



Embarc Day
September 22, 2021



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Agenda for Today's Discussion

Module 1

Business
Update

Module 2

Fireside Chat
with
Mike Pigors,
Michele Meyer
and Terry Kline

Module 3

Investor
Perspective:
Why Embark?

Module 4

Business
Development
and
Partnerships

Module 5

An Informed
Discussion on
AV Policy

EMBARK's mission is to build a world where consumers pay less for the things they need, drivers stay closer to the homes they cherish, and roads are safer for the people we love



Overview of the SPAC Process

SPAC Process Overview

- The SPAC process has allowed Embark to engage with more investors over a longer period of time in more depth relative to an IPO process
 - Embark has validated the valuation of the transaction with a \$200mm PIPE from leading institutional and strategic investors including CPPIB, Sequoia and Knight-Swift
- Support from high quality SPAC sponsor in Northern Genesis Acquisition Corp. II (Ticker: NGAB)
 - Strong track record with Lion Electric
 - Owner-operator mindset: the ideal fit for Embark
- Once a business combination is announced, the SPAC files a S-4 registration statement, which like a S-1 in an IPO, undergoes SEC review – we are in SEC review
- Once the SEC completes its review, the SPAC (in discussion with Embark) sets the record date
 - The record date is the date that a person/entity needs to be a shareholder in order to vote for the items listed above
- The shareholder vote typically occurs approximately 4 weeks after the record date
- The business combination is expected to close within a couple of days of the shareholder vote
- Embark will officially start trading the day after closing



Today's Embark Presenters

Alex Rodrigues

Co-Founder and CEO
of Embark

Richard Hawwa

CFO of Embark

Mike Reid

CBO of Embark

Sam Abidi

Head of Business
Development
at Embark

Jonny Morris

Head of Policy at
Embark

Additional Presenters

Mike Pigors

*Fmr. Region
President US
Domestic and Intl
Operations, FedEx*



Michele Meyer

*Fmr. President,
Snacks Operating
Unit, General Mills*



Terry Kline

Fmr. CIO, Navistar



Pat Grady

Sequoia Capital



Hon. Elaine Chao

*Fmr. Sec. of
Transportation*



Leading the Way in Autonomous Trucking



Embark is America's longest running self-driving truck program⁽¹⁾

Embark pioneered the transfer point operation model — Embark specializes on long-haul and partners with local drivers for the first and last mile

Proprietary Vision Map Fusion architecture developed from the ground-up to tackle the hardest problems encountered on highways

Embark's business model is asset-light: fleets own & operate trucks and pay a per mile subscription fee to use Embark Driver software

Embark Universal Interface is designed to allow OEMs to provide Embark Driver compatible hardware as a factory option to fleet buyers regardless of platform or powertrain

Embark's strategy has received support from partners and has broad regulatory support

⁽¹⁾ Based on regular road-testing of self-driving truck technology on public roads in the United States.

Module 1:
Business Update
*Presenters: Alex Rodrigues
and Richard Hawwa*



Key Business Updates



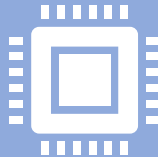
Advisory Board

Launched Advisory Board including current and former CEOs and Executives from Cummins, Navistar, Knight-Swift and FedEx



Tier 1 Suppliers

Partnerships with  and Cummins to support cross-platform integration for Embark Universal Interface



Compute Provider

 **NVIDIA** to provide automotive-grade compute for Embark Universal Interface



Freight Network

Partnership with  to add up to 100 transfer points to Embark's ecosystem



Drayage Partner

Piloting electric trucks for first and last mile with  and 



Embark Announces the Formation of Advisory Board

Overview and Key Highlights

- Embark launches Advisory Board including current and former CEOs and Executives from Cummins, Navistar, Knight-Swift and FedEx
- The team of six leaders will serve as key advisors to Embark as we finalize our commercialization strategy and prepare to enter the market
- Since inception, Embark has understood the importance of incorporating insights from industry veterans to help inform our strategy and we look forward to working alongside our advisors for the years to come



Jon DeGaynor
CEO Stoneridge Inc.



Rich Freeland
Fmr. COO Cummins



David A. Jackson
CEO Knight Transportation



Terry S. Kline
Fmr. CIO Navistar



Michele S. Meyer
*Fmr. President,
Snacks Operating Unit,
General Mills*



Mike K. Pigors
*Fmr. Region President for US
Domestic and US International,
FedEx*



Embark and Collaborate to Validate Automatic Steering Control in Self-Driving Trucks

Overview and Key Highlights

- Embark and ZF announced collaboration to test, validate, and integrate ZF's ReAX adaptive steering technology in Embark's trucks, to ensure **compatibility with the Embark Universal Interface ("EUI")**
- Embark believes this collaboration will lead to the validation of a redundant, "fail operational" L4 steering solution, ultimately leading to a **safer and more performant autonomous technology stack**
 - Automated vehicles require some level of **subsystem redundancy** to allow for continued operation in a faulted state (e.g., under conditions such as loss of communication, ignition, etc.)
- ZF will provide access to the prototype ReAX steering solution and engineering support to Embark, including installation and operation of the system
 - Embark will **integrate and test ReAX with the EUI** and will relay data and results to ZF in order to promote continued development and improvement
- **Embark has tested ZF equipment for 4 years** and this collaboration will take the relationship to the next level
- Both **Embark and ZF pursue an OEM-agnostic approach** with the trucking industry



"As the autonomous trucking sector grows, it's incumbent upon Tier-1 suppliers like ZF to outfit technology companies and OEMs with next-generation solutions. Our collaboration with Embark provides additional data for critical testing and validation of the ReAX steering solution and will ensure that Embark's autonomous trucks are equipped with best-in-class steering innovations as the company pursues its commercialization effort." – **Julien Plenchette, Vice President, Americas, Commercial Vehicle Solutions Division, ZF Group**



Embark Testing Cummins Automatic Powertrain Control

Collaboration to give Embark access to Cummins' next-generation powertrain interface to accelerate integration of the Embark Universal Interface

Overview and Key Highlights

- Embark and Cummins Inc. announced collaboration to seek to accelerate the integration of next-generation automatic powertrain control
- Cummins will provide its automated driving system (ADS) powertrain interface to manage powertrain operations to Embark
- This will enable Embark to leverage Cummins' ADEPT™ powertrain features resulting in **improved fuel efficiency and performance of the self-driving system**
- Cummins will provide engineering support including installation, operation, system specifications, and other technical information to assist Embark in its testing and validation of the powertrain interface for the **Embark Universal Interface (“EUI”)**
- Embark will **share the data and results** from its testing to enable Cummins to support continued development and improvement
- Both Cummins' and Embark's strategies **ensure integration of their respective technologies across all platforms**



“This collaboration was a natural fit for us because both Cummins and Embark’s strategies ensure integration of our respective technologies across all major vehicle platforms. We are testing our ADS powertrain interface to ensure optimization of Cummins powertrains with all self-driving technology interfaces like the EUI.” - J Michael Taylor, General Manager Powertrain Integration, Cummins Inc.⁽¹⁾



Embark Uses NVIDIA DRIVE® to Power its Embark Universal Interface for the Autonomous Trucking Industry

Overview and Key Highlights

- Embark intends to equip its test fleet with automotive-grade, high-performance, and energy-efficient compute by collaborating with NVIDIA and adopting the DRIVE® platform
- High-performance computing is critical to processing complex AI algorithms and autonomous vehicle software. By using the NVIDIA DRIVE® platform, Embark is adopting best-in-class scalable compute solutions to deploy robust self-driving software, marking the next step in Embark's four-year relationship with NVIDIA
- The NVIDIA DRIVE® platform is the first scalable AI platform that features co-developed hardware and software that work together to enable the production of automated and self-driving vehicles, combining deep learning, sensor fusion, and surround vision for a safe driving experience



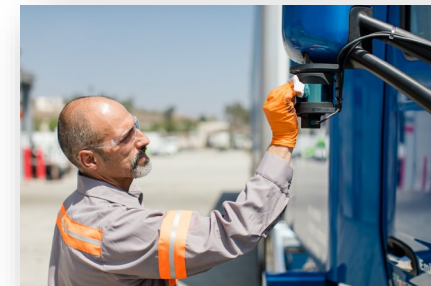
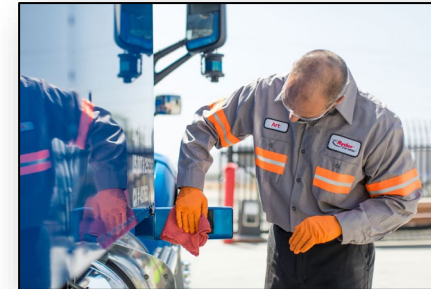
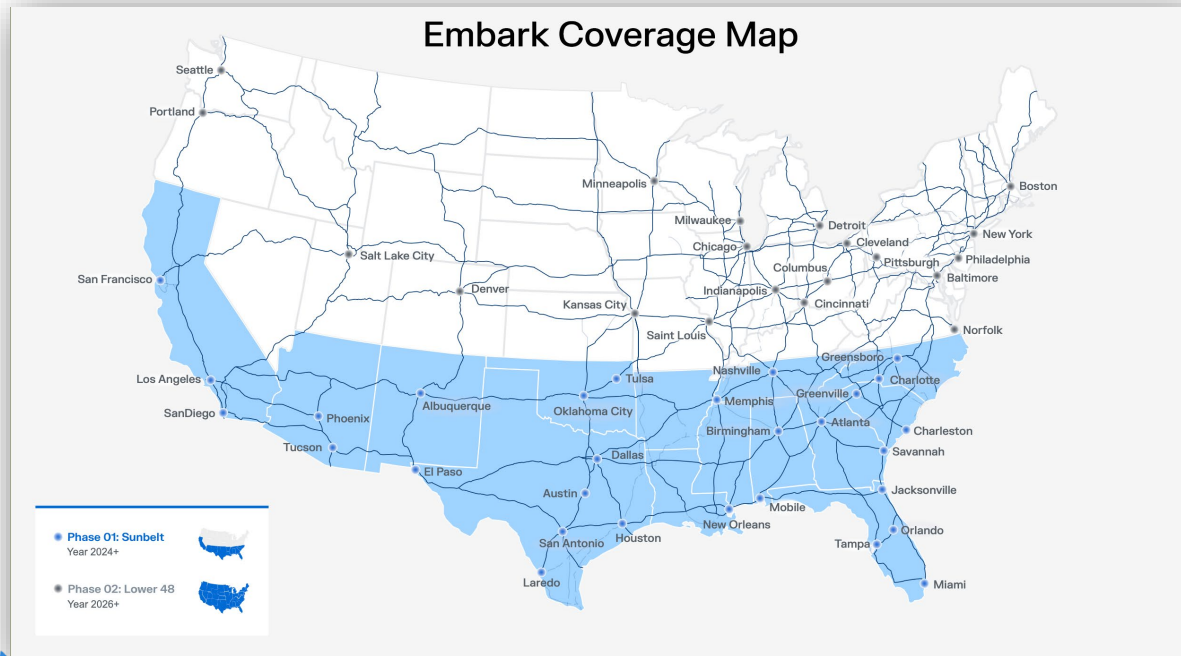
“By selecting NVIDIA DRIVE®, Embark will help accelerate the development of commercial self-driving software-as-a-service for the trucking industry, achieving a safer and more efficient freight ecosystem,” Rishi Dhall, Vice President of Automotive Business at NVIDIA



Embark Partners with to Launch Nationwide Network of Up to 100 Freight Transfer Points for Autonomous Fleets

Overview and Key Highlights

- **Embark Coverage Map:** Embark is working with a host of industrial real estate operators to secure and stand up transfer points in key sunbelt markets between now and 2024 in preparation for commercial launch
- **Onsite Operations:** Embark has partnered with Ryder which plans to operate points within the Embark Coverage map, providing fleet partners a comprehensive, efficient and consistent onsite experience for activities ranging from pre-launch inspection to tire changes to sensor cleaning



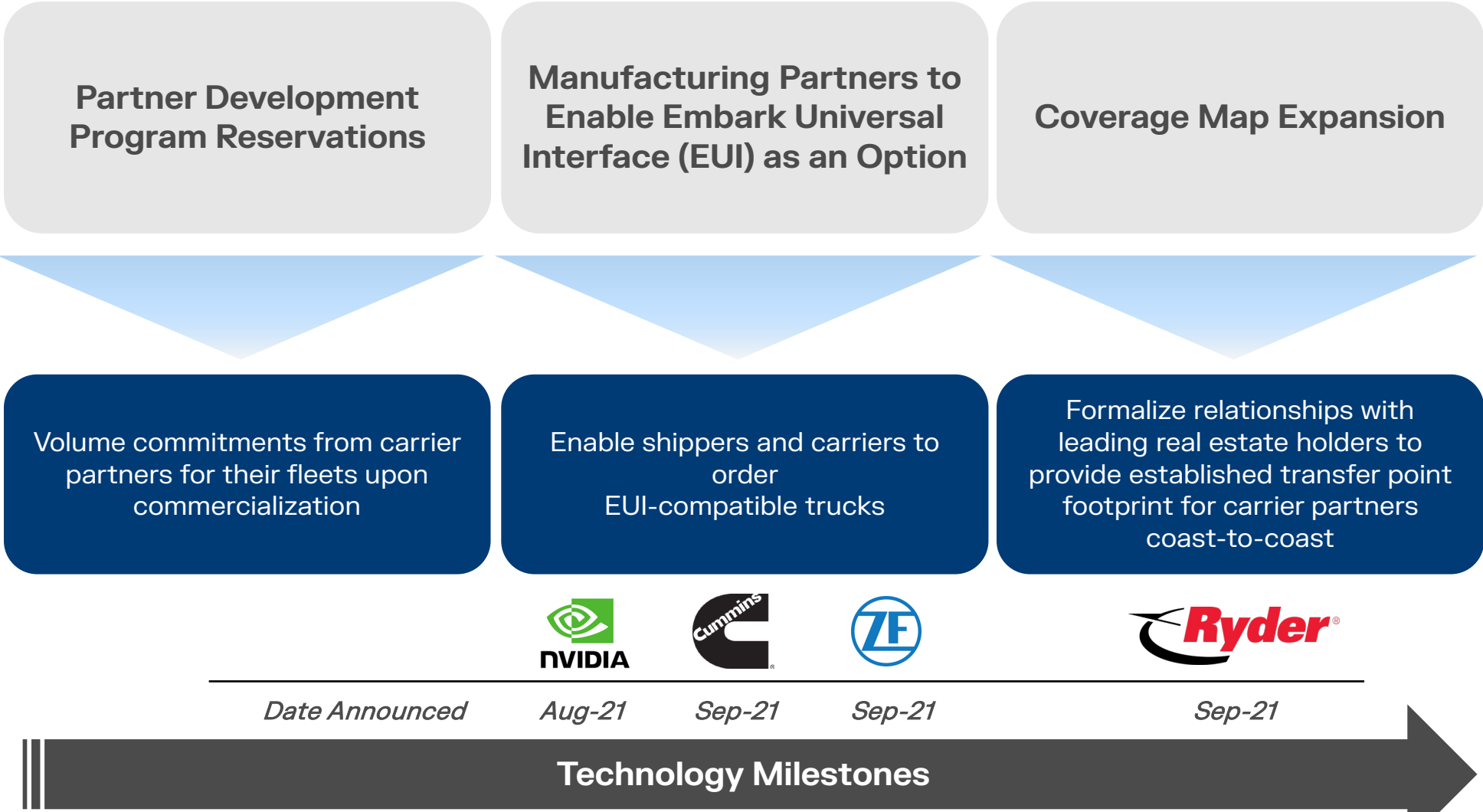
Embark and Introduce EV Drayage with

Overview and Key Highlights

- **Key Industry Partners:** Embark is working with HP and BYD to formalize the end-to-end shipment process integrating autonomous trucks and electric truck transfer point drayage
- **A Natural Operational Fit:** The transfer hub model, pioneered by Embark, creates two short haul local moves for every load, where EVs, which are currently best suited for short haul, can eliminate pollutants where they matter most – in cities
- **Addressing Public/Private ESG Goals:** Shippers are driven to meet ambitious targets and carriers want to support them



Embark is Delivering on Initiatives



Public Announcements Since Transaction Announcement





What Differentiates Embark

Disciplined, Consistent and Sole Focus on Trucking

Embark's Mission-Driven Philosophy

- Embark's software technology is differentiated because it was designed from the beginning to be commercialized at scale for a sole use case in trucking
 - Urban driving use case presents challenges that are not transferrable to AV Trucking
- Developing an autonomous software stack is about time and refining the layers of code
 - Embark has been working on this problem for a long time
- History and experience focused on safely developing trucking software differentiates Embark's technical aspects, but also practical aspects in commercializing the technology

Embark's Seed Pitch Deck (2016)



First AV Truck on US Highways⁽¹⁾



October 2016



June 2017



November 2017




May 2018



July 2020

 **EMBARK** is the Longest-Running Self Driving Truck Program

 1) Embark date based on internal record. All other dates are estimates determined through public records.

Key Aspects of Our Business



**Vision Map
Fusion**



**Embark Universal
Interface**



**Asset-Light
Go-to-Market**



Technology: Vision Map Fusion

What is Vision Map Fusion?

- Vision Map Fusion is Embark’s differentiated approach to mapping
- Embark does not treat the map as static, but rather treats the map as a dynamic changing environment
 - Legacy AV systems rely on HD mapping given focus on the robotaxi market or generally accepted practice of building a first-generation system
- Vision Map Fusion leverages Embark’s cutting-edge non-linear-optimization techniques to update the map in real-time using detailed road geometry data from Embark’s LiDAR and Camera sensors
- This allows the Embark Driver software to detect and respond to new situations where the map may be outdated and improves the safety of the system
- This technology should also enhance the expansion of Embark’s operational design domain for situations like snow, where lack of lane markings or lane closures due to inclement weather are common challenges
- Vision Map Fusion was designed for trucking given the lack of re-routing capability for highway driving and may not be as applicable for urban driving
- Vision Map Fusion has been a key catalyst to carrier partnerships given deep understanding of highway construction frequency

Source: YouTube. Company materials.

1) <https://aurora.tech/blog/the-atlas-our-hd-mapping-system> - (Discussing Aurora’s HD map technolog)

2) https://plus.ai/Plus_Safety_Report_2021.pdf

3) <https://www.sec.gov/Archives/edgar/data/1823593/000119312521091150/d909743ds1.htm>

Other AV Companies Rely on HD Mapping

“...HD maps can become a morass of dense, heavyweight data that requires significant time and resources to maintain.”⁽¹⁾



“Using both our cameras and our lidar, we can localize with respect to our HD maps which contain structured priors that can aid in rapidly and accurately understanding our surroundings.”⁽²⁾



“Our HD digital mapped routes currently span over 3,000 miles across the U.S., and we expect to map the entire 46,000 mile U.S. Interstate System by 2024.”⁽³⁾



Comparing  and  **EMBARK** responding to encountering a work zone on the road.





Embark Universal Interface

What is Embark Universal Interface (“EUI”)?

- EUI is a standard sensor module and compute module designed to interface with most major steering and braking actuators
- Comprised of cameras, lidars, radars, and GPS in order to perceive the world around the trucks and enable safe autonomous driving
- EUI is intended to enable Embark’s carrier partners to purchase Embark Driver-compatible vehicles from multiple OEM integrators
 - Nearly 90% of top 25 carriers run 2+ OEMs and ~50% run 3+ OEMs¹⁾
 - Embark’s PDP partners currently run all 4 major OEMs
- Provides flexibility for future integration for a variety of powertrain and propulsion systems
- Designed to be consistent with the way the trucking and logistics industry operates today
- Designed to be a factory option for carriers
- EUI cost bundled into truck cost, paid for by carriers and their customers
- Under the current model, EUI is enabling technology, not a profit driver



¹⁾ Fleet OEM composition based on company analysis of publicly available media and disclosures.



Asset Light Go-To-Market Strategy

What is Embark's Asset-Light Go-to-Market Strategy?

- Embark will commercialize its technology in a manner that is consistent with how the trucking and logistics industry already operates today
- Embark's customers are the carriers and shippers, who may license Embark's technology for a per mile subscription fee
 - Embark does not build trucks and does not intend to create its own carrier network
- In-depth analysis network analysis with current carrier partners designed to bring the technology to market at a commercial scale
 - Leverage the capital spend and economies of scale carriers have with OEMs to enhance the overall ecosystem in a capital efficient manner
- Work with Tier I suppliers to integrate and work with OEMs, consistent with the way trucks are built today
- Embark will look to partner with real-estate partners to expand its coverage map and build a transfer point network that can be scaled

Complementary Asset Partnerships



The **top 100** carriers spend an estimated **\$10.3B⁽¹⁾** on fleet replacement annually.



Embark is working with leading real estate operators who together manage **thousands of properties** located in key Embark markets.

Robust Partnership Model Allows Embark to Remain Asset-Light, Focus on its Core Competency of Software Development and Leverage the Existing Ecosystem as it Exists Today.

¹⁾ Replacement figure based on the total fleet of the top 100 carriers (<https://www.ttnews.com/top100/for-hire/2021>) and assumes 25% of the total fleet is replaced annually at \$125k replacement value per truck.



EMBARK Partners with World Class Suppliers



NVIDIA.

**Market Cap
\$528bn**

LUMINAR

**Market Cap
\$6bn**



**2020 Revenue
\$39bn⁽¹⁾**



















**Market Cap
\$32bn**



Source: FactSet. Market data as of September 20, 2021.
1) ZF 2020 Revenue converted at FX rate of 1.181 EUR to USD.

Embark is Differentiated Versus Competitors

				
First AV Truck on US Highways ⁽¹⁾	October 2016	June 2017	November 2017	July 2020
Solely trucking focused	✓	✗	✓	✗
Developing For:	Freightliner	✓	✗	✗
	PACCAR	✓	✗	✓
	Volvo	✓	✗	✓
	Navistar	✓	✗	✗
Vision-Map Fusion	✓	✗	✗	✗
Asset Light?	✓	✗	✗	✗
U.S. Shipper Partnerships	 	--		--
U.S. Carrier Partnerships	   	 	  	--

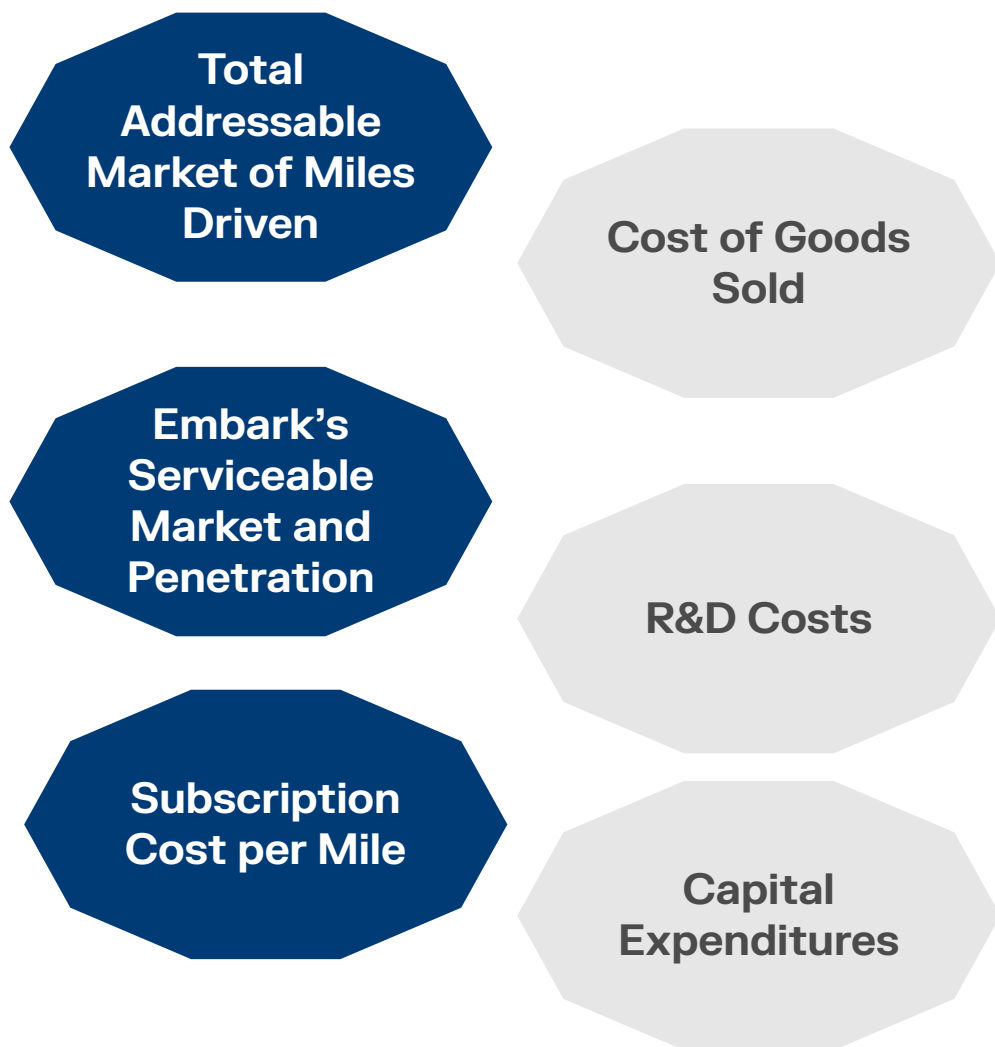


Source: Company filings and public announcements.

1) Embark date based on internal data. All other dates estimated based on public records.



Financial Model Framework



Financial Model Framework

- Derived based on how we see the AV Trucking market ultimately commercializing
- Identify the total addressable market, the number of miles economical for autonomous trucking and Embark's ultimate penetration of that service market
 - 2024 commercialization in the sunbelt states and 2026 commercialization in the remainder of the lower 48 thereafter
 - Mix of transfer point and direct to customer hauls
- Pricing based on savings per mile of a human-driven truck versus an autonomously drive truck
 - \$1.76 versus \$0.96 per mile or **\$0.80 net savings per mile**
- Embark receives a portion of this savings as its per mile subscription cost of \$0.44 per mile
 - For Transfer Point hauls, Embark provides a fixed dollar rebate for a portion of the last mile (i.e., drayage) cost, as such the actual cost per autonomous mile ranges depending on the length of the haul
- COGS is network support – primarily bandwidth and staffing and should scale in parallel with revenue growth

Assumptions Supported by Ongoing Dialogue with Carrier Partners



Reviewing the Domestic Freight Market

Domestic Freight Modalities by Revenue⁽¹⁾



Embark is entering a nearly \$1.0T domestic freight industry, of which \$700B is derived from truck freight.

Truck Freight: By the Numbers

2.0M semi-trucks in operation⁽²⁾

60k truck driver shortage expected to increase to **160k** by 2028⁽³⁾

1 in 5 shippers have their electronic shipment requests rejected by carriers⁽⁴⁾

~70% of goods shipped (by value) are transported by trucks⁽⁵⁾

300B miles travelled annually⁽⁶⁾

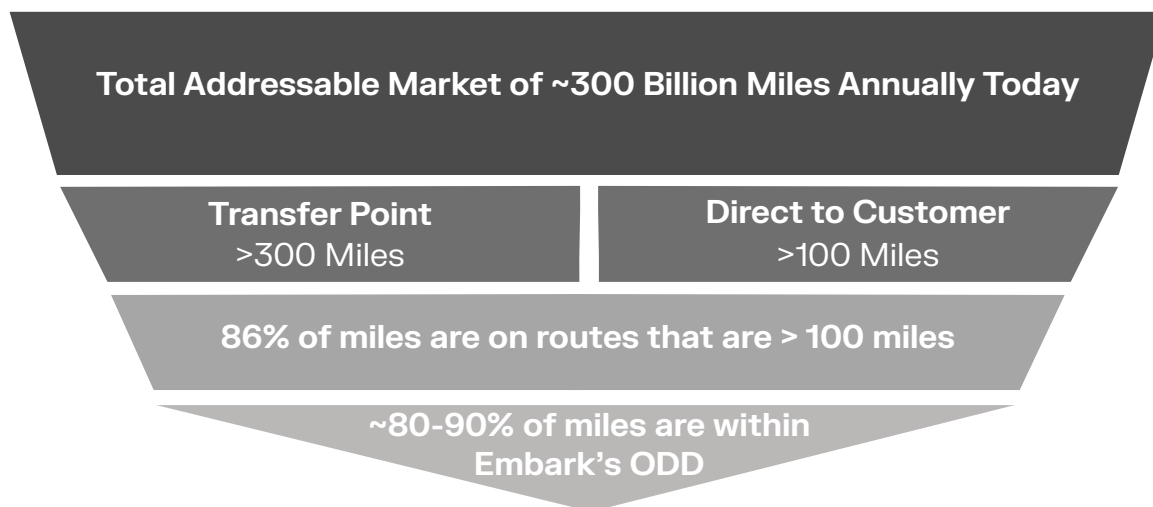
\$700B total truck freight revenue

1) *Truck Freight (2018 data):* <https://www.trucking.org/news-insights/new-report-finds-trucking-industry-revenues-topped-700-billion>. *Rail Freight (2017 data):* <https://railroads.dot.gov/rail-network-development/freight-rail-overview>
2) (2014 data) <https://hdstruckdrivinginstitute.com/blog/semi-trucks-numbers/>
3) (2018 data) <https://www.ttnews.com/articles/ata-says-truck-driver-shortage-course-double-decade>
4) <https://www.freightwaves.com/news/rejection-rate-down-meaningfully-but-spot-rates-at-all-time-high-what-gives>
5) <https://www.census.gov/library/stories/2021/02/what-is-in-that-truck-i-just-passed-on-the-highway.html>
6) Based on Freight Analysis Framework from the US DOT: https://ops.fhwa.dot.gov/freight/freight_analysis/faf/



Embark's Mileage Framework

Autonomous Truck Miles Driven⁽¹⁾



Expected Embark Penetration as a % of Serviceable Miles



Mile Detail⁽¹⁾

(miles in millions)

Phase 1	2024E	2025E
Total Freight Miles	96,677	98,224
Total Serviceable Miles	56,970	59,455
300+ Mile Routes	52,421	53,425
100 – 300 Mile Routes ⁽²⁾	4,550	6,029
Embark Miles Driven	2,374	7,432

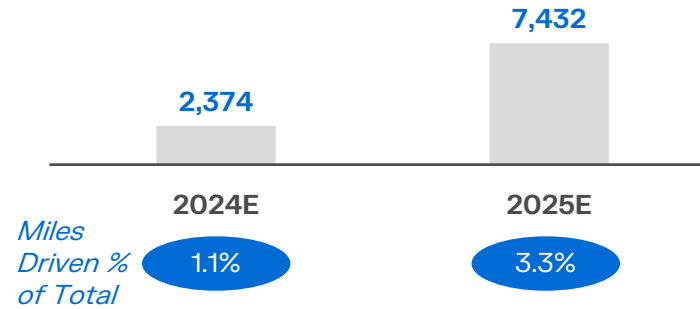
Phase 2	2024E	2025E
Total Freight Miles	218,008	221,496
Total Serviceable Miles	164,064	169,081
300+ Mile Routes	157,603	160,519
100 – 300 Mile Routes ⁽²⁾	6,461	8,562
Embark Miles Driven	--	--

¹⁾ Analysis based on the Freight Analysis Framework, produced in partnership with the Bureau of Transportation Statistics and the Federal Highway Administration and additional data from the Bureau of Transportation Statistics Link: https://ops.fhwa.dot.gov/freight/freight_analysis/faf/

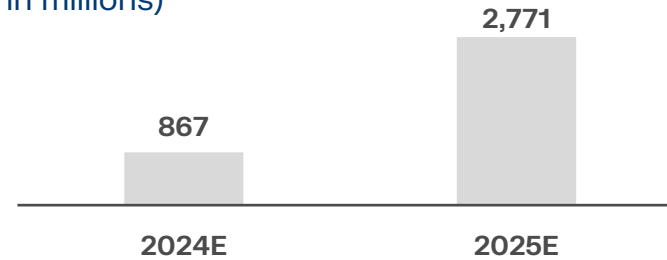
²⁾ 100-300 mile trips only economical in Direct to Customer model (i.e. origin/destination within operating domain)

Financial Projections

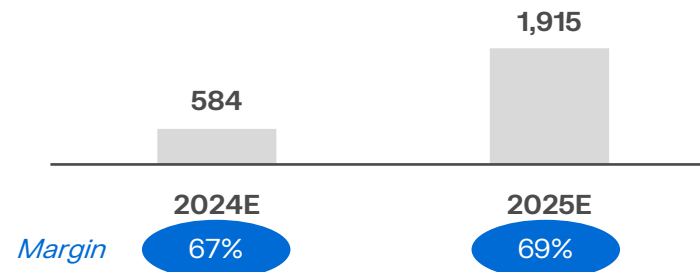
Autonomous Miles Driven (miles in millions)



Revenue (\$ in millions)



Gross Profit (\$ in millions)



Source: Embark

2026+ Serviceable Mile Opportunity ~236 Billion+



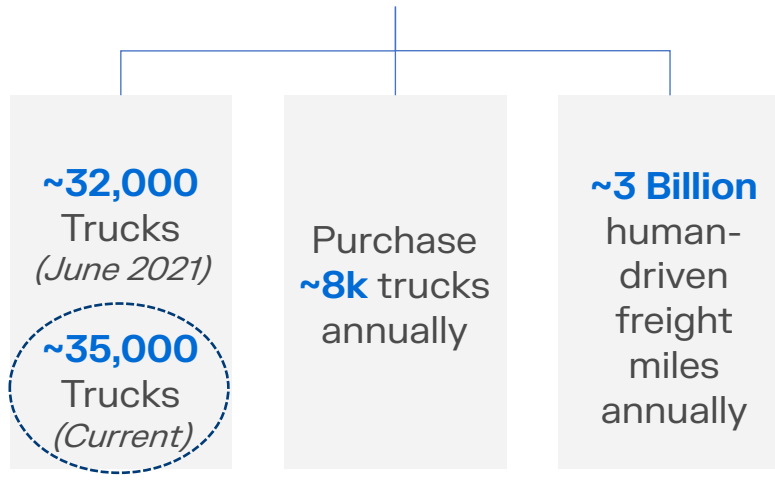
Long-Term Gross Margin Target
~74%

Long-Term EBITDA Margin Target
30%+



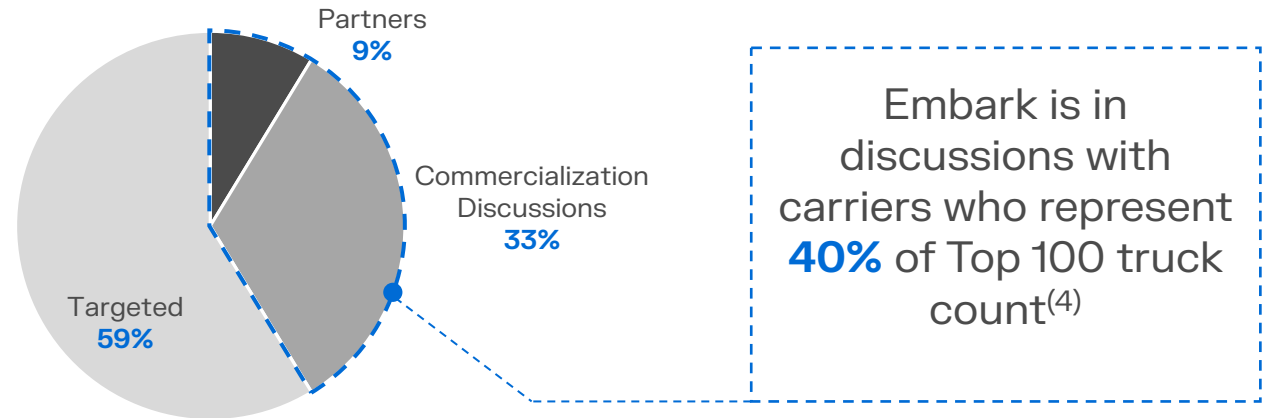
Existing Partner Data Supports Mileage Targets

Existing Partners



The fleet owned by the members of our partner network has grown, and now constitutes **~97%** of the trucks needed to meet our 2024 target up from **89%** since June 2021 ⁽¹⁾⁽²⁾⁽³⁾

Embark is Currently Partnered With High Quality Carriers But Has a Robust Customer / Carrier Pipeline to Rapidly Grow



Top 100
(~10% of market)

~4,600 Average Fleet Size⁽⁴⁾

~30 Billion Human Driven Freight Miles⁽⁵⁾

1) Assumes our partner routes are the same distribution as all routes, as determined by the Freight Analysis Framework, or ~18% of our partner trucks are in phase 1 addressable lanes in 2024

2) Assumes each autonomous truck can run 360K miles per year

3) Forecast requires ~6,500 autonomous trucks to meet 2024 mileage targets and estimates that the 5 existing partners have ~6,300 trucks on lanes deployed in 2024 based on Sep-21 figures

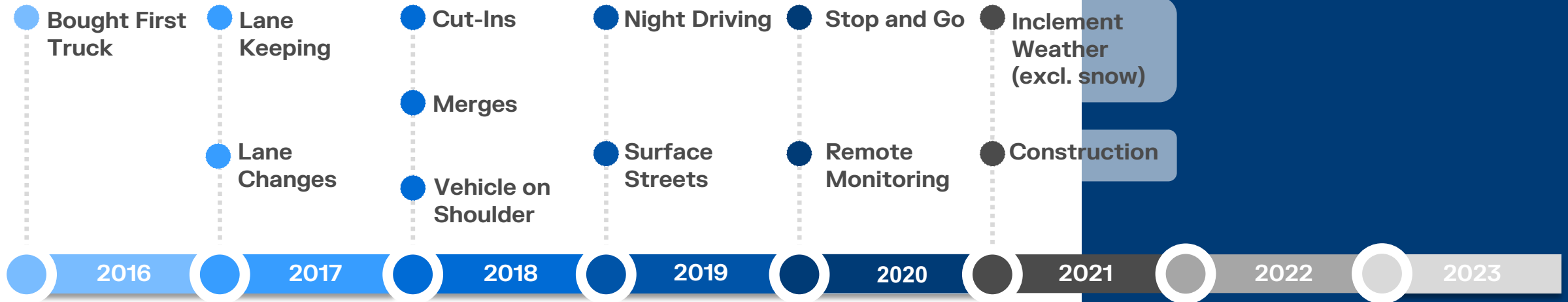
4) Based on Top 100 For-Hire carrier data from Transport Topics: <https://www.ttnews.com/top100/for-hire/2021>

5) Calculated based on top 100 total tractor count of ~342K (Transport Topics) and ~94K annual miles per truck (Trucking Research - <https://truckingresearch.org/wp-content/uploads/2020/11/ATRI-Operational-Costs-of-Trucking-2020.pdf>)



Embark's Technology Differentiation Provides Visibility to Commercialization With Safety at the Forefront

Past Technology Milestones and Accomplishments



Future Technology Milestones to Accomplish

Embark has identified 16 core capabilities that are required to safely commercialize its technology

- Embark has developed 11 of the 16 capabilities, and expects to complete the remaining 5 by the end of 2023

- Safely Pull Over to Shoulder
- Emergency Vehicle Interactions
- Evasive Maneuvers
- Inspections
- Blown Tires

Operational Overview

Safety

Industry-Leading FMCSA Stats⁽¹⁾

- Zero failed DOT inspections
- Zero DOT crashes

Testing

Public Road Testing⁽²⁾

- 4.5+ years of public road testing
- Longest running self-driving truck program in America

Efficient Fleet Utilization

- 60,000 miles/truck-year on average since 2018⁽³⁾

Ready for Scale

- 400%+ expected internal AV testing fleet growth by end of 2023⁽⁴⁾

Commercial

Shipper & Carrier Partners

- Current partners own ~35,000 trucks⁽⁵⁾
- 3x YoY growth in the number of shipper and carrier partners we work with⁽⁶⁾

Service

- 100% on time delivery rate 2018 to date

 **EMBARC** Ultimately Defines Success by Safely Commercializing our Technology

1) Based on Federal Motor Carrier Safety Administration Company Snapshots: <https://safer.fmcsa.dot.gov/CompanySnapshot.aspx>

2) Based on earliest available publicized information of public road testing with a Class 8 truck in the US

3) Based on average miles per truck-year for Embark's autonomous truck fleet from Jan 1 2018 to August 31 2021

4) Minimum expected autonomous truck fleet count growth from September 2021 until the end of 2023 based on current forecasting

5) Based on public reports of Embark's current shipper and carrier partners.

6) Based on # of shipper and carrier partners combined that Embark has worked with in 2021 YTD vs 2020





Concluding Remarks

Concluding Perspectives

Embark has established itself as a leader in the autonomous trucking industry



Focused on a market with a clear commercial and business use-case: commercialization is expected in the near-term and tangible



Disciplined, consistent focus from the start on AV trucking, which has enhanced technology leadership



Commitment to building a product that places the safety of its end users as its top priority



Partnership model allows Embark to focus on core competency of software development and deploy its capital efficiently



Embark seeks to enhance and help evolve the overall industry, not disrupt or break the industry



Module 2: Fireside Chat with Embark's Advisory Board

*Presenters: Mike Reid with
Embark Advisory Board Members:
Mike Pigors, Michele Meyer,
and Terry Kline*



Advisory Board Presenters



Mike K. Pigors
Fmr. Region President for US Domestic and Intl, FedEx

- Michael “Mike” Pigors spent his 40-plus year career at Federal Express (FedEx), where he most recently served as Regional President and Executive Vice President for US Domestic and US International
- Began his career at FedEx in 1979 as a Ramp Agent, and has since worked throughout the organization, holding senior leadership positions since 1990
- Previously served on the board of directors of the Intermodal Transportation Institute, a program at the University of Denver’s Center for Transportation Management founded to promote sustainable transportation systems worldwide



Michele S. Meyer
Fmr. President, Snacks Operating Unit, General Mills

- Michele Meyer has spent the majority of her 30-plus year career in the CPG industry at General Mills. She most recently served as President and SVP for General Mills’ Snacks Operating Unit, a position she held from 2017 to 2019
- During her tenure at General Mills, she oversaw national product launches, restructured and optimized global supply chains, and spearheaded major business growth initiatives
- Currently serves as an Operating Partner at Newroad Capital Partners and as a board member at the SPOON Foundation, the National Association of Corporate Directors (Minneapolis Chapter), and Woman Corporate Directors (Minneapolis Chapter)



Terry S. Kline
Fmr. CIO Navistar

- Terry Kline is a seasoned technologist and automotive and trucking industry expert, having served as an IT leader at major global OEMs during his career
- Senior Vice President and Global CIO of Navistar International from 2013 to 2018
- Held senior leadership roles at GM from 2000 to 2012, including serving as Vice President and Global CIO from 2009 to 2012
- Currently the MD of TSK Technology Group, a consulting firm he founded in 2012 specializing in the connected vehicle industry



Lunch Break



Module 3
An Investor Perspective:
Why Embark?
Presenter: Pat Grady



An Investor Perspective: Why Embark?



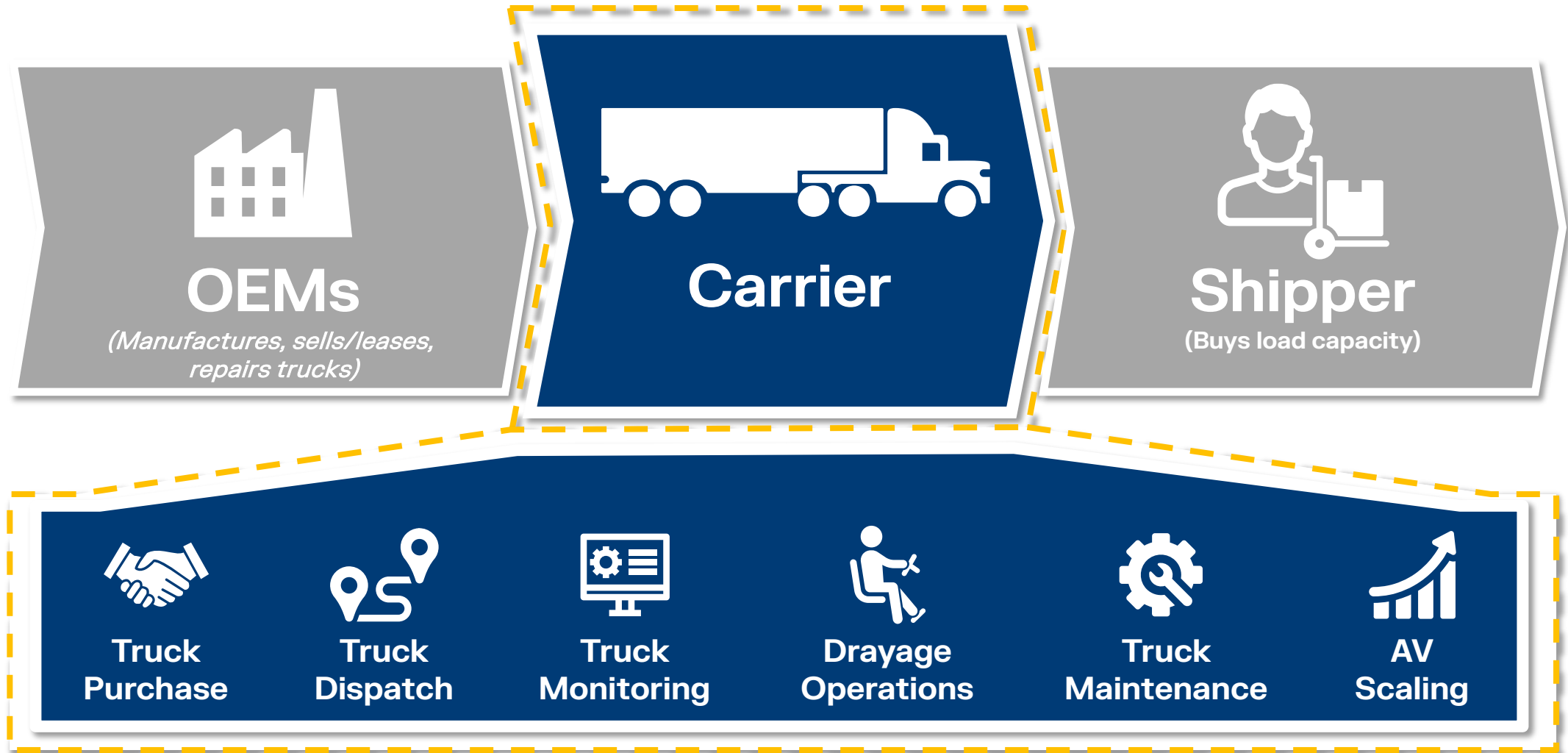
Pat Grady
Partner, Sequoia Capital

Pat Grady is a Partner at Sequoia Capital, which he joined in 2007, and is responsible for the partnership's growth-stage investment business in the U.S. and Europe. He is a Director of Amplitude, Attentive, Cribl, Embark Trucks, Namely, Okta (OKTA), and Pilot. He has also had the privilege of working closely with Drift, Gather, HubSpot (HUBS), Jive Software, MarkLogic, Medallia (MDLA), Neeva, OpenDNS, Qualtrics (XM), ServiceNow (NOW), Snowflake (SNOW), Sumo Logic (SUMO), Sunrun (RUN), and Zoom (ZM), among others. Pat holds a B.S. from Boston College, grew up in the Powder River Basin of Wyoming, and lives in Portola Valley with his wife and two daughters.

Module 4
Business Development
and Partnerships
Presenter: Sam Abidi



Embark Freight Ecosystem



Embark partners represent over 35,000 trucks and \$22B in freight⁽¹⁾

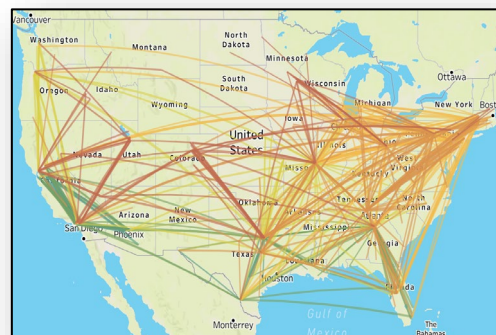
Embark Partner Development Program

A systematic approach to preparing the nation's leading carriers to deploy, operate and scale autonomous trucks across their existing networks



Strategic Planning

Embark is working with shippers and carriers to analyze their nationwide freight networks at a lane level and **develop detailed rollout plans** for converting portions of these networks to autonomous



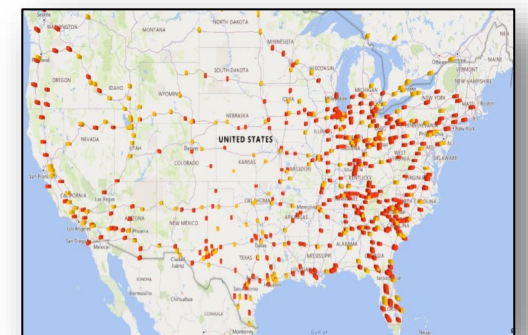
Operational Testing

Embark is **hauling with carriers and shippers** to refine operational details such as dispatching, maintenance and monitoring, establishing a scalable autonomous trucking operating model



Ecosystem Building

Embark is collaborating with carriers and shippers to **define and establish** the transfer point, regulatory, insurance and technology **infrastructure** necessary to efficiently scale autonomous trucking



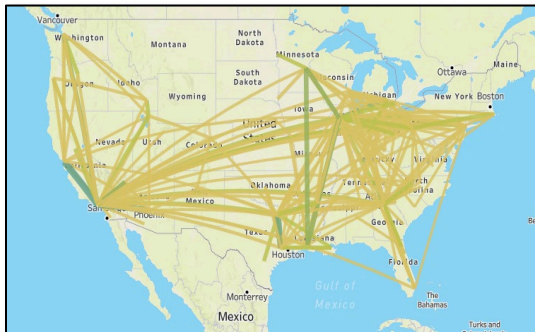
1) Based on public reports of Embark's current shipper and carrier partners.

Strategic Planning

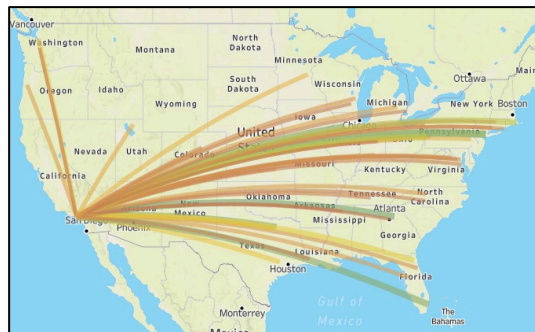
Embark is working with shippers and carriers to analyze their nationwide freight networks at a lane level and develop detailed rollout plans for converting portions of these networks to autonomous

Network Assessment

- **Benefits:** Quantify carrier benefits at a lane level across savings, speed, sustainability and safety
- **Clusters:** Cluster lanes based on attractiveness for conversion considering factors such as region of operation, lane length, frequency, lane density, growth potential, through a host of Embark proprietary measures
- **Sequence:** Sequence lane clusters for rollout, factoring in carrier business objectives and operational adaptations needed



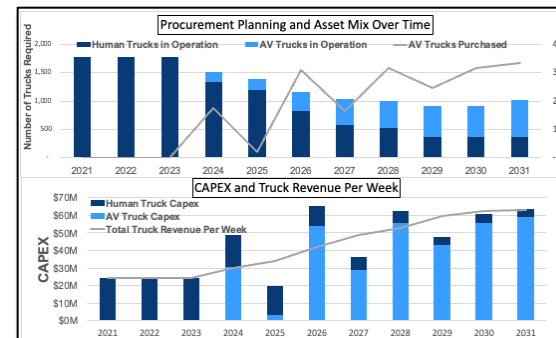
Where are my high-density shuttle lanes, can I grow them?



Where can I remove one or more days of delivery time?

Deployment Planning

- **Trucks:** Utilize Network Assessment to define specific truck needs during early years of deployment (supply constrained years)
- **Capital:** Model CAPEX, NWC and vehicle lifecycle implications for carriers to begin financial planning today
- **Operations:** Determine geographic operational requirements to support rollout including drayage truck capacity, drayage drivers, site mapping needs (shipper facilities, LTL DCs, Transfer Points, etc.).



How will truck count, CAPEX and NWC change over time?



Where will I need drayage drivers and how many?

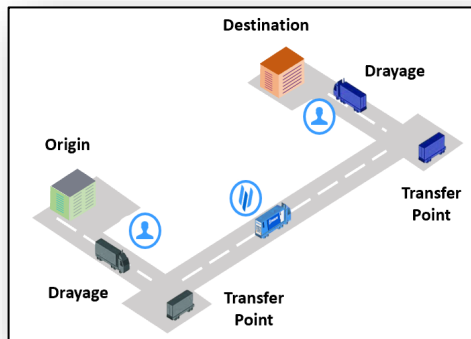


Operational Testing

Embark is hauling with carriers and shippers to refine operational details such as dispatching, maintenance and monitoring, establishing a scalable autonomous trucking operating model

Process Testing

- **Industry Vertical Exposure:** Embark has hauled loads for most industry verticals, including retail, food and beverage, e-commerce, durable goods and automotive, providing a range of insights
- **Process Learnings:** Embark's testing informs autonomous truck specific process flow changes related to site turn around time, weigh scale processes, onsite maneuvering and trailer quality requirements



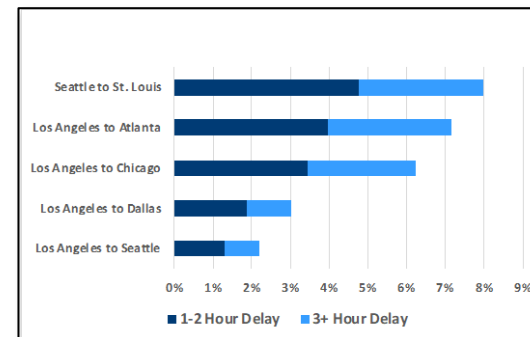
What information will shippers need about AV trucks?



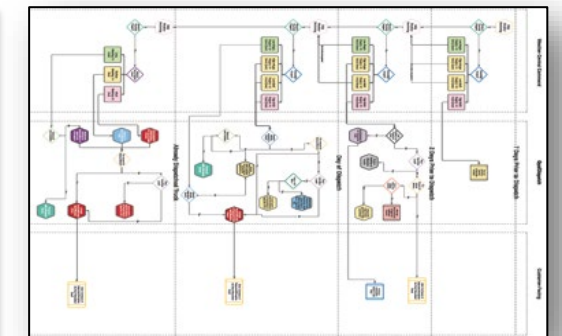
What can be done to support quick repairs onsite?

Process Development

- **Adverse Weather Process Flow Development:** Embark received feedback from carrier weather teams, carrier dispatch teams, airlines and data scientists to develop a sophisticated dispatch logic that approves AV vehicles for missions
- **Adverse Weather Assessment:** Embark analyzed over 100M datapoints to determine the probability of adverse weather events occurring on specific lanes, providing Embark and carrier partners insight into which lanes to target from an operational ease perspective



How often will adverse weather occur and for how long?



What logic should be followed for dispatching days ahead and real-time?



Ecosystem Building

Embark is working with partners across the ecosystem to develop a virtual coverage map (Embark Coverage Map) that includes the physical locations (transfer points) between which fleet partners will be able to run Embark trucks.

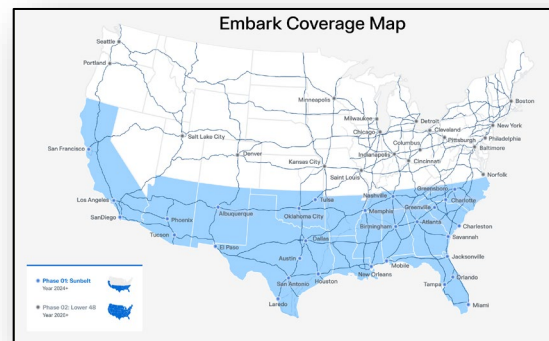
Embark Coverage Map

Planned Embark Coverage Map will consist of **three types of nodes**, each serving a specific use case.

- 1. Dedicated Transfer Points**, like those that Ryder should operate, will be placed in major freight nodes to support the high throughput that a shared site cannot
- 2. Shared Transfer Points**, like truck stops and maintenance facilities, will provide additional density in major markets and help serve secondary markets
- 3. Shipper Transfer Points**, like distribution centers, manufacturing facilities and LTL cross-docks, will enable AVs to run directly door-to-door

Partnership Approach:

Embark is working with a host of real estate operators (industrial REITs, truck stops, maintenance providers, etc.) **who have existing footprints in order to be capital efficient**



Which locations should Embark prioritize in support of large carriers and shippers?

Transfer Point Operations

- Onsite Operations:** Through the Embark/Ryder partnership, Ryder plans to operate certain purpose-built transfer points within the Embark Coverage map, intended to provide fleet partners a comprehensive, efficient and consistent onsite experience for activities ranging from gate-access to pre-launch inspection to tire changes to sensor cleaning
- Direct to Shipper Process Flows:** Embark is beginning to work with select shippers to map their facilities into our network and define how their site staff will interact with AVs onsite



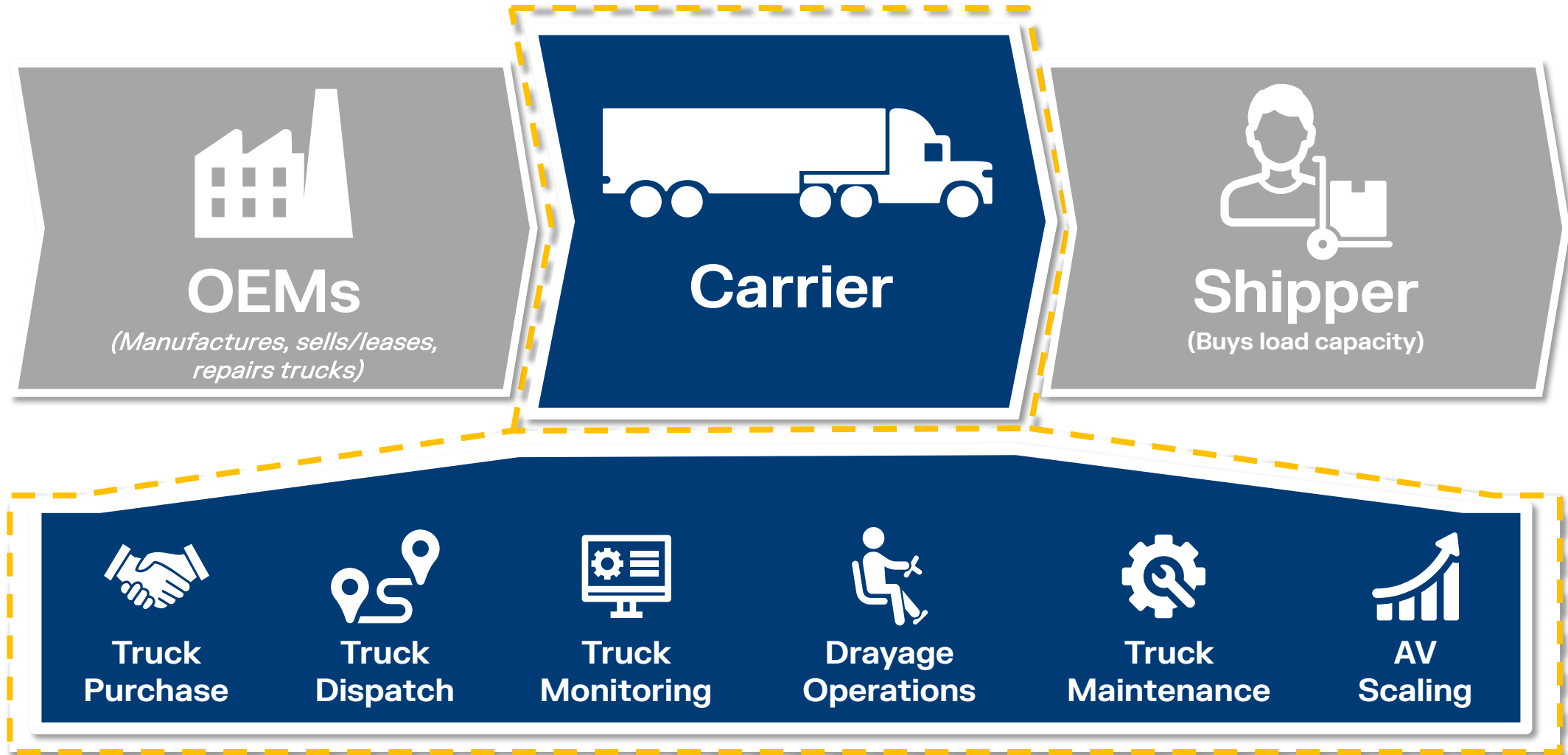
How do we most effectively and safely utilize transfer point space?



How do carriers currently perform similar onsite services?



Embark Freight Ecosystem

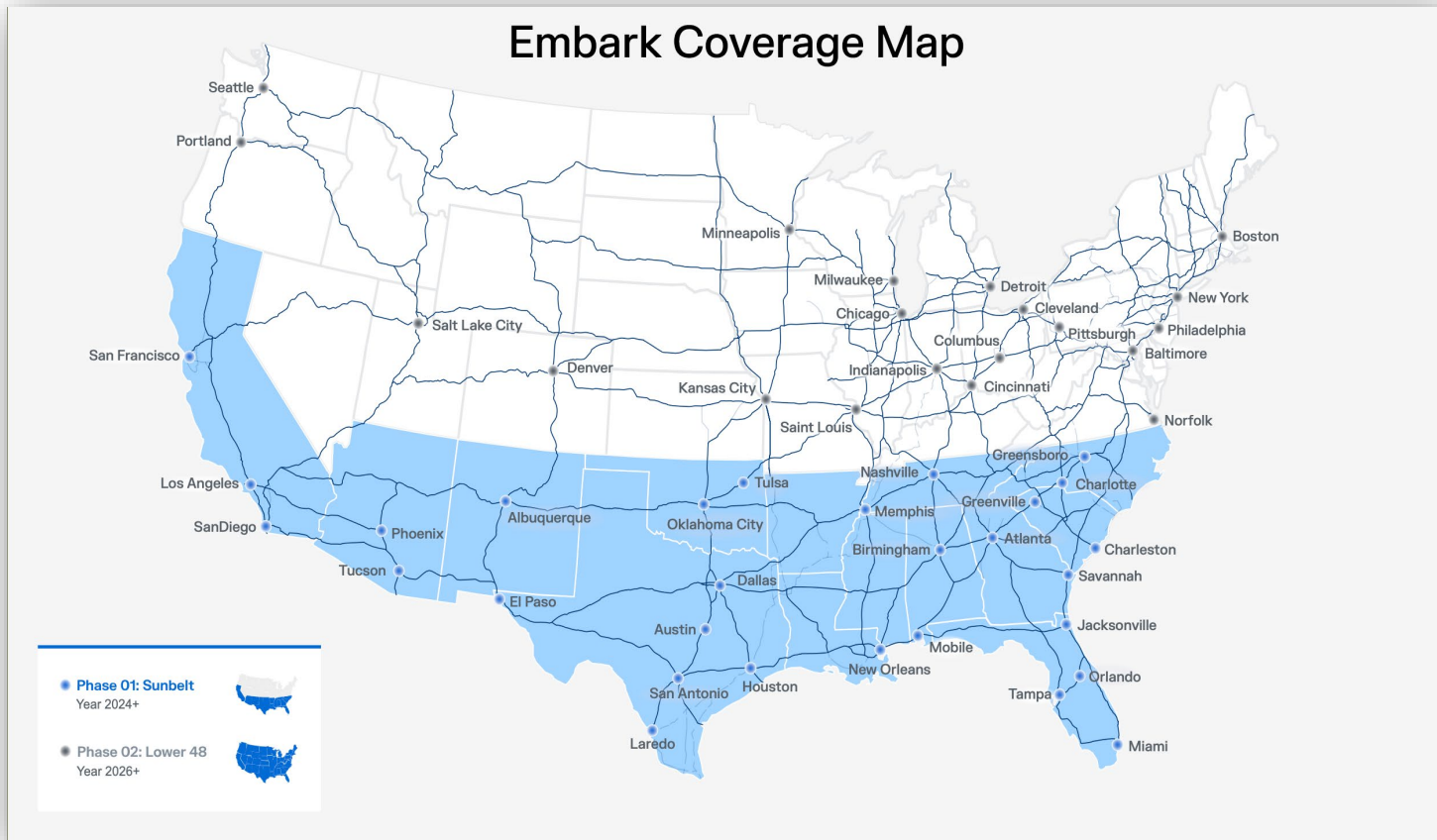


Module 5
An Informed Discussion
on AV Policy

*Presenters: Jonny Morris and
Fmr. U.S. Secretary of Transportation
Elaine Chao*



EMBARK is Leading the Way on Policy



Elaine Chao

- U.S. Secretary of Transportation (2017-2021)
- Oversaw development of first-ever regulatory guidance on autonomous trucking
- U.S. Secretary of Labor (2001-2009)
- Past board positions at Dole Foods, Wells Fargo Bank, Harvard Kennedy School

“ Trucking is the backbone of the American economy. I believe Embark’s technology will strengthen U.S. economic competitiveness by making trucks safer, dramatically improving productivity, and solving the real and growing driver shortage. ”

— Elaine Chao



Jonny Morris

- Joined Embark in June 2017
- 8-year veteran of autonomous vehicle policy issues in automotive, trucking, and insurance industries
- Served as technology and policy adviser in the Obama White House, U.S. Department of Defense, and U.S. Department of State

“ Early on at Embark, we knew we had to lead on autonomous trucking policy. Helping shape the regulatory framework is the right thing for our company and will ensure the safety and efficiency benefits of Embark’s technology are not delayed. ”

— Jonny Morris





Thank You