Deliverable #1: Dairy Methane Digester Project Expansion

		Item A			Item B					
Committee Member	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation	
Original Languge	An estimated 200 digesters	Digesters allow for the	The legislature should	Currently, a large majority	Additional incentives may be needed to	Committee has not yet identified	Environmental benefits	California's dairy industry is shrinking	TBD. Committee has not yet	
	will need to be built in order	initial collection of raw	continue to allocate	of RNG supplied to	help in-state RNG production become	specific consensus policy	must accrue, and	overall, but in some cases, consolidation	identified specific consensus policy	
	to reduce manure methane	biogas. Digesters are a	GGRF incentive funding	California originates from	competitive with out-of-state sources.	recommendations	impacts must be	of dairies is leading to more new cows in	recommendations.	
	40% from dairies. To make	critical component of the	to encourage and	low-cost sources out of	Legislative discussions are currently taking		avoided, in the	certain locations. Some parties feel the		
	investments in these	state's SLCP plan.	incentivize dairy	state. It is unclear how	place advocating for a biomethane		communities where dairy	issue of new cows in some places		
	digesters attractive to		methane reduction	competitive RNG derived	procurement program, in which utilities		methane reduction	deserves an intervention by our group.		
	farmers, incentive funding is	CDFA has estimated that	efforts in accordance	from in-state dairy	could "take" a certain level of dairy RNG		projects are	Others maintain that relocation of cows		
	will continue to be needed.	\$500M is needed to	with CDFA's	biomethane will be			implemented.	within the state is both limited in scale		
		encourage and	recommendations	competitive with these				and not a consequence of state methane		
		incentivize dairy		sources in the future.				reduction efforts, and therefore, such		
		methane reduction						cases are best handled by local		
		efforts. \$159M has been						permitting authorities.		
		spent or appropriated,								
		and another \$99M has								
Fariva Ali		been budgeled.				TBD. Committee has not vet identified				
						specific consensus policy				
						recommendations which support the				
						industry and balance the cost impact to				
						consumers.				
Neil Black				Currently, a large majority	Additional incentives or rules may be	TBD. Committee has not yet identified		Add to existing: Dairy digesters add to	Proposed Rec: LCFS pathways	
				of RNG supplied to	needed to help in-state RNG production	specific consensus policy		environmental protection by decreasing	should be established for natural	
				California originates from	become competitive with out-of-state	recommendations. Incentives or rules to		ammonia, H2S, and other emissions. As a	gas tractors and other farm	
				low-cost sources out of	sources. Approaches to insure robust	ensure demand for California projects		result, digesters improve local air quality	equipment. In addition, fleet	
				state and this out of state	demand for CA dairy biomethane are key.	should be adopted.		when the gas is put into the pipeline.	conversion funding should include	
				supply is growing rapidly. It	Legislative discussions are currently taking			Further, dairy R-CNG projects advance	programs targeting dairy and	
				is unclear how competitive	place advocating for a biomethane			air protection by replacing diesel truck	agricultural equipment, resulting in	
				RNG derived from in-state	procurement program, in which utilities	P. Dresher wrote, "		fleets with NZE vehicles. There is also a	benefits to the San Joaquin Valley	
				dairy biomethane will be	could "take" a certain level of dairy RNG.	Extend provisions of AB 398 Section 4(E)		nascent supply of natural gas	air quality.	
				competitive with these	Other approaches are being discussed. It is	to LCFS:"no more than one-half may		tractors/farm equipment which could		
				sources in the future.	critical that there is adequate demand at a	be sourced from projects that do not		replace polluting diesel equipment.		
					sufficient price for California dairy R-CNG	provide direct environmental benefits in				
					in order to encourage digester	state" Ideally, this would apply to the				
					development and secure successful	regulated parties entire compliance				
D .1 D .1					operations of built projects.	obligation.				
Rebecca Boudreaux					Additional incentives may be needed to			California's dairy industry is snrinking		
					neip in-state RNG production become			overall, but in some cases, consolidation		
					Competitive with out-or-state sources.			cortain locations		
					difference in Cliscores between in state			PR Comment: Consolidation of dairy		
					dainy biogas-based PNG and out of state			farms could improve the economics of		
					landfill gas-based RNG provide enough			dairy biogas projects due to the		
					incentive for in-state dairy methane			increased number of cows in a single		
					projects?			location. This could ultimately drive		
					···· ··· ··· ··· ··· ··· ··· ··· ··· ·			more projects. As our group's focus is on		
								fostering new markets for dairy		
								digesters. I do not see how our group		
								could oppose such consolidation.		
					<u> </u>					
Peter Drasher					Extend provisions of AB 398 Section 4(E) to			PD Comment: A recent comment made		
					LCFS:"no more than one-half may be			a compelling point about electrical		
					sourced from projects that do not provide			generation for EV's benefitting San		
					direct environmental benefits in state"			Francisco at the expense of the Central		
					Ideally, this would apply to the regulated			Valley Is there a way to balance the		
					parties entire compliance obligation.			impacts and benefits locally?		
		l								

Deliverable #1: Dairy Methane Digester Project Expansion

		Item A			Item B		Item C				
Committee Member	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation		
Cliff Gladstein			California should invest			Support policies that prioritize in-state			CARB and CDFA should implement		
			in programs to increase			production of dairy RNG utilizing			a program to increase awareness		
			awareness among dairy			language similar to that used to			in impacted communities of the		
			owners of the			accomplish the same objecting in the			benefits that RNG production will		
			opportunities presented			RPS.			bring to those geographies.		
			for enhancing						Educate key stakeholders of the		
			sustainable operations						value of dairy RNG infrastructure		
			through manure						to reducing adverse local impacts		
			management for RNG.						of dairy operations.		
Bonnie Holmes-Gen	An estimated 200 digesters	Digesters allow for the	The legislature should				Air quality and				
	may will need to be built in	initial collection of raw	continue to allocate				Environmental benefits				
	order to reduce	biogas. Digesters are a	GGRF incentive funding				must accrue, and				
	manure methane 40% from	critical component of the	to encourage and				impacts must be				
	dairies. Further research will	state's SLCP plan along	incentivize dairy				avoided, in the				
	determine the number of	with other methane	methane reduction				communities where dairy				
	digesters needed vs. other	reduction methods	efforts in accordance				methane reduction				
	methane reduction		with CARB and CDFA's				projects are				
	methods. (We haven't heard		recommendations.				implemented.				
	the recommendations of the										
	Research sub-group yet to										
	understand what can be										
	achieved through other										
	methods) To make										
	investments in these										
	digesters attractive to										
	farmers, incentive funding is										
	will continue to be needed										
Lynne McBride								California's dairy industry is shrinking			
								overall, but in some cases, consolidation			
								of dairies is leading to more new cows in			
								certain locations. Some parties feel the			
								issue of new cows in some places			
								deserves an intervention by our group.			
								Others maintain that relocation of cows			
								within the state is both limited in scale			
								and not a consequence of state methane			
								reduction efforts, if dairies of all sizes			
								are included in digester projects, and			
								therefore, such cases are best handled			
1								by local permitting authorities.			

Deliverable #1: Dairy Methane Digester Project Expansion

		Item A			Item B		Item C				
Committee Member	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation		
John Shears	An estimated 200	CDFA has estimated that	Care needs to be taken in		Currently, a large majority of RNG supplied		Air quality, community				
	digesters*1 might will need	(if digesters prove to be a	order to avoid the		to California originates from low-cost		health and				
	to be built in order to	practical/viable slcp	danger here that		sources out of state. It is unclear how		Environmental benefits				
	contribute to the reduce-	emissions reduction	depending upon how an		competitive RNG derived from in-state		must accrue, and				
	reduction of	pathway that) \$500M is	overall SLCP funding		dairy biomethane will be competitive with		impacts must be				
	manure methane by 40%	needed to encourage	strategy is implemented		these sources in the future.		avoided, in the				
	from dairies.	and incentivize dairy	(for digester and non-				communities where dairy				
		methane reduction	digester projects alike)				methane reduction				
	To make investments in	efforts. \$159M has	that this could				projects are				
	these digesters attractive to	been spent or	distort/disrupt* the				implemented				
	farmers, incentive funding is	appropriated, and	market and/or lead to a				(Bonnie's change in in				
	will-might continue to be	another \$99M has been	shifting of impacts on				blue text.)				
	needed.	budgeted.	the environment and								
			community health.								
	*1 eg.	*2									
	https://biomass.ucdavis.edu	https://www.cdfa.ca.gov	* Analyses conducted to								
	/wp/ARB-Report-Final-	/oefi/climate/docs/SLCP_	date indicate that dairy								
	Draft-Transmittal-Feb-26-	Reommendations.pdf	digester projects are								
	2016.pdf		more likely to be								
			economically feasible for								
			the largest dairies.								

Discussion document for review – not for citation

Dairy and Livestock Working Group Digester Subgroup DRAFT Working Recommendations for Discussion July 11, 2018

Deliverable #2: Electricity Generation and Grid Interconnectivity

Recommendations for cost effective ways to further mitigate criteria pollutant emissions for on-site electricity generation projects, including market development incentives, policy development, removing barriers, and regulatory or legislative action.

Issue	Discussion	Recommendation
A) Electricity production and sales, including programs like the BioMAT FiT program, provides an important revenue stream and financial diversification for dairy digesters.	In March 2018, CPUC adopted a decision to continue the BioMAT FiT program, which expires in 2021. CPUC staff is currently conducting a program review and plans on releasing draft recommendations in the near future. CPUC may open a new phase of the proceeding to consider staff's recommendations and other proposals to revise the program	The BioMAT Fit program provides an important revenue stream for financing dairy digester projects and should be extended by the CPUC. As part of the BioMAT FiT program review and any follow- up proceeding, the CPUC should ensure public discussion and consideration of the following program revisions: - extension of the BioMAT FiT program to continue supporting the development of dairy digester projects - ways to modify the BioMAT FiT program that would allow for changes in MW/year production for the purpose of giving projects the flexibility to move from electric generation to onsite vehicle fueling and/or pipeline injection

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Discussion document for review – not for citation

Dairy and Livestock Working Group Digester Subgroup DRAFT Working Recommendations for Discussion July 11, 2018

Deliverable #3: Pipeline injected Biomethane

Recommendations that can increase pipeline injection of biomethane, including market development ______ Formatted: Font: (Default) Arial incentives, cluster identification, policy development, regulatory or legislative action, removing barriers, and support the SB 1383 pilot project process.

Issue	Discussion	Recommendation		Formatted: Font: (Default) Arial, 11 pt, Bold, Font color: Black
				Formatted Table
A) The Low Carbon Fuel Standard (LCFS) provides substantial value for digester projects, and the perceived stability of credit prices is essential to project financing.	Since the group's formation, the LCFS has been statutorily protected by AB 398. Now the CARB Board is currently considering rulemaking for the 2020-30 period including a carbon intensity reduction target of 20% by 2030. Note: SB 1383 requires that CARB establish a pilot financial mechanism (PFM) to promote certainty and stability of credit prices.	CARB to develop and propose a pilot financial mechanism (PFM) by the end of 2018 The legislature and State policymakers should ensure the PFM program is fully funded and implemented no later than January 1. 2020,		 Deleted: should adopt and implement a PFM in 2018.¶ Formatted: Font: (Default) Arial, 11 pt Deleted: stringency of the Formatted: Font: (Default) Arial, 11 pt Deleted: ¶ The legislature should be prepared to appropriate funding to the PFM.
B) Interconnection costs can be a significant portion of total project costs, depending on size (biogas volume) of project and location to the nearest pipeline having capacity.	CPUC 's Biomethane Interconnection Incentive Program ends in 2021. This program based on AB 2313 provides a 50% reimbursement up to \$5M for dairy digester clusters (3 or more dairies) and up to \$3M for other biogas sources.	CPUC should extend the program from 2021 to 2030 and increase the funding cap from \$40M to NTE \$400M. CPUC should also put in place eligibility criteria and establish a transparent queue process to enable developers to be certain of funding.		Deleted: very high Deleted: beyond Deleted: . Deleted: .
		Working group is supportive of legislation that would expand the use of ratepayer dollars for the development of interconnection infrastructure.	~~~~	Formatted: Font: (Default) Arial, 11 pt Formatted: Font: (Default) Arial, 11 pt Formatted: Font: (Default) Arial, 11 pt

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C) Some dairies may not have access to a nearby utility pipeline <u>due to cost and/or</u> <u>location to a nearby</u> <u>pipeline having</u> <u>capacity</u> .	There may be an attractive use case for moving <u>renewable gas</u> , via tube trucks and delivering via "wet fueling" (remote sites). Such an approach may potentially provide a lower cost solution compared to interconnecting to the utility pipeline.	The CPUC should explore and address in their upcoming OIR the option for trucking of renewable gas in order to spur exploration of this approach		 Deleted: RNG Deleted: TBD. Committee has not yet identified specific consensus policy recommendations.
	۲			 Deleted:

Deliverable #4: Transortation Fuel Markets

Recommendations to increase biomethane access to all vehicle fuel markets, including market development incentives, policy development, regulatory or legislative action, and strategies to identify potential fleets and fuel networks/retailers

	Hom A			Item B Item C				ltem D			New Recommendation Added by Committee Member				
Committee Member	Issue	Discussion	Recommendation	lecuo	Discussion	Recommendation	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation	Issue	Discussion	Recommendation
Original Language	The conversion of dairy biomethane to transport fuel is a	CAPP has established a three-year investment plan for Medium-	The legislature should allocate \$695 million annually in a multi-year application to	Currently NG trucks	Current legislation for a	The legislature should provide a	PNG markets in California are	To discuss This issue has been identified as a	TBD. Committee has not yet identified specific	While Low NOx patural gas truck	Several emerging technology areas are	The legislature should provide a multi-	13500	Discussion	Recommendation
onginal canguage	nie conversion of daily biomethane to transport rulers a	and House Duty Vohiolog (MHDV) in the Low Carbon	for MHDV/c in the Low Carbon Transportation program consistent with CARP's	weigh up to around 2 000	2 000 nound weight	2 000 nound weight exemption	approaching caturation. In order to	noblem but no clear solutions have been	rob. committee has not yet identified specific	opgings allow for the productive	describer of investment However the	upper allocation for MHDVs in the Low			
	LCES credits are lucrative. However, such fuel requires an	Transportation which calls for approximately \$685 million/year	investment plan	nounds more than	exemption for 7F and	for 7E and N7E trucks	increase further supply more	identified	consensus poney recommendations.	economical use of dairy biomethane	focus of our subcommittee is on the	Carbon Transportation Program as			
	expanded demand market and NG trucks the lowest-cost	Such funding covers demos initiate and commercial incentives and	intestitient plan.	conventional diesel trucks	NZE trucks is pending in		demand is needed. However, the	literatives.		in a way that displaces 90% of NOx	most rapid expansion of technologies to	outlined above in deliverable #4 which			
	vehicle technology that can make use of PNG costs a	includes 7E and NZE technologies CAPP. 2017)	CAPP should ensure that funding for Low NOx trucks fully covers the incremental	conventional dieser trucks	the legislature co-		state is pursuing policies that are			amissions from discal technologies	capture of methane for which	includes support for commercialization of	r -		
	premium compared to conventional diesel trucks	includes ze and wze technologies CAND, 2017).	cost premium over new discal trucks		che legislature, co-		depressing NG demand markets in			that achieve greater henefits could	technologies are commercially available	new dairy to fuel pathways and	·		
	premium compared to conventional dieser tracks	Commercial vehicle operators generally require short payback	cost premium over new dieser tracks.		CALSTART and CNGVC		transportation For example APP is			he possible if given further public	Nevertheless, it is important to build out	technologies			
		pariods (a.g. 12 months) so even with fuel cost savings switching			(AP 2061 Erazior)		considering a 100% zero-emission			investment and support	advanced technology to make further	technologies.			
		from diasel to NG generally requires the full incremental cost over			(AD 2001, Hazier)		requirement for hus purchases that			investment and support	improvements in the later years of the	Other recommendations TBD			
		the price of a discal truck to be subsidized					if approved, would deplete demand				regulation period	Committee has not yet identified specific			
		the price of a dieser ti dek to be subsidized					for PNG from natural gas buses				regulation period	consensus policy recommendations			
												consensus poncy recommendations			
	A) The conversion of dairy biomethane to transport fuel is	Commercializing the market for NG trucks requires establishing a	CARB and other state agencies should make an unambiguous commitment to				RNG markets in California are	The ultimate goal is to reduce NOx emissions	TBD. Committee has not vet identified specific-		What technologies and what funding	Consider new RD&D monies to further	Medium and heavy duty	Commercial vehicle	CARB should ensure that
	an essential primary strategy for expanding dairy digesters	"fully functioning" NG truck market. This means a market that has	expand the market for California-produced dairy RNG in the transportation				approaching saturation. In order to	and improve air quality in California. It is	consensus policy recommendations Heavy-duty		levels are being considered? We have	reduce NOx and improve the fuel	natural gas trucks suffer	operators generally	funding for Low NOx trucks fully
	due to because the financial conversion of LCFS credits	the same elements as the market it is intending to replace.	sector. Such a commitment should target expanding market demand to at least				further increase supply, more	important to act guickly and adopt available	diesel trucks are responsible for a vast portion of		near-term GHG requirements and R&D	economy of HD NG ICEs.	from a cost premium	require short payback	covers the incremental cost
	and Renewable Identification Number (RIN) credits are		match the volume of RNG that can be produced by the California Dairy industry as				demand is needed. However, the	and commercially viable clean technologies	NOx and particulate pollution in the SJV. NZE 12L		should have an ability to fit in with these		compared to diesel-fueled	periods (e.g. 18 months).	premium over new diesel
	lucrative and. At this time, the revenue from the sale of	The NG truck market currently lacks both a well-functioning	soon as possible. In addition, strategies should be developed to encourage the				state is pursuing policies that are	(Near-Zero CNG engines with RNG fuel)	trucks are commercially available now and reduce		requirements. Investments in further		counterparts. This	so even with fuel cost	trucks. CARB should allocate a
	the credits associated with vehicle fuel is regiured in order	secondary market and state programs that support the	use of diary RNG for the production and delivery of renewable electricity and				depressing NG demand markets in	now. This does not eliminate the need for	this problem by 90%. ZE alternatives with the		reducing NZE trucks, since it may be do-		incremental cost impedes	savings, switching from	minimum of \$100 million/vr to
	to develop projects not reliant on state subsidization of	maintenance of NG truck assets on a broad and programmatic	hydrogen to those markets so when those technologies commercialize producers				transportation. For example, ARB is	continued investment in other technologies.	same range are not yet commercially available.		able, since incremental, may belong on		market adoption of NGVs	diesel to NG generally	funding only NGVs, and open
Consolidated feedback	energy prices. However, such fuel this strategy requires	scale. Each of these market elements must be considered and	will be able to earn LCFS credits.				considering a 100% zero-emission	but does provide the most air quality	Encouragement of bus fleets to move from NZE		the list.]		and thus the needed	requires the full	the rest of the \$685 million/vr
from:	expanding the market for BNG in transportation in	accounted for by regulators to ensure the successful long term					procurement requirement for transit	benefits today.	vehicles to ZE vehicles should follow the growth of	F	· · · · · ·		expansion in the demand	incremental cost over	fund to also fund NGVs
- Fariya Ali	California, which today can be done by increased use of	commercialization of the NG truck market.	Such funding should be restricted to only funding NG trucks equipped with				bus purchases that, if approved		sufficient fleets to capture the increasing supply of	F			for BNG	the price of a diesel truck	
- Neil Black	CNG/LNG trucks. Such trucks come with an initial purchase		engines that meet or exceed the ARB Optional Low NOx standard. Priority should				would reduce deplete the current	This issue is very important as incentivizing	R-CNG.					to be subsidized.	To ensure co-benefits, all NGVs
- Peter Drasher	"premium" over and above diesel which discourages fleet	Commercial vehicle operators generally must provide competitive	he given to the lowest emission technologies.				demand for BNG from natural gas	supply through digester grants without					NGVs are only required to		supported by state funds
- Cliff Gladstein	operators from converting their operations from dirty	transportation rates to be successful. If forced to absorb the					huses.	incentivizing demand could have negative	CARB should be prepared to bolster demand for				meet current heavy-duty		outlined in A) & B) above should
- Steve Larsen	diesel to much cleaner NGVs. To ensure that the market	premium associated with the purchase of medium and heavy-duty	CARB should ensure that funding for Low NOx trucks fully covers the incremental					consequences for the RNG market.	RNG in transportation in the near term by				engine emission standards.		be required to meet ARB's
- Grant Zimmerman	for BNG in transportation expands, which must occur if	NGVs it is difficult for commercial fleets to charge competitive	cost premium for converting existing trucks from diesel to NG and the premium					Incentivizing demand through conversions	supporting funding to cover, the incremental cost				To harness this program to		Ontional Low NOx emission
- Bill Zobel	Dairy biomethane projects are to succeed, fleet operators	shipping rates compared to their diesel-fueled competitors. To	for NG above over new diesel trucks					from diesel to CNG is an obvious solution.	of NZE MHD NGVs, and over the long term by				achieve necessary air		standard of 0.02g/bhp-br and a
	should be compensated for the premium associated with	ensure that commercial fleets that choose BNG remain						Taking it a step further, new CNG equipment	supporting the development of policies and				quality co-benefits.		PM emission standard of 0.001
(Feedback from these	the first-time purchase of CNG/LNG vehicles.	competitive, thus increasing the demand for diary RNG.	Such funding should not be restricted by scrappage or outgoing vehicle age					vouchers could stipulate locally sourced	strategies to enable dairy RNG to produce LCES				additional requirements		g/bhp-br
individuals focus on	an expanded demand market and NG trucks, the lowest-	mechanism should be put in place to level the purchase costs of	requirements					BNG. More conversion funding through the	and RIN credits when the RNG is used to generate				should be placed on any		B) 511P 111
development of RNG for	cost vehicle technology that can make use of RNG costs a	NGVs. require short payback periods (e.g. 18 months), so even						local air districts with this stipulation could	electricity or hydrogen for transportation				NGV supported by state		
Low NOx NG trucks)	premium compared to conventional diesel trucks	with fuel cost savings, switching from diesel to NG generally	Further, such vehicle funding should benefit in state projects first.					be helpful.	applications in the long term.				resources		
		requires the full incremental life cost over the price of a diesel	· · · · · · · · · · · · · · · · · · ·												
		truck to be subsidized	CARR should ensure that funding for Low NOx trucks fully covers the incremental-												
			cost premium over new diesel trucks												
Rebecca Boudreaux										While Low NOx natural gas truck	However, the focus of our subcommittee	Other recommendations TBD.			
										engines allow for the productive,	is on the most rapid expansion of	Committee has not yet identified specific			
										economical use of dairy biomethane	technologies to capture of methane, for	consensus policy recommendations.			
										in a way that displaces 90% of NOx	which technologies are commercially	RB Comment: Garcia's AB1970 would			
										emissions from diesel,	available.	provide funding for 3 pilot projects for			
										RB Comment: We just spent the	RB Comment: Our subcommittee focus is	innovative, low carbon fuels such as			
										previous 2 pages discussing why we	on fostering markets – near and medium	renewable DME and renewable hydrogen	1		
										need more vehicle funding,	term. I do not recall there being a	and favors in-state waste streams. The			
										interconnection funding, etc. to	specific focus on only commercially	subcommittee should support this effort			
										make RNG more economical, so this	available technologies.	as new fuel options could expand the			
										statement seems contradictory.		market for RNG. Current bill language:			
												https://leginfo.legislature.ca.gov/faces/bi	i l		
												llTextClient.xhtml?bill_id=201720180AB1			
												970			
1	1												1		
Bonnie Holmes-Gen	The conversion of dairy biomethane to transport power		CARB should ensure funding support for the transition to zero emission HD				RNG markets in			While Low NOx natural gas truck	Several emerging technology areas are	The legislature should provide a multi-			
1	fuel is a primary strategy for utilizing expanding dairy		transportation technologies. that funding for Low NOx trucks fully covers the				California are approaching			engines allow for the productive,	deserving of investment including	year allocation for MDHVs in the Low	1		
1	digesters because LCFS credits are lucrative. However,		incremental cost premium over new diesel trucks.				saturation. In order to increase-			economical use of dairy biomethane	electricity and hydrogen pathways that	Carbon Transportation Program as	1		
1	such fuel requires an expanded demand market including						further supply, more demand is-			in a way that displaces 90% of NOx-	are becoming cost-effective given new	outlined above in deliverable #4, which			
1	increased emphasis on pathways for generating electricity						needed. However, the state is-			emissions from diesel, Expanded use	LCFS credit opportunities. However, the	includes support for commercialization of			
1	and nydrogen to expand electric vehicle use. and NG-						pursuing policies that are depressing	1		or dairy methane for electric and	Focus of our subcommittee is on the	new dairy to fuel pathways and	1		
1	trucks, the lowest-cost vehicle technology that can make						NG demand markets in			nydrogen technologies that achieve	most rapid expansion of technologies to	technologies such as electricity and	1		
1	use or KNG, costs a premium compared to conventional						transportation. For example, ARB is			greater benefits than natural gas are	capture of methane, for which	nyarogen.	1		
1	ureser tracks.						considering a 100% zero-emission			toohoology and a start of the	Neurorthologe it it is 'meeter to be it's		1		
1	1						if approved would deplote decreed			credits available, and should be "	out advanced technology to make		1		
1	1						for PNG from natural cas buse-			given further public investment and	further improvements in the later		1		
1	1						tor take it offit natural gas buses			support	of the regulation period		1		
1	1									Support.	or the regulation period.		1		
1	1												1		
1	1												1		
1	1												1		
1	1												1		
1	1												1		
John Shears	1		CARB should ensure funding support for the transition to zero emission HD			The legislature should provide a									
	1		transportation technologies (whether for LDV, MDV or HDVs). (Bonnie's changes			2,000 pound weight exemption							1		
1	1		are in blue text)			for ZE and NZE trucks. pending							1		
1	1					confirmation from							1		
1	1					CalTrans/relevant engineering							1		
1	1					experts that this will not							1		
1	1					significantly alter wear-and-tear							1		
1	1					on the state's roads and							1		
1	1					highways.							1		
1	1												1		
													1		

Discussion document for review – not for citation

Dairy and Livestock Working Group Digester Subgroup DRAFT Working Recommendations for Discussion July 11, 2018

Deliverable #5: Identification of Value Added Products from Manure and Digestate

Identification of key current and emerging technologies and approaches for converting manure and digestate into useful products including fuel/energy. The assessment will characterize products by technology readiness and outline general opportunities and issues.

Issue Discussion Recommendation CEC has issued various grants A) Investment is The legislature should allocate \$XM Deleted: currently needed to identify under the: 1) Alternative and annually to expand research, Deleted: s and demonstrate Renewable Fuel and Vehicle demonstration and commercialization Deleted: TBD. Committee has not yet identified emerging Technology Program (ARFVTP) and funding: 1) for process technologies and specific consensus policy recommendations. technologies that 2) California Energy Commission's biomethane delivery alternatives can convert manure Formatted: Font: (Default) Arial Research and Development Program capable of producing clean, low carbon and digestate into (EPIC and PIER funding) for low renewable fuels from dairy manure, and Formatted: Font: (Default) Arial useful products carbon fuels production facilities 2) on approaches to integrate covered Formatted: Font: (Default) Arial including fuel/energy (both for commercial and for lagoon digesters and other solutions pilot/demonstration scale projects). Formatted: Font: (Default) Arial, 11 pt with nutrient export. Recently, annual ARFVTP funding for biofuel and biogas fuel production plants has been ~\$25M and R&D funding has been ~\$4M. Starting Deleted: Is additional funding needed and/or programs July 1, 2018, ARFVTP funds will no to help develop emerging technologies that can convert manure and digestate into useful fuel? longer be allocated for biofuel and biogas fuel production plants, but the FY 2018-19 state budget allocated \$12.5M from GGRF for these purposes (\$25M AFTVT funds being moved to support zero emission vehicles). A one-time FY 2017-18 allocation of \$66M for food processing plants (potentially including dairies) energy RD&D projects has been augmented by \$68M in FY 2018-19 from GGRF. Programs that integrate digester Formatted: Font: (Default) Arial, 11 pt deployment with future water restrictions will be important.

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