Division of Ratepayer Advocates
California Public Utilities Commission

M E M O R A N D U M

Date : April 24, 2013

To : Adam Schultz, Energy Division Staff, adam.schultz@cpuc.ca.gov
cc: Service List R.11-05-005

From : Division of Ratepayer Advocates, Electricity Planning and Policy Branch
Selena Huang, Jordan Parrillo, David Siao, Colin Rizzo
XiaoSelena.Huang@cpuc.ca.gov, Jordan.Parrillo@cpuc.ca.gov

Subject : Informal Comments of the Division of Ratepayer Advocates on Draft Study "Small-Scale Bioenergy: Resource Potential, Costs, and FiT Implementation Assessment"

The Division of Ratepayer Advocates (DRA) submits these Informal Comments on Draft Study "Small-Scale Bioenergy: Resource Potential, Costs, and FiT Implementation Assessment" (Draft Report) in accordance with an electronic mail received from Energy Division Staff, Adam Schultz, on April 9, 2013.

DRA applauds the Commission for commissioning the Draft Report to provide analysis in support of the implementation of Senate Bill (SB) 1122, a 250 megawatt (MW) set-aside for small-scale bioenergy projects within the Section 399.20 Feed-in Tariff (FiT) program. The Excel file that contains a draft version of the levelized cost of electricity (LCOE) calculator developed by consulting firm Black & Veatch (B&V) is also useful in clarifying some of the cost assumptions used in the Draft Report.

DRA has organized these informal comments as a list of bullet points focusing on the questions posed by Energy Division staff and highlighting additional ideas and concerns.

(1) Whether the resource potential estimates included in this Draft Report are accurate?

<u>DRA recommends further research to analyze and discuss air pollution regulation impacts when estimating bioenergy resource size and evaluating these resources' allocations under SB 1122</u>.

- One factor affecting the resource potential for dairy and other agricultural bioenergy that was not discussed in the Draft Report is the impact on local air pollution from on-site electricity generation from biogas. In particular, the South Coast Air Quality Management District (SCAQMD) and Central Valley regions may face challenges

bringing enough dairy biogas on-line that is compliant with best available control technology (BACT) standards in ozone extreme non-attainment areas.

- This concern was also issued as a "signing message" by Governor Brown when he signed SB 1122.[1]

(2) Whether there is a preference, and the rationale for such a preference, for one of the resource allocation options described for allocating SB 1122 technology targets by utility?

DRA generally favors Option 6, if it is permissible, because it may affordably achieve SB 1122's legislative intent while achieving the lowest possible cost for ratepayers**.**

- Option 6 requires statutory modification because it allows the utilities to procure energy from projects located in any of the three investor owned utility (IOU) service territories instead of only within their territory, which is currently prohibited by SB 1122. Bioenergy is limited in San Diego Gas & Electric's (SDG&E) and Southern California Edison's (SCE) service territory. Enabling procurement of bioenergy from any IOU service territory will distribute costs among all IOU ratepayers more equitably because an overall increase in access to bioenergy will likely lower compliance costs due to larger resource availability.
- Option 6 ensures SB 1122 is efficiently implemented since bioenergy resources in all three service territories are available to meet procurement requirements.

If Option 6 is not permissible, DRA generally supports Option 3, by resource availability and using market competition factors, when considering only those options currently allowed under SB 1122**.**

- DRA generally supports Option 3 because it eliminates the procurement requirement for resources that are limited or unavailable in certain service territories by assigning targets based on the availability of resources in each service territory and then reallocating the remaining resources so that the original targets are preserved. Option 3 also reduces the administrative burdens of having to establish a separate process for the procurement of very few MWs in one particular category.
- Option 3 balances the ability to achieve SB 1122 targets against resource availability, which will equitably distribute costs among ratepayers.

DRA recommends that the Commission determine that the current categorical allocation is not appropriate and, thus, should modify the implementation of SB 1122 to reflect the lowest cost resources or eliminate the categorical allocation altogether.

- DRA finds that the suggested categorical allocations for the IOUs within each option would likely increase costs to ratepayers because they could preclude selection of lower cost resources that are otherwise available. Consequently, the categorical allocations within each option appear to create an inherent carve-out for potentially higher priced resources.

[1] Governor Brown's signing message is available at: http://gov.ca.gov/docs/SB_1122_Signing_Message.pdf.

- Therefore, DRA recommends the Commission, pursuant to its authority stipulated in Public Utilities Code section 399.20, determine that the categorical allocation is not appropriate and either modify the implementation of SB 1122 to reflect the lowest cost resources or eliminate the categorical allocation altogether.
- DRA recommends that this issue be discussed in the May 2 workshop, followed by formal comments by stakeholders, and that the Commission address this issue in the pending "bioenergy staff proposal/ALJ ruling seeking comment on implementation of SB 1122 and PD on SB 1122 and any related bioenergy issues."

(3) Whether the levelized cost of electricity (LCOE) estimates included in this Draft Report, as developed by the attached Excel model, are reasonable? If you believe that the cost estimates are not reasonable, please provide publicly available source data to support your assertions.

DRA believes that it is imperative that the Commission consider the additional revenue stream of greenhouse gas (GHG) offset revenue under the Assembly Bill (AB) 32 Cap-and-Trade program,[2] which can significantly reduce the LCOE required for sufficient return on investment for dairy digesters.

- Research conducted by DRA and University of California, Berkeley, Energy Resources Group[3] found that, without GHG offset revenue, an on-site electricity and digester system with 1,000 cows required an LCOE of approximately $300/MWh. The Draft Report's medium case estimate of the LCOE for a dairy with 5,500 cows is $278/MWh,[4] which seems reasonable.
- However, the analysis conducted in the Draft Report is not complete unless the estimated impact of GHG offset revenue on the LCOE of biogas projects is included. As revenues from GHG offsets are likely to be a key contributor to profits for biogas project developers, any attempt to determine the LCOE and standard electricity prices should consider the effect of GHG offsets produced by the project on profitability for the biogas producer. Similarly, when soliciting and evaluating bioenergy projects, the IOUs should consider GHG offset revenues as part of the project evaluation to ensure that ratepayers are not locked into higher-than-necessary contract prices.

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[2] Dairy biogas projects are eligible to generate California Air Resources Board Offset Credits under the Livestock Projects Compliance Offset Protocol of the Cap-and-Trade Regulation, available at: http://www.arb.ca.gov/cc/capandtrade/protocols/livestock/livestock.htm

[3] Dairy Biogas in California: Cost-Effective Development, April 2013 (Sanchez, Daniel), p.16, available at http://rael.berkeley.edu/sites/default/files/Sanchez_Biogas_in_California_Masters_Draft_April_2013.pdf. The same research was used in Dairy Biogas in California: Cost-Effective Development, October 2012 (Sanchez, Rogers (DRA), and Parrillo (DRA)), available at http://rael.berkeley.edu/sites/default/files/DRA_Biogas_for_Dairy_Digesters_Final_November_2012.pdf, and is pending publication in PolicyMatters. Both versions are available at: http://rael.berkeley.edu/2013/publications/draft/sanchez

[4] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.4-6.

- The research conducted by DRA and University of California, Berkeley, Energy Resources Group uses deterministic results to show the yearly revenue surplus or shortfall of four digester technologies at different GHG offset prices:

Yearly Revenue Surplus or Shortfall, Compared to Required Revenue (2010 Dollars)				
	No Carbon Price	Low Carbon Price ($10/tCO2-eq)	Mid Carbon Price ($20/tCO2-eq)	High Carbon Price ($30/tCO2-eq)
On-Site Digester (1000 cows, 100 kW)	-$152,000	-$78,000	-$3,000	$72,000
On-Site Digester with Co-Digestion (1000 cows, 200 kW)	-$143,000	-$52,000	$39,000	$130,000
Biomethane for Pipeline Injection (10,000 cows)	-$893,000	-$148,000	$597,000	$1,342,000
Centralized Biomethane Facility (10,000 cows, 9 facilities)	-$1,767,000	-$1,022,000	-$277,000	$468,000

- The Draft Report acknowledges that dairy manure digesters are eligible for AB 32 offset credits, but does not include the revenue in the base case analysis given the uncertainty for offset prices, demand, and eligibility.[5] Additionally, the Draft Report's suggestion, that a "$20/ton CO_2 credit value would produce revenue of roughly $500,000/year for a manure digestion project [roughly 5,500 cattle], lowering the LCOE by $70/MWh," may be an understatement. Given the productivity assumptions assumed by Environmental Science Associates,[6] a $20/ton carbon offset price would produce approximately $260,000 in yearly revenues for a 1,000 cow dairy. DRA assumes this would scale up roughly linearly; resulting in approximately $1,000,000 in GHG offset revenues and a much larger reduction of LCOE for a 5,500 cow dairy.
- In Section 5.4.1, the Draft Report states that "half the dairy digestion projects are assumed to receive AB 32 carbon reduction credits."[7] It is unclear where this calculation takes place and how it affects overall compliance costs; it would be useful to clarify this assumption.
- Since the Commission has the flexibility to determine if the allocation of the 250 MW by resource is appropriate or if it should be modified, the Commission should consider whether the dairy and other agricultural bioenergy targets should be increased (and other resource categories similarly decreased or removed altogether) due to the potential for GHG offset revenue to be an additional revenue stream and improve the economics of these projects. DRA recommends that this issue be discussed in the May 2 workshop, followed by formal comments by stakeholders.

[5] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.4-3.

[6] Environmental Science Associates, Economic Feasibility of Dairy Manure Digester and Co-Digester Facilities in the Central Valley of California. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/dairies/dairy_program_regs_requirements/final_dairy_digstr_econ_rpt.pdf

[7] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.5-8.

(4) Whether the general characterization of the current state of the small-scale bioenergy market in this study is accurate?

DRA is concerned that a competitive, market-based program such as FiT is a poor vehicle to achieve the mandates and restrictions of SB 1122. The current state of the small-scale bioenergy market does not, in many cases, reflect a competitive market.[8]

- Specifically, under most options, Category 3 for SCE and SDG&E and Category 2 for SDG&E may have too few MW of technical potential to be considered competitive, and therefore have too few MW to appropriately utilize the Re-MAT mechanism.[9] Option 3 circumvents this problem by avoiding procurement in these categories entirely, while Option 6 addresses this by removing the service territory siting restriction of SB 1122.[10] Additionally, this issue is resolved if the Commission decides the category allocations are inappropriate, as DRA discusses in Section 2 above.
- DRA is particularly concerned that SDG&E's obligation under SB 1122 (23 MW) is about 80% of the technical potential of bioenergy in its territory (29 MW).[11] No option discussed in the Draft Report adequately resolves this dilemma. Again, this issue is resolved if the Commission decides the category allocations are inappropriate, as DRA discusses in Section 2 above.
- DRA recommends that this issue be discussed in the May 2 workshop, followed by formal comments by stakeholders.

As the Commission moves forward to implement 399.20 as modified by SB 1122, price control and cost containment mechanisms will be critical to protect ratepayers from excessive costs.

- As with the larger FiT program under Re-MAT, IOUs "should be permitted to file a motion to temporarily suspend the program if evidence of market manipulation or malfunction exists."[12]
- The Commission should emphasize a preference for lower contract prices, incorporating not only incentives as described in Public Utilities (PU) Code 399.20,[13] but also the value derived from coproducts (heat, etc.) and AB 32 offsets where possible.

[8] DRA understands a competitive market to mean the entry or exit of developers, as well as their actions, cannot affect the market price in the short run.
[9] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.8.
[10] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, pp. 56, 58.
[11] Ibid.
[12] Decision (D.)12-05-035, Order 18, p. 129.
[13] PU Code 399.20(f)(2)(C) Coordinate, to the maximum extent feasible, any incentive or subsidy program for bioenergy with the agencies listed in subparagraph (A) of paragraph (3) in order to provide maximum benefits to ratepayers and to ensure that incentives are used to reduce contract prices.

- DRA suggests that the starting price of a SB 1122 FiT program be set to the lowest executed price of an online bioenergy FiT project: $84.48/MWh.[14] While this may slightly delay the uptake of projects in a SB 1122 FiT program, this tradeoff is worth protecting ratepayers from tens or even hundreds of millions of dollars in overpayments to projects that would have accepted lower Re-MAT prices but were offered a higher one. It is also very simple to adjust the starting price upward if necessary.
- In Section 5.2.5, Potential Tariff Modifications, the Draft Report includes several suggestions to stimulate the market or protect ratepayers.[15] DRA addresses each in turn:
    - Faster Tariff Ramp or Larger Price Step Changes: DRA strongly disagrees with this recommendation. In its recent comments on the FiT Proposed Decision (PD), DRA explains that large price step changes unacceptably leave ratepayers vulnerable to FiT prices in excess of actual market prices for several periods.[16] The Utility Reform Network (TURN), Pacific Gas and Electric (PG&E), SDG&E, and Clean Coalition supported DRA's comments.[17] Instead, similar to its comments on the recent FiT PD, DRA proposes capping the price adjustment per period to $12, to contain the amount of overpayment borne by ratepayers when the Re-MAT price overshoots the market price.[18]
    - Start Tariff Ramp with Less Than Five Projects: DRA is concerned that requiring fewer projects to be in the queue before a price adjustment can be triggered diminishes the market discipline imposed by competition, and may lead to more collusion or exercising of market power. Therefore, this suggestion should not be adopted.
    - Accept International Experience: DRA agrees that accepting developers with international experience would widen the pool of potential bidders and encourage competition, but the Commission may wish to discount this experience relative to developers with direct experience developing projects in California.
    - Consider Seller Concentration Requirements: DRA agrees that seller concentration requirements should be considered, and that all reasonable

[14] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.44.
[15] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.51.
[16] DRA's Opening Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 8, 2013, pp. 4-5.
[17] TURN's Reply Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 15, 2013, pp. 3-4. PG&E's Reply Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 15, 2013, pp. 9-10. SDG&E's Reply Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 15, 2013, pp. 3-4. Clean Coalition's Reply Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 15, 2013, pp. 7-8.
[18] DRA's Opening Comments on the PD and Alternate PD Adopting Joint Standard Contract for Section 399.20 FiT Program and Granting, In Part, Petitions for Modification of D.12-05-035, April 8, 2013, pp. 4-5.

means to address market power concerns should be incorporated into the implementation of SB 1122.
    - Price Caps: DRA agrees that price caps should be considered, as an insufficient number of developers may leave a Re-MAT based FiT program vulnerable to market power and collusion. DRA further agrees that utilities "[s]hould not be obligated to meet SB 1122 requirements if the price cap is reached."[19]
- DRA recommends that price control, cost containment, and other ratepayer protection mechanisms be discussed in the May 2 workshop, followed by formal comments by stakeholders. In addition, the Commission should address these issues in the pending "bioenergy staff proposal/ALJ ruling seeking comment on implementation of SB 1122 and PD on SB 1122 and any related bioenergy issues."

Other Issues/Additional Recommendations:

<u>The Commission should clarify the relationship and potential interaction between the "regular" FiT program (under the Re-MAT pricing mechanism) and an "SB 1122 FiT" program.</u>

- While an "SB 1122 FiT program" would be specifically targeted towards three different types of bioenergy,[20] it overlaps with the "regular" FiT program,[21] which also accepts bioenergy projects under its baseload product category.
- Safeguards should be established to ensure developers are unable to game the programs and obtain a higher contract price than is warranted.
    - Additionally, if bioenergy products were removed from the baseload product category in the broader FiT program, the Commission should determine the potential impact that could have on the Fit/Re-MAT price for the remaining technologies in that category (geothermal and small hydro).
- DRA recommends that this relationship and interaction between the 'regular' FiT and "SB 1122 FiT" programs be discussed in the May 2 workshop, followed by formal comments by stakeholders and the Commission should address this issue in the pending "bioenergy staff proposal/ALJ ruling seeking comment on implementation of SB 1122 and PD on SB 1122 and any related bioenergy issues."

<u>The Draft Report should include specific breakdown of each unique cost factors.</u>

- In estimating the high/mid/low costs for different types of bioenergy projects (eg. Table 1-2), the Draft Report should include, but should not be limited to the following: specific breakdown of each of the unique cost factors, such as specific costs for interconnection, coproduct value, fuel cost, and cogeneration applications.

[19] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, p.51.
[20] Category 1: Biogas from wastewater plans and green waste (110MW); Category 2: Diary and other agricultural bioenergy (90 MW); and Category 3: Bioenergy from sustainable forest management material in fire threat treatment areas (50 MW).
[21] http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/feedintariffs.htm

The Draft Report should include analysis on fuel transportation costs.

- The Draft Report notes that most bioenergy resources are transportable and can be moved to better locations for interconnection, The Draft Report notes that most bioenergy resources are transportable and can be moved to better locations for interconnection,[22] but the Draft Report fails to include or analyze the fuel transportation costs. DRA recommends that the Final Report include analysis on the availability of various fuel transportation costs.

The Commission should serve the May 2 Workshop Notice and other Bioenergy-related matters on the service list such as the Long Term Procurement Plan (LTPP) proceeding.

- In addition to serving the May 2 Workshop Notice and other Bioenergy related matters on the RPS service list, the Commission should also serve them other relevant service lists such as the LTPP proceeding (R.12-03-014), as the analysis contained in the Draft Report may have an impact in that proceeding, which considers the IOU's procurement rules for GHG compliance offsets.

[22] Black and Veatch, Small Scale Bioenergy: Resource Potential, Costs, and Feed-in Tariff Implementation Assessment, April 9, 2013, Section 3.2 "Transmission Availability" p. 3-5.

Addendum A: DRA's Preliminary Analysis of Draft Report Options

Option 1: Proportional by Load	**Option 2: By Resource Availability**	**Option 3: By Resource Availability, Using Market Competition Factors**	**Option 4: Flat Procurement Target**	**Option 5: Ratio of Resource Availability**	**Option 6: Statutory Modification**
Performed on a proportional basis per the overall procurement goal and the split of resources defined in SB 1122.	Assigns targets based on the availability of resources in each service territory.	Eliminates the procurement requirement for limited or unavailable resources in certain service territories. Reduces the administrative burdens of having to establish a separate process for the procurement of very few megawatts in one particular category.	Requires a flat target of 25 percent by resource within each service territory.	Allocates amounts equal to the ratio of the resources available in each service territory compared to the statewide potential.	Requires statutory modification because it allows the utilities to procure energy from projects located in any of the three service territories.
DRA analysis	**DRA analysis**	**DRA analysis**	**DRA analysis**	**DRA analysis**	**DRA analysis**
Impractical, and consequently, unduly expensive on ratepayers, because such an allocation of resources would be impractical for SCE and SDG&E given that those service areas have a limited amount of forest material as well as lack of available dairy and agricultural material.	Here, Option 2 is preferred over Option 1 because Option 1 is impracticable to implement. Alternatively, Option 2 is less favorable when compared to Option 3 because Option 2 involves less competition and potentially results in higher costs.	Balances SB 1122's mandates equitably against resource availability which ultimately affects the cost to ratepayers.	Costly option when compared to what is currently permitted under law and is not a cost-effective way for the utilities to comply with SB 1122's mandate because compliance costs are ultimately increased.	Requires major changes in the allocation requirements and would lead to a disproportionate ratepayer cost by service territory.	Statutory modification appears to equitably distribute costs among all ratepayers in each service territory because territories with limited resources will have access to bioenergy in territories with greater resources which in turn, would lower compliance costs due to larger resource availability.

*The information contained herein is based on a preliminary analysis and is subject to revisions based on additional information and analysis.