

AST and UST Storage of DEF – What's Best for You?



NISTM
National Institute for Storage Tank Management

Outline



- **What is SCR & DEF?**
- **DEF Industry Background**
- **DEF Market Update**
- **Storage and Dispensing Equipment Solutions**

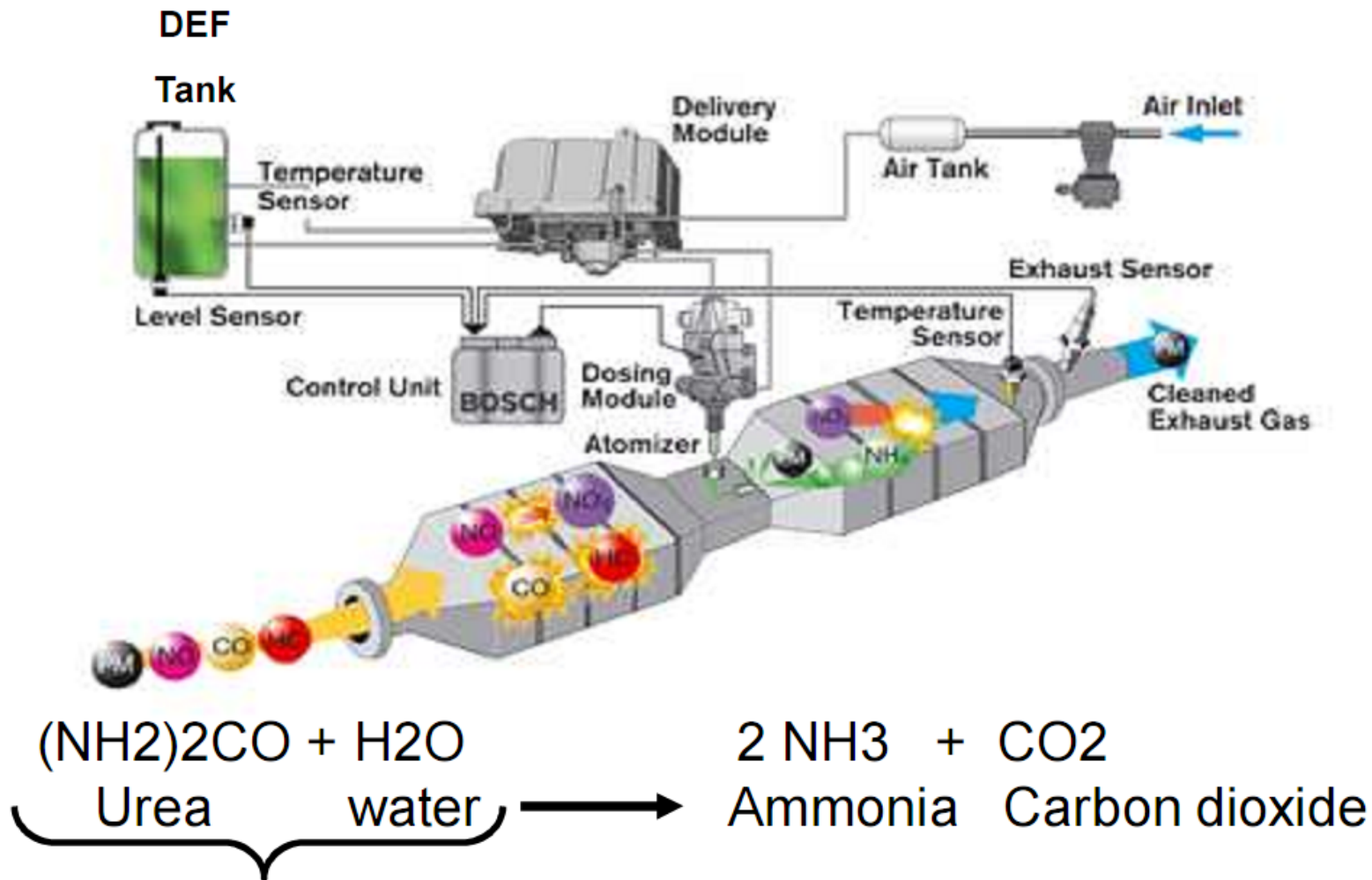


Why DEF?...2010 EPA Mandate

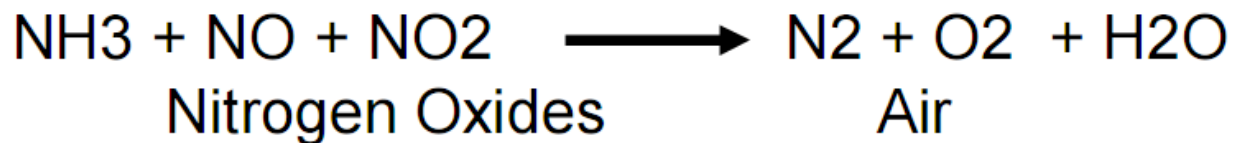
- Clean Air Act of 1970
- Reduces Harmful NO_x (Nitrogen Oxides)
- Technology of Choice – Selective Catalytic Reduction (SCR)
- Stages of Mandate:
 - 2010 All on-road diesel vehicles (Class 1 – 8)
 - 2012 Off-road (Construction, Agriculture & Generators)
 - 2014 Marine (freshwater)
 - 2015 RR locomotives
 - 2017 Marine (Ocean vessels w/ US flags)



Selective Catalytic Reduction (SCR)



DEF



Nitrogen Oxides

Air



DEF Material Compatibility

COMPATIBLE

Plastics
(HDPE, CPVC)
Rubber
Stainless Steel
(304 & 316)
Fiberglass
Fiberglass

NOT COMPATIBLE

Carbon steel
Iron
Zinc
Nickel
Aluminum
Copper
Brass



ISO Certification

ISO Standard 22241 -

1. Quality Requirements
2. Test Methods
3. Handling, Transportation & Storing
4. Refilling Interface



TM

DEF Product Characteristics

- Non-hazardous and non-toxic
- Weighs 9.1 lbs per gallon
 - Heavier than Petroleum Products
 - Bulk Load <5,000 gallons
- Will freeze at 12° F (-11°C)
- “Leaking and Creeping” tendencies



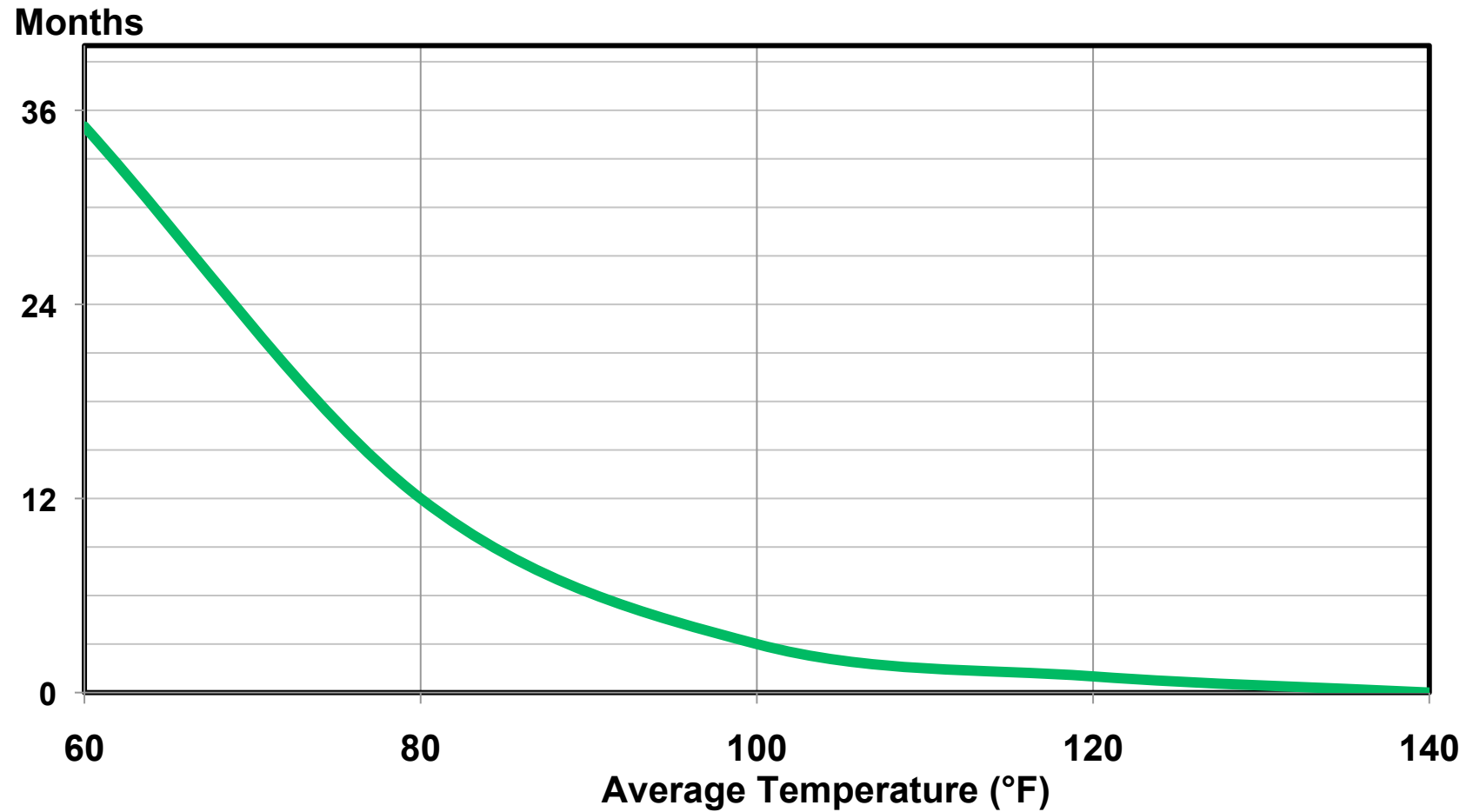
Many Different Manufacturers...



Blue DEF
DIESEL EXHAUST FLUID



SHELF LIFE VS TEMPERATURE



DEF Started with Small Containers...



DEF Progressed to Drums...



DEF Transitioned to Totes...



DEF Has Now Progressed to Bulk Storage...



DEF Dispensing



CRYSTALLIZATION ON NOZZLE IS NORMAL



Where does it go in the Vehicle?



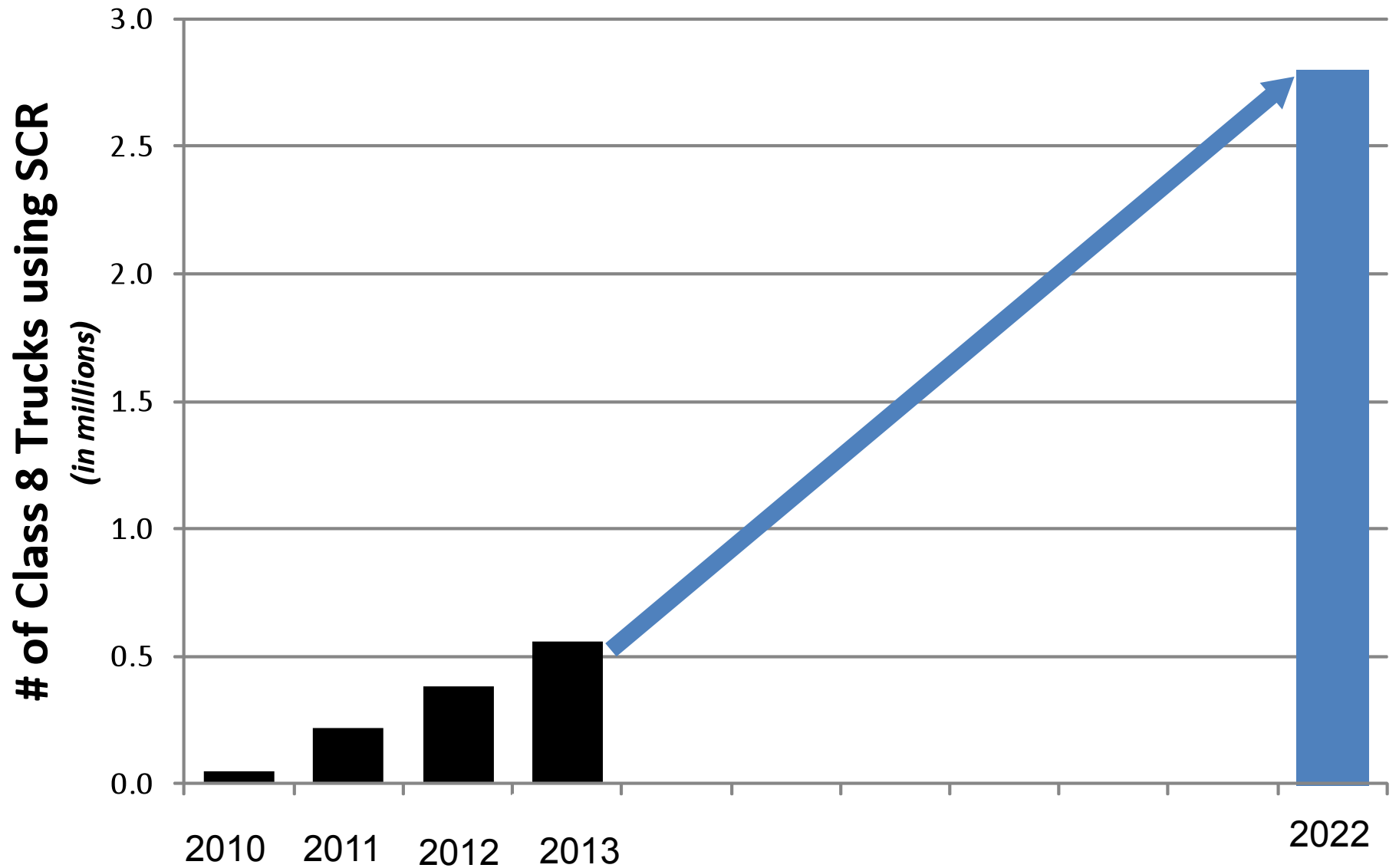
Instrumentation



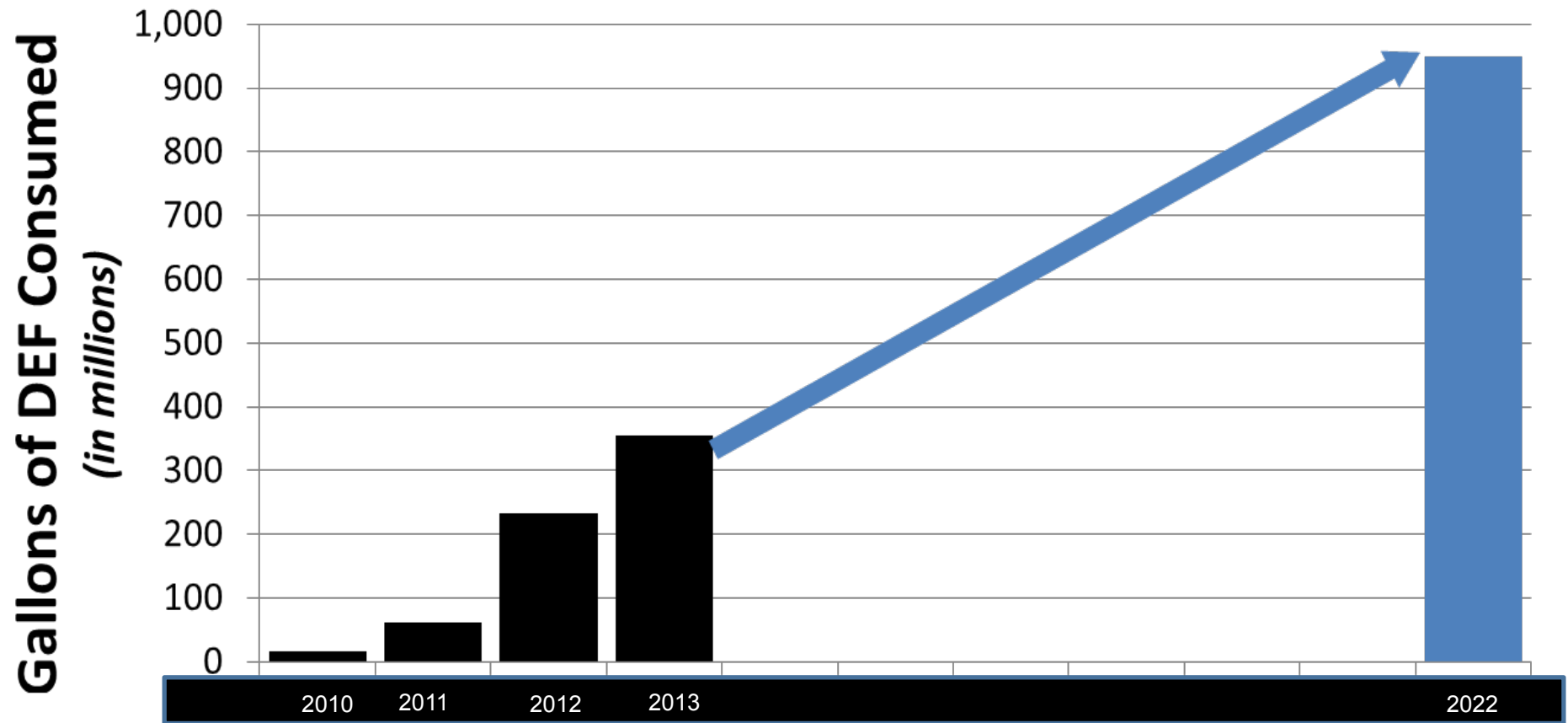
Washington DC, 2013...



Market Update - CL8 SCR Vehicles



DEF Consumption

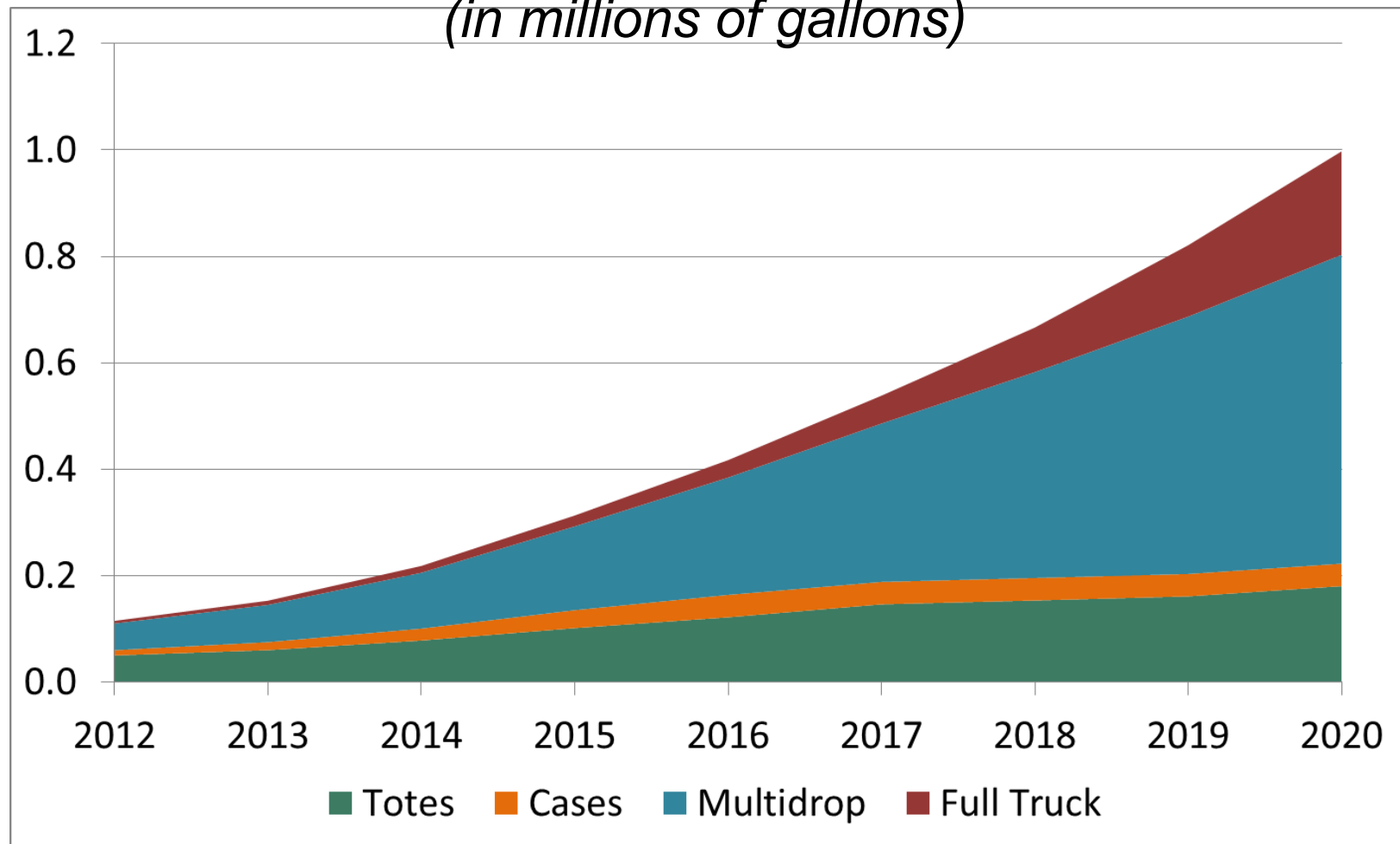


DEF Equipment Forecast

- Majority of market will be multidrop (minibulk) = Blue1 market strength

DEF Volume by Delivery Format

(in millions of gallons)



BLUE1USA Equipment

Mini-Bulk Systems



BLUE1USA Equipment

Tote Cabinets



BLUE1USA Equipment



**Dispensers
and Pumps**

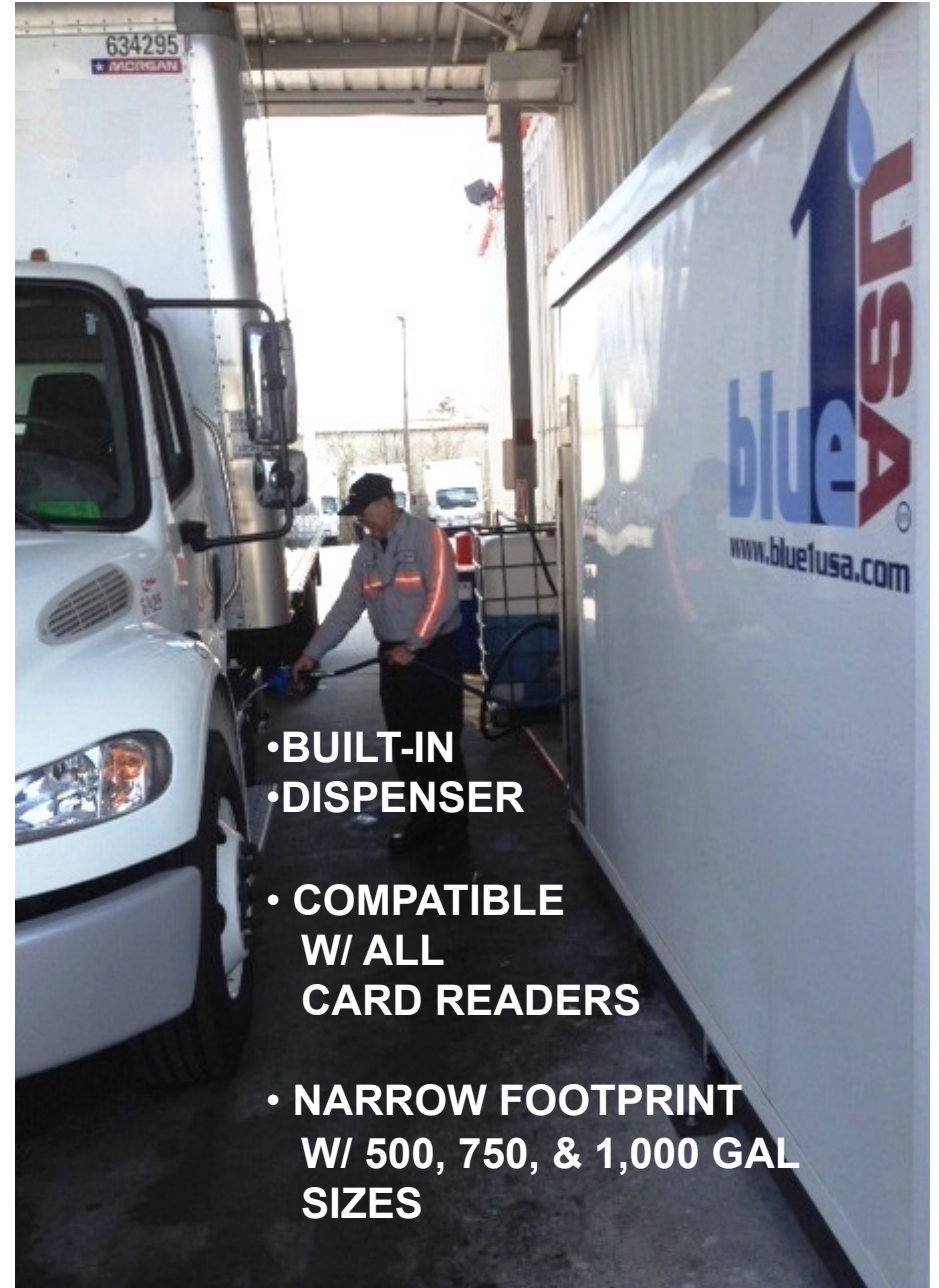
BLUE1USA Equipment

Bulk Storage



BLUE1USA Equipment

Commercial Mini-Bulks



- BUILT-IN DISPENSER
- COMPATIBLE W/ ALL CARD READERS
- NARROW FOOTPRINT W/ 500, 750, & 1,000 GAL SIZES

BLUE1USA Equipment

Remote Mini-Bulks

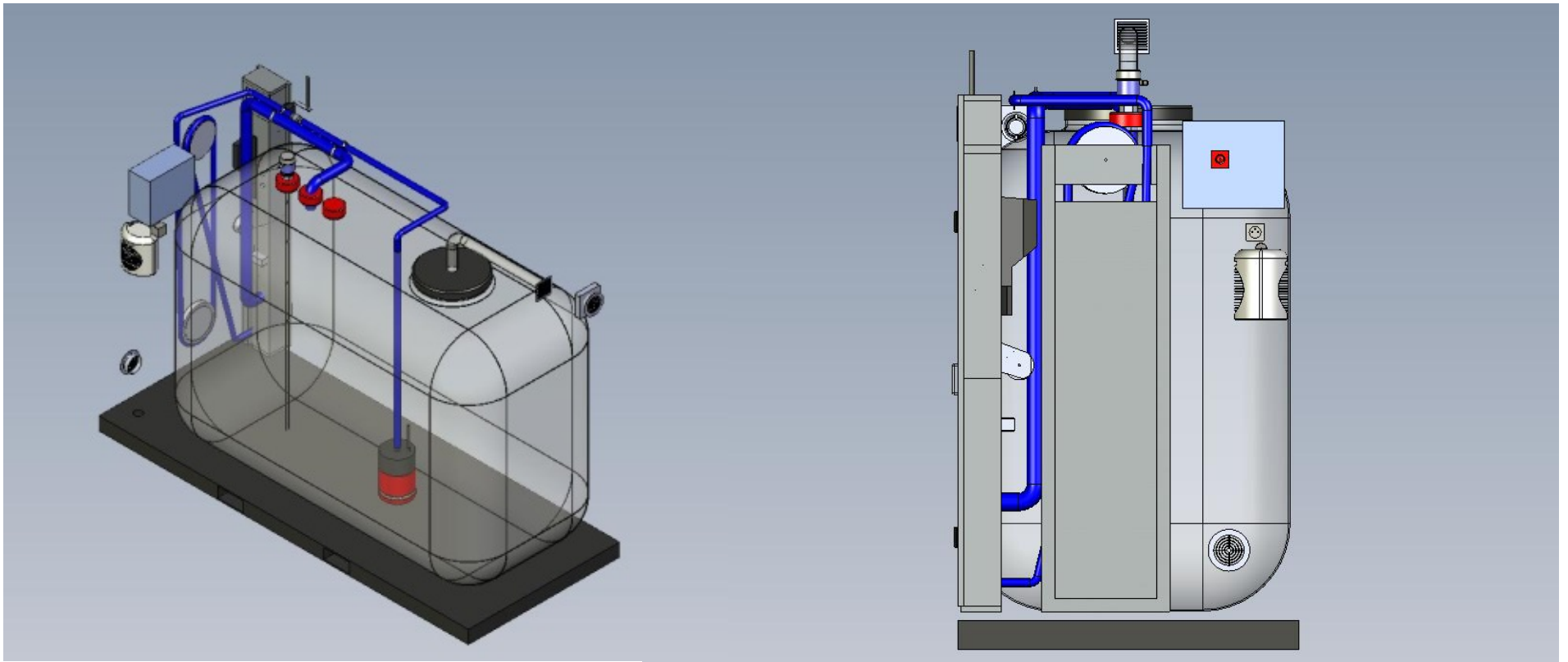
- INTEGRATES w/ ANY 3RD PARTY DISPENSER
- AVAILABLE W/ ECONOMICAL LEVELING FRAME
- 500 - 3,400 GALLON SIZES



BLUE1USA Equipment

Mini-Bulk Construction

- Primary poly tank w/ secondary containment
- Insulated exterior made of 100% composite materials
- Stainless Steel Piping
- Turn-key, pre-wired components



Blue1Box



- **Insulated & Non-Insulated**
- **Narrow, Compact Footprint**
- **1,000 Gal Capacity**
- **Economical**
- **Perfect for Commercial Fleets**



BLUE1USA Equipment

Tote Cabinets



BLUE1USA Equipment Tote Cabinets



Non-Insulated



Insulated Exterior

Blue1USA DEF Dispensers



Bulk Storage Solutions

SITE SPECIFIC PRICING
Bulk Storage, 3,000 to 8,400 Gals



CERTIFIED TO UL & CSA ELECTRICAL STANDARDS



Blue1USA
3883 Rogers Bridge Rd.
Suite 205-A
Duluth, GA 30097
770-688-1958
www.blue1usa.com



Model: DEF Mini-Bulk
Electrical: 120/240 V
30 A
60 Hz

Unit Serial Number:

Conforms To:

UL 508

Certified To:

CSA C22.2 No14-10



c [®] US

E10353



Underground Options for DEF Storage



WHAT SIZE STORAGE FACILITY DO I NEED?

DEF STORAGE SYSTEMS

STORAGE CAPACITY MATRIX AND CALCULATOR

SCR VEHICLES		DEF USAGE PER PERIOD			
# VEH	DIESEL GAL/WK	WEEK	MONTH	QUARTER	YEAR
1	385	12	50	150	600
3	1,154	35	150	450	1,800
5	1,923	58	250	750	3,000
8	3,077	92	400	1,200	4,800
10	3,846	115	500	1,500	6,000
13	5,000	150	650	1,950	7,800
26	10,000	300	1,300	3,900	15,600
40	15,385	462	2,000	6,000	24,000
50	19,231	577	2,500	7,500	30,000
80	30,769	923	4,000	12,000	48,000
100	38,462	1,154	5,000	15,000	60,000

120,000	Miles Per Year
6.00	MPG
3%	% DEF per gallon of Diesel

RECOMMENDED STORAGE CAPACITY	DEF USAGE PER PERIOD (GALLONS)			
	WEEK	MONTH	QUARTER	YEAR
55 gal Drum	20+	80+	240+	960+
275 gal Tote	80+	350+	1,400+	5,600+
1,000 - 5,000 gal Mini-Bulk Storage System	160+	700+	2,800+	11,000+
8,000+ Bulk Storage	1,375+	5,500+	15,500+	62,000+

YELLOW HIGHLIGHTED CELLS CAN BE MODIFIED BY USER

Who is Blue1USA?

- Manufacturer of DEF storage & dispensing equipment
- Providing fleet fueling solutions since 1998
- Corporate Office in Duluth Georgia.
- Manufacturing facility in Little Rock, AR



Customers



National Distributor Network

Service and Product Support

- 50 States
- 100 + Branches
- 600 + Service Technicians
- Parts & Service Support



Questions?

