

# R&D RNG Roadmap

2018

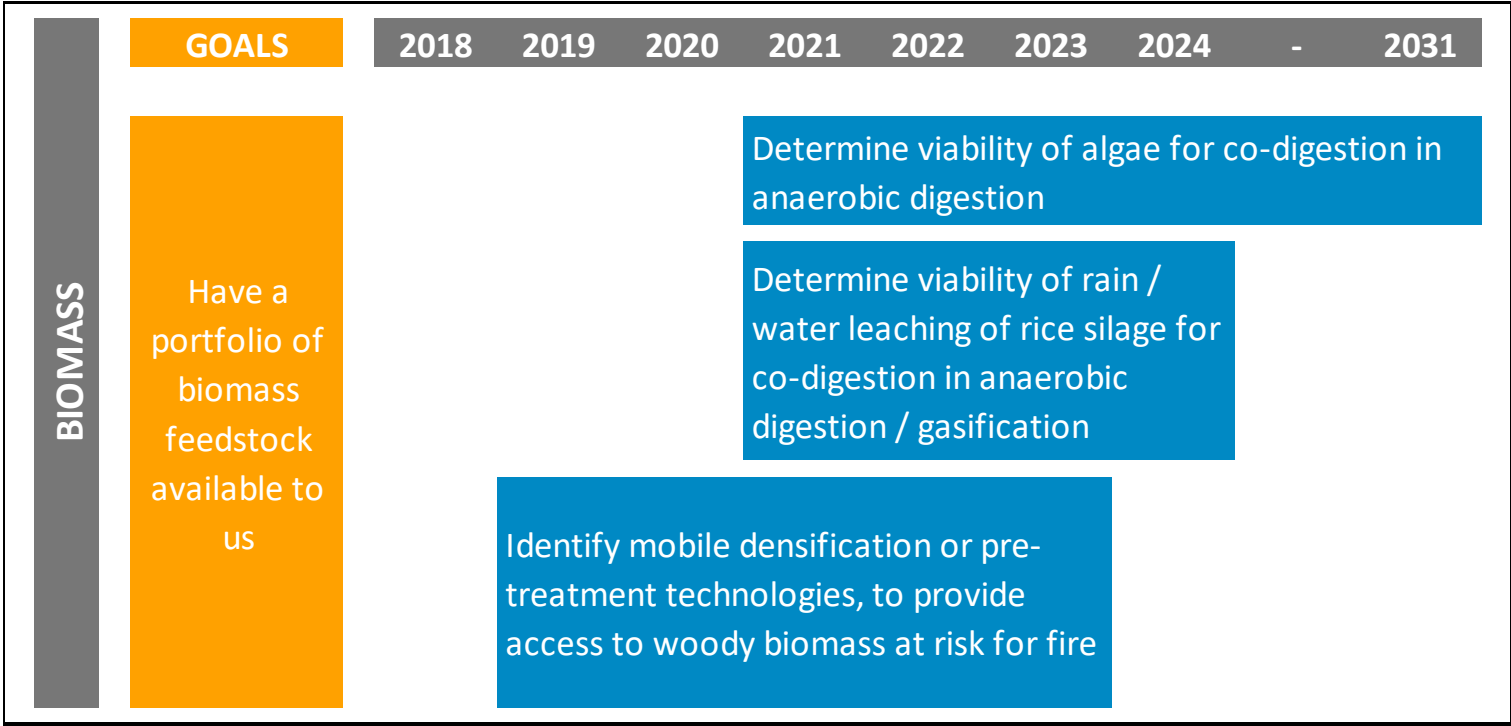


Together, Building  
a Better California



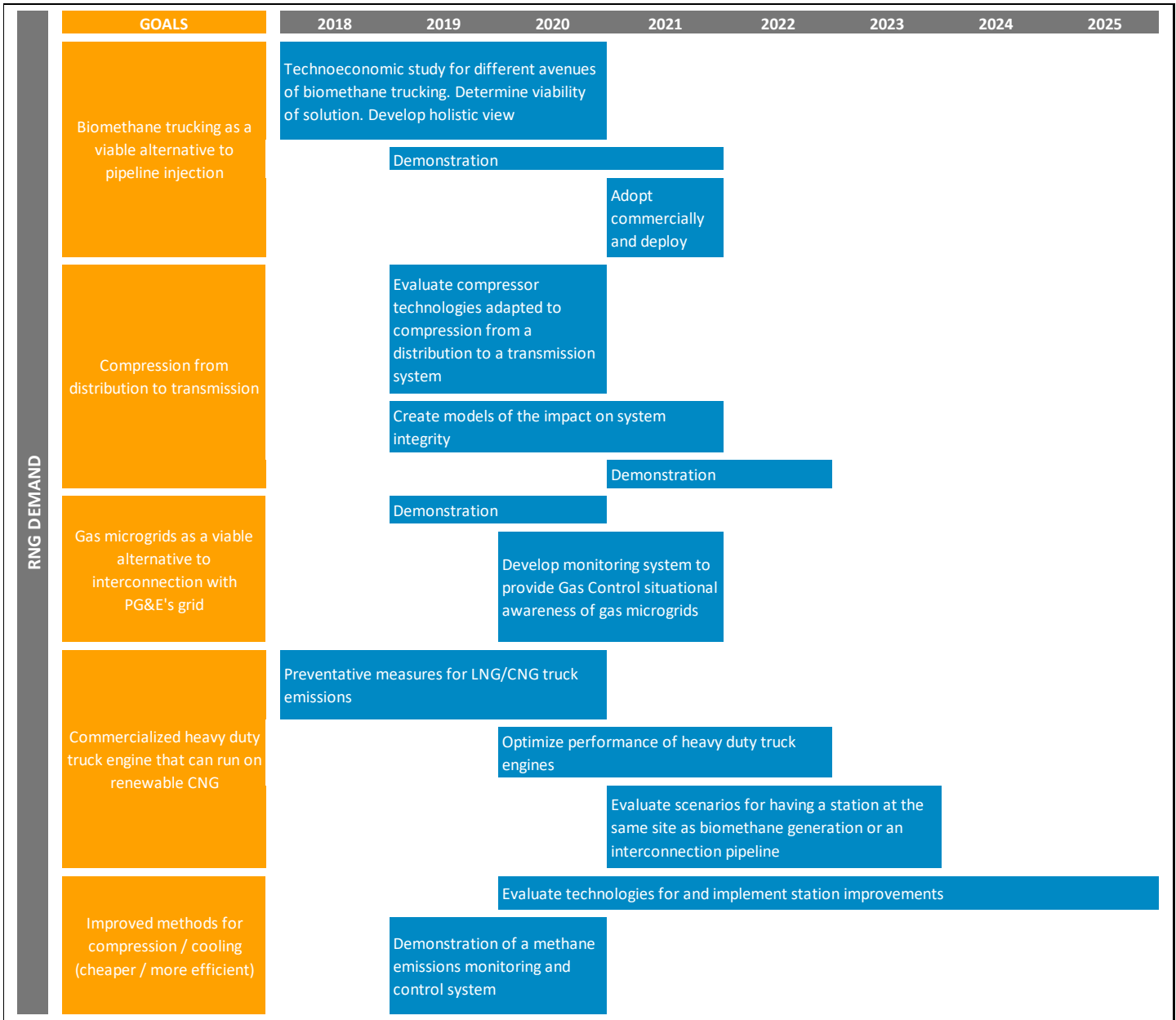
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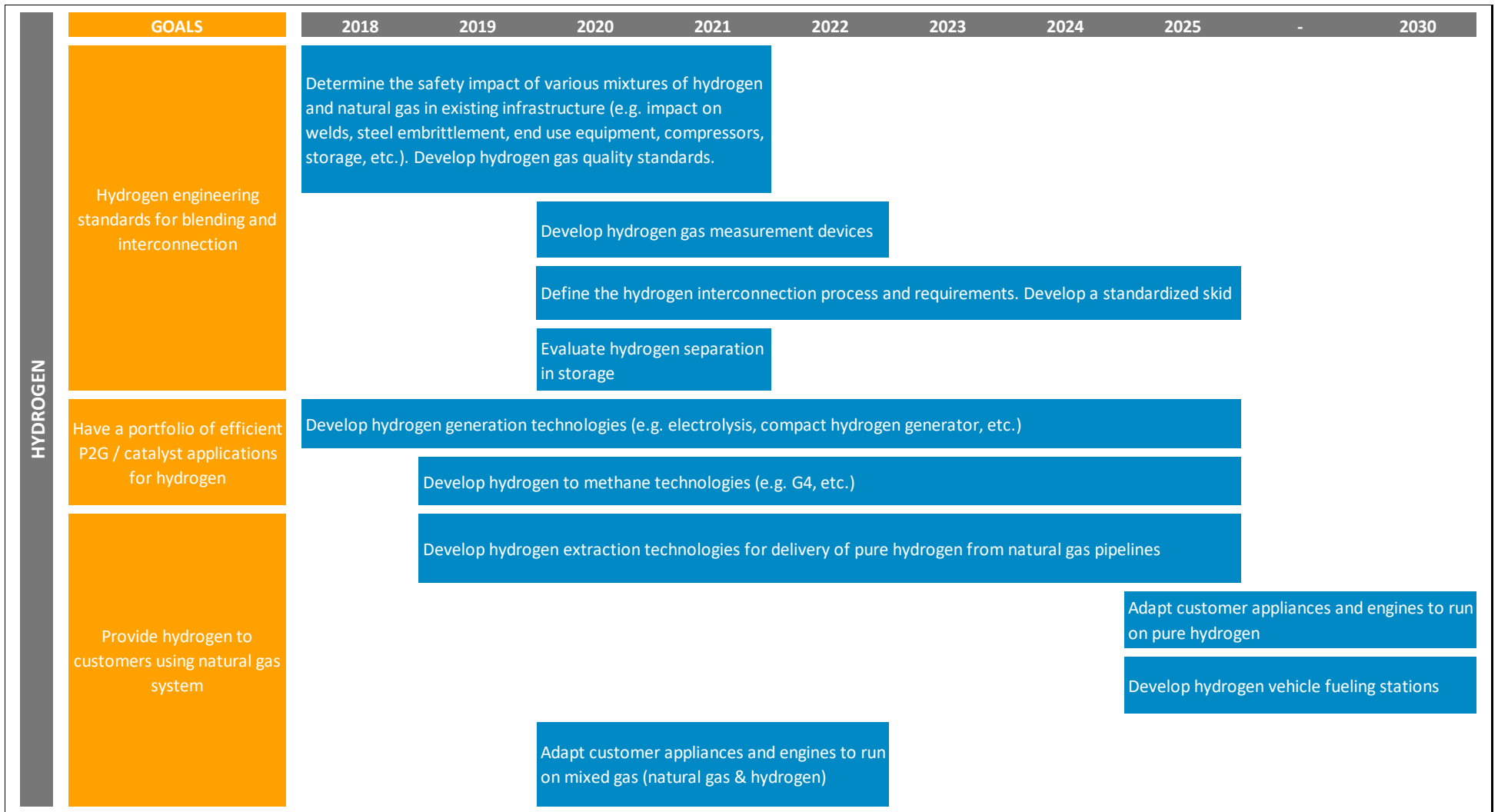


		2018	2019	2020	2021	2022	2023	2024	2025	
CONVERSION	<b>GOALS</b>									
	Woody biomass conversion with digesters (in addition to traditional conversion via gasification / pyrolysis)		Exploration and feasibility study				Conceptual design and demonstration			
	Have a portfolio of gasification and pyrolysis technologies available to us	Provide support/assessment in short term projects that aren't R&D driven (e.g. GTI stockton plant assessment)								
		Connect with projects done elsewhere (e.g. Europe, PNNL, NETL)								
		Develop technologies through long term partnerships (e.g. G4, Sierra)								
							Optimize technologies			
					Operationalize full scale plants					
Standards for anaerobic digesters in California / US	Improve control with bacteria types and management									
	Optimize operating conditions (e.g. feed, enzymes, etc.) and resiliency / reliability / flexibility for consistent biomethane quality									





RING DEMAND



ALTERNATIVE CARBON MARKETS	GOALS	2018	2019	2020	2021	-	2025
	Analyze alternative carbon markets	Evaluate technologies that repurpose CO2 into CH4					
			Evaluate technologies in alternative carbon markets (e.g. carbon black)				