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Commissioner Robert Weisenmiller
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: R.13-02-008 (AB 1900) Comments on California's Challenges & Potential Solutions to Procuring Biomethane (RNG)

Commission and Staff:

We thank you for your service to the California Energy Commission and the State of California. This letter and its enclosure are intended as our comments in reply to the May 31st Workshop. Once again, we are appreciative for the invitation and opportunity to have served on a panel addressing the Challenges and Identifying Potential Solutions to Procuring Biomethane in California, from our industry's perspective.

On behalf of the Coalition For Renewable Natural Gas ("Coalition"), this comment letter will summarize the key points from our May 31st presentation. A PDF copy of the full presentation is enclosed with this letter. We trust the following challenges and proposed solutions will serve your white paper on the subject, and prove beneficial in informing the Commission's subsequent Bioenergy Action Report(s) to the Legislature.

Goal of AB 1900: As the primary organization responsible for initiating and supporting AB 1900, understanding the basic tenets of the bill are tantamount to proper implementation. It is also important for future policy recommendations. The goals of AB 1900 are to "*promote the in-State production and distribution of biomethane" and to "facilitate the development of a variety of sources of in-State biomethane" (Public Utilities Code Section 399.24.*

Anaerobic digestion of organic matter produces biogas, the main energy component of which is methane. Biogas that has been treated to meet pipeline quality specifications (currently a challenge to procurement in CA since 1988) is referred to as biomethane or renewable natural gas (RNG). In spite of the relatively small quantity of available biomethane, as a base load, storable, dispatchable, renewable fuel it could still contribute significant value toward achieving California's renewable electric power and low carbon transportation fuel goals.

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Potential Sources of Biomethane in California: There are three potential types of sources of biomethane in California: landfills, digesters at wastewater treatment plants, and other anaerobic digesters with or without co-digestion of other organic material (such as fats, oils, grease, agricultural waste and municipal solid waste).

The size of the source, including the volume of organic matter being deposited at the site, the proximity of the source to the natural gas pipeline system, along with the substantial (millions) capital investment required are each factors that limit development of available sources into biomethane producing facilities.

In order to achieve the minimum required economics, these projects are typically developed at larger landfills and digesters located relatively near existing pipelines. According to the US EPA, less than 7% of all biogas sources are developed for biomethane production; only 39 out of 594 operational projects in the US. Coalition members developed, own and or operate nearly all of these facilities.

For perspective, if 100% of all potential biogas sources were developed in California, for purposes of producing pipeline quality biogas, the amount of biomethane would be less than 2% by volume of the natural gas presently consumed in the State.

Impediments to Biomethane Project Development in California: There are several categories of constraints that hinder development of biomethane projects; physical limitations, costs, utility or other energy customer constraints, legal and regulatory constraints.

<u>Taxes, Investment Capital, Interconnection Costs:</u>

As already mentioned, source proximity to the natural gas common carrier pipeline is a physical limitation because it represents a large financial constraint. Applicable sales taxes, energy taxes and property taxes also drive up costs for developers.

In addition to the fixed costs of development, operation and maintenance, the astronomically high cost to interconnect with California pipelines, when compared to the rest of the nation, is also an impediment. For example, three projects developed outside California paid interconnections costs of $82,546, $70,816, and $272,170 respectively, as recent as this year (2013). In California, the utilities have quoted interconnection costs estimated somewhere between $1,500,000 and $3,000,000.

<u>Investor-owned Utility Tariffs:</u>

Unlike most other states, California's investor-owned utilities' pipeline specification tariffs do not currently accommodate differences in biomethane from fossil fuel natural gas (biomethane does not contain higher chain hydrocarbons with attendant higher heating values). For these reasons, with the exception of the Point Loma Wastewater Treatment Plant, not a single biomethane project has been developed in California in the last twenty-five years.

Inconsistency in State Renewable Policy Regulations:

Currently, California landfills are flaring biogas, or in limited cases, converting it into transportation fuel through on-site generation. However, prohibitive air emission regulations are threatening even these operations, and as a result they are reverting back to flaring the biogas being produced. A lack of synchronization between the State's Clean Air and Renewable Energy policies, like the Low Carbon Fuel Standard (LCFS) and Renewable Portfolio Standard (RPS) also represent an impediment to the development of biomethane projects in California.

Potential Policy Solutions for California: Policies drive demand and determine value. Considering that there are zero federal credits or grants available for RNG development, the industry is forced to rely upon policy solutions that at least address existing barriers. As such, on behalf of the industry we represent, the Coalition For Renewable Natural Gas proposes the following potential solutions:

Increase Access to California Market (1-5):

1. *Pipeline Interconnection* - have pipeline utility pay costs of interconnection and allow the costs to be included in their utility rate base.

2. *Pipeline Easements* - have interconnecting pipeline utility pay costs to acquire pipeline easements or rights of way required for pipeline to interconnect the biomethane project to the natural gas pipeline and allow the costs to be included in utility rate base.

   Justification: This is the same as having electric utilities pay for transmission line costs and costs to construct, operate, fuel and maintain fossil-fuel based generation to support grid stability for intermittent renewable electric power resources, like wind and solar. These utility-borne (and ratepayer paid) costs underwrite and encourage development of wind and solar projects. Likewise, this would allow biomethane project development to proceed without the much higher costs for interconnection in California becoming an economic roadblock to the financing, and financial success of the project.

   The ratepayer burden of paying for interconnection costs (by inclusion in the utility ratebase) is offset by solid waste disposal costs for landfill gas collection systems or digester infrastructure costs that are paid by biomethane developers. Utility ratepayers and waste disposal customers overlap. Costs paid by biomethane developers support lower waste disposal fees, whether at landfills or publicly-owned digester projects such as wastewater treatment plants.

3. *Pipeline Quality Specifications* - adjust acceptable heating value, allow blending

   Heating Value - require the investor owned utilities to lower their 990 btus/scf requirement and adopt a heating value standard for biomethane of between 950 -975 btus/scf, which is the most common heating value standard in other states for injection of both fossil-fuel natural gas and biomethane into natural gas pipelines (PG&E and SoCalGas Company have both "grandfathered" and previously accepted natural gas producers into their pipelines at 970 btus/scf).

Blending - Allow blending before the point of injection into a pipeline of either or both other natural gas or higher heating value fuel, such as propane, with biomethane to achieve minimum heating value requirement for injection into natural gas pipeline (at both the May 31st CEC Workshop and the June 2nd CPUC Workshop, SoCalGas and PG&E advised they would not object to this).

4. *Reasonable Testing & Monitoring Protocols* - adopt reasonable frequencies and costs for monitoring constituents of interest in biomethane. CARB & OEHHA have recommended standards relative to human health and safety in their May 15th Report to the CPUC that can reasonably be met by the RNG industry. Regulation should prohibit, or at least require the utility to pay the costs for any additional tests or incremental monitoring performed at their own discretion, above and beyond a) the monitoring frequency or testing schedule required by regulation, commensurate with implementation of AB 1900 and or b) the monitoring frequency or testing schedule performed by investor-owned utilities for fossil-fuel natural gas.

5. *Prevent Volume Restrictions* - prevent restrictions and resist adoption of any limitations on the volume of biomethane that can be injected into the natural gas pipelines, which would only reduce revenues available for developers to receive a return of and return on full investment capital for developed processing facility, and ensure continued operation.

<u>Promote Biomethane Development & Procurement in California (1-7):</u>

1. *Biomethane or Renewable Natural Gas Standard* - similar to how the RPS worked for the development of renewable electric power, create an RNG Standard that will require natural gas marketers in California, including investor owned utilities, to procure a minimum percentage of their total gas purchases from RNG . Such percentage should increase incrementally each year from the inception of the standard until the percentage goal is reached.

We recommend that the RNG Standard begin at .5% and increase every year by between .25 to. 5% until a **[**2%**]** RNG Standard goal is reached. [**NOTE: we state that if all potential RNG projects in California were developed they would only produce less than 2% of volume of natural gas in California. Perhaps, the RNG Standard should be 1.75% to be consistent with that statement.]**

If gas marketer fails to meet the prescribed RNG Standard in any year, they would be required to pay a specific penalty in an amount to be determined (e.g., $1.00/MMBtu) each year for each MMBtu that they fall below the required RNG Standard in any given year, unless they can demonstrate that there was no RNG available from California sources. The funds would be put into a fund administered by the California Energy Commission, or appropriate State body, to be used as grants for the development of RNG projects in California.

Offer **mandatory** Gas Sale Agreement at prices that allow for project financing and profitability. Minimum Price equal to <u>greater</u> of following:

I. $10.00 / MMBtu in 2013 dollars – escalated by increases over term of GSA by increases in CPI All Items for U.S. reported by U.S. Bureau of Labor Statistics; OR

II. Sum of following prices (average commodity price + average RIN price + average LCFS credit price) determined semi-annually:

a. Average Published commodity closing price in dollars per MMBtu of natural gas at identified California border for second month prior to start of next semi-annual billing period

i. Gives time for incorporation in pricing of published data in recognized publication such as Inside FERC

ii. Example, if semi-annual billing period begins in June of a year, then the published data would be the average closing price per MMBtu for the month of April of that year.

b. Average price of RINS, expressed in dollars per MMBtu, for second month prior to start of next semi-annual billing period as published by either Platt's or Argus Media

c. Average price of LCFS credits, expressed in dollars per MMBtu, for second month prior to start of next semi-annual billing period as published by either Platt's or Argus Media

The RNG Standard should provide that RNG purchased by a gas marketing firm, whether it is an investor- owned utility or gas marketing firm, will be allowed inclusion of the price paid for RNG in its rate base or otherwise recoverable as an additional renewable fuel charge added to the price of natural gas sold to customers.

Provide that RNG injected into a natural gas pipeline that is not sold to the interconnecting natural gas pipeline company, but that is subsequently delivered to a regulated California utility (whether an investor-owned or municipal utility) that is used in an in-state generating facility to produce renewable electric power that meets the criteria for Portfolio Content Category 1 under the State's RPS will count toward the RNG Standard requirement of such interconnecting pipeline company.

Lastly, we propose that an RNG Standard should provide that RNG injected into a natural gas pipeline that is not sold to the interconnecting natural gas pipeline company, but that is subsequently delivered to a California customer for vehicle fuel, either as renewable CNG or renewable LNG, will count toward the RNG Standard requirement of such interconnecting pipeline company.

2. *Renewable Portfolio Standard* - because biomethane is a base load, storable and a dispatchable fuel that is already being used by some California municipal utilities to balance the electric grid and compensate for intermittent resources, modify existing RPS requirements to require that a minimum percentage of biomethane be used to fuel such supplemental generation to balance intermittent renewable energy resources, such as wind and solar.

RNG is a base load, storable and dispatchable fuel that can be used to fuel the electric power generating sources that must be maintained by utilities in order to balance the electric grid for intermittent renewable electric power sources, such as wind and solar project.
Kilowatt hours produced from the RNG used to support intermittent renewable electric power generation should also fully count toward meeting the utility or other obligated RPS party's obligations.

3. *State Vehicle Mandate* - require that all State and Municipal CNG and LNG Vehicles procure at least 25% of their natural gas fuel from RNG, with in-state sources of RNG receiving double credit if used to satisfy this requirement, in order to provide an incentive for procurement of in-State resources.

4. *Economic incentive*s - encourage development and operation of RNG projects in California by affording the following:

I. Sales tax exemption for equipment used to collect, process, produce and deliver RNG:

a. This duplicates the concept incorporated into SB 71, which provides for a 100% exclusion of the value of solar energy property from property taxation

II. Real and Personal property tax exemption for RNG property

a. Similar to type of exemption available to solar projects

b. Doesn't take away funding from municipalities and schools since, without such exemption, these projects may not exist and no tax revenues would be realized. Could be made to apply only to new RNG projects developed, which, because of the Hayden Amendment, would mean virtually all projects to be developed in California from today on.

c. Adopted by many other states

d. Would exempt from property tax both real property interests (such as possessory interests arising from leases with municipalities as well as leases of real property from private entities) and personal property (all of the processing equipment, collection system, pipes, meters, metering equipment, etc.)

III. Transferable California Tax Credit

a. To be applied against California taxes equal to a percentage of either of the following:

i. the value of the RNG facility installed, or

ii. the value of the RNG energy sold each year for 10 years

b. Transferability allows developer to utilize value of credits by monetizing them with California entities with large tax bill – same concept used for federal Section 29 tax credits

IV. Grant for specified percentage

a. For example, 30% of installed capital costs of RNG project payable 60 days after it is "placed in service." Can use same approach as Section 1603 grant provided by federal government, which has proven to be a very successful program.

V. Minimum "cap and trade"

a. provide minimum 'cap and trade' pricing and transferable and tradable credit for carbon capture benefits realized from in-state RNG projects

b. Specifically exclude carbon capture credits from environmental attributes that must be transferred to obligated utility in order to meet RPS requirement

c. Coordinate carbon capture credits allowable with Low Carbon Fuel Standard Offset credits to avoid double dipping when RNG used a vehicle fuel

VI. RNG Always Treated as Zero Emission Fuel

a. Need to modify CARB regulations adopted under Mandatory Reporting Requirements of emission reporting rules pursuant to AB 32 so that RNG from in-state sources is <u>always</u> treated as a zero emission fuel when purchased by an obligated party, such as a regulated utility or electric power marketer

b. No limitation on zero emission fuel treatment based on date contract signed or whether RNG is from incremental production

c. DOE and Climate Action Reserve treat RNG as a zero emission fuel. CARB has treated RNG as a zero emission fuel for purposes of the LCFS. If RNG is not gratned zero emission fuel status, then an obligated party must purchase emission offsets with respect to combustion of RNG, and costs of offsets will be deducted from price for RNG by the biomethane developer. This represents a huge economic penalty on RNG.

5. *Financing Assistance* - provide California guarantee of debt used to finance project development

I. Provide California guarantee of debt used to finance up to 90% of project costs provided that project can support minimum 1.2: 1 debt coverage ratio

II. Authorize and provide preferential tax exempt bond cap allocation to in-state RNG projects for use of tax-exempt bonds to finance RNG projects in California

a. When coupled with state guarantee provision above, will help obtain investment grade rating for bonds that improve marketability of bonds and reduce interest expenses to project

6. *Feed-in Tariff* - has been used successfully to increase available renewable electric power in California and other states. Premium prices to be paid would costs to be recoverable as part of the utilities rate base. Pipeline utilities would also be excused from offering feed-in tariff if biomethane project sells biomethane, transporting it through the natural gas pipeline to an in-State electric power utility or marketer (for RPS purposes) or to a transportation fuel supplier (for LCFS purposes)

7. *Allow in-State Transportation by Displacement* - provide clarification that physical transportation by displacement of biomethane is acceptable for purposes of using RNG as a vehicle fuel in California, for Low Carbon Fuel Standard (LCFS) purposes. This would ensure that implementation of an approved LCFS is consistent with rules for the Federal EPA's Renewable Fuel Standard 2 (RFS2).

On behalf of the Coalition For Renewable Natural Gas , thank you for the opportunity to provide written comments, summarizing industry identified challenges and proposed solutions presented during the Commission's May 31st Workshop. We trust the information will both aid the development of the Commission's white paper and prove beneficial in informing its Bioenergy Action Report(s) to the Legislature.

Sincerely,

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California's Challenges & Potential Solutions to Procuring Biomethane (RNG)

RNG Industry Perspective

May 31, 2013

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Meet the Presenters

- **Paul Morrow – Managing Director of Morrow Renewables LLC**
  - Developer of 6 RNG projects
  - Former owner of South-Tex Treaters, Inc. one of the largest gas treating firms that designs and manufactures natural gas treating facilities in U.S. – recently sold to Kinder Morgan
  - Co-founder of Coalition for Renewable Natural Gas
- **Evan Williams – President of Cambrian Energy Development LLC**
  - Developer of 50 LFG-to-energy projects and 3 RNG Projects; co-developer of largest RNG project in U.S. at McCommas Bluff Landfill in Dallas, Texas
  - Chairman and co-founder of Coalition for Renewable Natural Gas
- **Selection Process to Represent Coalition**

Evan's Political Qualifications

How Green Was My Valley (Best Film 1941)

Rhys Williams – Actor

(Evan's Father)

Mrs. Miniver (Best Film 1942)

Walter Pidgeon & Greer Garson

Kiss Tomorrow Goodbye (1950)

James Cagney

The World in His Arms (1952) Gregory Peck

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California Political Office Qualification Standards

- **Actor =**
  - Governor
    - Ronald Reagan

    - Arnold Schwarzenegger

  - U.S. Senator
    - George Murphy

- **Son of Actor =**
  - Lieutenant Governor
  - Member of California Energy Commission

Overview

- Goal of AB 1900
- Potential Sources of RNG in California
- RNG Market Size – History & Number of Projects
- Technologies Used & Minimum Project Size
- RNG Developer's Essential Requirement – Secret Formula
- California Impediments to Development of RNG projects
- Menu of Potential Policy Solutions
- Needed Synchronization of State's Clean Air and Renewable Energy Policies
- Critical Math Lesson

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Stated Goal of AB 1900

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New Public Utilities Code Section 399.24

- Promote the In-State Production and Distribution of Biomethane

- Facilitate the Development of a Variety of Sources of In-State Biomethane

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Potential Sources of RNG in California

- **Anaerobic Digestion of Organic Matter from:**
  - Landfills
  - Digesters at wastewater treatment plants
  - Digesters for digestion or co-digestion of other organic matter
    - Fats, oils and grease
    - Agricultural waste
    - Municipal solid waste

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Potential Contribution by RNG to California Gas Market – All Uses

- **1% OR LESS - If all potential RNG projects from all organic sources were developed**
- **RNG, as a base load, storable, dispatchable, renewable fuel, would contribute significant value toward achieving California's renewable electric power and low carbon transportation fuel goals**
- **Size of available organic matter resources, proximity to pipelines and substantial capital investment required for RNG are limiting factors**
  - Projects typically developed at larger landfills and digesters relatively near pipelines

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RNG Production Technology – New or Old?

- **Based on natural gas processing technology – proven over many years**
- **Used to process landfill gas to RNG and injection into pipelines for many years**
  - At Fresh Kills Landfill on Staten Island, NY for more than 30 years
  - Operating on several of largest RNG projects for more than 20 years
- **However, due to investment required and limitations on access to markets, of 594 operational projects in U.S. per LMOP, only 39 are RNG projects (6.5%)**

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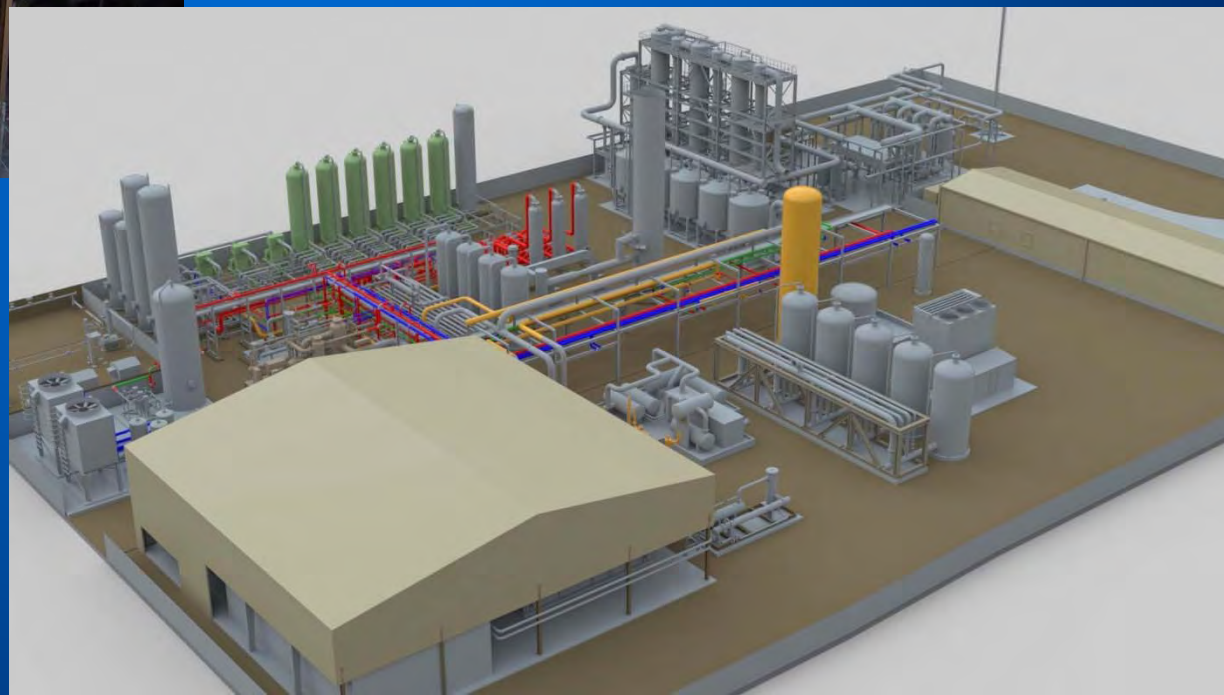
Scale of RNG Projects - Millions in Capital Required



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LFG Wells

400 Wells in Dallas @ $10,000 per well

Well Field Capital Replacement is 10% to 15% of Original Capital Cost each year

RNG Developer Business Model & Essential Requirement

- **Make Money**

- **Return <u>of</u> and return <u>on</u> investment**

- **RNG projects use proven technology <u>but</u> involve <u>High Financial Risk</u>**
  - McCommas Bluff project had 3 prior bankruptcies before current owners
  - Current Owners: used same technical engineering, but better financial engineering

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Key to Development of Successful RNG Project

- Must Meet Secret Formula

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Secret Formula

- Revenues > Expenses
- Predictably

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Costs for LFG to Pipeline Quality Renewable Natural Gas Project

Gas Processing Cost For 2 million Feet/Day Inlet in $/MMBtu	
$1.80	Plant Capital Amortization
$2.20	O&M for Processing Plant
$0.38	Collection System Expansion Per Year
$0.61	Collection System O&M Per Year
$0.49	Initial Collection System and Flare Capital Amortization
$0.78	12.5% Royalty
$5.48	Total Cost Per MMBtu

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Revenues from Sale of MMBtu of Natural Gas

- Henry Hub Pricing May 24, 2013 = <u>$4.23</u>

- Problem: Commodity Price of energy content in RNG does not meet Secret Formula requirement

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What Leads to RNG Development in California?

- **Access to Markets Essential**
  - If can't sell renewable energy to a customer, then how much is available or how cheaply it can be produced doesn't matter
- **State Policies must <u>increase</u> Positive Dollars and <u>reduce</u> Negative Dollars**
- **Environmental Policies must be synchronized**
  - Clean Air vs Renewable Energy

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What Hinders Access to Market?

- **Physical Constraints**
  - Project not close to natural gas common carrier pipeline
- **Utility or Other Energy Customer Constraints**
  - High interconnection costs
  - Pipeline Company gas specification tariffs don't accommodate differences in RNG from natural gas (e.g., no higher chain hydrocarbons with higher heating values)
  - RNG price constraints – i.e. insufficient price
- **Legal and Regulatory Constraints**
  - No available exemption from regulation as utility
  - Prohibitive air emission regulations
  - Before AB 1900, the Hayden Amendment codified in H&S Code Section 25421 led to prohibition of access to market for RNG

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What are Positive Dollars and Negative Dollars?

- **Positive Dollars**
  - result from any law, policy, support or source applicable to a renewable energy project that either

    increases revenues

    or

    decreases expenses

- **Negative Dollars**
  - result from any law, policy, support or source applicable to a renewable energy project that either

    decreases revenues

    or

    increases expenses

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Examples of Positive Dollars

- **Enhanced Revenues from sale of energy**
  - Feed-in Tariffs
- **Tax Credits (federal and state)**
  - Section 29 and Section 45 of IRC
  - Can be monetized with third party if developer can't use
- **Supplemental Energy Payments, Grants and other Governmental Supports**
- **Transferable Renewable Energy Certificates**
- **Transferable Emission Reduction Credits**

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Examples of Positive Dollars

➢ Exemptions from or Reductions of Certain Expenses

- Taxes
  - Sales tax
  - Energy tax
  - Ad valorem tax (property tax)
- Exemptions from regulation and reporting
  - Utility regulation
  - Reporting requirements
- Expedited permitting procedures
  - Negative declaration rather than full EIR
  - Favorable air emission regulations
    - » e.g., take into account positive emission reductions from use of LFG
    - » Cross species offsets

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Examples of Negative Dollars

- **Taxes**
  - Sales taxes
  - Energy taxes
  - Property Taxes
- **Regulations that Increase Capital Expenditures for Equipment, Permitting and Installation**
  - Restrictive Air emission standards
  - Pipeline standards that increase expenses for delivery of processed LFG or digester gas to gas utility pipelines
    - High Minimum Btu standards
    - Extensive Trace Constituent Standards
    - Continuous or frequent monitoring or testing for trace constituents that are difficult to measure

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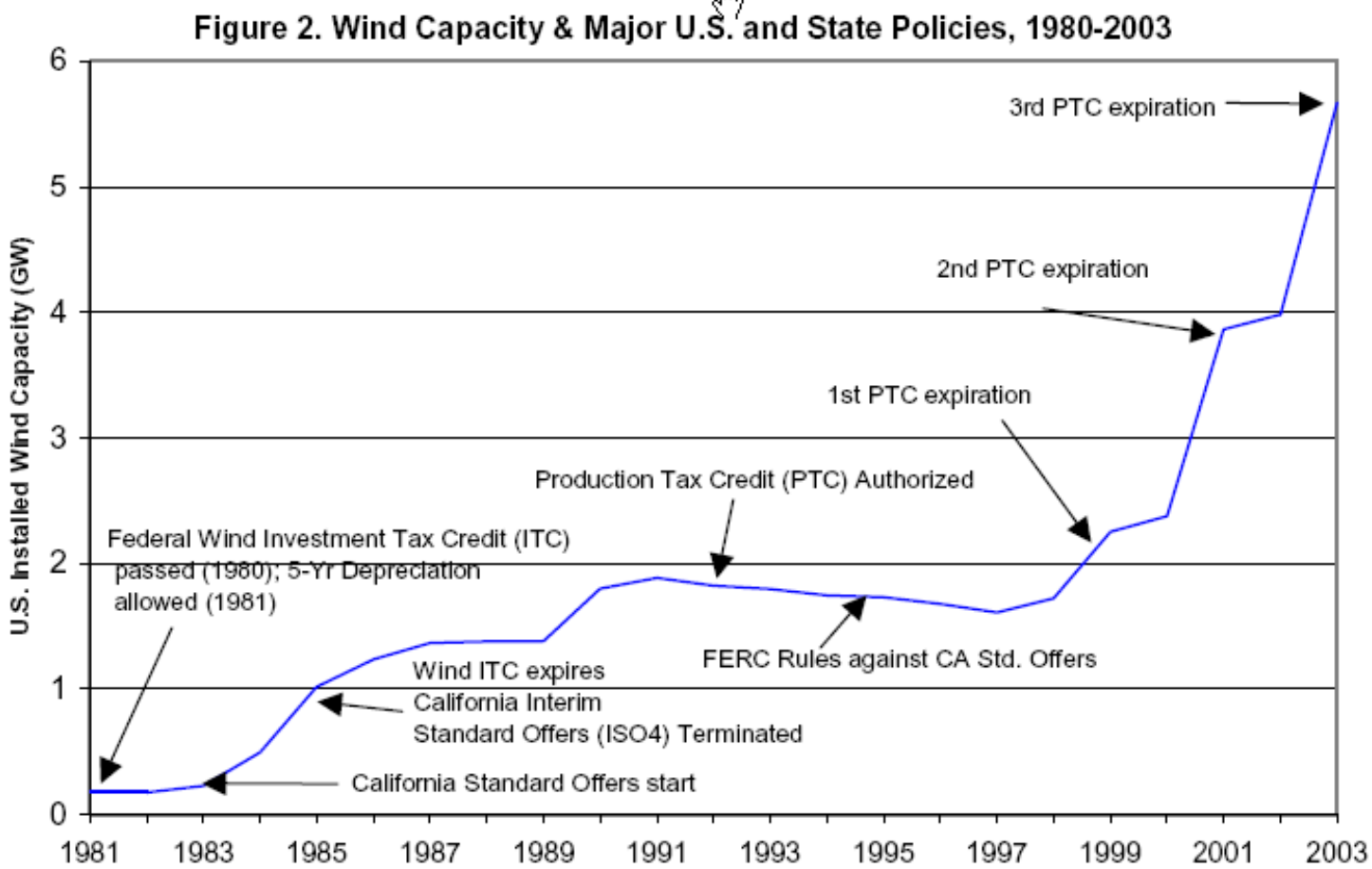
Positive Dollar Regulations and Mandatory Market Access Work



GW = Gigawatts

FERC = Federal Energy Regulatory Commission

Sources: Wind Capacity, 1981-1989, California Energy Commission, Draft Final Report, "California Historical Energy Statistics," January 1998, P300-98-001; 1990-2002, Energy Information Administration, Annual Energy Review 2002, Table 8.7a; Policies compiled by Office of Integrated Analysis and Forecasting, Energy Information Administration.

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Comprehensive List of Federal Tax Credit and Grants Available for RNG

- **None**
- **Zero**
- **Nada**
- **Zip**
- **NOTE: Federal EPA Renewable Identification Numbers under Renewable Fuel Standard 2 enhance value for RNG used for transportation fuel**
  - Pricing is Volatile and not predictable
  - Long-term off-take agreements at attractive pricing that will support debt financing not available

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California Access to Markets Impediments for RNG (Negative Dollars)

- **High California Pipeline Interconnection Costs**
- **Comparative Examples: Costs of interconnection at recent RNG projects developed by Morrow Renewables:**
  - $82,546 (2007)
  - $70,816 (2008)
  - $272,170 (2013)
- **California pipeline interconnection costs quoted to digester RNG projects**
  - Between $1,500,000 and $3,000,000

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California Access to Markets Impediments for RNG (Negative Dollars)

- Rule 30 minimum heating value specification of 990 btus/scf
- Mandated expensive continuous or very frequent monitoring of constituents of concern requiring expensive independent lab analyses
- Prohibition or restriction on blending of other natural gas or higher heating value fuels with RNG to meet minimum pipeline specifications
- Proposed restriction on volume of RNG that may be introduced into California pipeline
- Limiting injection of RNG only into transmission pipeline

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Potential Solutions to Increase Access to Markets for RNG

- **Pipeline Interconnection – have pipeline utility pay costs of interconnection and allow costs to be included in utility rate base**
- **Pipeline Easements – have interconnecting pipeline utility pay costs to acquire pipeline easements or rights of way required for pipeline to interconnect RNG project to natural gas pipeline**
- **Justification: Same as having electric utilities pay for transmission line costs and costs to construct, operate, fuel and maintain fossil-fuel based generation to support grid stability for intermittent renewable electric power resources, such as wind and solar. These utility-borne (and ratepayer paid) costs underwrite and encourage development of wind and solar projects.**
  - Allows RNG project development to proceed without the much higher costs for interconnection in California becoming an economic roadblock to the financing and financial success of the project.
- **Justification: ratepayer burden of paying for interconnection costs (by inclusion in utility rate base) is offset by solid waste disposal costs for landfill gas collection systems or digester infrastructure costs that are paid by RNG developer. Utility ratepayers and waste disposal customers overlap. Costs paid by RNG developer support lower waste disposal fees, whether at landfills or digester projects, such as WWTPs.**

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Potential Solutions to Increase Access to Markets for RNG

- **The following topics are the subject of hearings conducted by CPUC, CARB & OEHHA On Health Considerations and Pipeline Integrity & Safety Considerations of RNG**
- **RNG Industry Recommendations:**
  - **Heating Value:** For RNG, adopt heating value standard of 950 btus/scf, which is most common heating value standard in other states for injection of both natural gas and RNG into natural gas pipelines
  - **Blending**: Allow blending of either or both other natural gas or higher heating value fuel, such as propane, with RNG to achieve minimum heating value requirement for injection into natural gas pipeline
  - **Monitoring:** Adopt reasonable frequencies and costs for monitoring constituents of interest in RNG
    - CARB & OEHHA process completed and recommended standards in report can reasonably be met by RNG industry
  - **No RNG Volume Restrictions:** Resist adoption of any volume limitations on RNG that can be injected into natural gas pipeline, which would only serve to reduce revenues (Negative Dollars) available to receive return of and return on full invested capital in gas processing facility. Could have same practical effect as Hayden Amendment tariff provisions that included absolute prohibition of RNG.

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Potential Solutions to Increase Positive Dollars Available for RNG

- **Renewable Natural Gas Standard**
  - Worked for development of renewable electric power
  - May not be needed if Access to Markets occur and other solutions are implemented
- **RNG as Grid Support for Intermittent Renewables**
  - Require minimum percentage of RNG be used to fuel combustion generation required to provide grid support for intermittent renewable energy sources, such as wind and solar
  - Could be requirement separate from or count toward RPS generation requirement of obligated utility or covered party

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Potential Solutions to Increase Positive Dollars Available for RNG

- **Feed-in Tariff providing higher price for RNG**
  - Used successfully to increase available renewable electric power in California and other states
  - Premium prices to be paid would be allowable recoverable costs as part of rate-base of utilities
  - Pipeline utility excused from offering feed-in-tariff if RNG project sells RNG through natural gas pipeline to in-state electric power utility or marketer (RPS) or to transportation fuel supplier (LCFS)
- **Allow In-State Transportation of RNG by Displacement.**
  - Allow transportation by displacement of RNG of in-state RNG across multiple natural gas pipelines in state
  - Reduces transportation costs and allows same transportation of RNG as is allowed by FERC for natural gas

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Potential Solutions to Increase Positive Dollars Available for RNG – Transportation Fuel

- **Require RNG for State & Municipal CNG/LNG Vehicles**
  - Mandate all California state-owned and municipal-owned CNG and LNG vehicles procure a specified percentage of their natural gas fuel from RNG
    - Creates market and lowers carbon footprint of state and municipal vehicles
    - In-state sources of RNG get double credit to satisfy requirement than do out-of-state sources of RNG
- **Transportation of RNG for Transportation Fuel by Displacement**
  - Allow transportation by displacement of RNG used as transportation fuel for LCFS purposes so long as pipeline path exists
  - Transfer of environmental attributes of RNG occur by contract and not by pipeline
  - Aligns California rule with EPA treatment under Renewable Fuel Standard 2

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Potential Solutions to Increase Positive Dollars – Economic Incentives

- **Transferable Tax Credits**
  - Transferable California tax credit to be applied against California taxes equal to a percentage of either (i) the value of the RNG facility installed, or (ii) the value of the RNG energy sold each year for 10 years.
  - Transferability allows developer to utilize value of credits by monetizing them with California entities with large tax bill – same concept used for federal Section 29 tax credits
- **Grants**
  - Grant for specified percentage (e.g., 30%) of installed capital costs of RNG project payable 60 days after it is "placed in service." Can use same approach as Section 1603 grant provided by federal government.
  - Federal program very successful

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Potential Solutions to Increase Positive Dollars – Economic Incentives

- **Carbon Capture Credit**
  - Provide minimum "cap and trade" pricing and transferable and tradable credit for carbon capture benefits realized from in-state RNG projects
  - Specifically exclude carbon capture credits from environmental attributes that must be transferred to obligated utility in order to meet RPS requirement
  - Coordinate carbon capture credits allowable with Low Carbon Fuel Standard Offset credits to avoid double dipping when RNG used a vehicle fuel

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Potential Solutions to Increase Positive Dollars – Economic Incentives

- **Sales Tax Exemption**
  - Sales tax exemption for equipment used to collect, process, produce and deliver RNG
  - This duplicates the concept incorporated into SB 71, which provides for a 100% exclusion of the value of solar energy property from property taxation

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Potential Solutions to Increase Positive Dollars – Economic Incentives

- **Real and Personal Property Tax Exemption**
  - Similar to type of exemption available to solar projects
  - Doesn't take away funding from municipalities and schools since, without such exemption, these projects may not exist and no tax revenues would be realized. Could be made to apply only to new RNG projects developed, which, because of the recent repeal of the Hayden Amendment, would mean virtually all projects to be developed in California from January 2014 on.
  - Adopted by number of other states – Iowa, Kansas, Kentucky, Maine, Minnesota, Montana, Virginia, Wyoming
  - Would exempt from property tax both real property interests (such as possessory interests arising from leases with municipalities as well as leases of real property from private entities) and personal property (all of the processing equipment, collection system, pipes, meters, metering equipment, etc.)

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Potential Solutions to Increase Positive Dollars – Financing Assistance

- **State Guarantee of Debt**
  - Provide California guarantee of debt used to finance specified percent (e.g., up to 90%) of project costs provided that project can support minimum 1.2: 1 debt coverage ratio
- **Provide Preferential Tax-Exempt Bond Cap Allocation**
  - Authorize and provide preferential tax exempt bond cap allocation to in-state RNG projects for use of tax-exempt bonds to finance RNG projects in California
  - When coupled with state guarantee provision above, will help obtain investment grade rating for bonds that improve marketability of bonds and reduce interest expenses to RNG project

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Potential Solutions to Increase Positive Dollars – Synchronize Air Emission Regulations with Renewable Energy Objectives

- **RNG Processing Technologies Have Low Emissions**
  - Raw gas is collected, treated and injected into pipeline, not combusted
- **Always Categorize RNG as Zero Emission Fuel**
  - Need to modify CARB regulations adopted under Mandatory Reporting Requirements of emission reporting rules so that RNG from in-state sources are <u>always</u> treated as a zero emission fuel when purchased by an obligated party, such as a regulated utility or electric power marketer
  - No limitation on zero emission fuel treatment based on date contract signed or whether RNG is from incremental production
    - If not a zero emission fuel, then obligated party must purchase emission offsets with respect to combustion of RNG, and costs of offsets will be deducted from price for RNG --- Huge Negative Dollars.

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Potential Solutions to Increase Positive Dollars – Synchronize Air Emission Regulations with Renewable Energy Objectives

- **Adopt Exemption from Emission Requirements or More Reasonable Control Technology Emission Requirements for On-site Electric Power Generation at Landfills and WWTPs**
  - Old regulations used to provide offsets taking into account offset from reduced flare emissions and benefits of renewable energy production and relative inefficiency of on-site engine-generators.
  - New rules by air districts require lower emissions from on-site electric power generation at landfills and WWTPs than for a flare
  - Thus California policy: rather flare landfill gas than displace fossil fuel generation through onsite production of renewable electric power
  - Many existing California landfill gas-to-electric power generating facilities will be terminated, since cannot afford expensive gas treatment and exhaust emission control equipment required to meet new air emission regulations
  - Many of those landfill sites will be too small to install RNG production facility, so landfill gas will be flared.

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Development of RNG Projects is a Delicate Numbers Game

- Usually only works at larger landfills and WWTPs due to fixed costs of development and O&M
- Must meet Secret Formula
- Cannot engage in Fuzzy Math as to Positive Dollars and Negative Dollars

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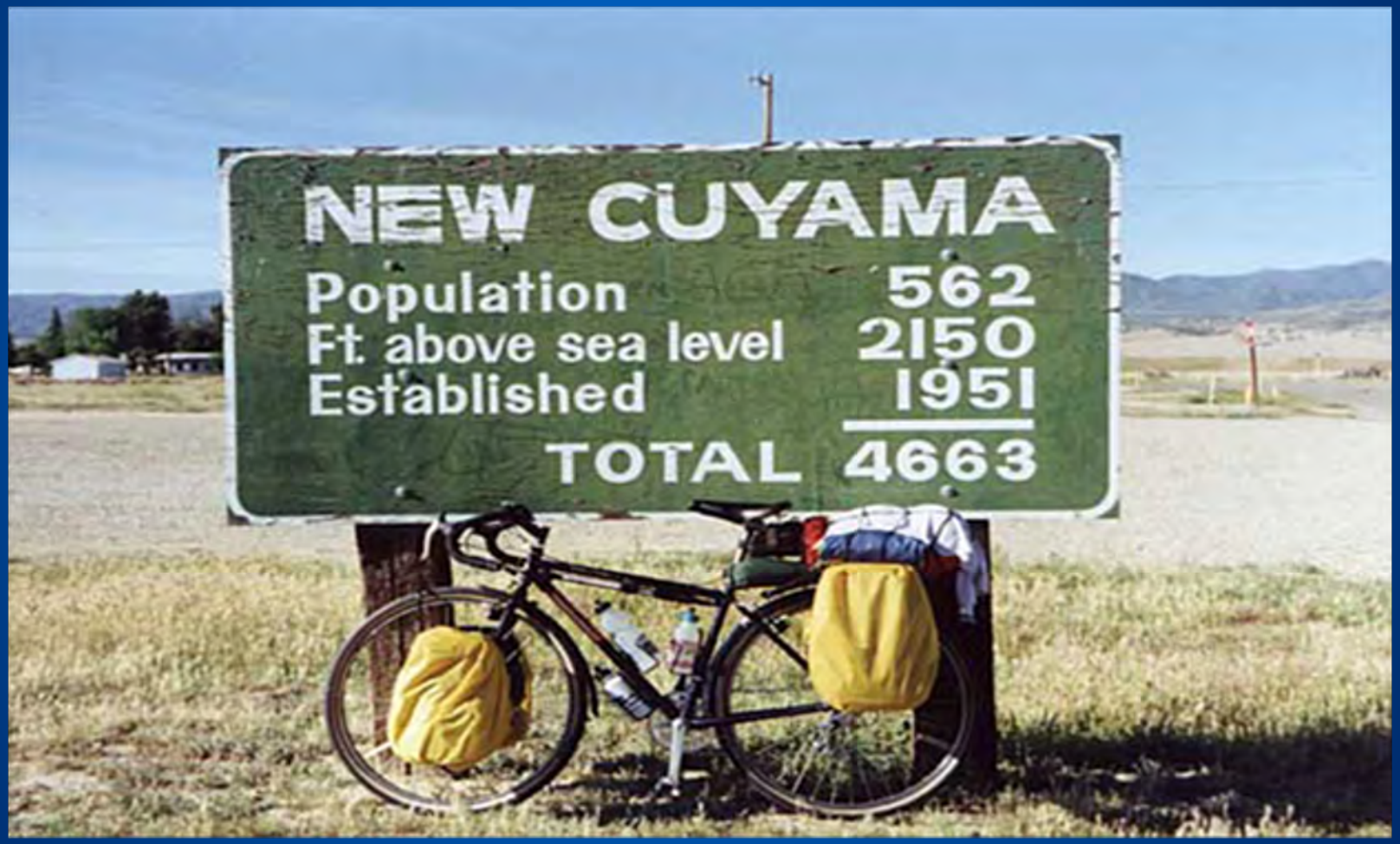
What is Fuzzy Math?



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Thanks for Listening!!

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