

Hydrogen Infrastructure Strategies to Enable Deployment in High-Impact Sectors—Day 1

Hydrogen and Fuel Cell Technologies Office

January 17-18, 2024



Medium- and Heavy-Duty Vehicle Variety

Medium Duty

Class Three: 10,001 to 14,000 lbs.



Class Four: 14,001 to 16,000 lbs.



Class Five: 16,001 to 19,500 lbs.



Class Six: 19,501 to 26,000 lbs.

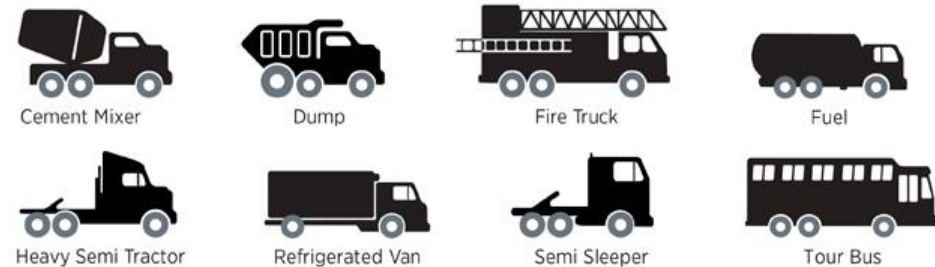


Heavy Duty

Class Seven: 26,001 to 33,000 lbs.



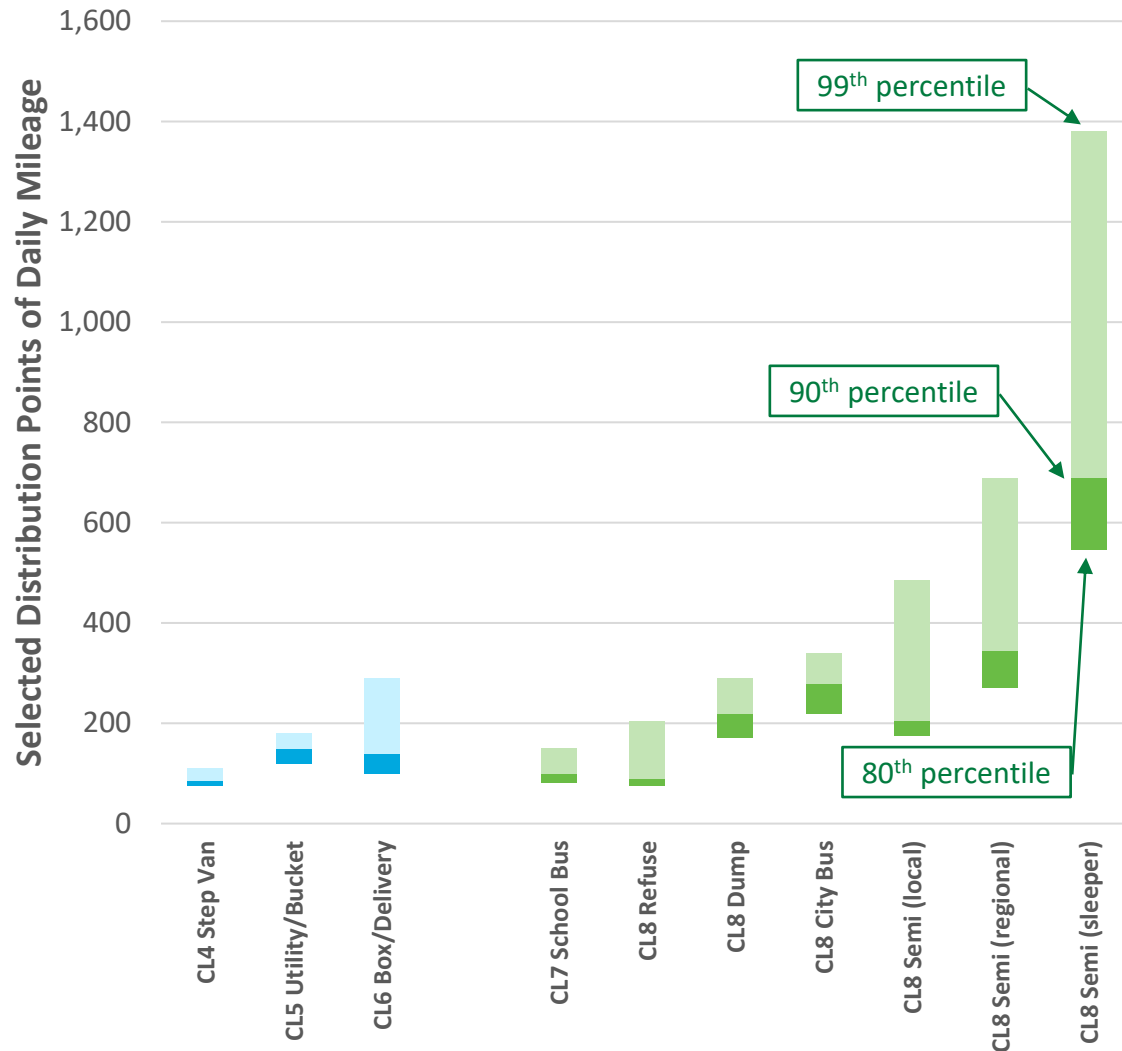
Class Eight: 33,001 lbs. & over



- Federal Highway Administration classification
 - U.S. Census Bureau and Environmental Protection Agency also classify vehicles

<https://afdc.energy.gov/data/10381>

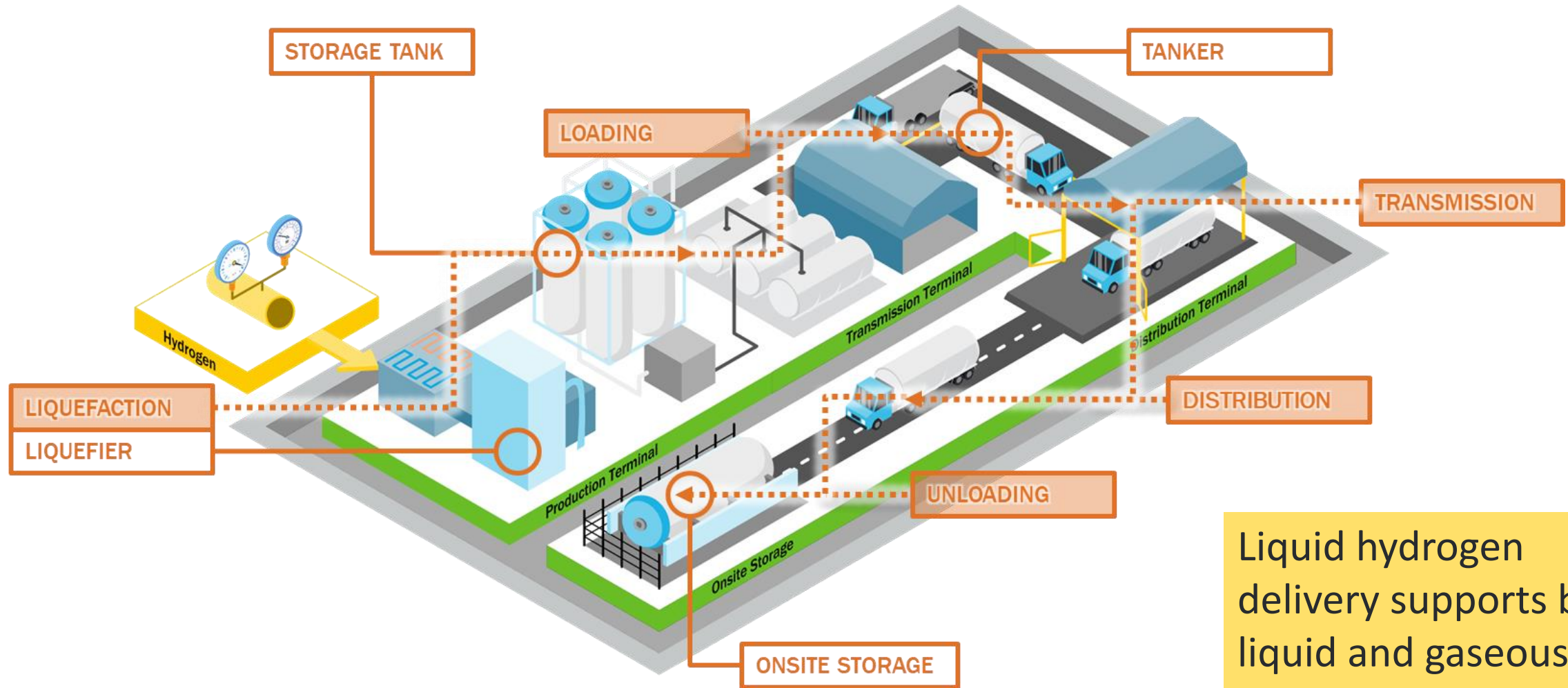
Medium- and Heavy-Duty Vehicle Variety



- Fueling pathway selection drivers:
 - Vehicle duty cycles
 - Other vehicle constraints (e.g., weight or space limited)
 - Fueling locations needed, from central depot to dispersed retail
 - Availability and cost effectiveness of fueling pathway technologies
- Anticipate that a range of fueling configurations will be needed both for early market development and deployment at scale

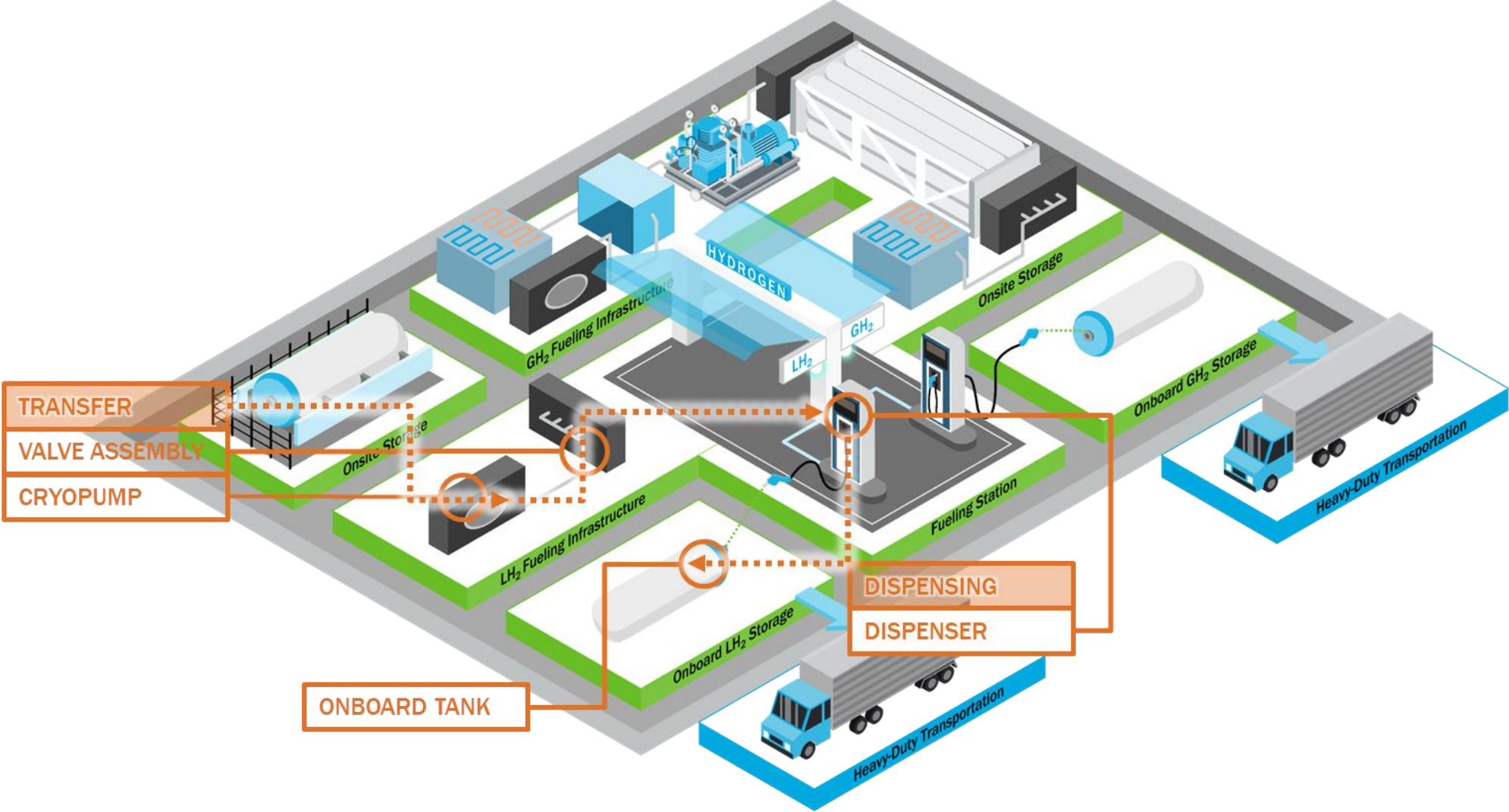
• This workshop is about DOE learning from stakeholders to understand development needs

MD/HD Transportation: Liquid Hydrogen Delivery

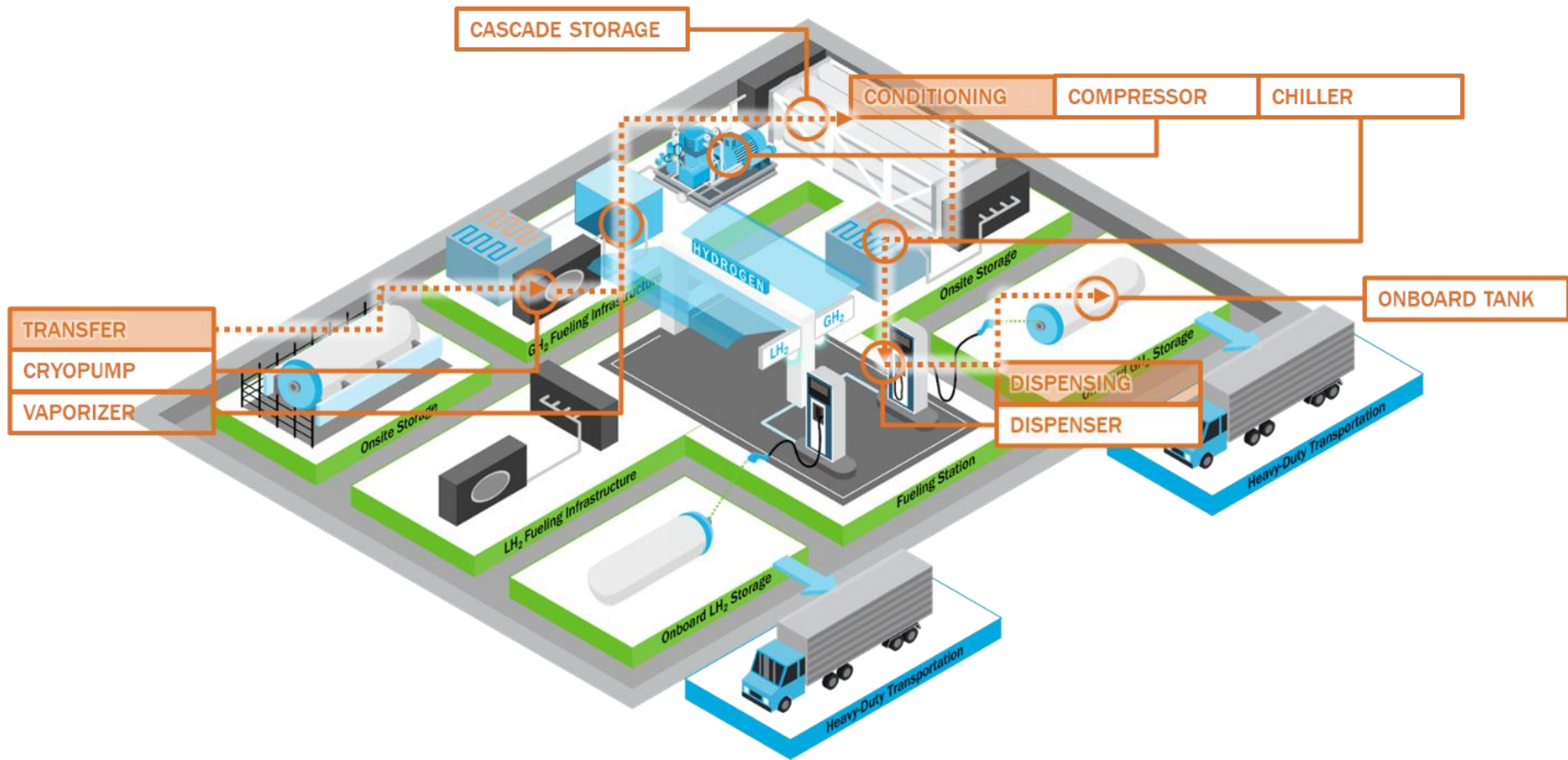


Liquid hydrogen delivery supports both liquid and gaseous hydrogen dispensing

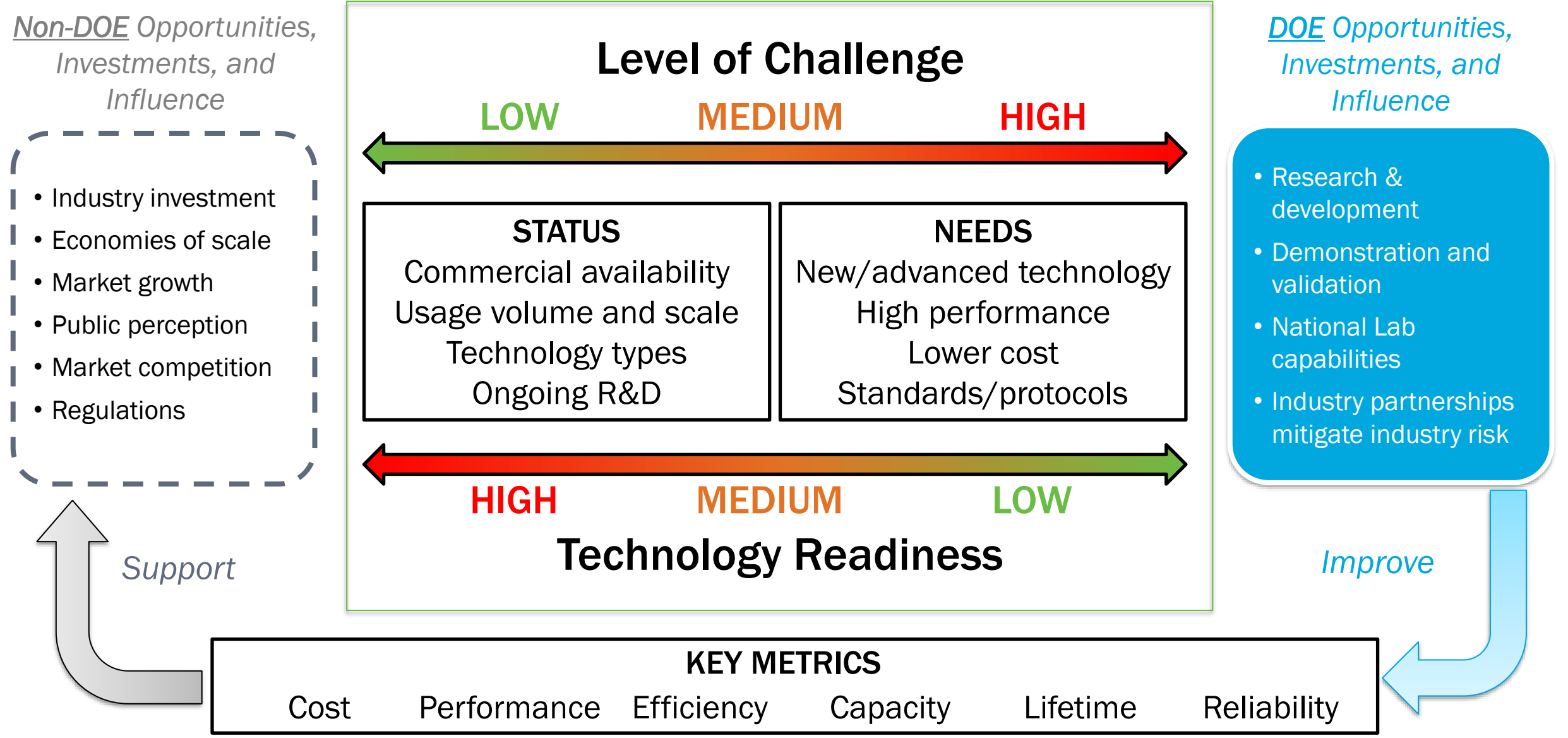
MD/HD Transportation: Liquid Hydrogen Dispensing



MD/HD Transportation: Gaseous Hydrogen Dispensing



Level of Challenge, Technology Readiness, and DOE Impact












































Day 1 Agenda

- Stakeholder presentations: Deployment Activities
- Stakeholder panel: Vehicle OEMs
- Breakout Sessions - 1: Vehicle, end user, and fleet requirements
- Lunch
- Stakeholder presentations: Infrastructure Providers
- Breakout Sessions - 2: Hydrogen supply, delivery, and dispensing
- Report-outs from breakout sessions

FHWA, U.S. Census, and EPA Vehicle Classifications

Left: <https://afdc.energy.gov/data/10381>
Right: <https://afdc.energy.gov/data/10380>

Class One: 6,000 lbs. or less					
					
Full Size Pickup	Mini Pickup	Minivan	SUV	Utility Van	
Class Two: 6,001 to 10,000 lbs.					
					
Crew Size Pickup	Full Size Pickup	Mini Bus	Minivan	Step Van	Utility Van
Class Three: 10,001 to 14,000 lbs.					
					
City Delivery	Mini Bus	Walk In			
Class Four: 14,001 to 16,000 lbs.					
					
City Delivery	Conventional Van	Landscape Utility	Large Walk In		
Class Five: 16,001 to 19,500 lbs.					
					
Bucket	City Delivery	Large Walk In			
Class Six: 19,501 to 26,000 lbs.					
					
Beverage	Rack	School Bus	Single Axle Van	Stake Body	
Class Seven: 26,001 to 33,000 lbs.					
					
City Transit Bus	Furniture	High Profile Semi	Home Fuel		
					
Medium Semi Tractor	Refuse	Tow			
Class Eight: 33,001 lbs. & over					
					
Cement Mixer	Dump	Fire Truck	Fuel		
					
Heavy Semi Tractor	Refrigerated Van	Semi Sleeper	Tour Bus		

Gross Vehicle Weight Rating (lbs)	Federal Highway Administration		US Census Bureau
	Vehicle Class	GVWR Category	VIUS Classes
<6,000	Class 1: <6,000 lbs	Light Duty <10,000 lbs	Light Duty <10,000 lbs
10,000	Class 2: 6,001 – 10,000lbs		
14,000	Class 3: 10,001 – 14,000 lbs	Medium Duty 10,001 – 26,000 lbs	Medium Duty 10,001 – 19,500 lbs
16,000	Class 4: 14,001 – 16,000 lbs		
19,500	Class 5: 16,001 – 19,500 lbs		
26,000	Class 6: 19,501 – 26,000 lbs	Heavy Duty >26,001 lbs	Light Heavy Duty: 19,001 – 26,000 lbs
33,000	Class 7: 26,001 – 33,000 lbs		Heavy Duty >26,001 lbs
>33,000	Class 8: >33,001 lbs		

Gross Vehicle Weight Rating (lbs)	EPA Emissions Classification			
	Heavy Duty Vehicle and Engines			Light Duty Vehicles
	H.D. Trucks	H.D. Engines	General Trucks	Passenger Vehicles
<6,000 6,000	Light Duty Truck 1 & 2 <6,000 lbs	Light Light Duty Trucks <6,000 lbs	Light Duty Trucks < 8500 lbs	Light Duty Vehicle < 8500 lbs
8,500	Light Duty Truck 3 & 4 6,001–8,500 lbs	Heavy Light Duty Trucks 6,001-8,500 lbs		
10,000	Heavy Duty Vehicle 2b 8,501–10,000 lbs	Light Heavy Duty Engines 8,501 lbs–19,500 lbs	Heavy Duty Vehicle Heavy Duty Engine >8,500 lbs	Medium Duty Passenger Vehicle 8,501–10,000 lbs
14,000	Heavy Duty Vehicle 3 10,001–14,000 lbs			
16,000	Heavy Duty Vehicle 4 14,001–16,000 lbs			
19,500	Heavy Duty Vehicle 5 16,001–19,500 lbs			
26,000	Heavy Duty Vehicle 6 19,501–26,000 lbs	Medium Heavy Duty Engines 19,501–33,000 lbs		
33,000	Heavy Duty Vehicle 7 26,001–33,000 lbs			
60,000	Heavy Duty Vehicle 8a 33,001–60,000 lbs	Heavy Heavy Duty Engines Urban Bus >33,001		
>60,000	Heavy Duty Vehicle 8b >60,001			