California High-Speed Rail Authority
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March 11, 2021

Subject: Comment Letter on California High-Speed Rail Authority Revised Draft 2020 Business Plan

We are pleased to submit this public comment letter on the California High-Speed Rail Authority (CHSRA) Revised Draft 2020 Business Plan. This is an updated version of the September 24, 2020 comment letter we submitted on the CHSRA LA-Anaheim project section environmental review Notice of Intent and Notice of Preparation document (NOP/NOI) on the BNSF Colton and Lenwood project components, released in August 2020.

The Revised Draft 2020 Business Plan does not mention the BNSF projects of a new intermodal facility in Colton and staging tracks in Lenwood west of Barstow. These projects, essential to the High Speed Rail program, should be discussed in the Business Plan, especially in Chapter 6 about project risk, particularly in the sections discussing stakeholder support (pgs. 121-2) environmental review process (pgs. 125-6).

The proposed BNSF Colton Intermodal Facility and Lenwood Staging Tracks, as stated in the NOP/NOI, are “facilities located outside the primary LOSSAN rail corridor which would relieve potential congestion sufficiently to allow passenger and freight volumes to reach projected cumulative 2040 levels and on-time performance”, and:

“Projected future cumulative passenger (commuter diesel and electric HSR) and freight train volumes require additional facilities be added outside the corridor to maintain existing and anticipated freight and passenger train operations, including on-time service levels, during project construction and operation”

With CHSRA performing the NOP/NOI work, BNSF is in effect receiving public money for the development of Colton Intermodal Facility and Lenwood Staging Tracks. The public thus has a right to demand maximum public benefits, and minimum public impacts, from these proposed new freight rail facilities. Maximum public benefit from rail infrastructure means that it must be planned in consideration of California’s transportation network as a whole.

We are concerned that this proposal to reduce the number of BNSF freight trains on LOSSAN corridor between LA and Fullerton Junction, for relieving a rail trail constraint along the LOSSAN corridor shared with HSR, would create more truck traffic on the region’s highways. This would add dozens of truck vehicle miles traveled (VMT) per container haul, if the container loaded at the Ports of LA/LB or Hobart intermodal yard must now be loaded at Colton. Increased truck VMT per container haul has a negative impact on air pollution and traffic congestion of Southern California freeways. More truck traffic

congestion, in turn, causes more pollution from passenger cars. One of the California HSR project's main goals is to reduce the pollution from passenger transportation. CHSRA should also aim to reduce pollution from freight transportation (whether by rail or truck).

We propose that the "mitigation" of fewer BNSF freight trains from LA-Fullerton must not result in more truck traffic. For the sake of the environment, congestion and road safety, a new intermodal railyard should be planned to decrease, not increase, truck VMT in the region.

Both the 2015 San Bernardino Associated Governments, *Final San Bernardino Countywide Transportation Plan*[1] and the Riverside County Transportation Commission's 2019 *Riverside County Long Range Transportation Study*[2] and stated goals of reducing truck VMT, emissions and accident rates of goods movement. In January 2020, the Riverside County Board of Supervisors endorsed both short-haul freight rail and mode-shift of more freight movement from truck to rail as part of its annual Legislative Platform[3].

Minimizing Negative Impacts of the Proposed Colton Intermodal Yard

For the Colton intermodal yard in particular, in order for the new facility to provide the maximum environmental and public benefit, it must be:

1. 100% electric (ALL locomotives and trucks serving yard would be zero-emissions, all-electric)

2. Hosts short-haul intermodal trains from the San Pedro Bay Ports, which are intended to directly displace truck vehicle miles travelled (VMT) in the metropolitan Los Angeles region.

The CAHSR EIR process on the Colton intermodal yard and Lenwood staging tracks is an opportunity to raise the issue of heavy freight rail electrification as well as requiring electric trucks to serve short-haul trips within the Inland Empire. If BNSF, with assistance from CHSRA and others, were to electrify freight trains on the BNSF San Bernardino Subdivision mainline from LA to Riverside-Colton-San Bernardino, this would be a huge breakthrough for rail electrification in this country.

Communities around the proposed Colton intermodal yard site are already heavily polluted by diesel transportation exhaust and other industrial sources, such as decades of quarrying on this site. This very

[1] San Bernardino Associated Governments, *Final San Bernardino Countywide Transportation Plan,* September 2015: https://www.gosbcta.com/wp-content/uploads/2019/10/Final-Countywide-Transportation-Plan-.pdf

[2] Riverside County Transportation Commission, *Riverside County Long Range Transportation Study*, December 2019:
https://www.rctc.org/wp-content/uploads/2019/12/RCTC-Draft-LRTS-120119-GV22.pdf

[3] *County of Riverside 2020 Legislative Platform*, "Good Movement by Rail", pgs. 27-28:
https://countyofriverside.us/Portals/9/LegislativePlatform/2020%20Legislative%20Platform.pdf?ver=2020-05-12-160127-907

legitimate concern of environmental justice is being used by political opponents of the California High Speed Rail to attack the project. The proposed Colton intermodal yard has generated opposition from others who did not previously publicly oppose the High Speed Rail project, including environmental and community organizations. A 10-page joint letter by East Yard Communities for Environmental Justice, Center for Community Action and Environmental Justice Earthjustice, San Pedro Peninsula Homeowners' Coalition, Natural Resources Defense Council, and the Sierra Club stating concerns about the BNSF Colton and Lenwood projects was submitted in September 2020 as part of the NOI/NOP scoping process.

In an October 2, 2020 editorial "The Inland Empire shouldn't be treated as a dumping ground for the bullet train" in the *San Bernardino Sun* newspaper, San Bernardino County Supervisor Janice Rutherford and Highland Mayor Larry McCallon[4] are worth quoting at length:

> They struck a deal: BNSF will make these adjustments in LA in return for the Rail Authority shepherding the environmental process for a new BNSF intermodal facility in Colton, a community already heavily impacted by traffic congestion and harmful emissions from trucks and trains.
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> The proposed Colton yard would be larger than the 154-acre BNSF facility currently operating in San Bernardino and would accommodate 10 or more diesel trains daily, each hauling up to 300 containers, which translates to approximately 3,000 more daily trucks on local freeways and interchanges. To move those containers around the yard and onto the freeway will require more than 40 diesel locomotives and about 4,000 diesel truck trips each day.
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> The facility poses serious potential impacts not only in Colton but to nearby San Bernardino, Grand Terrace, Rialto, and Bloomington with train traffic, truck traffic, air quality, noise and vibration, and visual effects. With the exception of Grand Terrace, these areas are designated "Communities of Concern" by the Southern California Association of Governments because 81 percent of residents are below the poverty level and 75 percent are Hispanic.
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> The South Coast Air Quality Management District's (AQMD) letter to the Rail Authority sums it up: "This is an already environmentally burdened community that gets another diesel freight facility while coastal communities in Los Angeles and Orange counties get a new all electrical passenger train route…"
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> The HSRA held six open house community meetings in L.A. and Orange Counties and none in San Bernardino County.
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> The draft environmental documents for the proposed Colton yard won't be released until spring 2021, but we don't want to be blindsided by those details and are asking questions now.
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> Earlier this month, the San Bernardino County Transportation Authority, on which we both serve, sent the HSRA a letter with dozens of questions about the proposed railyard as well as urging the HSRA to provide information to stakeholders sooner than next year. The AQMD, where we also serve, has urged the HSRA to give the public ample time to review the huge air quality and public health risks the project presents.

[4] https://www.sbsun.com/2020/10/02/the-inland-empire-shouldnt-be-treated-as-a-dumping-ground-for-the-bullet-train/

> The sparse information provided so far and the reluctance to engage in any meaningful dialogue flies in the face of the investment strategies listed in the draft State's Transportation Action Plan Strategies: "Reduce public health harms and maximize benefits to disproportionately impacted disadvantaged communities, low-income communities, and communities of color, in urbanized and rural regions and involve these communities early in decision-making."
>
> The time to talk is now.
>
> Our San Bernardino County residents deserve as much consideration as those in coastal counties are being given. Our health, our economy, and our people are just as important, and we will not stand for them to be sacrificed at the altar of high-speed rail.

Both Rutherford and McCallon serve on the boards of the San Bernardino County Transportation Authority and the South Coast Air Quality Management District. This not the type of publicity, particularly among elected officials, that the California High Speed Rail Authority wants or needs. Nor does the Authority want to get dragged into a long, costly lawsuit brought by communities against a new BNSF intermodal railyard that would cause even more diesel pollution (similar to the drawn-out legal battle over the proposed Southern California International Gateway yard in Wilmington). This is all unfortunate as the potential for a new Colton intermodal facility to reduce truck congestion and pollution in the Inland Empire is huge if it is done right.

If true, what Supervisor Rutherford and Mayor McCallon are describing violates the CHSRA's own Environmental Justice Policy, which states[5]:

> The California High-Speed Rail Authority (Authority) promotes Environmental Justice into its programs, policies, and activities to avoid, minimize or mitigate disproportionately high human health, environmental effects, including social and economic effects on minority and low-income populations. It is the policy of the Authority to duly emphasize the fair and meaningful involvement of all regardless of race, color, national origin or income with respect to the high-speed rail project planning, development, operations and maintenance. This policy directs the Authority to appropriately engage the public through public participation forums so that decisions are mitigated and reflects environmental justice for all communities. This commitment strives to inspire environmental justice and equal access.

Origin/Destination of Containers To/From Proposed Colton Intermodal Yard

The "starting point" of BNSF's long-haul trains leaving Southern California is very important for pollution and truck congestion in the region. Thus, the location of intermodal railyards has a huge impact on the overall amount of truck traffic, both local and regional.

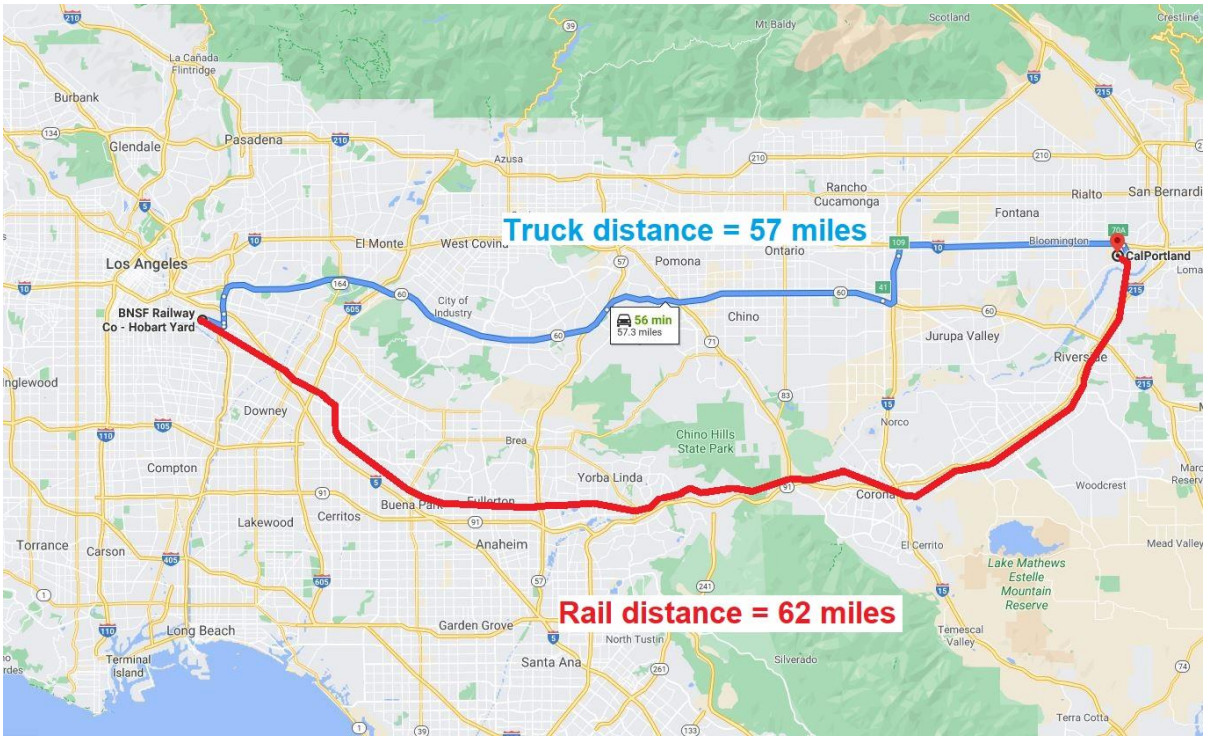
The EIR/EIS should clearly state the rationale and the need for the Colton yard, and its relationship to volume of rail traffic through Fullerton. Critical questions include:

[5] https://hsr.ca.gov/docs/programs/title_VI/CHSRA%20EJ%20Guidance%208-14-2012.pdf

- Where will the freight on trains using the Colton intermodal yard come from (and go to)? Will a detailed origin/destination study of all the trucks going to and from the Colton intermodal yard be included in the LA-A HSR environmental review?

- In accounting for the overall emissions impact of the entire San Francisco-Anaheim Phase 1 HSR project, will CHSRA take into account all the diesel truck traffic and diesel locomotive emissions that could be generated by this proposed Colton intermodal yard through 2040? And ways which said diesel truck traffic could be reduced or eliminated (such as electric trucks & trains, mode shift of regional freight movement from truck to rail)?

The driving distance between Hobart and the proposed Colton yard, and its 57 miles one-way, and 62 miles by rail on the BNSF mainline San Bernardino Subdivision, as shown on the map below:



- It is assumed that the equivalent terminal equipment by a truck or yard tractor (and resulting fuel/pollution) is used at either end of the trip is the same for both rail and truck.

- The pollution and fuel consumed by moving a ton-mile of intermodal freight by rail is assumed to be 1/3 that of moving the same ton-mile by truck (though is some cases it is even less).

At the September 10, 2020 scoping meeting, Lena Kent of BNSF stated that all of the containers that will be going through Colton would be domestic, so they wouldn't be international ones coming from the San Pedro Ports. How do we guarantee this? International trade through the ports remains the biggest driver of intermodal rail traffic in Southern California. Many of the "domestic" 53' containers which BNSF loads onto trains at the Hobart and San Bernardino yards contain goods which originated via

trucks from transloading facilities, and 40' 'international' containers trucked to said facilities from the ports.

The fact that freight trains which would be loaded at Colton are being displaced from LA-Fullerton segment, implies that the containers would have been loaded on/off the train at BNSF's Hobart yard at the very least. We need to understand the origin of these containers which get on the train via Hobart (but would be displaced to be instead loaded on/off at Colton). Unless they are being trans-loaded at Hobart from another BNSF train (unlikely), virtually all of the containers coming into existing Hobart yard to be put on trains today arrive by truck. So if they will be trucked instead from their point of origin the proposed Colton yard, instead of Hobart, how does this affect truck traffic between East Los Angeles and Colton on the 60, 10, 91 or 210 freeways?

Demand (or Lack Thereof) for BNSF's Long Haul Intermodal Trains in Southern California

While 2020 was a record year for the number of TEUs passing through the San Pedro Ports. The number of long-distance BNSF trains through the LA-Fullerton segment (and BNSF's San Bernardino Subdivision) is predicted by some rail industry experts to possibly decrease, or at least not increase, in the future for the following reasons:

- *U.S. import supply chains are changing.* More manufacturing aimed at U.S. consumers is shifting to South and Southeast Asia (and away from China), which are closer to East and Gulf coast ports via the Panama and Suez canals
- *West Coast competition from Canadian ports.* LA/Long Beach is well positioned to capture the majority of Northeast Asia (China, Korea, Japan) trade with the U.S. However, the B.C. ports of Vancouver and Prince Rupert, have emerged as formidable competitors to U.S. West Coast ports because they are closer to Northeast Asia, with good rail links via central Canada to the rest of North America, especially the U.S. Midwest.
- *Transloading.* More 'international' 40' containers are trucked from San Pedro Bay to the Inland Empire or other locations where they are transloaded to 'domestic' 53' containers. This is a big reason that the Alameda Corridor is under-utilized.

The trends described above point to a continuing decline in the number of long-haul trains to/from Southern California. The number of BNSF trains on the LA-Fullerton segment peaked in 2006 (the peak of imports from China through San Pedro Bay ports). It is also worth noting that rail traffic through the Alameda Corridor peaked in 2006 at 55 trains per day, with 4.8 million TEUs passing through the corridor. Since then, both port and mainline rail capacity improvements funded by government agencies and Class I railroads have been completed, and more are under construction or planned. Despite the publicly-funded investments in the regional freight network the number of TEUs through the Alameda Corridor had declined 2.25% by 2019, moved on an average of just 33 trains per day. These numbers reflect the fact that shippers bypassing the corridor with trucks taking international containers off the docks to trans-loading facilities, and that railroads now use longer trains.

As described by an October 2020 article in *Trains* magazine which describe the "big shift" of the relative share of international intermodal container traffic away from the Ports of LA/LB[6]:

> ..what's a loss for BNSF and UP is a win for Norfolk Southern and CSX Transportation. The big Eastern systems enjoy a longer length of haul when boxes bound for the Ohio Valley arrive at East Coast ports rather than being railed through Chicago from the West Coast. CSX and NS are also serving shorter-haul markets thanks to on-dock terminals and new state-funded inland intermodal port terminals. Canadian National and Canadian Pacific are winners in the shift of port traffic as shippers reduce their dependence on LA/Long Beach and rely more on Vancouver and the CN-served Port of Prince Rupert, British Columbia. And now East Coast Canadian ports and their rail partners are vying for container traffic bound for Chicago and the Midwest.
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> A number of factors are driving these trends that affect roughly half of intermodal volume. First, shippers are taking a "four corners" approach to North America so that they are not as dependent on any one port. Second, the use of ever-larger container ships and the completion of the expanded Panama Canal has reduced shipping costs and made intermodal less competitive from the West Coast to points east of the Mississippi. Third, ports on the West Coast are saddled with much high costs than their counterparts in Canada and on the U.S. East and Gulf coasts. And finally, as manufacturing costs have risen in China, companies are sourcing goods from lower-cost countries in Southeast Asia, making an all-water route to the East Coast via the Suez Canal more attractive.
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> …two years after the expanded Panama Canal opened, the San Pedro Bay ports still lost some 14.7 million tons of cargo to East and Gulf Coast ports.
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> The trends- made worse by the U.S.-China trade dispute and the coronavirus pandemic- have alarmed Southern California port officials. In June, Gene Seroka, executive director of the Port of LA, predicted that 15% of its import volumes won't return once the economy and global trade rebound from the pandemic. Seroka has called together West Coast ports, terminal operators, labor, shipping lines, and railroads to make the ports more competitive.
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> BNSF declined comment for this story, citing economic uncertainty over the pandemic and its impact on trade. UP CEO Lance Fritz contends the Southern California ports can still compete, but need to reduce the time boxes spend on the dock and make shipments more visible for customers. "And we're working very hard with the Port of LA and the Port of Long Beach to get that done," Fritz told investors earlier this year. "I look at that and I think that's all opportunity."

For containers to spend less time on the dock, more will have to leave the ports by rail instead of truck in order to avoid congested highways.

The Ports of Los Angeles and Long Beach stand to lose more business to East Coast competitors, who are already benefiting from the decongestion and capacity advantages of short-haul freight rail service to inland intermodal terminals. The Port of New Orleans is also seeking to develop an inland port served by short-haul rail[7]. As described by an October 2020 article in *Trains* magazine which describe the "big shift" of the relative share of international intermodal container traffic away from the Ports of LA/LB[8]:

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[6] Bill Stephens, "The Big Shift", *Trains* magazine, October 2020, pgs. 30-32.

[7] https://www.portnola.com/assets/pdf/Gateway-Action-Plan.pdf

[8] Bill Stephens, "The Big Shift", *Trains* magazine, October 2020, pg. 35.

> …both CSX and NS are serving short-haul markets thanks to state investment in inland port terminals in Georgia, South Carolina, Virginia, and elsewhere. They are one reason international intermodal share within the Southeast has doubled since 2006. "With the shift of the east, there's been a lot of focus on opening up new markets that traditionally were only served by trucks," [CSX railroad vice president of intermodal and automotive Maryclare] Kenney says. "You think of the combination of the work from the port facilities, as well as the state investment into these inland markets, you combine that with a consistent, reliable rail service product, were able to serve shorter haul markets in the east effectively."

Short-Haul Freight Rail in Southern California

Emissions from goods movement (particularly from diesel trucks) is a significant part of Southern California's air pollution. Diesel exhaust is a major source of greenhouse gas, particulate matter and smog-forming NOx emissions. Although, rail facilities are the subject of substantial complaints, the larger problem is the truck traffic associated with the facilities. A short-haul intermodal freight rail service is needed for the region, which is competitive with truck between the Ports of LA/LB and the Inland Empire. The LA-Anaheim EIR/EIS should include an analysis and investigation of short-haul freight rail between the Ports of LA/LB and Hobart to the Inland Empire, as an alternative to truck drayage (train to train movement of containers, instead of truck to train). Such service has characteristics more similar to passenger trains than typical US freight trains.

About 25% of all containers coming into the Ports of Los Angeles and Long Beach go directly on the docks to long-distance trains. The two ports are collectively investing about $2 billion in rail infrastructure upgrades to increase on-dock rail capacity to get the mode share up to 35% by 2030. That still would leave about 2/3rd of all containers leaving the ports by dirtier trucks on roads.

There is such a huge volume of containers 40' international coming off of ships, then going to transloading/trans-shipping facilities (mostly in the Inland Empire). From there, the goods go in 53' domestic U.S. containers on long-haul trains from the UP and BNSF yards. Or they keep going by truck. The purpose of short-haul intermodal rail service between Ports and the Inland Empire would be to directly displace trips that now go by truck. One of the big reasons for all the warehouses in the Inland Empire is the mismatch in size between 40' international containers on ships, and 53' containers preferred in the US. The Ports' 2017 Clean Air Action plan estimated short haul rail to the Inland Empire would bring the ports' mode share to 50% rail, or better. The capacity of the Alameda Corridor rail line (which connects the ports to the rest) is only about a 1/3 utilized.

Alternatives to conventional truck transportation are much needed in the Los Angeles metro area, which is afflicted by the worst highway congestion and air quality in the nation. To address pollution and road congestion, a mode shift of more freight from truck to rail is critical in Southern California. There will be major environmental and energy-savings benefits from short-haul freight rail service within the region. California's goals to reduce greenhouse gas emissions are dependent on cleaner freight transport, and more freight moved by rail must be part of the solution.

A regional planning consideration, short-haul freight rail within the region (particularly between San Pedro Bay and the Inland Empire), has long been discussed as a strategy to shift freight transport from truck to rail to reduce truck congestion and pollution in Southern California. This option needs further study, as moving a ton-mile of freight by rail uses 1/3rd to 1/5th the energy (using 1/3rd to 1/5th the fuel and producing 1/3rd to 1/5th the emissions), compared to truck. This is true whether the comparison is between diesel truck and diesel train, or electric truck and electric train. The lower power requirement is important when considering the amount of additional electric power generation that will be needed to electrify the existing highway vehicle fleet. The benefits of short-haul freight rail as described in more detail in Appendix B of this letter.

With fast, frequent short-haul freight rail shuttle trains between San Pedro Bay and the Inland Empire, much of this freight presently moved by truck can be shifted to rail, to reduce highway congestion and pollution. Moving freight by rail is also much safer, with far fewer accidents per mile travelled compared to road transportation. Another competitive advantage for moving containers from San Pedro Bay to the Inland Empire by rail is that it is much less likely that the container moved would be involved in an accident. The smoother ride of steel wheels on rails also results in less likelihood of damage to goods than shipment by truck.

When considering energy use and congestion, electric trucks alone will not reduce either to the degree needed. Much less electricity needs to be pulled off the grid to move the same amount of freight by electric train, compared to electric truck. Electric trucks don't do anything to reduce congestion, even if they are zero-emissions. In recent years drayage trucking costs have increased due to highway congestion, tightened port security, higher driver wages and other factors. Increased road congestion and trucking costs, particularly near the Ports of Los Angeles and Long Beach, have renewed the interest in short-haul freight rail service to the Inland Empire. As trucking costs and delays increase, goods movement by rail within the region and California will increase in value.

The San Pedro Bay Ports' 2017 Clean Air Action Plan has a goal of increasing the amount of cargo leaving the port complex by rail to 50% by 2030, up from less than 30% today. To help achieve this goal, the plan stated that "the Ports will explore the potential of short-haul rail in inland sorting facilities about 60 to 80 miles away from the Port area". The 2018 California State Rail Plan also described the potential benefits of short-haul freight shuttle trains[9]:

> Short-haul rail shuttles connecting ports with inland regions hosting substantial international trade-related distribution activity offer the opportunity to improve the velocity of the flow of goods into and out of the densely populated regions of Southern California and San Francisco Bay Area. With sufficiently high volumes, short-haul rail shuttles transfer the volume of freight truck traffic away from the already congested highways, particularly in and around the major ports. The capital investment in short-haul rail shuttle improvement can be made using the Traffic Congestion Relief Program funds, given a clear

[9] California State Department of Transportation, *2018 California State Rail Plan*, Public Release Draft, November 2017, section 5.2.6 Short-Haul Rail Improvements), pg. 168: http://www.dot.ca.gov/californiarail/docs/CSRP_PublicReleaseDraft_10112017.pdf

> analysis of how the rail shuttle can help relieve congestion on roadways. The feasibility of short-haul rail shuttles is highly sensitive to the differential in costs between rail and highway transportation, and would require efficient operation to maximize their viability, and to capture a better rate of return on the investment of public funds.

In addition to the large volume of trucks on highways between the Inland Empire and the Ports, there is also a large number of trucks to and from Mexico. A new freight rail connection from the Inland Empire to the U.S./Mexico border is needed. This should also be considered as part of the CHSRA's Phase 2 plans to build a line to San Diego.

Similarly, Union Pacific (UP) Railroad's Alhambra and Los Angeles Subdivisions between East LA and West Colton should also be examined as part of the CHSRA LA-Anaheim EIR process, as upgrading capacity on these lines could afford space for BSNF trains to make arrangements to use the UP-owned tracks to get to the new Colton intermodal yard. For decades, UP and BNSF have shared some key track segments across the Western U.S.

Short-haul freight rail service would build upon, and add value to, the large freight rail infrastructure investments that the ports and regional/state governments are making to shift more freight from truck to rail. In addition to adding value to CHSRA investments, short-haul freight rail would increase the economic value of publicly-owned rail infrastructure within Port property, the Alameda Corridor, International Container Transfer Facility and on county-owned railroad lines. These include ongoing and planned public investments in rail capacity expansions at the Ports of LA (Alameda Corridor southern terminus gap closure and Terminal Island railyard enhancement) and Long Beach (Pier B, Pier G/J, Terminal Island wye improvement), and rail-road grade separation projects going on throughout the region. In addition, Metrolink's Southern California Optimized Rail Expansion (SCORE) 10-year, $10 billion capital program will not only greatly increase the capacity, reliability and frequency of passenger service in the region, but will help do the same for freight movement by increasing the overall capacity of rail corridors. A component of the SCORE program which is directly relevant to the LA-Anaheim corridor is the Fullerton Junction project and related track capacity upgrades (3rd and 4th tracks) on the BNSF San Bernardino Subdivision between Fullerton, Riverside and San Bernardino (see below on pg. 14 of this letter). We suggest that the LA-Anaheim EIR/EIS study should take full account of these planned rail infrastructure projects and estimate their effect on mitigating freight rail movement on the LA-Anaheim Segment.

CHSRA should make investments and improvements that are not exclusive to future CHSR service, but should work to enhance overall passenger and goods movement in the region and the whole state. Developing ways to maximize the utilization of infrastructure is a good argument in favor of the program. Measures to support future short-haul express freight trains should be studied by CHSRA and should be included in system design. It is important that our state remains committed to the long-term solutions to the public health dirty air crisis and to increasing freeway congestion. To this end, CHSRA must support solutions such as freight rail electrification, and mode shift of more freight movement from truck to rail.

"Rolling-Road" short-haul freight rail service-

A 'rolling highway', 'rolling road', or 'land ferry' train enables complete tractor-trailer trucks to drive on or off train cars quickly. This roll-on/roll-off intermodal transport practice is similar to how a truck would drive on and off a ferry boat as part of a longer journey. That concept has rapidly grown in Europe over the past two decades.

The business model of a 'rolling-road' train is to provide an alternative to road trucking within a dense and congested region with a high amount of traffic delay. However, this concept is both an alternative to trucking and an enabler of a more efficient truck haul. The beginning and ending of the journey of the shipping container or other load would still be on a truck. Therefore, trucking would only be for a short parts of the overall journey, where it makes the most sense. This enables truck tractors to move more loads per day over shorter drayage trips, instead of wasting much of the day idling in traffic jams.

As an example of this concept, Austria and Switzerland have long had policies which encourage trucks ride through the Alps via electric 'rolling highway' train, to reduce pollution, congestion and accidents on mountain highways. Swiss company RAlpin (http://www.ralpin.ch/), operator of the all-electric rolling highway trans-mountain train shown below, is one of several freight rail operators which carry trucks travelling between France, Germany and Italy. These trains typically have a set schedule, similar to a ferry or passenger rail service. All of the Austrian and Swiss mainlines are electrified, and the 'rolling highway' truck trains share the tracks with fast passenger service. These trains typically operate at speeds similar to US passenger trains.

RAlpin 'rolling road' electric train carrying trucks in Switzerland
(Photo: RAlpin AG, http://www.ralpin.ch/media/)

Rolling road trains can carry the tractor and trailers together, with the drivers riding in a passenger car, or as trailers alone like conventional 'piggyback' intermodal rail cars. Traditionally there have been two general applications of short-haul and medium-haul rolling highway intermodal trains in Europe:

- Transportation of trailers or containers, but not in double stack configuration.

- Transportation of semi truck-trailer combinations. In this configuration, over-the-road drivers ride on a passenger car on the train. While riding, drivers are off duty for the purpose of driving hours limitation.

Both types of rolling road service use some type of drive on/off system. Some use "circus loading" in which there is a ramp leading to the first car in a string. Trucks pull on to the train using the ramp and drive along the train until reaching the farthest empty rail car. Others use some configuration of a rotating rail car deck that allows trucks to drive on off and on of rail cars individually. This generally involves a specifically designed terminal that provides ramps for trucks to drive on and off each car. With the latest technology, such a service can use existing tracks and intermodal facilities, or new ones with a relatively small land footprint, without the need for heavy machinery to load or unload the train.

A conventional U.S. intermodal terminal typically requires at least 300 acres of land alongside a rail line. It is therefore very unlikely that a new intermodal railyard of this size could be built anywhere else but BNSF's proposed Colton site in the central Inland Empire, where the vast majority of land has already been developed. New types of rail freight service must be explored for the region, which do not depend on slow freight trains which take hours to load or unload at large, conventional intermodal facilities. There are European innovations in intermodal freight rail which could serve as an example for California. Such trains use minimal intermodal terminals with short loading and unloading times, which do not require large amounts of land. Fast 'land ferry' freight trains, running on frequent, detailed schedules like passenger trains, designed to be competitive with highway trucking for distances less than 500 miles, are an essential part of rail system design.

A viable proposal for rolling-road short-haul rail for Southern California will draw upon the European commercial service experience of intermodal drive-on/drive-off railcars. This requires a demonstration in the U.S. of this technology, in collaboration with freight railroad and trucking companies. Such a pilot project would be needed to develop strategies to optimize utilization of the existing Southern California regional freight rail system for short-haul service, and fully integrated with line-haul freight and passenger rail trains. To be competitive with trucking, the short-haul rail service needs to be fast, frequent and flexible. As described in the article "Railroad Vision 2020: Lessons from Europe" by Brian Solomon in the August 2020 issue of *Trains* magazine:

> ..European-style freights offer a model to attract customers to rail that doesn't fit the North American model. Short (12 to 36 cars long), tightly coupled, precision-scheduled, point-to-point freights could provide high-value shippers better service that would be more competitive with trucks while making better use of equipment and quicker turnaround times. Using better marketing, improved customer service, nimble dispatching combined with the ability to accelerate and decelerate quickly without suffering long delays at yards, short fast freights could reach markets that modern North American railroads have forsaken.

The Colton Intermodal Yard Could Be A Truly 'All-Electric' Intermodal Facility

Electrification is possible for all land movements of a shipping container, from unloading off of a ship with an electric crane, drayed by an electric truck to a nearby transshipment facility or intermodal yard, moved around at that facility with an electric forklift, and carried away on an electric train. A new intermodal facility, such as BNSF's proposed Colton intermodal yard or the Southern California International Gateway (SCIG) project could be designed from the ground up as all-electric, utilizing both electric trucks and electric trains, along with electric freight movement equipment. It is technically feasible for such a facility to have cranes, forklifts, trucks, and locomotives that are 100% electric. The local community and environmental opposition to BNSF's SCIG or Colton intermodal yard proposals could be mitigated if the facility would be required to utilize a significant fraction, or even entirely, all-electric trucks and all-electric shuttle and long-haul freight trains.

The proposed BNSF Colton intermodal yard is described on pg. 4 of the CHSRA LA-Anaheim Project Section public scoping meetings mailer/fact sheet as an 'all-electric facility':

"The new facility will feature all-electric components, including:

- Automated wide-span rail-mounted cranes

- Automated container-straddle carriers

- Electric Hostler trucks "

This is commendable, as is the fact that BNSF has already started testing electric cranes, side loaders and yard trucks in its California railyards[10]. However, hostler trucks and container-lifting equipment within a conventional intermodal yard together represent a minority of the pollution generated by the yard. The majority comes from road trucks and locomotives passing through the yard. If the new Colton intermodal yard is to truly be "all-electric" facility, then it must include zero-emissions electric locomotives, and a stipulation that only electric trucks would be transporting freight in and out of the yard.

CHSRA is rightly advancing zero-emission, all-electric rail passenger transportation at a large scale, enough to cause a notable reduction in the amount of passenger trips within California of fossil fuel-powered automobiles and airplanes. However, electrified passenger rail is not enough for California. Freight rail must also be electrified, and California can set an important example of freight rail electrification for the rest of North America.

Applications such as railyard 'switcher' locomotives are an ideal opportunity for deployment of the first generation of zero-emissions battery-electric locomotives. Zero-emissions switcher locomotives would also directly replace existing diesel switchers, which are typically the oldest and dirtiest locomotives in a

[10] https://bnsfcalifornia.com/2018/10/11/bnsf-awarded-22-6-million-state-grant-for-clean-technology-pilot-program/

railroad fleet. These legacy locomotives in urban railyard service have a disproportionate impact on neighboring communities, and should be taken out of service as soon as they can be replaced with electric switchers, providing significant public health benefits. BNSF and Wabtec are already testing a battery-electric locomotive in Southern California[11]. Pacific Harbor Line and Progress Rail plan to test its new Joule battery-electric locomotive in the Ports of Long Beach and Los Angeles during the second half of 2021[12]. Regional electrification of both passenger and freight rail lines throughout Southern California, beyond the current plans to electrify only passenger service between LA and Anaheim, should also be evaluated by the Authority. To be useful, electric freight locomotives outside of the railyard would require electrification infrastructure across the region. Battery-electric locomotives may also play a significant role in the implementation of electric intermodal shuttle trains. Refer to Appendix A of this letter for more information on freight rail electrification in Southern California.

It is important to note that automated freight handling equipment does not necessarily mean that it is electric or zero-emissions. Automation is often marketed as a means to reduce pollution, but in practice its main aim is to reduce the number of workers.

Fullerton-Riverside-San Bernardino 3rd Main Track

A third mainline track between Fullerton, Riverside and San Bernardino is currently in planning and environmental review (funded by a state SB1 grant to Metrolink), but not yet funded for construction. Part of the Metrolink SCORE program in collaboration with BNSF, the project will increase capacity, improve reliability, and reduce passenger-freight train congestion conflicts on one of the nation's busiest freight rail corridors shared with passenger trains. This third track could also provide sufficient capacity for future short-haul freight trains between the Ports of LA/LB and the new Colton Intermodal yard.

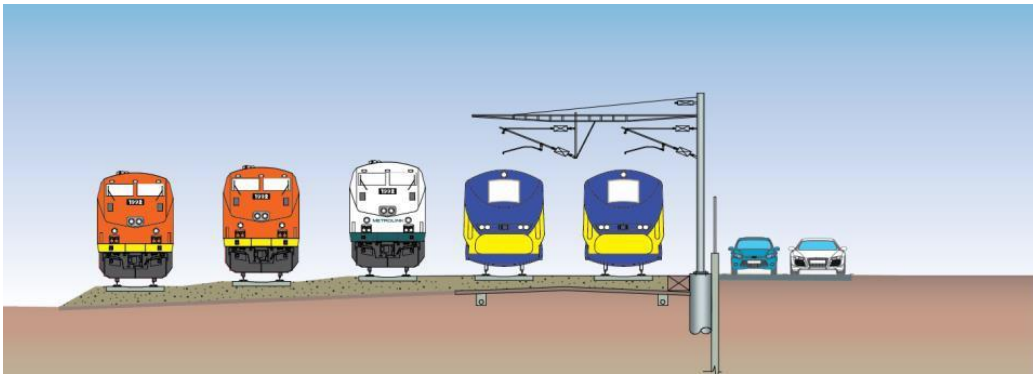
On the 46 miles between San Bernardino and Fullerton, BNSF has currently two main tracks and about 15 miles of third mainline track. Passenger trains operating on this segment include Amtrak (*Southwest Chief*) and Metrolink (91/Perris Valley Line and Inland Empire Orange County Line). Full completion of the remaining 31 miles of third main track from Fullerton to San Bernardino, with key fourth track segments at Corona and La Sierra, is being studied. According to the 2018 SCORE proposal, the project is estimated to cost $566 million, and is expected to be completed in the 2024-2028 timeframe. The full project is not yet funded, but a portion of third mainline track between Atwood and Esperanza in Orange County is moving forward thanks to a federal grant received by Metrolink (as a first phase of the Fullerton Junction project). A complete third mainline from Fullerton to Riverside should be funded and expedited, with full support of the state government (including CHSRA).

[11] https://www.bnsf.com/news-media/news-releases/newsrelease.page?relId=bnsf-and-wabtec-commence-battery-electric-locomotive-pilot-test-in-california

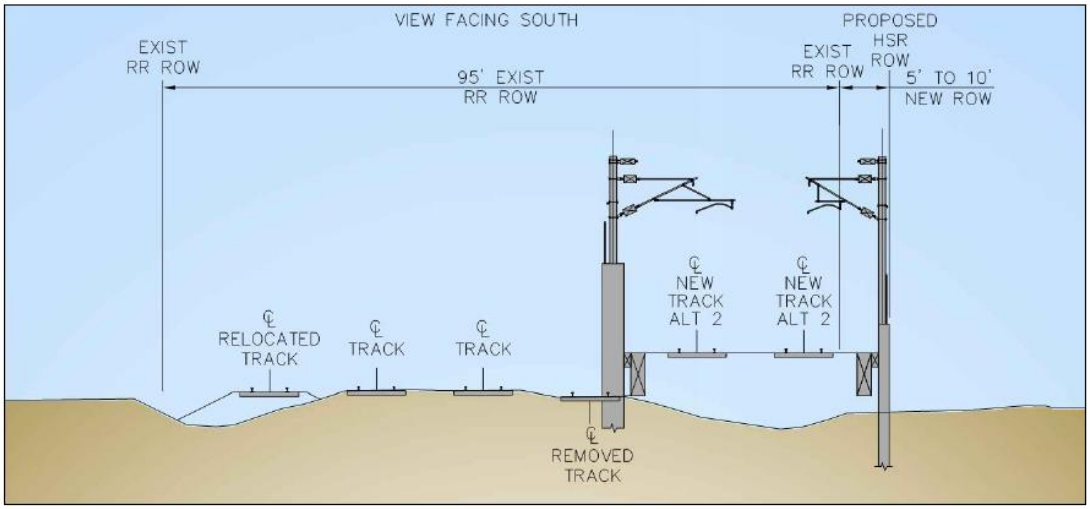
[12] https://www.railwayage.com/mechanical/locomotives/phl-to-test-progress-rail-emd-joule/

CHSRA and Freight Rail Electrification in the Southern California Region

Upgrades to the LA-Anaheim corridor by CHSRA , in collaboration with those made by other public agencies and BNSF, including adding more track capacity consistent with short, fast, time-sensitive freight trains, would be a great public benefit to both passenger and freight rail service. The heavy train traffic of this corridor would lead to improved economics and higher utilization of electric rail infrastructure, if used by both electric passenger and freight trains sharing the corridor. CHSRA is proposing two electrified tracks on which all passenger service would run (electric or not), and two to three freight tracks between Los Angeles and Fullerton, as shown in the diagrams below (taken from CHSRA's *Los Angeles to Anaheim Project Section: Supplemental Alternatives Analysis Report*, April 2016). In application of traffic to infrastructure design, intermodal shuttle trains should be considered to be traffic similar to express commuter trains.



At-grade alignment of electrified passenger rail tracks alongside three freight tracks, as proposed for the Los Angeles to Fullerton corridor.

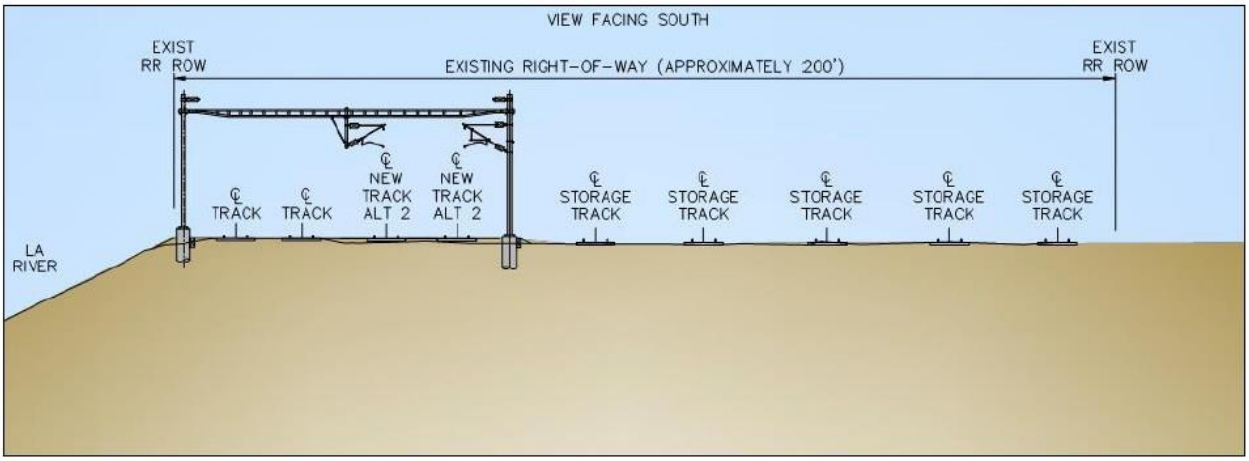


Source: STV, 2015 (Figure not to scale)

Figure 3.4-15 Alternative 2 Typical At-Grade Cross-Section - Fullerton

Electric catenary infrastructure proposed by California High Speed Rail Authority at Fullerton, on Los Angeles-Anaheim section along BNSF San Bernardino Subdivision.

The CHSRA 25-kV overhead catenary system could be designed to support catenary wire over the freight tracks in the future. A 25-kV overhead catenary electrification system is powerful enough to pull heavy freight trains, as demonstrated by existing electric freight railroads around the world. In downtown Los Angeles, the planned CAHSR catenary structure over the tracks along the West Bank of the Los Angeles River is already planned to span over most of the freight tracks as well, as shown below.



Source: STV, 2015 (Figure not to scale)

Figure 3.4-10 Alternative 2 – Typical Cross-Section –- LA River West Bank: Approaching Redondo Junction

Electric catenary infrastructure proposed for Los Angeles River West Bank by California High Speed Rail Authority, on Los Angeles-Anaheim section south of LA Union Station (Diagram from California High Speed Rail Authority)

The 'blended' CHSRA Burbank-Los Angeles-Anaheim-Irvine corridor could serve as a catalyst for electric regional passenger and freight rail for the rest of Southern California. Electrification of the LA-Anaheim corridor for the Phase 1 of California High Speed Rail could lead to regional Metrolink link trains being electrified. This could take different forms, either completely conventional overhead wire catenary electrification or possible hybrid locomotives under development such as diesel-battery hybrid or catenary-battery hybrid technologies. The 2018 State Rail Plan called for planning for "development of future electrified regional services and phased implementation HSR services in the Inland Empire". Phase 2 of the High Speed Rail plans to pass through the Inland Empire on the way to San Diego.

The LA-Fullerton segment of the LA-Anaheim Phase 1 HSR project is on BNSF-owned mainline right-of-way, part of the San Bernardino Subdivision from LA to Riverside and San Bernardino. Electrification of the Fullerton-Riverside segment should be also studied. LA-Fullerton-Riverside 'higher speed' electrified Metrolink service, at speeds up to 125 mph, would be a game changer for this densely- populated corridor. More frequent and faster zero-emissions electric trains could take tens of thousands of cars off the freeways each day. Electrified short haul freight trains between San Pedro Bay and Riverside and San Bernardino would also be an excellent way to maximize the greenhouse gas emissions reductions resulting from the infrastructure investment built for the California High Speed Rail Project.

An existing model for "blended services" combining electrified higher-speed / high-speed passenger trains and express freight trains can be found in Germany and other countries. Freight trains in Germany

operate in mixed traffic with commuter, regional, long distance, and high speed passenger trains on lines with maximum speeds of up to 150 mph. Electric freight trains in Germany typically operate at 60-70 mph. German 90 mph freight trains were common in the past, but that speed was found to be too costly to be beneficial to the commercial service.

CHSRA infrastructure can be shared with lightweight express freight trains running late at night on HSR tracks, as is common in Germany (see Appendix C). U.S. freight railroads have mostly given up on short haul service and expedited delivery. HSR right-of-way and infrastructure provide an opportunity for specialized trains. Traditional Amtrak tried and mostly failed for political and business reasons, not technical impossibility.

In Europe, many HSR lines share some of the track with conventional passenger trains or even freight trains, at least in terminal areas. Where the track is shared with other types of traffic, the HSR trains are generally limited to no more than 155 mph. Almost all high speed rail trains in Europe access city terminals on the conventional network at conventional speed. This characteristic limits the amount of urban right of way needed and limits some of the most expensive infrastructure. The general characteristics of freight trains in the US and in Europe generally prohibit such shared operation. US freight trains are very long, heavy, and slow for political and business reasons. However, there is a large amount of lightweight and time-sensitive freight currently hauled by truck in the US that could be moved on trains similar to European freight trains, allowing the shared use of conventional trains and some HSR trains.

Colton as a location for a 'Southern California Rail Tech Hub'

The Colton intermodal facility could incorporate, as a public and economic benefit, a 'Southern California Rail Tech Hub'. Such a trackside facility could host:

- High-end manufacturing of electric locomotives and rail equipment ('rail industrial park' for several companies)
- Sites for zero-emissions electric railroad technology demonstrations
- University railroad engineering and research programs

A Rail Tech Hub could provide high-paying manufacturing jobs in the "green technology" sector, by attracting companies who manufacture zero-emissions electric locomotives, and intermodal railcars which reduce pollution by shifting more freight from truck to rail. The Inland Empire is the ideal location for a rail-technology hub in California, given the existing amount of local rail infrastructure and know-how.

Colton as a center for rail transportation education and training-

The success of improving the utilization of rail transportation depends upon restoring the US railroad industry's knowledge of infrastructure design and utilization and the reliable movement of people and time-sensitive freight.

As a consequence of focusing on highways, much of the expertise in railroad design, construction, and operation in the US has been lost. The maintenance and furthering of technical expertise requires an educational pathway to allow young people to enter the field. It also requires academic "homes" (departments or institutes) where innovation and research can be nurtured and realized. In the US, there are only three university railroad transportation and engineering programs: University of Illinois at Urbana-Champaign (its rail program was founded over 100 years ago), Michigan Technological University (founded in 2007), and Penn State Altoona (founded in 2011). There are 20 discrete, non-program courses offered at other US universities, with the number of courses ranging from one to six at the various universities. Of these only three universities offer more than two courses. There is a roughly 100:1 ratio of highway to rail academic funding in the US (*Tuning Transatlantic Cooperation in Rail Higher Education, Handbook for Rail Higher Education*, 2011).

In the European Union, there are 37 university programs in railroad transportation and engineering. Similar university railroad engineering and transportation programs are offered in Russia, China, Taiwan, and Australia. There are even entire universities in Russia and China that specialize in rail transportation programs. In Germany, the fundamental rail engineering courses are a requisite for all engineering students. Railroad programs in Chinese universities are attracting students from English as a second language countries all over the world.

The university rail programs in Europe and Asia are far more comprehensive in content than the US programs. US rail engineering programs concentrate more on how to build than what to build or how to use it. Engineering and operation cannot be separated in rail transportation as it can in highway transportation.

Safe and dependable rail transportation also depends upon well-qualified individuals to operate, maintain, and manage the service. In conjunction with and supporting this author's proposed rail transportation program, a full rail-road transportation and engineering program should be initiated in several California colleges and universities. Southern California railroad tracks could be used in conjunction with a comprehensive technical training and apprenticeship program in railroad trades (operation, track and signal maintenance, vehicle maintenance, supervision, and management).

Appendix A: Rail Electrification in Southern California

The short-haul rail service would begin with conventional diesel-powered locomotives, then later move on to lower- and zero-emissions electric locomotives. However, serious planning efforts for the inevitable electrification of rail must begin now. The long-term vision is that the electric short-haul rail service would carry trailers between the two, with electric trucks handling the relatively short drayage trips, with electric trucks, on either end.

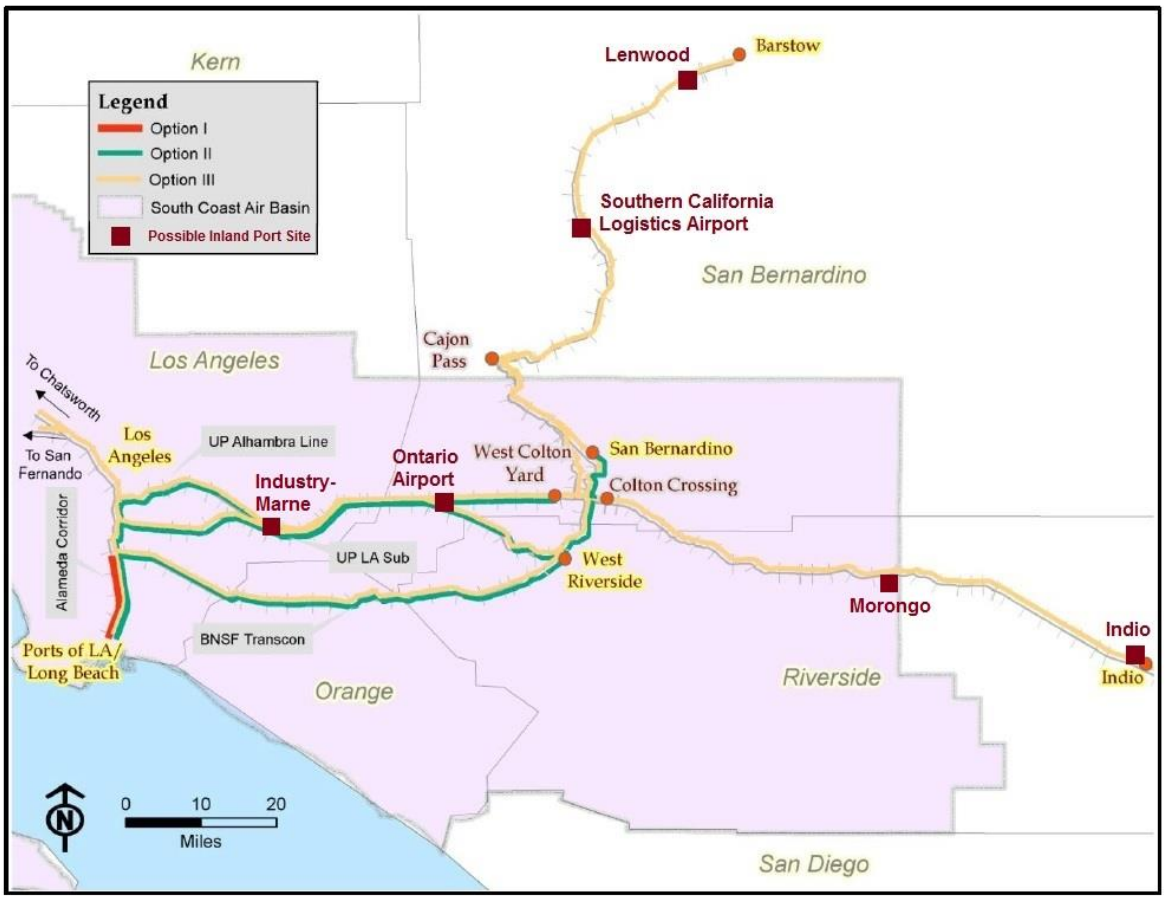
The only proven zero-emissions heavy freight movement technology is a fully electric railroad. Electric trains are the most energy efficient way to move freight on land, moving a ton with a small fraction of the energy used by diesel-powered road trucks. The electrification of freight rail in California would reduce the public health impacts to local communities affected by diesel-powered locomotives, and reduce the greenhouse gas emissions of freight movement. Electric locomotives also improve the speed of travel with better acceleration, quieter operation, and twice as energy efficient as diesel locomotives. Used successfully all over the world for over a century, electric freight locomotives have many advantages.

Advantages of electric locomotives include:

- Zero emissions
- Quieter than diesel locomotives
- More energy-efficient and lower energy cost, can be powered by renewable energy via the power grid
- Simpler locomotives, lower O&M costs
- Established, proven technology

Innovative intermodal-truck technology combined with electric rail could offer great benefits to the Southern California region. The short-haul freight rail service in California can begin with existing diesel locomotives, which would still greatly reduce pollution and fuel consumption compared to truck. However, the faster acceleration and zero-emissions track miles of electric locomotives will greatly enhance the environmental and de-congestion benefits of short-haul freight rail, increasing its competitive advantage over highway trucking. With electric locomotives, energy-efficiency of rail transport is greatly increased while emissions drop to zero. Electrified freight shuttles could also utilize the same overhead catenary and/or charging infrastructure used by future electric passenger trains planned for the Southern California region. In some situations, battery locomotives may be a rapid-implementation way of electrifying intermodal shuttle trains., Different scenarios and technologies for California freight rail electrification need to be evaluated.

Regional Electrification Options and the SCAB Boundary



Source: *Task 8.3: Analysis of Freight Rail Electrification in the SCAG Region (Final Technical Memorandum)*, prepared by Cambridge Systematics, Inc. for Southern California Association of Governments, April 2012, pg. 4-24.

There have been several studies over the past three decades of regional freight rail electrification in Southern California, including a 2012 SCAG report[13]. The last time that a regional, comprehensive rail electrification task force existed was for the 1992 Southern California Accelerated Rail Electrification Program study[14]. Such a regional task force should be created again, with committees for planning, engineering, analysis, operations & maintenance, environmental analysis, funding, legislative and regulatory issues. Electrification of the Alameda Corridor, combined with other infrastructure projects and policies which encourage shifting of port freight movement from truck to rail, is a superior environmental and socially-acceptable alternative to freeway expansions, such as adding more lanes to the I-710 freeway. Freight car switching on either end of electrified track segments could be performed

[13] *Task 8.3: Analysis of Freight Rail Electrification in the SCAG Region (Final Technical Memorandum)*, prepared by Cambridge Systematics, Inc. for Southern California Association of Governments, April 2012.

[14] *Southern California Accelerated Rail Electrification Program, Draft Executive Summary.* Prepared for Southern California Regional Rail Authority, February 1992: http://libraryarchives.metro.net/DPGTL/Metrolink/1992-ExecSummary-SoCal-Accelerated-Rail-Electrification.pdf

by zero emissions battery-electric switcher locomotives, which would not require overhead catenary. Electrification of the Pacific Harbor Line could be implemented with battery-electric switcher locomotives to complement an overhead catenary system, a scenario shown on the map below.

Possible operating scenario of Alameda Corridor electrification using catenary/battery hybrid locomotives, overlaid on map of existing electric utility transmission lines and substations (Background map: California Energy Commission)

Outside of North America, electric freight trains are very common. Almost every industrialized country, from Europe to Asia to South Africa, has an extensive electric rail network that includes freight service. Several notable, pioneering electric freight rail lines existed in the U.S. during the first half of the 20th Century, particularly for steep mountain grades. In the Washington Cascades, the Great Northern Railway electrified its Cascade Tunnel in 1909. The Milwaukee Road electrified 645 route miles of its Pacific Extension in two long sections of the Rocky and Cascade mountain ranges between 1914 and 1920, the longest electric railroad in the world at the time. The Pennsylvania Railroad had electrified nearly 2,700 miles of its track by the end of the 1930s. In Northern California, the Sacramento Northern Railway, which ran between Oakland, Sacramento and Chico, ran electric freight locomotives until 1965. The Pacific Electric Railway had electric freight locomotives for small freight trains on its inter-urban electric rail transit system across Southern California (see photo below).

Electric freight trains were once common in Southern California:
Pacific Electric Railway all-electric local freight train in South LA, 1953
(Photo: Pacific Electric Railway Historical Society)

U.S. freight rail companies have long resisted converting from diesel to electric locomotives, as well as neglecting the short-haul freight market. However, public support for rail electrification, and getting trucks off the highways, is growing due to the environmental benefits of all-electric, zero-emissions freight rail. A Port-to-Inland Empire short haul freight rail service would be a logical first phase for freight rail electrification in Southern California.

BNSF and Electrification

The BNSF Railway is owned by holding company Berkshire Hathway, which also has substantial investments in renewable energy and electric power transmission. Berkshire Hathaway Energy (BHE)'s U.S. Transmission division owns interests in transmission line projects in California, Arizona, Texas and Kansas. For years, BNSF has expressed interest in electrification along its lines in conjunction with transmission development, but has not moved forward because of the capital costs. As described in this 2009 article in the *Journal of Commerce*:[15]

> Converting the freight rail system to electric trains from today's all-diesel operations might seem like a far-off notion, but BNSF Railway's Matthew K. Rose is starting to explore this new frontier. If his ideas pan out, BNSF's still-early planning efforts could help produce historic change for North American freight railroads. Rose, BNSF's chairman, president and CEO, told *The Journal of Commerce* his company is in talks with electrical power line builders about stringing or burying transmission lines in some of BNSF's inter-city rail corridors. With those line-easement leases emerging as a possible new revenue source, BNSF officials are also weighing how to electrify the carrier's mainline track system and asking equipment makers about locomotives that could run both under electric or diesel power.
>
> .."We have had conversations with two, if not three, outside organizations," Rose said, "around using railroad right of way for different opportunities of electrification." He does not see such potential power line projects developing quickly on the railroad, but said BNSF is in "serious" talks with two of them. He said BSNF could opt to draw electricity from those lines for its own use, in lieu of cash payments. With that, it might also offer power along with freight transportation to a new-era industrial park for various types of factories that burn lots of energy.
>
> BNSF has not asked locomotive makers to prepare any plans, Rose said, but has discussed with them what kind of equipment is already available or could be developed if the railroad begins to integrate electric power with its vast diesel territory. He said the price tag to electrify all BNSF mainline tracks could be $10 billion, including what the carrier would need in dual-mode locomotives. That's too steep a price for BNSF to justify right now, but the initial power line projects could be a way to start.
>
> …Rose thinks the federal government should step in as a matter of public policy, set rail electrification as national goal to cut carbon levels and U.S. dependence on foreign oil, and help fund it across the entire rail network.
>
> "You hear everybody talking about a carbon-constrained world, and a carbon-priced world," he said. "Railroads are so efficient from a carbon standpoint in terms of truck, but we still have an opportunity in terms of electrification. But I just think the capital burdens are so enormous when we're talking about this that its really going to have to be a federal vision, with some federal funding".

More recently, Wabtec (formerly GE Transportation) and BNSF have collaborating on battery electric locomotive demonstration project in California[16].

[15] "BNSF eyes route to electric trains", *Journal of Commerce*, April 13, 2009: http://www.joc.com/rail-intermodal/bnsf-eyes-route-electric-trains_20090413.html

[16] https://www.bnsf.com/news-media/railtalk/service/battery-electric-locomotive.html

Appendix B: Benefits of Short-Haul Freight Service

From the ports, many shippers have historically found that trucking containers to the Inland Empire for transloading from 40' international containers to 53' domestic containers to be cheaper than paying the fee to use the Alameda Corridor (not including the variety of subsidies which trucking receives). However, in recent years drayage trucking costs have increased due to highway congestion, tightened port security, higher driver wages and other factors. Increased road congestion and trucking costs, particularly near the Ports of Los Angeles and Long Beach, have renewed interest in short-haul freight rail service to the Inland Empire. Also, the lower volume of long-haul trains withing the LA Basin frees up some capacity within the Southern California regional freight rail network. This capacity can be utilized by an increased number of passenger trains (HSR, Amtrak and Metrolink), as well as new types of freight rail service (short and medium-haul). After all, BNSF's predecessor, the Santa Fe Railway, successfully ran short- and medium-haul intermodal freight trains throughout Southern California between the 1880s and mid-20th century.

Benefits to freight railroads from short-haul service -

Short-haul freight rail offers a new line of business, and new sources of revenue for railroad companies. Class I railroads (UP and BNSF) have traditionally not seen short-haul freight service to be profitable enough to pursue. They also do not want it to interfere with existing operations of profitable long-haul trains. For the past several decades, the preferred business model of Class I freight railroads has focused on long-haul not-time-sensitive bulk shipments over 500 miles in length, and not short-haul trains that would compete more directly with truck. Railroads consider a truck haul of up to 700 miles at either end of the rail shipment to merely be an integral part of the rail trip. However, the decline of bulk commodity shipments of coal and oil in the past several years has freed up some track capacity and makes a business case for U.S. freight railroads to be more open to exploring new business opportunities such as short-haul rail. Today, increasing road traffic congestion is making short-haul rail look more competitive with trucks for drayage between San Pedro Bay and the Inland Empire, and builds a business case for the service. Short-haul and medium-haul intermodal traffic is perhaps the greatest opportunity for railroad freight traffic growth in North America. A major challenge of short-haul freight rail that has been cited by Class I is the availability of land and capital needed to construct an "inland port". However, new rapid load/unload technology offers a way to dramatically cut the cost of an intermodal rail facility.

The short-haul freight trains would be scheduled similarly to existing Metrolink passenger trains in the region, which the freight railroads are accustomed to, and have been for the past several decades. Each day in Southern California before the pandemic, both UP and BNSF accomodated about 200 regularly scheduled Metrolink and Amtrak passenger trains. The 2008 Southern California Association of Governments short-haul freight rail report recommended this "commuter shuttle" train concept for

scheduling a short-haul freight train between San Pedro Bay and the Inland Empire[17]. Shuttle train service could also run in the middle of the night, if found to be advantageous and practical, when there are the fewest passenger trains.

Success of a short-haul freight rail service will require project design that ensures the private freight railroad companies involved are appropriately paid for the use of their property, and that they will have a clear economic benefit for hosting the short-haul freight trains. They are not going to let others use their tracks for free. Since the short-haul freight rail is not passenger service, the host railroads are not under the same obligation to allow a short-haul freight operator low-cost access. The track use fees for short-haul rail will thus likely be higher than those paid by passenger trains.

The open access practices of the EU can serve as a model. EU Council Directive 91/440/EEC of 29 July 1991 established the requirements for non-discriminatory access to the rail network. At the time of its writing, the rail network of each European country was a vertically integrated system with the same company owing the infrastructure and providing service, as is the practice in the US. The EU Council identified several disadvantages to that system. Similar disadvantages exist in the US system.

The EU directive required financial and management separation of infrastructure from operation and non-discriminatory access to the infrastructure. It did not require the national railroad companies to sell the infrastructure, just to operate it as a wholly owned subsidiary, separate in operation and financially from the parent company

The German railway company, Deutsche Bahn, separated the company into nine separate companies:

- DB Netze, the infrastructure division,
- DB Fahrzeuginstandhaltung, the rail vehicle maintenance division,
- DB Regio, the regional passenger service division,
- DB Fernverkehr, the long distance passenger service division,
- DB Stadtverkehr, the commuter and urban transit division,
- DB Cargo, the rail freight transport division,
- DB Netze Energy, the fuel and traction power division,
- DB Vertrieb, the ticket sales division,
- DB Systemtechnik, the engineering division.

The EU Directive establishes a fee structure for the infrastructure company that involves payment of all costs of owning, operating, and maintaining the infrastructure plus a profit margin. The fee can be tiered based upon the needed priority, running time, time of day, traffic volume at the requested time, and the amount of time in advance of the requested train time that the request for a schedule is made.

[17] *Inland Port Feasibility Study, Project No. 06-023 Final Report*, Prepared by the Tioga Group Inc., Railroad Industries, Inc. and Iteris for the Southern California Association of Governments (SCAG), August 2008

Such an arrangement has existed in the US in Chicago for over a Century. There are economic advantages to a terminal railroad operating entirely within the Chicago Switching District. To that end

- Baltimore & Ohio (now CSX) owned the Baltimore & Ohio Chicago Terminal Railroad.
- New York Central (now NS) and Chicago, Milwaukee, St. Paul & Pacific (now CP) jointly owned the Indiana Harbor Belt Railroad.
- 13 railroads jointly owned the Belt Railway of Chicago.

The subsidiaries charged the parent companies for the use of the facilities just as they did for other railroads.

Such an arrangement can ensure that there is network access for the rail service the community needs while providing an appropriate return on investment for the property owners. The short-haul rail movements could also offer Class I long-distance trains a convenient connection. Preference on short-haul rail trips could be assigned to containers that will be transferred to Class I intermodal long-distance trains at an inland intermodal yard. In Southern California, short-haul rail along UP's tracks would offer priority delivery of containers to/from San Pedro Bay and UP's existing LATC, East LA, Industry, West Colton and Yermo yards, where they would be loaded onto long-distance trains to the rest of the country. Similarly, on BNSF tracks, priority containers would go to/from the ports to BNSF's existing Hobart, San Bernardino and Barstow yards. A guarantee of future container traffic volume from short-haul trains would lower the balance sheet risk of Class I railroads.

Congestion-reduction benefits-

Each truck taken off the highway between San Pedro Bay and the Inland Empire takes up the space of about five cars. Reducing the vehicle-miles driven by trucks reduces not only traffic congestion but also the potential for accidents. Reducing wear and tear on the roads is another important benefit: commercial trucks do close to 99 percent of the damage to highways and contribute 35 percent of the cost of maintenance and repair[18].

Environmental benefits-

Rolling-road short-haul freight rail service would be a great benefit to the Southern California region, where air pollution remains a major problem, particularly in communities alongside freight movement corridors. Mode shift of more freight movement from truck to train will reduce overall diesel engine pollution.

UC Berkeley Prof. Robert Leachman in his 2017 white paper "Strategic Initiatives for Inland Movement of Containerized Imports at San Pedro Bay"[19], estimated that the emissions benefits of San Pedro Bay-

[18] https://truecostblog.com/2009/06/02/the-hidden-trucking-industry-subsidy/

[19] Prof. Robert Leachman, "Strategic Initiatives for Inland Movement of Containerized Imports at San Pedro Bay". Institute of Transportation Studies, University of California Berkeley, January 12, 2017: https://santamariashippingllc.com/wp-content/uploads/2017/06/RCL-LA-Basin-Initiatives-Jan_13_2017.pdf

Inland Empire short haul rail service would be impressive, even with conventional diesel locomotives. Assuming it displaced 2.6 million San Pedro Bay-Inland Empire dray truck trips per year (or about 7,200 truck trips per day), and all-electric terminal equipment on both ends, the annual emissions reductions would be over 300,000 metric tons of CO_2, 300 tons CO, 1,156 tons NOx, and 97 tons of PM2.5.

Highway transportation has been associated with a newly discovered form of pollution. As rubber tires wear, they leave a fine residue of toxic particulate matter that washes off of the pavement into the ground water during rainfall. Not addressed yet be specific research, it appears that the particulates from tire wear may also be a component of air pollution associated with highway transportation.

Benefits to marine terminal operators-

Short-haul rail offers a reduction of truck congestion around the docks, and an opportunity for better utilization of terminal capacity. Increased throughput of containers, especially as container vessels keep getting larger, will lead to pressure for alternatives to conventional drayage trucking. Containers that can be quickly moved off the docks by train to an inland terminal will not take up space at the docks. Reducing the time that containers dwell at the docks is critical for increasing the competitiveness of a port facility.

Benefits to beneficial cargo owners-

More reliable shipments are possible when trucks don't have to travel through the most congested areas of the LA metro area. Short-haul freight shuttle service offers the advantage of sending trucks only a short distance between an Inland Empire distribution center and a nearby rail terminal. Faster drayage of priority containers, which need to be moved as quickly as possible from the docks to an inland facility, would be the first to use such a service. The Ports of LA/LB are the nation's primary gateway for high-value imports such as electronic goods, and thus the beneficial cargo owners have a great need for express intermodal service.

With fewer delays due to road congestion and lower fuel cost of transport, short haul freight rail will save shippers money. Short-haul rail also offers beneficial cargo owners a lower carbon footprint of shipments, and less likelihood of accidents/damage to goods. Rail transport is also less susceptible to weather-related interruptions than road transport.

Appendix C: German High Speed Rail, combined with other services.

The table 1 below contains extensive information about HSR and conventional train service in Germany. This information can correct many of the popular US myths about train service in Europe and HSR in general. The table represents one High Speed Train (HST) on the Zurich, Switzerland - Kiel, Germany route, 654 miles. Including close connections, there are 12 trains per day in each direction between endpoints. One of these trains is an Inter City Express (ICE) HST that operates over the entire route. Four of the trains are ICE HSTs between Zurich and Hamburg connecting to a regional train.

Schedule and Connections Deutsche Bahn (Germany) High Speed Train ICE 74

Station	Pop.	Miles from Prev	Dwell	Time to Next	Avg. Speed mph	Conn. in one hour	Min. Conn. Time	Max. Conn. Time	Type of Connecting Train or Bus	*Equivalent Size US City*
Zurich	377,000	0.0		0:55					*(Schedule does not list connections at initial station)*	*Bakersfield CA*
Basel SBB	188,000	54.6	0:07	0:06	60	12	0:05	0:43	TGV, IC, IC, S, IR, IR, RE, S, IC, S, S, IR	*Knoxville TN*
Basel Bad		3.1	0:03	0:34	31	7	0:09	0:39	SBB, IRE, RB, RB, RE, RE, SBB	
Freiburg (Breisgau)	200,000	37.8	0:02	0:42	67	14	0:08	0:43	BSB, ICE, RE, BUS, BSB, RB, BUS, BUS, RE, BUS, BSB, RB, BUS, BUS	*Salt Lake City UT*
Baden-Baden	54,000	63.9	0:02	0:16	91	4	0:08	0:32	BUS, E, E, BUS	*Owensboro KY*
Karlsruhe	286,000	18.0	0:02	0:23	68	26	0:04	0:43	IC, IC, IC, E, S, S, S, S, IC, S, RE, S, S, S, S, RE, RE, E, RB, S, TGV TGV, E, S, S, RB	*Lincoln NE*
Mannheim	319,000	37.8	0:02	0:37	99	24	0:10	0:43	RNV, S, RNV, RNV, RNV, S, RNV, S, ICE, RE, RE, ICE, S, RNV, RNV, RE, ICE, RB, RB, RNV, IC, RB, S, RNV	*Lexington KY*
Frankfurt (Main)	670,000	50.8	0:05	1:23	82	43	0:08	0:45	S, RE, S, RB, S, S, S, ICE, ICE, ICE, RE, S, ICE, ICE, S, S, ICE, S, S, HLB, IC, IC, S, EC, IC, S, S, IC, IC, IC, S, RE, S, RE, S, S, RB, RB, S, S, RE, RE, VIA	*Detroit MI*
Kassel-Wilhelmshoehe	194,000	119.7	0:02	0:18	87	12	0:07	0:43	RE, RE, IC, RT, RE, RE, RT, ICE, ICE, RT, RT, RE	*Grand Prairie TX*
Goettingen	129,000	27.3	0:02	0:34	91	9	0:08	0:37	ICE, RB, RB, ICE, ICE, ME, CAN, CAN, CAN	*Thousand Oaks CA*
Hannover	515,000	61.4	0:03	1:14	108	32	0:03	0:48	S, S, ICE, ICE, ICE, ICE, S, S, ME, S, ICE, IC, IC, ME, S, S, IC, RE, RB, RB, RE, S, RE, RE, ICE, IC, IC, IC, S, IC, S, IC	*Fresno CA*
Hamburg	180,000	111.0	0:04	0:03	90	24	0:08	0:46	S, IC, S, S, S, RB, RB, S, S, S, RE, S, ME, S, S, ME, S, RB, ICE, ME, RE, ME, ME, RE	*Providence RI*
Hamburg Dammtor		0.6	0:02	0:43	12	4	0:06	0:20	S, S, S, S	
Neumuenster	80,000	48.4	0:02	0:18	68	6	0:06	0:23	SHB, AKN, RB, NOB, NBE, RB	*Lawrence KS*
Kiel	229,000	19.2			64	3	0:15	0:36	NOB, RB, RB	*Richmond VA*
	Total	653.6	0:38	8:06		220	***0:03*** Min.	***0:48*** Max.		
	Avg. Speed 74.84 mph									

Table 1: Schedule and Connections Deutsche Bahn (Germany) High Speed Train ICE 74

There is a common myth that Europe has only HSR. HSR is a lesser component of rail travel as can be observed in the connections column. A common myth that the US does not have the population needed to support HSR. The US equivalent cities for the stations on this route counter that notion. This is HSR, but the maximum speed is about 155 mph. The speed has been established by the service rather than establishing a speed then establishing a service at that speed.

The time between stations ranges between six minutes to 1 hour 23 minutes. Average speed is 75 mph.

This train connects with 215 trains and five bus routes. Connecting trains leave in as little as three minutes after the arrival of this train. The longest wait for a connecting train is 48 minutes.

This train connects to as many as 43 trains (Frankfurt). The connecting trains include HST, long distance Trains (Like Amtrak long distance), Corridor trains (e.g., Amtrak Cascades, Surfliner, San Joaquins), commuter trains (e.g., Seattle Sounder, Los Angeles Metrolink, San Francisco Caltrain, Chicago Metra), light rail and bus service.

In the US, Amtrak will generally sell tickets that include a connecting time of less than 60 minutes and in some cases 90 minutes.

The distance between stations on this route ranges from 0.6 and 3.1 miles in cities that have multiple stations to 120 miles. The average distance between stations is 54 miles. The close connecting service to intervening stations makes this high speed train a reasonable alternative to driving.

The connectivity represented in this table is common throughout Europe. It is an essential element of the rail service and also of HSR.

Table 2 below is another comparison of rail service levels of two cities in Germany (Frankfurt) and the US (Seattle).

Frankfurt am Main, Germany is slightly larger than Seattle. The Seattle-Tacoma-Everett-Bellevue municipal region, about 5,870 Square Miles, has a population of 3.9 million. Frankfurt am Main is part of the Frankfurt Rhine-Main Metropolitan Region, about 5,700 square miles, with a population of 5.8 million.

Table 2 shows how many of each type of train service, HSR, Long Distance, Regional, and Commuter and distribution of departures throughout the day for both cities. Commuter rail service in Frankfurt am Main, called S-Bahn, includes trains similar to light rail trains in Seattle.

Although Germany has an excellent roadway system, the model for the US Interstate highway system, rail passenger service is substantially greater than rail passenger service in the US.

Train Departures - Seattle (Pop. 730,000)

Time	HSR	LONG DISTANCE	REGIONAL	*COMMUTER*	*LIGHT RAIL*	TOTAL COMMUTER
12:00 AM					3	3
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM					2	2
5:00 AM					4	4
6:00 AM				2	9	11
7:00 AM			2	1	10	11
8:00 AM					10	10
9:00 AM		1			6	6
10:00 AM					6	6
11:00 AM			1		6	6
12:00 PM					6	6
1:00 PM					6	6
2:00 PM			1	1	6	7
3:00 PM				3	9	12
4:00 PM		1		5	10	15
5:00 PM				5	10	15
6:00 PM			1	1	10	11
7:00 PM			1		6	6
8:00 PM					6	6
9:00 PM					6	6
10:00 PM					5	5
11:00 PM					4	4
Total	0	2	6	18	140	158

Train Departures - Frankfurt am Main (Pop 733,000)

Time	ICE	LONG DISTANCE	REGIONAL	COMMUTER
12:00 AM	3		7	20
1:00 AM				12
2:00 AM	2	1		4
3:00 AM	1	2		4
4:00 AM	1	1	3	18
5:00 AM	7	3	13	37
6:00 AM	9	3	33	49
7:00 AM	9	2	33	50
8:00 AM	11		21	50
9:00 AM	9	1	19	48
10:00 AM	10	2	20	42
11:00 AM	7	2	18	42
12:00 PM	11	1	20	42
1:00 PM	12	1	19	45
2:00 PM	10	1	21	46
3:00 PM	9	1	27	50
4:00 PM	14	2	33	50
5:00 PM	12	1	33	50
6:00 PM	11	2	30	50
7:00 PM	7	1	22	50
8:00 PM	9	2	20	40
9:00 PM	6		17	34
10:00 PM	2		14	34
11:00 PM	3	2	10	33
Total	175	31	433	900

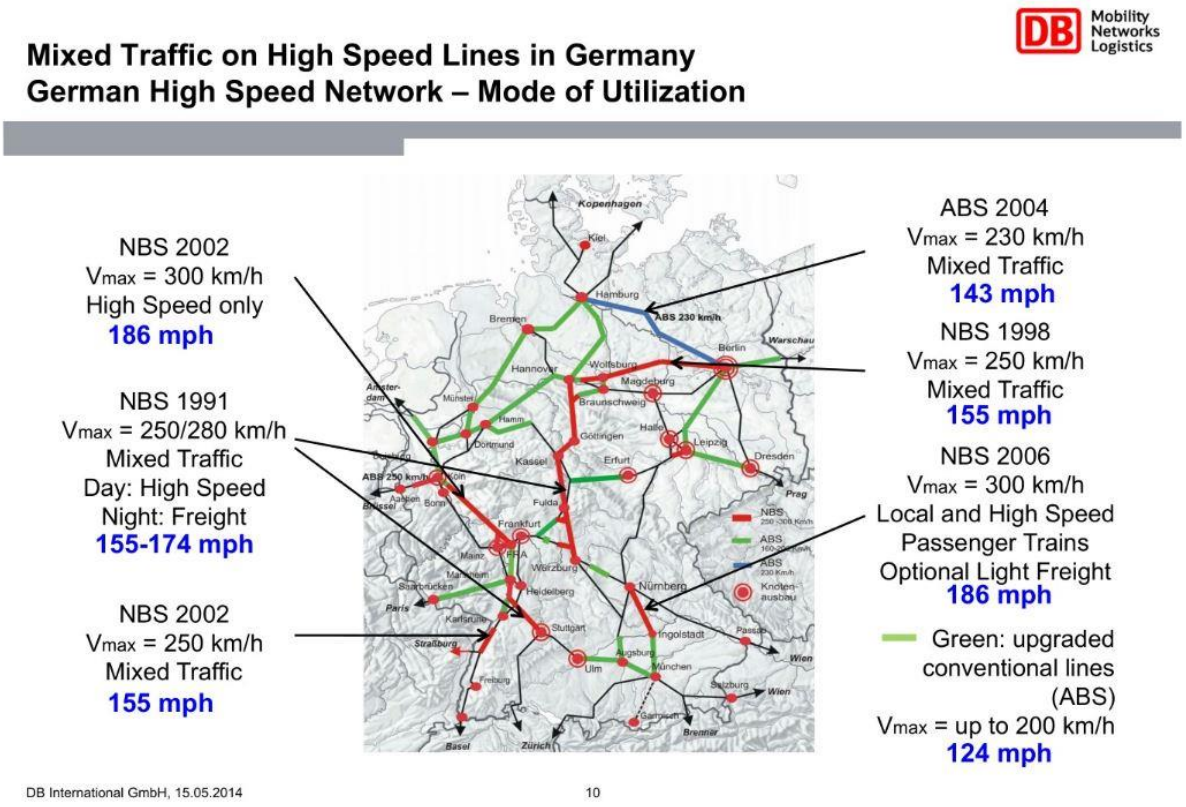
Commuter includes trains called light rail in Seattle

Table 2: Comparison of daily passenger train service in Seattle and in Frankfurt am Main

The German HSR network is a model for development of HSR around service requirements. German HSR lines have a variety of maximum speeds from 124 mph to 186 mph.

HSR, conventional passenger, and freight trains share some routes at HSR speeds of up to 155 mph (shown on map below). Many HSR routes are upgraded conventional lines instead of new construction on separate right of way. There is a popular belief in the US that if there are freight trains in Europe, they operate only at night. That is not generally true, although this map shows two segments on which freight trains operate only at night.

Mixing 150 mph passenger trains with typical US freight trains on the same or closely adjacent track is not desirable, however, there is ample opportunity for mixing passenger trains moving at 150 mph with mixed passenger/freight trains, truck shuttle trains, and lightweight express freight trains in the same manner as is accomplished in Germany.



Map showing mix of speeds and traffic on German HSR routes.

Table showing mix of passenger and freight train on a typical line (Hannover-Braunschweig) in Germany.

Line Hannover - Braunschweig
Section Lehrte - Gross Gleidingen
Trains counted at station Peine
Timetable 2000/2001

	eastbound		westbound	
Hour	freight	passenger	freight	passenger
00:00 - 01:00	2	1	4	0
01:00 - 02:00	3	0	4	1
02:00 - 03:00	2	1	4	1
03:00 - 04:00	5	1	2	0
04:00 - 05:00	3	1	0	1
05:00 - 06:00	2	2	2	3
06:00 - 07:00	6	2	3	2
07:00 - 08:00	2	2	3	3
08:00 - 09:00	3	2	3	2
09:00 - 10:00	2	2	1	2
10:00 - 11:00	2	2	2	2
11:00 - 12:00	1	2	4	2
12:00 - 13:00	3	2	0	3
13:00 - 14:00	3	3	3	2
14:00 - 15:00	3	3	1	2
15:00 - 16:00	2	3	3	2
16:00 - 17:00	1	3	2	2
17:00 - 18:00	2	3	1	2
18:00 - 19:00	3	3	3	3
19:00 - 20:00	2	2	2	3
20:00 - 21:00	2	2	0	2
21:00 - 22:00	1	2	4	2
22:00 - 23:00	2	2	4	2
23:00 - 00:00	1	2	4	2
Sum	58	48	59	46

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Brian has experience with design, construction, maintenance and testing of industrial electrical and power generation systems, including programs with tight deadlines, challenging logistical scenarios and in mission-critical environments. With over 10 years of experience working for an industrial electrical contractor, he has extensive hands-on field experience with utility- and industrial-scale electrical equipment and substations (up to 66 kV), including substation commissioning, maintenance and troubleshooting, as well as wind, hydroelectric, wave and solar power generation systems. Brian has also worked on several utility-scale energy storage projects. Passionate about clean energy technologies and railroad electrification, he is the founder of advocacy organization Californians for Electric Rail (http://calelectricrail.org). Since 2017 he has worked on electric locomotive systems, including battery-electric propulsion, for Orange County-based Rail Propulsion Systems. Since 2020 he has been President & CEO of Flexiwaggon America, Inc. Brian has a BSEE from Columbia University.

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Thomas White, owner of VTD Rail Consulting, has over fifty years of experience in railroad operations: 28 years in the railroad industry directly involved in traffic management, planning, safety, service design, and infrastructure planning, and 24 years as a railroad operations consultant. He has extensive experience in integrated rail freight and passenger operations and development of new passenger services on freight railroads. Tom had a significant role in the Burlington Northern effort to structure freight operations in the early 1990s. He was substantially involved in the development of Sound Transit (Seattle area) Sounder commuter rail service, the Washington State passenger rail program (Amtrak Cascades), commuter services in Canada and Mexico, and restructuring of rail operations in South Africa. Tom was substantially involved in the introduction of tilting train technology and Talgo trainsets to the Amtrak Cascades service. He is the author of three railroad operations textbooks, co-author of two others, and co-author of a transportation policy book.