

# Developing Biogas Systems Using Livestock Manure

July 10, 2019

# Our business



## **CNG**

*20 CNG stations in Midwest, Southeast & Texas*



## **RFS & LCFS**

*3 Dairy RNG projects in Indiana will make RNG equivalent to 4M diesel gallon equivalents of RNG*

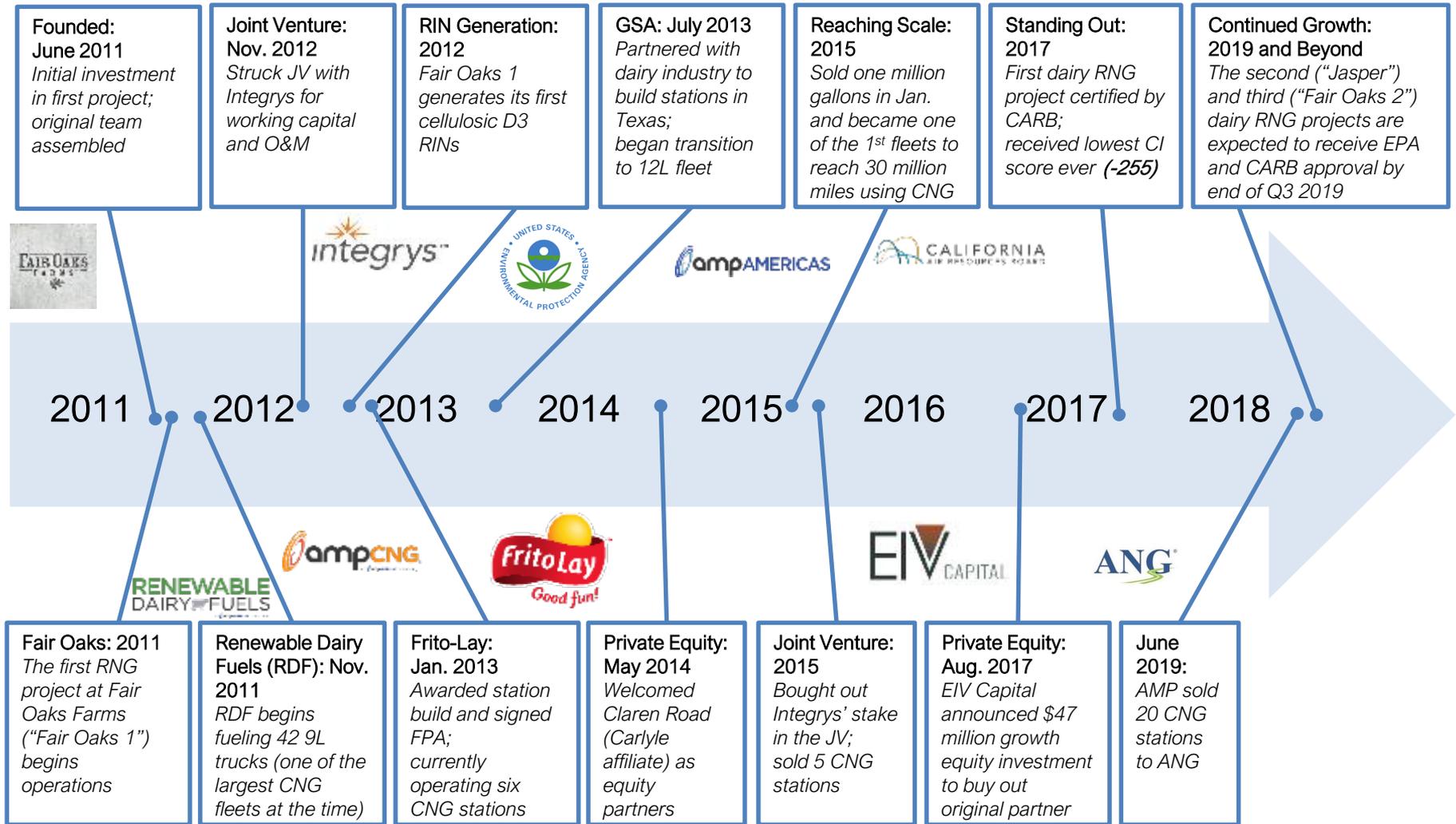


## **RFS & LCFS**

*Cross country sourcing, marketing, and dispensing capabilities*



# Company history



# Asset-based business: AMP station network and RNG production

## Value Chain

Farmer supplies waste stream for RNG production



PipeCo manages distribution and scheduling



Anchor fleets sign Fuel Purchase Agreement for 5-10 years



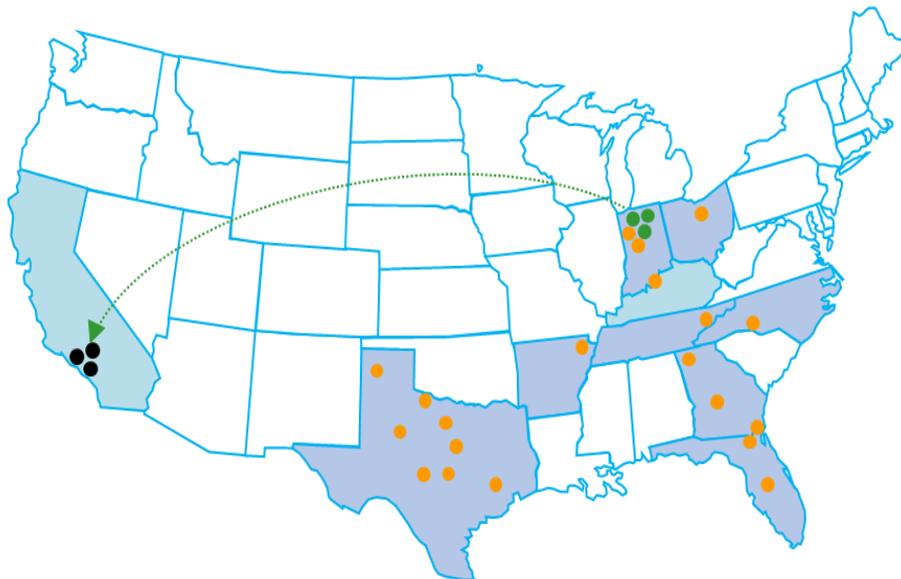
Contracts to monetize RINs



Contracts to monetize LCFS



## Asset Map



- RENEWABLE DAIRY FUELS
- ampRENEW
- ampCNG

**ANG**



June 2019

# Amp has consistently demonstrated pioneering success in low-carbon fuels

- AMP's initial dairy RNG project, Fair Oaks 1, is the first and only dairy waste-to-RNG project certified under both the LCFS and RFS programs. **Notably, Fair Oaks 1 has achieved the lowest (best) dairy Carbon Intensity ("CI") score ever awarded by California Air Resources Board (-255)**
  - Additionally, the Company commissioned one of the first 9L and 12L over-the-road CNG truck fleets, and was among the first CNG fleets to reach 30 million miles
- AMP's dairy partner, Fair Oaks Farms, is a leading innovator in the dairy industry with a vision of producing carbon-neutral milk. They are adopting innovative sustainability initiatives including waste-to-energy, nutrient recovery, and water management
- AMP has spent over eight years building a strong working relationship with its dairy partner – the Company frequently witnesses other development deals stall, or fail, due to poor relationships between project developer and farmer partners



# Our customers



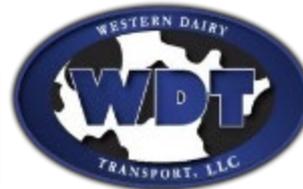
Select Milk



Producers, Inc.  
Setting a Higher Standard.



DEDICATION THAT MOVES YOUR BUSINESS



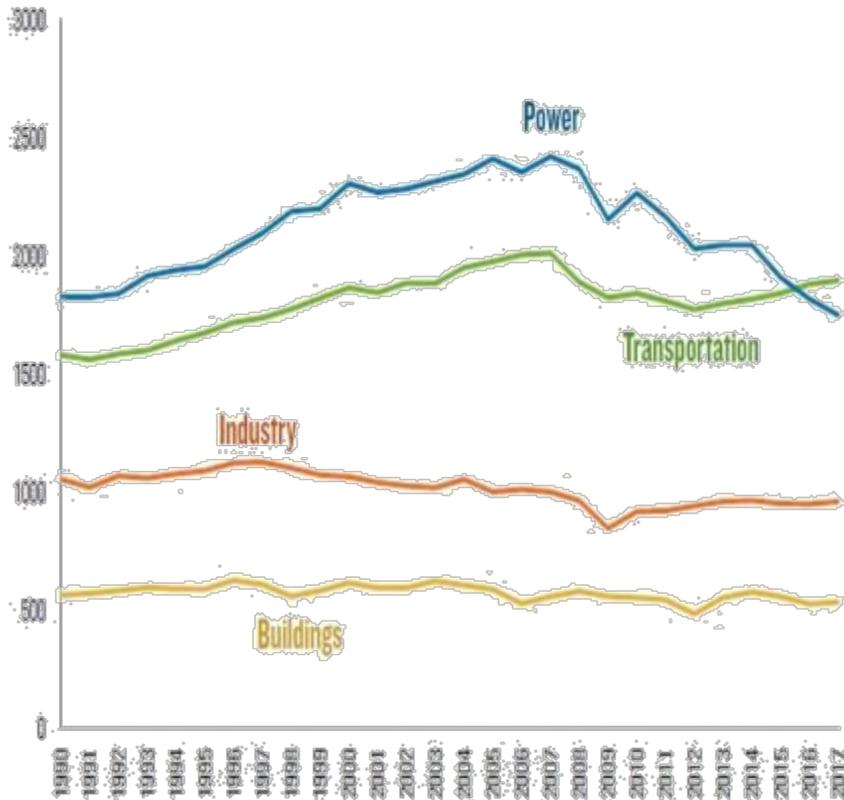
**VENTURE LOGISTICS**  
YOUR TOTAL TRANSPORTATION COMPANY



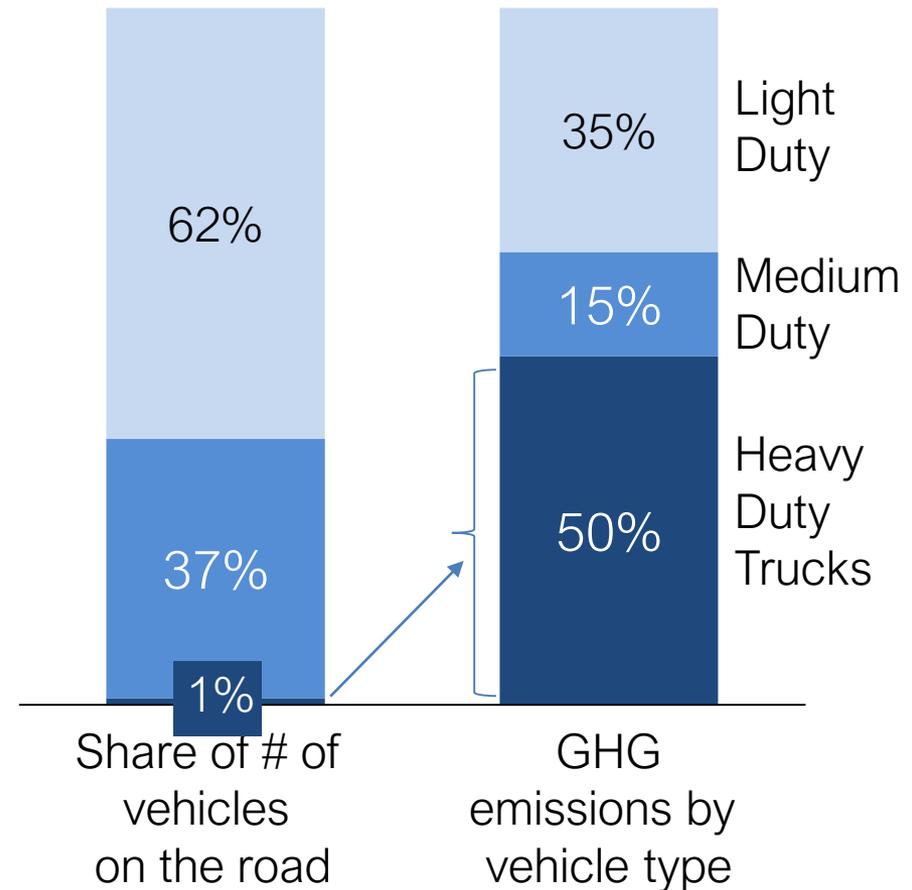
# Transportation is now the largest source of CO<sub>2</sub> emissions and trucks are the worst

## GHG emissions by sector

CO<sub>2</sub> emissions by sector in the U.S. (million MT)

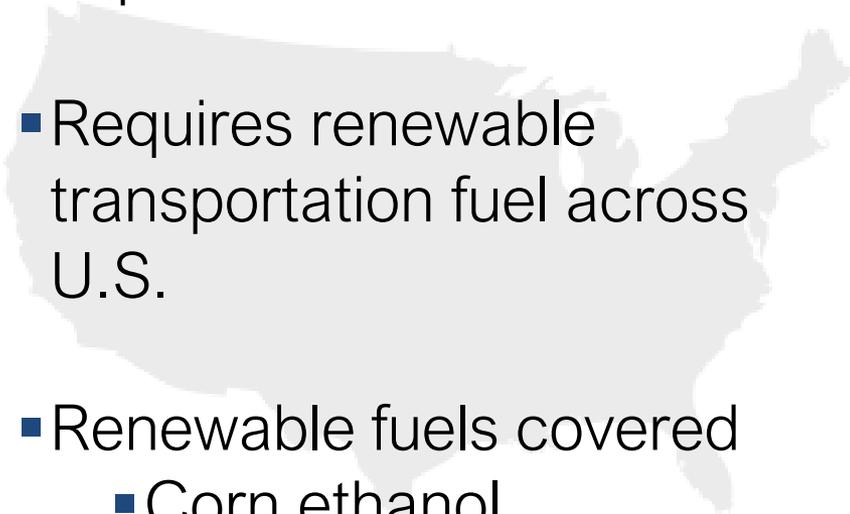


## Transportation emissions by vehicle type

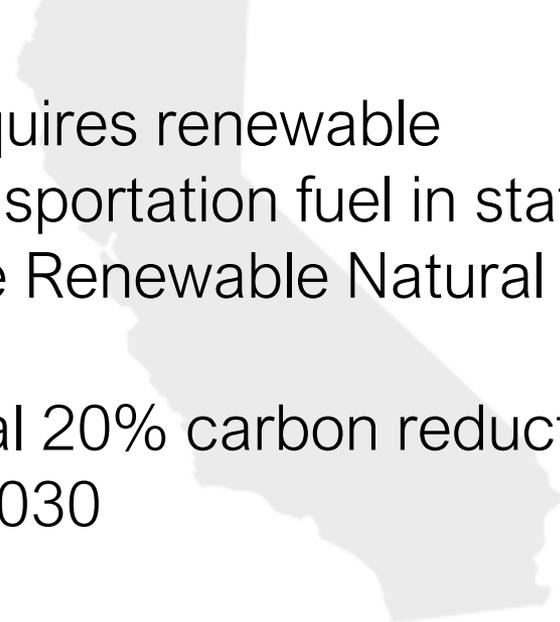


# National and state renewable fuel programs

## U.S. Renewable Fuel Standard

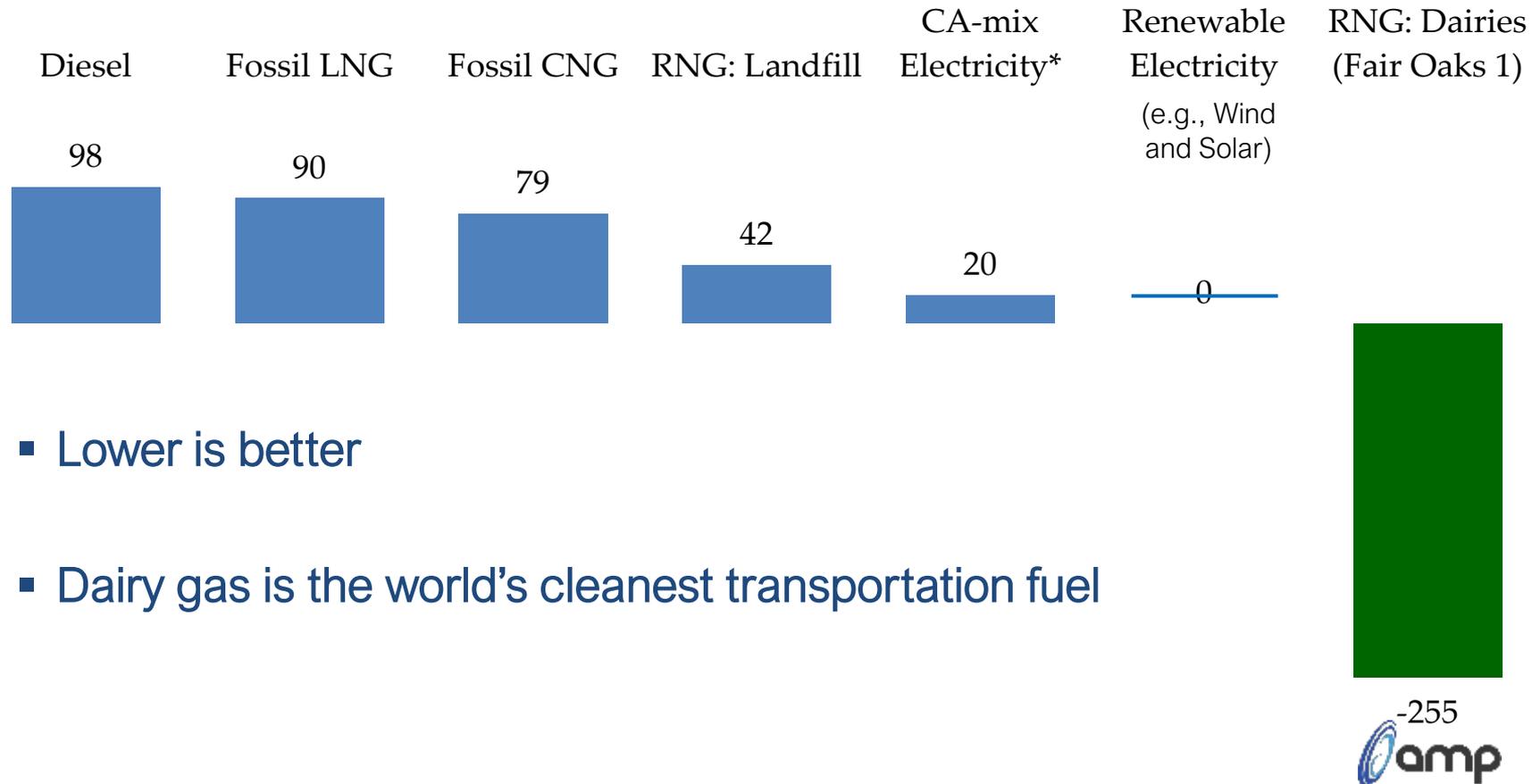
- In place since 2007
  - Requires renewable transportation fuel across U.S.
  - Renewable fuels covered
    - Corn ethanol
    - Bio-diesel
    - Non-corn ethanol
    - Renewable Natural Gas
- 

## California Low Carbon Fuel Standard

- In place since 2011
  - Requires renewable transportation fuel in state (like Renewable Natural Gas)
  - Goal 20% carbon reduction in 2030
  - Targets go up each year
- 

# Dairy RNG has the lowest Carbon Intensity of any fuel in the market

Carbon Intensity ("CI") score (grams of CO<sub>2</sub>e per megajoule)



- Lower is better
- Dairy gas is the world's cleanest transportation fuel

\* EER-adjusted to be comparable to natural gas scores  
Source(s): California Air Resource Board, AMP analysis

# It all started with Fair Oaks Farms – You've all heard about this for years

- Partner is leading innovator in dairy
  - Milk production, public education, sustainability
  - Manure management and nutrient recovery
  - Water management – reduction, reuse, recycling
  - *Vision: transparent, carbon neutral milk production*
- Our project is a part of the vision
  - 20,000 head of milking cows, 15,000 feeding the digester
  - First Dairy RNG project RINs, LCFS
  - Greenlane water wash system
  - NIPSCO interconnect
  - 3-mile private natural gas pipeline



# Our newest project is up and running – Jasper

- 16,000 milking cows
- 3 digesters on 3 sites
- 7 miles of biogas pipeline
- DMT CO<sub>2</sub> removal and H<sub>2</sub>S removal
- New NIPSCO interconnect



## Number 3 – Site 2 – is under construction

- 4,300 milking cows
- DVO mixed plug flow – 2 cells
- Added mechanical agitation
- Sand-trapping technology
- Feeds existing Fair Oaks gas conditioning operation with minor upgrades



# Four macro trends position RNG to fuel the transformation of heavy-duty trucking



## 1. Greenhouse gas emissions reduction

State & Federal laws (not just regulations) steadily increase required volumes of renewable fuels through 2022 and 2030



## 2. Air quality improvement

168 counties in non-attainment due to diesel trucking – cities/states funding transition of buses & trucks to CNG



## 3. Transportation cleaning up its act

EVs widely viewed as long-term solution for light duty vehicles, but no viable heavy-duty offering. ‘Near-Zero’ engines powered by natural gas available now. This is important as transportation is now the largest source of US CO<sub>2</sub> emissions.



## 4. Waste as a resource

Municipalities, industry and farms looking to for ways to manage organic waste & increase revenue. Capturing waste prevents methane emissions and displaces diesel

## RNG opportunity

**Cheap** – commodity price is lower (and less volatile) than diesel for shippers

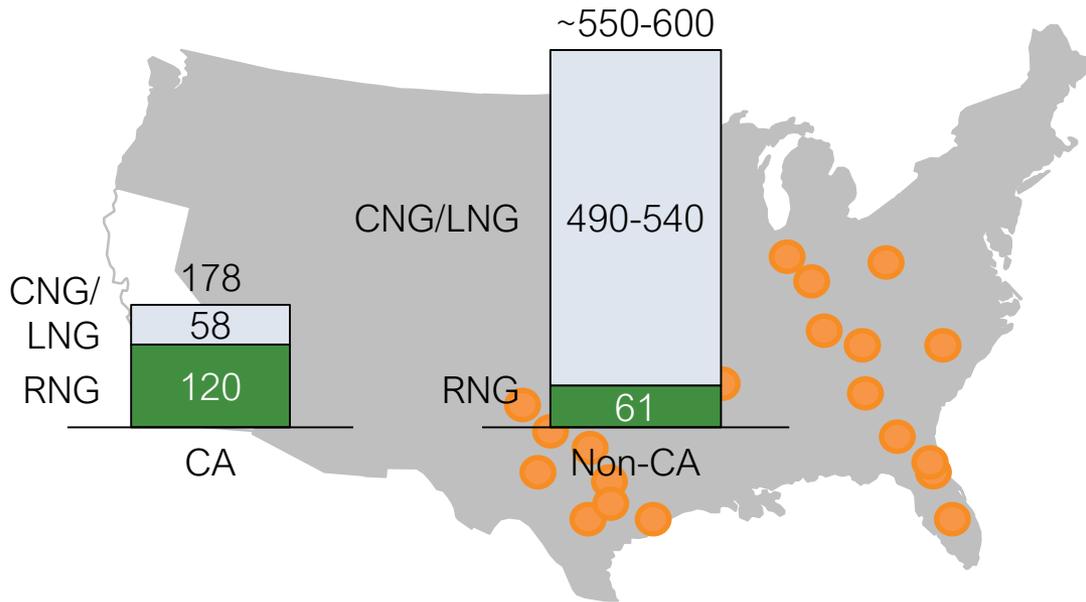
**Clean** – can be >100% GHG reduction & 99% smog reduction thru productive reuse of organic waste streams

**American** – 100% North American sourcing supports energy independence goals

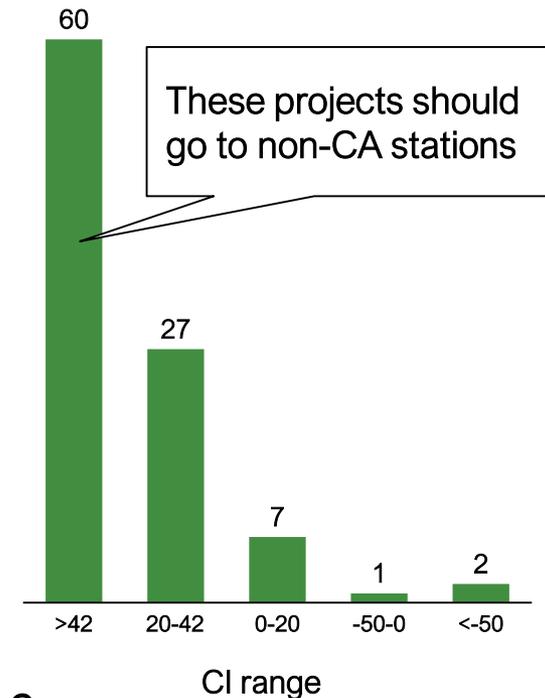
**Available now** – the only commercially viable truck + infrastructure solution for several more years

# Outside California demand far outstrips supply

Where is the RNG?: Estimated 2018 CNG/LNG in transportation by fuel source  
M gallons/year



Very few projects with very-low CI gas (pathway count)



How to get RNG to non-CA stations?  
Swap for Dairy Gas  
Build your own projects

# Get in touch



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