CLEAN COLD POWER

In Administration

babr INSOLVENCY COMMERCIAL FINANCE DEBT RECOVERY

Zero–Emission Transport Refrigeration

Opportunity to acquire the Intellectual Property rights, associated work in progress and stock

April 2024 (v 2–0)

Opportunity to acquire the Intellectual Property rights, associated work in progress and stock

Clean Cold Power's mission is harnessing the natural energy of liquid nitrogen expansion for maximum refrigerated transportation cooling efficiency.

Key information:

- Global markets for transportation refrigeration products/cold-chain solutions are growing sustainably, driven by growing populations, rising transportation needs, and increasing need/awareness for food safety. We estimate the growth of the cold chain to be larger than aggregate GDP growth. According to UN, the global population is projected to grow by 1.3 billion over the next 20 years, to 9.4 billion.
- However, current cold-chain solutions still rely almost exclusively on fossil fuels (e.g., transportation refrigeration units (TRUs) powered by diesel engines).
- Cost-efficient and zero-emission cold chains are key to meeting the Sustainable Development Goals (SDG), by reducing emissions, pollution, and product waste.
- Driven by the global initiatives to reduce greenhouse gas emissions and pollution, regulators are starting to focus on converting the cold chain to zero emissions. For example, in California, CARB has started to mandate zero emissions for certain TRUs.

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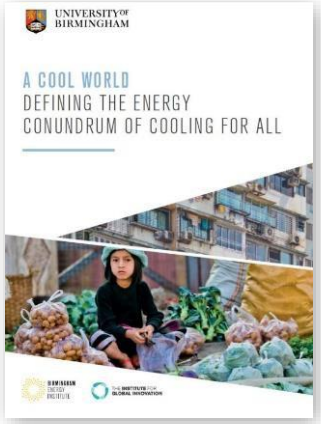
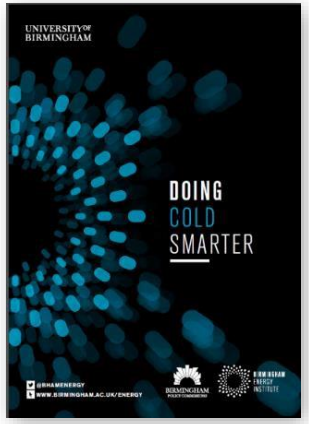
The Problem

The days of diesel are numbered. Clean cooling is imperative and is increasingly recognised by global policy makers

Credit: Adobe Stock





- *"The days of diesel are numbered "– **Leah Matasushita**, CARB*
- *"As the world faces the dual challenges of climate change and a growing population, investing in sustainable and energy-efficient cooling solutions for transportation is key to ensuring food and medicine reach every corner of the globe." - Environmental Advocate*
- Currently, cooling already consumes 17% of the world's electricity and causes 7% of global greenhouse gas (GHG) emissions, twice that of shipping and aviation combined.
- *By 2060, the total energy consumed for cooling purposes is expected to exceed the total energy consumed for heating. Cooling is the majority of projected growth in energy consumption[1].*
- *"We urgently need access to clean cooling for all. In order to achieve this, we need to stop asking ourselves 'how much electricity do we need to generate?' and start asking 'what is the service we require, and how can we provide it in the least damaging way? "" - Prof. **Toby Peters**, Professor in Cold Economy, University of Birmingham*
- *"California understands that regulation is like gravity. It's inevitable."*
- *It's illogical to create high heat for cooling*

1 https://www.theguardian.com/environment/2015/oct/26/cold-economy-cop21-global-warming-carbon-emissions

The world needs more transport refrigeration, but we cannot allow it to be diesel-powered

Diesel transport refrigeration is filthy - as air polluting as 120 cars

In most trucks delivering cold loads, the diesel transport refrigeration accounts for:

18% of the whole vehicle's CO_2e emissions

80% of the air pollution

= 6x the truck's NO_x emissions

= 29x the truck's PM emissions

A massive problem, getting worse, as cold chain demand grows

Cooling demand exceeds heating demand and grid capacity by 2050:

- Population growth forecast to reach 9 billion
- Urbanisation and growth of middle class
- Climate change

Foods & medicines cold chain gap:

- Food through cold chain: China <20%, India <3%. Each committed to invest $100bn to create cold chains
- 30–40% post-harvest food loss = 1.5bn tons of waste p.a. = 4GT CO_2eq
- 2 million people die every year due to a lack of cold chain for vaccines
- 7 million deaths linked to air pollution

Closing the cold chain gap with diesel is not an option:

- 2.5M cold trucks today = annually: 83 megatons CO_2eq + 149kT NOx + 7.7kT PM
- Market 4.5M by 2030. By 2050 air quality impact equivalent to >600M cars and >0.6GT CO_2eq

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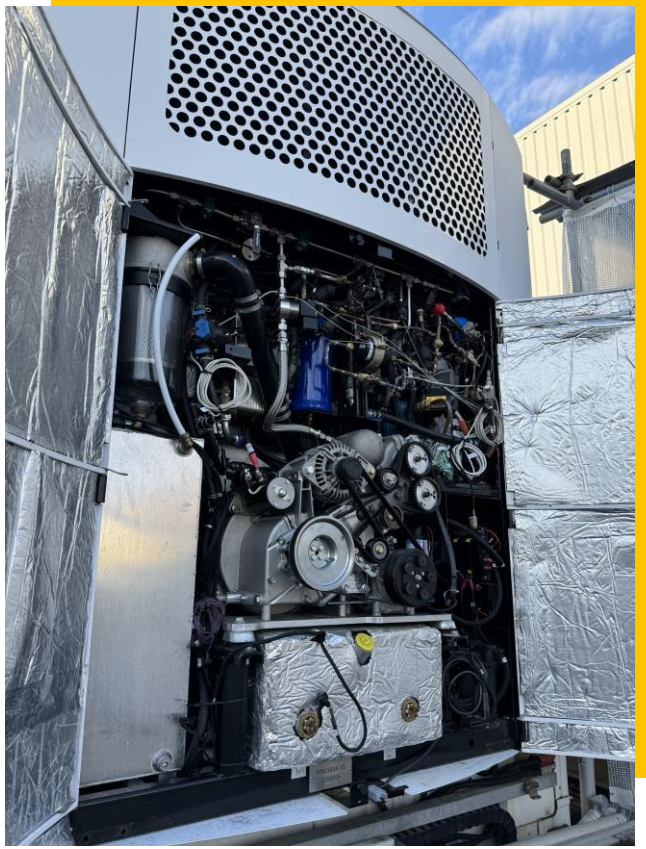
The Solution

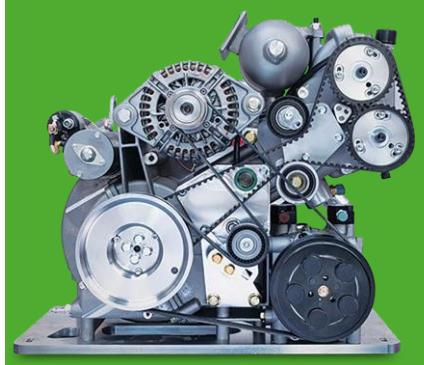
Clean Cold Power and our Technology

Clean Cold Power has developed an innovative, cryogenic-based, zero-emission cooling technology

- **Our technology more than doubles (greater than 100%) the cooling power of LiN, making it much more efficient and economical.**
- Traditional cooling technology is based on liquid nitrogen (LiN), a cryogenic fluid with temperatures of −320°F.
- Liquid nitrogen has had many commercial applications for decades, and it is clean and safe.
- The first application of this technology is a zero-emission transport refrigeration unit (TRU) for refrigerated semi-trailers.



Our Unique Solution



Our proprietary technology[1] harnesses the energy when liquid nitrogen expands (700x) and runs a second cooling cycle.

The only by-product of the process is air. Yes, air. It is Zero Emission with no fossil fuels used.

[1] *Five worldwide patents, with three in progress*

- Cost-Efficient: Costs less than diesel to operate
- Zero Emission: Clean & sustainable
- 300% faster cool-down than diesel (complete cool-down minutes after door closes)
- Quieter than diesel (less than 60 dB); allows for 24-hour quiet deliveries
- Inexpensive infrastructure: LiN tanks are safe, non-flammable, and no need to break concrete
- Can retrofit using same bolt holes on trailer

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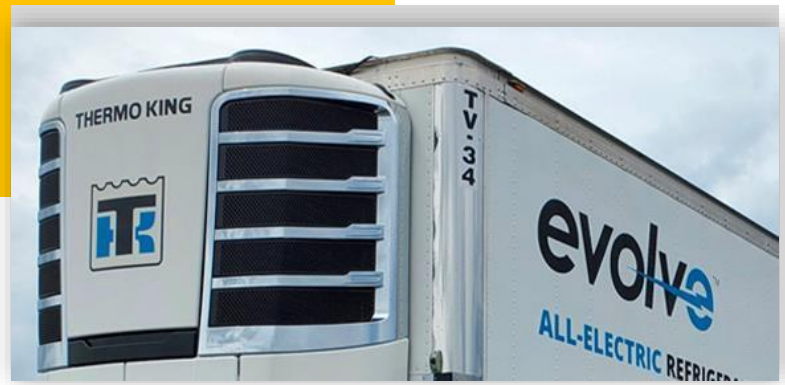
The Opportunity

Why Clean Cold Power is Better than other ZE Alternatives



Liquid Nitrogen TRU

- ✓ Superior Refrigeration Performance
- ✓ Inexpensive & Easy-to-Install Infrastructure
- ✓ Affordable Operating Costs
- ✓ Quick To Refuel
- ✓ No Rare Earth Elements Utilized
- ✓ 100% Safe To Use

Solar/Battery Electric TRU

- × No Hard Duty Cycles Without Recharge
- × Expensive Charging Infrastructure and Unrealistic Demands on the Grid
- × 8–10 hrs. of Daily Operation, ONLY
- × Long Charging/Fueling Times
- × Batteries Eventually Need Replacing
- × Rare Earth Elements Required and Have Fire Risk

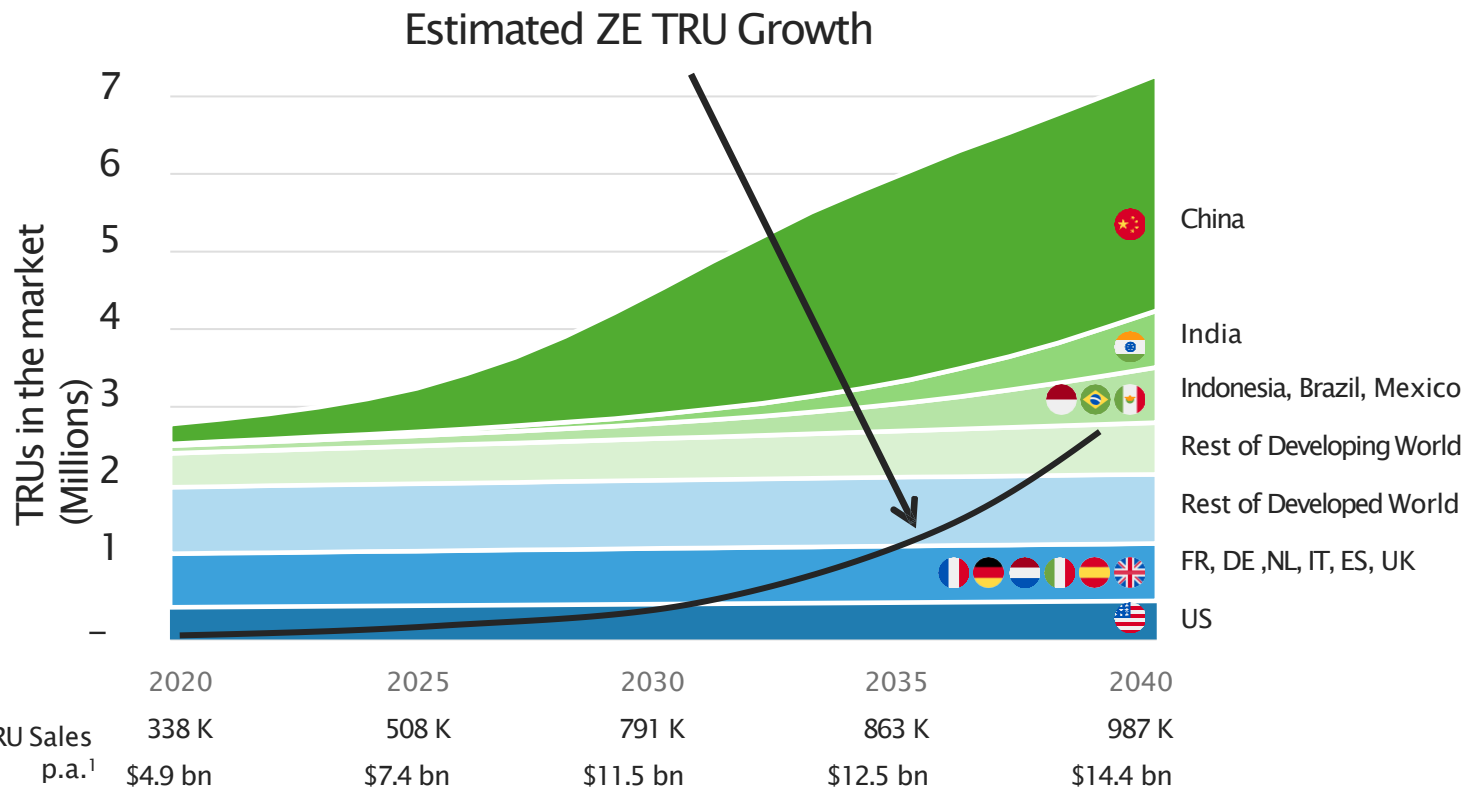
Hydrogen Fuel Cell TRU

- × Not Yet Commercially Available
- × Expensive Refueling Infrastructure
- × Limited Sources of Renewable H2
- × Significant Safety Issues Still In Question

How big is the TRU market?

TRU market to increase by almost 300% by 2040[1]

Transport Refrigeration Units 2020-40

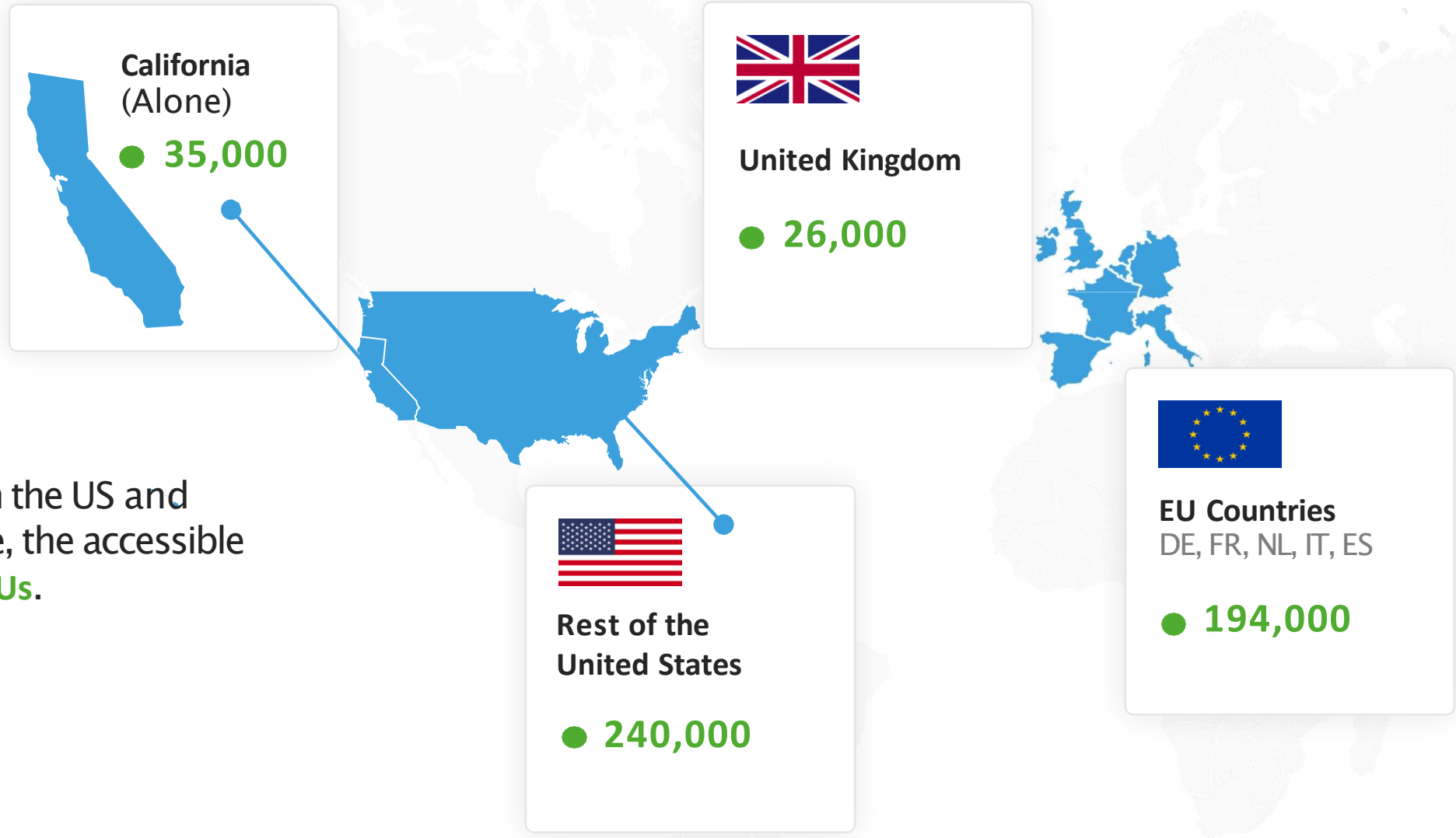


A massive opportunity in Zero Emission TRUs

- The chart on the left shows the massive opportunity for growth of Zero Emission TRUs globally
- It is estimated that by 2040 that TRU sales will reach 1 million

CCP has a massive opportunity to become the market leader in ZE refrigerated transportation.

The opportunity in regulated markets is huge



Based on regulations in the US and customer pull in Europe, the accessible market is **~500,000 TRUs**.

CARB Regulations Regarding Diesel TRUs

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CALIFORNIA AIR RESOURCES BOARD

CALIFORNIA AIR RESOURCES BOARD | CARB

Passed and Mandated Legislation:

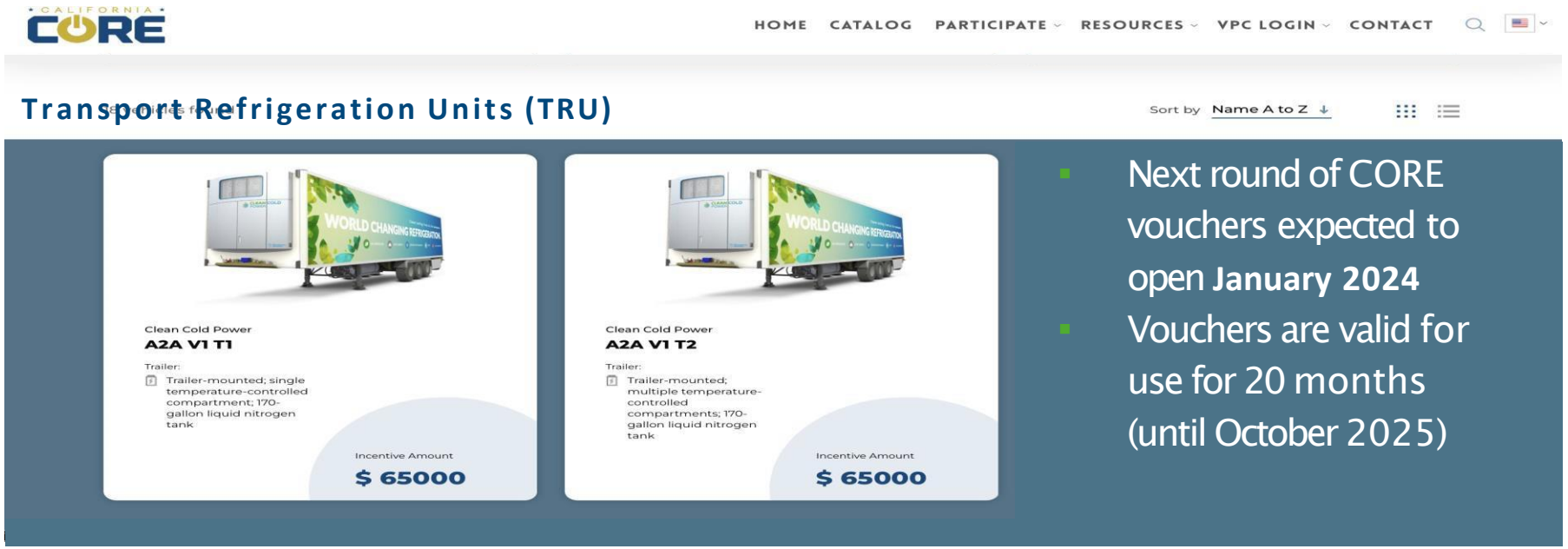
- CARB has banned future use of diesel fuel in TRUs
- TRUCK TRU (box truck) fleets are now required to switch to Zero Emission TRUs for 15% of their fleets beginning December 31, 2023, 30% in 2025, 45% in 2026... **until diesel is no longer in use in CA by 2030.**

Pending Legislation:

- CARB has begun the process of legislating similar regulations for diesel TRAILER TRUs. Projected that requirements will start with **converting 15% of trailer fleets as early as December 2025.**
- CARB is also recommending, from 2025, Diesel TRUs operate for <15 minutes while stationary/at dock; increasing infrastructure needs for "shore power".

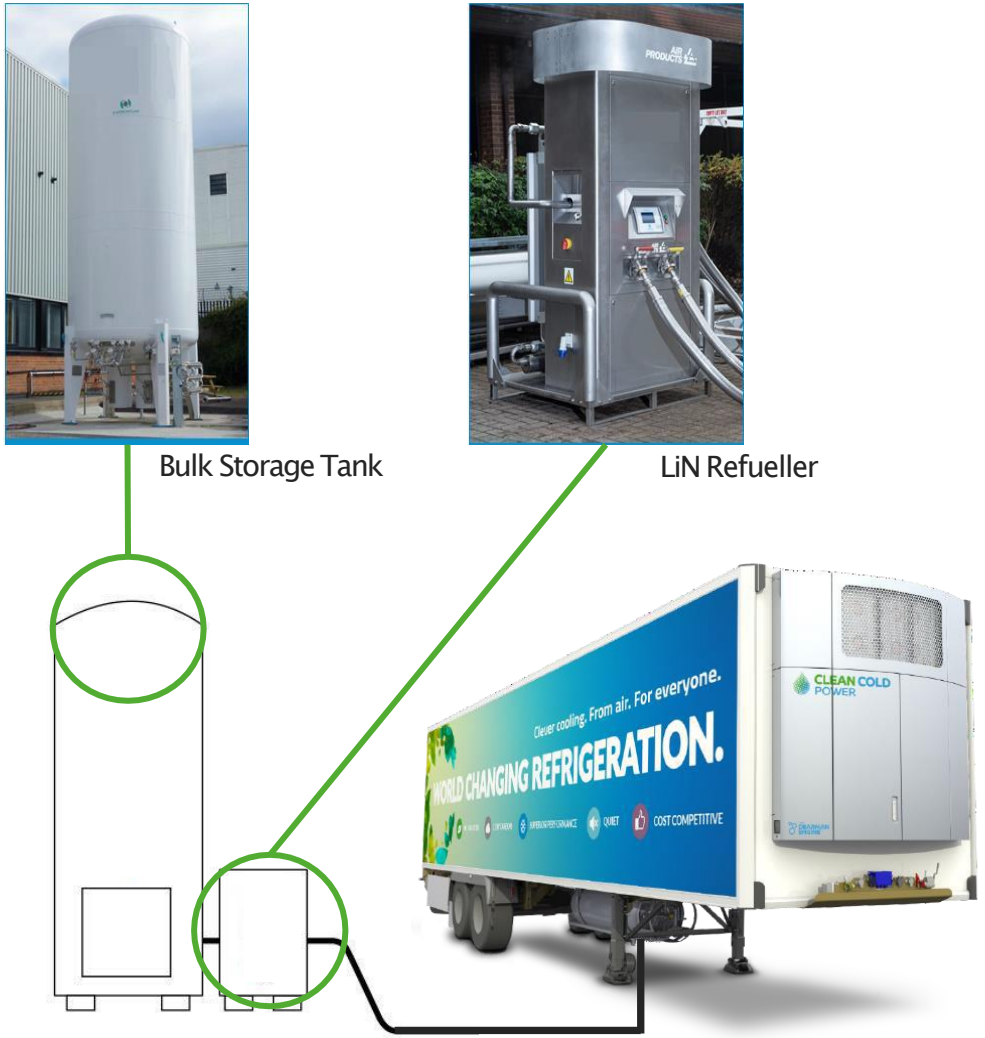
Our recent accomplishments

- Verified by CARB as Zero Emission Technology
- Added to the **California CORE Voucher Program** for the maximum $65,000 incentive (plus and additional $6,500 if fleet is based in a Special Economic Zones)
- Opened our first CCP trailer service and partnered with Quality Equipment in Fontana, CA, for trailer service and maintenance

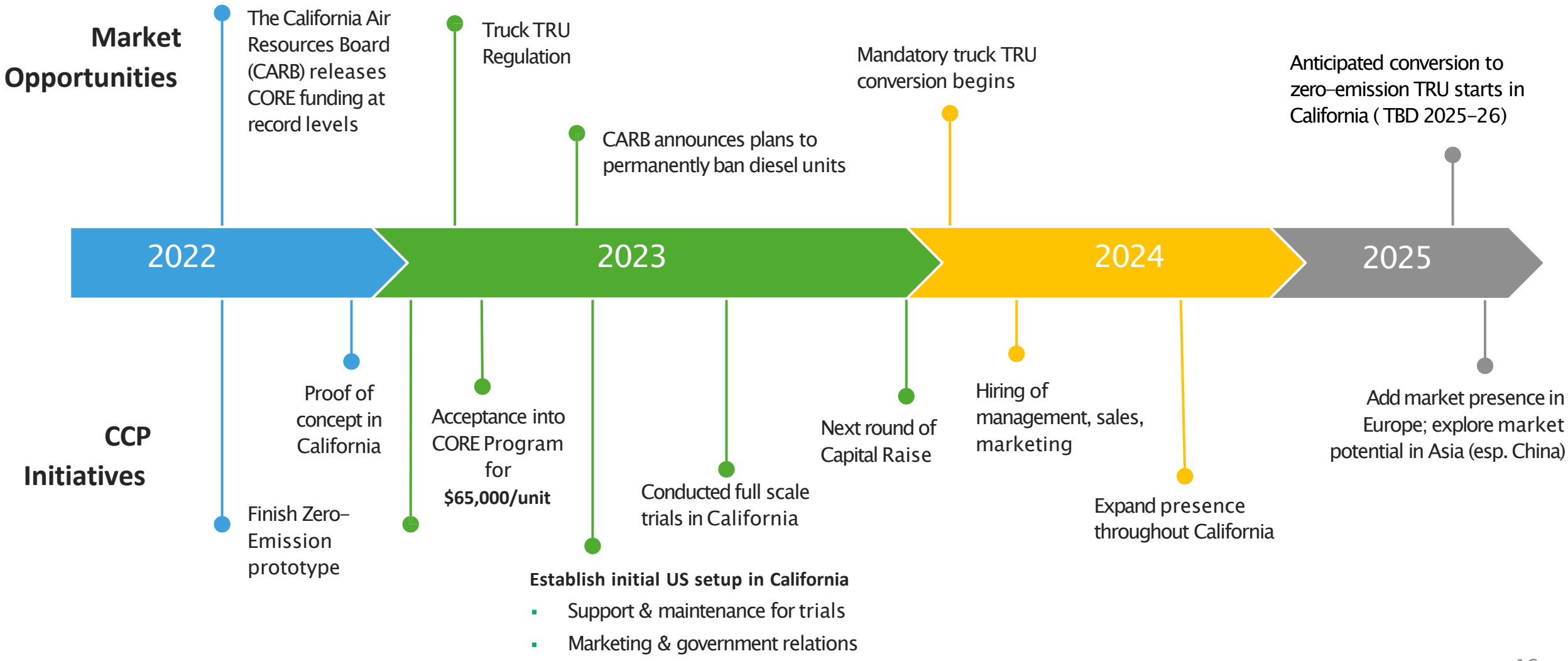


Liquid nitrogen infrastructure is easy to deploy, with opportunity to scale easily and safely

- LN_2 produced in Air Separation Units at scale, **delivered and stored in above-ground bulk storage tank** at the customer's site
- Refill **in under 10 minutes** using a dispenser similar to a diesel pump
- **Short lead-time** in delivery and installation
- Infrastructure **lasts for 20+ years, lower maintenance** requirements than **diesel refuelling** infrastructure
- Compared to hydrogen, diesel and electric infrastructure, LN_2 is:
  - **More scalable**
  - **Much easier to install** *(no high voltage requirements)*
  - **Safer** *(low pressure, non-flammable & no contaminants)*



Clean Cold Power Roadmap



Contact Us

Want to learn more? Contact us.

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