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# Renewable Natural Gas:

Building on Lessons from Low Carbon Fuel Standard  
Success to Drive RNG Use Across All Sectors

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## About the RNG Coalition

- The leading advocacy and education voice for RNG in North America
- We advocate for the sustainable development, deployment and utilization of renewable natural gas so that present and future generations will have access to domestic, renewable, clean fuel and energy
- RNG developers, marketers, financiers, technology providers, consultants, utilities and labor coming together
- 98%+ of the RNG supply in North America

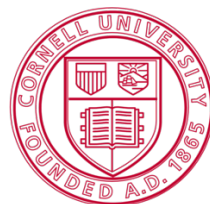
## RNG Coalition LEADERSHIP Members



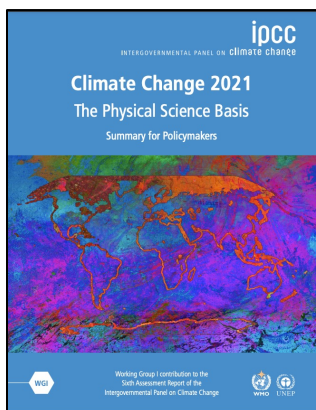
## RNG Coalition GENERAL Members



## RNG Coalition ACADEMIC Members



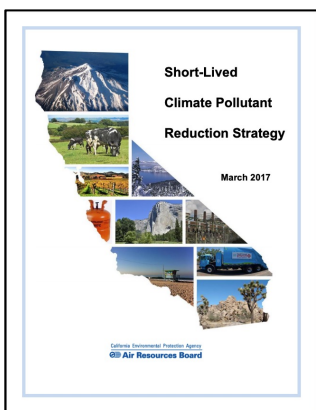
## Abating Methane from Organic Wastes Remains a Critical Climate Strategy, both in Globally and in California



“Sustained methane mitigation, wherever it occurs, stands out as an option that combines near- and long-term gains on surface temperature and leads to air quality benefits by reducing surface ozone levels globally.”

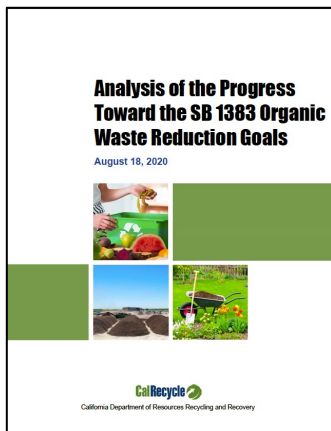
“Over time scales of 10 to 20 years, the global temperature response to a year’s worth of current emissions of SLCFs is at least as large as that due to a year’s worth of CO<sub>2</sub> emissions (high confidence). Sectors producing the largest SLCF-induced warming are those dominated by CH<sub>4</sub> emissions: fossil fuel production and distribution, agriculture and waste management.”

“For example, some short-term ‘win-win’ policies that simultaneously improve air quality and limit climate change include the implementation of energy efficiency measures, **methane capture and recovery from solid waste management** and oil and gas industry...”



“California’s organic waste streams are responsible for half of the State’s methane emissions and represent a valuable energy and soil-enhancing resource. Effectively implementing the measures described in this SLCP Strategy will not only reduce methane emissions but provide many other benefits as well, including cutting emissions of CO<sub>2</sub> and boosting economic growth in agricultural and rural communities.”

## SB 1383 (Lara, 2016) Goals and Progress



- **CalRecycle:**

“Organics recycling and recovery infrastructure is growing, but still needs significant expansion to provide the recycling capacity necessary to meet the SB1383 disposal and methane reduction goals.”

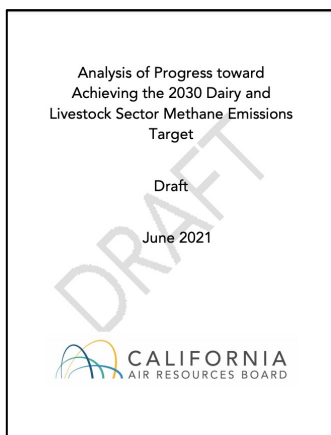
“Due to high capital expenses, AD facilities often rely on revenue from renewable energy incentives to make projects economically feasible.”

- **CARB:**

“This Analysis shows that the dairy and livestock sector is projected to achieve just over half of the annual methane emissions reductions necessary to achieve the target by 2030 through modifications to manure management systems—primarily using anaerobic digesters—and additional reductions through decreases in animal populations.”

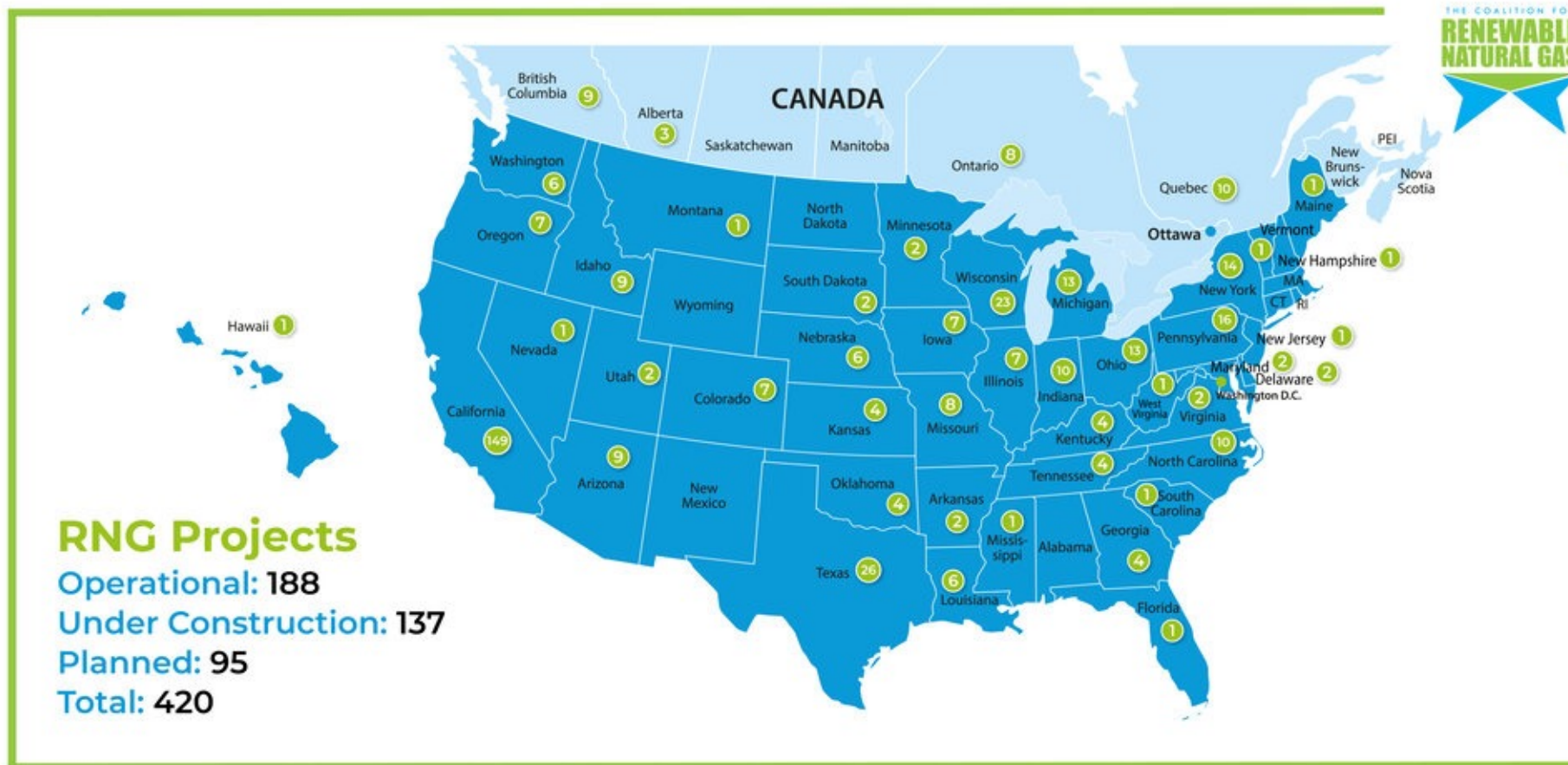
“New or expanded local, State, or federal incentives or funding mechanisms could potentially accelerate the capture and beneficial use of California biomethane, provide additional revenue necessary to ensure that California’s dairy manure methane emissions are captured, and direct the biogas to difficult-to-decarbonize sectors”

- **RNG industry stands ready to help achieve the goals, agrees that economics of RNG production will be a key driver**



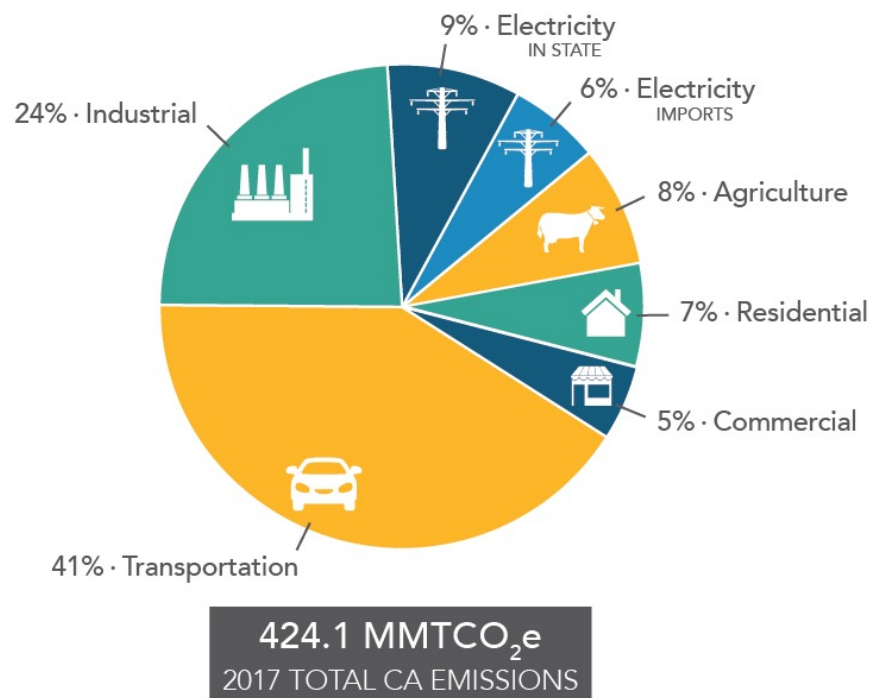


## RNG Production Facilities In North America



## California's Low Carbon Fuel Standard (LCFS)

- California's primary program to promote alternative fuel use in the transportation sector



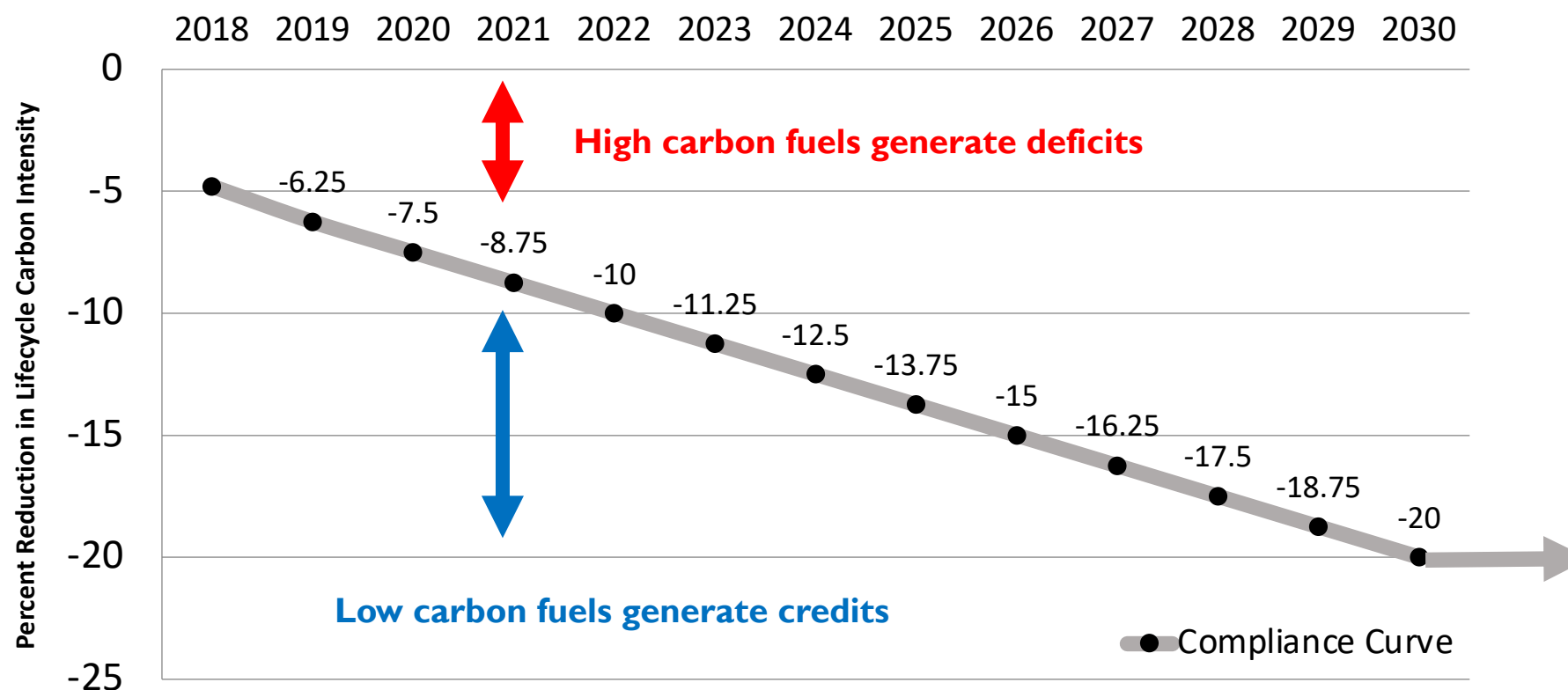
### Goals:

- Reduce carbon intensity (CI) of transportation fuels
- Transform and diversify fuel pool
- Reduce petroleum dependency

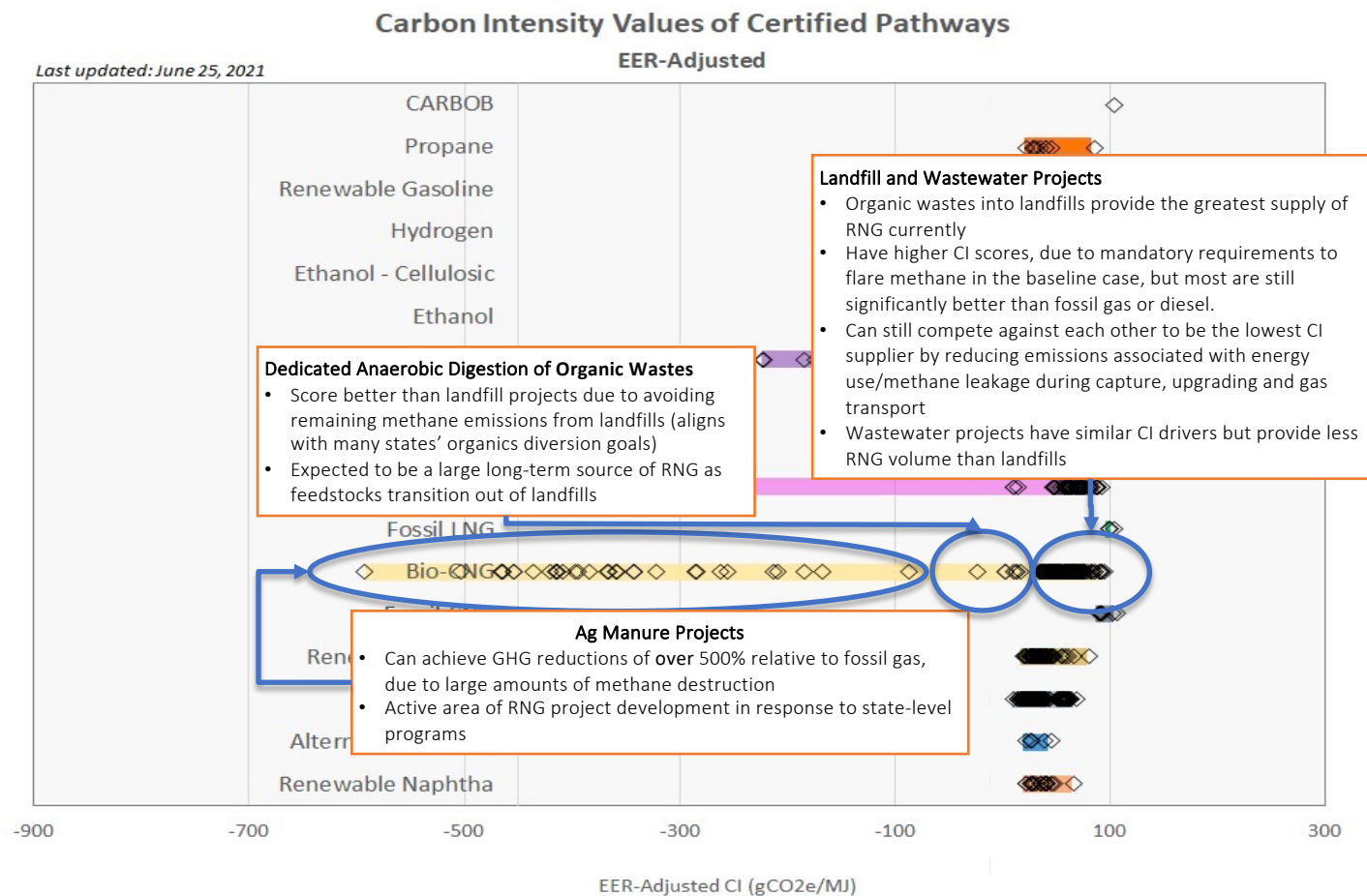
### Benefits:

- Reduce emissions of criteria pollutants and toxics
- Support other state environmental goals:
  - SB 1383 (methane and organic waste reduction)
  - SB 1505 (renewable hydrogen)
  - Sustainable changes in the Natural and Working Lands Sector

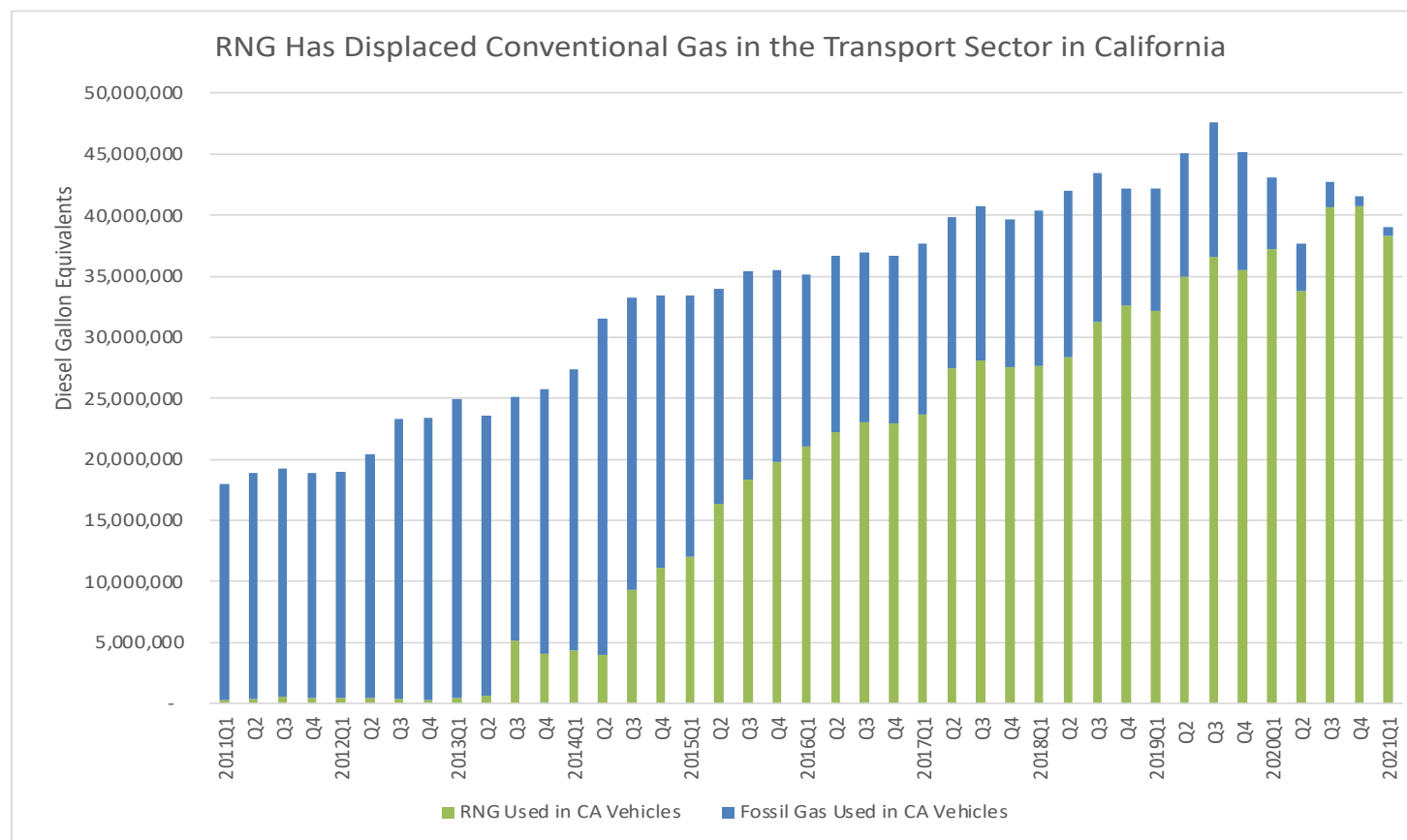
## How Does CA LCFS Work?



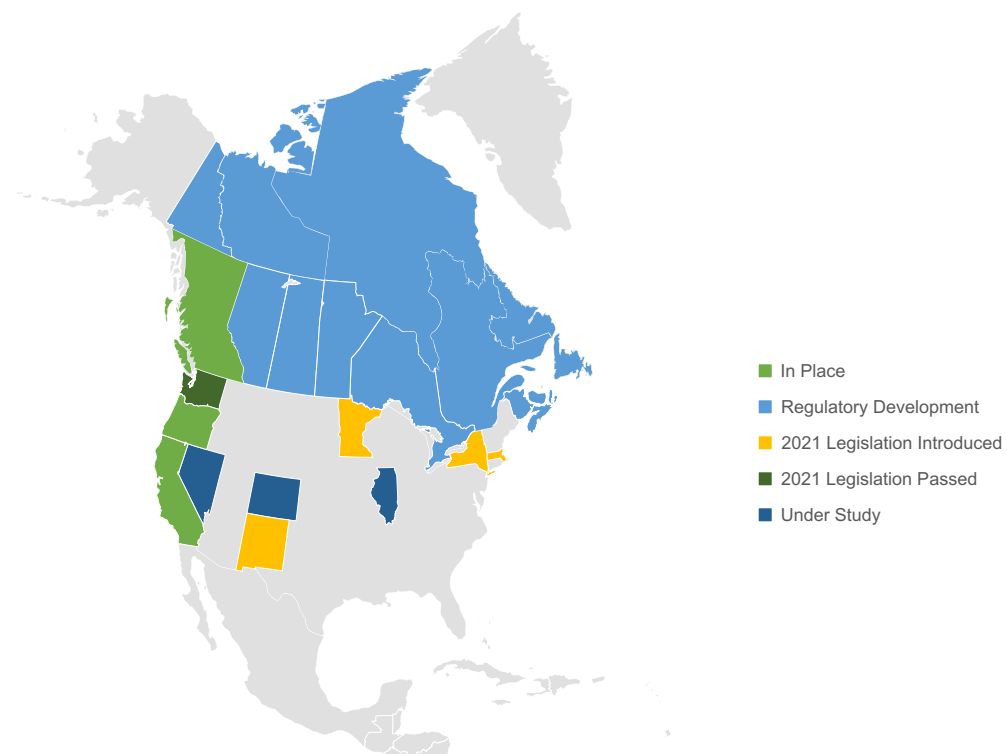
## Each RNG Pathway Has a Unique Lifecycle Carbon Intensity Score



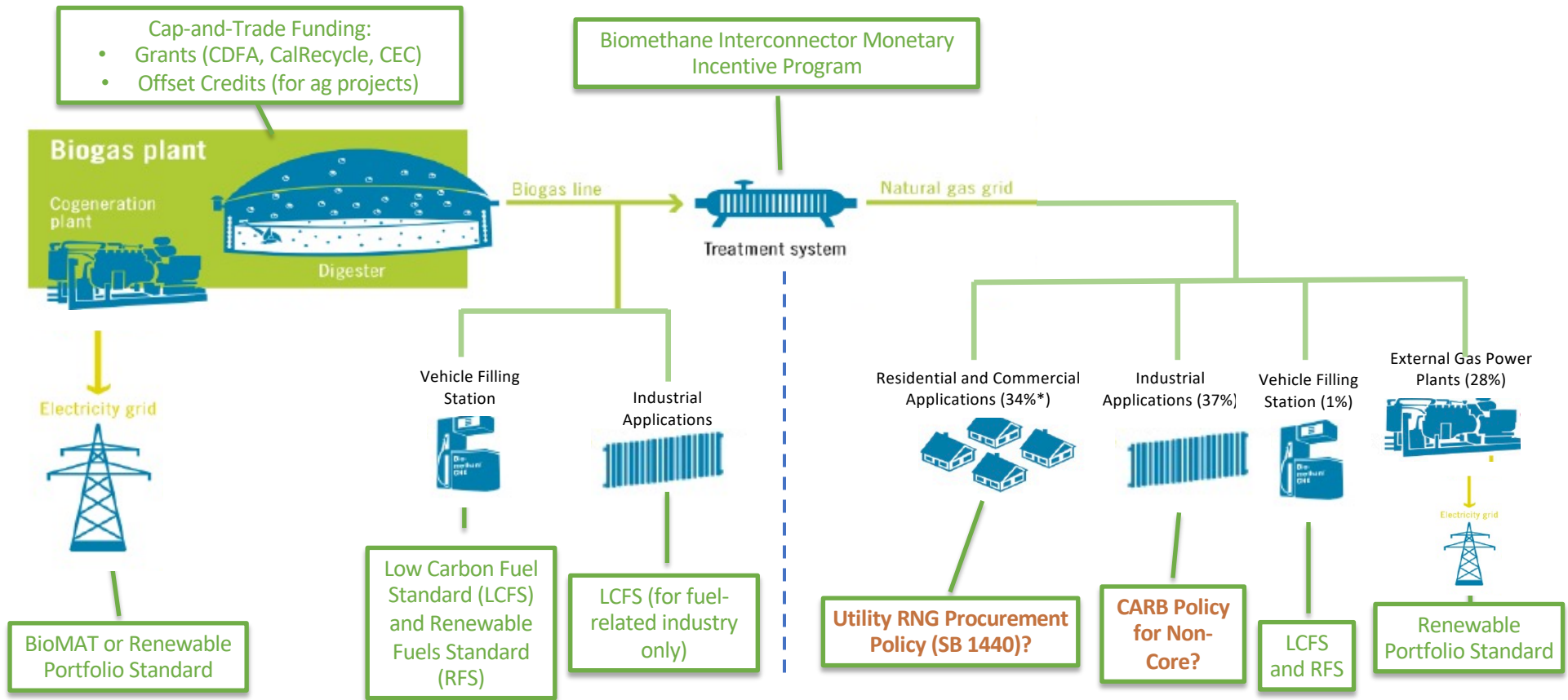
## CA LCFS is Working, Achieved 98% RNG Blend Rate in Transportation NGVs in Q1 2021



## California Leadership is Leading to Expansion of Clean Fuel Standards Across North America



# Current CA Policy Promotes RNG Creation, Use in Transportation and Power. But not Use in the Largest Gas Demand Sectors (Residential, Commercial, Industrial).

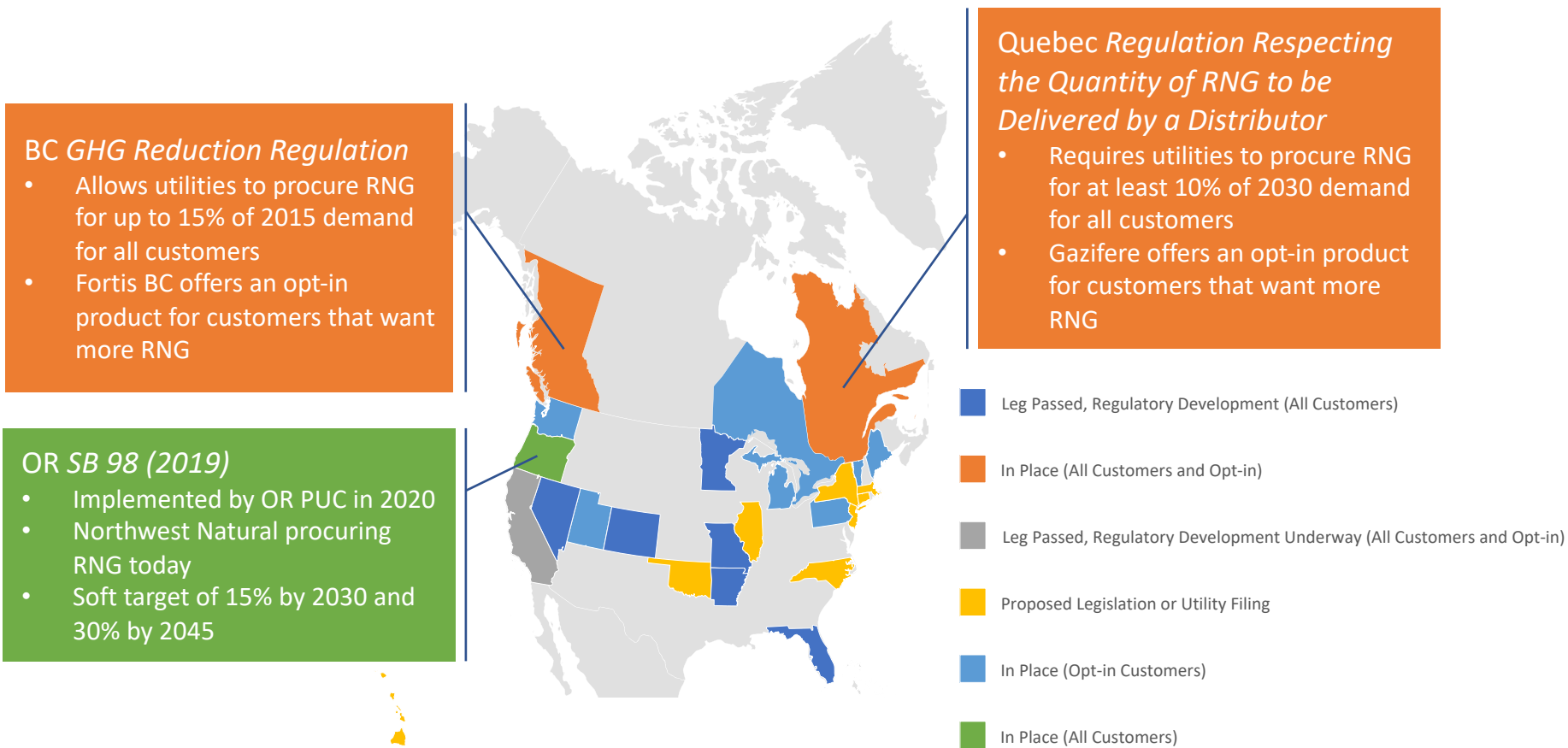


## Many Concepts from LCFS can be Imported into Other Policies to Promote RNG (e.g., Utility Procurement Programs)

- Key metric should always be “mass of CO<sub>2</sub>e/MJ of gas delivered,” matching the LCFS.
- Lifecycle analysis using this metric can address common critiques/concerns about RNG:
  - High carbon/energy intensive methods won’t be used to make RNG (would have poor scores)
  - Methane leakage rates are captured in the scoring (less leaks → better score)
  - Minimize transportation distances/new gas infrastructure (minimize transport distance/lower embedded emissions → better score)
- Thoughts on CPUC Proposal for SB 1440 Framework:
  - Emphasize primary procurement method should be lifecycle \$/ton performance.
  - Each year each gas suppliers can then show how many GHG reductions they’ve achieved through RNG procurement (volume-weighted portfolio CI multiplied by RNG blend rate)
  - Same framework could incent biomethane in the near-term and renewable H<sub>2</sub> or synthetic gas (SNG) in the longer term, in-line with studies about how to meet our long-run decarbonization goals



## RNG Procurement by Gas Utilities is a Growing Trend Across North America



# Studies on Deep Decarbonization See a Role for RNG, Disagree About What Sector Should Use It

**Table 2-1 | The Role of RNG in Deep Decarbonization Studies**

REGION	STUDY	FINDINGS AND ASSUMPTIONS RELATED TO ROLE OF RNG IN DEEP DECARBONIZATION BY MIDCENTURY OR EARLIER
California	Deep Decarbonization in a High Renewables Future (Mahone et al. 2018)	<b>Transport:</b> Light-duty vehicles move toward 100% electrification. Medium- and heavy-duty vehicles use biomethane alongside mix of CNG, hydrogen, and other biofuel options. <b>Stationary end uses:</b> Alongside large-scale building electrification, RNG displaces additional building gas demand.
California	Getting to Neutral: Options for Negative Emissions in California (Baker et al. 2020)	<b>Cross-cutting:</b> Reaching net-zero emissions will require scaling of net-negative decarbonization strategies. RNG and hydrogen from organic wastes can play a role if coupled with emerging CCS technologies to achieve added carbon removal.
Oregon/ Washington	Pacific Northwest Pathways to 2050 (Aas et al. 2018)	<b>Stationary end uses:</b> Alongside electrification efforts, RNG and hydrogen may be used in existing gas distribution networks to help decarbonize hard-to-abate end uses and meet peak heating demand.
Northeast	Northeastern Regional Assessment of Strategic Electrification (Hopkins et al. 2017)	<b>Cross-cutting:</b> Alongside rapid electrification, RNG and other low-carbon fuel supply can be deployed to further lower emissions.
Northeast	Northeast 80x50 Pathway (National Grid 2018)	<b>Stationary end uses:</b> Region can reduce emissions through rapid transition away from liquid fuels in building heating and conversion to electric heat pumps, natural gas, and renewable natural gas from local feedstocks.
Northeast	The Role of Renewable Biofuels in a Low Carbon Economy (Lowell and Saha 2020)	<b>Cross-cutting:</b> Complementary deployment of biofuels may be viable for decarbonization. <b>Transport:</b> Alongside significant electrification of heavy-duty vehicles (with the exception of combination trucks), RNG fuels 80–100% of NG vehicles in 2030. <b>Stationary end uses:</b> Alongside electrification, RNG may be used to meet 5–10% of residential and commercial heating demand in 2030.

Notes: CNG = Compressed natural gas; CCS = Carbon capture and storage; NG = Natural gas.  
Source: WRI authors, based on studies cited above.

## CEC Should Articulate a Multi-Phase Strategy for Use of RNG Resource in this IEPR Cycle

### **Near-Term: Reduce Methane Emissions**

- Build the RNG projects immediately to reduce methane from organic waste streams as fast as possible
- Reach 2030 SCLP reduction goals
- Begin to decarbonize the gas system

### **Mid-Term: Begin to Prioritize RNG Use in Hard to Decarbonize Sectors**

- RNG projects that are pipeline injected offer a flexible resource that can be sent to the sectors that most need it over time (i.e., those that prove to be hard to decarbonize in other ways)
- This choice becomes more important when remaining gas demand is closer to RNG supply

### **Long-Term: Manage Transition to H<sub>2</sub> with CCS**

- When hydrogen transport infrastructure develops, consider transitioning bio feedstocks to H<sub>2</sub> molecule as the energy carrier (especially for non-AD feedstocks)
- Couple H<sub>2</sub> production with Carbon Capture and Sequestration to get carbon negative outcomes

## Conclusions

- Many additional opportunities exist to deploy RNG across all California sectors that currently use conventional gas
  - Critical to build out RNG to reach methane reduction goals and to begin the decarbonization of the gas sector
- California's LCFS is a proven model to support RNG project development
  - RNG is delivering the promised GHG benefits and remains the lowest carbon fuel in the LCFS program
  - Similar support needed to promote RNG across additional end uses
- RNG production capacity expansion will allow cities, counties, and California's waste and agricultural sector to comply with SB 1383 requirements
- Timely California leadership will be highly valuable in providing a consistent vision for how the RNG resource is developed and utilized across North America

## Speaker Info

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