses a 119 mile segment that can be used for testing high-speed trains; it will not yield any passenger service except, possibly, a better route for San Joaquin service between Sacramento and Poplar Avenue in Shafter. It does not cover rolling stock or connections from Madera to San Jose or connection into Bakersfield.

PFAL concluded that plans for the remaining work are "aggressive" (PFAL, Central Valley, page 9), perhaps by as much as two years (PFAL, Central Valley, page 18), but that there is a reasonable chance that overall project schedules and budgets can be met. PFAL recommends strengthening of reporting and management and that an experienced rail operating advisor be brought on board as soon as possible. With respect to Cap and Trade funding, PFAL concluded that the projected funds would be made available to the Authority to support the Plan, but that "...the \$500 million per year projection will require additional scrutiny in subsequent funding plans due to the volatility seen in recent auctions, the ongoing court case regarding the legality of state-auction allowances, and the uncertainty regarding the Air Resource Board's authority to

continue Cap-and-Trade past 2020.” (PFAL, Central Valley, page 29).

REQUEST FOR QUALIFICATIONS (RFQ) FOR EARLY TRAIN OPERATOR

The Peer Review Group strongly supports the Authority’s proposal to bring in business expertise in the form of an early operator as outlined in the draft RFQ approved by the Authority’s Board in December, 2016. The Authority is currently constructing a high-speed rail **line**, in order to support a **business** that will compete with airlines, buses and private automobiles. Public authorities are not suited to running market-driven businesses, a fact that the Authority has long accepted in expressing intentions to have the high-speed rail **services** provided by the private sector. This makes it important that an operator’s viewpoint be included as soon as possible in design and construction decisions being made by the Authority and in managing the transition from purely public authority at the outset to an appropriate form of Public Private Partnership (PPP) for full operation of rail services.

In September of 2015 the Authority received a number of expressions of interest from potential private partners. The responses influenced the formulation of the RFQ that the Authority approved in December of 2016. The Authority intends to use the statements of qualifications and any comments received as the basis for developing a request for proposals (RFP).

A large body of worldwide experience can be drawn upon in private operation of rail passenger services. These range from highly directive management contracts in which the private operator’s role is restricted to providing labor and operations management (Caltrain, Metrolink and ACE are examples) to full private ownership and operation as in most passenger railways in Japan. Most of the rail passenger PPPs fall on the spectrum from management contracts to franchises to concessions, where the role of the private partner in investment, operations, market planning and demand risk grows across the spectrum. The franchising experience in the U.K. spans the range from management contracts to privatization, and will furnish a good base on which to develop the approach in California.

The Authority currently envisions a three stage process. In the first phase, the early operator will provide paid consulting advice to the authority on design and planning decisions that ultimately will affect the safety, investment, demand and operating costs of the system. This will include design and negotiation of the terms of the second phase, for which the early operator will receive a short term franchise that will involve start-up operation of the system and development of the fare and marketing policies to be employed. The life of the second phase franchise should not extend much beyond the stage at which the demand and market potential for the Valley to Valley system has been demonstrated. The third phase would be a longer term concession for the system. The Authority expects phase three will generate significant investment from the franchise operator, but the amount generated will depend on the demand actually demonstrated.

The Authority expects that the early operator will perform both phase one and phase two, though there will be decision points at which either the Authority or the early operator could halt the partnership if desired. At the end of phase two, phase three would be opened to full competition from all potential operators.

Franchising and concessioning of passenger railways is complex and no single approach is guaranteed to succeed. Since there is essentially no experience in the U.S. with either rail passenger franchising or concessioning, the Authority must develop an approach suited to California on its own, hopefully with inputs on international experience from the early operator.

There is good reason to link phases one and two, because the early operator will have a much stronger incentive to provide good advice in phase one if it will benefit from better performance in phase two. There is a risk, of course, that the early operator will conceal the complete potential of the system during phase two in order to gain an advantage in bidding for phase three, but the Authority can minimize risk by requiring clear and detailed public reporting during phase two. The opt-out point at the end of phase one also provides protection. We agree that all three phases should not be awarded in one package, because the risk premium before demand is demonstrated would be too high. Contracting with an early operator is a good way to get an operator's input and to start the process of private delivery of market-driven services, but the Legislature should consider a number of potential public policy issues.

The \$64 billion high-speed rail project is based on more than the difference between passenger revenues and operating and investment costs borne by the operator. Justification for public involvement rests to a large extent on benefits such as air pollution reduction, lowered carbon emission, less noise, improved overall transportation safety, investment avoided in alternative road or air transportation facilities, better land use, improved access to jobs and a host of other potential benefits that accrue to the public and not to the operator.

The 2016 Business Plan forecasts argue that the private operator will be able to cover operating costs and make a partial contribution to investment. Our letter of March 25, 2016, stressed that a public planning, investment and regulatory role will also be essential. There will need to be a **partnership** in which state and local authorities and private parties invest, and in which the benefits and costs are shared in a way that permits all to benefit.

A key policy issue is the commercial freedom that the Authority, as the owner, grants to the operator under the terms of the franchise or concession. If the operator were granted total freedom to set fares and determine service levels, the operator could generate maximum operating profits and thus make the largest contribution to the Authority for investment in future capacity or retiring existing debt. If the Authority decided that, in the interest of increasing public benefits, fares (or fare increases) should be controlled, or minimum service levels or frequencies should be imposed, or that service from low employment origins should be provided at lower than market-driven fares, then the operator's profits would fall and the ability of the operator to invest or take demand risks would be reduced accordingly. We recommend that the Legislature inform itself on the rationale that ultimately leads to the pricing, service and contract term approaches in the second phase, in the third phase requests for proposals, and in the policies the Authority follows when it is the **economic** "regulator" of the system.

Normal U.S. and international practice is to separate **safety** regulation from all owners and operators. The Authority and its operator will face a large number of detailed safety requirements that will have to be overseen by a regulatory agency whose objectives are separated

from the financial performance of the system. Unfortunately, no state regulatory agency other than HSRA currently has the capacity or technical capability to oversee the safety of system operations because the technology and operational issues of HSR are different from and beyond those currently experienced in California. The Federal Railroad Administration (FRA) would also be hard pressed to provide adequate oversight because of a perennial lack of resources and because even the Northeast Corridor, which is the only existing high speed rail passenger system in the country, does not pose the same issues as the planned 220 mph operations of the HSRA. We recommend that the Legislature request that HSRA, other state regulatory agencies and FRA provide a joint report on how (and who) will provide adequate safety regulation of the design and operations of the HSRA system.

No investment, operating or demand risk has been transferred as yet from the Authority to an operator. We expect that an early operator's involvement in phase one will enable the Authority to reduce investment or operating costs and help the Authority identify and minimize the risks of coordinating the work of many different construction and design contractors. The early operator should also give advice on demand and operating cost forecasts that could increase the likelihood that the system will eventually operate without a subsidy and even generate some net revenue that can be shared with the Authority. This should establish a much firmer base for phase two and, eventually, set the stage for phase three.

Please let me know if you have any questions, need further information about our comments, or would like to meet with the Group directly.

Sincerely,

A handwritten signature in black ink, appearing to read 'Louis S. Thompson', with a long, sweeping horizontal line extending to the right.

Louis S. Thompson
Chairman, California High-Speed Rail Peer Review Group

cc: Hon. Jim Beall, Chair, Senate Transportation and Housing Committee
Hon. Anthony Canella, Vice Chair, Senate Transportation and Housing Committee
Hon. Jim Frazier, Chair, Assembly Transportation Committee
Hon. Vince Fong, Vice Chair, Assembly Transportation Committee
Brian Kelly, Secretary, California State Transportation Agency
Mac Taylor, State Legislative Analyst
Ken Alex, Director, Governor's Office of Planning and Research
Dan Richard, Chair, California High-Speed Rail Authority
Jeff Morales, Chief Executive Officer, California High-Speed Rail Authority
Members, California High-Speed Rail Peer Review Group

Appendix A

Documents referenced in the December 7, 2016 meeting and in this letter

California High-Speed Rail Authority, "High-Speed Rail Subdivision (d) Funding Plans, PRG Briefing," December 7, 2016, Sacramento, CA

California High-Speed Rail Authority, "San Francisco to San Jose Peninsula Corridor Funding Plan," December 2016

Project Finance Advisory Ltd (PFAL), "Independent Financial Advisor Report to California High-Speed Rail Authority Regarding: Peninsula Corridor Funding Plan," December 6, 2016

California High-Speed Rail Authority, "Memo to File: Policy change regarding the use of coupled trainsets for operation," September 15, 2016

California High-Speed Rail Authority, "Central Valley Segment Funding Plan," December 2016

Project Finance Advisory Ltd (PFAL), "Independent Financial Advisor Report to California High-Speed Rail Authority Regarding: Central Valley Segment Funding Plan," December 8, 2016

Project Finance Advisory Ltd, "HSR-14-65 Draft Memo on Ridership and Revenue for Valley to Valley Line of the California High-Speed Rail System," memo to Boris Lipkin dated December 5, 2016

Boris Lipkin, "Informational Presentation Regarding Early Operator Input and Development of and Policies on Fares and Schedules," memo to Chairman Richard and Board Members dated October 11, 2016

Jeff Morales, "Consider Providing Approval to Release a Request for Qualifications for Early Train Operator Procurement," memo to Chairman Richard and Board Members dated December 13, 2016

California High-Speed Rail Authority, "California High-Speed Rail Project: Request for Qualifications for Early Train Operator," draft dated 2016

CHSRA and PCJPB, "Agreement Regarding Funding Commitments Towards Peninsula Corridor Electrification Project," August 9, 2016

From: [Prodan Statev](#)
To: [Adrian Brandt](#); [Theodore Burgwyn](#)
Cc: [cacsecretary \[@caltrain.com\]](#)
Subject: Faster boarding: next steps for the November CAC update
Date: Saturday, October 17, 2026 1:18:30 PM

You don't often get email from pstatev94@gmail.com. [Learn why this is important](#)

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Hi Adrian and Ted,

I ride Caltrain daily and would like to support the next improvements that make trips faster and boarding easier. Getting more out of the electric fleet seems especially valuable as Caltrain works to grow ridership and protect service.

Adrian, thank you for putting level boarding on the CAC's work plan. Could the November 18 update identify the next step Caltrain can deliver, particularly where the new step design and prototype stand, what funding or approval they need, and when work can begin?

Ted, [Clem Tillier's post](#) also raises the possibility of shortening the door and retractable-step sequence. Could your team ask Stadler to assess whether the sequence can safely be shortened and, if so, by how much, and identify a small trial if the findings are promising? Even a modest improvement repeated at each stop could make everyday trips better.

For both, could the November update name a staff lead and next decision or review date? That would give riders a concrete action to support. If this work is already underway, a status update would be useful.

I'm copying the CAC secretary for inclusion in the October 21 correspondence.

Thanks,
Prodan

From: [Adrian Brandt](#)
To: [Prodan Statev](#)
Cc: [Theodore Burgwyn](#); [cacsecretary \[@caltrain.com\]](mailto:cacsecretary [@caltrain.com])
Subject: Re: Faster boarding: next steps for the November CAC update
Date: Saturday, October 17, 2026 3:58:33 PM

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Hi Prodan,

Thanks for your note.

While I share your interest in getting more detail on the level boarding roadmap, I yesterday learned the earlier plan for the CAC to receive a level boarding staff presentation was withdrawn because level boarding has been “deferred.” I was unable to get any further clarity on for how long — so the deferral appears indefinite until further notice. ♂

I also fully support your suggestion for Caltrain to work with Stadler to see about optimizing the door-and-step open/close-extend/retract sequence coordination & timing as described in the linked blog post:

<https://caltrain-hsr.blogspot.com/2025/09/easy-little-fixes.html>

... as even a small per-stop dwell time reduction could make for a significant cumulative run time reduction proportional to the number of stops made.

Best,
Adrian Brandt

On Sat, Oct 17, 2026 at 13:12 Prodan Statev <pstatev94@gmail.com> wrote:

Hi Adrian and Ted,

I ride Caltrain daily and would like to support the next improvements that make trips faster and boarding easier. Getting more out of the electric fleet seems especially valuable as Caltrain works to grow ridership and protect service.

Adrian, thank you for putting level boarding on the CAC's work plan. Could the November 18 update identify the next step Caltrain can deliver, particularly where the new step design and prototype stand, what funding or approval they need, and when work can begin?

Ted, [Clem Tillier's post](#) also raises the possibility of shortening the door and retractable-step sequence. Could your team ask Stadler to assess whether the sequence can safely be shortened and, if so, by how much, and identify a small trial if the findings are promising? Even a modest improvement repeated at each stop could make everyday trips better.

For both, could the November update name a staff lead and next decision or review date? That would give riders a concrete action to support. If this work is already underway, a status update would be useful.

I'm copying the CAC secretary for inclusion in the October 21 correspondence.

Thanks,
Prodan

From: [Prodan Statev](#)
To: [Adrian Brandt](#); [Theodore Burgwyn](#)
Cc: [cacsecretary \[@caltrain.com\]](mailto:cacsecretary [@caltrain.com])
Subject: Re: Faster boarding: next steps for the November CAC update
Date: Tuesday, October 20, 2026 1:01:49 PM

You don't often get email from pstatev94@gmail.com. [Learn why this is important](#)

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Thanks, Adrian. I appreciate the update and your support on the door/step timing.

Ted, could that assessment with Stadler move ahead separately from level boarding? If so, who would be best placed to take it forward, and when could we expect an initial answer on whether a trial is feasible?

On level boarding, could you clarify whether the deferral includes the step design/prototype, and what would need to change for that work to move forward?

Thanks,
Prodan

On Sat, 17 Oct 2026 15:58:11 -0700, Adrian Brandt <adrian.brandt@gmail.com> wrote:

Hi Prodan, Thanks for your note. While I share your interest in getting more detail on the level boarding roadmap, I yesterday learned the earlier plan for the CAC to receive a level boarding staff presentation was withdrawn because level boarding has been “deferred.” I was unable to get any further clarity on for how long — so the deferral appears indefinite until further notice. ♂ I also fully support your suggestion for Caltrain to work with Stadler to see about optimizing the door-and-step open/close-extend/retract sequence coordination & timing as described in the linked blog post: <https://caltrain-hsr.blogspot.com/2025/09/easy-little-fixes.html> ... as even a small per-stop dwell time reduction could make for a significant cumulative run time reduction proportional to the number of stops made. Best,
Adrian Brandt
On Sat, Oct 17, 2026 at 13:12 Prodan Statev <pstatev94@gmail.com> wrote: > Hi Adrian and Ted, > > I ride Caltrain daily and would like to support the next improvements that > make trips faster and boarding easier. Getting more out of the electric > fleet seems especially valuable as Caltrain works to grow ridership and > protect service. > > Adrian, thank you for putting level boarding on the CAC's work plan. Could > the November 18 update identify the next step Caltrain can deliver, > particularly where the new step design and prototype stand, what funding or > approval they need, and when work can begin? > > Ted, Clem Tillier's post > <<https://caltrain-hsr.blogspot.com/2025/09/easy-little-fixes.html>> also > raises the possibility of shortening the door and retractable-step > sequence. Could your team ask Stadler to assess whether the sequence can > safely be shortened and, if so, by how much, and identify a small trial if > the findings are promising? Even a modest

improvement repeated at each stop > could make everyday trips better. > > For both, could the November update name a staff lead and next decision or > review date? That would give riders a concrete action to support. If this > work is already underway, a status update would be useful. > > I'm copying the CAC secretary for inclusion in the October 21 > correspondence. > > Thanks, > Prodan >

From: [Roland Lebrun](#)
To: [Board \(@caltrain.com\)](#)
Cc: [Baltao, Elaine \[board.secretary@vta.org\]](#); [cacsecretary \[@caltrain.com\]](#); [carb@public.govdelivery.com](#); [Christina Watson](#); [SFCTA Board Secretary](#); [SFCTA CAC](#); [Capitol Corridor](#)
Subject: Business Case for Stadler change order pivoting from a failed BEMU experiment to 6 MWh Battery-Electric Locomotives (BELs)
Date: Monday, October 19, 2026 5:26:48 AM

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders.

Dear Chair Medina and Board members,

Further to the latest developments in the LTK Engineering BEMU debacle, I am pleased to present the Caltrain and TAMC Boards with a proposal to pivot to a Battery-Electric Locomotive (BEL) solution capable of extending Caltrain's existing 7-car KISS EMU range by up to 150 miles into non-electrified territory, **thereby introducing single-seat rides between San Francisco and Salinas.**

Please note that these BELs are equipped with both Shaku (for sub-60-second coupling/uncoupling at Tamien) as well as AAR couplers for Maintenance of Way (MOW) operations, **thereby complying with CARB's diesel elimination mandate.**

Finally, this proposal includes a Battery Energy Storage System (BESS) at Tamien recharged by regenerative braking and capable of recharging A BEL back to 80% in under 30 minutes, **thereby capturing the energy necessary to operate up to 20 daily round trips between Tamien and Salinas at no utility costs and without any additional charging infrastructure south of Tamien.**

Respectfully presented for your consideration.

Roland Lebrun

PS. I am available for further technical assistance as needed at your staff's convenience.

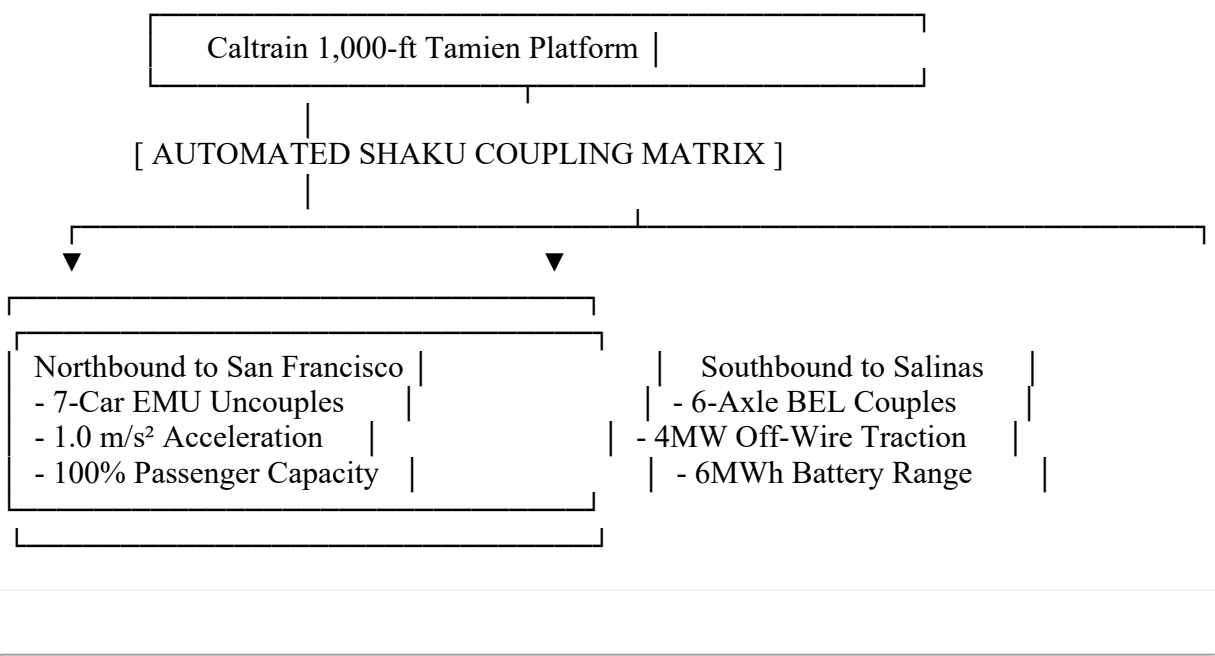
Executive Summary

The Peninsula Corridor Joint Powers Board should direct staff to issue a Change Order to Stadler Rail to advance a dual-ended 6MWh Battery-Electric Locomotive (BEL) and 20MWh Battery Energy Storage System (BESS) concept. This strategy optimizes California's strict zero-emission rail mandates by expanding zero-emission commuter rail service to Salinas without modifying Caltrain's existing **7-car Electric Multiple Unit (EMU)** passenger cabins.

By leveraging automated **Scharfenberg (Shaku) couplers** and **Train Control Management System (TCMS)** integration, a 6-axle, 4MW BEL can dynamically couple to a standard 7-car EMU at Tamien Station. This approach maintains rapid-transit acceleration under the wires between San Francisco and San Jose while providing the traction power and battery capacity needed to handle the **130-mile un-electrified round trip to Salinas on a single charge**.

Financially, the proposal relies on a **20MWh BESS at Parallel Station 7 (PS7)** that trickle-charges from mainline regenerative braking. This enables rapid DC fast-charging at the Highway 87 pocket track without impacting the local utility grid. By replacing high-emission Maintenance of Way (MOW) diesels with the BEL's utility-facing **AAR knuckle coupler** and reducing emergency EMU rescue times by 40 minutes, this concept improves operational efficiency.

This change order fits within existing state zero-emission capital allocations. It provides a highly scalable, zero-carbon alternative to traditional, lower-capacity battery train designs.



Strategic Objectives & Fleet Architecture

The core value of this architecture is its ability to separate high-density electrified operations from long-distance, un-electrified regional extensions while maintaining standard rolling stock configurations.

1. 100% Passenger Capacity Retention

Traditional Battery-Electric Multiple Unit (BEMU) designs often require sacrificing passenger seating space to house heavy battery enclosures within the coach frame. By shifting the entire 6MWh energy storage matrix into a standalone, 6-axle locomotive frame, **Caltrain maintains 100% of its standard 7-car EMU passenger capacity (675+ seats)** during peak commute hours,

preventing platform overcrowding.

2. Dynamic Uncoupling & Mainline Optimization

Dragging a heavy battery pack under live, electrified catenary wires creates unnecessary weight and energy drag. This proposal utilizes dynamic uncoupling at Tamien Station to keep operations optimized:

- **The Northbound Fleet:** At Tamien, the BEL uncouples and reverses to a dedicated pocket track. The 7-car EMU proceeds north to San Francisco with its unencumbered **1.0 m/s² rapid acceleration**, protecting tight commuter timetables.
- **The Southbound Fleet:** The incoming EMU couples to a waiting BEL via an automated Scharfenberg head. The train runs south onto Union Pacific tracks as a combined **8-car trainset**, utilizing the BEL's 4MW traction motor.

3. MOW Diesel Elimination & Rapid Rescue Capabilities

The BEL features an asymmetric coupling configuration, with a Shaku coupler on the passenger end and a standard **AAR knuckle coupler** on the utility end. This allows the locomotive to perform dual roles:

- **Zero-Emission MOW Operations:** The BEL can haul heavy freight-style maintenance flatcars, **eliminating Caltrain's high-emission legacy diesel MOW fleet**.
- **Accelerated EMU Rescue:** In an emergency, the BEL can couple directly to a stranded EMU without manual adapter brackets or ground-level air line connections, **shaving an estimated 40 minutes off mainline rescue operations**.

Track Infrastructure & Grid Integration

Operating a heavy locomotive on freight networks while delivering fast-charging power requires balancing track dynamics with smart energy storage.

1. Mitigating Track Stress via 6-Axle Design

A 6MWh battery pack paired with a 4MW traction motor results in a gross locomotive weight of approximately **145 metric tons**. Implementing a **6-axle (Co-Co) bogie configuration** distributes this mass evenly:

- **Axle Load Reduction:** Individual axle loads drop to **24.1 metric tons**, which is well below Union Pacific's heavy-freight damage thresholds.
- **Dynamic Stability:** Spreading the 4MW of motor torque across 12 contact wheels

prevents wheel slip on slick rails and reduces dynamic rail stress through the Pajaro Gap and Salinas Valley curves.

2. The 20MWh BESS Substation Buffer

To avoid high utility peak demand charges and localized grid strain, a **20MWh Containerized Battery Energy Storage System (BESS)** is integrated at Parallel Station 7 (PS7) along the Highway 87 embankment:

- **Energy Recycling:** The BESS trickle-charges day and night by capturing the high-voltage regenerative braking energy generated by mainline EMUs slowing into Tamien.
- **Grid-Isolated Fast Charging:** When a BEL docks at the pocket track, the substation draws directly from the 20MWh BESS to deliver a **high-speed DC fast charge (back to 80% in 30 minutes or less)**, insulating the local municipal grid from extreme power spikes.

Financial Plan & Implementation Timeline

Advancing this concept as a Stadler change order provides a clear path toward financial break-even through grid arbitrage, lower fuel costs, and minimized track maintenance fees.

1. Capital Expenditure Breakdown

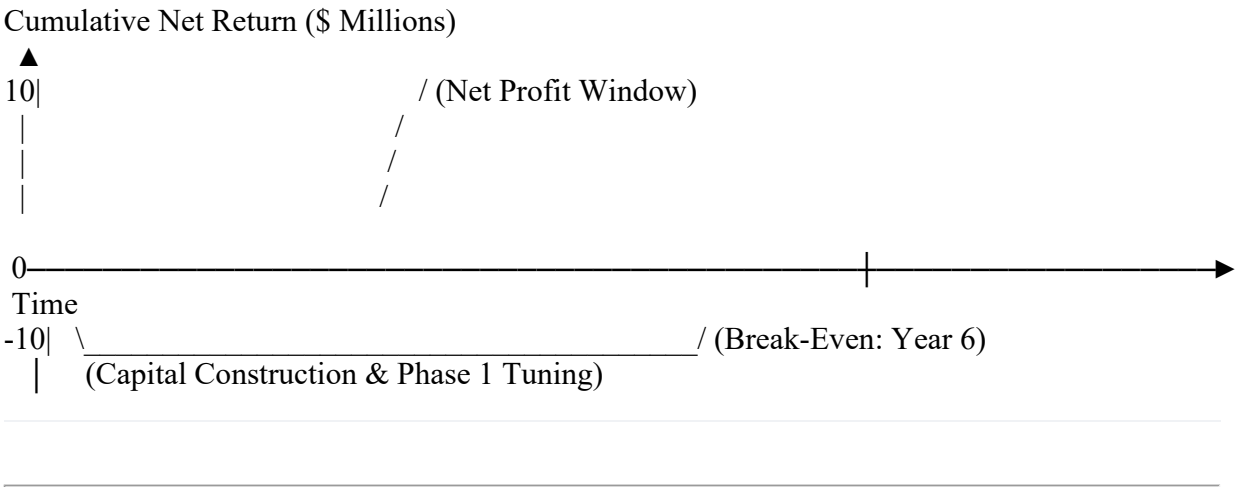
The project budget scales across three primary categories:

- **Procurement of 6-Axle BEL Prototypes:** Design, crashworthiness engineering, and fabrication of the bi-coupling 4MW locomotive frames by Stadler Rail.
- **PS7 BESS Infrastructure Installation:** Site preparation, concrete foundation slabs along the Highway 87 embankment, and procurement of utility-scale LFP battery storage enclosures.
- **Automated Charging Interface:** Installation of a rigid overhead conductor rail (OCR) or ground-contact plates within the Tamien storage tracks.

🕒 2. Return on Investment (ROI) Matrix

Phase	Timeline	Operational Focus	Financial Impact
Phase 1	Years 1-2	Local Demand Mitigation & Regenerative Capture	Saves \$300,000–\$500,000/year by avoiding PG&E peak demand charges.
Phase 2	Years 3-5	CAISO Wholesale Market Arbitrage & Regulation	Generates \$1.2M–\$1.8M/year via peak discharging and frequency balancing.

Phase 3	Year 6+	Net Profitability Threshold Achieved	Full capital payback met. Churns out long-term operational profit.
----------------	---------	---	--



Recommendation & Directives

To advance this zero-emission rail project, it is recommended that the Caltrain Board issue the following directives to staff:

- 1. Authorize Stadler Change Order Negotiations:** Direct staff to initiate formal technical and financial scoping with Stadler Rail to draft a change order for a **6-axle, dual-ended 4MW/6MWh BEL prototype**, utilizing remaining BEMU pilot funding allocations.
- 2. Initiate Joint Transit-Utility Engineering:** Instruct staff to collaborate with PG&E and CAISO to complete the electrical interlocking designs for the **20MWh BESS tie-in at Parallel Station 7**.
- 3. Engage Regulatory Partners:** Direct staff to submit the dual-mass vehicle profile to the [Federal Railroad Administration \(FRA\)](#) to begin crash energy management (49 CFR Part 238) review and scheduling for testing at the TTC facility in Pueblo, Colorado.