Inland Ports in California: Impacts and Implementation

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Introduction

According to the California Freight Mobility Plan (CFMP) 2023, an inland port is a rail or a barge terminal that is linked to a major seaport (California Department of Transportation, 2023). Inland ports align with the CFMP 2023 Goals – Multimodal Mobility, Economic Prosperity, Environmental Stewardship, Healthy Communities, Safety and Resiliency, Asset Management, and Connectivity and Accessibility. For example, Goal 7 – Connectivity and Accessibility Objective CA-4 is to "Utilize Inland Port Facility, Short-Haul Rail Shuttle, and Inland Seaports to Lessen Impacts on Nearby Communities" (CFMP, 2023).

Impacts of inland ports on the supply chain include congestion reduction, increased freight reliability, and increased multimodal connectivity. Inland ports improve cost efficiency by enhancing competitiveness, responding to future market demand, and improving transportation efficiency. Inland ports can be port sponsored, publicly sponsored, and terminal operators initiated, but many utilize state assistance in initial development, which exhibits itself in different ways. They increase resilience by addressing infrastructure strain and mitigating road maintenance. They also present social and environmental implications, such as:

- directing truck traffic away from equity-priority communities,
- improving air quality in port areas,
- reducing greenhouse gas emission (GHG) through efficiency and promoting ZEV transition,
- job creation and economic growth, and
- improving land use compatibility

Many different government agencies are involved in the development and regulation of inland ports, including the California Air Resources Board (CARB), California State Transportation Agency (CalSTA), California Transportation Commission (CTC), Council of Governments (COGs), and the California's Governor's Office of Business & Economic Development (GO-Biz). Projects must follow and be in-line with various state and federal laws and policy documents, including AB 98, the California Environmental Quality Act (CEQA), and the California Freight Mobility Plan (CFMP) 2023.

Inland port planning utilizes many different sources of data which come from public records, vehicle data, survey data, telematics, GPS data, and confidential data. These include average annual daily traffic (AADT), bill of lading records, twenty-foot equivalent units (TEUs), speed, travel time, and location.

The preliminary investigation profiles a few dozen inland ports in California, the US, and other countries. They are public, private, and port-led. Some are maritime ports, but most are dry ports. In addition, TradePort California, Castle Commerce Inland Port, Barstow International Gateway (BIG), and the Gainesville Inland Port are given case studies, including interviews and summaries for the first three. Finally, 12 papers, studies, and articles are listed, and research recommendations are made.

California Department of Transportation. (2023, July). *California Freight Mobility Plan 2023.* California State Transportation Agency. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf5

Detailed Findings

Impacts of inland ports on the supply chain

Congestion

Inland ports are a solution to the capacity crunch at seaports (CLN Worldwide, 2024). Increasingly larger ships and capacity limits have led to inefficiencies and congestion in and around coastal ports (CBRE Research, 2016). Inland ports allow shippers to avoid and decrease heavy congestion, leading to cheaper transportation costs, reduced waiting time, and faster routes (CBRE Research, 2016) (The City of Calgary, 2017) (CLN Worldwide, 2024) (O'Mara, n.d.) (SeaBay Cargo, n.d.). Located away from crowded port areas where land is often scarce or unavailable, inland ports create space for transloading, warehousing, and custom clearance, relieving pressure in port areas and roadways (Feemster, 2015). A 2023 study found that a rail shuttle-inland port concept in Southern California could eliminate approximately 5,100 short-haul truck moves every weekday (Bailey, 2024).

CLN Worldwide. (2024, January 28). *The role of inland ports to tackle supply chain congestion.* https://clnusa.com/the-role-of-inland-ports-to-tackle-supply-chain-congestion/

CBRE Research. (2016). *North American inland ports logistics annual report 2016.* https://bloximages.newyork1.vip.townnews.com/stltoday.com/content/tncms/assets/v3/editorial/d/09/d091b2c7-d677-5068-bb5c-ab5debe688a2/57a8ca8884173.pdf.pdf

The City of Calgary. (2017, December 31). *14 key advantages of inland ports to boost your supply chain.* https://www.calgary.ca/realestate/blog/14-key-advantages-of-inland-ports-to-boost-your-supply-chain.html

O'Mara, L. (n.d.). *Inland ports: Key freight rail partners*. GoRail. https://gorail.org/ports/inland-ports-key-freight-rail-partners

SeaBay Cargo. (n.d.). *Inland port*. https://www.seabaycargo.com/glossary/Inland-Port_672.html

Feemster, T. (2015). *10 inland ports to watch. Area Development.* https://www.areadevelopment.com/logisticsinfrastructure/intermodal-sites-q1-2015/10-inland-ports-to-watch-2829267.shtml

Bailey, A. (2024, January). *California ports: Boost efficiency with rail-inland port*. Oliver Wyman. https://www.oliverwyman.com/our-expertise/insights/2024/jan/california-ports-intermodal-strategy.html

Freight reliability

Inland ports can improve freight reliability by increasing options and providing redundancy. Inland ports provide alternative routes and mode options for shipping goods, reducing dependency on a single port or transportation method and relieving pressure on key freight corridors. This is valuable “in times of disruption, such as strikes, port closures, or natural disaster” by providing flexibility of routes (SeaBay Cargo, n.d.). Inland ports lead to less reliance on the trucking industry (CLN Worldwide, 2024). For example, the 136-acre Minot Intermodal Facility in North Dakota ships exports like wheat, soybeans, sugar beet pulp pellets, and dried distiller grains to the Ports of Seattle and Tacoma via the BNSF Railway. Its “strategic location in North Dakota allows it to serve as a central hub for shippers that would

otherwise have to transport goods by truck over exceedingly long distances". The Minot facility helps reduce truck transit by more than 10 million miles and strengthens local supply chains (Kramer, 2024).

SeaBay Cargo. (n.d.). *Inland port*. https://www.seabaycargo.com/glossary/Inland-Port_672.html

CLN Worldwide. (2024, January 28). *The role of inland ports to tackle supply chain congestion*. https://clnusa.com/the-role-of-inland-ports-to-tackle-supply-chain-congestion/

Kramer, B. (2024, November 12). *Why inland ports are crucial to the national supply chain*. *Inside Supply Management*. https://www.ismworld.org/supply-management-news-and-reports/news-publications/inside-supply-management-magazine/blog/2024/2024-11/why-inland-ports-are-crucial-to-the-national-supply-chain/

Multimodal connectivity

In recent years, inland ports in the United States have been turning into multi-dimensional gateways, serving as hubs for rail, air, and truck modes (Lauriat, 2024). Alternatively, they may "have access to an inland waterway, such as a river or lake" (Marsh, 2022). "Warehousing facilities and distribution centers are typically co-located with inland ports, even directly on site" (InterlogUSA, n.d.). In the end, drayage trucks must move containers from the inland port to their final destinations. Drayage capacity from the inland port to the final destinations "can be a challenge depending on the location and volume of the inland port" (Zmodal, 2021).

When developing an inland port, one should evaluate location (proximity to major transportation routes and market access), infrastructure, and intermodal facilities (Eezyimport, n.d.). "Short haul rail allows shippers to avoid the long, costly truck miles to and from the marine terminal and reduce the unproductive hours when truckers are waiting to pick-up their load" (Franklin Street, 2019). "[I]nland ports can also provide valuable staging for last mile (AKA final mile) deliveries direct to customers" (Baxter, 2022). Companies near the inland port can also order a container when needed and return them easily, though inland ports face a challenge of a lack of availability of empty containers (Zmodal, 2021).

Lauriat, G. (2024, October 28). *Inland ports are rising.* American Journal of Transportation. https://www.ajot.com/premium/ajot-inland-ports-are-rising

Marsh, J. (2022, March 22). *One solution to the congestion problem: More inland ports.* FreightWaves. https://www.freightwaves.com/news/one-solution-to-the-congestion-problem-more-inland-ports

InterlogUSA. (n.d.). *The importance inland ports have on the movement of goods.* https://www.interlogusa.com/answers/blog/domestic-the-importance-inland-ports-have-on-the-movement-of-goods/

Zmodal. (2021, August 10). *Inland ports explained.* https://zmodal.com/2021/08/10/inland-ports-explained/

Franklin Street. (2019, June 10). *What is an inland port?* https://franklinst.com/what-is-an-inland-port/

Eezyimport. (n.d.). *Inland ports*. https://www.eezyimport.com/glossary/inland-ports/

Baxter, K. (2022, March 16). *Inland ports and retail imports: A matching pair*. InTek Logistics. https://www.inteklogistics.com/blog/inland-ports-retail-imports-matching-pair

Cost efficiency

- Enhancing competitiveness

  Inland ports enhance competitiveness by reducing transportation costs through being located closer to manufacturers and consumers, thus enhancing supply chain efficiency (Eezy Import, n.d.). Access to multiple modes of transportation creates modal flexibility which helps to find more competitive pricing (Marsh, 2022). Congestion reduction, increased freight reliability, and multimodal connectivity also enhance competitiveness. A study in China found that international dry port integration has "a positive effect on logistics cost performance and service quality performance (Li et al., 2022).

Eezyimport. (n.d.). *Inland ports.* https://www.eezyimport.com/glossary/inland-ports/

Marsh, J. (2022, March 22). *One solution to the congestion problem: More inland ports.* FreightWaves. https://www.freightwaves.com/news/one-solution-to-the-congestion-problem-more-inland-ports

Li, Q., Yan, R., Zhang, L., & Yan, B. (2022). Empirical study on improving international dry port competitiveness based on logistics supply chain integration: Evidence from China. *The International Journal of Logistics Management, 33*(3), 1040–1068. https://doi.org/10.1108/IJLM-06-2020-0256

- Future market demand

  According to Emergen Research, the global inland container depot and dry port market size is projected to increase from $38.7 billion in 2025 to $69.7 billion in 2035 (2024). In a comparable projection, MarkWide Research forecasts a rise from $28.8 billion in 2026 to 60.59 billion in 2035 (2026). Mordor Intelligence's estimates are more modest, predicting an increase from $31.0 billion in 2025 to $40.5 billion in 2030 (2025).

  Market demand needs to be cultivated: railroads "need to do their part in encouraging shippers to use inland ports", such as by "being more open about the performance dynamics of their network" and "producing a product that has all the visibility aspects that a truck provides," integrating "all the pieces: the dray, the terminal operation, the line haul and then the other side of the terminal – the destination and the destination delivery" (Marsh, 2022). The ports can also attract shippers by upgrading their facilities. "Shippers need to be more proactive about approaching logistics providers, terminal operators, short lines, railroads about what they want, and let the supply side try to come up with solutions that can solve the problem" (Marsh, 2022).

Emergen Research. (2024, December). *Inland container depot and dry port market.* https://www.emergenresearch.com/industry-report/inland-container-depot-and-dry-port-market

MarkWide Research. (2026, May). *Inland container depot and dry port market size, share, and industry trends forecast 2026–2036.* https://markwideresearch.com/inland-container-depot-and-dry-port-market

Mordor Intelligence. (2025). *Inland container depot and dry port market: Share analysis, industry trends & statistics, growth forecasts (2025–2030).*

https://www.mordorintelligence.com/industry-reports/inland-container-depot-and-dry-port-market

Marsh, J. (2022, March 22). *One solution to the congestion problem: More inland ports.* FreightWaves. https://www.freightwaves.com/news/one-solution-to-the-congestion-problem-more-inland-ports

- Transportation efficiency

  By giving shippers more options, inland ports "can potentially lead to cheaper transport costs and faster transits" (CLN Worldwide, 2024). In addition, "[d]ry ports often include value-added services such as customs clearance, transloading, warehousing, distribution, manufacturing, and/or facilities for the maintenance of rail and road cargo carriers" (O'Mara, 2022). Rail is also more fuel-efficient than trucks (InterlogUSA, 2023). However, trucks "typically retain a time advantage over goods moved by rail or barge" (California Department of Transportation, 2023). Shippers "often use inland ports to bypass the additional supply chain step of staging products at a larger distribution center and instead move products directly to their destination" (Baxter, 2024).

CLN Worldwide. (2024, January 28). *The role of inland ports to tackle supply chain congestion.* https://clnusa.com/the-role-of-inland-ports-to-tackle-supply-chain-congestion/

O'Mara, L. (2022). *Inland ports: Key freight rail partners*. GoRail. https://gorail.org/ports/inland-ports-key-freight-rail-partners

InterlogUSA. (2023, February 7). *The importance inland ports have on the movement of goods.* https://www.interlogusa.com/answers/blog/domestic-the-importance-inland-ports-have-on-the-movement-of-goods/

California Department of Transportation. (2023, July). *California Freight Mobility Plan 2023.* California State Transportation Agency. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf

Baxter, K. (2024, April 24). *What is an inland port?* InTek Logistics. https://www.inteklogistics.com/blog/what-is-inland-port

- State's roles and responsibilities

  CalSTA's Port and Freight Infrastructure Program (PFIP) seeks to improve the efficiency of goods movement "to, from and through California's maritime ports" (California State Transportation Agency, n.d.). PFIP provided a $49.6 million grant to the Castle Commerce Center Inland Port (Central Valley Journalism Collaborative, 2023). For more information, see section "Existing Government Structure and Inland Ports".

California State Transportation Agency. (n.d.). *Freight, rail and border*. https://calsta.ca.gov/subject-areas/freight-rail-border

Central Valley Journalism Collaborative. (2023, July 19). *New Merced County "inland port" expected to create 250 jobs, thanks to $49.6 million grant*. The Merced FOCUS. https://themercedfocus.org/new-merced-county-inland-port-expected-to-create-250-jobs-thanks-to-49-6-million-grant/

Resilience

- Infrastructure strain

  Inland ports alleviate infrastructure strain. Infrastructure strain at coastal ports includes chassis shortages, rail car constraints, and warehouse backlogs, causing costly bottlenecks (Maersk, 2026). In contrast, inland ports increase space for warehousing away from seaports and "provide shippers with the opportunity to have more options, which can possibly lead to faster transit times" (InterlogUSA, 2023).

Maersk. (2026, June 24). *Why inland freight networks are the new battleground for supply chain resilience*. https://www.maersk.com/insights/resilience/2026/06/24/why-inland-freight-networks-are-the-new-battleground-for-supply-chain-resilience

InterlogUSA. (2023, February 7). *The importance inland ports have on the movement of goods*. InterlogUSA. https://www.interlogusa.com/answers/blog/domestic-the-importance-inland-ports-have-on-the-movement-of-goods/

- Road maintenance

  It is well-established that heavy duty trucks cause drastically increased pavement wear. "[H]eavy trucks weighing generally up to 80,000 pounds…clearly do more damage to our roads per mile traveled than your average passenger car or truck weighing around 4,000 pounds" (Union of Concerned Scientists, 2019). Overall, wear and tear can be estimated by VMT estimates, and thus savings in roadway maintenance and be inferred. Inland port-specific studies make the logically induced argument that rail transport to the ports reduces wear and tear on the roadway, saving money on road maintenance (Zmodal, 2021). Road maintenance impacts extend beyond pavement in the traveled roadway, and can include roadway markings, roadside appurtenances susceptible to vehicle strikes, and shoulder quality. This is supported by FHWA's comprehensive truck size and weight limits study, performed as a requirement of MAP-21. That study included assessments of truck weight impacts on roads and bridges, as well as expected changes that could occur in various mode shift scenarios. Significantly, the composition of the roadway matters, as reinforced pavement would be expected to experience less wear than low-volume roadways with a thinner cross-section (FHWA, 2015). This may be a factor to consider when sitting inland ports in areas that do not customarily accommodate high truck volume. Put differently, inland ports may reduce overall truck VMT, but an assessment of the roadways in the vicinity would be necessary to conclude that it would reduce overall maintenance costs.

Zmodal. (2021, August 10). *Inland ports explained*. https://zmodal.com/2021/08/10/inland-ports-explained/

Union of Concerned Scientists. (2019, July 2). *Trucks cause the lion's share of road damage—and their industry wants you to keep paying for it*. https://blog.ucs.org/dave-cooke/trucks-cause-the-lions-share-of-road-damage-and-their-industry-wants-you-to-keep-paying-for-it/

Federal Highway Administration. (June 2015). Comprehensive Truck Size & Weight Limits Study Technical Reports. https://ops.fhwa.dot.gov/freight/sw/map21tswstudy/technical_rpts/index.htm

Social and environmental implications

- Equity-priority communities

  Ports and their contributions to air and noise pollution have long had a disproportionate impact on equity-priority communities (Environmental Defense Fund, 2024). “Diesel trucks, ships, cargo handling equipment and rail operating in and around ports are significant contributors to emissions and air pollution to neighboring communities” (Environmental Defense Fund, 2024). Inland ports reduce the pollution impact of freight by replacing truck traffic with rail, which is less polluting and less harmful to equity-priority and disadvantaged communities. On the other hand, the environmental burden is also shifted to the inland ports and nearby communities, where trucks transport goods to and from the port. However, coastal areas are more densely populated than rural areas where inland ports are placed so fewer residents would be affected.

  One study looked at the United Nations Sustainable Development Goals (SDGs) and reviewed 101 peer-reviewed articles to examine inland port outcomes for different domains, including environmental impact (Fallah Shayan & Mohabbati-Kalejahi, 2026).

Environmental Defense Fund. (2024, March 13). *New report provides ports pathways to decarbonization, environmental justice*. https://www.edf.org/media/new-report-provides-ports-pathways-decarbonization-environmental-justice

Fallah Shayan, N., & Mohabbati-Kalejahi, N. (2026). The strategic role of inland ports in advancing the sustainable development goals (SDGs) through logistics and regional development. Discover Sustainability, 7, Article 471. https://doi.org/10.1007/s43621-026-02835-4

- Air quality

  Inland ports can be less harmful to the environment because they convert truck traffic to rail routes (Baxter, 2022). A 2010 study by the University of California quantified the net impact of a shift from drayage trucks to trains from the San Pedro Bay Ports, finding a significant reduction. (You et al). Likewise, based on 2000 traffic levels, Park et al. (2007), found that a 20% modal shift from trucks to rail in the Southern California ports region reduced mobile-source emission up to 0.86 tons for nitrogen oxides and 16 kgs for particulates/day. However, air pollution moves inland as trucks travel to inland ports to deliver and pick up cargo. Concerning regulations, the California Air Resources Board (CARB) ensures inland port projects align with state climate and air quality objectives.

Baxter, K. (2022, March 16). *Inland ports and retail imports: A matching pair*. InTek Logistics. https://www.inteklogistics.com/blog/inland-ports-retail-imports-matching-pair

You, S. I., Lee, G., Ritchie, S. G., Saphores, J.-D., Sangkapichai, M., & Ayala, R. (2010). *Air pollution impacts of shifting San Pedro Bay Ports freight from truck to rail in Southern California*. University of California Transportation Center. https://escholarship.org/content/qt8vc6636r/qt8vc6636r.pdf

Park, M., Regan, A., & Yang, C. H. (2007). Emissions impacts of a modal shift: A case study of the Southern California ports region. *Journal of International Logistics and Trade, 5*(2), 67–81. https://doi.org/10.24006/jilt.2007.5.2.67

- Workforce impacts and job creation

  Inland ports create jobs, such as the International Inland Port of Dallas (IIPOD), which supports over 30,000 jobs (DFW Inland Port, n.d.). The Mojave Inland Port was projected to support 3,000 new jobs (Mojave Inland Port, n.d.). The Barstow International Gateway is predicted to create 20,000 direct and indirect jobs (BNSF Railway, 2022). The Castle Commerce Center inland port is expected to create 250 jobs (Central Valley Journalism Collaborative, 2023). Inland ports can also create trucking jobs because drivers are more likely to work if they do not need to spend time traveling through congested port areas which can take days and take them away from their families. By making a region competitive for trade, inland ports create jobs in many industries, such as agriculture.

  DFW Inland Port. (n.d.). *DFW Inland Port*. https://dfwinlandport.com/

  Mojave Inland Port. (n.d.). *The project*. https://www.mojaveinlandport.com/02-the-project

  BNSF Railway. (2022, October 1). *BNSF to build new integrated rail complex in Barstow to increase supply chain efficiency nationwide*. BNSF.com

  Central Valley Journalism Collaborative. (2023, July 19). *New Merced County "inland port" expected to create 250 jobs, thanks to $49.6 million grant*. The Merced FOCUS. https://themercedfocus.org/new-merced-county-inland-port-expected-to-create-250-jobs-thanks-to-49-6-million-grant/

- Economic growth

  When developing or utilizing an inland port, one should evaluate economic impact (job creation, regional economic growth, and trade facilitation). "They often become key economic hubs in their regions, supporting local industries and enhancing the region's logistical capabilities" (SeaRates, n.d.). An inland port is a type of intermodal facility that focuses on international freight (Kern Council of Governments, 2026). "The best way to secure a benefit from it is to make sure that you have properties in relatively good vicinity with the intermodal ramp where you could attract investors that are interested and willing to locate a facility that doesn't have to be directly on rail, but which could benefit from the lower cost of moving either their inbound product…via container or their outbound product via container or potentially both" (Southern Economic Development Council, 2025).

  SeaRates. (n.d.). *Inland port*. SeaRates. https://www.seabaycargo.com/glossary/Inland-Port_672.html

  Kern Council of Governments. (2026). *Kern Area Regional Goods-Movement Operations (KARGO) Phase 3: Community Prosperity/Protection Study*. https://www.kerncog.org/wp-content/uploads/2026/05/KARGO_Phase_3.pdf

  Southern Economic Development Council. (2025, September 12). *Quick Tip: Intermodal vs. Inland Port, Dr Robert Martinez* [Video]. YouTube

- Land use compatibility

  Inland ports should not be located near residential areas because of air and noise pollution. By moving truck traffic away from seaports, they decrease land use incompatibility at those ports. Along with the rail districts, inland ports also bring with them warehouses taking advantage of

the nearby ports. These should also be sited away from residential uses and sensitive receptors. These relationships are studied in feasibility studies.

On the other hand, TradePort California "seeks to redefine how communities perceive "industrial" activity to "become an attractive adjacent use to communities, including residential areas" (Fresno Council of Governments, 2023).

One study explores maritime ports and "the existing and planned future functional dimension or socio-economic purpose of the land" (Ažman Momirski et al., 2021).

Fresno Council of Governments. (2023). *California Inland Port Project (TradePort California) Feasibility Study Phase 3 Final Report*.

Ažman Momirski, L., van Mil, Y. B. C., & Hein, C. M. (2021). Straddling the fence: Land use patterns in and around ports as hidden designers. *Urban Planning, 6*(3), 136–151. https://doi.org/10.17645/up.v6i3.4101

- Greenhouse gas (GHG) emissions

  By shifting freight transport from truck to rail, GHG emissions can be decreased. In 2018, freight rail emitted 0.048 pounds of GHG per ton-mile while freight truck emitted 0.465 pounds per ton-mile – almost 10 times as much as rail (Laska, 2021). One study found that a small standalone terminal with two or three shuttle trains a day could shift up to 15% of Inland Empire port drayage while a large inland port with five to ten shuttle trains per day and a large integrated logistics park could shift 25% to half of Inland Empire port drayage (Bailey, 2024). While moving freight to rail is a way to decrease GHG, even further GHG reduction can occur through creating carbon-free technologies such as hydrogen-and battery-powered locomotives (Laska, 2021).

Laska, A. (2021, June 7). *Freight rail's role in a net-zero economy*. Third Way. https://www.thirdway.org/memo/freight-rails-role-in-a-net-zero-economy

Bailey, A. (2024, January 24). *California ports: Boost efficiency with rail-inland port strategy*. Oliver Wyman. https://www.oliverwyman.com/our-expertise/insights/2024/jan/california-ports-intermodal-strategy.html

- Zero-Emission by 2045

  In 2020, Governor Newsom established Executive Order N-79-20, which required that all heavy-duty vehicles be 100 percent zero emission by 2045 where feasible, with the requirement going into effect for drayage trucks in 2035 (California Air Resources Board, 2021) (Office of Governor Gavin Newsom, 2020). The former requirement was implemented through the Advanced Clean Fleet electric vehicle truck mandates.

  Inland ports can complement the goal of decreasing truck emissions by requiring trucks to travel shorter distances from the inland ports to warehouses or customers instead of the complete distance from the seaports. Likewise, domestic products would not need to travel the full distance to the seaports and could be transported by rail for part of the way. Inland ports may also facilitate the transition to heavy-duty zero emission vehicles because battery-electric trucks have limited range and shortening the drayage leg brings more trips within their feasible range envelopes. New charging depots are also being built along inland port corridors, consolidating

efforts to prepare electrical infrastructure and land entitlement that would accommodate heavy duty truck charging at a large scale.

California Air Resources Board. (2021, January 19). *Governor Newsom's Zero-Emission by 2035 Executive Order (N-79-20)*. https://ww2.arb.ca.gov/resources/fact-sheets/governor-newsoms-zero-emission-2035-executive-order-n-79-20

Office of Governor Gavin Newsom. (2020, September 23). *Governor Newsom announces California will phase out gasoline-powered cars & drastically reduce demand for fossil fuel in California's fight against climate change*. State of California. https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/

Existing government structures and inland ports

Inland ports are administered according to different government structures. There are port-sponsored, publicly-sponsored, and terminal operators initiated inland ports (California Department of Transportation, 2023). Port sponsored terminals must consider the perspectives of the railroad, the marine carrier, and the seaport. The public sponsored port is concerned with job creation, economic development, exports, reducing congestion, and environmental concerns. The terminal operator wants to increase revenue and profitability. According to the California Freight Mobility Plan, "East Coast inland ports have demonstrated the feasibility of inland ports in the U.S., but in most cases, the state government has control over the ports and statewide economic development that allows for subsidization and streamlining of development" (California Department of Transportation, 2023).

The three interviews with inland ports and intermodal facilities, found in the appendix, show that governance, not economics or design/engineering, is the primary factor in project development. Two of the projects, Castle Commerce Inland Port and the Barstow International Gateway, were proceeding well. This was largely because they were in control of their land while the TradePort project, which is led by an MPO, needs to work on finding entities to take on the project. In addition, the interviews showed that collaboration between agencies is essential for inland port development, whether local, state, federal, port authority, or private sector.

Government agencies involved in the development and regulation of inland ports include the following:

- **Air pollution control agencies** provide environmental oversight and support emissions reduction strategies. One example is the San Joaquin Valley Air Pollution Control District (APCDs), which covers Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and part of Kern Counties. California is divided into 35 air pollution control agencies.
- The **California Air Resources Board (CARB)** ensures inland port projects align with state climate and air quality objectives. CARB is responsible for a multitude of regulations and incentive programs that could promote the development of inland ports. Significantly, California's Assembly Bill 617 (AB 617) established the Community Air Protection Program (CAPP), an environmental justice framework CARB to shift air quality focus from broad air basins down to the most heavily polluted local neighborhoods. Many of these neighborhoods are in freight-heavy corridors that would be improved by inland port development, but as previously mentioned, this could potentially create new communities of concern in the areas of new development.

- The **California State Transportation Agency (CalSTA)** develops and coordinates California's transportation policies and programs such as the 2024-2026 Strategic Plan and the Climate Action Plan for Transportation Infrastructure (CAPTI 2.0). CalSTA oversees the Port and Freight Infrastructure Program (PFIP), sets policies, and awards grants.

- **Caltrans**, the California Department of Transportation, is involved in inland ports through administering PFIP, allocating grants, and supporting local agencies with intermodal planning and funding oversight.

- The **California Public Utilities Commission (CPUC)** regulates railroad crossing safety and approves new rail crossings, grade separations, and related rail infrastructure improvements.

- The **California State Lands Commission (CSLC)** manages sovereign lands associated with California's ports and navigable waterways and may play a role in projects involving seaport partnerships or state-owned lands.

- The **California Transportation Commission (CTC)** funds inland port infrastructure through the Trade Corridor Enhancement Program (TCEP) and State Transportation Improvement Program (STIP). The Commission also advises CalSTA and the Legislature, coordinates stakeholder engagement, and leverages funds for state and federal grants.

- **Councils of Government**, such as Fresno COG or the Sacramento COG, are responsible for project feasibility studies, planning, outreach, and coordination. Most Metropolitan Planning Organizations are also COGs, though some are not. MPOs are federally designated for urbanized areas with populations over 50,000 and perform comparable planning and programming functions. With TradePort California, FresnoCOG is the leading agency with the project. In other inland port development examples, MPOs have played a key role in coordination and providing a regional case for consolidated trade activities, since benefits are generally not local to the new inland port development and may show the greatest benefit in a net assessment of impacts at a regional level.

- **Counties** conduct feasibility studies, secure funding (such as CalSTA grants), attract businesses, perform intergovernmental and stakeholder coordination, ensure governmental compliance, serve as key local developers, and sometimes control land and infrastructure (such as with the Castle Commerce Center). Counties serve a similar regional role to MPOs, except that they have land entitlement authority and are central in each case that a development is proposed in county jurisdiction.

- **California's Governor's Office of Business & Economic Development (GO-Biz)** does not fund inland port infrastructure itself, but its grants, such as the Port Data Interoperability Grant Program, and policies improve freight flows, thus benefitting inland port operations.

- The **Governor's Office of Land Use and Climate Innovation (LCI)** is the state's primary land-use and environmental planning agency. It coordinates CEQA reviews, facilitates land-use compatibility, and develops planning guidance.

- **Port Authorities** such as the Port of Los Angeles and Port of Long Beach provide support, advocacy, coordination, and participation in Inland Ports and the PFIP. For example, the Port of Los Angeles signed a Memorandum of Understanding with the Castle Commerce Center to partner to develop Castle's inland port.

- The **Surface Transportation Board (STB)** is a federal agency that regulates freight rail transportation, rail service obligations, rail competition, and certain rail infrastructure developments. Federal preemption over rail operations makes STB oversight a critical consideration for inland port projects dependent on Class I Railroad access.

- The **U.S. Customs and Border Protection (CBP) and Foreign-Trade Zones Board** oversees customs processing, cargo security, and Foreign-Trade Zone designations that can enhance the competitiveness of inland port facilities.

California Department of Transportation. (2023). *California Freight Mobility Plan 2023*. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf

Key policies and measures

State and federal laws and policy documents

- **AB 617 (2017)**
  This law allows for the establishment of community-centered air quality monitoring and focused Community Emissions Reduction Plans (CERPs). This means that benefits accrued at a regional scale might not outweigh community air quality concerns and could lead to significant opposition to the creation of new large-scale industrial developments. It should be noted that mobile source air quality benefits from enabling mode shift and reducing VMT could be offset by an increase in stationary source emissions at the site of inland port development. Thus, it is crucial to assess the designation of AB 617 communities in relation to new development, as well as the potential that an inland port could create new communities of concern (Sacramento Metropolitan Air Quality Management District, n.d.).

- **Assembly Bill (AB) 98**
  This law requires buffer zones and setbacks between new warehousing and sensitive receptors, as well as submitting and enforcing truck routing plans to avoid residential and sensitive receptor areas.

- **California Environmental Quality Act (CEQA)**
  CEQA is California's environmental law which must be followed by any discretionary project approved by a California state or local agency, including inland ports. Included in these reviews is environmental justice analysis on impact such as health and VMT impacts.

- **California Freight Mobility Plan (CFMP) 2023**
  The CFMP 2023 is "a comprehensive plan that governs the immediate and long-range planning activities and capital investments by the state with respect to freight movement (California Department of Transportation, 2023)". The plan includes information on the inland ports of Stockton and West Sacramento and dry ports in general.

- **National Environmental Policy Act (NEPA)**
  NEPA applies to any project with federal funding, permits, or land. It requires that environmental impacts be disclosed but not mitigated.

- **Regional Transportation Plans (RTPs)**
  Metropolitan Planning Organizations create Regional Transportation Plans, which inland ports must coordinate with, adhering to the local, regional, and state freight priorities.

- **Senate Bill (SB) 1287**
  Inland ports may benefit from SB 1287, the Shortline Railroad Modernization Act of 2026, which creates tax credits to incentivize private investment in short line railroads, "smaller railroads that run shorter distances and connect shipper with the larger freight rail network" (Union Pacific Railroad, 2020).

- **Permit Streamlining Act (PSA)**
  Inland port projects can use the California EPA's Permit Streamlining Act to "request one agency to coordinate all of their state environmental permits" (California Department of Resources Recycling and Recovery, n.d.), including from air pollution control districts. This reduces "the need to provide duplicate information to different agencies" (California Department of Resources Recycling and Recovery, n.d.).

Sacramento Metropolitan Air Quality Management District. (n.d.). AB 617 background. https://www.airquality.org/air-quality-health/community-air-protection/ab-617-background
California Department of Transportation. (2023). *California Freight Mobility Plan 2023*. https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/strategic-freight-planning/cfmp-20232
Union Pacific Railroad. (2020, March 24). *What are short line railroads and why do they matter?* https://www.up.com/news/service/tr051220-what-are-short-line-railroads
California Department of Resources Recycling and Recovery. (n.d.). *California's Permit Streamlining Act explained*. California Department of Resources Recycling and Recovery. California EPA's Permit Streamlining Act Explained (PDF)

Freight data sources and potential gaps

Table 1 – Summary of Freight Data Sources

Data Source	Type	Description
Caltrans Traffic Census	Electronic Counter Data	Average Annual Daily Traffic
Bureau of Transportation Statistics (BTS) – Empty Container Availability Report	Public Records	Number and location of empty shipping containers
Port Import/Export Reporting Service (PIERS)	Public Records	Bill of lading records
Transearch	Public Records	Predicts freight flows
Port Optimizer	Public Records	Twenty-foot Equivalent Units (TEU), Maritime shipping data
California Open Data Portal	Public Records	Multiple agency open data
Bureau of Transportation Statistics (BTS) - Freight Analysis Framework FAF5.7.1	Survey Data	Freight flow data
Altitude by Geotab	Telematics, GPS Data	Roadway use and traffic patterns
StreetLight	Vehicle Data	Traffic volumes

National Performance Management Research Data Set (NPMRDS)	Vehicle Data	Speed, travel time, and location
Surface Transportation Board (STB) - Carload Waybill Sample	Confidential Data	Stratified sample of carload waybill for all U.S. rail traffic

Electronic Counter Data

- **Truck AADT (Truck average annual daily traffic**) is "the total traffic volume for the year divided by 365 days. Counting is performed by Caltrans generally by electronic counting instruments moved from location throughout the State in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of average annual daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present" (California Department of Transportation, 2025).

California Department of Transportation. (2025). *Truck average daily traffic*. California Open Data. https://data.ca.gov/dataset/truck-average-daily-traffic

Public Records

- **Freight tonnage (TEUs – twenty-foot equivalent units)** is reported monthly by the Bureau of Transportation Statistics. This is focused on seaports and inland water ports. Freight tonnage can also be obtained from the inland ports themselves.
- **PIERS** stands for Port Import/Export Reporting Service and is a database for U.S. waterborne trade. It contains bill of lading records from every ocean cargo shipment entering and leaving U.S. ports (S&P Global Market Intelligence, n.d.a).
- **Transearch** is a database which "lets you predict US freight flows over 30 years by origin, destination, commodity and transportation mode" (S&P Global Market Intelligence, n.d.b). It is "a comprehensive database of North American freight flows built from industry, commodity, and proprietary data exchange sources" (National Operations Center of Excellence, n.d.). It can track modal competition or commodity groups; identify transportation demand; provide data on outbound and inbound ships; provide volumes routed along individual trade lanes or corridor; and provide data on tonnage, value, and units of shipments.
- **Port Optimizer** is an information portal used by Port of Los Angeles cargo owners and supply chain stakeholders to access real-time maritime shipping data. It "helps the port supply chain monitor and respond to dynamic conditions, align people and resources, and proactively communicate across functions-- enabling maximum port throughput and delivery performance" (Port of Los Angeles, n.d.). The set of applications provides information about container moves, status changes, and asset management.
- The **California Open Data Portal** is found at data.ca.gov and hosts open data from more than one agency.
- **Empty container data** includes number and location of empty shipping containers. "U.S. exporters report finding available containers as one of the most serious challenges to move cargo." The Bureau of Transportation Statistics produces the Empty Container Availability Report, which provides data insight on the supply of empty containers for export at coastal ports and inland hubs" (International Transport Forum, 2021). The Empty Export Containers at

Select U.S. Ports in TEUs can be found at the BTS website (Bureau of Transportation Statistics, n.d.).

S&P Global Market Intelligence. (n.d.a). *PIERS: Bill of lading database, import export data*. S&P Global. https://www.spglobal.com/market-intelligence/en/solutions/products/piers

S&P Global Market Intelligence. (n.d.b). *Transearch: Freight transportation research*. S&P Global. https://www.spglobal.com/market-intelligence/en/solutions/products/transearch-freight-transportation-research

National Operations Center of Excellence. (n.d.). *Transearch*. NCHRP 08-119. https://data.transportationops.org/transearch

Port of Los Angeles. (n.d.). *Port Optimizer™*. Port of Los Angeles. https://portoflosangeles.org/business/supply-chain/port-optimizer

International Transport Forum. (2021). *Building transparency into the U.S. supply chain*. Organisation for Economic Co-operation and Development. https://www.itf-oecd.org/sites/default/files/repositories/building_transparency_into_the_us_supply_chain.pdf

Bureau of Transportation Statistics. (n.d.). *Freight indicators: Empty container movements*. U.S. Department of Transportation. https://www.bts.gov/freight-indicators#empty-aggregate

Survey Data

- The **Freight Analysis Framework Version 5.7.1 (FAF5.7.1)** is the Bureau of Transportation Statistics product which estimates freight movement by origin and destination by state and region, commodity type, transportation mode, tonnage, dollar value, and ton-miles. It includes three types of freight flows: weight, value and activity. The database integrates Commodity Flow Survey (CFS) data obtained from a shipper survey of approximately 165,000 establishments (Bureau of Transportation Statistics, 2025).

Bureau of Transportation Statistics. (2025). *Commodity Flow Survey (CFS)*. U.S. Department of Transportation. https://www.bts.gov/cfs

Confidential Data

- The **Surface Transportation Board (STB)'s Carload Waybill Sample** "is a stratified sample of carload waybills for all U.S. rail traffic submitted by those rail carriers terminating 4,500 or more revenue carloads annually" (U.S. Surface Transportation Board, n.d.). "The sample contains data such as origin, destination, commodity, car count, weight, revenue, and length of haul among others" (U.S. Department of Transportation, Federal Railroad Administration, n.d.).

U.S. Surface Transportation Board. (n.d.). *Waybill*. https://www.stb.gov/reports-data/waybill/
U.S. Department of Transportation, Federal Railroad Administration. (n.d.). *Data resources*. https://railroads.dot.gov/rail-network-development/freight-rail/data-resources

GPS, Mobile, and Vehicle Data

- **Altitude by Geotab** is a mobility data analytics platform that provides insights into roadway use, traffic patterns, and safety—built on aggregated commercial-vehicle GPS data from Geotab fleets.
- **StreetLight** is an analytics platform which uses mobile and vehicle data to deliver metrics like traffic volumes, origin-destination flows, and travel times through interactive maps, CSV/API exports, and GIS integration.
- The **National Performance Management Research Data Set (NPMRDS)** is probe-vehicle-based speed, travel time, and location referencing data set used by state departments of transportation and metropolitan planning organizations. The NPMRDS also contains data sets for passenger vehicles, trucks, and trucks and passenger vehicles combined. (Federal Highway Administration, n.d.) (Federal Highway Administration, 2020).

Federal Highway Administration. (n.d.). *National Performance Management Research Data Set (NPMRDS)*. U.S. Department of Transportation. Federal Highway Administration

Federal Highway Administration. (2020, September). *The National Performance Management Research Data Set (NPMRDS) and application for work zone performance measurement* (FHWA-HOP-20-028). U.S. Department of Transportation, Federal Highway Administration, Office of Operations. https://ops.fhwa.dot.gov/publications/fhwahop20028/

Potential Gaps

- **Intermodal lift counts** measure the movements of an intermodal units (containers or trailers) to or from well cars or flat cars (Murtha, 2024). At inland ports, intermodal lifts counts are a data gap. For instance, the Federal Port Performance Freight Statistics Program collects national data, but only for seaports (Bureau of Transportation Statistics, n.d.).
- **Container dwell time** is "the amount of time a container remains at a port, marine terminal, rail terminal, yard, or other transfer point before it moves to the next step in the freight journey" (UNIS, n.d.a). The U.S. DOT collects average terminal dwell time data by railroad, but not for inland ports (Bureau of Transportation Statistics, n.d.b). This is a key operating metric for inland ports.

Murtha, T. (2024, July 16). *Here is a screenshot of a map of current share...* [LinkedIn post]. LinkedIn. https://www.linkedin.com/posts/tom-murtha-8a114924_here-is-a-screenshot-of-a-map-of-current-share-7213574299465523201-5kaw/

Bureau of Transportation Statistics. (n.d.a). *Port performance freight statistics program*. U.S. Department of Transportation. https://www.bts.gov/ports

UNIS. (n.d.). *Container dwell time*. UNIS Freight Glossary. https://www.unisco.com/freight-glossary/container-dwell-time

Bureau of Transportation Statistics. (n.d.b). *Freight indicators*. U.S. Department of Transportation. https://www.bts.gov/freight-indicators

Innovative inland port projects and strategies worldwide

Port of Rotterdam - Automated Inland Container Terminal

In 2026, the Port of Rotterdam in the Netherlands opened a new fully automated inland container terminal. The facility "integrates advanced robotics, artificial intelligence, and real-time data analytics for highly efficient container handling." This will reduce congestion, drive efficiency, streamline logistics flow, and decrease carbon emissions (MarineLink, 2026).

MarineLink. (2026, May 8). *Port of Rotterdam inaugurates automated inland container terminal*. Ports Directory. https://ports.marinelink.com/ports/port/pittsburg/news/port-of-rotterdam-inaugurates-automated-inland-container-terminal

California Inland Port System/TradePort California

The California Inland Port System is a $30 billion proposal which is a 425-mile corridor which will stretch from the Ports of Los Angeles and Long Beach up to Sacramento. The system will consist of four main inland ports and seven smaller satellite ports, creating an innovative "multi-modal network of integrated clean and automated truck, rail, and cargo facilities" (Lopez, 2022). According to GLDPartners, an international advisory firm for manufacturing companies, public and private logistics and property asset owners and investors for such projects, the Port System is a trailblazer, with not many examples to compare with it. "We think it will be the most efficient, cleanest, most robust, technologically advanced logistic system anywhere" (Lopez, 2022). The project now goes by TradePort California (TradePort California, n.d.).

Lopez, F. (2022, December 1). *A fix for wobbly supply chains? Ambitious $30B California Inland Port imagines a new way to move stuff*. The Business Journal. https://thebusinessjournal.com/a-fix-for-wobbly-supply-chains-ambitious-30b-california-inland-port-imagines-a-new-way-to-move-stuff/

TradePort California. (n.d.). *TradePort California: Clean energy logistics hub*. https://tradeportcal.com/

Port of Duisburg

The Port of Duisburg is the world's largest inland container port and a cornerstone of Europe's coal industry, handling over 20 million tons of coal every year. It has embraced an innovative energy system with most of the power coming from solar panels, with fuel cell systems and hydrogen cogeneration plants providing power when there is no sunlight (Miles, 2025).

Miles, T. (2025, August 10). *Sustainable future for the world's largest inland port*. Machinery Market. https://www.machinery-market.co.uk/news/40446/Sustainable-future-for-the-worlds-largest-inland-port

Examples of inland ports

This section will include four in-depth case studies of inland port, with three interview summaries in the Appendix. In addition, shorter profiles of other Californian, U.S., and international inland ports are included.

Case Studies - Inland Ports in California

Public-led

- **Castle Commerce Center (Merced County)**

  The Castle Commerce Center is a 1,912-acre multimodal freight transportation hub in Merced County which will include an inland port and be supported by air, ground, and rail connections. The site is currently home to more than 60 tenants. (County of Merced, n.d.) The inland port is funded with a $49.6 million grant from CalSTA under the Port and Freight Infrastructure Program (PFIP), which will develop 70 acres of land and is estimated to create approximately 250 jobs (Central Valley Journalism Collaborative, 2023). This rail district is served by Patriot Rail (CV Journalism Collaborative, 2024). See Appendix A for an in-depth interview with Merced County on the project.

  County of Merced. (n.d.). *Castle Commerce Center*. https://www.countyofmerced.com/1245/Castle-Commerce-Center

  Central Valley Journalism Collaborative. (2023, July 19). *New Merced County "inland port" expected to create 250 jobs, thanks to $49.6 million grant*. The Merced FOCUS. https://themercedfocus.org/new-merced-county-inland-port-expected-to-create-250-jobs-thanks-to-49-6-million-grant/

  CV Journalism Collaborative. (2024, November 9). *Loading dock completed at Castle as part of multi-million dollar Merced County inland port project.* Turlock Journal. https://www.turlockjournal.com/news/local/loading-dock-completed-at-castle-as-part-of-multi-million-dollar-merced-county-inland-port-project/

- **California Inland Port Project/TradePort California**

  As profiled in the Innovative Inland Port Project and Strategies Worldwide section, the California Inland Port Project analyzes the feasibility of creating an inter-modal rail spine to connect seaports to the Central Valley. A Phase One Feasibility Study was completed in Spring 2020 which analyzed the size of the market, reviewed truck versus rail transportation costs, and analyzed the reduction in pollutants (California Inland Port Feasibility Analysis: Preliminary business model, 2020) (San Joaquin Valley Council of Governments, n.d.). The Project is a $30 billion, 425-mile corridor that will stretch from the Port of Los Angeles and Long Beach to Sacramento. It consists of four main inland ports and seven satellite ports (Fresno Council of Governments, 2022)(Lopez, 2022). The ports are planned as up to 1,500-5,000 acre districts, with 75-150 acres Logistic Core Zones. The project now goes by TradePort California. See Appendix C for the interview with Fresno Council of Governments about the project.

  California Inland Port Feasibility Analysis: Preliminary business model. (2020, April 8). San Joaquin Council of Governments. https://sjvcogs.org/wp-content/uploads/2021/07/Attachment-1-CA-Inland-Port-FS-Phase-1-Report.pdf

  Fresno Council of Governments. (2022, April 20). California inland port: Phase two summary. https://publicinput.com/Customer/File/Full/fe741100-3d59-4a05-97f3-fe9d08b15fb2

Fresno Council of Governments. (n.d.). TradePort California. Public Input. https://publicinput.com/u60381#tab-59418

Fresno Council of Governments. (2023). *California Inland Port Project (TradePort California) Feasibility Study Phase 3 Final Report*.

San Joaquin Valley Council of Governments. (n.d.). California Inland Port Project. https://sjvcogs.org/california-inland-port-project/

Fresno Council of Governments. (2022, May). California Inland Port System overview. https://www.fresnocog.org/wp-content/uploads/2022/05/California-Inland-Port-System-Overview-May-2022.pdf

Lopez, F. (2022, December 1). A fix for wobbly supply chains? Ambitious $30B California Inland Port imagines a new way to move stuff. The Business Journal. https://thebusinessjournal.com/a-fix-for-wobbly-supply-chains-ambitious-30b-california-inland-port-imagines-a-new-way-to-move-stuff/

Private-Led

- **Barstow International Gateway**

  The Barstow International Gateway (BIG) is $4 billion 4,500-acre facility in Barstow, California planned by the BNSF. BIG is an integrated rail facility and consists of a rail yard, intermodal facility, and transload warehouses but is not referred to as an inland port. It is "the only facility of its kind developed by a Class I railroad" (Kent, 2026). "Containers arriving at the Ports of Los Angeles and Long Beach will move directly from ships to trains via the Alameda Corridor and onto the BNSF mainline to Barstow" (Kent, 2026) At the Gateway, containers will be processed, staged, and then built into trains which will head east along BNSF's national network (Kent, 2026). Westbound freight will also be processed at the facility and travel by train to coastal ports and other California terminals.

  The Gateway strengthens the supply chain and supports global market competitiveness by increasing capacity, creating faster access, improving network fluidity, enhancing reliability, reducing congestion at seaports, reducing bottlenecks, and creating a more resilient, efficient, clean, and low-carbon freight system. The project will create approximately 62,000 construction-related jobs and 15,000 long-term operational jobs. Over its first 20 years of operation, it is projected to produce $928 million in total earnings and $2.9 billion in total economic output (Kent, 2026).

  The Gateway "is projected to eliminate approximately 205 million truck miles traveled (TMT) in 2028, 269 million TMT in 2033, and 312 million TMT in 2048, easing pressure on urban neighborhoods while delivering economic, environmental, and equity benefits statewide. BNSF has committed to deploying zero-emission rail mounted gantry cranes, hybrid rubber-tired gantry cranes, zero emission forklifts and hostlers, and electric plug-ins for refrigerated units" (Kent, 2026)

  The BNSF and the Mojave Desert Air Quality Management District (MDAQMD) signed a Memorandum of Understanding (MOU) to demonstrate zero emission technologies, such as battery electric switcher locomotives The BNSF also signed an MOU with the California Air Resources Board to explore additional emissions reduction technologies and pursue grant opportunities. They voluntarily agreed to replace the existing switcher locomotives with the cleanest available Tier 4 switcher locomotives at its Barstow facility. (Kent, 2026)

On April 30, 2026, the BIG was certified for California Environmental Quality Act (CEQA) judicial streamlining under SB 149 (Governor's Office of Land Use and Climate Innovation, 2026)(City of Barstow, n.d.). "Projects that the Governor certifies for judicial streamlining benefit from expedited judicial review of any lawsuits challenging the project under the California Environmental Quality Act (CEQA), reducing lawsuit-related delays from 3-5 years to ~270 days" (Governor's Office of Land Use and Climate Innovation, n.d.). On June 17th, 2026, the Barstow City Council approved the BIG project. The Sierra Club and three other environmental advocacy non profits are suing the City of Barstow to invalidate the approval (Pettersson, 2025). They argue that the project did not adequately analyze the project effect on wildlife as well as its energy, water, noise, cumulative impact and growth-inducing impacts. EIR – include as reference.

Kent, L. (2026, June 17). Barstow International Gateway approved by the Barstow City Council. https://www.mdaqmd.ca.gov/Home/Components/News/News/608/67

Governor's Office of Land Use and Climate Innovation. (2026, April 30). *Governor's certification for the Barstow International Gateway Project, San Bernardino County*. State of California. https://jtlegbudget.legislature.ca.gov/system/files/2026-05/lci-barstow-international-gateway-project-govenor-s-certification-san-bernardino-4-30-2026.pdf

City of Barstow. (n.d.) Governor certified Barstow International Gateway Project under California Environmental Quality Act (CEQA) judicial streamlining (Senate Bill 149). Victorville Daily Press. https://s3.amazonaws.com/ipublishmedia.cnpa.legals/AdvertImages/notices/dailypress_9017_0506202641_GannettCA-3/M_60832088.pdf

Governor's Office of Land Use and Climate Innovation. (n.d.). *Judicial streamlining*. State of California. https://lci.ca.gov/ceqa/judicial-streamlining/

Pettersson, E. (2025, April 23). *Environmentalists sue to block massive rail yard in California desert*. Courthouse News Service. https://www.courthousenews.com/environmentalists-sue-to-block-massive-rail-yard-in-california-desert/

Case Studies - Active Inland Port Outside of California

Port authority-led

- **Gainesville Inland Port (GIP)**

  Opened on May 4, 2026 and developed by the Georgia Ports Authority, the Gainesville Inland Port links the Port of Savannah's 39 global container ship services to Northeast Georgia (with it 2 million consumer market and only 50 miles from Atlanta) and the I-85/I-985 corridor via the Norfolk Southern rail. It strengthens the area's manufacturing and logistics corridor, home to more than 330 manufacturers. This 104-acre location features five-day-a-week service, seven electric rubber tire gantry cranes, 18,000 feet of working track, and an annual container lift capacity of 200,000 (Georgia Ports Authority, 2026a). The Gainesville Inland Port is a $134 million project, consisting of a $127 million investment by the Georgia Ports Authority and $7 million from Norfolk Southern (Georgia Ports Authority, 2026b). This included a grant of up to $46.9 million from the U.S. Maritime Administration (MARAD) to help cover construction costs. The port will provide $687 million in net public benefits, create 20 direct jobs, and support nearly 90,000 jobs in the 10-county region.

The port will lead to safer commutes, decrease transportation costs, less wear and tear on highway infrastructure, improved congestion, avoiding costly empty container moves to and from the coasts, and improved air quality by cutting emissions through rail's greater fuel efficiency. The GIP can also create new inland markets by acting as a draw for new private investment. The inland port also frees up capacity at the Port of Savanah by providing additional container storage off the port, The Port will shift 26,000 containers to rail in its first year of operation. Approximately 46% of truck traffic between Northeast Georgia and the Port of Savannah will use rail instead and 7 hours of truck use will be reduced to less than 30 minutes. The port will offset a 600-mile roundtrip truck route, avoid 15 million truck miles, and eliminate 80% or 22,510 metric tons of $C0_2$.

Conceptual planning for the port began in September 2017, construction began in January 2025, and full service begins in Summer 2026. The Gainesville Inland Port in part of the Georgia Port Authority's inland port network, which also include the Appalachian Regional Port, the Bainbridge Terminal, and the Carolina Connector. Locally, to decrease the railyard's impact on surrounding communities, the Authority funded $4.8 million in local road projects, eliminating an at-grade rail crossing, rerouting a road, surfacing a road to ensure free access for emergency vehicles, avoid traffic disruptions from train, and an improve alternative route for residents. (Georgia Ports Authority, 2026c). The Georgia Port Authority was not open to an interview for competitive reasons.

Georgia Ports Authority. (2026a, May). *Gainesville Inland Port* [Fact sheet]. https://gaports.com/wp-content/uploads/2026/05/260505_GPA_Fact-Sheets-26_GIP.pdf

Georgia Ports Authority. (2026b, March 20). *Gainesville Inland Port media kit* [Media kit]. https://gaports.com/wp-content/uploads/2026/03/260320-GIP-Media-Kit.pdf

Georgia Ports Authority. (2026c, May 21). *GPA's Gainesville Inland Port open for business*. https://gaports.com/press-releases/gpas-gainesville-inland-port-open-for-business/

More Examples of Inland Ports – California

Public-led

- **Mojave Inland Port**

  The Mojave Inland Port is a 410-acre facility planned in Kern County at the southeast corner of state highways 14 and 58. The port is intended to receive and distribute up to 3 million containers per year from the Ports of Los Angeles and Long Beach. (Trains, 2022) (Antelope Valley Press, 2022). The site is fully entitled and environmentally cleared but has not begun construction because it lacked interest from carriers, perhaps because the port was only large enough for about one carrier. The owners are exploring other uses for the land, such as a truck depot, so the project may be completely canceled.

Trains. (2022, August 15). *Plans advance for Mojave Inland Port, first of its kind in California*. *Trains*. https://www.trains.com/pro/freight/intermodal/plans-advance-for-mojave-inland-port-first-of-its-kind-in-california/

Antelope Valley Press. (2022, September 23). *Residents question Mojave port plans.* Antelope Valley Press. https://www.avpress.com/news/residents-question-mojave-port-plans/article_63bb73ec-3d45-11ed-bdcd-1f8b8b4b871c.html

- **Port of West Sacramento**

  The Port of West Sacramento is an inland maritime port located 79 nautical miles from San Francisco (City of West Sacramento, n.d.) and 4.7 miles west of Sacramento near U.S. 50 (California Department of Transportation, 2023). The Port's primary cargo is rice (exports) and cement (imports) (City of West Sacramento, n.d.). It runs under a landlord operating model and owns more than 600 acres of vacant, developable property in West Sacramento (City of West Sacramento, n.d.).

California Department of Transportation. (2023). *California Freight Mobility Plan 2023*. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf

City of West Sacramento. (n.d.). *Port of West Sacramento*. https://www.cityofwestsacramento.org/government/departments/city-manager-s-office/port-of-west-sacramento

- **Port of Stockton**

  The Port of Stockton, also known as the Stockton Port District, is an inland maritime port located on the Delta of the San Joaquin River (Port of Stockton, n.d.). It features over 400 acres of land approved for new development and "flexible solutions for domestic and international distribution by ship, rail, or truck" (Port of Stockton, n.d.). It is the largest bulk shipping port on the West Coast (California Department of Transportation, 2023).

Port of Stockton. (n.d.). *Port of Stockton*. https://www.portofstockton.com/

California Department of Transportation. (2023). *California Freight Mobility Plan 2023*. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf

- **The Tulare Inland Port**

  The Tulare Inland Port is a logistics hub that the City of Tulare is exploring that will facilitate the movement, storage, and distribution of goods away from congested seaports and improve regional freight efficiency (City of Tulare, n.d.). It is part of a development which will include a Business Park. City of Tulare staff recommends a southwest location near the International Agri-Center Way interchange because of its proximity to Highway 99, the Union Pacific Railroad, and available undeveloped land (City of Tulare, n.d.).

City of Tulare. (n.d.). *Business Park & Inland Port*. https://www.tulare.ca.gov/government/departments/economic-development/projects/business-park-inland-port

Private-led

- **Wonderful Logistics Center**

  The Wonderful Logistics Center is a 3,400-acre, master-planned industrial development located along the BNSF rail mainline in Shafter. The center features a container depot and warehouses for multiple Fortune 100 companies. A new international rail terminal is scheduled for completion in 2026 and will serve importers and exporters from a rail line running between the San Pedro Bay and Shafter (Wonderful Logistics Center, n.d.) (Port of Los Angeles, 2025) (Barrera, 2025) (Fine, 2026).

Wonderful Logistics Center. (n.d.). Map. https://www.wonderfullogisticscenter.com/center/map

Port of Los Angeles. (2025, June 26). Port of Los Angeles signs agreement to expand exports through Central Valley. https://portoflosangeles.org/references/2025-news-releases/news_062625_wonderful_moa

Barrera, B. (2025, June 26). Wonderful Logistics Center plans expansion with inland rail terminal, cleaner cargo movement. Bisnow. https://www.bisnow.com/los-angeles/news/industrial/wonderful-logistics-center-wonderful-real-estate-studiob-134481

Fine, H. (2026, May 25). 'Green truck corridor' is formed. Los Angeles Business Journal. https://labusinessjournal.com/transportation/green-truck-corridor-is-formed/

Other US Inland Ports

Port authority-led

- **Alabama's Inland Ports**

  The Port of Mobile's impact is extended through a network of inland river ports and rail ports. These ports link local economies to global markets through first and last-mile connectivity (Alabama Port Authority, n.d.a). There are eight ports along Alabama's river system (Alabama Port Authority, n.d.b) while the rail ports consist of the Intermodal Container Transfer Facility (ICTF) and the Terminal Railway Alabama State Docks (TASD), both in Mobile (Alabama Port Authority, n.d.c).

Alabama Port Authority. (n.d.a). *Inland ports*. https://alports.com/inland-ports/

Alabama Port Authority. (n.d.b). *Inland river ports*. https://alports.com/inland-river-ports/

Alabama Port Authority. (n.d.c). *Rail ports*. https://alports.com/rail-ports/

- **Appalachian Regional Port**

Located in Murray County, Georgia, the Appalachian Regional Port consists of 42 acres in Northwest Georgia's Murray County. It has direct rail service to the Port of Savannah, a capacity of 75,000 containers a year, and offsets 710 truck miles for each round-trip container route (Georgia Ports Authority, n.d.). It is a joint effort of the State of Georgia, Murray County, the Georgia Ports Authority, and CSX Transportation (Georgia Ports Authority, n.d.).

Georgia Ports Authority. (n.d.). *Appalachian Regional Port*. https://gaports.com/facilities/inland-ports/appalachian-regional-port/

- **Charlotte Inland Port**

  The Charlotte Inland Port is a dry port that serves the I-85 and I-77 corridors through intermodal transit service to and from the Port of Wilmington. It can accommodate 2,000 containers and contains 20 acres, 10 of which are already developed (North Carolina Ports, n.d.). It also "provides container yard operations to ocean carriers and serves as a staging area for empty and loaded containers" (North Carolina Ports, n.d.).

North Carolina Ports. (n.d.). *Charlotte Inland Port*. https://ncports.com/port-facilities/charlotte-inland-port/

- **South Carolina Inland Ports**

  Inland Port Greer and Inland Port Dillon are two railed-served inland ports owned by South Carolina Ports. Inland Port Greer is located on I-85, 212 miles inland from Charleston while Inland Port Dillon is located on I-95 near that South Carolina/North Carolina border (South Carolina Ports, n.d.). "[T]hese facilities allow shippers to reduce carbon emissions up to 80% vs. all truck service" (South Carolina Ports, n.d.).

South Carolina Ports. (n.d.). *Inland ports*. https://scspa.com/cargo/logistics/inland-ports/

- **Utah Inland Port Authority (UIPA)**

  The Utah Inland Port Authority connects industry and government partners, identifies gaps in Utah's logistics system, provides investments, and helps build critical infrastructure. The UIPA is "not a singular place; it's a statewide, generational logistics system" (CLN Worldwide, 2024). The Utah Inland Port in Salt Lake City opened in 2019. It signed cooperative agreements with the Port of Oakland and Port of Long Beach to improve cargo flow to the UIPA by enhancing on-dock rail facilities to reduce congestion and movement costs (Utah Inland Port Authority, n.d.).

CLN Worldwide. (2024, January 28). *The role of inland ports to tackle supply chain congestion*. https://clnusa.com/the-role-of-inland-ports-to-tackle-supply-chain-congestion/

Utah Inland Port Authority. (n.d.). *Utah Inland Port Authority*. https://inlandportauthority.utah.gov/

- **Virginia Inland Port (VIP)**

  Located along US 340/522 just north of I-66, the Virginia Inland Port allows for the quick transfer of containers from train to truck. It was the first inland intermodal terminal in North America (The Mountain Courier, n.d.). It was completed more than 30 years ago and the Port of Virginia is currently considering constructing a second inland port in southwest Virginia (The Mountain Courier, n.d.). It supports more than 10,000 jobs and almost $1 billion in investment (The Mountain Courier, n.d.).

  The Mountain Courier. (n.d.). *Virginia Inland Port: The Valley's link to the world*. https://www.themountaincourier.com/articles/featured-stories/virginia-inland-port-the-valleys-link-to-the-world/

Private-led

- **The International Inland Port of Dallas (IIPOD)**

  The International Inland Port of Dallas is centrally located and able to reach 93 percent of the US population within 48 hours. The Inland Port spans over 76,000 acres and has access to Interstates 20, 35, and 45. It supports over 30,000 jobs, offers Foreign Trade Zone availability, and access for the 306 acres Lancaster Airport (DFW Inland Port, n.d.).

  DFW Inland Port. (n.d.). *DFW Inland Port*. https://dfwinlandport.com/

- **Logistics Park Kansas City**

  "Logistics Park Kansas City (LPKC) is a 2,352-acre master planned distribution and warehouse development…just southwest of downtown Kansas City" (Logistics Park Kansas City, n.d.a). It is an inland port served by the BNSF Railway with a "capacity for 26.5 million square feet of industrial buildings" (Logistics Park Kansas City, n.d.b). It is "designed specifically for distribution, warehouse and manufacturing tenants"

  Logistics Park Kansas City. (n.d.a). *Logistics Park KC: A heartland hub with global reach*. https://www.logisticsparkkc.com/

  Logistics Park Kansas City. (n.d.b). *About LPKC*. https://www.logisticsparkkc.com/about-lpkc/

- **Midwest Inland Port**

  "The Midwest Inland Port is a multi-modal transportation hub located in Decatur, Illinois that delivers both domestic and international flexibility for companies through a well-positioned transportation corridor". It is served by 2 Class I railroads (Canadian National Railway (CN) and Norfolk Southern (NS)) and one short line (Watco) and "an intermodal ramp with 25-minute average turn times" (Midwest Inland Port, n.d.). It also includes an airport with a 8,500' main runway and daily passenger service to Chicago (Midwest Inland Port, n.d.).

Midwest Inland Port. (n.d.). *Overview*. https://www.midwestinlandport.com/overview/

International Inland Ports

Port authority-led

- **The Port of Duisburg**

  Previously described in Innovative Inland Port Projects and Strategies Worldwide, the Port of Duisburg is situated at the confluence of the Rhine and Ruhr rivers in Germany. The Port of Duisburg is an inland river port and the largest inland container port in the world. It handles over 4 million TEUs (twenty-foot equivalent units) annually as a critical logistics hub for Europe, facilitating "smooth transshipment between water, rail, and road transport" (Duisburger Hafen AG, n.d.)(FreightMango, n.d.).

Duisburger Hafen AG. (n.d.). *duisport: The world's largest inland port*. https://duisport.de/en/

FreightMango. (n.d.). *Port of Duisburg (DEDUI), Germany*. https://www.freightmango.com/port-info/de/duisburg-dedui/

- **Zaragoza Maritime Terminal**

  Beginning operations in 2001, the Zaragoza Maritime Terminal is an inland port in Spain (Aragón Plataforma Logística, n.d.). It is the second largest dry port in the country and manages 480,000 TEUs per year with 8 direct trains to the Port of Barcelona every day (Invest in Aragón, n.d.) (Mercazaragoza, n.d.). The Container Depot consists of 65,000 square meters with a capacity to store over 1,500 containers (Aragón Plataforma Logística, n.d.).

Aragón Plataforma Logística. (n.d.). *Terminal Marítima de Zaragoza (TMZ).* Aragon Platform

Invest in Aragón. (n.d.). *Infrastructure*. https://investinaragon.com/infrastructure/

Mercazaragoza. (n.d.). *Zaragoza Maritime Terminal*. https://mercazaragoza.es/en/zaragoza-maritime-terminal/

Public-private led

- **Uiwang Inland Port**

  The Uiwang Inland Port is 25 km south of Seoul, South Korea which "acts as a load center for the metropolitan area and handles about 45% of its container traffic" (Port Economics, Management and Policy, n.d.). It consists of two inland container yards and has intermodal rail terminal connections to the port of Pusan, Korea's main deep-sea port, located 350 km southeast of Seoul and a hub for exports and imports (Port Economics, Management and Policy, n.d.). "75% of the inland container depot is owned by private transport companies, and 25% is owned by the Korean National Railroad, a governmental agency (Port Economics, Management and Policy, n.d.).

Port Economics, Management and Policy. (n.d.). *Uiwang Inland Port, South Korea*. https://porteconomicsmanagement.org/pemp/contents/part2/dry-ports/uiwang-inland-port-south-korea/

Private-led

- **European Federation of Inland Ports**

  The European Federation of Inland Ports promotes inland ports as a nodal point for nearly 200 inland ports and port authorities in Europe, facilitating the exchange of transportation and environmental policy developments and representing the ports to other national and international organizations (European Federation of Inland Ports, n.d.). It "presents common positions on European policy issues of importance for inland ports" (European Federation of Inland Ports, n.d.).

  European Federation of Inland Ports. (n.d.). *European Federation of Inland Ports (EFIP)*. https://www.inlandports.eu/

Detailed Summary of Further Reports

7 Challenges for Inland Ports in California
URL: https://www.kerncog.org/wp-content/uploads/2023/11/InlandPortsChallenges_20231115.pdf

This presentation from the Kern Council of Governments highlights 7 challenges for inland ports in California. They are the following:

1. Class I railroads (BNSF & UP) 300-750 mile minimum shipping distance
2. Balancing export/import priorities at seaports
3. Re-shoring manufacturing trend
4. Inland Empire full/more centralized distribution warehousing in Central Cal
5. LA's congested rails/ports
6. Spokes & hub connectors/road maintenance needs
7. Street turns: Minimizing empty truck/rail trips.

14 key advantages of inland ports to boost your supply chain
URL: https://www.calgary.ca/realestate/blog/14-key-advantages-of-inland-ports-to-boost-your-supply-chain.html

This blog post is from The City of Calgary's official web site and is from a Canadian perspective, though the advantages apply across all inland ports.

Below are the 14 key advantages:

"1. Efficiency of rail shipping can exceed that of only using sea and road.
2. Avoid heavy congestion at seaports.

3. Increased capacity. A supply chain system that includes inland ports increases the intermodal capacity for inland freight distribution. The additional capacity allows for off-site storage.
4. Consolidation of import and distribution functions in one location.
5. More space available for warehousing and distribution facilities away from seaports. Many seaports have limited land available for expansion leading to a search for lower value locations supporting less intensive freight activities, such as transloading. An example of limited space is in the Vancouver metropolitan area, which is facing land availability issues.
6. Sustainable option. Rail travelling to and from an inland port uses less fuel than trucks.
7. Excellent market proximity to at least three million people within 320 kms.
8. Foreign Trade Zone status and privileges for many of Canada's inland ports.
9. Abundance of reasonably priced commercial real estate for warehousing and distribution.
10. Collaboration of stakeholders on implementation and management of inland ports.
11. Speeds flow of cargo between ships and major land transportation networks.
12. Success of major retailers using inland ports. Among the first and largest users of inland ports are major retailers and importers such as Walmart and Home Depot. Many of these logistics giants saved money by consolidating multiple distribution centers into smaller hubs situated at inland ports with adequate logistics capacity.
13. Become a buffer in supply chains, acting as a temporary warehousing facility.
14. Improved speed-to-market and the lowest cost shipping for a desirable alternative."

2016 Inland Ports Logistics Annual Report
URL:
https://bloximages.newyork1.vip.townnews.com/stltoday.com/content/tncms/assets/v3/editorial/d/09/d091b2c7-d677-5068-bb5c-ab5debe688a2/57a8ca8884173.pdf.pdf

This report gives an overview on what are inland ports and their status in the US. Inland ports are transportation hubs that "quickly and efficiently receive freight from the seaports and move it to distribution hubs". Congestion at seaports is a problem because of increasingly larger ships, leading to inefficiencies on offloading times. "The inland port is often anchored by an intermodal rail facility but can also have an inland waterway, such as a river, along which cargo can be shipped." All inland ports meet two criteria:

- Direction connection to a major seaport via Class I rail;
- Major transportation infrastructure is usually in the form of rail, but also interstate highway or inland waterway.

According to this and the study's additional criteria, it identified 12 major inland ports in the US – Lehigh Valley, Columbus, Chicago, St. Louis, Greenville, Inland Empire, Atlanta, Dallas/Fort Worth, Houston, Memphis, Kansas City, and Phoenix.

Community Prosperity/Protection Study – KARGO Phase 3
URL: https://www.kerncog.org/wp-content/uploads/2026/05/KARGO_Phase_3.pdf

The Kern Area Regional Goods – Movement Operations (KARGO) initiative produced three studies which assessed and planned growth of the goods movement industries in Kern County. The third study, Community Prosperity and Protection Study, identified nine potential inland port sites. One is currently under construction in Shafter, while the rest are either planned or conceptual. This study includes discussion of the economic impacts associated with "inland port development and freight shift to rail in

Kern County." Further economic analysis found that "inland port operations could generate substantial long-term economic benefits, including employment growth, labor income, and economic output."

Feasibility and benefits of intermodal service in short-haul markets
URL: https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2024/jan/anacostia-feasibility-and-benefits-of-intermodal-service-in-short-haul-markets-report-v3.pdf

This study assessed "at a high level the operational, service, and economic feasibility of the rail shuttle-inland port concept for Southern California. Key findings include an addressable market of 3.1 million to 4.6 million TEUs (twenty-foot equivalent units), due to the presence of many large retailers and original equipment manufacturers in the area with substantial transloading needs. At full capacity, this could eliminate some 5,100 short-haul truck moves (drayage) every weekday. Additionally, a rail shuttle-inland port service could be cost competitive on a per container basis for shippers compared to direct truck drayage — as long as the inland port is integrated with or located near freight logistics and warehousing facilities.

Inland ports could be built under different models: a small standalone terminal with two or three shuttle trains a day could shift up to 15% of Inland Empire port drayage. A large inland port with five to 10 shuttle trains per day and a large integrated logistics park could shift a quarter to nearly half of Inland Empire port drayage at full capacity.

By moving certain operations inland, the Los Angeles and Long Beach ports would be able to grow volumes without expanding their physical footprint — and without adding yet more trucks to local highways (like the I-710) that are unlikely to be further expanded. Central regions of California have significant undeveloped land and communities looking to expand their economies, and so could be willing to support the development of logistics facilities and warehousing.

There are of course challenges in implementing the rail shuttle-inland port concept, including ensuring sufficient mainline rail capacity, the potential need for a day-one zero-emissions operation, site selection/permitting, and securing government support. But the study illustrates that the concept could provide benefits to all major stakeholders in the Southern California intermodal inland transportation chain, including the ports, shippers, carriers, and state/local governments" (Bailey, 2024).

Bailey, A. (2024, January). *California ports: Boost efficiency with rail-inland port*. Oliver Wyman. https://www.oliverwyman.com/our-expertise/insights/2024/jan/california-ports-intermodal-strategy.html

Functions and actors of inland ports: European and North American dynamics
URL: https://www.sciencedirect.com/science/article/pii/S0966692310000402

From the abstract: The emergence of inland ports took place in several regions around the world, notably where the growth of inland freight distribution required a massification of flows. Yet, there is no definitive consensus about how such inland facilities should be labeled, with terms such as dry ports being advocated. It is suggested in the paper that the term inland port is a more appropriate construct since it considers terminal activities as well as the crucial logistics activities taking place in co-location or in proximity of inland terminals. This perspective requires an investigation of how transport and supply chain functions and the various actors involved in their setting and operations are taking shape in inland

ports. Case studies pertaining to European and North American inland ports are presented. Although inland ports are planned, set and operated by a wide variety of actors, ranging from public to private interests, transport and supply chain functions tend to label them as satellite terminals, load centers or transmodal centers.

Inland Port Feasibility Study
URL: https://tiogagroup.com/docs/Tioga_Grp_SCAGInlandPortReport.pdf

This study sought to determine whether inland ports could be implemented in the SCAG region to reduce truck VMT and produce other benefits. It found that "while an inland port/rail shuttle service had intrinsic merit and would benefit the region, the concept also faced daunting implementation barriers while ranking low on the list of regional priorities."

Inland Ports Show Their Worth – St. Louis Regional Freightway
URL: https://www.thefreightway.com/inland-ports-show-their-worth/

This article is a series of case studies of inland ports in North America: In British Columbia, where flooding in 2021 led goods to be diverted from the Port of Vancouver to the Port of Prince Rupert, which was able to handle the increased cargo because of rail connections to the inland port of Edmonton, Alberta. The Port of Long Beach is partnering with the Utah Inland Port Authority to improve cargo flow between the port and Utah, Colorado, Nevada, and Idaho by investing $1 billion in rail improvements over the next 10 years. Together, South Carolina Port's Port Greer and Port Dillon extend the reach of the Port of Charleston and pull hundreds of thousands of trucks off the highway. Because of its 16 barge-transfer facilities, the Port of Metropolitan St. Louis claims to be the most efficient inland port in the United States.

Market Potential and Marketing Strategy for Short-Haul Intermodal Service in Southern California
URL: https://www.anacostia.com/wp-content/uploads/2024/01/Market-Potential-and-Strategy-for-Short-Haul-Intermodal-final-rev.pdf

Executive Summary: "Commissioned by Pacific Harbor Line, this report quantifies the import and export markets for a short-haul rail intermodal service between marine terminals at the San Pedro Bay ports and one or more terminals located in the Inland Empire. The report provides an overview of the nature and structure of supply chains deployed by various types of importers. Analysis is provided of the impact on total import volumes through the San Pedro Bay ports as a function of the difference in cost to beneficial cargo owners between use of the intermodal service and current drayage services. Strategies and stakeholder agreements facilitating the formation of a successful short-haul intermodal service are discussed."

Overview: Characteristics, Benefits and Challenges of Inland Ports
URL: https://rosap.ntl.bts.gov/view/dot/88356

From the abstract: "This research offers a comprehensive overview of inland ports in the U.S. aiming to confirm a clear definition and understand their role as intermodal distribution centers. This work uses case studies and public data to establish contributions and strength of inland ports. It addresses the perspectives and challenges and reports on the infrastructure of four of the US inland port locations."

The case studies found that "port size or size of the metropolitan area is not a predictor of performance" and "economic benefits seem to accompany the implementation of an inland port."

Prospects for Developing Inland Logistics Ports in California
URL: https://papers.ssrn.com/abstract=4175841

Inland ports have the potential to be a solution to the congestion and pollution problems that exist at the San Pedro Bay port complex (SPB). Studies have identified potential port locations and associated costs and benefits. However, compared to other US seaport gateways, there are few inland ports serving California. This study assesses the prospect and impediments to the creation of inland ports for the SPB by identifying existing and planned inland ports, cataloguing economic and institutional impediments, and assessing the role of current and planned inland ports in facilitating the growing U.S. containerized agricultural trade.

The Identification and Classification of Inland Ports
URL: https://rosap.ntl.bts.gov/view/dot/14877

According to its abstract, "[t]his report presents a formal definition for inland ports and creates a classification methodology to promote familiarity with inland port operations…The classification methodology builds on the management product life cycle concept to create an inland port development life cycle. The stages of the development life cycle can assist planners in understanding what actions can be taken to best promote positive transportation impacts by inland ports."

Further research and gaps

Research gaps

Subjects with limited information include:

- **Infrastructure strain**

  More research could be conducted using feasibility studies to quantify how infrastructure strain is alleviated at seaports and how much capacity the inland ports have.

- **State roles and responsibilities regarding cost efficiency**

  While we know about how CalSTA's Port and Freight Infrastructure Program (PFIP) is designed to improve efficiency, we would benefit from more information on the role of other funding programs to support inland ports and cost efficiency.

- **Road maintenance**

  While road traffic can be estimated by VMT modeling, there have not been direct studies comparing the road maintenance impact of inland ports. As noted in the roadway maintenance section, while there is evidence to support potential mode shift and truck trip efficiency, there is also potential that new truck traffic could be induced in areas that are not designed for it. This would have to be assessed on a case-by-case basis, considering a large set of factors, including:
  - Mode shift potential, including projected truck volume data in a build and no-build scenario.
  - Base-case assessments of existing maintenance needs and attribution to truck traffic of the type that would be shifting.

- Roadway asset inventory data for projected build and no-build truck routes.
- Existing cross-sectional roadway design around the new development.

There is a possibility that net road maintenance needs could increase due to the introduction of new freight network capacity and dramatic increases in truck volume at the local site of new inland port development.

Appendix A – Interview about Castle Commerce Center Inland Port

Summary of interview with Mark Mimms, Director of Community & Economic Development at Merced County, June 26, 2026

Castle Commerce Center is owned by Merced County based at a converted Air Force Base and consists of four projects – the inland port, an autonomous vehicle testing center, industrial space, and an airfield. The inland port is the rail area with about 200 acres of land surrounding the existing rail line with approximately 90 acres of undeveloped land which is being developed through CalSTA's Port Freight Infrastructure Program (PFIP). A focus of the inland port is to be able to ship products from the Central Valley to the port throughout California and North America quicker and easier. Right now, they ship throughout the US and to Mexico and Canada. In addition to expediting shipping from the Central Valley, a second goal of the port is to alleviate port congestion at the Ports of Los Angeles, Oakland, Long Beach, San Diego, and Stockton by taking products from the ports by train to the inland port. The product is then taken off trains, unto trucks, and shipped to the end user within the Central Valley. Patriot Rail is the short line provider and Hydrologistics is the logistics company, but most of the inland port is in the design phase. Construction is expected to be finished in 2027.

Discussion on how to take trucks off the highways, especially Highway 99, started in 2013. In 2016, there was a memorandum of understanding with the Port of Los Angeles which started a strategic partnership with them to create the inland port. In 2019, Merced County started to fund satellite ports throughout the Central Valley where a train could pick up products to build a full train to go to the Port of Los Angeles. The Port of Oakland was not interested at that time. One of their neighboring counties also pursued the project. Merced County received the PFIP grant in 2023 from CalSTA, which was $49.6 million to build out the port and for a study. Since the grant, the Port of Oakland has been very interested in joining and wants to partner with them. The most influential entity in building momentum was the County, who owned and led the project, as well as the Port of LA. Later, Patriot Rail coming on helped push the project a little bit further, as well as Caltrans and CalSTA assisting.

The original vision of the complex is to both get products from the Central Valley to the inland port and from the seaports to the inland port. The PFIP funding and a federal grant through the Build American Bureau have been used to hire a firm, DB E.C.O. North America to run a study on how the inland port works.

In addition to utilizing the converted Air Force Base, the location was influenced by a desire to take trucks off the road, better the commute patterns throughout the valley, better air quality, and to help the agricultural industries. A study by the San Joaquin Valley Air Pollution and Control District in 2022 in partnership with Merced County and other groups showed how the valley can make the port work. Information was also gathered from BNSF, Patriot Rail, the Port of LA. There were previously no models making projections about the performance of the port but the DB E.C.O. study will look at this. As far as pilot projects, there have been smaller groups trying to do something similar. Patriot Rail shipped to Mexico and started shipping to other places. There is already an off ramp to the Atwater-Merced Expressway to Highway 99. This made the inland port more attractive. Some development was made to support the inland port after it began developing. For example, when Patriot Rail came in, they built out two more rail spurs, equally a mile of track and three spurs. They also built out a 15-acre logistics distribution site that is rail focused.

As far as governance goes, the County owns the land the port will be built on. The current rail lines are owned and run by Patriot Rail. Merced County will decide ownership of the new rail which is being built out. Part of the DB E.C.O study is to determine how the governance of the project works. They have talked to Salt Lake City's inland port to understand how they function. They may create more of a

standalone agency. As for state agencies, CalSTA gave them the PFIP grant and they are in constant contact with CalSTA and Caltrans on updates. They also received a federal grant. However, neither the State nor the Federal government are involved in governance. They are more involved in funding than regulation. Merced County also partners with the air pollution control district.

They currently do not have their own port authority. Looking at other ports, their relationships with the Port of LA and Oakland are probably the strongest. The Port of Stockton is also developing interest in a partnership. The relationships are all very good. They are not in constant contact but once construction begins, they anticipate more conversations to find stronger partnerships. Right now, there is an active MOU with the Port of LA, and the Port of Oakland wants to have an active MOU also.

As far as policies, legislation, laws, and agreements go, there are not any currently. They will be creating internal policy procedures such as zoning regulations, but until the study ends, there are no laws and regulations for the site. Fiscal incentives include the PFIP and the Federal grant. The site is also a foreign trade zone. Patriot Rail probably is starting to build and probably has a more favorable rate. The irrigation district is also their electric provider, which they see as a great incentive because people do not have to deal with PG&E and they are generally about 25% less expensive. They will discuss other incentives to bring in more businesses when the warehousing is completed but right now there is a large amount of demand already. Future county guidelines include a general plan and a zoning code that the buildings have to be rail use.

Some of the major challenges faced in developing the inland port include other jurisdictions trying to pursue the project and the financial piece to build everything out. In the future, a major challenge will be creating the structure for how the port works – creating the partnerships such as finding the shippers. To overcome the competition, they moved ahead and became the only successful jurisdiction for inland ports. They found other strategic partners to replace the competition through education and meetings, such as working with the BNSF to bring them on board. Merced County created a team of about 15 people to look at how to financially finish the project. To create the final partnerships, they will rely on more education and meetings – bringing the right people to the table, such as Patriot Rail and the partners at the ports.

One innovative practice of this inland port is the Central Valley satellite ports. Patriot Rail has also been coming up with new ways to ship and expedite shipping. Tenants at the inland port can expect operational efficiencies, including strong customer service, expedited shipping, and competitive pricing. Patriot Rail will do what they can to strengthen client businesses. Tenants can also rely on the port to ship goods to the seaports and not worry about getting goods there in time. Truck drivers also like the inland port because they do not need to spend days traveling to the congested seaports. The trucking industry is extremely supportive of the inland port because it will help to retain and help expand their truck drivers. Merced County sees this project as more than just a county project, but something to better the Central Valley and the State.

Appendix B – Interview about Barstow International Gateway

Summary of interview with Lena Kent, General Director of Public Affairs at BNSF, July 31, 2026

The key elements of the Gateway are the warehousing (9 million square feet); the intermodal facility-where containers will be loaded on and off of trains; and the block swap-where shorter trains are consolidated for longer trains across the country or broken down to travel to various terminals at the seaports.

The BNSF has long seen Barstow as a place to develop. COVID pushed the project forward faster than anticipated because of the supply chain "meltdown," in which there was not adequate warehousing space and warehouses were using chassis to store containers because they did not have any place to load and unload. Because there were no chassis available, when a train was brought to a city, they could not offload it onto a chassis so that it could be taken to a warehouse. This put pressure on the rail system with a backlog of trains that were sitting and waiting to be offloaded.

At this time, they were asked at the federal level to look at what could be done to prevent something like this from happening in the future. This is when the Barstow facility started to take shape and they thought of how to operate it in a way that would minimize the truck movements on the highway and have a shorter dray to reduce some of the cost associated with the move and reduce the time it took to move a box across the country. They began working on plans during COVID and announced the project to the city in October 2022.

The purpose of the Gateway is to move freight by rail to the facility where it's transloaded, brought back to their ramp, and then loaded onto a train for destinations across the country. The intent is not to move it by truck. There is not any money to be made by the short move from the ports to Barstow. They want to capture the long-haul move. There is adequate land space at the Gateway for warehousing and transloading.

Right now, freight moves from the port by three different routes. Freight is sometimes loaded onto a rail car and taken to destinations across the country. For a small number of cases, it's taken by truck to BNSF's LA facility and loaded onto a train. In many other cases, a truck picks up the container at the port and then takes it to a warehouse oftentimes in the Inland Empire. There, it's transloaded and then picked up by a truck and taken back to the rail facility, either in San Bernardino or LA. At the rail facility, it is then loaded onto a train and then moved through the region to destinations across the country. These trucks pick up freight at the port and take freight to the warehouse, adding time, expense, congestion, and wear and tear on the highways. With the Barstow International Gateway, there is a consolidated footprint where the freight is moved by rail to Barstow and does not hit the city streets. At Barstow, the containers are offloaded, moved to the on-site warehouse where they are transloaded and then brought back in 53-foot domestic containers, not 40-foot containers. The containers are then loaded onto a train and moved to destinations across the country. BIG eliminates the middle step of moving from the ports to the warehouses by truck and takes about 800,000 trucks off the highway.

There was a great deal of cooperation with state agencies, CalSTA in particular. The project was listed in 2024 in the State Rail Plan as an important piece of infrastructure. CalSTA was instrumental in helping to secure the SB 149 certification for the project. The City of Barstow has been very instrumental in their support and cooperation in trying to bring the project forward. They have been on the verge of bankruptcy multiple times and a project of this magnitude - spending $4 billion in their community - is significant and helps them increase revenue to support their community.

The vision of the complex includes reducing the transit time. This project is the 1st of its kind in the world. There is an effort to capture business from containers that are currently transported from the

ports via truck to be transloaded in the Inland Empire and Orange County or even Northern California and then taken across the country by trucks and long-haul drivers. This is also an effort to capture some of that business and to put it onto rail.

Goods that are manufactured and coming from the interior of the country back to be exported would also come through the Barstow facility. From there, they would break those trains down and build trains that are going to specific terminals.

Three elements made Barstow an ideal spot. First of all, it contained 5000 acres. It is difficult to find enough land to fit a block swap, an intermodal facility, and the 9 million square feet of warehousing. Secondly, Barstow was also next to their right-of-way. Lastly, the city is very supportive. It is also 130 miles from the ports, which is not too far away, and is a point where traffic from both Northern California and Southern California comes in. The location was chosen by an internal assessment rather than through any specific tools. Data was not really used to support or promote the development of the facilities. No models were used to make projections about performance nor were there any pilot projects.

Whether or not the project is successful will depend on whether customers want to co-locate there. Because they had to go through the California Environmental Quality Act (CEQA), it was difficult for customers to make plans because they didn't know if the project was going to come to fruition or not. Now that they are through that process, customers have more certainty and the BNSF can start to engage their interest in co-locating.

What was the role of local, regional, state, and federal government agencies in development of the BIG? The BNSF has been working very closely with the City of Barstow and San Bernardino County on the CEQA piece. At the state level, they had to work with California Department of Fish and Wildlife (CDFW) because tortoises and burrowing owls were found on the property. They worked with CalSTA to obtain the SB 149 certification. On the federal level, a small piece within the center of the 5000 acres was owned by Bureau of Land Management, so they had to work with them to acquire those approximately 30 acres, which was a very long process. Overall, there have been multiple agencies that have had a role in the project's development – some larger, some smaller, but all critical in moving the project to where it is today. It is fully privately-funded and did not receive any funding from any government agencies. The ports were supportive of the concept but did not have a role in its development per se. They want to utilize the Alameda corridor, which was built to move containers from the ports of LA and Long Beach to destinations across the country versus putting them on the highway but is underutilized. The Alameda Corridor Transportation Authority (ACTA) has been supportive as well.

No policies or legislation was created to support the facilities, though they did obtain SB 149 certification. The project was one of only 10 projects that will be granted certification from the Governor's Office and was the 1st transportation project in the state to receive the certification. They had to meet several criteria. That is why they are also doing a pilot project with the Mojave Desert Air Quality Management District to test out some hybrid locomotives that are tier 4 when they are moving up the grade and then in zero emission mode when they're coming into the yard. The project also cannot increase greenhouse gas emissions. They signed a Memorandum of Understanding with the California Air Resources Board to seek out and explore technologies to continue to reduce emissions in the state. They also signed project labor agreements to use labor union forces to build and construct the facility.

There were not any fiscal incentives from the public sector nor any county guidelines for this type of development. The city is working on it and working on annexing the property from the county.

Major challenges in development include CEQA, which takes years to complete and involves thousands of reviews. It was also difficult acquiring the land from the BLM. CDFW was also a very long process.

They currently have a lawsuit filed against the project from the environmental justice community and should be in court. They were supposed to start construction in November but will now be in court during that time. Because of SB 149, the court case must be resolved within 270 days versus lasting multiple years, as other cases have in the past.

They have been able to overcome these challenges through a strong communication plan, working closely with the agencies, getting in front of various people within the agencies, and then having other people in various agencies step forward to help. CalSTA and Go-Biz have been extremely helpful. GoBiz has also been supportive of the project and has helped open doors to have conversations with people. Congressman Obernolte was also very instrumental in helping to open up doors and have conversations at the federal level with the Bureau of Land Management. It took not giving up, being relentless, and finding the right people at the various agencies to talk to when they were faced with obstacles. Nobody thought they were going to get through CEQA in the time period that they did, which was unheard of. They found ways to continue to have conversations on the importance of this project and what it was going to mean to the State of California and to the supply chain. They continued to meet with various people that would help put them in touch with the right people to get them through obstacles. They managed to, for the most part, stay on their timeline towards starting construction this year. The litigants have asked for an injunction to stop construction, so they are still working through that process.

This project employs many green technologies, including a 140-acre solar farm using rooftop solar to make up for the electricity that Southern California Edison is not able to provide and zero-emission hustlers to move containers in and around the facility. There has been a big push for zero-emission locomotives, which are not currently available. One of the challenges is that there is not enough electricity out there to power electric locomotives. There is not even enough electricity to power the entire facility. That is why they are building the solar farm to supplement. Electric hybrid cranes are also planned.

The employment numbers are significant. On the construction side, throughout the state, the project creates 62,000 direct, indirect, and induced jobs. The other piece is the High Desert. A lot of people that live in the High Desert currently drive to southern California for work. The project reduces their vehicle miles traveled because they will work closer to home. Lena believed this is why all of the other adjacent High Desert communities supported the project. Some developers want to build in the area to support, not only the construction workforce, but the permanent employees. Lewis Homes, for example, has a plan to build homes. The economic benefits multiply. For example, with the new homes, the school district is looking at building new schools. BNSF is working with Barstow Community College to train the next generation that will be employed at the warehouses and the rail facility.

Lena encouraged looking at the CEQA Environmental Impact Report (EIR) where one could find a lot of more detailed answers to some of our questions. Read the Executive Summary.

Appendix C – Interview about TradePort California

Summary of interview with Simran Sangha, Principal Planner at Fresno Council of Governments; and Paul Herman, Deputy Director at Fresno Council of Governments, August 10, 2026

This project was previously more of a multi-county, multi-transportation planning agency project stretching all the way from Kern up to about Sacramento. It has been rebranded as TradePort California because there are so many inland port projects.

The key elements of TradePort California are goods movement, reduction of traffic congestion on State Route 99, overall efficiency for both the public and private sector for moving goods, and economic competitiveness. It would create more jobs, minimize pollutants, and positively impact public health.

Because California does not have a Port Authority as other states do, many ports operate very individually. In Phase One and Two of the feasibility study, Fresno COG looked at the cost of shipping out of the Ports of Long Beach, LA, Stockton, and Oakland. For agricultural goods, the Port of Oakland was favored but for other consumer products, the Ports of LA and Long Beach were more favored and traveled through the Alameda Corridor, who they looked at working with. For other goods, they already have a "micro" inland port system right now, but they have a lot of transloading congestion.

COVID exacerbated how poorly structured and inefficient the goods movement system was and how there were ships docked and empty container cargo going back to the ports. That is why they wanted to set up inland ports in the valley, primarily for agricultural goods. There was not much warehousing, but it has grown in the last five years.

A key driver of this project is the ability for an inland port to shift a lot of containerized goods and agricultural goods off of the trucking network and onto the rail network. Over the last five years, there has been a rise in the cost of delivering goods via truck because of the rise in cost of diesel. This effort is trying to change the paradigm to see more medium distance rail delivery. Typically, Fresno to LA would be seen as too short of a trip for rail but because the cost of trucking has grown significantly with diesel costs and labor costs, they are now seeing cost comparative or cost parity between freight rail and trucking. They are starting to see it become more and more advantageous to do medium distance delivery via rail compared to trucking. If there are enough deliveries, then a rail facility could be quite attractive to the local economic base, logistics firms, agricultural companies, Amazon, and these large retailers that have distribution centers in the valley. It becomes more and more attractive to have a rail delivery method from ports versus relying on the truck industry. TradePort California is synergistic with some of the investments in rail in California such as in Barstow and Southern California.

Discussions about the inland port started when the Port of Los Angeles Executive Director Gene Seroka approached California Forward, an economic development business-focused organization. Their chair was Pete Weber, who is local to Fresno. California Forward, through Gene Seroka's "brainchild", brought the idea forward to the San Joaquin Valley MPO directors. Initially, the concept was maybe making some sort of Port Authority and having it be similar to high-speed rail, but the state was reluctant to accept that concept, so it was sent to the MPO world. At that time, Fresno COG's former executive director took the project on for the eight valley MPOs, all the way from KernCOG through SACOG. The MPOs and the Air District contributed some match funding for a Caltrans Sustainable Planning Grant. They developed the first phase of the California Inland Port study to see how the MPOS would work together to see if this was a feasible concept. This was in 2020 during peak COVID and the supply chain challenges.

For the next steps, they completed the first phase. The Air District was involved and helped with some of the emission calculations. For the second phase, they received a grant from US DOT. They have a division at the federal level for public private partnerships. Since the State was not interested in creating a separate authority, they pursued having private enterprise step in and help develop this concept. They received a $1 million grant. They worked towards creating a Joint Powers Authority (JPA). This was a bureaucratic process and involved networking and lobbying in Sacramento and with the railroads in Omaha and meetings with the Ports of LA, Long Beach, and Stockton. The Port of Oakland did not want to be involved in that phase.

After that phase, they realized that nothing really came into fruition - no one really wanted to get involved with forming the JPA because the MPOS do not have land use jurisdiction. They got to a point where they realized only a municipality could really form the JPA, so that began the next phase. They received another grant from the US DOT. They decided to just bring the project closer to Fresno County but make it replicable throughout the valley. They have been working to find two prime locations in Fresno County where there is a Class I Railroad and State Route 99 and potential for development. They have been helping Fresno County municipalities to clear red tape by conducting initial environmental clearance, traffic analysis, and off-site development concepts.

Fresno COG has been the leading entity pushing the project to gain momentum.

Because of the supply chain challenges, CalSTA came out with $1.2 billion of Port and Freight Infrastructure. The project tried to go after some of that funding but was unsuccessful because there was no entity to award at that time. Castle Commerce was awarded with that program. The Port of Stockton also had some potential but was not awarded. Crows Landing in Stanislaus County also had some potential. Since then, the Wonderful Company has also made a huge investment in Kern County with their Schafter intermodal location with BNSF. There has been a lot of movement towards inland ports concepts, but a system of inland port has yet to be developed because they are all still working independently.

The original vision was to have four large inland ports and have satellite hubs away from State Route 99 and the Class I railroads in the most rural regions of the San Joaquin Valley and having all of them work together to get goods in and out of the valley via rail instead of trucks. If they were using trucks, those trucks were meant to be fueled by hydrogen or electricity. This is a very long-range vision for how they would perceive freight movement and goods movement to occur, especially given that the Valley faces the most negative pollution impacts from trucks.

Concerning determining where the ports would be located, the initial phases were more of a political process where whoever was willing to give them some ideas of where they would want to station an inland port in their county or in their region. Since that did not work so well, Paul and Simran have been working on something that looks more of the technical aspect. The TradePort California project needs to have a rail facility. One of the main components is the shift off of truck and onto more efficient rail-based delivery of cargo and freight. The key components would need to be existing infrastructure assets that are in place to support a facility of the scale they would need for this type of trade port and inland port.

Class I railroad access was critical. Union Pacific and BNSF are the two Class I railroads that run through Fresno County and San Joaquin Valley generally and State Route 99 is the primary freight corridor. So, they knew that they needed any facility that was going to be of any significant size and capability to have very good access to either one of the Class I railroads or both and then also State Route 99. They also did an evaluation of what industrial zoneage is already occurring in the San Joaquin Valley. They do not want to place a facility in the midst of a residential community and create all kinds of disruption. It

needs to be cited in a location that makes sense for the development of an inland port, and they believe that would need to be either within or just adjacent to an established industrial district in the Valley.

For the next step, because they could not find regional partners that wanted to put the trade port in their city or in their county, they decided to evaluate Fresno County. They layered on these aspects – railroad access, State Route 99 access, and industrial land use. Out of these criteria, they developed several sites at the preliminary stage. Initially, they developed about 7 sites along the State Route 99 corridor in Fresno County between the cities of Fresno and Kingsburg. The current feasibility study is going to advance two sites. They are doing traffic analysis and a high-level environmental review of what the constraints are. From that perspective, they are looking at on-site and off-site infrastructure needs. A facility of a certain size would need to have rather significant on-site and off-site infrastructure to allow for truck movements to occur to and from the sites. This is where they were at the time – they were in the final stages of their TradePort California Site Feasibility Study, which they anticipate delivering to their policy board in early 2027.

They used GIS and layered general plans and infrastructure to determine the location. They evaluated traffic flows, both freight trucks and regular light duty vehicles. A wide variety of different data was used depending on the task. They brought all the typical kinds of information when they did environmental reviews – biological, cultural, air quality, noise, etc. They refreshed their business model and considered the amount of truck flows coming in and out of the valley in Fresno County and whether the flows were agricultural goods or containerized goods. They looked at the cost of diesel fuel for both the railroads and trucking. They tried to understand the potential utilization for inland ports in Fresno County.

As far as pilot projects go, the consulting team (GLD Partners) helping to deliver this project has worked on these types of inland port projects throughout the county, especially on the West Coast, and are Fresno COG's advisors in terms of looking at what other states and jurisdictions have done and giving them advice. Fresno COG considers this first trade port as their pilot project. It would be the first of several inland ports throughout the valley. However, the project itself did not have any pilot projects. There has been a lot of activity and investment in the state over the last five years such as in Kern, Merced, ongoing efforts by the railroads, and more intermodal sites even in Southern California.

Concerning other types of development that helped enable the project, several projects were developed prior to the early stages. There were several interchange projects near the sites they are looking at. Most specifically, there are two interchange projects that are currently under development in south Fresno called the South Fresno Interchange Project at Cedar North at State Route 99 and American Ave at State Route 99. These are the two closest state route interchanges to the two sites that have advanced in the feasibility study. There would be other interchanges that would be utilized potentially for the projects and there would be other improvement projects that would likely happen. There are several interchange projects that are underway that would be supportive of the study.

In terms of all the railroad infrastructure, the sites were evaluated with the existing infrastructure so there is not a need for significant new spurs to access the site. They are both already adjacent to existing rail infrastructure, which was a key piece that made them viable from Fresno COG's perspective – they did not need an enormous rail investment in order to be activated. There are definitely some interchange projects within the Caltrans system that would benefit this project. They are just wrapping up their off-site infrastructure needs assessment that is evaluating what other kinds of roadway projects or things on the rail side such as storage tracks would be needed to support such a facility. So, there are projects both outside the actual study and then projects generated within the study itself that are envisioned as needing to be built in order to support one of these sites.

Regarding the role of government, the initial vision was to have the state lead. The project was then moved down to the regional level and then when the regional governments looked at it, it seemed like it

was something that a local government would have to lead. They have had all levels of government involved in the development. The MPOs were project managers and the different state agencies were involved, not just CalSTA and the transportation sector but CTC, who did an analysis of where they needed to have freight chargers along major corridors throughout California. There have been a lot of state initiatives that have aided the concept. Locally, they have had more invitations through corridors and intermodal interchanges.

They have a private inlet intermodal site in Fresno County called Van-G Logistics near Fowler, California. It is a privately operated intermodal site for the purpose of moving agricultural goods via rail.

There has been a lot of different areas of government getting involved with inland ports because even the economic development agencies throughout all the San Joaquin Valley and MPOs have chimed in because they see the potential for better jobs and access to inviting private investment into the region. Locally, regionally, and statewide, there has been a lot of involvement, but it ultimately falls on the local government because the state is not willing to replicate what they have done with high-speed rail. Concerning federal involvement, they have been a funding partner in a lot of Fresno COG's planning over the last five years. The federal government has funded planning in 2 separate grant cycles. They have been big champions of the project and have wanted Fresno COG to apply more but there is only so much jurisdiction that they have as a regional planning agency for transportation. For now, Fresno COG has put the project on a standstill until private companies get involved.

The ports have long sat within their advisory committee structure. They have advised on the project over the years. The origin of the project was through efforts from the Ports of LA and Long Beach to look at inland ports in the valley to potentially relieve some of the truck movements in and out of the port. The idea is that they could load a train quickly at the port itself, send it up to Fresno, and then have the trucking disperse from somewhere off site. It would relieve some of the truck congestion that they have within the port itself. They could quickly move a lot of containerized freight, as the vast majority of movements from LA and Long Beach are containerized goods. They could relieve some of the truck movements in and out of the ports, which are one of the busiest in the entire country. They are looking for relief.

No policies, legislation, or laws were created to support the port.

The project will need to follow the CTC's initiatives for clean fuel trucking for the state's climate goals, as well as CARB, the reduction of VMT, GHG emissions, SB 375, and clean fueling. They are positively aligned with these goals by getting trucks off the road and getting cleaner air. AB 98 will require a truck reroute study for all the local governments in California.

As stated before, they have received two rounds of federal grants. The first initial study wasn't even a grant. It was just all the MPOs and the Air District. It was barely $200,000. Then they received the Caltrans Sustainable Planning Grant. After that, they received over $2,000,000 from the Regional Infrastructure Accelerator Program that is managed by the Build America Bureau, which is a division of USDOT.

The development will need to follow the County General Plan and the City of Fresno's General Plan, as well as specific plans such as the South Central Specific Plan. There are also district studies that the port will need to follow, such as the Reverse Triangle study that Fresno COG did and evaluates Industrial development in the Reverse Triangle, which is where SR 99 and SR 41 merge together. It is a heavily heavy industrial area. There are several general plan specific studies and COG studies that have helped form the basis for a lot of the work from a land use and transportation network perspective.

Some major challenges that were faced in developing the project include trying to form a JPA amongst regional governments. This is not seen to be viable. The governance piece has really been one of the trickier aspects of this whole process because developing a regional concept for an inland port network

has not really been done before. It's usually individual communities, jurisdictions, or counties working with very specific businesses, logistics firms, or railroads. This was envisioned as a network at the beginning and over time they had to hone it down into a very specific location to see something come to fruition. As an MPO, they do not have land use authority. They cannot tell the city or county to change any of their land use. Their jurisdiction is in transportation plans and funding. So, while that is a key component of any kind of inland port, they do not have direct authority to cite, place, and build an inland port facility itself.

It has been a particular challenge to find a willing partner from a land use perspective. It is a bit like the chicken and egg. The jurisdictions want to see their study to see what locations they would advise from a transportation impact perspective. Given how many truck movements would be coming in and out, what the rail disruptions would be, and how many train movements would access the site, it made a lot of sense for them to evaluate the port from a transportation perspective.

They envision that the actual operations of a facility like this would likely be a railroad, a logistics company, or a consortium of the two. Because Fresno COG is not a traditional port like Stockton, Oakland, LA or Long Beach, they do not have the authorities granted a traditional port in California. The authority could ultimately come from a partnership of different companies and the government. Fresno COG can support, get grants, and conduct engineering and developing transportation projects that would be supportive. However, they don't see themselves as operating a trade port facility in the valley.

They do not know for certain at this point if any innovative practices will be employed at the port though the goal is to use clean fueling technologies such as hydrogen and battery drayage for trucking. On the railroad side, they are looking at cleaner fuel battery switchers and electric equipment to move containers on and off the railroad, off trains, and off trucks. A lot of the port would run off electric power, so they will likely need solar and off-site battery storage in order to keep the facility operating. They do not have specifics on the number of solar panels or battery storage or any of that because they have not gotten to that level of detail yet.

The study envisions warehousing, cold storage, tenants, and all the typical logistics facilities you would expect in proximity to an inland port but depends on a consortium or developer to actually execute the facilities. It is market-driven. The study is at a high level, looking at where the facility is likely to be cited given the infrastructure constraints. It does not say what amount of square footage there will be for any particular type of facility such as warehouse space or cold storage space. The study projects goods movement on a high level and estimates what is the truck flow, what are the train flows, etc.

If a private group came along and wanted to develop one of the sites, supportive infrastructure through funding like PFIP could be applied for. The group would need to be committed to building the port and then Fresno can be supportive with grants. Fresno COG is not a government entity like a port, city, or county with the authority to dictate what projects would be built. They are a long-range planning organization, not a development organization. They do not operate anything. The port will likely ultimately be operated by a private corporation or railroad.

Paul always envisioned that it would be one of the Class I railroads, at least from the rail side. He thinks it would develop similarly to the Wonderful Company in Shafter which developed a lot of infrastructure and warehouses. It was led by one company (the Wonderful Company) which owned the land, cited everything, and worked with their local county (Kern County) and the City of Shafter to develop the location. Fresno COG envisions a similar project with a consortium. The problem in Fresno is that there is not a single landowner. Ownership is very fragmented in Fresno County while in Kern County, the Wonderful Company owns millions of acres of farmland. It was a lot easier for them to own all aspects of development of an inland port site and operation, partner with the railroad, and lead the entire process. In Fresno County, ownership is fragmented, so there would likely need to be an outside developer that

comes in, purchases the necessary land, and then works with other logistics firms to actually operate the site.

The hope is that someone will take on this project and then Fresno COG can move on to the next port in the network. Shafter could also fold into the network. That network is already happening organically. It is not the top down approach that was first envisioned 5-7 years ago when the project was initiated. Stockton already has Class I railroads and quite extensive intermodal facilities near Lathrop. The BNSF outside of Stockton has very significant intermodal facilities. In South Merced, the Castle Air Force Base is beginning to develop as a smaller “mini” inland port on its own. It has been advanced by Patriot Rail. And then in Shafter, like previously mentioned, the Wonderful Company has stepped up and developed an inland port concept. So, between Merced and Shafter, we need Fresno to fill a gap in the valley that could work with these other inland ports for different customers.

In Northern California Stockton serves a lot of the Bay Area. It has access points into Oakland and moves goods from the Midwest into California. Stockton is kind of the last stop along the way from train that originates in Chicago or Kansas City.