



West U.S. Largest Small-Item Sortation Distribution Center (DC)
BFL Intl Airport – 4-story, 2.6M sq. ft. on .64M sq. ft. footprint



7 Challenges for Inland Ports in California

- I. Class I railroads (BNSF & UP) 300-750 mile minimum shipping distance
- II. Balancing export / import priorities at seaports
- III. Re-shoring manufacturing trend
- IV. Inland Empire full / more centralized distribution warehousing in Central Cal
- V. LA's congested rails / ports
- VI. Spoke & hub connectors / road maintenance needs
- VII. Street turns: Minimizing empty truck/rail trips



West U.S. Largest Perishable Grocery DC
Shafter, CA/BNSF – 5-story, .6M sq. ft.



Overview - Inland Port Efforts in California

- Barstow BNSF International Gateway – Barstow to Ports of LA/LB
- Shafter Inland Port/Wonderful Industrial Park – Shafter-Ports of LA/LB & Oakland
- Mojave Inland Port – Mojave to Ports of LA/LB
- Merced/formerly Castle AFB Inland Port – Manufacturing Center
- California Inland Trade Port – Stockton/Fresno/Shafter-Ports of LA/LB & Oakland
- Valley Inland Port Study – 2-3 SJV Inland Ports-Ports of LA/LB
- McFarland Industrial Park – McFarland-Ports of LA/LB & Oakland on UP
- Patterson Inland Port – Patterson-Port of Oakland
- CIRRUS Study – Stockton-Port of Oakland
- Tejon Ranch Rail Spur – Tejon to Ports of LA/LB
- Others?

BNSF Stockton Intermodal Facility

Image © 2023 Airbus

Class I RRs Have Final Say – Profitability Is Key

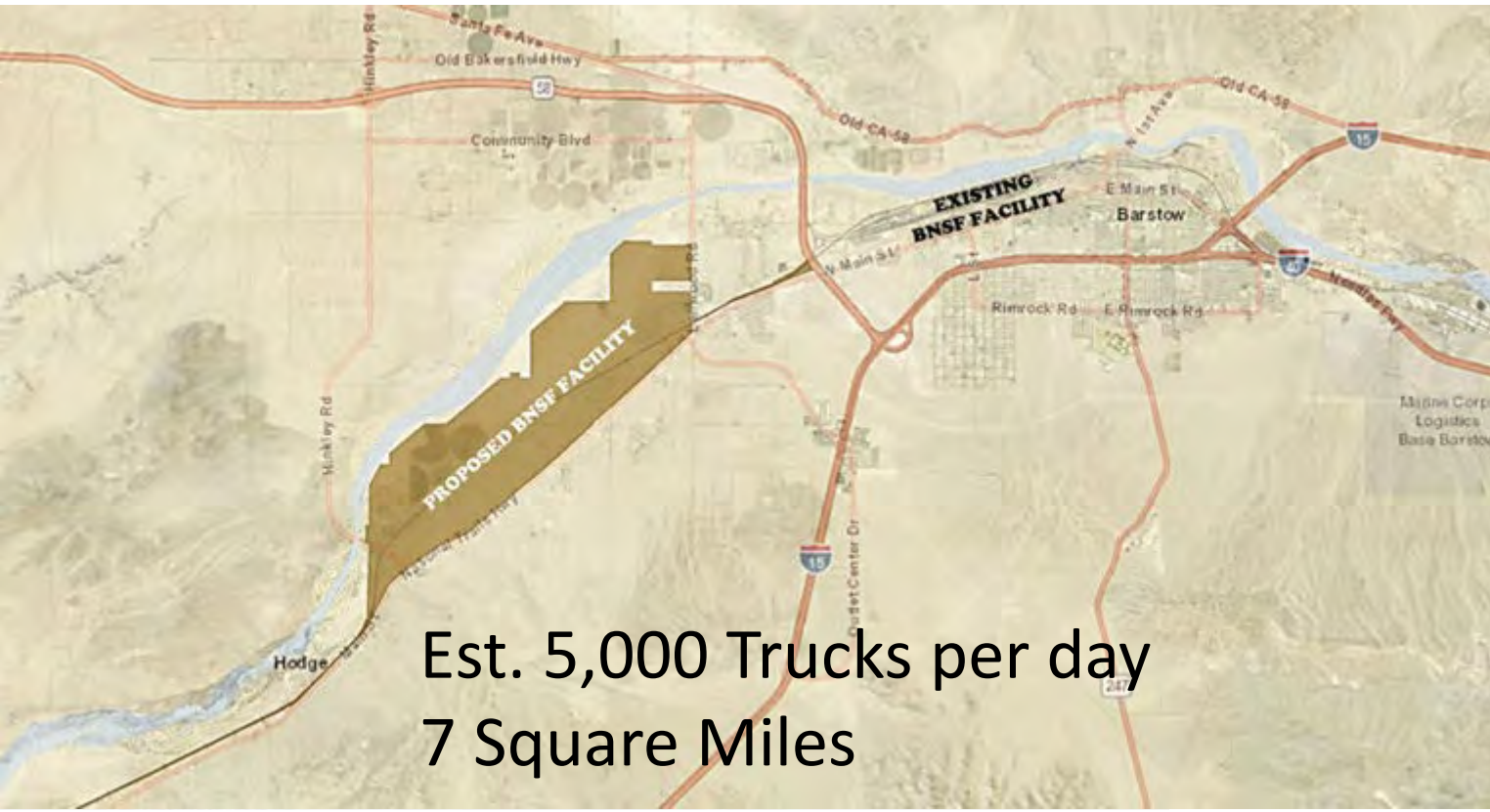
Google Earth

Imagery Date: 5/10/2023 37°53'27.40" N 121°08'59.45" W elev 61 ft eye alt 9124 ft

BNSF Barstow Intl. Gateway Inland Port

<https://www.bnsf.com/news-media/news-releases/newsrelease.page?relId=bnsf-to-build-new-integrated-rail-complex-in-barstow-to-increase-supply-chain-efficiency-nationwide>

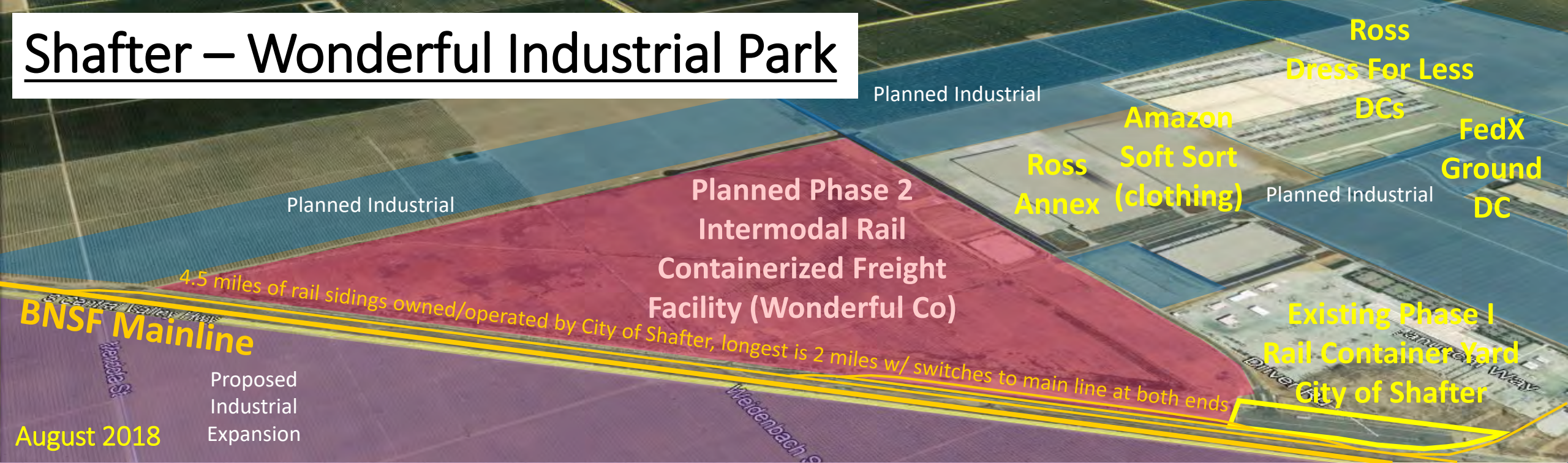
1.5B Investment



Est. 5,000 Trucks per day
7 Square Miles



Shafter – Wonderful Industrial Park

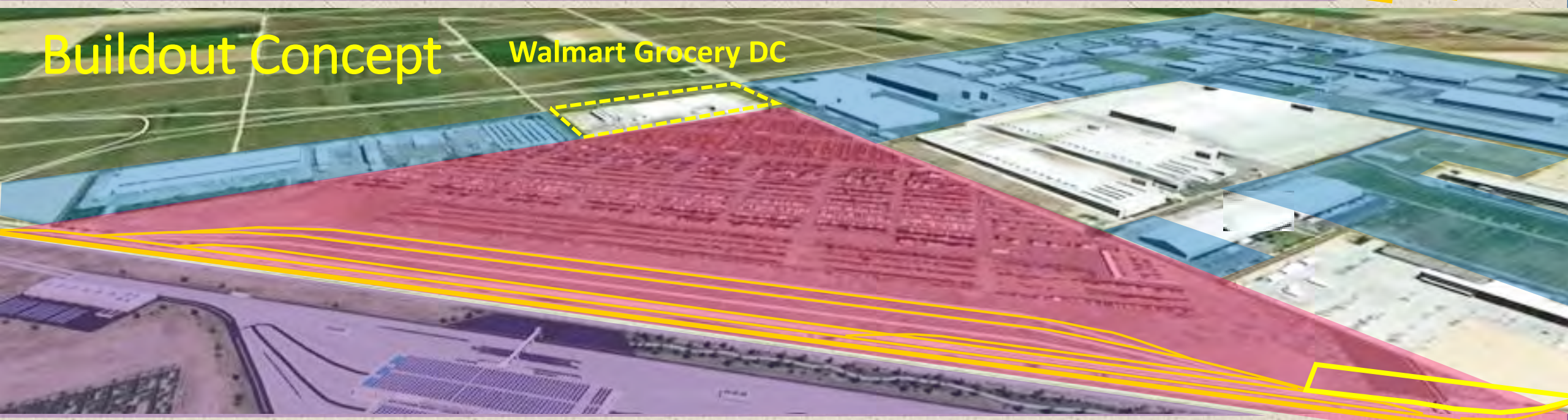


August 2018

Proposed Industrial Expansion

Buildout Concept

Walmart Grocery DC



Mojave Inland Port <https://www.mojaveinlandport.com/>

Construction Quick Facts

Kern County



\$113.0 Million Construction expenditures for the Project are expected to generate \$113.0 million in economic output

\$41.1 Million \$41.1 million in labor income

\$5.1 Million \$5.1 million in state and local tax revenues

662 662 jobs supported

Los Angeles County



\$12.7 Million Construction expenditures for the Project are expected to generate \$12.7 million in economic output

\$41 Million \$41.1 million in labor income

\$0.7 Million \$0.7 million in state and local tax revenues

53 53 jobs supported

Operations (Recurring Yearly) Quick Facts

Kern County



\$491.7 Million Once operational, projected annual expenditures are expected to generate \$491.7 million in economic output



\$28.2 Million \$28.2 million in state and local taxes



2,675 2,675 jobs supported

Los Angeles County



\$38.5 Million secondary effects are expected to generate \$38.5 million in economic output



\$1.9 Million \$1.9 million in state and local taxes

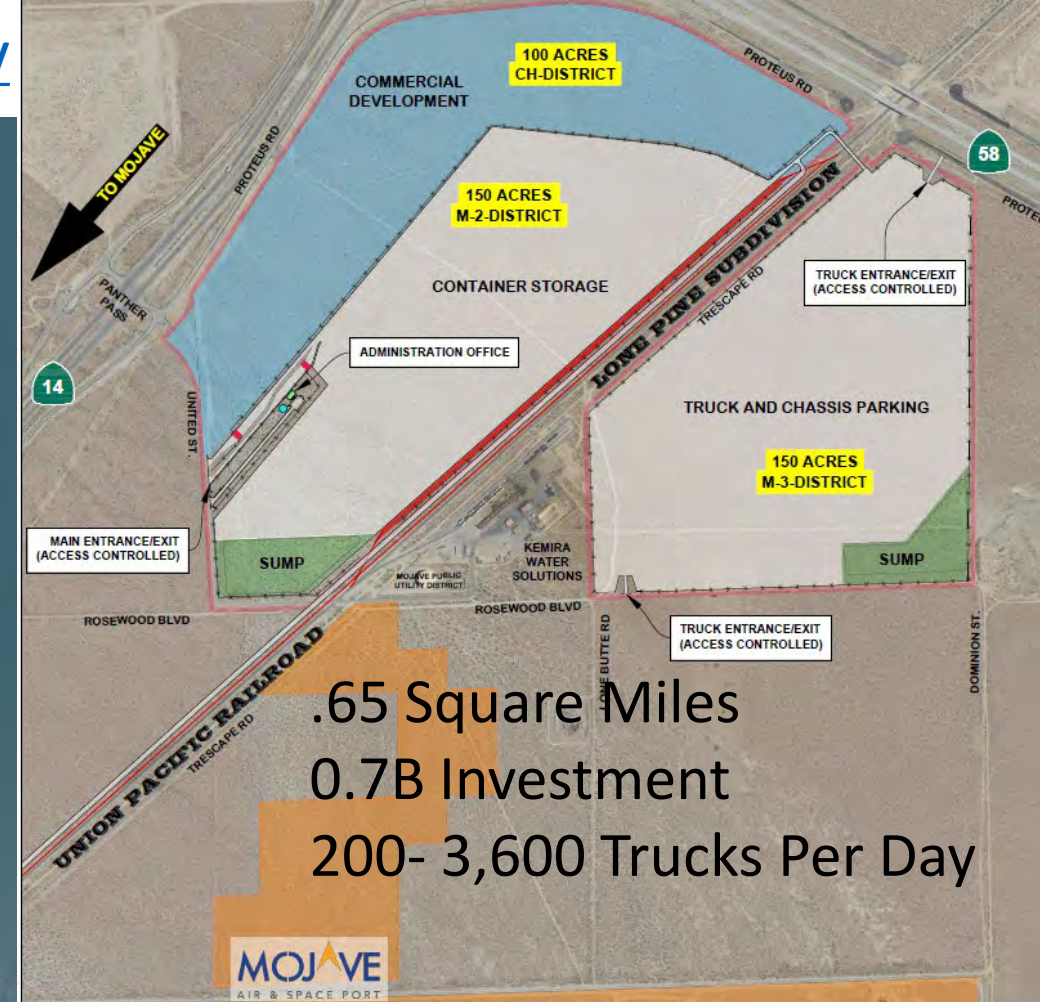


176 176 jobs supported

Prepared By:



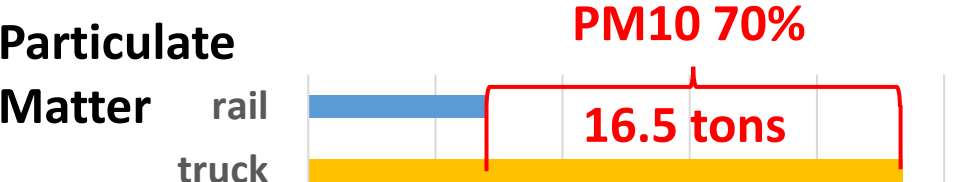
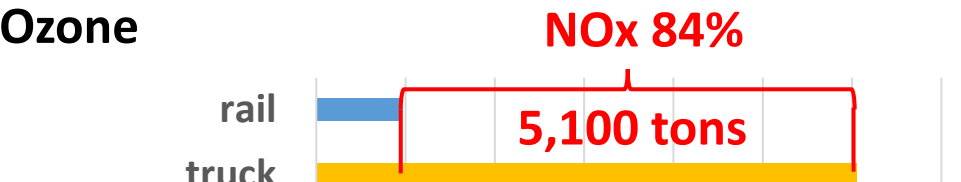
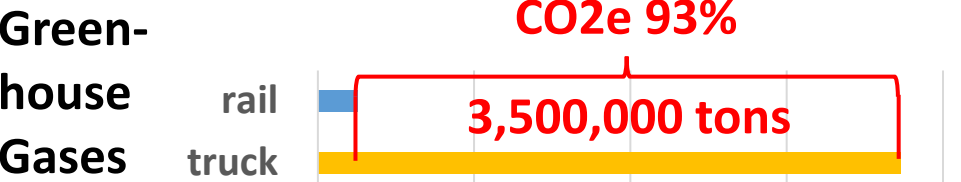
BEACON
ECONOMICS



.65 Square Miles
0.7B Investment
200- 3,600 Trucks Per Day



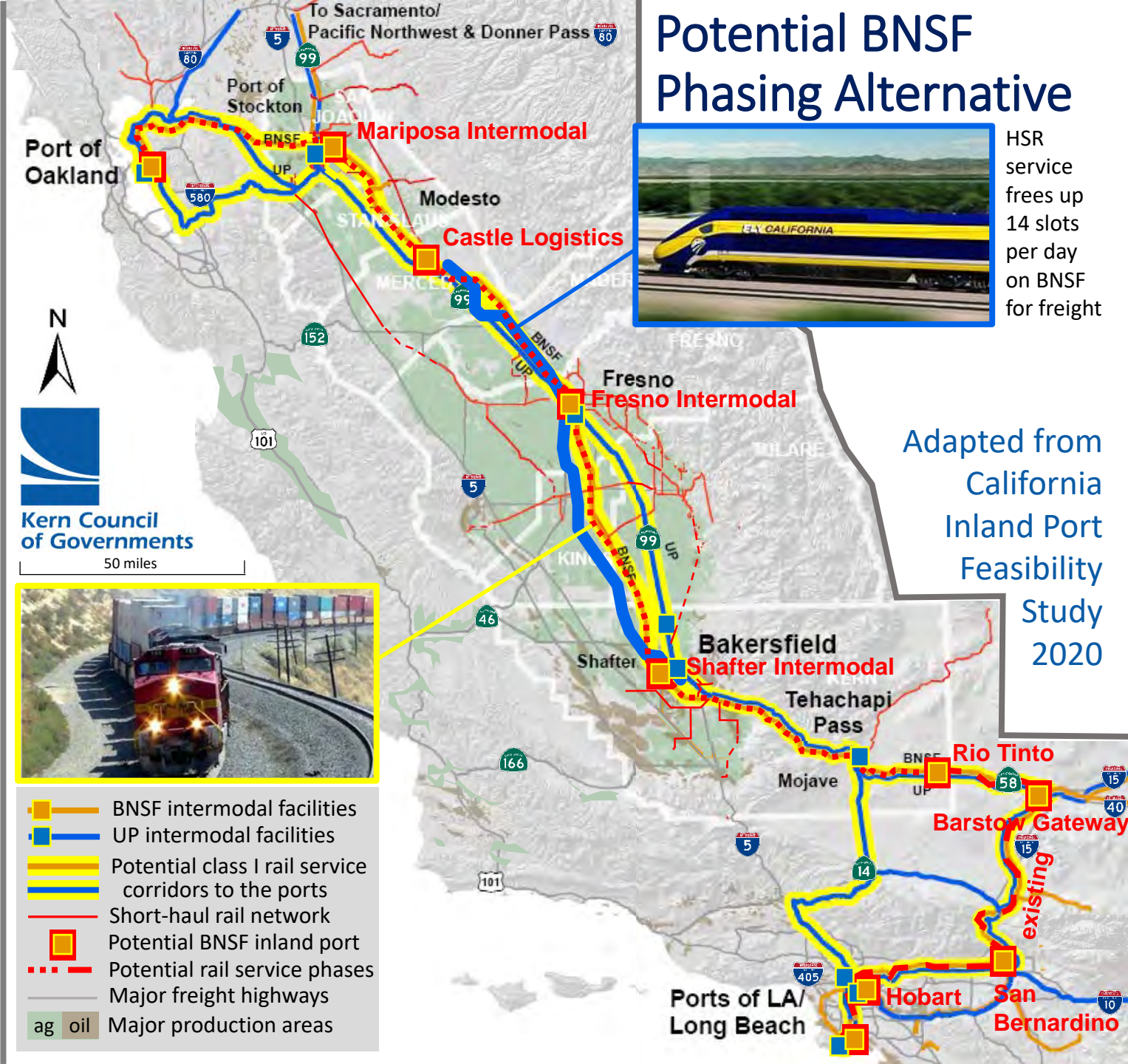
Potential Rail Freight Service Annual Emission Reductions



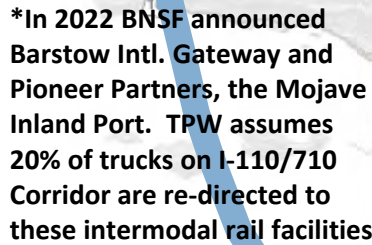
Assumptions:

- 250 truck trips removed per train
- 2010 train emission rates

Source: SJVAPCD, California Inland Port Feasibility Study 2020



Adapted from
California
Inland Port
Feasibility
Study
2020





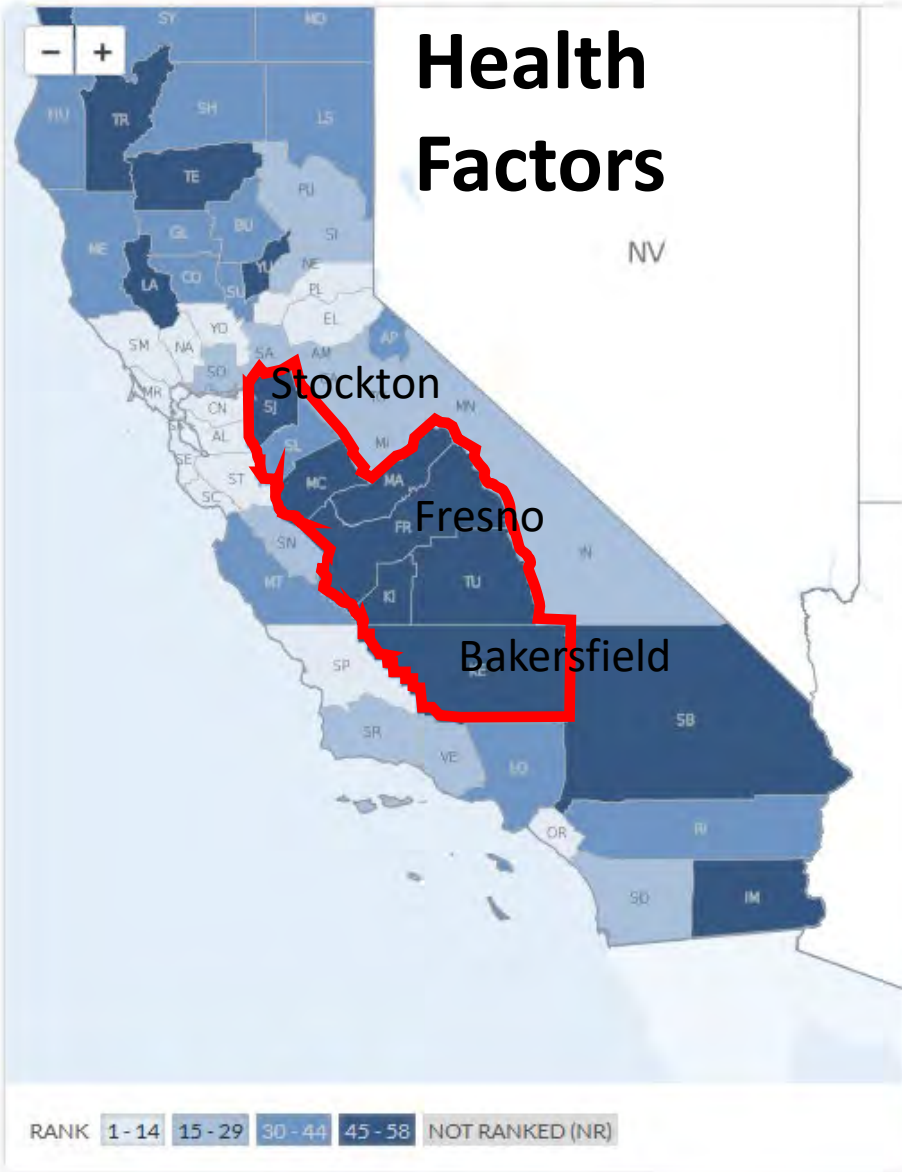
COUNTY HEALTH RANKINGS:

All but 3 of the poorest health counties in CA are in the Central Valley according to the Robert Wood Johnson Foundation

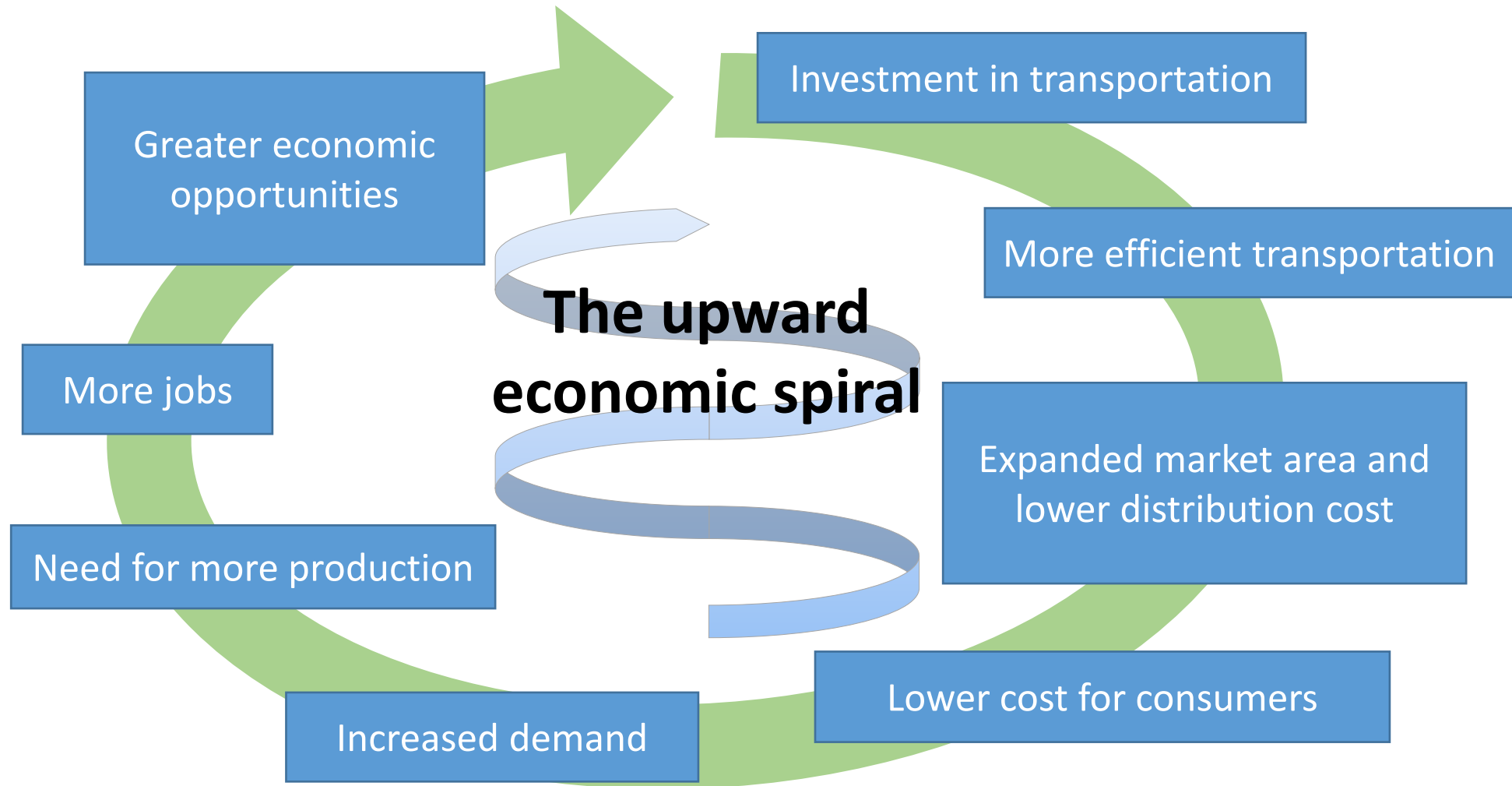
Overall Rankings in Health Outcomes ⓘ



Overall Rankings in Health Factors ⓘ



How a Well Funded Transportation System For Goods Movement Drives the Economy



Challenge I. - Class I railroads (BNSF & UP) 300-750 mile minimum shipping distance – Rail versus trucking

Key factors: profitability, shipping-time and reliability



- **Profitability:** Drayage movements to/from inland port, and the “lift” loading/unloading costs for rail can add as much as 1/3rd to a rail rate
- **Shipping-time:** Load/unloading trains can add ¼ to ½ day
- **Shipping-time:** Circuitous rail routes between Central Cal & LA Ports are up to double distance compared to trucking
- **Reliability:** Too many players--Complex shipper/receiver/truck/rail/container-group multi-entity agreements
- **Reliability:** Truck/rail worker shortages affect reliability
- **Reliability:** Empty container/chassis/rail car availability

Source: <https://www.freightwaves.com/news/commentary-will-short-haul-intermodal-rail-ever-work> Dec. 2019

Challenge II. – Balancing exports/imports at seaports

San Joaquin Valley Produces

- Value of agriculture goods = \$24 Billion
- Supports food/beverage processing = \$34 Billion
- A wet year can add \$5 Billion to the state economy
- Benefits the poorest communities in the state, sometimes

Challenge III. – Reshoring Manufacturing Trend

EIR for proposed steel micro mill near Mojave with 400 jobs expected Nov. 17

By CLAUDIA ELLIOTT For Tehachapi News Nov 7, 2023



Pacific Steel Group has proposed a micro mill to produce steel rebar to be built near Mojave.

Courtesy of Pacific Steel Group

New Micro Steel Mill is Competitive Despite Low Steel Prices

CMC announces construction of new micro mill in Oklahoma with \$250 million investment.

WRITTEN BY



James Anderton

PUBLISHED

Aug 06, 2015

READING TIME

~3 mins



[LISTEN TO STORY](#)



Challenge IV. - Kern is Seeing Spillover From the Inland Empire

Tejon Ranch
has less
congestion,
shorter travel
times/cost to
the Port of
LA/LB,
compared to
the Inland
Empire.

Inland Empire is filling up, freeway congestion is bad, and property costs compared to Kern are more than double.

Beaumont (I-10/SR60)

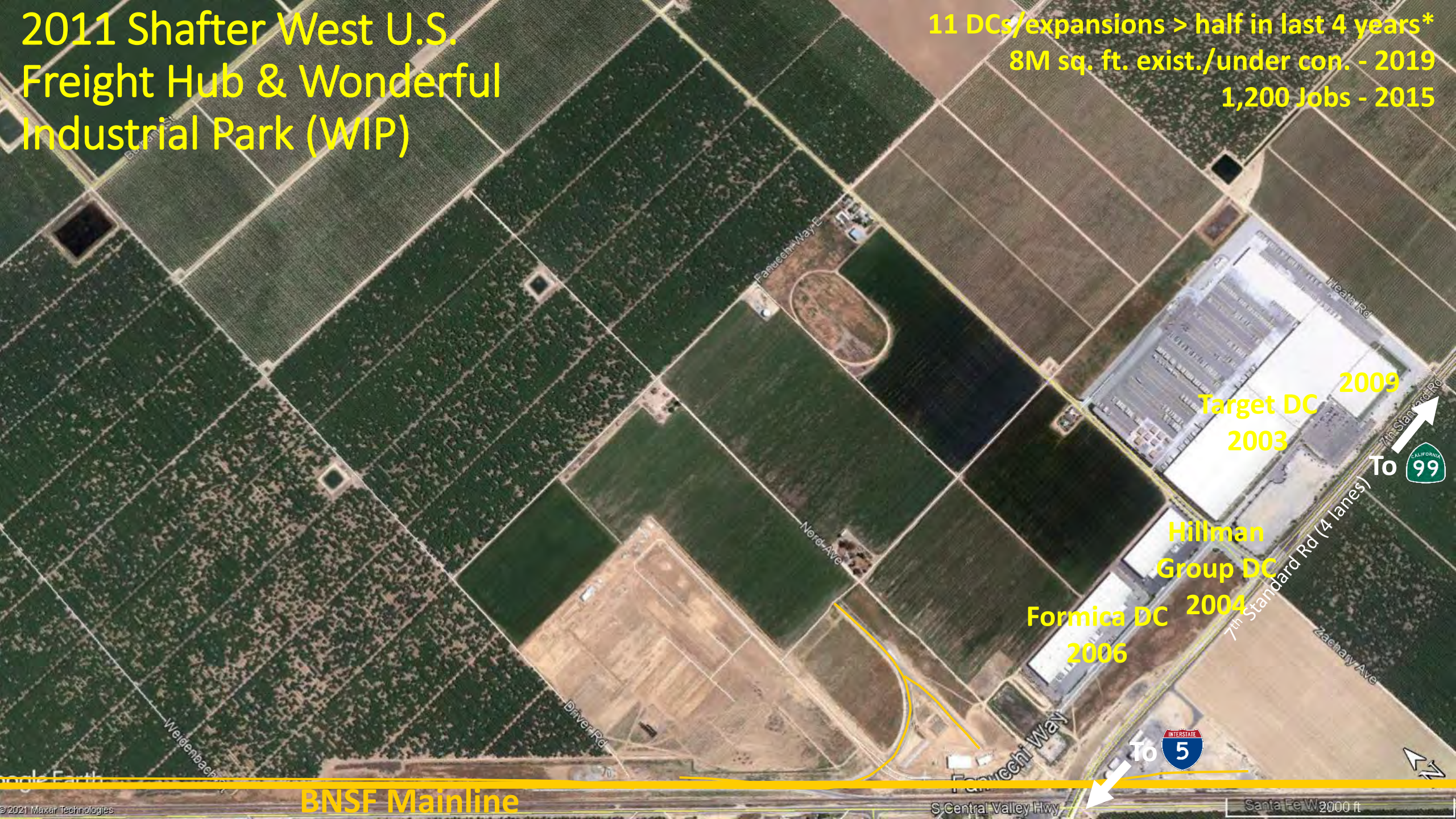
Ports of LA/LB The Ports are a significant destination for warehousing and manufacturing loads.

The 3 Newest Walmart Automated Perishable Grocery DCs



2011 Shafter West U.S. Freight Hub & Wonderful Industrial Park (WIP)

11 DCs/expansions > half in last 4 years*
8M sq. ft. exist./under con. - 2019
1,200 Jobs - 2015

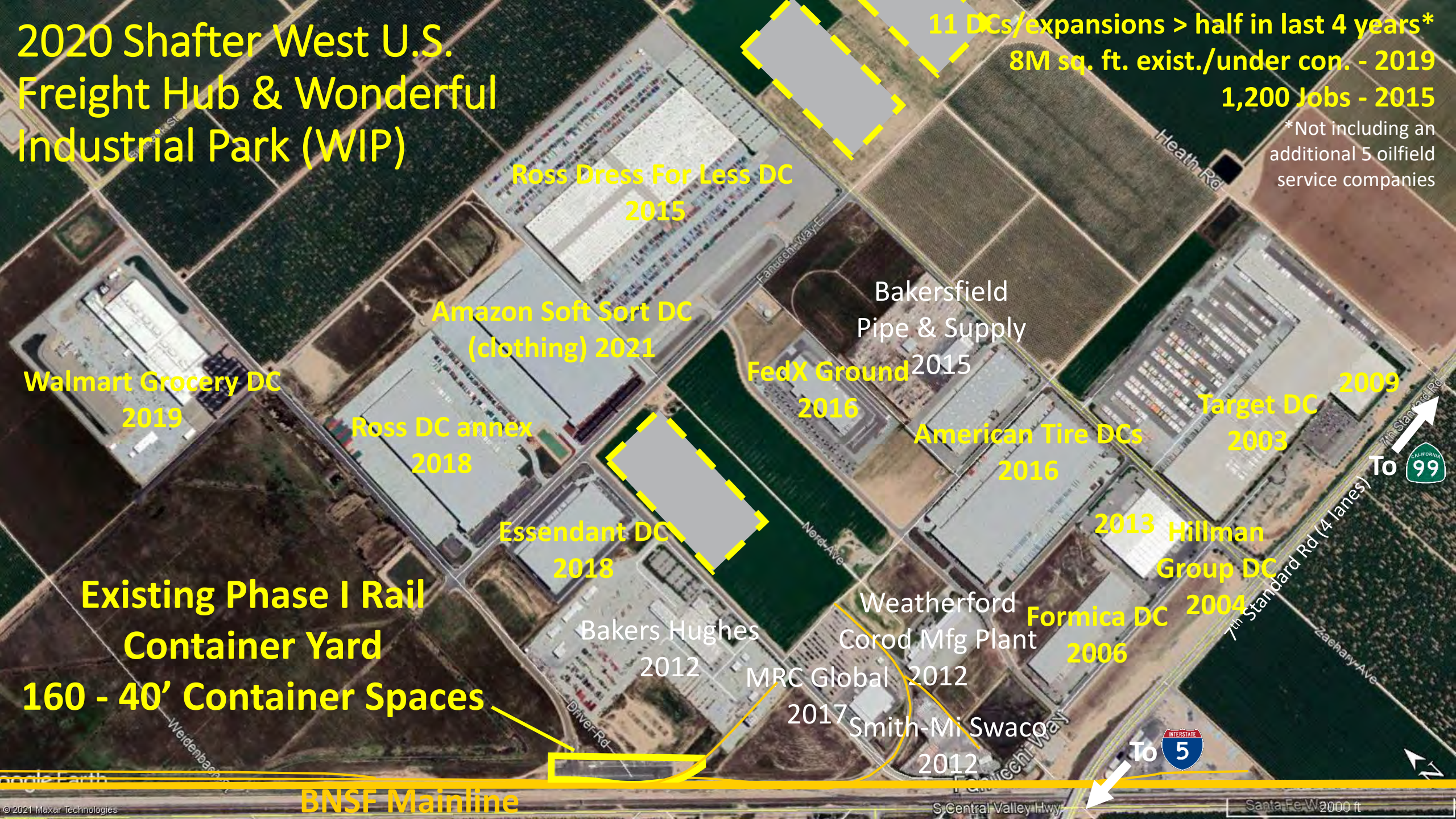


Target DC
2003

Hillman
Group DC
2004

Formica DC
2006





**2020 Shafter West U.S.
Freight Hub & Wonderful
Industrial Park (WIP)**

11 DCs/expansions > half in last 4 years*
8M sq. ft. exist./under con. - 2019
1,200 Jobs - 2015

**Not including an
additional 5 oilfield
service companies*

**Ross Dress For Less DC
2015**

**Amazon Soft Sort DC
(clothing) 2021**

**Walmart Grocery DC
2019**

**Ross DC annex
2018**

**FedX Ground
2016**

**Bakersfield
Pipe & Supply
2015**

**American Tire DCs
2016**

**Target DC
2009**

**Essendant DC
2018**

**2013 Hillman
Group DC
2004**

**Existing Phase I Rail
Container Yard
160 - 40' Container Spaces**

**Bakers Hughes
2012**

**Weatherford
Corod Mfg Plant
2012**

**Formica DC
2006**

**MRC Global
2017**

**Smith-Mi Swaco
2012**

BNSF Mainline



Challenge V. - LA's Congested Rails

Rio Tinto starts producing lithium in California from old mining waste

By DAVID STRINGER | BLOOMBERG

Los Angeles Times

OCT. 25, 2019 | 1:37 PM



Rio Tinto's borax mine in Boron, Calif., in 2010. The company is reprocessing mining waste to extract lithium, which can be used in rechargeable batteries. (David McNew / Getty Images)

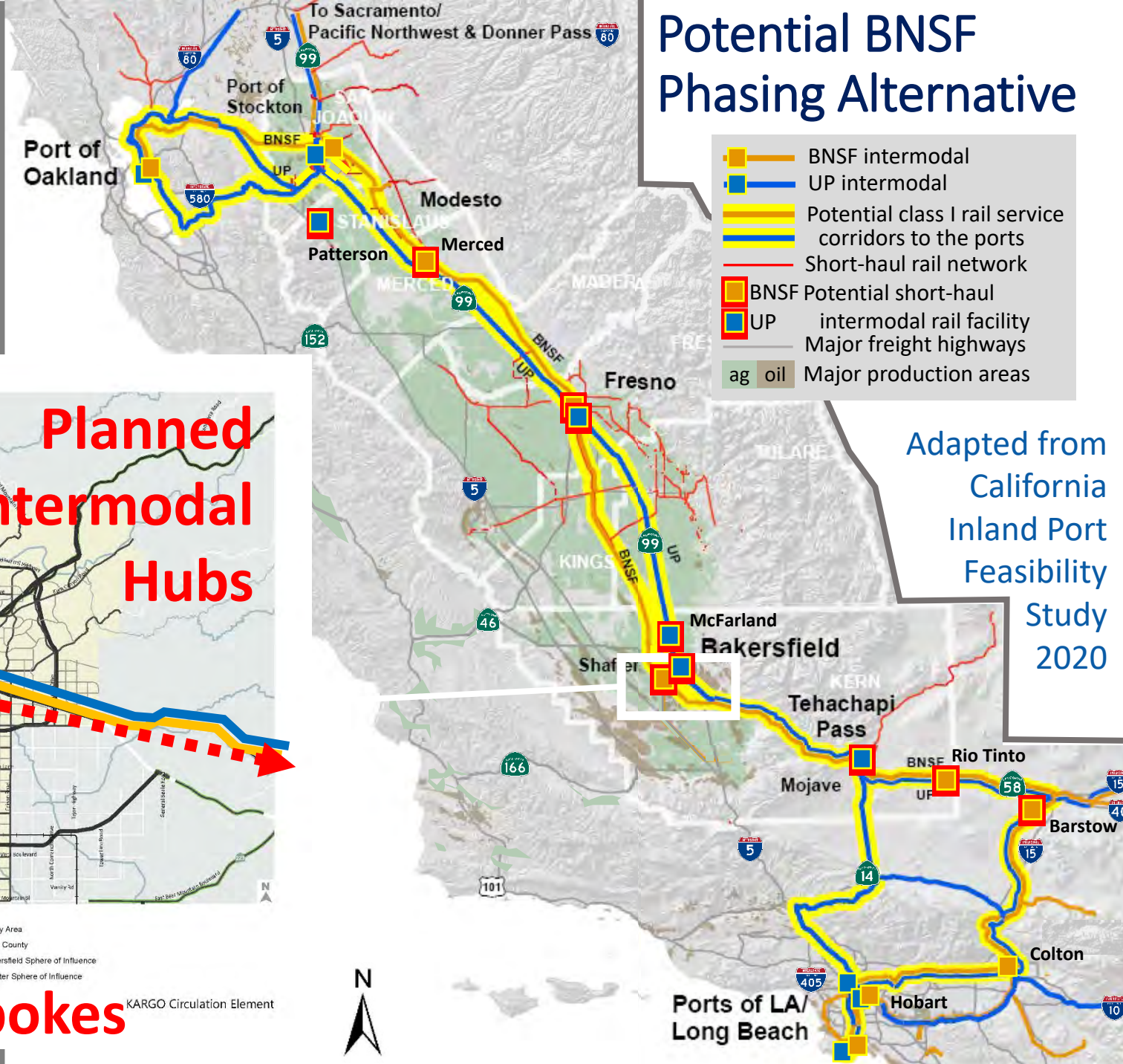
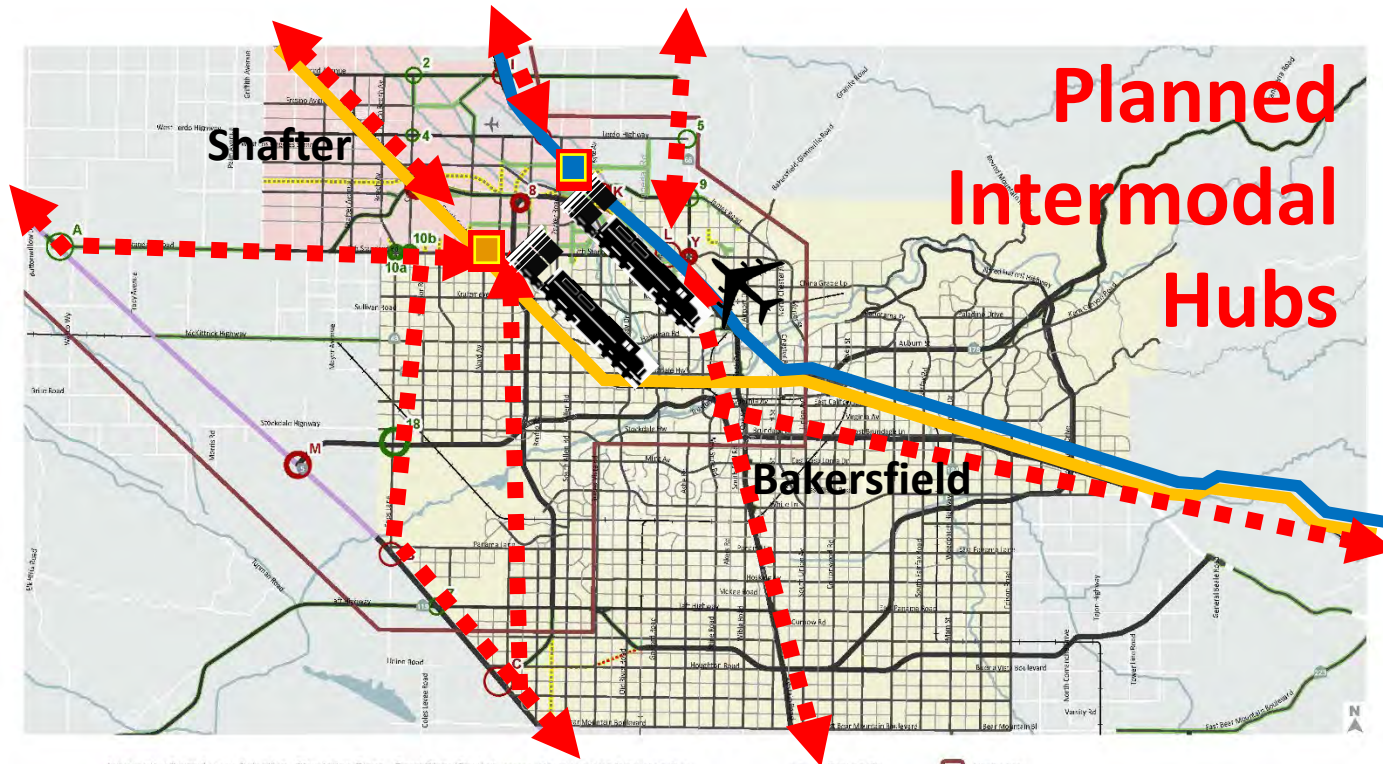
Potential Autonomous Electric Haulage Vehicle



BNSF Operates 7 trains per week betwn.
Rio Tinto in Boron and the Port of L.A.

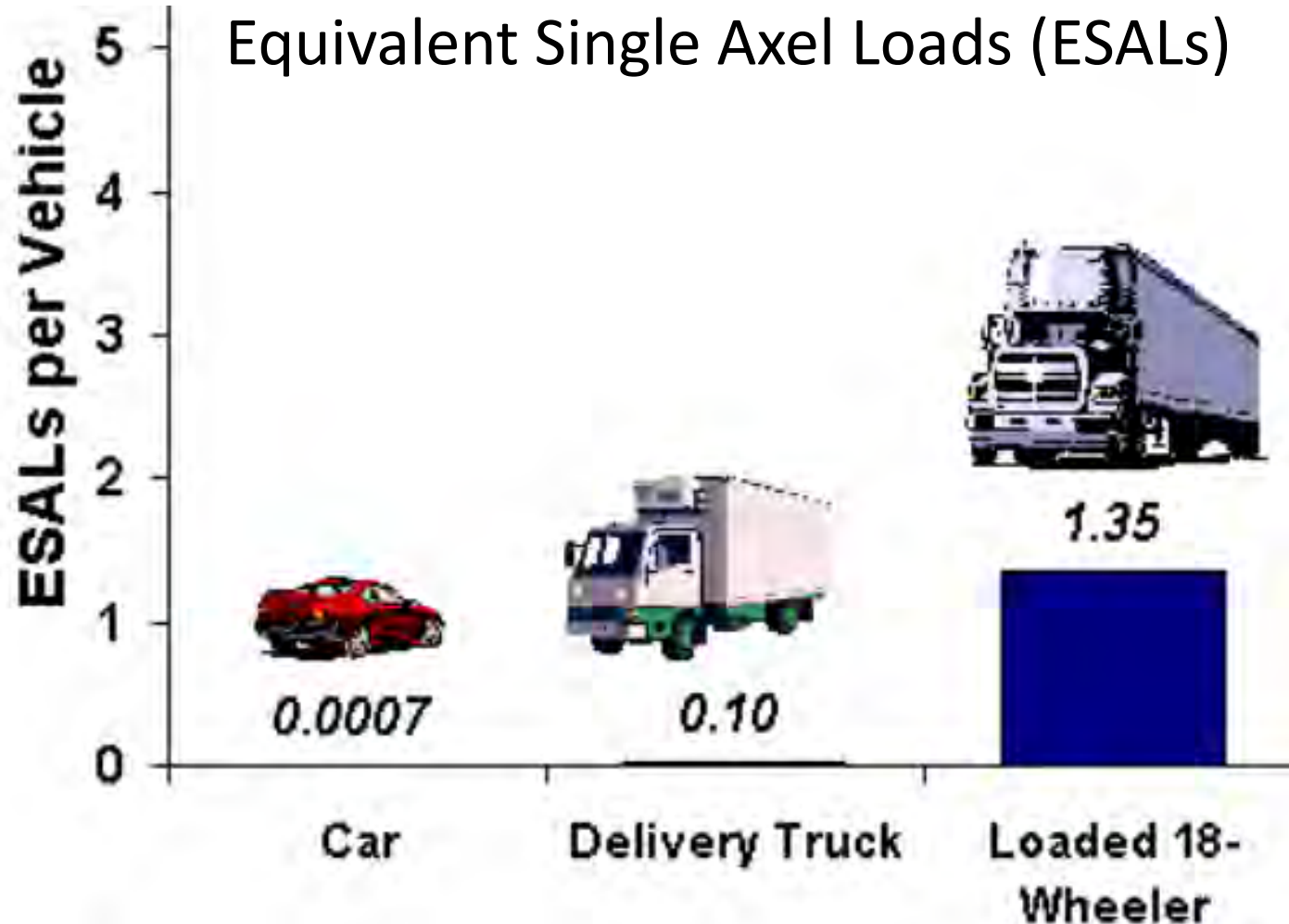


Challenge VI. – Hub & spoke connectors / road maintenance needs



One Loaded 18-Wheeler = 3,000-10,000 cars of road-wear on the highways

Equivalent Single Axel Loads (ESALs)



Note that a 5-axel truck typically pays 48 times what a passenger car pays in federal fuel taxes. Consumers see lower store prices because this apparent but disputed subsidy to trucking.

<https://cdllife.com/2021/ooida-ata-team-up-to-combat-deeply-concerning-truck-only-0-25-vmt-tax-plan/>

Truck Zero Emission Vehicles (ZEVs) Are Part of the Solution



264-475
kWh



475
kWh



653
kWh



900
kWh



396
kWh

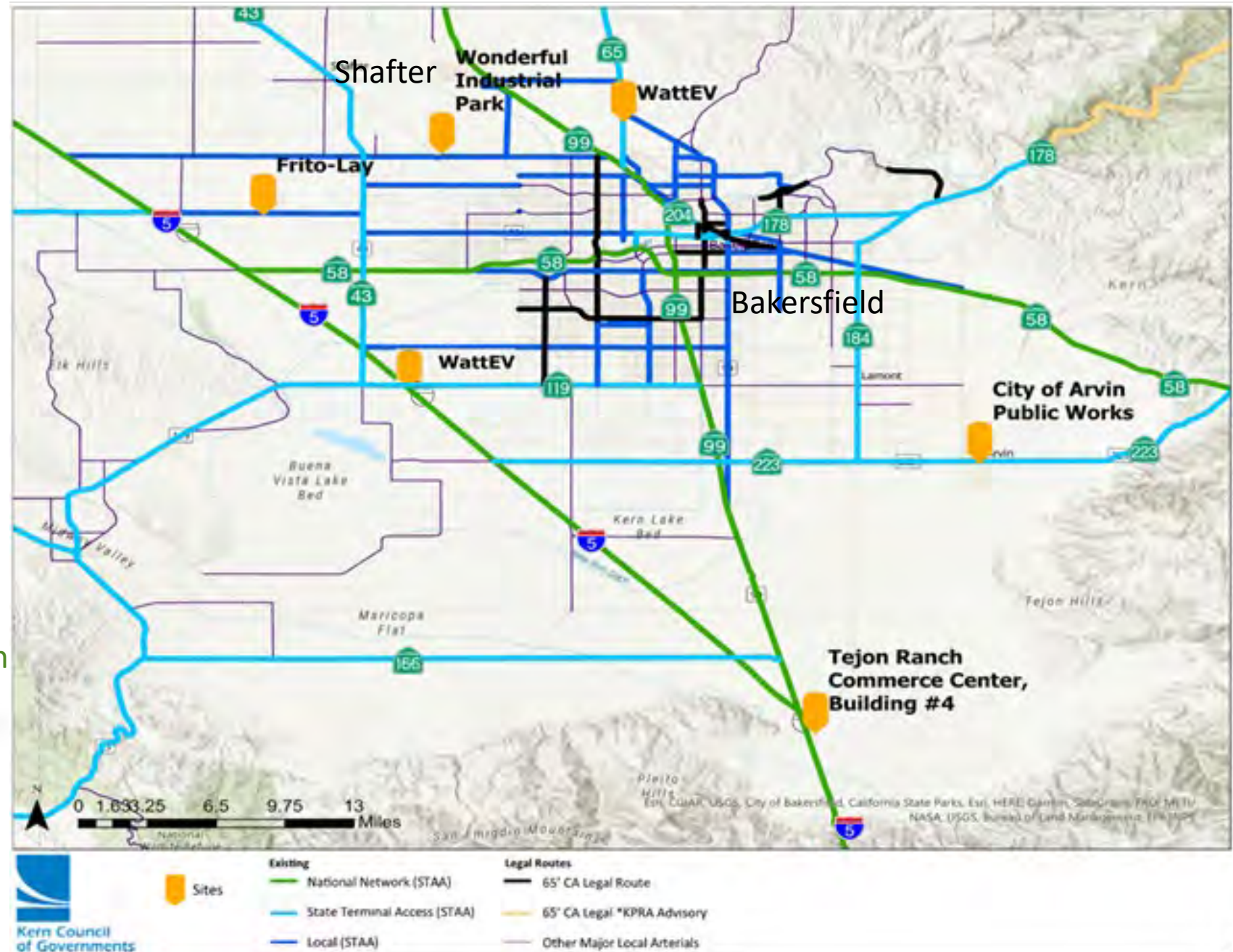


753
kWh



220+
kWh

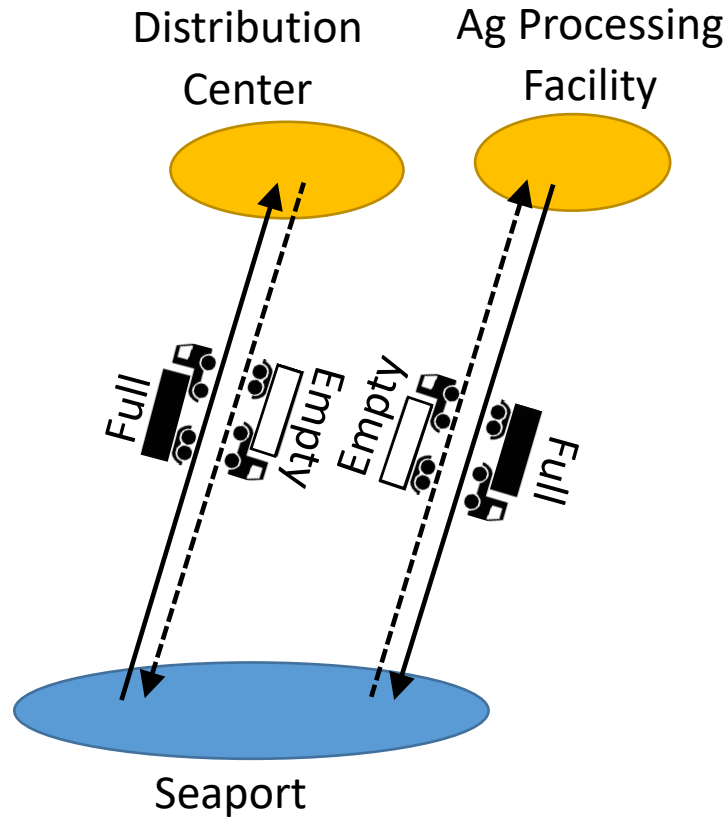
Figure 8.3 Kern High Priority Medium- and Heavy-Duty ZEV Infrastructure Projects



Challenge VII. - Minimize Empty Truck Trips

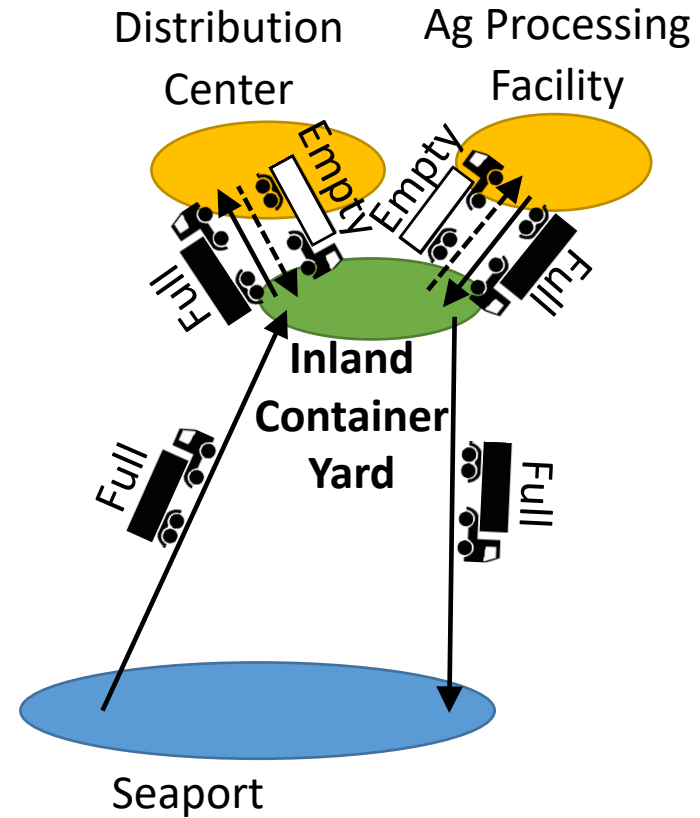
Goods Movement “Street-Turn” Strategy

Before Street Turn



Today – Empty containers passing each other on I-710, I-405 & I-5

After Street Turn

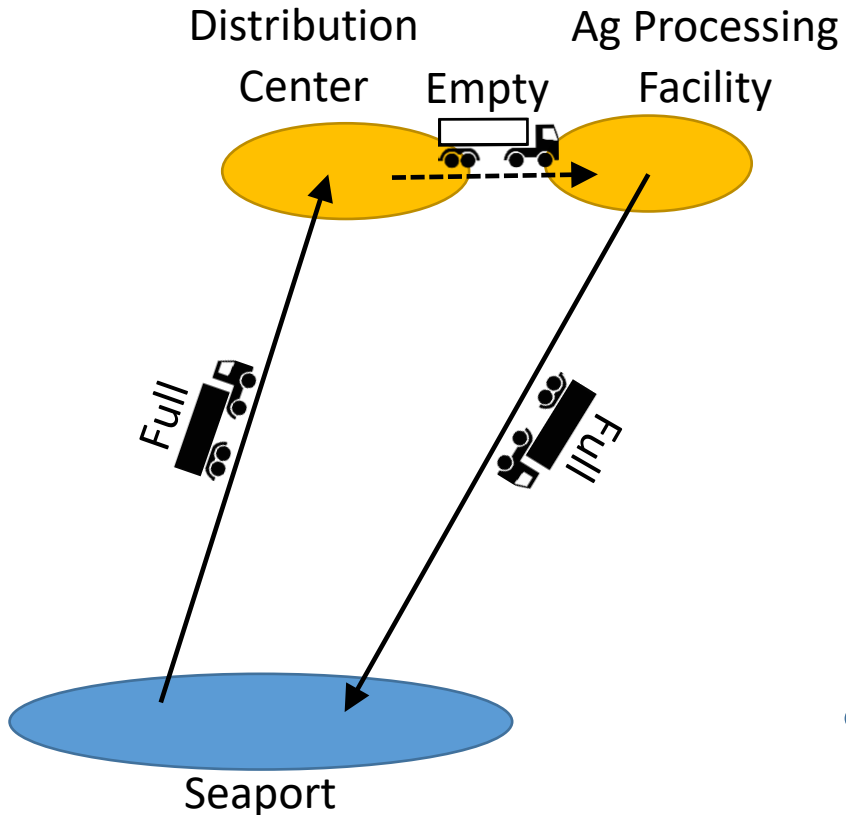


Save up to 40% in shipping costs, VMT, port congestion, road wear & tear, and emissions

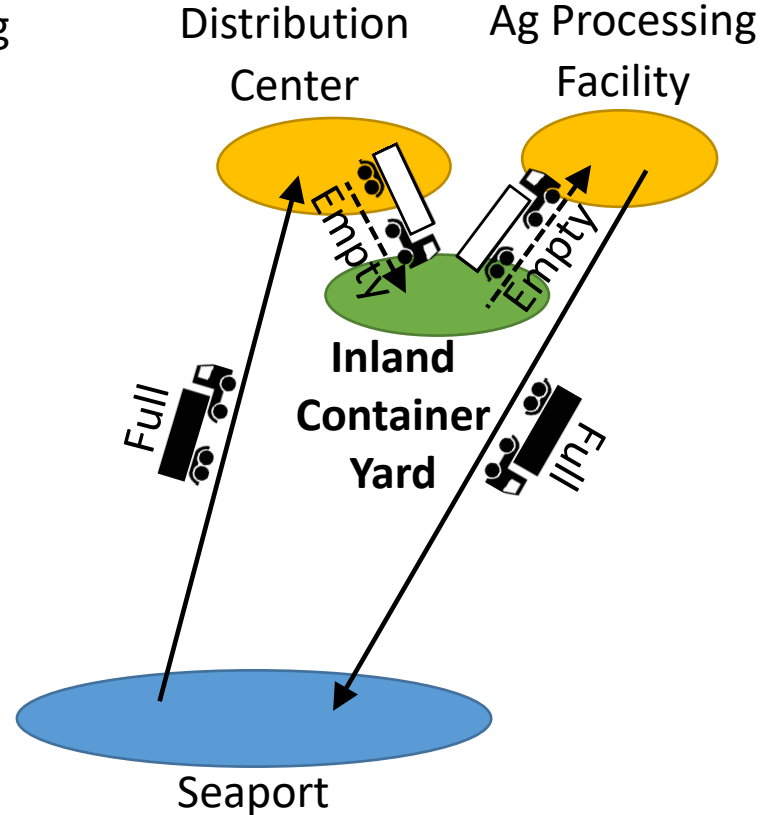
More Efficient Street Turn Variations

A. Virtual Container Yard

(needs public cloud supply chain solutions and/or block chain solutions)

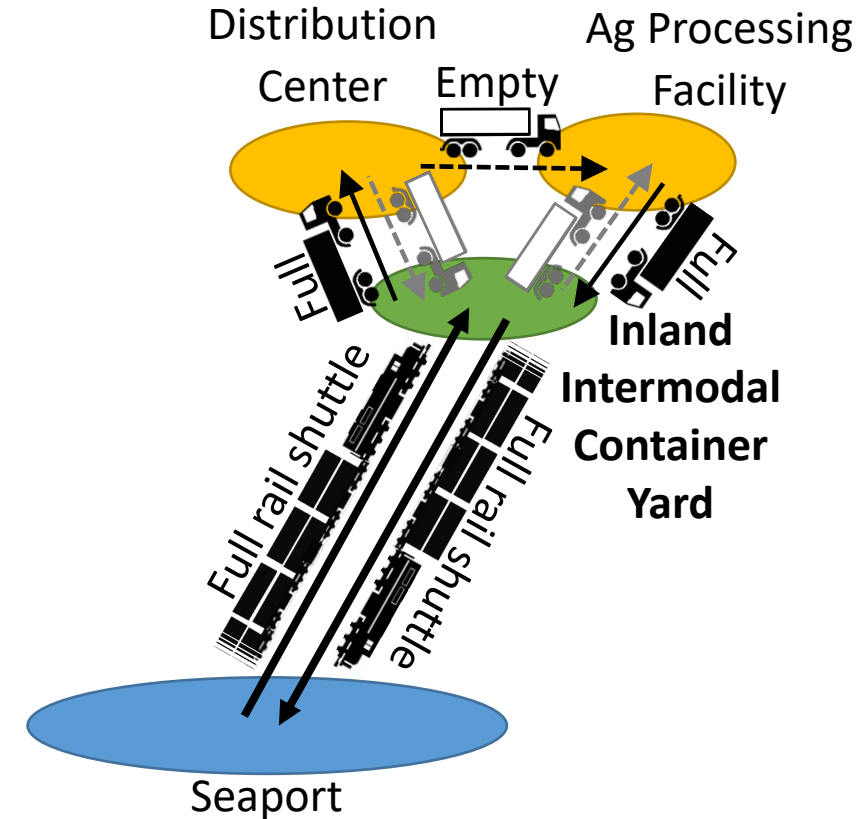


B. Exchange Empty Container/Chassis for needed ocean carrier type, and/or for cleaning



C. Rail Shuttle Concept ... Challenge

(Need 300 containers per ship headed to inland port and similar volume of exports going back with competitive pricing from a class 1 RR and/or additional government investment)



Questions/Comments/Ideas?



Kern Council
of Governments

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Rob Ball

Deputy Director &
Planning Director

Rball@kerncog.org

661-635-2902

For copy of slides and
more info go to:

<https://www.kerncog.org/goods-movement/>

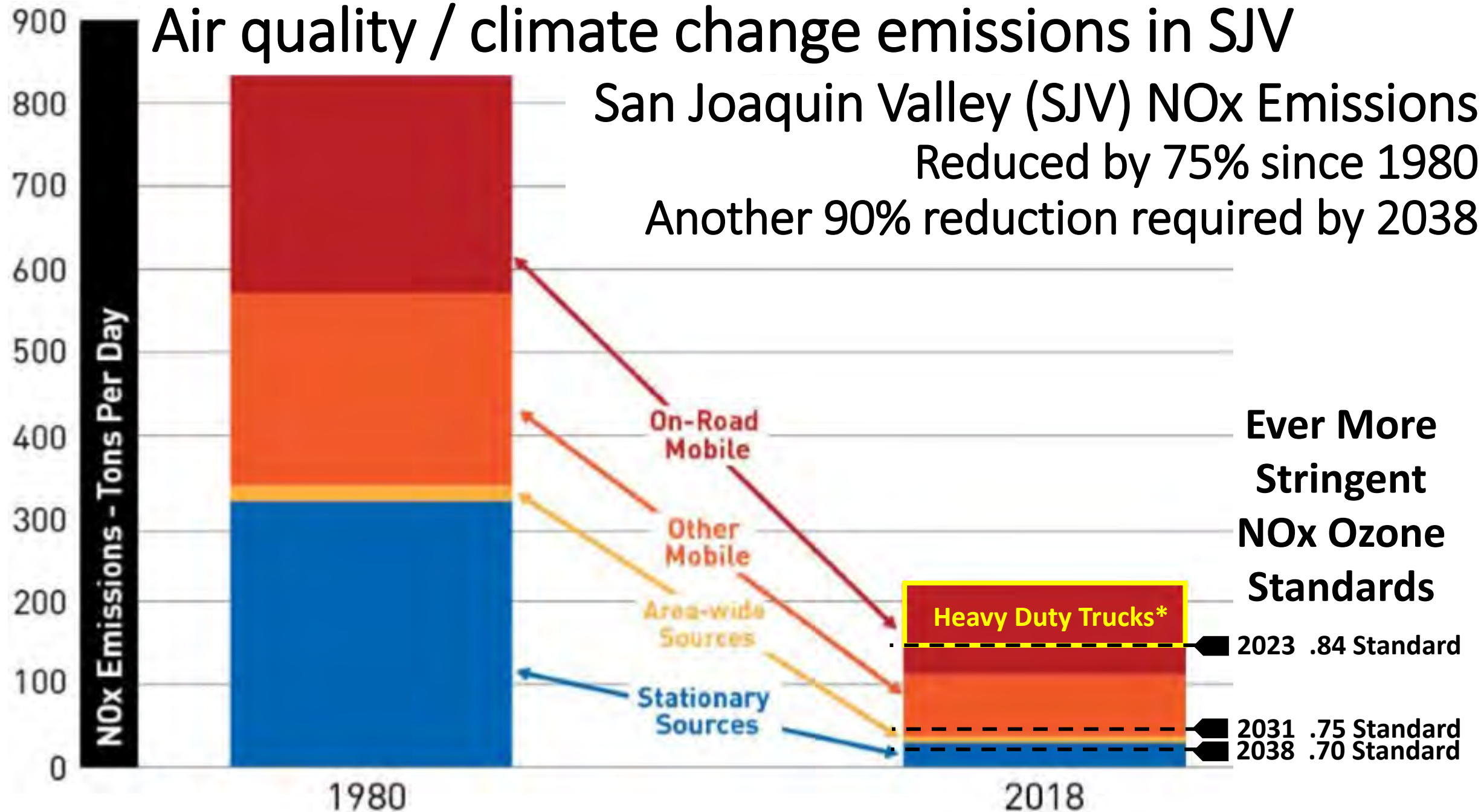
Bonus Slides for Reference

Air quality / climate change emissions in SJV

San Joaquin Valley (SJV) NOx Emissions

Reduced by 75% since 1980

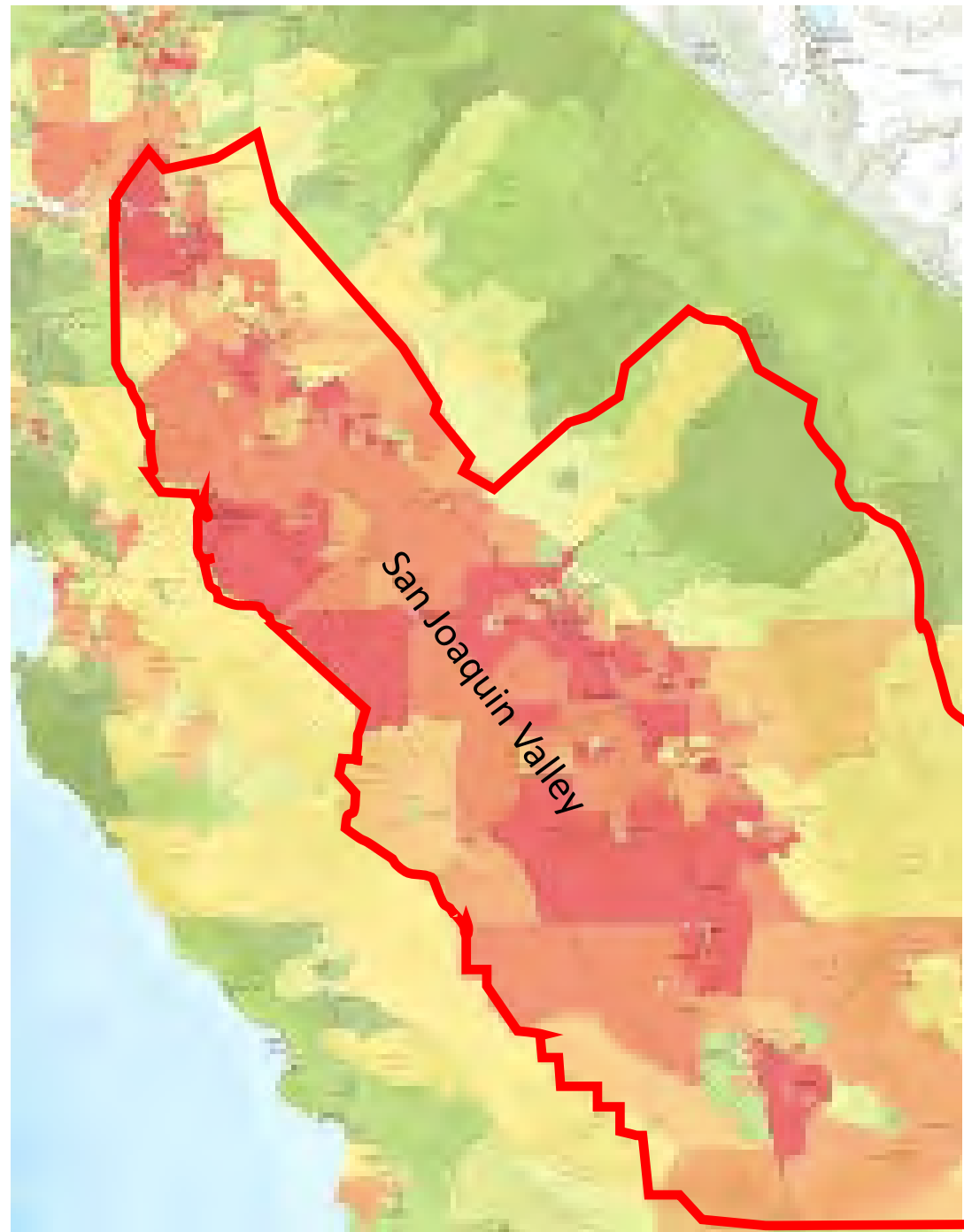
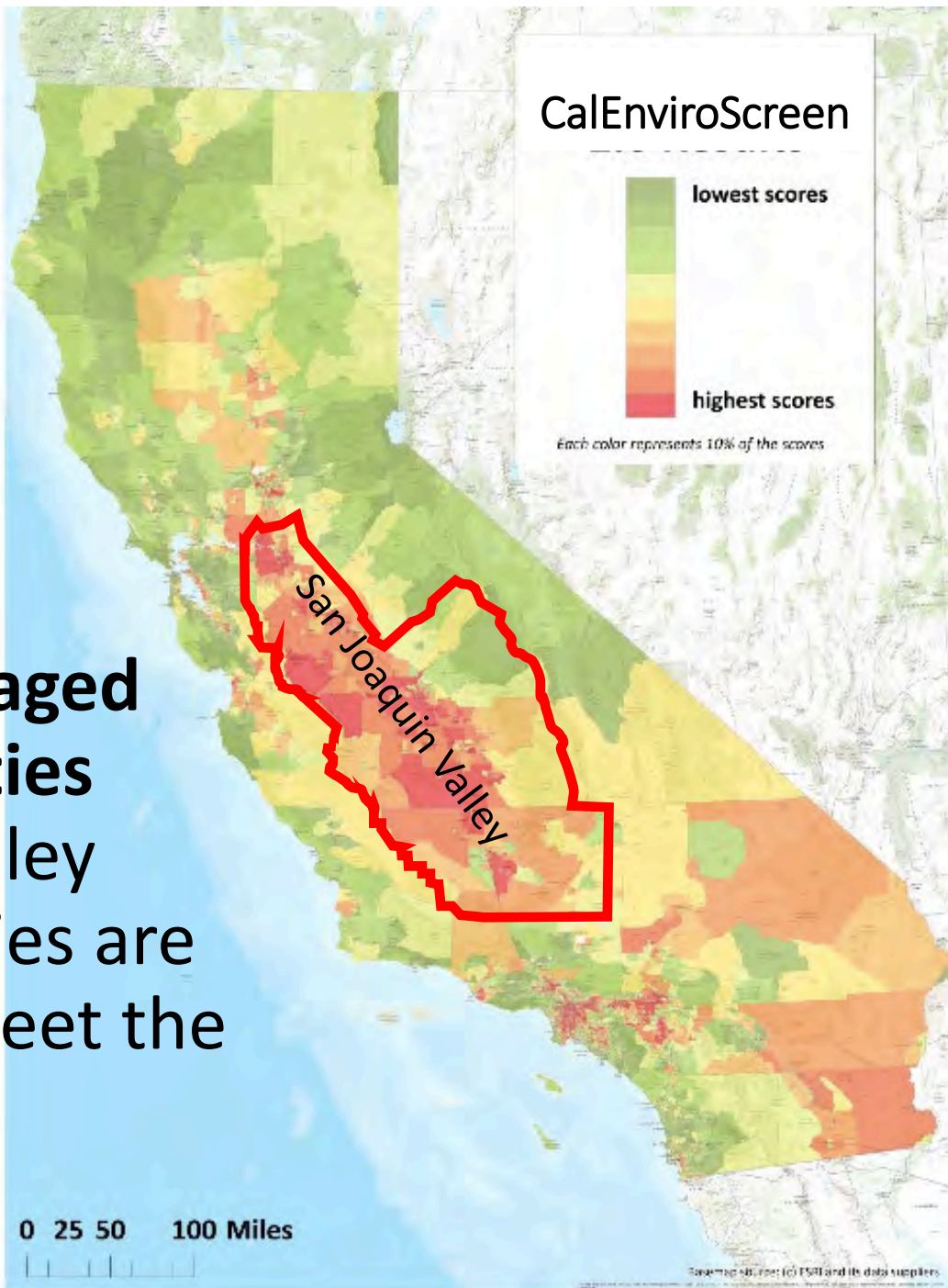
Another 90% reduction required by 2038



*% trucks estimated using 2016 Ozone Plan base inventory for 2012. Chart modified from one prepared by San Joaquin Valley APCD 12/18

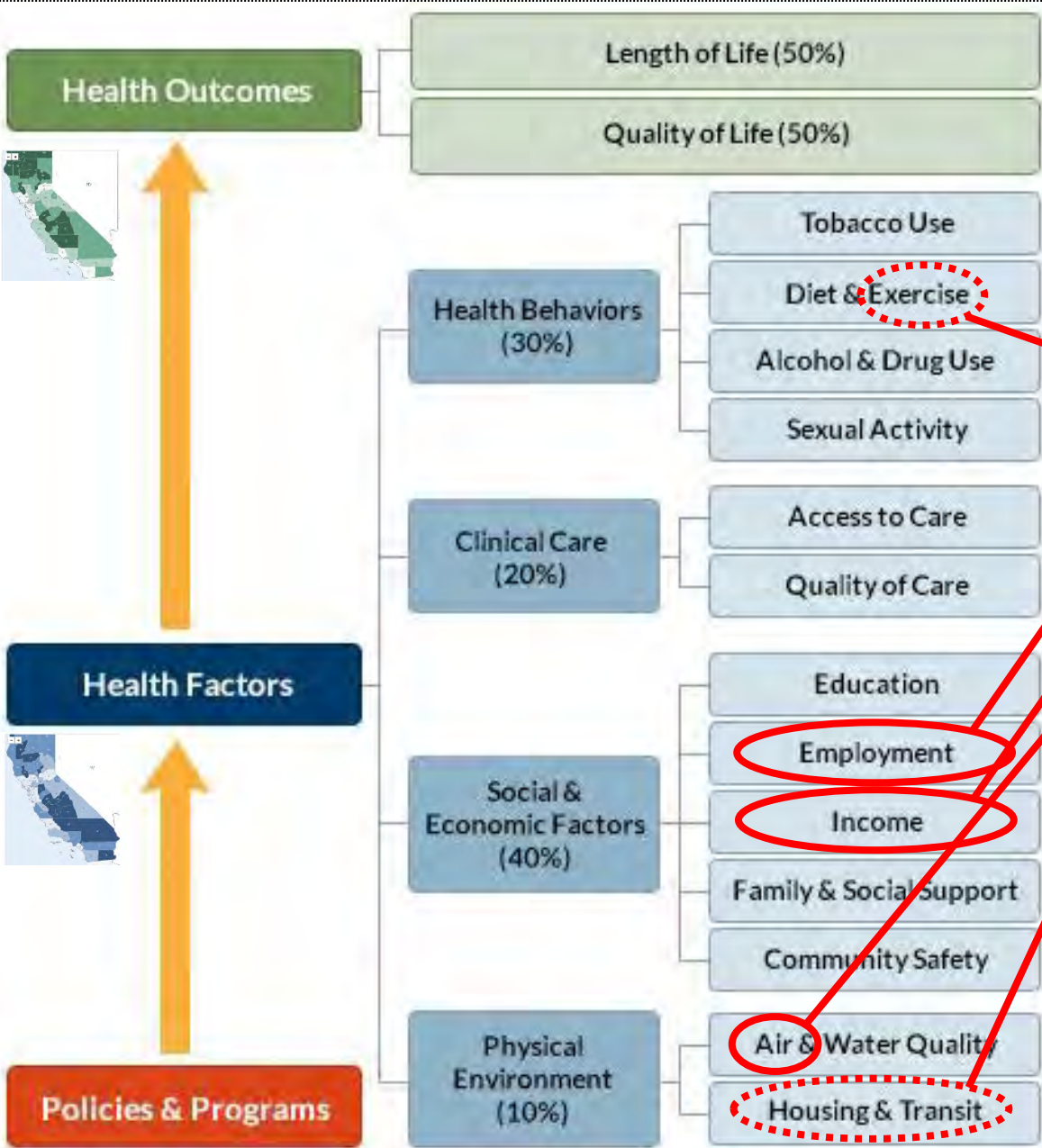


**Disadvantaged
Communities**
Central Valley
communities are
rising to meet the
challenges



RWJ County Health Ranking Methodology

2.5% of Valley Counties' Poor Health Ranking Due to the Air, 16% Due to the Economy!



Estimated Weights of Transportation Related Factors on Health Ranking:

- 4% - Exercise (walking, biking)
- 8% - Employment (economic growth)
- 8% - Income (economic growth)
- 2.5% - Air (vehicle emissions)
- 5% - Housing & Transit (job access, walking)

Transportation Related Factors Affect Less than 30% of the region's health ranking and more than half (16%) are economic growth related.

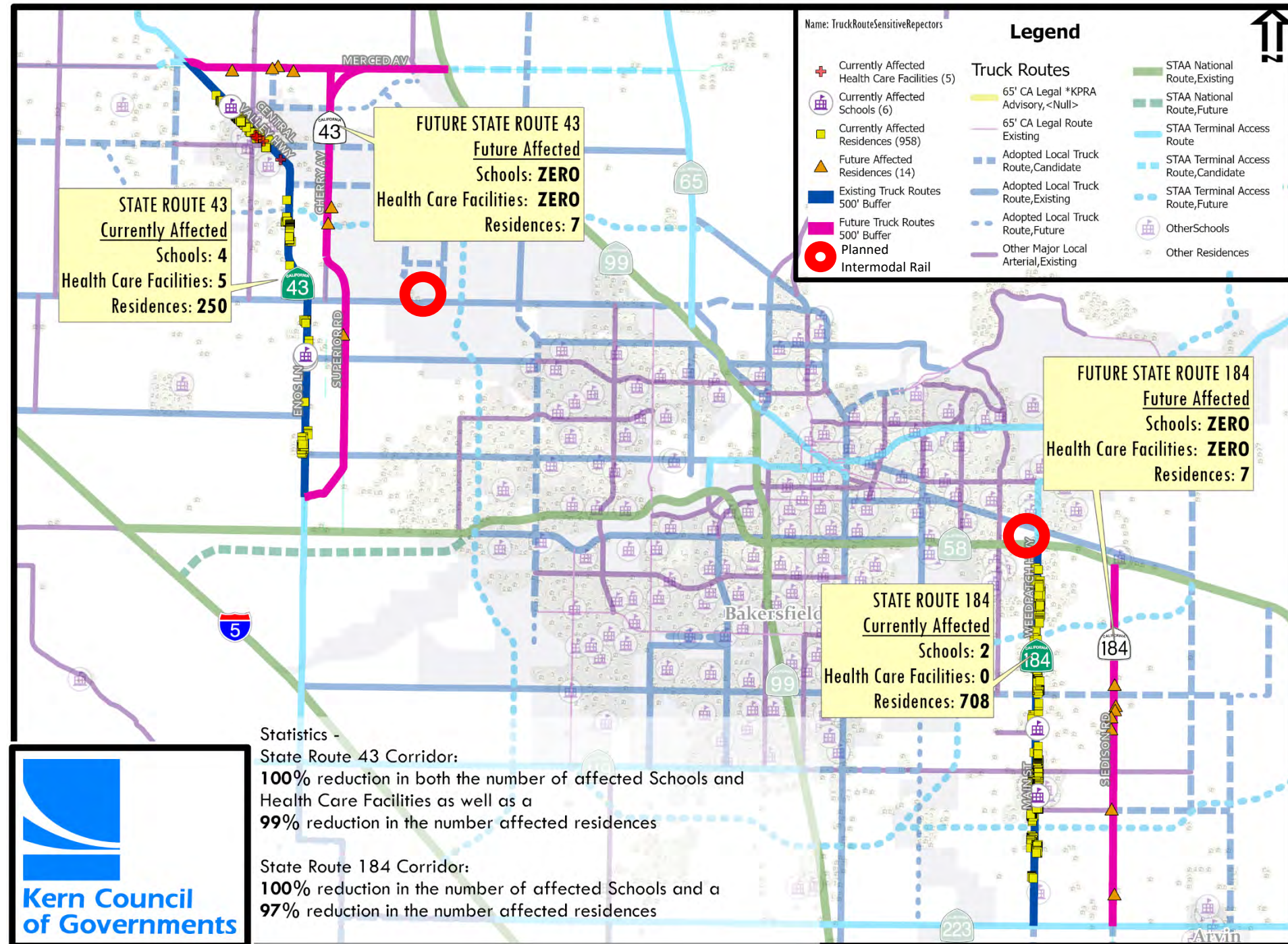
County Health Rankings & Roadmaps

Building a Culture of Health, County by County

A Robert Wood Johnson Foundation program

<http://www.countyhealthrankings.org/explore-health-rankings/our-methods>

Potential to Move Truck Traffic Away from Sensitive Receptors on State Routes 43 & 184



Transportation Investment Benefits: The Grapevine Example



12 hours to L.A.



2 hours to L.A.

8-lane freeway to Southern California has brought Kern 10 hours closer to 22 million consumers and the resulting economic benefit.

Tejon Ranch Commerce Center Federal Foreign Trade Zone (Duty Free)

2014-2018 Observed
Trucks Per Day (TPD)*
www.kerncog.org/traffic-counts

8 Distribution Centers (DCs), half in last 6 years
4.5M Square Feet - 2019
2,500 Jobs - 2015



* Truck counts on local roadways are from the Kern COG regional traffic count program, taken at different times of the year and not adjusted for seasonal variation. TPD counts are non-annualized, weekday, 24-hour counts using multiple hoses to classify observed trucks. TPD counts shown are of combination (combo) trucks with at least one trailer and 4+ axels. Same for all graphics.

6 out of 7 Kern Residents Favor New Distribution Centers

*Spring 2019 statistically valid survey**

- **1,400 people in Kern were asked:** *“Recently new employers, such as Amazon.com, have located in Kern County, creating many new jobs in the County. These jobs have also created new commuter and truck trips. **Do you think these new jobs are worth the additional traffic?**”*

82% say worth it, 13% not worth it, ~5% didn't know or no answer

**2019 is the last time this question was asked. Survey available online with other survey results thru 2023:*

<https://www.kerncog.org/quality-of-life-survey/>



West U.S. Largest Small-Item Sortation Distribution Center (DC)
BFL Intl Airport – 4-story, 2.6M Sq. Ft. on .64M Sq. Ft. footprint



Inland Empire's Sales Tax Measures & Impact Fees May Have Been Too Little Too Late

The New York Times

California's Inland Empire Pushes Back on Booming Warehouse Construction

Several municipalities have halted new projects to study their impact on pollution and congestion.



By Kurtis Lee

Oct. 17, 2022

<https://www.nytimes.com/2022/10/17/us/california-inland-empire-warehouse-construction.html>

IE warehouse boom generates call for building moratorium

Letter from 60-plus groups: "We have a right to not be made sick by the air we breathe"

By **TRD Staff**

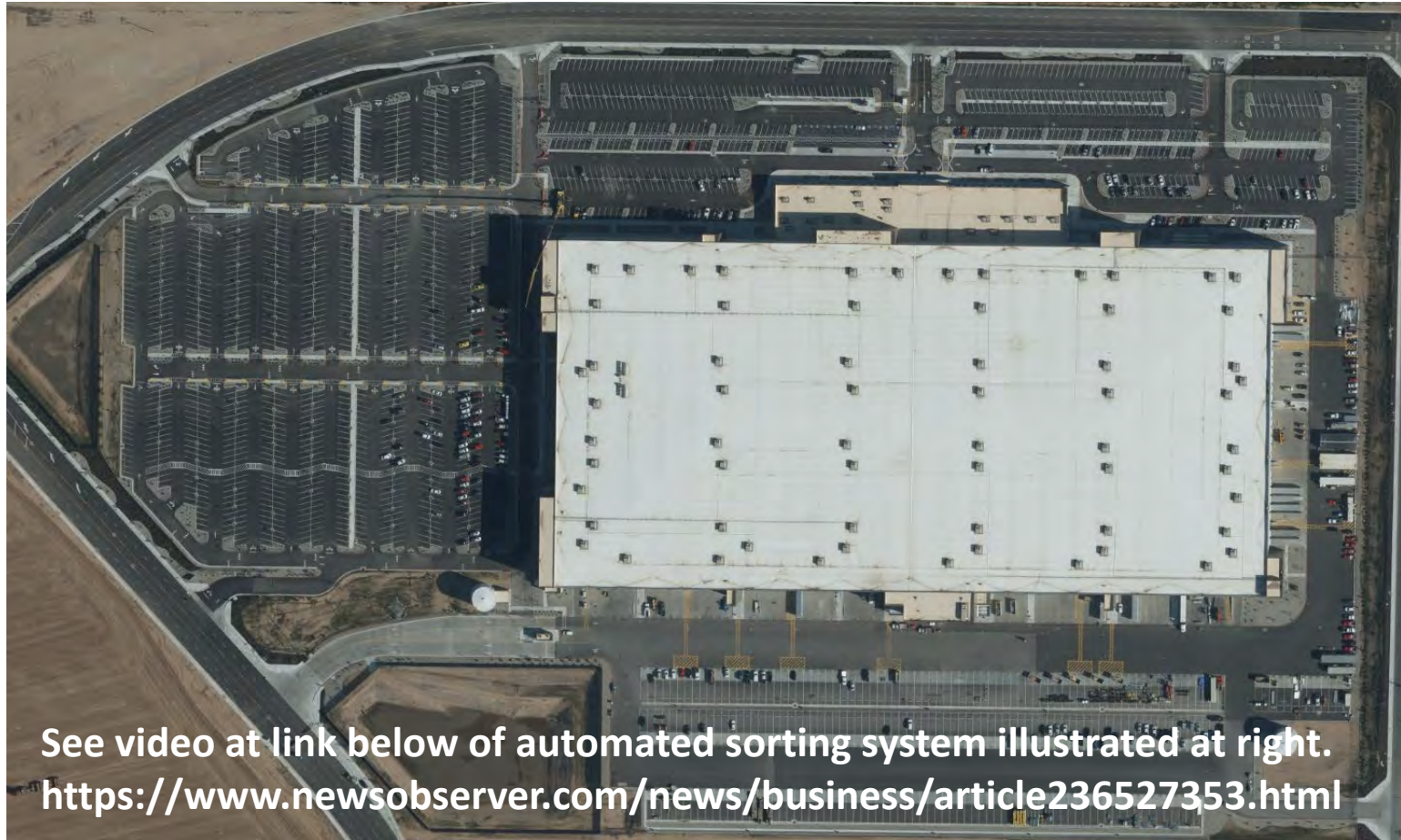
JAN 31, 2023, 6:33 PM

<https://therealdeal.com/la/2023/01/31/ie-warehouse-boom-generates-call-for-building-moratorium/>

Inside New Amazon DC - BFL Airport



One of four, Multi-story Distribution Centers Outside Major U.S. Urban Areas



See video at link below of automated sorting system illustrated at right.
<https://www.newsobserver.com/news/business/article236527353.html>



Testing of robot sorting system in sister facility near Raleigh, North Carolina.

Inside New Walmart DC - Shafter

One of 3 New Automated Perishable Grocery Distribution Centers in the U.S.



Tall vertical automated rack system in a 100' tall building will be able to pick products 40% faster than a conventional forklift accessed rack system



See video link of automated rack system <https://youtu.be/cUHj2qff1Ds>

Proposed Kern SAFETEC Logistics Zone – Advanced Research Corridor Network

– Safer Autonomous Freight Enhanced Testing Environmentally Clean (SAFETEC) Logistics Zone



Google spinoff Waymo LLC

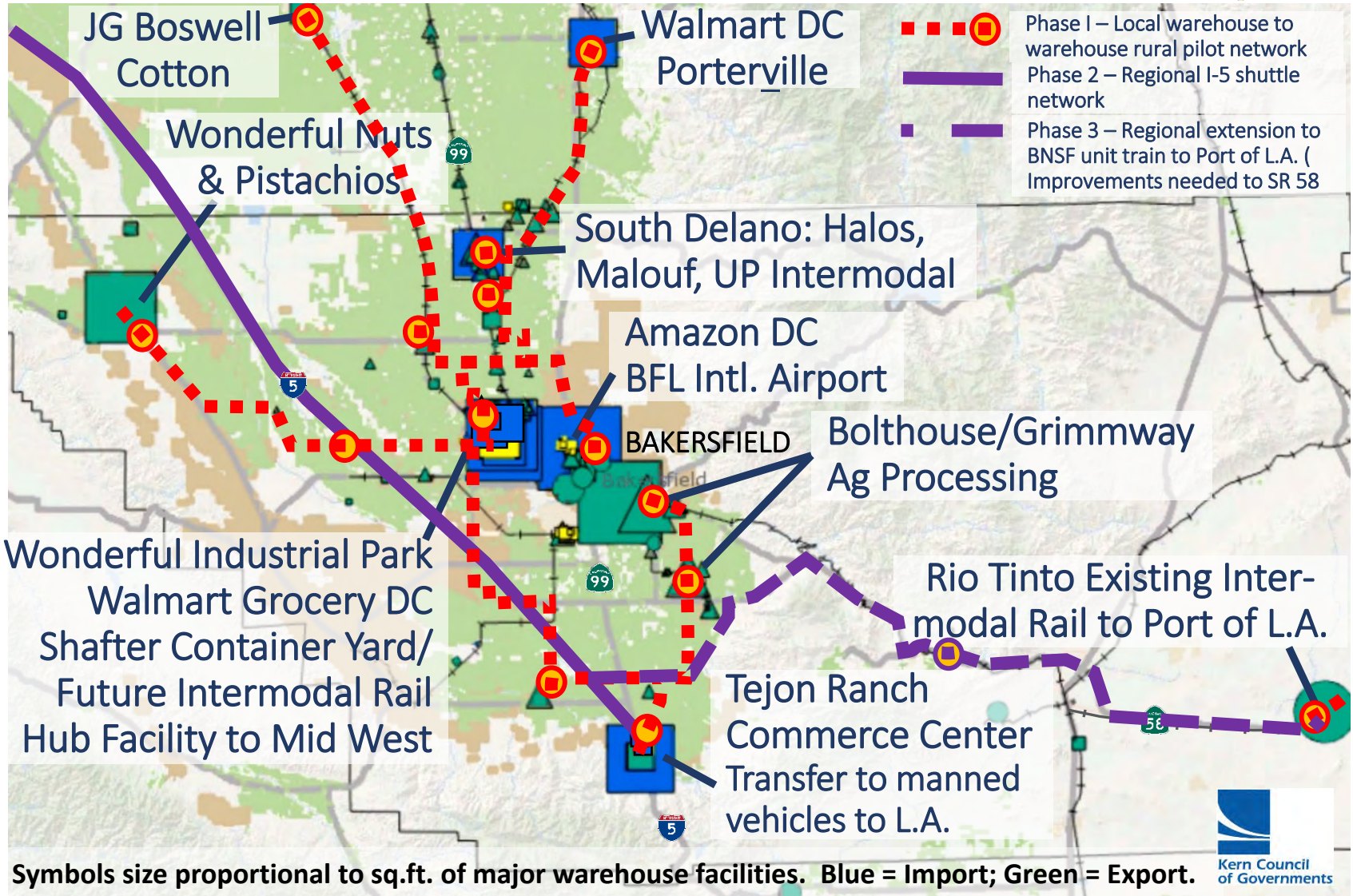


Tesla Electric Truck - Autonomous



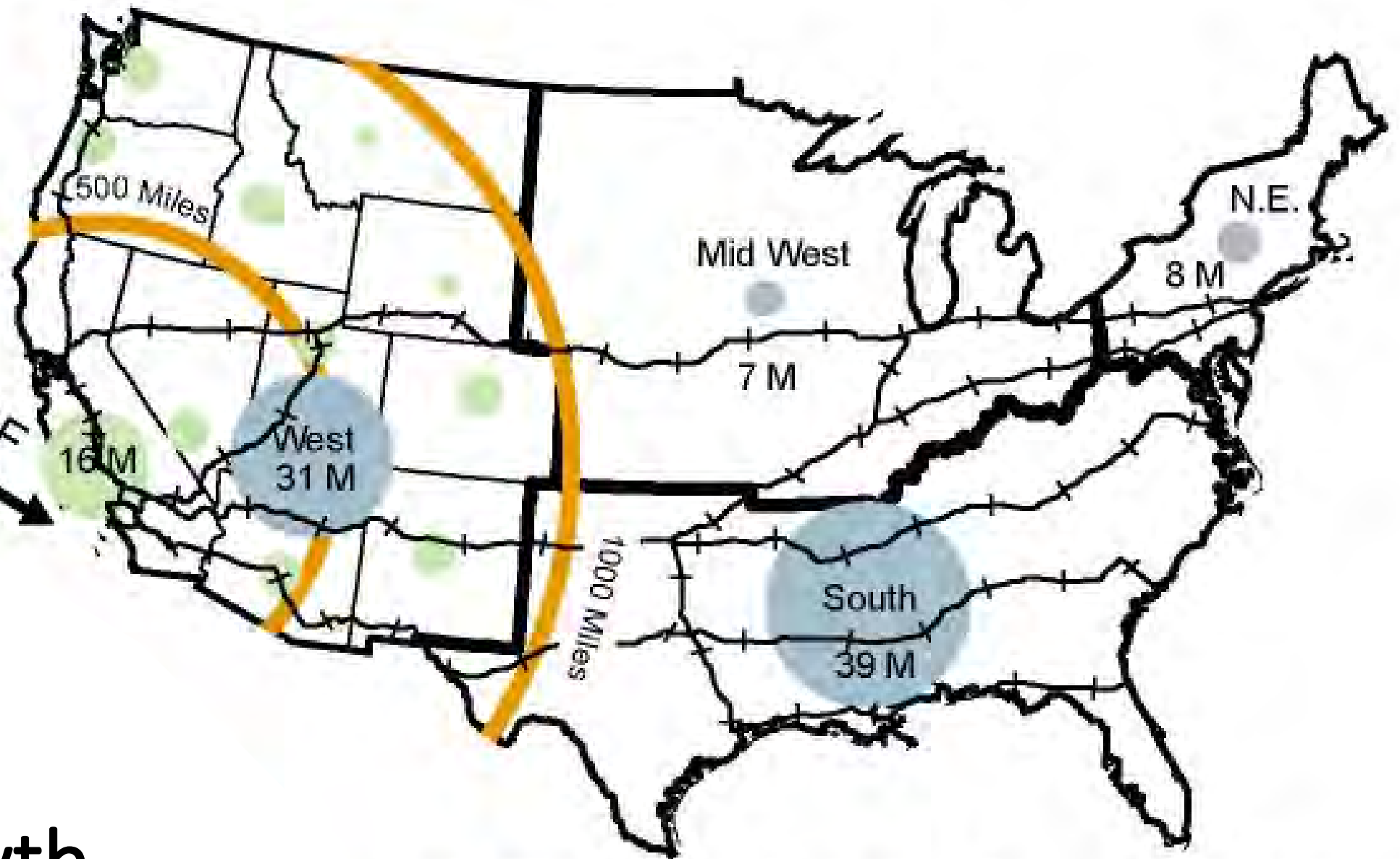
Volvo Electric Autonomous Truck

Potential Pilot Rural Logistics Corridor Network



To Asia

40% TO 60% OF
ALL U.S. IMPORTS



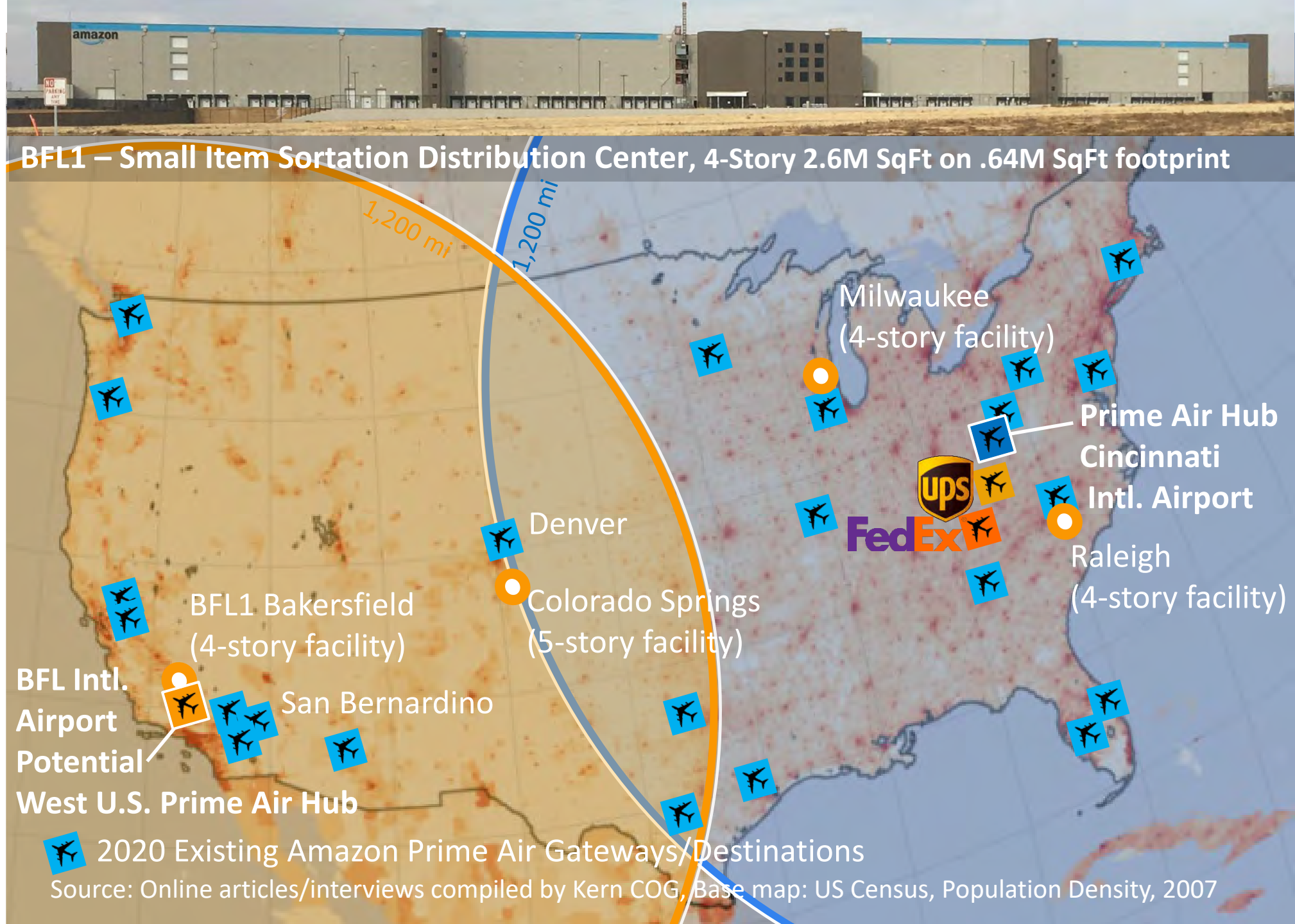
Future
U.S. Growth
Concentrations

82% of Growth in the Lower 48 States
In South and West 2010 - 2050



Potential Future West U.S. PrimeAir Freight Hub

Bakersfield is
one of four
new
Multi-story
warehouses
near airports
outside major
urban areas

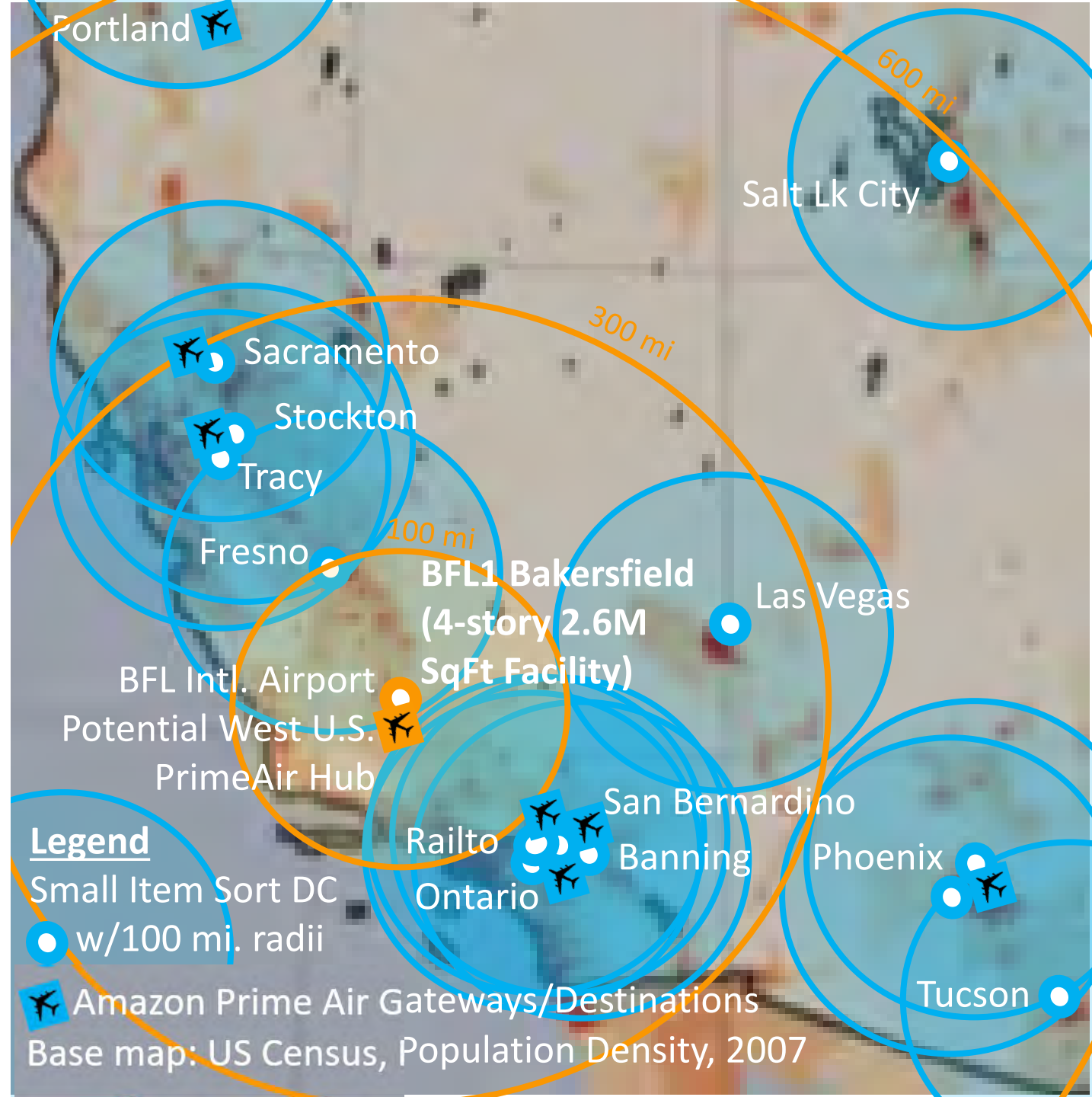




Small Item Sortation Distribution Centers in West U.S. with 100 mi. Radii

- Bakersfield - **only** 4-story Amazon warehouse in the West U.S.
- The facility is adjacent a low volume intl. airport 1,100' runway.
- Geographically central to major West U.S. markets
- Could serve as a possible upstream staging facility for high volume seasonal or event driven products.

Note that map only shows related Small Sortation Distribution Facilities. It does NOT show specialty large item, cross dock or other Amazon warehouse facilities. The map was compiled from lists found on Wikipedia and <https://www.mwpyl.com/html/amazon.com.html>.



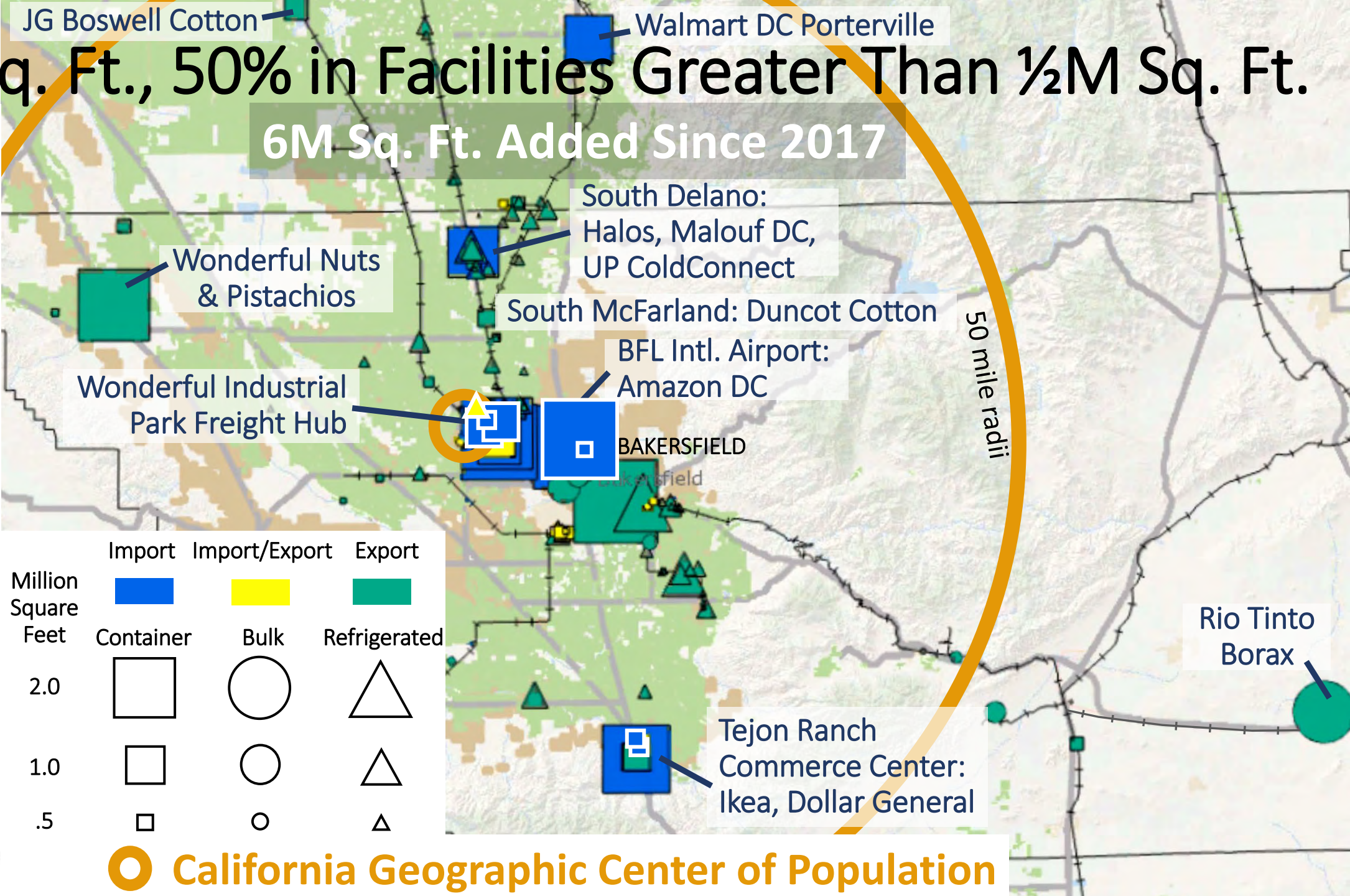
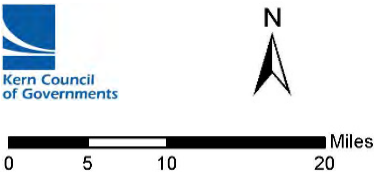
52M Sq. Ft., 50% in Facilities Greater Than ½M Sq. Ft.

Symbol sizes are proportional to the square footage at that major, large & medium facilities.

Green = Exporter
Blue = Importer
Yellow = Both

Square footage data is for distribution centers, warehouses, processing, mining and energy facilities using Google Earth 2019.

Green areas are predominantly agriculture. Tan areas are predominantly oil production.

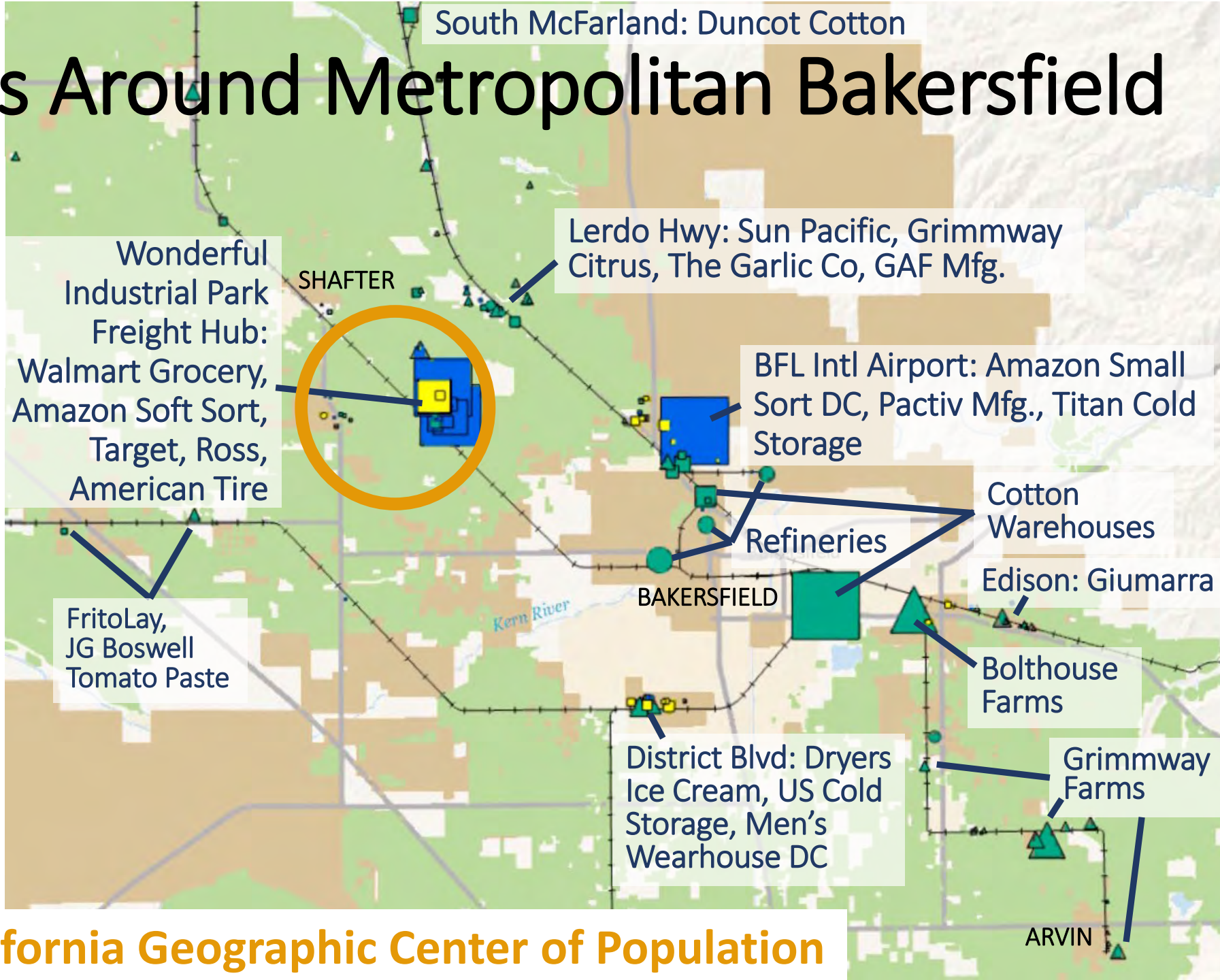
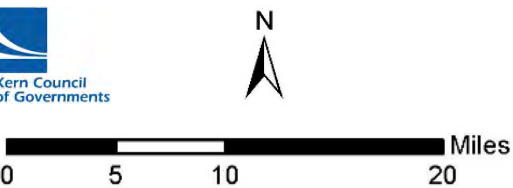
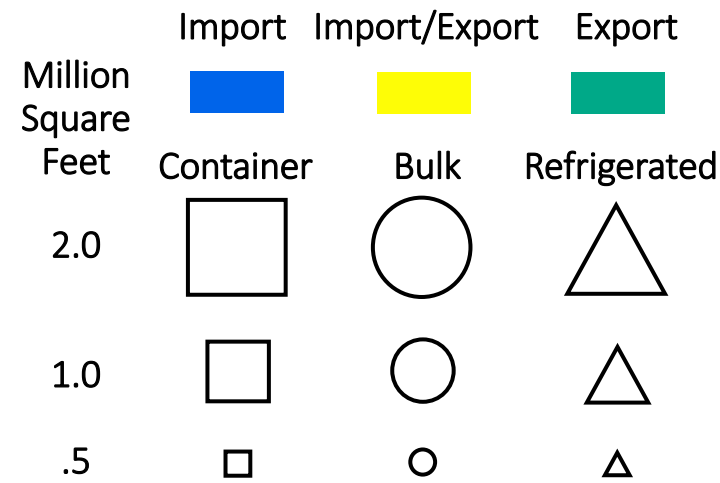


Major Facilities Around Metropolitan Bakersfield

Symbol sizes are proportional to the square footage at that facility.

Square footage data is for distribution centers, warehouses, processing, mining and energy facilities using Google Earth 2019.

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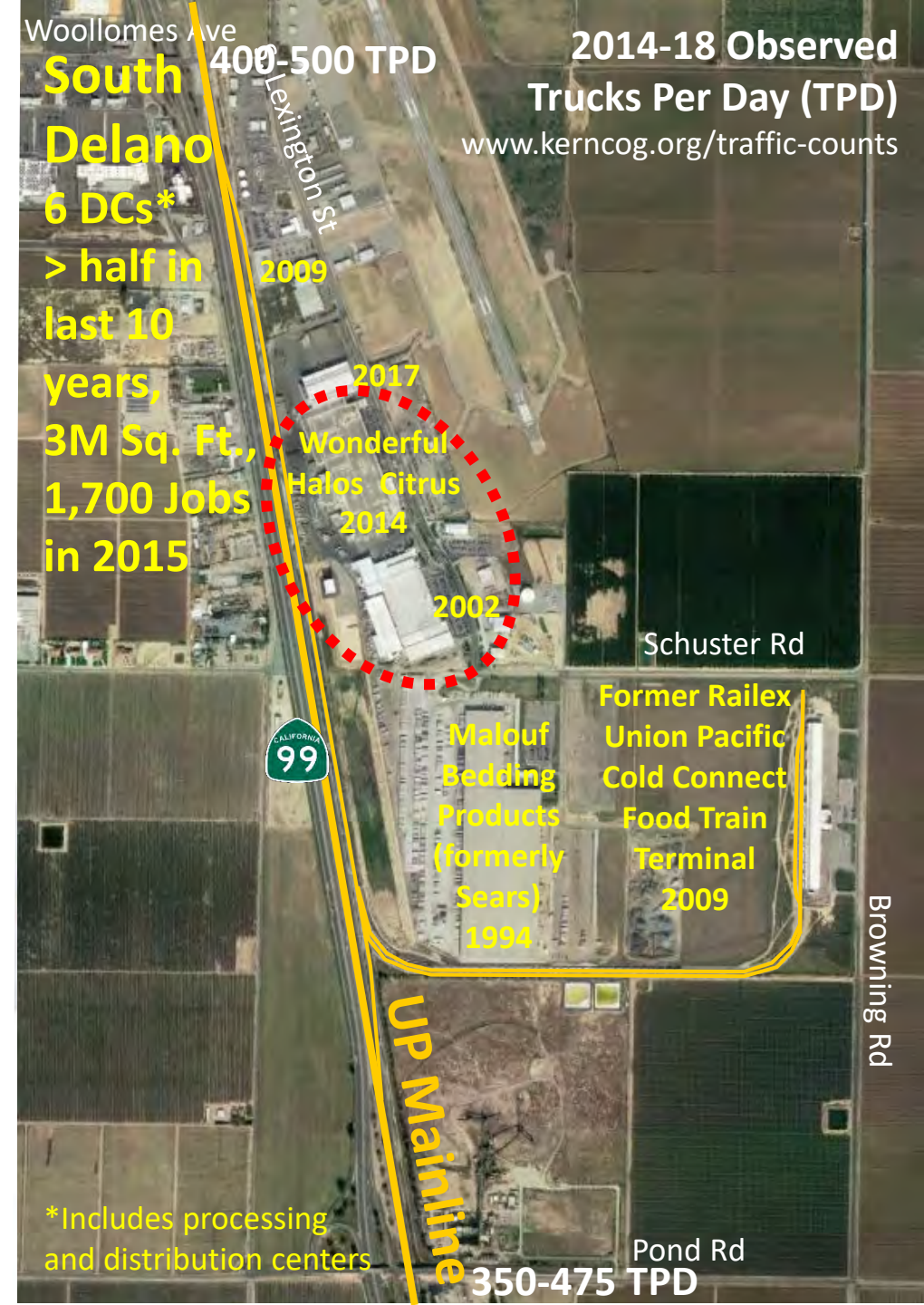
South Delano – Wonderful Halos/Citrus

World's Largest Citrus Processing Facility

Top 3 Ag Producing Counties in U.S. - Kern, Fresno, Tulare
Export produce from all over CA (CV, Salinas, Imperial)

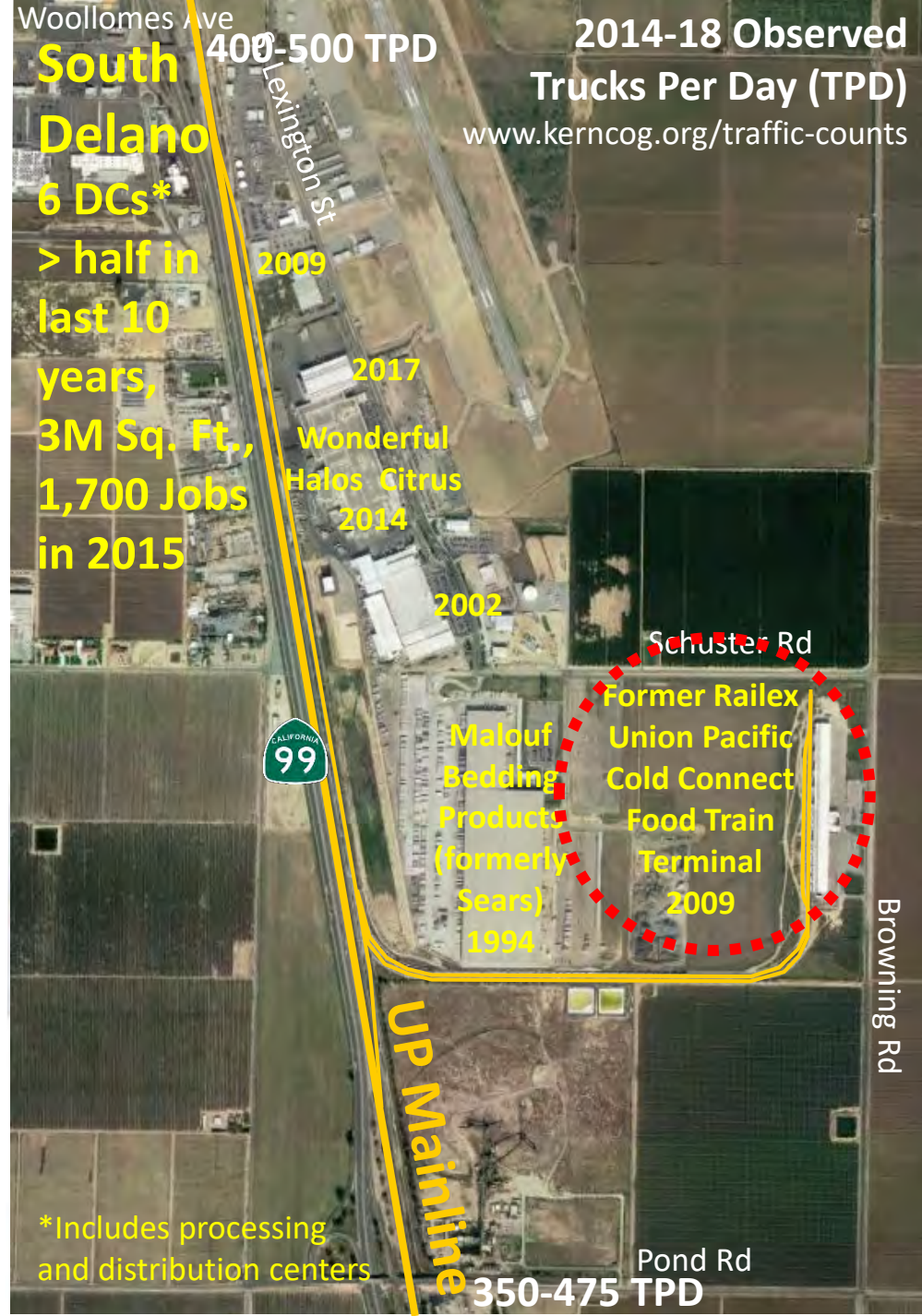


Largest Citrus Processing Conveyor System in the World

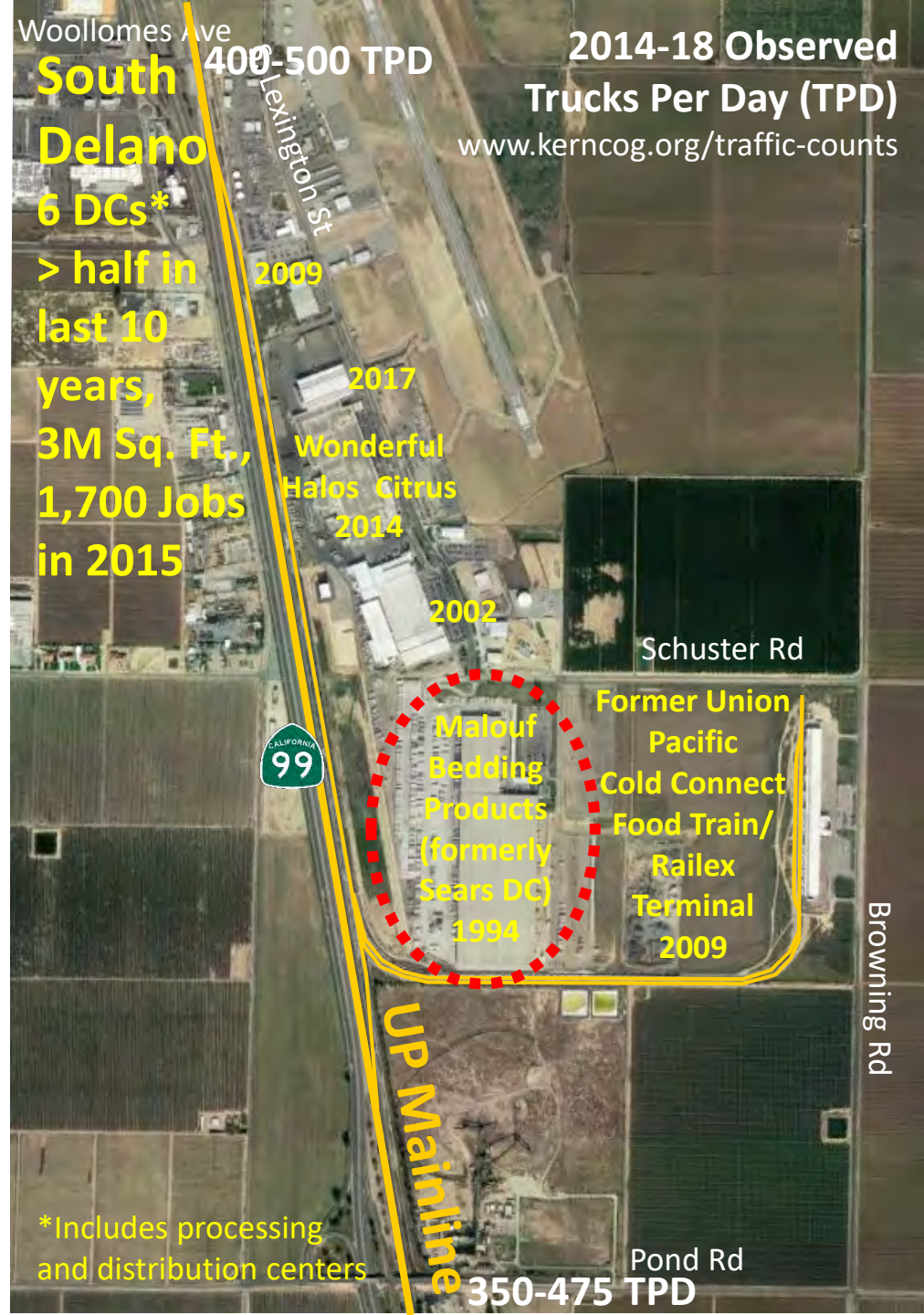
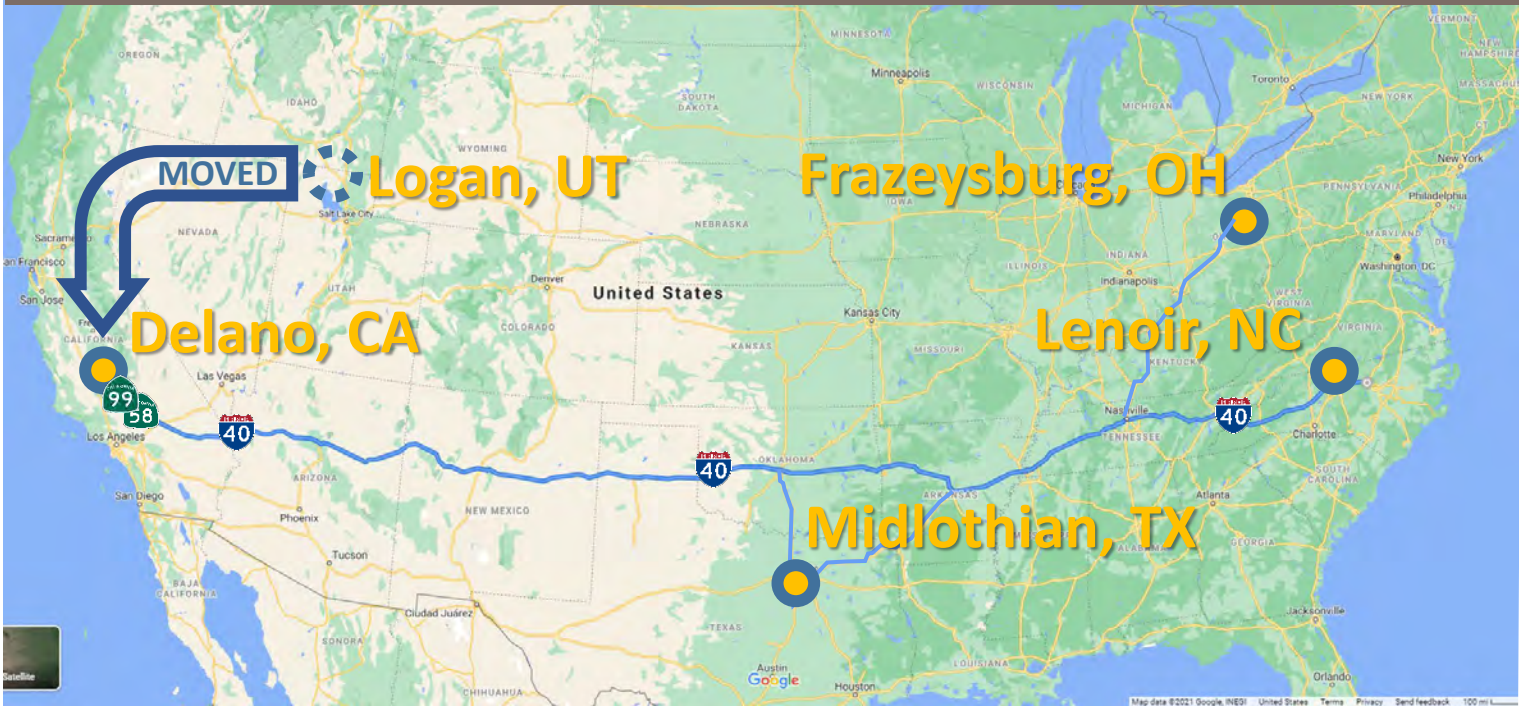


South Delano – Union Pacific Cold Connect Food Train Service (operations temporarily down)

Top 3 Ag Producing Counties in U.S. - Kern, Fresno, Tulare
Export produce from all over CA (CV, Salinas, Imperial)

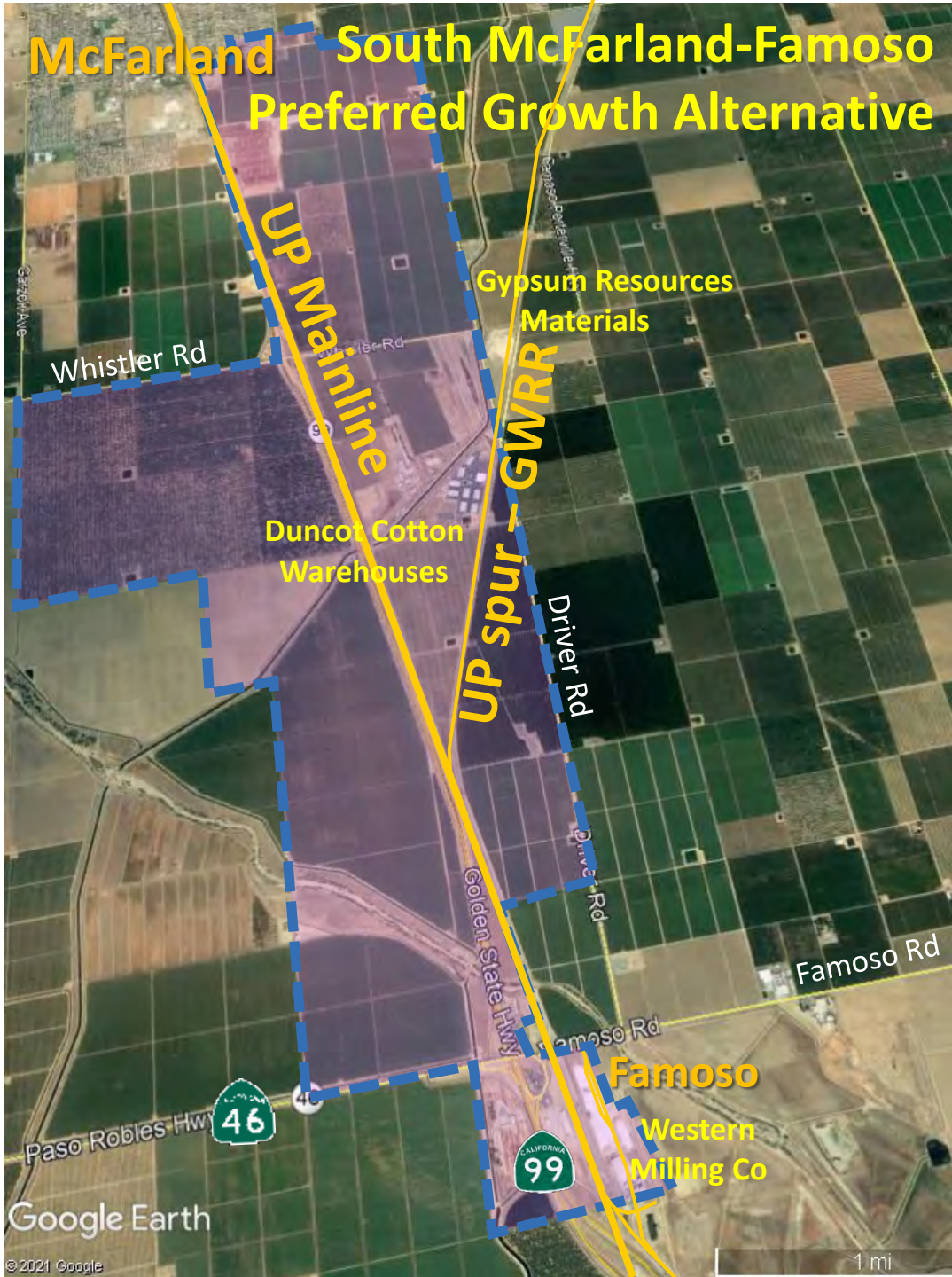
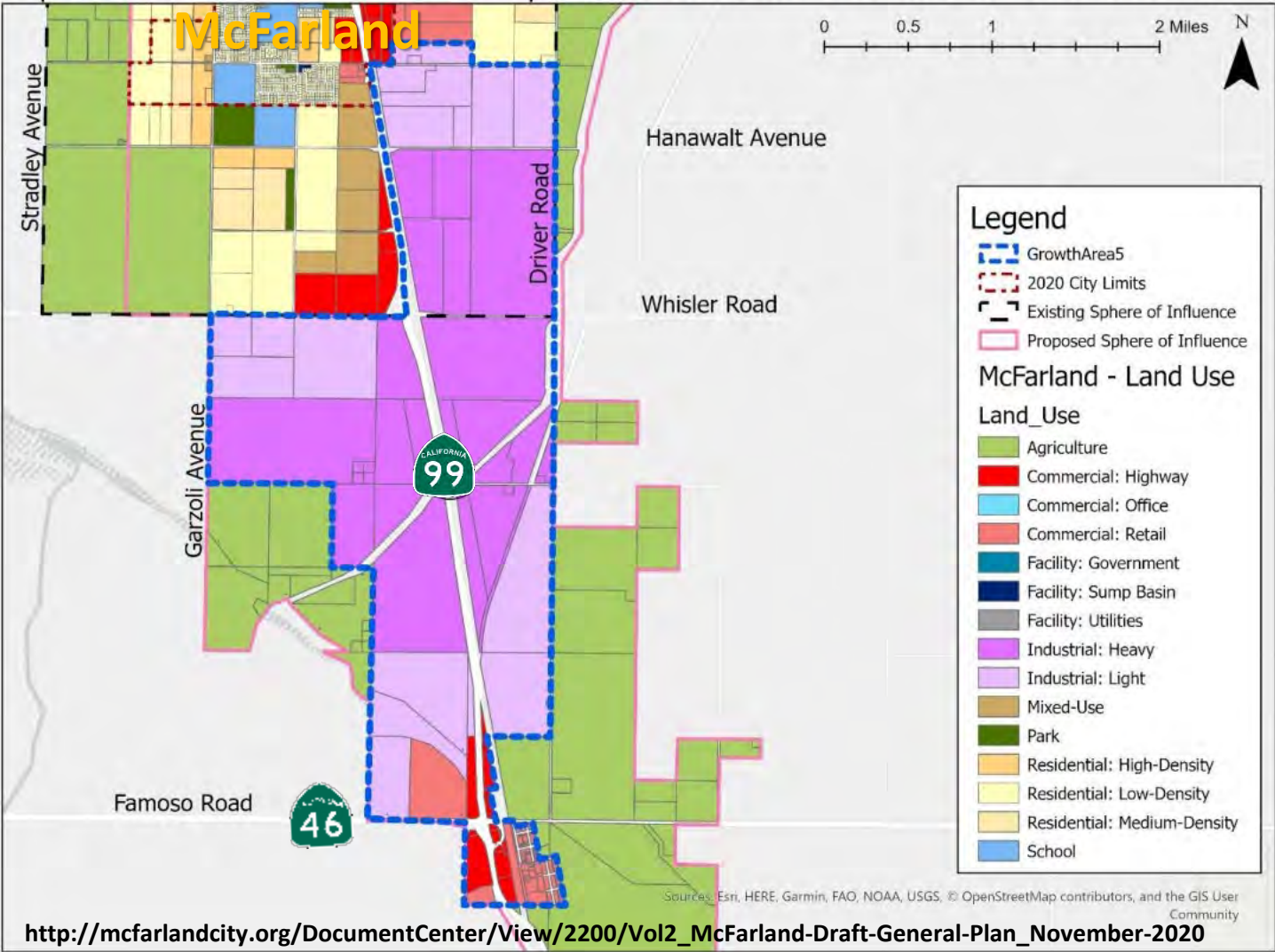


South Delano – Malouf Bedding Moves West U.S. Warehouse to Delano, CA from Logan, UT



McFarland–Famoso Industrial Park & Commercial Center 5+ sq. mi.

Map 5-7: Preferred Growth Alternative Key Growth Area #5: Famoso Industrial and Commercial Center



West U.S. Freight Hub

12 Square Miles of Vacant Industrial/Commercial land

2014-18 Observed
Trucks Per Day (TPD)
www.kerncog.org/traffic-counts



**Rail Shuttle
to Ports
Avg Savings
= 127 truck
miles (VMT)
per container
trip = Less
Emissions +
Less Wear
& Tear on
Roads+Less
Congestion**

Importer or Exporter	Walmart	Sears	Target	Men's Warehouse	IKEA	
City	Porterville	Delano	Shafter	Bakersfield	Lebec	Average
From Ports of LALB Via Highway						
Truck VMT	204	166	147	133	109	
I710	19	19	19	19	19	
I5 South of Kern Co.	74	74	74	74	74	
I5 Total	90	90	90	90	89	
I5 in SJV Study Area	16	16	16	16	15	
SR99	77	55	31	20	0	
Other	18	2	7	4	1	
From Ports of LALB Via Shafter Intermodal Terminal						
Truck VMT	50	27	1	18	41	
I710	0	0	0	0	0	
I5 South of Kern Co.	0	0	0	0	0	
I5 in SJV Study Area	0	0	0	0	1	
SR99	0	16	0	9	32	
Other	50	11	1	9	8	
VMT Change						
Truck VMT	-154	-139	-146	-115	-68	
I710	-19	-19	-19	-19	-19	
I5 South of Kern Co.	-74	-74	-74	-74	-74	
I5 in SJV Study Area	-16	-16	-16	-16	-14	
SR99	-77	-39	-31	-11	32	
Other	32	9	-6	5	7	
I5/SR99 Corridor Net	-93	-55	-47	-27	18	-43
Non-Corridor	-61	-84	-99	-88	-86	-84
Total	-154	-139	-146	-115	-68	-127

Challenge at the Ports

How do you get 300 containers bound for DCs in the Central Valley from a single ship at the right pier with access to the right rail line, that is also willing to take on export containers from the Central Valley? Block chain tracking?

Legend

- 1 – Pier J On-Dock
- 2 – Pier G On-Dock
- 3 – Pier E On-Dock (MHT)
- 4 – Pier A On-Dock
- 5 – Pier T On-Dock
- 6 – Pier B Rail Yard
- 7 – TICTF Shared On-Dock
- 8 – Pier 300 On-Dock
- 9 – Pier 400 On-Dock
- 10 – WBICTF On-Dock
- 11 – WB-East (TraPac) On-Dock
- 12 – B200 Support Rail Yard (PHL Base)

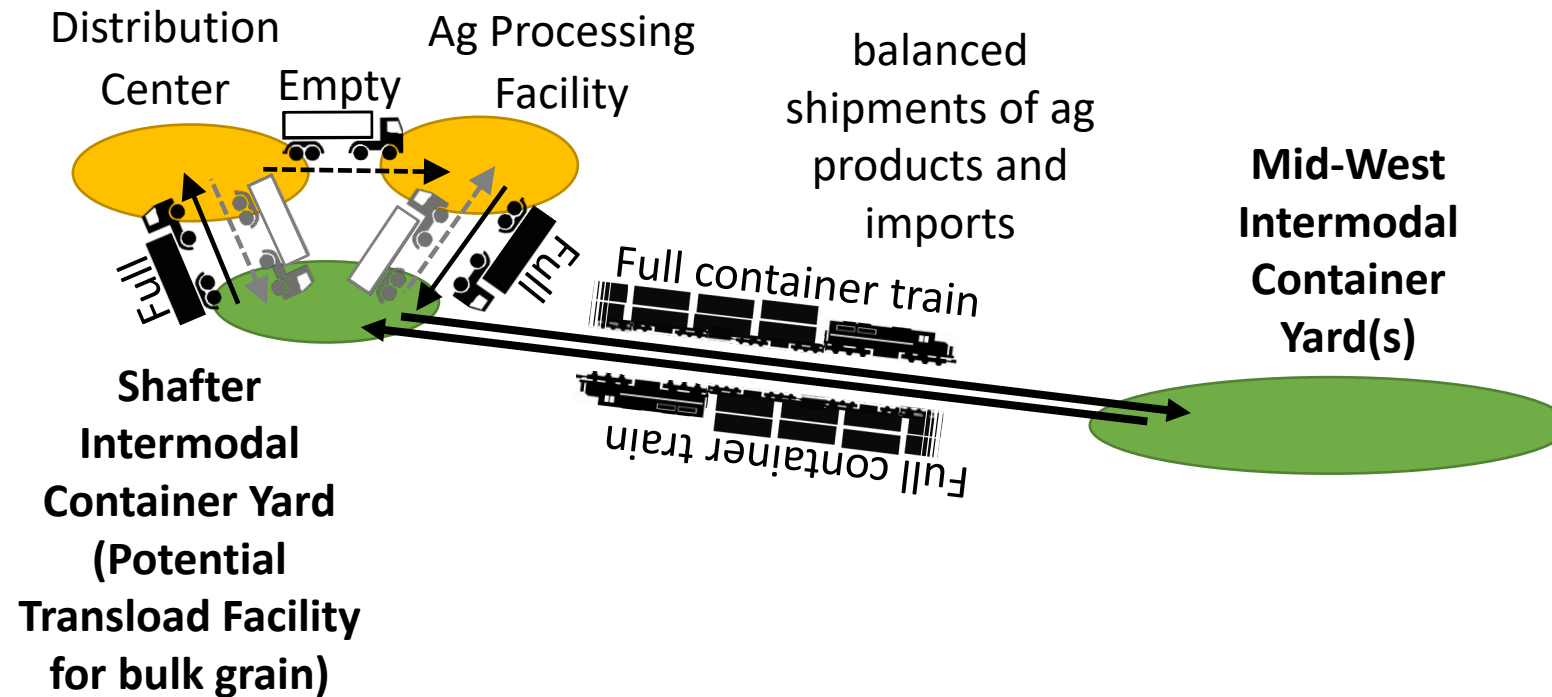


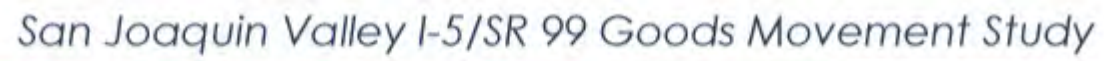
Figure 14.300 On-Dock and Support Rail Yards in San Pedro Bay



One More Interim Step Before Rail Service to LA Port

B2. Establish Intermodal Rail Service at Shafter

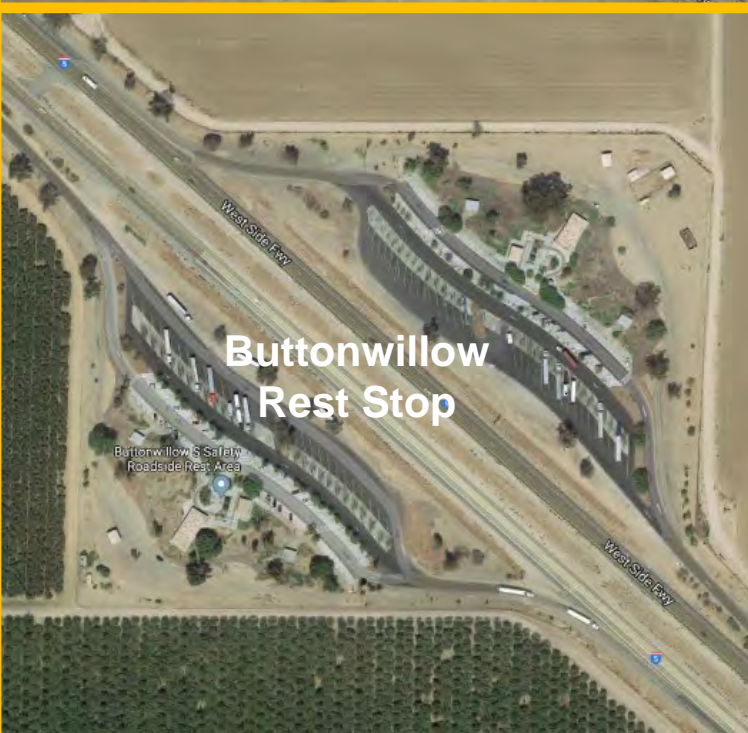




DAIMLER



**Wesley
Rest Stop**



**Buttonwillow
Rest Stop**



I-5 Freight ZERO Pilot Project – Phase I.

Testing Emerging Cleaner Long-Haul Semi-Truck Fleet Tech

- SJV Frito-Lay Plant has 38 existing CNG Volvo Trucks and fueling facilities
- Another 15 Tesla Trucks are on Order

Ultra-Clean
Renewable
Bio-Diesel

Hydrogen
Fuel-cell

Battery Electric

Renewable
Natural Gas
CNG/LNG

Freightliner Cascadia

Diesel Truck
6x4 Tandem Axel Drive
Long Range
Sleeper
0-60 in ~60 Sec. @ 80k GCW



Image: Freightliner

Nikola One

Hydrogen Fuel Cell – Electric Truck
Six Motor AWD
Long Range
Large Sleeper
0-60 in 30 Sec. @ 80k GCW



Image: NIKOLA

Tesla Truck

Battery – Electric Truck
Six Motor AWD
Long Range
Large Sleeper
0-60 in 20 Sec. @ 80k GCW



BYD Truck

Battery – Electric Truck
Six Motor AWD
Medium Range
No Sleeper
0-60 in ?? Sec. @ 80k GCW

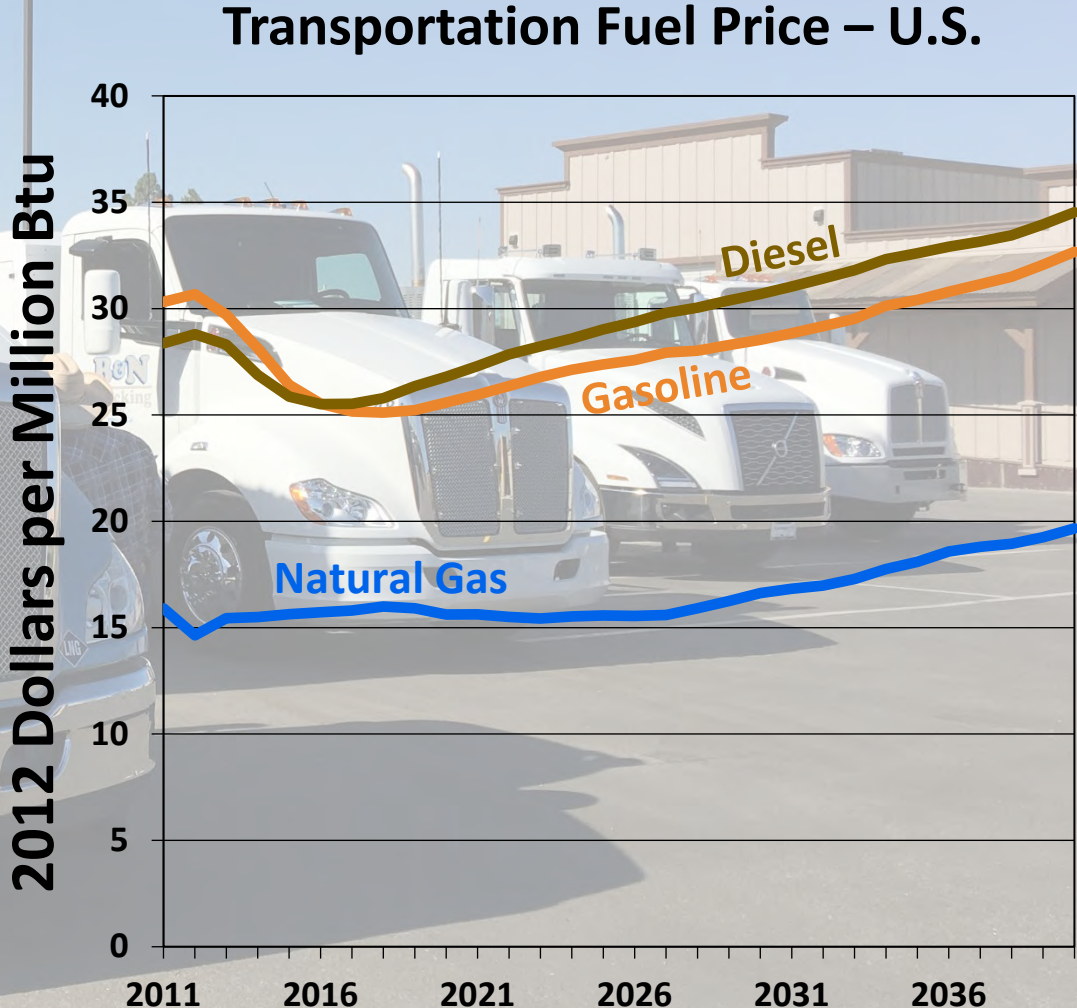
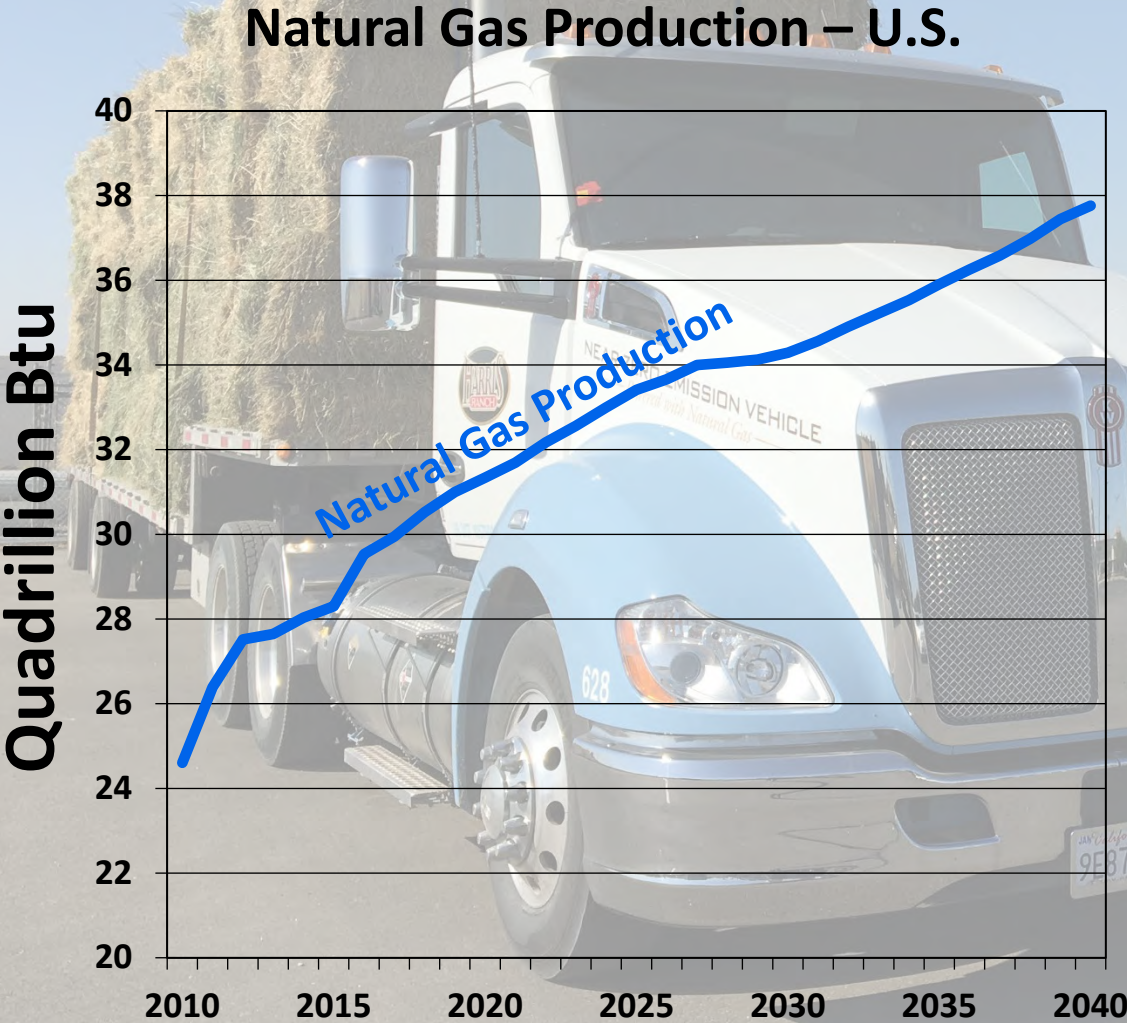


Kenworth RNG

CNG or LNG
6x4 Tandem Axel Drive
Long Range
Sleeper option
0-60 in ~60 Sec. @ 80k GCW



CNG Basics: Supply and Price Projections



99.9% clean “Near Zero Emission” CNG & LNG Kenworth & Volvo trucks used in the SJV on display in Shafter, CA

Compressed Natural Gas \Rightarrow Renewable Natural Gas \Rightarrow Hydrogen

RNG Better than zero for CO₂*, low federal criteria emissions (NO_x,...), interim step to hydrogen fuel cell

Two Zero Emission Technology Options for Trucks & Buses

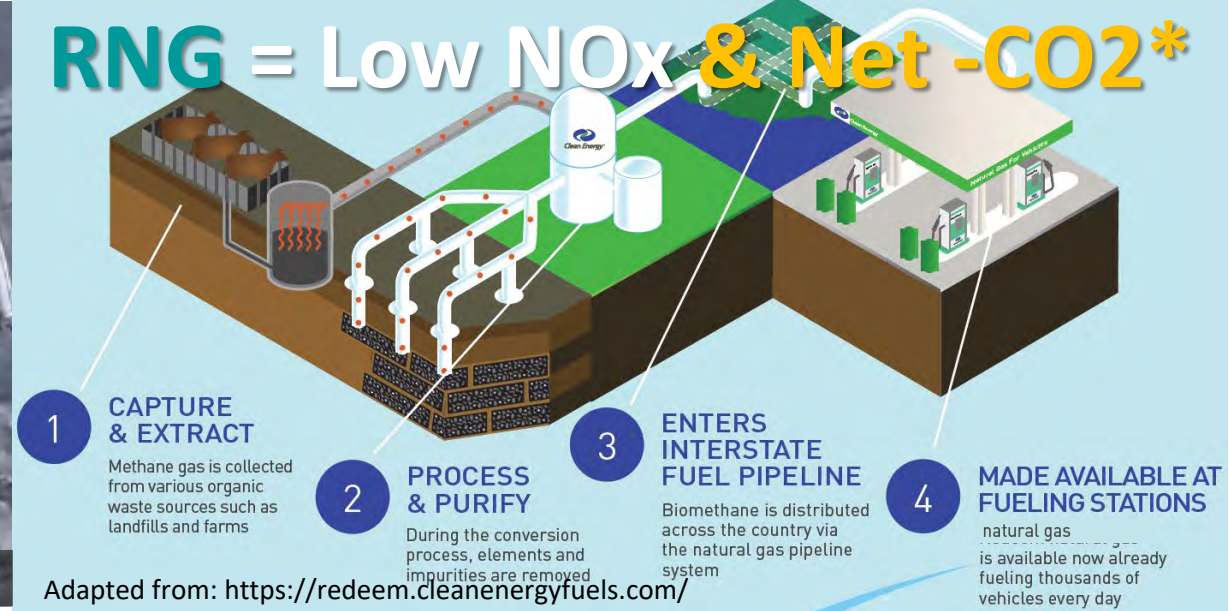
Hydrogen fuel cell tech
BEATS battery electric

- longer range
- faster refilling
- better cold weather performance
- superior hill climbing ability

CNG = Low NO_x



RNG = Low NO_x & Net -CO₂*



- **Similar Ranges** - CNG/RNG & hydrogen fuel cell trucks/buses all have similar operating ranges, so same routes can be operated with no additional trucks/buses. CNG and hydrogen trucks both require the refueling of a compressed gas, with similar piping, compression, and gas distribution equipment
- **Similar Codes** - Codes and standards are similar

(for the safe handling of Class 2 flammable gasses)

- **Similar Infrastructure** - CNG/RNG and hydrogen use a common feedstock – natural gas - so much of the existing infrastructure can be repurposed
- **Faster Fueling** - Like CNG, hydrogen refueling infrastructure is scalable and allows fast refilling
- **Similar Training Requirements** as handling CNG fuel

*Methane in RNG is a 25 times more potent greenhouse gas than CO₂ so burning it greatly reduces CO₂ equivalent emissions resulting in better than zero CO₂ emissions compared to burning straight hydrogen.

To Get Industry's Interest... Talk Market Share/Branding Government Fees & Incentives vs. Protecting Business Market Share

- Government Funds Marketing Campaign for Consumers to Purchase Products Shipped Sustainably (Like SmartWay or Energy Star, sort of a LEED program for goods movement).
- Menu Based Approach - Let Business Pick Which Sustainable Shipping Strategies They Want to Use
- Participating Businesses are licensed to Market their Products as Being “Shipped the Smart Way” or “Green Seal Certified.”
- Government Certification Regularly For Use of Marketing & Promotional Materials



Other branding and certification resources



proprietary product for
supply chain tracking



Trucking Efficiency is a an
industry organization
focused on reducing fuel use
by the trucking industry.

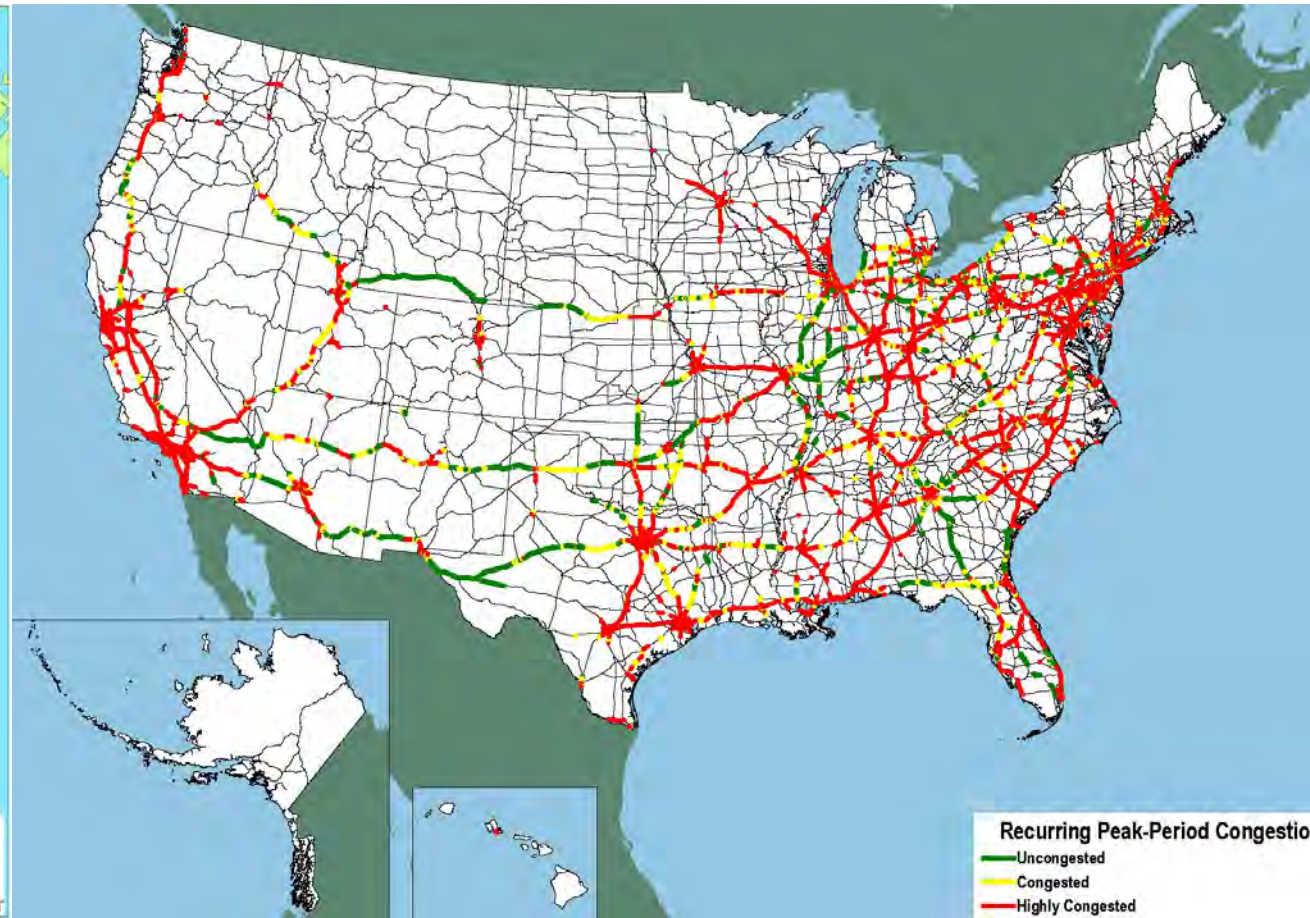
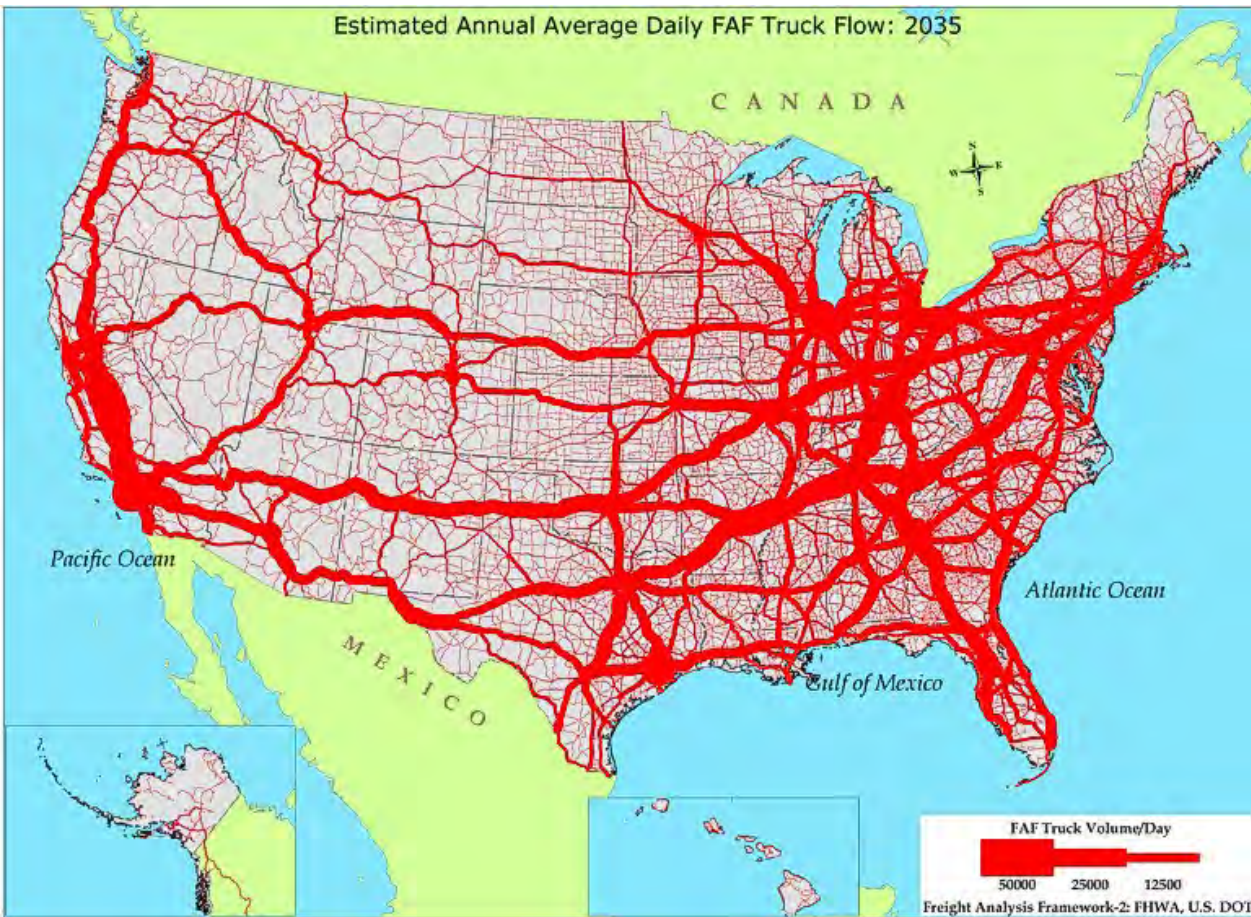


<https://rmi.org/our-work/transportation/trucking-efficiency/>

Non- Transportation
Certification
Branding Examples



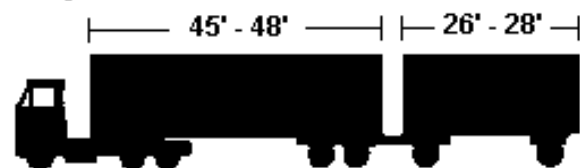
2035 Truck Volumes Will be A Major Issue for the San Joaquin Valley and the Nation



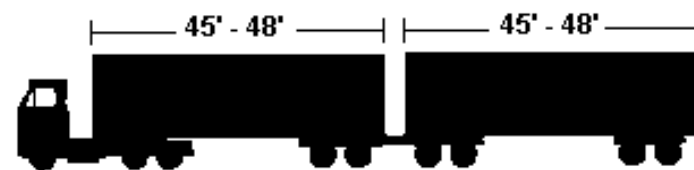
Triple Trailers + Longer Trucks = Fewer Trucks and Less Emissions

Common LCVs

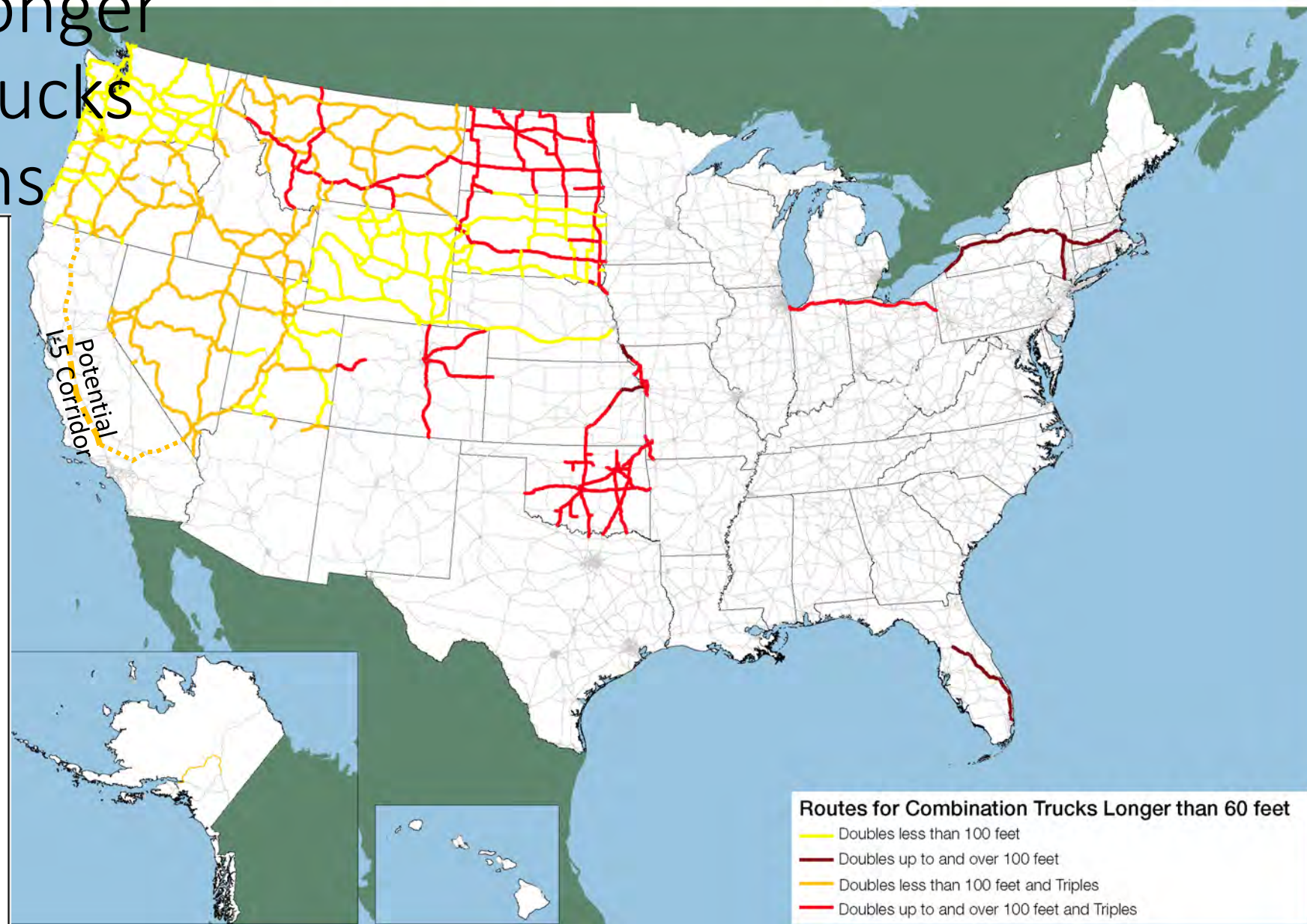
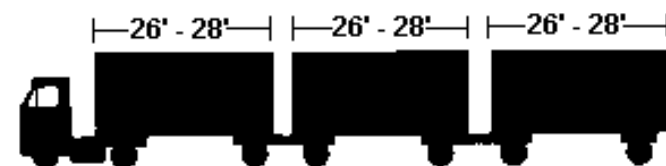
Rocky Mountain Double



Turnpike Double



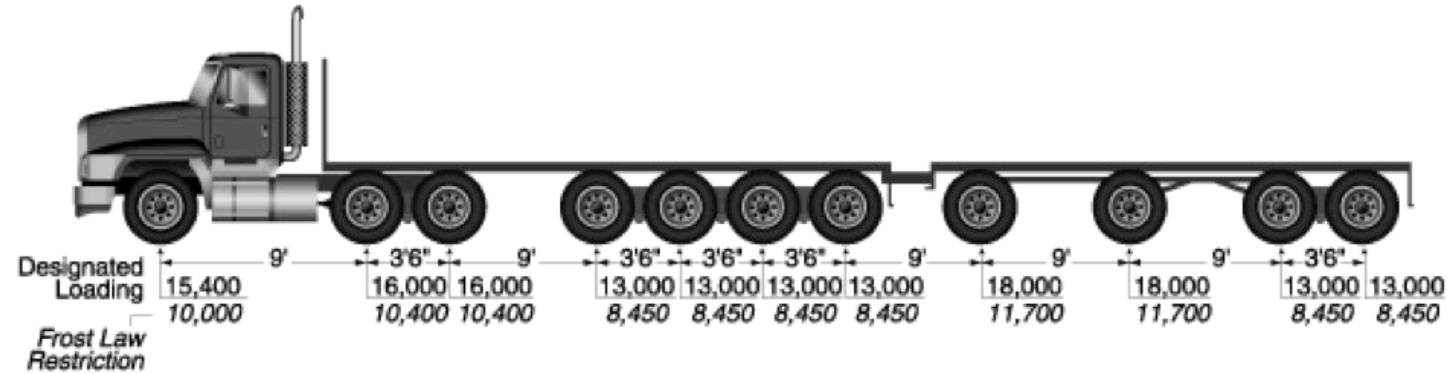
Triple



Note: Empty Triples are allowed on I-80 in Nebraska.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, special compilation by the Freight Operations and Technology Team, 2010.

Heavier Loads + Even More Tires = Less Weight/Tire = Fewer Trucks, Better Air, Less Wear and Tear on Roads, Savings on Road Maintenance to Re-invest in Capacity



Truck tolling is discussed in a report by the Information Technology and Innovation Foundation presented to Congress in 2013 <http://www2.itif.org/2013-oct-house-testimony-atkinson.pdf>.

Phase I Route 58

Eastbound Truck Climbing Lanes



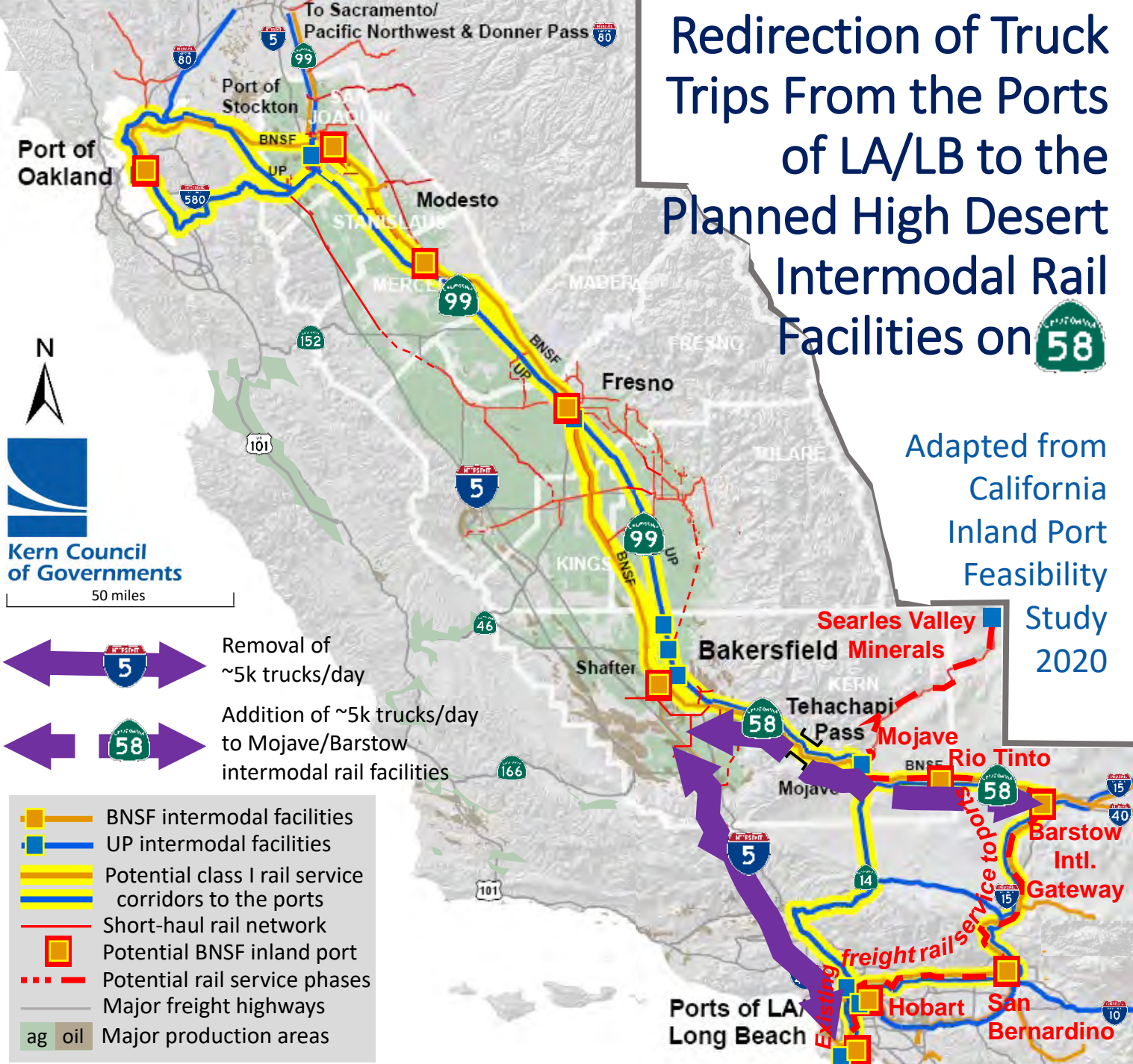
LOCATION (PM)	AVE GRADE	TOTAL RISE	DISTANCE	COST*
#1 (PM 71.8 – 74.5)	4.40 %	610 ft	2.63 miles	\$32 m
#2 (PM 76.3 - 79.4)	5.03 %	805 ft	3.03 miles	\$33 m
#3 (PM 84.1 - 86.5)	3.72 %	483 ft	2.46 miles	\$40 m

Inland Trade Port Impacts on SR 58 Could add 5,000 Trucks Per Day



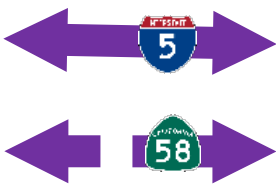
Source:
Kern COG

Caltrans 5+ Axle Truck Counts 2019			
Traveling to/from Ports of LA/LB			
Route	2019	2019	
	S of 405	S of 91	
110	4,589	10,772	
710	15,459	18,110	
Total	20,048	28,882	
Assume 20% redirected to Barstow via 58			
58	4,010	5,776	



Redirection of Truck Trips From the Ports of LA/LB to the Planned High Desert Intermodal Rail Facilities on 58

Adapted from California Inland Port Feasibility Study 2020

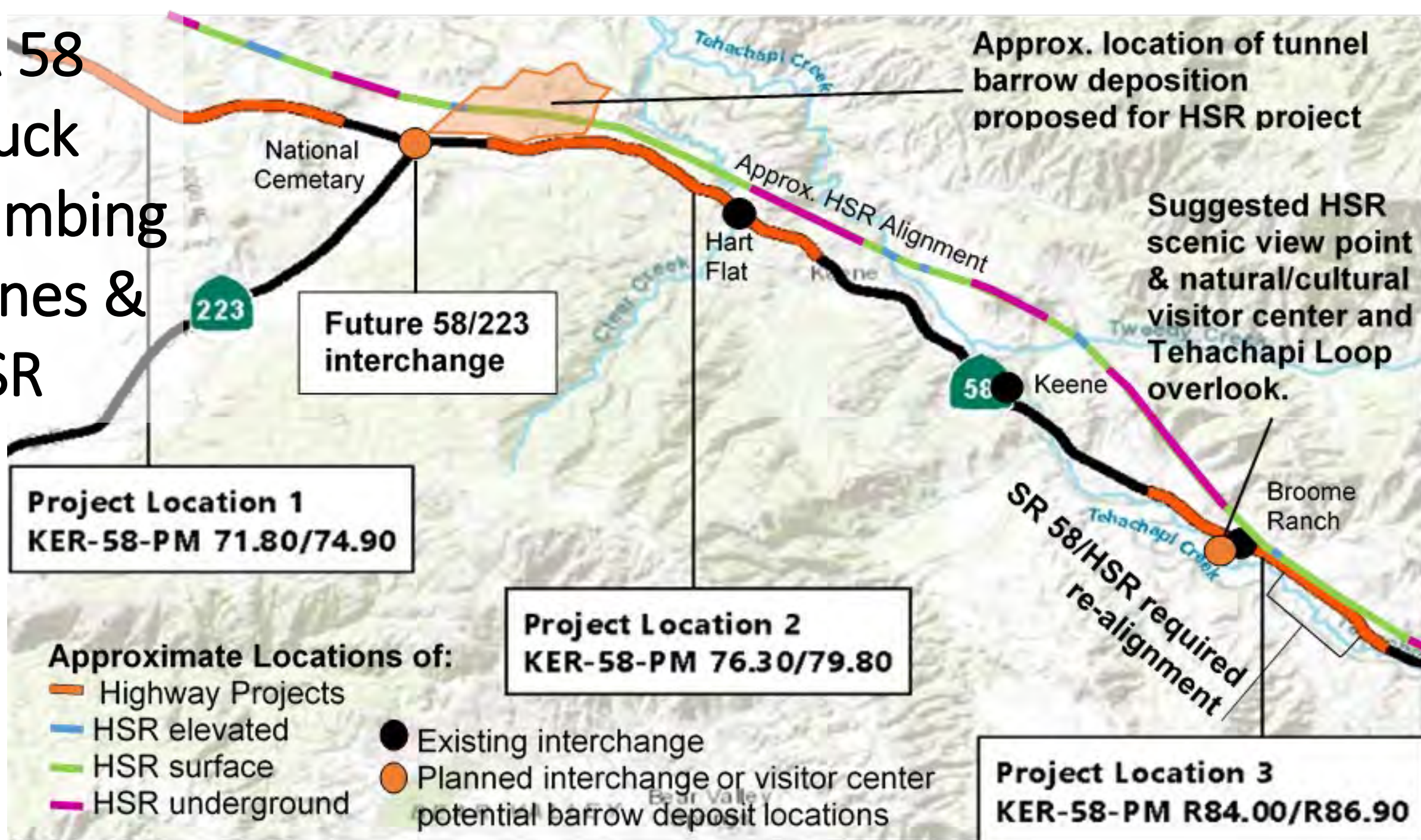


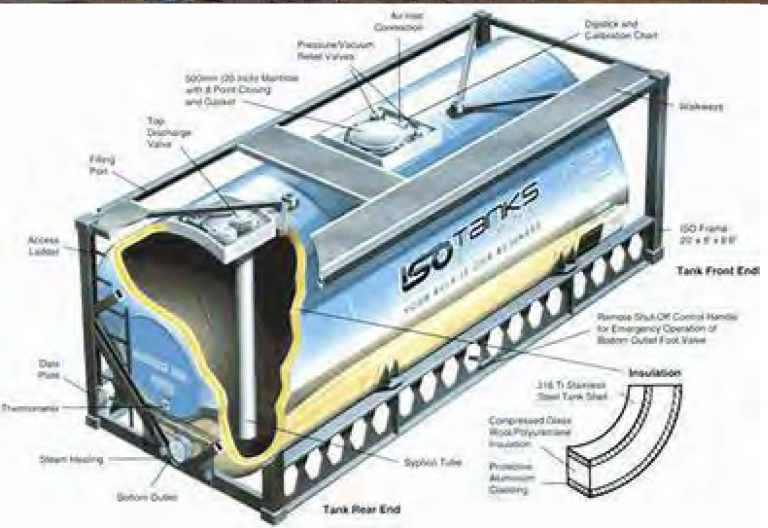
Removal of ~5k trucks/day

Addition of ~5k trucks/day to Mojave/Barstow intermodal rail facilities

- BNSF intermodal facilities
- UP intermodal facilities
- Potential class I rail service corridors to the ports
- Short-haul rail network
- Potential BNSF inland port
- Potential rail service phases
- Major freight highways
- Major production areas

SR 58 Truck Climbing Lanes & HSR





SJVR & CFNR acquired by Canadian/Singapore Firms – Brookfield/GIC



15 years Ago Kern COG Proposed a Network of Inland Ports Connected by Short Haul Rail



Kern Council
of Governments



About Parallel Systems



Culver City and
Mountain View office

- Formed January 2020 in Los Angeles
- Twenty-nine engineers and growing
- Experience from Amazon, SpaceX and Uber

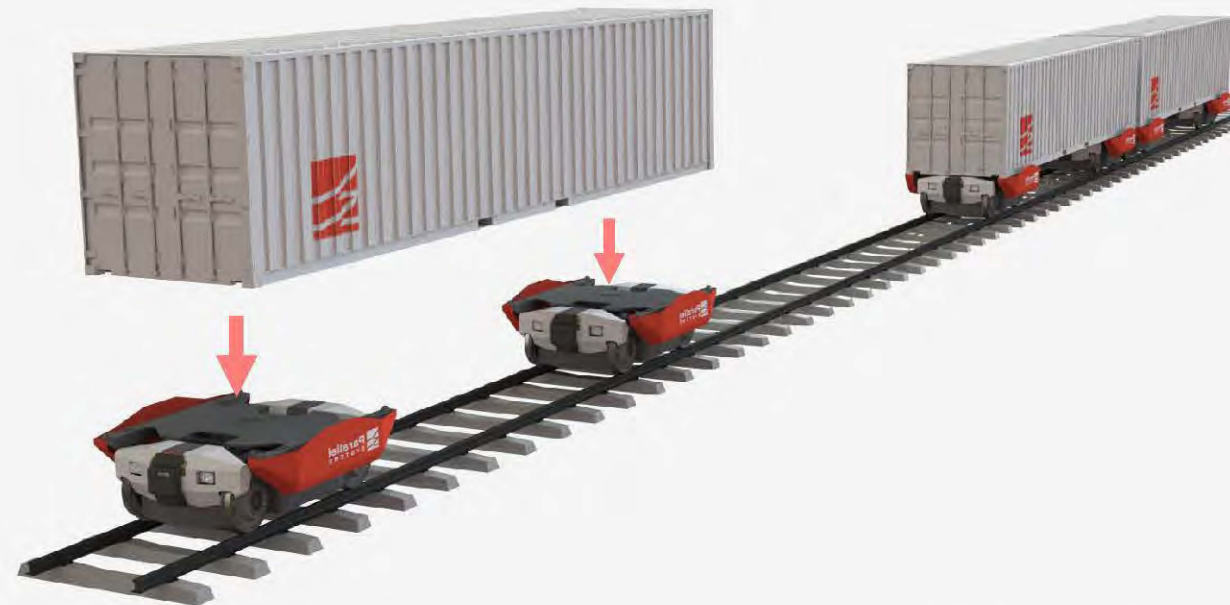


Intermodal Vehicle



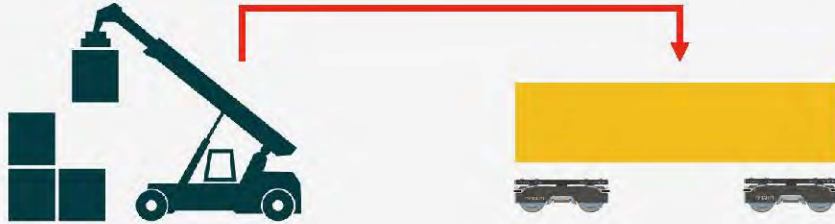
- 150 kWh battery | 500 mile range
- 1/10th the stopping distance of trains
- Class 5 track compatibility | 80 mph

Battery powered rail autonomous vehicles that platoon together

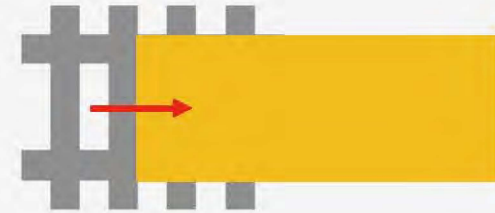


How Does It Work?

- 1 Container loaded onto Parallel rail drones



- 2 Car routes to dispatch queue



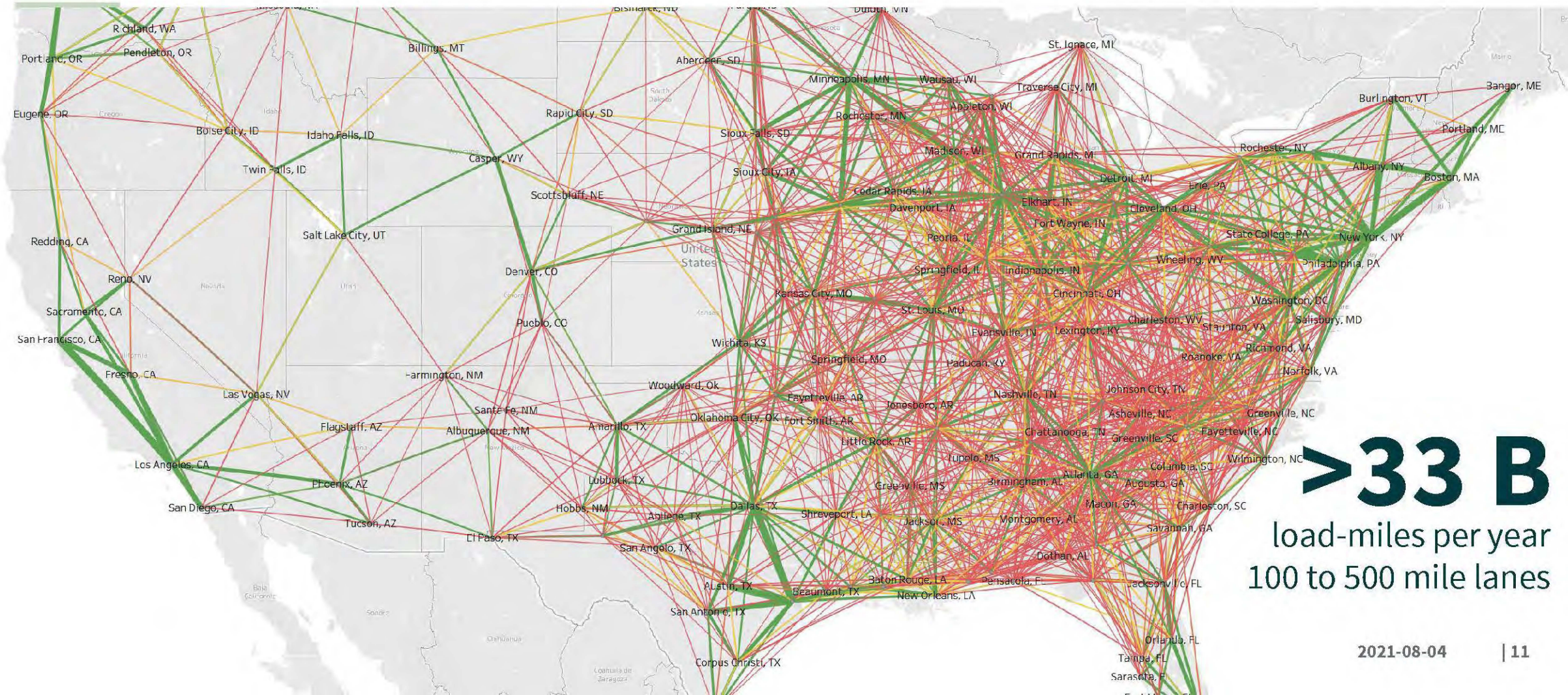
- 3 Drones opportunistically form platoons



- 4 Cargo is routed directly to destination



Opportunities to Migrate Trucking to Rails



Pilot Programs

- Planned 2021 pilot program outside #4 US port
- Goal is to create inland port and move truck volume to rail
- Currently working with FRA for concurrence to operate

