Renewable Energy Credits (RECs) in California

Status after Passage of Senate Bill 107 of 2006

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1. Executive Summary

Increasing the amount of renewable electricity consumed in California has long been a goal of state energy policy. Progress toward this goal can lead to an improved environment, more diverse sources of electricity, and stimulate an important economic industry. Two current examples of large state initiatives to achieve this policy are the Renewables Portfolio Standard (RPS), which places a requirement on many utilities to procure a growing percentage of electricity from renewable sources, and the California Solar Initiative (CSI), which provides subsidies toward the purchase of certain types of renewable distributed generation to foster the creation of a large and eventually self-sustaining solar power industry. These and other programs face many implementation challenges. For example, the money and time may not be available to develop sufficient renewable resources locally to meet the ambitious requirements of these programs. A system of tradable Renewable Energy Credits (RECs) may help, at least partially, to implement these renewable energy programs.

The basic concept underlying RECs is straightforward: a renewable generator produces two outputs simultaneously, electricity and environmental benefit. RECs are certificates that represent the environmental attributes or 'greenness' of renewable production. Thus, for every unit of electricity produced by a renewable generator, a corresponding unit of REC is also produced. These RECs can potentially be separated from the associated electricity and sold, either to a voluntary market comprised of purchasers who seek to buy green bragging rights, or to an RPS compliance market comprised primarily of utilities under a legal compulsion to procure a growing percentage of electricity from renewable sources.

A renewable generator can benefit from tradable RECs by realizing a source of revenue from the sale of the environmental attributes resulting from their renewable generation—effectively monetizing what had previously been an external benefit. Purchasers of RECs can also benefit from tradable RECs by having increased flexibility—being able to claim they use or sell renewable electricity via the purchase of RECs coupled with conventionally-generated electricity. For example, utilities could more easily comply with RPS obligations if they can supplement local renewable generation with conventionally-generated electricity plus the purchase of RECs from elsewhere.

California Senate Bill 107 (S.B. 107), passed in 2006 and effective January 1, 2007, has for the first time defined and authorized in legislation a system of tradable RECs for use in the RPS compliance market in California (though the primary purpose of the statute was to accelerated the state's RPS goals to reach 20% renewables by 2010). Adoption of an RPS compliance market of tradable RECs, however, is still awaiting action by the California Public Utilities Commission (CPUC).

S.B. 107 reflects a balance of sometimes conflicting policy objectives. The statute seeks to provide increased compliance flexibility for utilities under the RPS by allowing them to trade or buy RECs separate from the associated electricity. The sale of these RECs may also provide a benefit to owners of renewable generators participating in the RPS by allowing them to monetize the environmental benefits of their production, and so gain an additional source of financing.

But the statute balances these potential benefits with several significant restrictions, intended to mitigate concerns that unlimited trading of RECs could undermine the primary goal of the RPS—developing additional *in-state* renewable resources. These limitations may also help alleviate related concerns of a possible adverse environmental justice impact, and of in-state ratepayers paying for the accrual of environmental benefits out-of-state.

Table 1 below summarizes the provisions restrictions in S.B. 107 related to RECs. Section three of this paper describes the provisions of this statute in detail.

Table 1 – Summary of Selected S.B. 107 Provisions Relating to RECs		
Topic	**Cal. Pub. Util. Code**	**Description**
Definition of RECs		
General Definition	§ 399.12(g)(1)	Definition of a "Renewable Energy Credit" as a "certificate of proof, issued through the accounting system established by the Energy Commission… that one unit of electricity was generated and delivered by an eligible renewable energy resource."
	§ 399.12(g)(2)	RECs definition includes: "All renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource," except that RECs specifically exclude specific pre-existing emissions and solid waste reduction (biomass) credits.
Specifically for RPS Compliance Market	§ 399.12	RECs are defined in this statute for purposes of the California Renewables Portfolio Standard (RPS).
Tradable RECs Authorized	§ 399.16(a)(7)	RECs are potentially capable of being purchased unbundled: "The [public utilities] commission may limit the quantity of renewable energy credits that may be procured unbundled from electricity generation."
	§ 399.16(a)(4)	RECs may also be sold by utilities: "All revenues received by an electrical corporation for the sale of a renewable energy credit shall be credited to the benefit of ratepayers."
Adoption of Tradable RECs for RPS Compliance		
Tradable RECs for RPS Authorized, But Not Adopted	§ 399.16(a)	The CPUC has regulatory power, and *may* authorize the use of RECs for RPS compliance.
	§ 399.16(a)(9)	The CPUC may adopt additional reasonable conditions on the use of RECs for RPS compliance.
Tracking System is a Mandatory Prerequisite	§ 399.16(a)(1)	A tracking system established by the Energy Commission (WREGIS) must be established before RECs are adopted for RPS compliance.
Limits on the Creation of RECs		
Electricity Must be Delivered for CA Consumption	§ 399.12(a)	RECs created only when electricity is generated and delivered in-state, or in limited circumstances when imported from out-of-state via the WECC, as defined in Cal Pub Res Code § 25741.
Temporal	§ 399.16(a)(5)	Generators only create RECs under an electricity purchase

		contract executed on or after Jan. 1, 2005, unless explicit terms for disposition of RECs.
Renewable Fuel Operations Only	§ 399.12(g)(3)	No RECs are created by an otherwise renewable generator when its operating on nonrenewable fuels.
Qualifying Facilities (QFs)	§ 399.16(a)(6)	No RECs are created by QFs operating under PURPA contracts executed after Jan, 1, 2005.
Municipal Utilities Eligibility	§ 399.13(d)	If certain eligibility conditions are met, local publicly owned electric utilities may create RECs which can be sold to other utilities for RPS compliance.
Limits on RECs Transactions		
First Sale of RECs By a Generator Must be Bundled	§ 399.14(a)(2)(D)	All generators operating under RPS electricity purchase agreements must include the transfer of RECs as a part of standard contract terms.
Later Utility Sale of Unbundled RECs	§ 399.16(a)(4)	The only substantive limitation on the sale by utilities of any excess unbundled RECs is that the proceeds be credited for benefit of ratepayers.
Purchase of Unbundled RECs by Utilities for RPS Compliance	§ 399.16(a)(7) § 399.12(g)(1) § 399.16(a)(3)	Possible sources of unbundled RECs that a utility may purchase and apply against RPS goals are limited as follows: > Quantity may be limited by CPUC regulation > RECs must be issued and tracked via WREGIS > The associated electricity is delivered for consumption in CA
Utility Purchase of RECs is Not Always Mandatory	§ 399.16(a)(8)	Utilities are not required to purchase RECs to reach RPS goals that are otherwise excused due to a lack of ratepayer subsidies in the form of Supplemental Energy Payments (SEPs).
Ratepayer Costs for Utility Purchase of RECs	§ 399.16(b)	Utilities may recover reasonable costs of purchasing RECs in their rates, but per Cal. Pub. Res. Code § 25743(b)(1)(G)(i), utilities may not use direct ratepayer subsidies (SEPs) to purchase RECs.

S.B. 107 does not directly address some important issues with respect to RECs:

- The effect of S.B. 107 provisions on the voluntary market for RECs;
- The ownership and disposition of RECs from renewable distributed generation (DG), especially when the purchase of the DG system is subsidized by ratepayers;
- What legal rights a REC owner may assert.

S.B. 107 expressly applies to the RPS compliance market for tradable RECs. While it is advantageous to adopt a consistent definition of RECs in the voluntary market, such that a generator (for example, DG) could sell RECs into either or both markets, the limitations contained in S.B. 107 should not be read as applicable to the voluntary market. For example, if RECs in the

voluntary market in California are limited to only those associated with electricity delivered for consumption in the state, and only when tracked via WREGIS, then the supply of RECs for the voluntary market would effectively be eliminated. Such an outcome would not be consistent with the state energy policy of encouraging additional renewable resource use, nor would it be consistent with past CPUC decisions that expressly contemplate the existence of both compliance and voluntary markets in the state. Section four of this paper explores this issue in more detail.

S.B. 107 also does not directly address the disposition of RECs from renewable distributed generation (DG). However, the CPUC has answered many of the outstanding questions related to DG RECs in various decisions. The CPUC has decided that the DG owner also owns all RECs produced, that all renewable electricity production by the generator creates RECs even when the electricity is consumed in-house and not delivered to the grid. Further, DG RECs may potentially be sold for value to either the voluntary or the RPS compliance market. In a recent decision adopted after the passage of S.B. 107 (CPUC Decision 07-01-018) the CPUC held that any ratepayer subsidies received by a DG owner toward the purchase of the generator do not affect the ownership of RECs—the DG owner retains ownership of all RECs.

However, despite being RPS eligible, DG RECs today could not be sold into a California RPS compliance market (if and when adopted) since the RECs cannot be accurately measured and tracked as required by S.B. 107. Statutory compliance may require more advanced metering than is currently in place, to measure and report actual total generator output, and not merely the net electricity output at the point of grid interconnect as is common under the net metering program today. The CPUC has deferred a decision on this DG metering requirement until the compliance market is closer to adoption. This paper recommends that this decision be expedited to provide assurance to potential DG purchasers, and to facilitate the ability to sell DG RECs into the RPS compliance market as soon as it is adopted. This will help maximize the potential value of DG RECs by opening a much larger potential market, and will also help to alleviate environmental justice concerns raised by tradable RECs in the RPS compliance market. Section five of this paper discusses the disposition of DG RECs in more detail.

Lastly, section six of this paper reviews what legal rights might be available to the owner of RECs in the event their interests are harmed. State contract, consumer protection, and unfair competition laws may be applied to enforce commitments made by other parties in the context of a transaction (e.g., a sale or purchase agreement for RECs). As will be discussed, it is likely that contracts for RECs will be interpreted as contracts for goods in California. However, also recognizing a property right would allow the owner to protect RECs from misappropriation or trespass outside the context of a transaction. A property right would also give REC owners some protection against government actions that take their property without just compensation by condemnation or regulation.

S.B. 107 is silent on the recognition of a property right in RECs in California. There is precedent in tradable pollution credits *not* to extend full property rights in order to reserve the state's ability to restrict the right to emit a quantity of pollution as represented by the credit. However, RECs can be distinguished from most models of tradable pollution credits because they represent a positive environmental attribute, and so the state's interest in reserving the ability to later restrict ownership is attenuated. Thus, recognizing a property right in RECs is recommended, subject to regulations on trading in the compliance market, as it would add additional certainty to the market for RECs and so possibly increase their value.

2. Introduction and Background

California is a land of abundant sunshine, and also the location of such hotbeds of innovation as Silicon Valley. Given the State's economic and technology muscle, and its temperate and sunny climate, it would be easy to think that California is the world's leader in renewable energy capacity. If this were the year 1996, that assumption might have been correct.[1] But by 2005, the entire United States had fallen to third in the world in total installed solar photovoltaic (PV) capacity and eighth in the world in renewable solar PV capacity per capita.[2] The Unites States is also currently third in the world in installed wind electricity generation capacity.[3]

Renewable sources are those which cannot be depleted or can be replenished in a short period of time, and so offer a long-term sustainable and environmentally clean source of energy. They are typically defined to include biomass, geothermal, wind, solar (solar thermal and photovoltaic), and some forms of hydropower.[4] Some of the benefits of increasing renewable energy use include environmental improvement, increased fuel diversity and corresponding improved national security, and economic development.[5] California has made some progress tapping the renewable energy potential in the state. In a report to the legislature in 2007, the California Public Utilities Commission (CPUC) reported that the state's three largest utilities, Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric, were supplying 11.8%, 17.7% and 5.2% respectively of their electricity from renewable sources in 2005.[6] These utilities combined had entered contracts between 2002 and 2006 for total renewable capacity of 2,656 megawatts (MW).[7] However, a 2005 California Energy Commission workshop on renewable energy resource potential found that the technically feasible renewable potential in the state is a staggering 1,303,422 MW, twenty-two times the state's current total electricity capacity.[8]

In recognition of the untapped potential for renewable energy in the state, and to realize some of the possible economic and environmental benefits, California has instituted several programs in recent years to encourage development of renewable resources.[9] Two of the most significant current programs are the Renewables Portfolio Standard (RPS) and the California Solar Initiative (CSI).

The RPS is an obligation placed on many utilities in the state to supply a growing percentage of electricity from renewable sources each year.[10] The RPS requires that twenty percent of retail electricity sold by designated California utilities must come from renewable resources by the end of 2010.[11] The CSI is a ratepayer-funded purchase incentive to promote the installation of new solar energy systems at homes and business throughout the state.[12] The goals of the CSI are to install 3,000 MW of new solar generation capacity and establish a self-sufficient solar industry within ten years, as well as to place solar energy systems on fifty percent of new homes within thirteen years.[13]

Creating programs like the RPS or CSI is not the same as implementing them on a broad scale, since many practical hurdles exist to widespread success. For example, there may not be sufficient time to build enough renewable generation capacity within a utility's service area to meet its RPS obligations, and a utility may also be constrained by limited transmission capacity from buying and importing renewable electricity from other geographies.[14] Similarly, the CSI subsidies may not be sufficient to encourage the installation of enough new solar generators to meet the programs goals, especially given that the incentives do not cover the entire cost of installing a new generator and phase out over the coming decade.[15]

The Renewable Energy Credit (REC) offers at least a partial solution to some of these hurdles. The general concept underlying RECs is simple, renewable generation creates two separable commodities simultaneously: electricity, and 'greenness' (positive environmental attributes). RECs are credits or

certificates representing the environmental attributes of renewable generation, separable from the electricity.[16] Thus, in principle RECs may be separated and traded apart from the associated electricity, and so offer some help implementing state initiatives like the RPS or CSI. For example, a utility facing an RPS obligation which is short of local renewable generation capacity within its service area might no longer have to import renewable electricity from distant locations and burden already strained transmission lines. Instead, that utility could purchase local conventionally generated electricity, and supplement it with the purchase of RECs from elsewhere.[17] In another example, the owner of a small solar generator could gain a new source of revenue to help finance the purchase and maintenance of their generator by selling any RECs which are produced.[18] In this way, an ongoing economic incentive would exist, supporting the CSI goal of establishing a self-sufficient solar industry.

But the use of RECs is not without potential problems. For example, a party might fraudulently claim to have generated RECs, when in fact no renewable generation occurred or when the RECs have already been obligated to another.[19] Or issues of environmental justice could arise if dirty conventional generation becomes disproportionately located in disadvantaged communities once utilities have the flexibility to purchase RECs from clean renewable generators elsewhere.[20] Any implementation of a system of tradable RECs will need to address concerns such as these.

In late 2006, the California legislature passed Senate Bill 107, which for the first time defined and authorized tradable RECs in statute.[21] Section three of this paper analyzes the provisions contained in this complex statute related to RECs, and will show that S.B. 107 represents a reasonable balance of increasing RPS compliance flexibility while seeking to minimize the risks associated with trading RECs, in particular the risk that RECs could undercut the primary RPS goal of promoting more *in-state* renewable capacity.

However, as will be shown, S.B. 107 does not address some important issues regarding RECs. Its provisions are directed solely at generators and utilities operating in an RPS compliance market. Section four of this paper explores a market for RECs not addressed by S.B. 107 directly: the voluntary market.[22] Section five then reviews CPUC decisions related to the treatment of RECs from a specific class of generators not addressed in S.B. 107—small renewable Distributed Generation (DG). And section six examines what legal rights an owner of RECs might assert in the event a dispute arises.

2.1. The Renewable Energy Credit Concept

As mentioned briefly above, the basic concept of a Renewable Energy Credit is straightforward: a renewable generator produces two outputs simultaneously, electricity and environmental benefits. The REC is a certificate that represents the environmental attributes or 'greenness' of the renewably generated power.[23] Thus, for every unit of electricity produced by a renewable generator, a corresponding unit of REC is also produced.[24] An analogy can be made to any useful commodity which can be separated into two valuable and tradable outputs, such as crude oil being separable into fuel and lubricant, or raw milk being separated into skim milk and cream.

In the case of RECs, the 'renewable' character of the generator output, once made separable and saleable apart from the electricity, provides a means for a generator owner to monetize environmental attributes that had previously been only external benefits.[25] More simply, a generator owner can realize income from selling the environmental attributes of their renewable output in the form of RECs. In addition, a party wishing to purchase renewable electricity would have the more

flexible option of purchasing conventionally generated electricity locally, plus RECs from some other source.

But as with many things, this simple concept can become considerably more complex when examined in greater detail, especially in the context of market realities and state laws. For example, the generation of RECs must be verifiably measured, and sales transactions accurately accounted, or there will be insufficient confidence for a market to function.

2.2. Potential Types of RECs That May Be Created

In theory, RECs may be defined in three basic ways: i) fully bundled, non-tradable RECs; ii) unbundled, fully-tradable RECs; and iii) something in between, restricted tradable RECs.[26]

Fully bundled non-tradable RECs are essentially an accounting tool. If RECs are required by law to be bundled together with the associated electricity being generated, and may never be separated and subsequently traded apart from that electricity, their usefulness becomes limited to being a means for tracking or accounting for renewable generation after the electricity itself commingles with other conventionally generated power on the grid.[27] Such bundled RECs act as a tool to identify a megawatt-hour of renewable electricity apart from any other megawatt-hour of conventionally generated electricity. By using RECs in this manner, it should be easier to establish a tracking and verification system that ensures the various parties engaged in the business of electricity generation and supply do not account for renewably generated electricity multiple times, and so avoid a distorted picture of the use of renewables.[28]

More interesting situations arise when RECs may be unbundled and traded separately from the associated electricity. In this way, RECs act as tradable certificates which memorialize the positive environmental attributes of renewably generated electricity.[29] When fully unbundled from the associated electricity and sold, tradable RECs allow a generator owner to receive a direct monetary value for the green benefits resulting from their renewable production. Also, the environmental benefits may be traded or sold to another party who may not otherwise want, or be in a position to purchase the actual electricity.[30] For example, a commercial business might purchase unbundled tradable RECs in order to claim the public relations benefit of utilizing green power.[31]

A middle alternative is to allow RECs to be tradable, but to limit or restrict the market for those RECs. For example, the initial sale of RECs might be allowed only when bundled together with electricity, but then later the RECs could be separated from the electricity and traded on a standalone basis. Such a restriction would effectively limit the initial market for RECs to utilities, since they would be the only parties in a position to purchase and take delivery of the electricity from a generator via the grid. This utility purchaser could then make later unbundled sales of any RECs they possess in excess of their own needs.[32] In this scenario, a generator owner may still be in a position to monetize the environmental benefits resulting from their renewable production, but only to the extent the RECs' value can be added to the price for electricity negotiated with a utility buyer.

In any system of tradable RECs, once the RECs are separated the remaining electricity may no longer be considered renewable energy.[33] In effect, the 'renewable' part of the 'renewable electricity' is removed when the RECs are unbundled and sold, leaving the remainder to subsequently be treated as any other conventionally generated electricity.

2.3. Two Markets for Tradable RECs

There are two distinct markets in which to sell tradable RECs, a voluntary market and a compliance market.[34] The voluntary market comprises potential purchasers who are under no legal compulsion to purchase renewable energy, and so seek to buy RECs voluntarily. The earlier example of a commercial business seeking to purchase RECs in order to gain a public relations advantage would be such a voluntary purchaser. The RECs are purchased essentially as green bragging rights.[35] Another example of a voluntary market transaction could be a power marketer that purchases RECs to provide retail electricity customers an option to pay a premium and receive a 'green' energy product.[36] By purchasing the RECs, the marketer can couple them with conventional power at the point of sale and market the product as green. Several municipal utilities in California offer such voluntary green purchase programs today.[37]

A compliance market for RECs comprises potential purchasers who must comply with a legally imposed obligation to purchase a quantity of renewably generated power, which in practice means utility companies which must comply with a state RPS.[38] The value of RECs in the compliance market may vary significantly from that in the voluntary market, and from state to state, due to differing demand, supply, and incentives to purchase.[39]

2.4. Pros and Cons of Tradable RECs Generally

Some of the potential benefits of tradable RECs include increased flexibility for utilities which must comply with RPS goals, improved sourcing efficiency, and an additional funding source for renewable generators. Concerns about the use of tradable RECs include the possibility of undercutting incentives to develop more in-state renewable resources, adverse environmental justice effects, and possible marketplace issues. Table 2 outlines the general pros and cons of RECs, which are examined briefly below.

Table 2 - Commonly Cited Potential Pros and Cons of Tradable RECs

Potential Benefits	Potential Risks
Increased RPS compliance flexibility	Reduced RPS incentives for in-state renewable resource investment
Improved sourcing efficiency	Adverse environmental justice impact
Ongoing source of funds for renewable generators	Marketplace efficiency and fraud

Local sources of renewable energy in a utility's service area may be limited. For a utility in this situation, meeting an RPS goal could thus require increasing the burden on transmission infrastructure or constructing new renewable generation capacity within the service area, or some combination of both.[40] Tradable RECs could provide flexibility in this scenario, by giving the utility access to 'renewables' from more distant locations without the time delays inherent in building new local generation, or the associated cost of building new transmission capabilities between service areas or adding to the load of already burdened long-distance lines.[41] Also, RECs may give

generators more flexibility since they could sell their valuable outputs to multiple parties. If the local utility which is purchasing electricity from a generator does not need RECs, the generator could potentially find other, potentially more distant buyers for the RECs.[42]

Another benefit of tradable RECs is that they may facilitate optimal placement of generators. Because RECs allow the purchase of the green attributes from potentially distant sources, renewable power generation could be sited in more optimal geographic locations.[43] For example, a distant location outside of a utility's service area may be highly suited to producing solar or wind energy, and so generate electricity at a lower marginal cost than a source built in a less sunny or windy location within the local service area.[44] By allowing a utility to purchase at least some RECs from an optimally sited but remote source, rather than being constrained to build capacity at a less than optimal local site (or burden strained transmission lines), the ultimate cost to ratepayers of meeting the RPS goals may be reduced.

A third benefit of tradable RECs is that they provide a means to monetize the environmental attributes of renewable electric power, separate from the sale of associated electricity.[45] By creating a certificate of greenness that can be sold, RECs become a potential source of revenue for the generator owner to help finance installation of renewable energy capacity. For example, revenues realized from the sale of RECs could supplement other subsidy programs which support the purchase of new renewable generation capacity, or even replace purchase subsidy programs entirely.[46]

These potential benefits of tradable RECs must be balanced against several possible concerns. One significant potential drawback when RECs are traded across state borders is that some of the benefits of renewable energy may accrue to other states at the expense of in-state ratepayers.[47] For example, California ratepayers ultimately pay (through their electricity bills) for their utilities to supply renewable electricity under the RPS, and if utilities purchase RECs from out-of-state to meet their goals, the environmental and economic benefits resulting from renewable generation would go most directly to others located out-of-state.[48] Further, unless inter-state REC trading in the RPS compliance market is limited in some manner, the potential exists of undermining the primary goal of the RPS, which is increasing "the quantity of California's electricity generated by in-state renewable energy resources. . . and obtaining the greatest environmental benefits for California residents."[49] Any compliance market for RECs must carefully balance gains of greater compliance flexibility against this potential for undermining the 'in-state' development of renewable resources called for by the RPS.

This suggests a related concern associated with tradable RECs: environmental justice.[50] By allowing utilities to buy RECs from outside their local service territories, the incentive to build locally-sited clean power generators is necessarily reduced. Thus, some local sites may be more adversely affected by the environmental footprint of conventional electric power generation, while remote sites where the RECs are created receive more of the environmental benefits resulting from renewable generation.[51]

Another area of concern arising from tradable RECs involves the many practical issues of a marketplace. The creation of RECs must be reliably measured and recorded via accurate metering and tracking systems, which may be difficult for small distributed generators that are often located at individual homes and businesses.[52] Also, the expiration or shelf-life of RECs must be determined and then reliably tracked and enforced.[53] If RECs persist indefinitely, it would be possible to bank them, and so possibly reduce the incentive in future years to operate additional renewable capacity. However, if RECs expire in the same year they are created their usefulness as a flexible means of

compliance with rising RPS, goals would be diminished. In addition, interstate trading of RECs will require an integrated accounting system to prevent fraudulent double-counting of RECs against multiple state RPS goals.[54] Further, the possible market distorting effect of ratepayer subsidies for renewable electricity must be considered,[55] as well as possible vulnerability of the market to manipulation by private parties artificially constraining the supply of RECs.[56]

Many of these marketplace concerns are being resolved through efforts to normalize regulatory models across regions, and through the creation of computerized management and tracking systems.[57] The California Energy Commission is under a statutory mandate to develop such a tracking system, and is working in collaboration with other states in the Western Governor's Association to develop and utilize the Western Renewable Energy Generation Information System (WREGIS) to track RECs which are traded in the RPS compliance market.[58] WREGIS's initial operating capability is currently expected within 2007.[59]

3. RECs Defined in California Law

Any legal definition of RECs today must look to state law. On August 8, 2005, the Federal Energy Policy Act of 2005 was signed into law, and was notably silent on the topic of creating a national compliance market for RECs.[60] Further, the Federal Energy Regulatory Agency (FERC) has left the matter of REC creation and ownership to the states. In a 2003 decision, FERC held that RECs generated by a Qualifying Facility (QF)[61] under contracts entered pursuant to the federal Public Utilities Regulatory Policies Act (PURPA)[62] do not impliedly or inherently transfer to utilities as part of an electricity purchase.[63] In this decision, FERC made clear that "[w]hat is relevant here is that the RECs are created by the States."[64] The decision continues, "[w]hile a state may decide that a sale of power at wholesale automatically transfers ownership of the state-created RECs, that requirement must find its authority in state law, not PURPA."[65] Therefore, state law must establish the legal basis to define and regulate RECs.

California regulators have been working to define RECs since before 2003. In that year, state Senate Bill 1078 took effect which first established the state's RPS.[66] Because the RPS creates a legal compulsion upon utilities to generate or purchase a quantity of renewable electricity, it forms the basis of a possible compliance market for RECs. While S.B. 1078 did not specifically define or authorize the use of RECs, the CPUC issued a decision in June 2003 to begin implementation of the RPS which did discuss RECs on a preliminary basis.[67] This decision provided the first legal definition of RECs in California as including "all renewable and environmental attributes associated with the production of electricity from a renewable source."[68] The definition was held to be a "default" with the possibility that some environmental attributes may be excluded from RECs in the future, "upon adequate showing."[69] The decision also explicitly stated that the use of tradable RECs was "not adopted in this phase of the proceeding."[70] The California Energy Commission, however, was encouraged to begin "design and implementation of a REC accounting system" to ease future adoption of REC trading.[71]

In 2005, another CPUC decision discussed RECs in the context of small renewable distributed generation, though it again stopped short of authorizing the use of tradable RECs for RPS compliance.[72] In this decision, the CPUC established a presumption that "[t]he owner of a DG [distributed generation] facility owns any renewable energy credits associated with the generation of electricity from that facility."[73] However, tradable RECs were still not adopted as a means for utilities to comply with RPS goals.

The most significant legislative step in defining and adopting tradable RECs in California occurred in 2006 with the passage of state Senate Bill 107.[74] For the first time, RECs are now expressly recognized by statute in California, and a definition for RECs is codified.[75]

Section 14 of S.B. 107 codified the definition of "Renewable Energy Credit" as being "a certificate of proof, issued through the accounting system established by the Energy Commission… that one unit of electricity was generated and delivered by an eligible renewable energy resource."[76] The statute continues the definition by adding that RECs include "all renewable and environmental attributes associated with the production of electricity from the eligible renewable energy resource," except that RECs specifically exclude, "an emissions reduction credit issued pursuant to Section 40709 of the Health and Safety Code and any credits or payments associated with the reduction of solid waste and treatment benefits created by the utilization of biomass or biogas fuels."[77] Thus, RECs in California are certificates that memorialize the environmental 'greenness' resulting from renewably generated electricity, minus certain environmental attributes previously captured in

specified air contaminant or waste reduction credits so as not to diminish those ongoing pollution reduction efforts.[78]

3.1. S.B. 107 Defines (But Does Not Adopt) Tradable RECs for RPS Compliance

The RECs created by S.B. 107 are intended to be unbundled and tradable. "The [public utilities] commission may limit the quantity of renewable energy credits that may be procured unbundled from electricity generation."[79] This language clearly states that it is at least possible for RECs to be purchased separately from the associated electricity by utilities. This is reinforced by a different condition imposed on the sale of RECs. "All revenues received by an electrical corporation for the sale of a renewable energy credit shall be credited to the benefit of ratepayers."[80] Thus the RECs defined in statute are by definition tradable, since a utility may purchase them unbundled from the associated electricity, and also sell them for value. The legislative history of S.B. 107 supports this understanding by referring to, "a REC trading program which allows the sale of the renewable attribute of renewable electricity as a commodity unbundled from the physical production and delivery of renewable electricity."[81]

A question arises as to whether S.B. 107 intends to define RECs for both the compliance and the voluntary markets. The statute language defining RECs begins with the statement, "[f]or purposes of this article."[82] This section of S.B. 107 is codified under article 16 of the Public Utilities Code entitled, "California Renewables Portfolio Standard."[83] Subsequent limitations and conditions on the use of RECs also expressly refer to "the use of renewable energy credits to satisfy the requirements of the renewables portfolio standard established pursuant to this article."[84] Also, the legislative history states that this bill is intended to authorize investor owned utilities "and other retail sellers to buy RECs instead of renewable electricity."[85] Thus, S.B. 107 should be read as referring to the use of RECs by utilities to satisfy an RPS obligation in the compliance market.[86] Section four of this paper further explores possible implications of this statute for the voluntary market.

While S.B. 107 defines tradable RECs for the RPS compliance market, their use is not mandated nor automatically adopted. "The commission, by rule, may authorize the use of renewable energy credits to satisfy the requirements of the renewables portfolio standard established pursuant to this article."[87] Thus, the CPUC has been given broad regulatory authority over the eventual adoption and use of tradable RECs in the RPS compliance market. This includes the ability to "limit the quantity" of RECs that a utility may apply toward meeting its RPS obligations.[88] The CPUC is also given the authority to adopt any additional condition on the use of RECs for RPS compliance, "that the commission determines is reasonable."[89]

This point was further illustrated in a decision issued shortly after the enactment of S.B. 107, in which the CPUC discussed allowing the sale of certain RECs into the RPS compliance market only "*if and when* [emphasis added] the Commission adopts an unbundled REC regime for RPS compliance."[90] The implication being that a system of unbundled RECs to satisfy RPS goals has not been adopted yet, despite being authorized by S.B. 107.

In addition, S.B. 107 imposes mandatory conditions which must be satisfied before the CPUC "may authorize the use" of RECs for RPS compliance.[91] Most importantly, a tracking system must be established by the California Energy Commission to independently verify the generation and delivery to the utility of the electricity associated with each REC.[92] Tracking of RECs will work in conjunction with an accounting system to ensure renewably generated electricity is "counted only once for the purpose of meeting the renewables portfolio standard."[93]

Even once adopted by regulators, the purchase of tradable RECs is not mandatory in all circumstances when a utility is short of full compliance with its RPS goals. For example, a utility is not obligated to purchase RECs to meet part of an RPS obligation for which it has otherwise been relieved due to insufficient ratepayer subsidies to cover above-market costs.[94] Further, ratepayer subsidies may not be directly used "for any purchases of renewable energy credits."[95] The legislative history for S.B. 107 explains that RECs should not overly impact the charges already levied on ratepayers,[96] although utilities may still recover in their rates any reasonable costs of procuring RECs.[97]

3.2. Qualifications and Restrictions on the Creation of RECs

By defining RECs as unbundled from electricity and potentially tradable by utilities, S.B. 107 seeks to gain the compliance flexibility inherent with the use of RECs. At the same time, many limits and restrictions on the trading of RECs are also contained in the statute. These limits are an attempt to balance the increased compliance flexibility against concerns that RECs may undermine key RPS goals.[98] The legislative history makes it clear that while RECs provide increased compliance flexibility for a utility, they also seem "inherently inconsistent with the goal of supporting the development of new renewable resources within California."[99] The statute, "attempts to overcome this inconsistency by imposing a variety of conditions on RECs."[100]

3.2.1. Not All Renewable Generators Create RECs – Delivery Required

RECs are defined as certificates of proof that "one unit of [renewable] electricity was generated and delivered."[101] Thus, RECs are created by a renewable generator only when the associated electricity is delivered. Delivered is defined for purposes of this statute as electrical output that is: i) from "an in-state renewable electricity generation facility"; and ii) that is "used to serve end-use retail customers located within the state."[102] The implication of this language, taken alone, is that out-of-state generators do not create RECs (nor would in-state generators which sell their electricity for consumption outside the state). That reading is not complete, however. Both of these definitional elements of 'delivered' are refined later in the same statute section.

The definition of an "in-state renewable electricity generation facility" is expanded to include generators that use an eligible renewable fuel source,[103] and also are either located in-state,[104] or located outside California but near the border with a first point of connection to the grid within the state.[105] Further, even more distant out-of-state generators may qualify, if they have a first point of connection to the grid within the Western Electricity Coordinating Council (WECC) service territory,[106] and also meet various other eligibility criteria.[107] Thus, renewable generators both within California and also outside of California (but within the WECC) have the potential to create RECs for the California RPS compliance market.

The definition of "delivered" also requires that a generator's output is "used to serve end-use retail customers located within the state."[108] Specifically, out-of-state generators connected to the WECC only make eligible deliveries if "[e]lectricity produced by the facility is delivered to an in-state location."[109] This added limit on out-of-state generators is consistent with the goal that RECs should not undermine the RPS objective of promoting development of in-state renewable resources.[110] By limiting out-of-state generated RECs, the concern that California ratepayers would pay for environmental benefits accruing elsewhere is reduced. Yet RECs still may be purchased and imported, in proportion to the extent California must import electricity to service its needs. Thus an incentive remains for utilities to use renewable sources, even when out-of-state electricity is required to meet demands.

What is less clear in the language of the statute is whether generators physically located in-state must also deliver electricity for consumption by retail end-users within the state to create RECs. The statute provides that output is delivered when it is "used to serve end-use retail customers located within the state."[111] However, the next sentence states, "electricity shall be deemed delivered if it is *either* [emphasis added] generated at a location within the state, or is scheduled for consumption by California end-use retail customers."[112] This implies that in-state renewable generators can create RECs by virtue of being located in-state, even if the associated electricity is eventually re-sold by the utility and consumed out-of-state. This does not appear to offend the policy goals of the RPS, since development of in-state renewable capacity is still encouraged, and the environmental benefits accrue primarily to California residents.[113] The CPUC may eventually clarify this interpretation, since the statute specifically allows that "delivery" may be "subject to criteria adopted by the commission."[114]

3.2.2. Other Restrictions on the Creation of RECs

A temporal restriction is imposed on the creation of RECs. No RECs are created by generators that have been operating under an "electricity purchase contract" with a utility, if the contract was executed before January 1, 2005.[115] An exception to this rule exists whereby RECs may be created under a pre-2005 contract if the "contract contains explicit terms and conditions specifying the ownership or disposition of those credits."[116] In this way, parties who had the foresight to negotiate the disposition of RECs will not be penalized by having their freedom to contract infringed. In general, though, while the output of renewable generators under pre-2005 contracts will count toward a utility's baseline RPS goal, no RECs will be produced which could be traded for value.[117] This restriction reinforces an incentive to build additional new renewable capacity, as the flexibility and possible economic value that may be derived from trading RECs in the RPS compliance market can only be realized by new generation capacity.[118]

Another restriction on the creation of RECs is that renewable generators, when operating on non-renewable fuel, do not create RECs. "No electricity generated by an eligible renewable energy resource attributable to the use of nonrenewable fuels, beyond a de minimus quantity… shall result in the creation of a renewable energy credit."[119] For example, a generator fueled by bio-gas that might otherwise be considered a renewable resource for purposes of the RPS, would not create RECs during a period when it is operated using non-renewable natural gas as a fuel.

3.2.3.Qualifying Facilities (QFs) Create No RECs

A special case of renewable generation that does not create tradable RECs for RPS compliance are Qualifying Facilities operating under contracts pursuant to the federal Public Utility Regulatory Policies Act of 1978 (PURPA).[120] S.B. 107 states that "[n]o renewable energy credits shall be created for electricity generated under any electricity purchase contract executed after January 1, 2005, pursuant to the federal Public Utility Regulatory Policies Act of 1978."[121] And since no RECs are created by generators under most pre-2005 electricity procurement contracts as discussed above, [122] it follows that QFs cannot produce tradable RECs in California.

This limitation settles a long-standing debate about the ownership of RECs created by QFs in California.[123] Concern had been expressed about unfairness and the possible unjust enrichment of either QFs or utilities, if one party were unexpectedly granted ownership of valuable RECs under existing PURPA contracts.[124] After S.B. 107, QF deliveries of renewable resources to a utility will not create tradable RECs for either party, but those deliveries will still "count towards the renewables portfolio standard obligations of the purchasing retail seller."[125] Thus, the utilities receive RPS credit

for the renewable electricity, but neither party may be unjustly enriched by the sale of RECs for value.

3.2.4. Participation of Local Publicly Owned Electric Utilities

Another special case addressed in S.B. 107 is the creation and trading of RECs by a class of electricity service provider known as local publicly owned electric utilities, or more commonly as municipal utilities.[126] The RPS obligation to procure twenty percent renewable electricity by 2010 does not apply to local publicly owned electric utilities (municipal utilities) as they are specifically excluded from the definition of "retail sellers" under the RPS.[127] However, renewable electricity that is generated and delivered to a municipal utility may still create RPS-eligible RECs.[128] S.B. 107 specifically authorizes unbundled RECs to be offered for sale by a municipal utility to other utilities in the RPS compliance market, as long as certain conditions are satisfied.[129] First, the municipal utility is required to implement their own local renewables portfolio standard that "recognizes the intent of the legislature to encourage renewable resources."[130] Second, a municipal utility may sell RECs unbundled to another utility in the state only if it will not fail to meet its own RPS goal as a result, and its RPS goal must be comparable to that of the purchasing utility.[131]

3.3. Limitations on REC Transactions

3.3.1. First Sale by a Generator Under RPS Contract Must be Bundled

The CPUC is required to adopt by rulemaking standard terms and conditions to be used by all utilities entering electricity purchase agreements under the RPS for renewable energy resources that "at a minimum, include the renewable energy credits associated with all electricity generation specified under the contract."[132] Thus, RECs must be bundled as part of the standard terms of an RPS electricity purchase agreement with a renewable generator. And as discussed above, RECs may only be used toward RPS compliance if "[t]he electricity is delivered."[133] Only after a utility acquires electricity under an RPS contract may the RECs become separable and tradable. This further implies that electricity generated and consumed on-site to meet local needs of the generator (and so never delivered) will not create RECs for the RPS compliance market, though this implied limit likely does not apply to generators which are not operating under RPS contracts, such as DG.[134]

Thus, while RECs do eventually become tradable by the utility, the first sale from a renewable generator operating under an RPS procurement contract may only be to a utility in California. This has the effect of ensuring that the supply of RECs in the RPS compliance market cannot be artificially constrained by generators in the RPS refusing to sell their RECs, reducing one possible risk factor of potential market manipulation. On the other hand, generators which operate under an RPS purchase contract will only be able to realize value for their RECs to the extent that value can be priced together with the electricity.

3.3.2. Limitations on a Utility's Ability to Buy and Sell Unbundled RECs

S.B. 107 allows utilities to sell any excess RECs they may have, unbundled from the associated electricity, as long as the revenue received from the sales are "credited to the benefit of ratepayers."[135] RECs being sold must be tracked to ensure no double counting occurs, but no other limitations on resale appear in the statute. Thus, a California utility's excess RECs may potentially be re-sold to any party, anywhere.

A utility is more limited with respect to the purchase of unbundled RECs for RPS compliance. In addition to any *bundled* RECs received from a generator operating under an electricity procurement

contract, a utility is also allowed to purchase some quantity of *unbundled* RECs to help meet its RPS obligation, subject to possible CPUC imposed quantity limits.[136] But, by definition RECs are certificates "issued through the accounting system established by the Energy Commission,"[137] and are authorized for RPS compliance only when the "electricity is delivered."[138]

This effectively limits utilities to purchasing *unbundled* RECs from only three possible sources that can both interface with WREGIS and deliver electricity for consumption in California. First, other in-state utilities directly serving California end-user customers may supply unbundled RECs. Second, unbundled RECs may come from out-of-state utilities who participate in the WREGIS REC tracking system, but only when they are also serving California end-user customers (possibly indirectly by selling the associated electricity as 'conventionally-generated' electricity via another in-state utility).[139] Third, in-state renewable distributed generation (DG) may potentially supply unbundled RECs, if the electricity output can be accurately metered and tracked by WREGIS.[140] This limit on the availability of unbundled RECs should help reduce concerns of ratepayers subsidizing out-of-state generators, by maintaining some incentive for utilities to develop in-state renewable resources to meet RPS targets.[141]

4. RECs in the California Voluntary Market After S.B. 107

Since S.B. 107 only defines tradable RECs for the RPS compliance market, a question arises as to the statute's possible impact on the voluntary market. As discussed, the voluntary market comprises parties who wish to purchase RECs as green bragging rights or as offsets against other polluting activities, but are under no legal compulsion.[142] REC purchasers in the voluntary market may include commercial businesses, government agencies, and private individuals.

S.B. 107 imposes many limitations on the creation and trading of RECs, which if applied to the voluntary market, could cripple that market in California. For example, RECs as defined in the statute may only be issued by the tracking system authorized by the California Energy Commission (WREGIS), yet many small or geographically distant renewable generators have no means to independently verify and report their output through such a system.[143] Instead, the integrity of the voluntary market today relies upon private verification systems.[144] Another example is that RECs are only created under S.B. 107 when the associated electricity is delivered to a utility in California, thus eliminating distant out-of-state generators as sources of RECs in the voluntary market.[145] Taken together, these limitations would significantly undermine the voluntary market by greatly reducing the supply of RECs available to potential buyers in the state. Additionally, if these limits were applied to DG, they could also reduce the economic benefit to generator owners who wish to sell the RECs associated with all of their renewable production, and not just the portion of RECs which are associated with electricity "delivered" onto the grid.

As noted, S.B. 107 defines RECs in the context of RPS compliance.[146] The legislative history of S.B. 107 also indicates it is directed at utilities, as it specifically "authorizes IOUs [Investor Owned Utilities] and other retail sellers to buy RECs instead of renewable electricity."[147] S.B. 107 is thus silent with respect to a voluntary market, and should not be interpreted to unduly limit RECs outside the context of an RPS.

Published CPUC decisions also support a distinction between RECs in the RPS compliance market and in the voluntary market. A 2005 CPUC decision implied that RECs may be created outside the context of the RPS. "[I]f a facility does not participate in the RPS program, then its output cannot be counted for RPS purposes, and its RECs are not required to go to the utility to which it is supplying energy."[148] This implies that RECs may be created by renewable generation in a non-RPS context, and so be available for sale to a voluntary market.

Another CPUC decision published in 2007 after the enactment of S.B. 107 also stated that RECs could potentially be sold into either an RPS compliance market or a voluntary market.[149] In that decision, the CPUC said that DG system owners "are free to do what they want [with RECs that they own], including expressly transferring the ownership right to another entity."[150] The CPUC expressly contemplated RECs potentially being sold in either a compliance or a voluntary market, as shown by language saying, "To the extent RECs have any value, whether explicitly through the sale of RECs into a voluntary or a compliance market . . . they may provide a benefit."[151] Thus, by implication, a voluntary market for RECs should not be understood to be effectively prohibited by the application of the provisions contained in S.B. 107. The CPUC also stated that it would revisit the need for more advanced DG metering to ensure consistency with S.B. 107's requirement to use the WREGIS tracking system only "if and when the Commission authorized unbundled RECs to be applied toward the RPS."[152] This implies the S.B. 107 requirement to use WREGIS for issuing and tracking RECs applies solely to the RPS compliance market, and not to the voluntary market.

Allowing a voluntary market to flourish without undue restriction is important for achieving some of the anticipated benefits of RECs, especially that of monetizing positive environmental attributes through the sale of RECs, and so creating a revenue source for additional renewable generation capacity.[153] A voluntary market provides a broad array of possible purchasers for RECs, not limited to just utilities under an RPS obligation. Adopting a definition of RECs which is as much as possible consistent between the voluntary and compliance markets is recommended, to facilitate eventual sales of a portion of RECs from a generator to both markets. However, many of the limitations in S.B. 107, such as the requirement that RECs may only exist when created and tracked by WREGIS, should apply only if the generator participates in the RPS compliance market, and should not be construed to prohibit or limit a separate voluntary market. California's stated energy policy is to increase reliance on renewable energy, both through the RPS[154] and other programs such as the California Solar Initiative.[155] Limiting renewable generators from selling RECs into a voluntary market outside the RPS would remove a potentially valuable financial incentive, and so be counter to those policy goals.

5. Distributed Generation (DG) RECs

As will be shown below, the provisions of S.B. 107 do not expressly apply to RECs from a particular class of electricity generators: renewable Distributed Generation. Thus, the disposition of RECs resulting from renewable DG must be determined from other sources of state law. DG is generally defined to be small grid-connected electric generation facilities, usually located near the point of consumption of the electricity, such as at residential homes, or commercial or public buildings.[156]

S.B. 107 expressly excludes DG or cogeneration from the definition of a utility or "retail seller" of electricity under the RPS.[157] Also, DG cannot reasonably be considered as a generator operating under an RPS "electricity procurement agreement" as defined under S.B. 107.[158] This is because, unlike the generators contemplated by S.B. 107 which operate under contracts to sell electricity, renewable DG usually connects to the grid under a net metering arrangement.[159]

Net metering is a program authorized by statute to encourage private investment in small renewable energy resources.[160] Net metering allows a consumer-generator to send electricity to the grid at times when an excess is being produced, while at other times consume needed electricity from the grid, thus allowing an electric meter to run both backwards and forwards.[161] The consumer only pays for any net electricity consumption over the course of a twelve month period, plus any usual non-energy items billed to any electric consumer.[162] A net metering arrangement with a utility may be reached through two contractual steps or in some cases through a single combined contractual agreement.[163]

Current net metering agreements do not refer to the requirements of the RPS.[164] Nor does the authorizing statute for net metering refer to the RPS.[165] Since S.B. 107 specifically applies to the generation of RECs in the RPS compliance market, it thus does not encompass RECs from DG operating under net metering agreements. Further, the net metering statute does not require a utility to pay any compensation to the DG owner, if at the end of 12 months the generator is a net energy producer, unless a *separate* electricity purchase agreement has been entered.[166] Given this, DG net metering agreements cannot reasonably be considered RPS electricity purchase agreements, and so any DG RECs are not obligated to utilities as per the requirements of S.B. 107 applicable to generators operating under RPS procurement contracts.[167] Thus, the disposition of DG RECs is governed by other state law, in particular several CPUC decisions on the matter discussed below.

5.1. Ownership of Renewable DG RECs

While the presumption has long been established in California that DG owners also own any RECs produced,[168] DG REC ownership has continued to be uncertain due to the possible effect of ratepayer subsidies supporting the purchase of the DG system, which may overcome the presumption of ownership by the DG owner.[169] However, a January 2007 CPUC decision has now resolved this long-standing issue in favor of DG owners retaining all RECs.[170]

Currently the two largest state subsidy programs paid to purchasers of renewable DG are the Self Generation Incentive Program (SGIP)[171] and the newer California Solar Initiative (CSI).[172] SGIP agreements are silent as to the disposition of RECs, and refer to RECs only to require that other possible agreements for their sale or trade be disclosed.[173] However, it has been asserted in CPUC proceedings on the issue that ratepayers could pay twice for an environmental benefit, first by subsidizing the purchase of renewable DG, and then again by paying for utility purchases of RECs from those same DG systems.[174] Thus, it has been suggested that subsidy agreements should imply-

in-law that some or all renewable DG RECs transfer to the utility to avoid unjust enrichment of DG owners at ratepayer expense.[175]

The possible effect of DG subsidies has been further complicated by the suggestion that a DG owner may receive an additional subsidy due to participation in a net metering agreement.[176] At first glance this seems unlikely, since the DG owner merely sends and receives electricity from the grid, and pays for any net usage.[177] However, the credit for electricity sent to the grid from the DG system is given at retail rates, which are typically more than a utility might pay to purchase the equivalent electricity from a central station or other generator at wholesale tariffs.[178] This difference in cost to ratepayers may arguably be a subsidy to DG owners, in that the credit to net metered DG owners exceeds what a wholesale generator would receive for supplying the same electricity. Others have reasoned that DG is already providing ratepayers with return benefits to compensate for this value by allowing utilities to avoid expensive additional peak capacity, [179] and by supplying environmental, health, and economic benefits via a stimulated local renewable energy sector. [180]

The CPUC resolved this ownership debate in a decision published shortly after the enactment of S.B. 107.[181] First, the CPUC decided that renewable DG RECs should not be divided or apportioned between the DG system owner and the utility, based on a partial subsidy paid to the DG owner toward the purchase of the generator.[182] Further, renewable DG owners should retain ownership of all RECs generated, as the existence of ratepayer subsidies does not justify the transfer of any RECs to utilities on behalf of ratepayers.[183]

Second, the CPUC held that while net metering does provide a benefit to renewable DG owners, it is irrelevant whether or not it may be considered a "subsidy." Net metering benefits do not justify the transfer of RECs to the utilities, just as direct subsidies do not justify the transfer of RECs.[184] In addition, the CPUC found that the sale of RECs by a DG owner does not act to make the DG system subsequently ineligible for participation in the net metering program.[185]

This CPUC decision is consistent with stated legislative goals underlying use of the ratepayer funds for renewable energy subsidies, specifically the public goods charge used for the Renewable Energy Resources Program, which funds some renewable DG subsidies.[186] "Awards made pursuant to this chapter are grants . . . any actions taken by an applicant to apply for, or become or remain eligible . . . shall not constitute the rendering of goods, services, or a direct benefit to the commission."[187] A reasonable inference is that since the CPUC receives no goods (such as RECs) as a condition of giving subsidies, neither should ratepayers.

The discussion in this 2007 CPUC decision on DG RECs provides useful insight into the policies underlying the trading of RECs in California. As mentioned, an earlier CPUC decision established a presumption that a renewable DG owner also owns any RECs created by the generator, unless the RECs have been sold or transferred by agreement to another party.[188] At the time, a concern was acknowledged that ratepayers could be paying twice for the same environmental benefit, first as subsidies to DG owners, and then again later through utility purchases of RECs.[189] In its 2007 decision, the CPUC states that it had originally considered accommodating this concern by dividing and apportioning the RECs between utilities (on behalf of ratepayers) and DG system owners, but now rejects that approach on the grounds that it adds too much complexity to accounting and tracking.[190]

Since RECs will not be apportioned, the issue then becomes all-or-nothing: either the DG owner retains all RECs despite any subsidies, or all RECs transfer to utilities for their use in satisfying RPS goals because of the subsidies. As stated above, the CPUC decision is that DG owners retain all RECs.[191] The rationale given for this begins with the "overriding goal" of the California Solar

Initiative (CSI), which is to "achieve a self-sustaining solar market."[192] This drives CPUC policy to calibrate subsidies and other incentives to the market, and so reduce subsidies over time as the economics of renewable solar become more attractive, eventually achieving a market that requires no subsidies.[193] The CPUC views all DG purchase incentives as means to "fill the value gap" for potential owners and so encourage investment in solar DG systems.[194] If RECs become valuable, they could become another factor that affects the economics of renewable DG, and may help "drive the deployment of solar DG in such a way that S.B. 1 [CSI] objectives can be achieved with less ratepayer support."[195] In other words, as RECs go up in value, other ratepayer incentives may potentially be reduced, as long as the DG owner retains ownership of the RECs.[196]

Several ways in which RECs might become valuable to a DG system owner are identified in this decision. RECs may "enable customers to make green claims" even if they have no cash resale value.[197] Also, RECs may be sold for value subject to the "level of demand for RECs in the voluntary market."[198] And finally, RECs may be sold for value in a compliance market depending "whether California migrates to an unbundled REC-based RPS regime" as authorized in S.B. 107.[199]

Because of this potential value, allowing DG owners to retain their RECs results in three primary benefits to the state. First, valuable RECs will impact the decision to invest in renewable DG, thus likely encouraging more renewable DG installations.[200] Second, since RECs are only created over time by ongoing operation of the generator, RECs align with the preferred ongoing performance-based incentive model of the CSI.[201] Third, valuable RECs provide a means of financing additional renewable DG, thus supporting the long-term goal of the CSI of making the solar industry self-sufficient.[202]

5.2. Outstanding DG REC Issue – Metering for the RPS Compliance Market

A remaining question concerning renewable DG RECs is how they might become eligible for sale into the RPS compliance market?[203] The CPUC has made clear that, in theory, DG RECs are RPS-eligible "if and when the Commission adopts an unbundled REC regime for RPS compliance."[204] However, S.B. 107 imposes a requirement upon any tradable RECs in the compliance market that they must be issued and tracked by the Energy Commission tracking system, WREGIS.[205] Yet no infrastructure exists today for metering or account management sufficient to ensure that the output of each renewable DG system is accurately reflected in WREGIS. Thus, new meters or other measurement procedures may be required to facilitate the sale of DG RECs into the RPS compliance market.[206]

In its 2007 decision on DG RECs, the CPUC acknowledged the possible need for more advanced measurement of DG consistent with WREGIS, to enable the sale of RECs into the RPS compliance market. However, action was deferred since the RPS compliance market for tradable RECs has itself not yet been adopted.[207]

A related concern with DG RECs is that S.B. 107 states that RECs are only created when the associated electricity is delivered to the grid (as under an RPS procurement contract).[208] But as discussed above, renewable DG is not operating under an RPS electricity procurement contract. Further, any electricity used in-house is being consumed by a California retail customer, and so is meeting the intent of the statute. In 2002, the CPUC was clear in a decision to initiate implementation of the RPS, where it held that all production from renewable DG was RPS-eligible, including output "on the customer side of the meter."[209] Now in its 2007 decision following the enactment of S.B. 107, the CPUC referred to that earlier 2002 decision when affirming that renewable DG is an RPS-eligible resource.[210] Thus, the entire output of a renewable DG system may

produce RECs for either the voluntary or compliance market, regardless if the electricity is delivered onto the grid via net metering. This affects how renewable DG must be measured. To determine the total number of RECs produced, it is necessary to measure the entire output of the DG system, even when the output is consumed locally and not delivered to the grid via the interconnect.

The metering challenge for renewable DG is that a typical meter today, read by the utility, measures only the net transfer of electricity via the grid interconnect.[211] But to account for all RECs, it would be necessary to measure the total production of the generator, including any electricity consumed in-house. Thus, two points of measurement are required, one to count total generator output to calculate total RECs produced, and one at the grid interconnect to calculate net metering credits. The measurements of total generator output could then be aggregated by the utility or whatever entity is assigned to read the meters, and be reported and tracked via WREGIS as the basis for any RPS-eligible RECs.[212] The easiest alternative to such advanced metering is to merely use a crude estimate of generator output based on the placarded capacity of the generator, without actually measuring production (this is often how the voluntary market estimates DG REC production today). However such estimates would likely be counter to the intent of S.B. 107 and so may not be adequate for the RPS compliance market.

Thus, facilitating a CPUC decision on this metering capability should be expedited to allow renewable DG to participate in the RPS compliance market as soon as possible after that market's adoption. This would give DG owners another potential market in which to sell their RECs beyond the voluntary market, and so potentially increase the demand and thus the value of their RECs. In this way, the economic incentive available to support investment in renewable DG generation is maximized.

Another important benefit of facilitating the entry of renewable DG into the RPS compliance market is its potential to alleviate environmental justice concerns.[213] Tradable RECs create the potential for utilities to purchase renewable attributes from other parts of the state or even from out-of-state, while continuing to locate more heavily polluting conventional electricity generation in the local service area. Thus some local communities may be disproportionately affected by conventional electricity generation while distant locales gain much of the environmental benefits of renewable generation. But, by definition, renewable DG is clean electricity generated at the primary point of consumption, and so is inherently distributed within local communities.[214] Thus, increased use of renewable DG in the RPS market will help to balance the increased risks of adverse environmental justice impact by giving utilities more locally-sited sources of RECs. And the added financial value for DG owners who can sell their RECs into the compliance market will provide financing and incentive to invest in even more local, clean, renewable DG.

6. Legally Enforcing Rights in RECs

A tracking system like WREGIS is intended to provide assurance that RECs are genuine and not double-counted.[215] But the potential still exists that a party may contract to sell or buy RECs, and not fulfill its promises. Also as discussed, such a state-certified tracking system will likely not be mandated in the voluntary market for RECs, so some other means of protection against fraudulent double-selling or other wrongful actions involving RECs may be especially needed in this market.[216] In addition, if a DG owner or other generator sells some RECs into both the voluntary and compliance markets, there exists the potential that some fraud or abuse could occur.[217] And the potential also exists that some party may claim another's RECs without permission, outside the context of a formal transaction. These are just some possibilities which lead to the question: what legally enforceable rights will exist for the owners of RECs to redress potential wrongs?

6.1. Are Contracts for RECs Contracts for Goods?

In the RPS compliance market, RECs must initially be traded between renewable generators and utilities bundled as part of an electricity purchase contract.[218] It is also likely that at least some contractual sales of RECs will occur in the voluntary market, in addition to the sale of RECs in retail sales model.[219] Thus, contract law may be available to enforce a party's obligations in such a negotiated transaction.

Two possible frameworks exist for the interpretation of contracts for RECs, either the model Uniform Commercial Code (UCC) for contracts for the sale of goods, or the common law of contracts for services and other items. But are RECs goods? It may be illustrative to look to how contracts for electricity are interpreted, since in the RPS compliance market RECs must be bundled with electricity when initially sold by a generator. So, the question becomes, are contracts for electricity contracts for goods? Courts in different states have decided this question differently.[220]

Article 2 of the UCC, as incorporated into California statute, defines "goods" as all things that are moveable when they are identified under contract for sale.[221] On this basis, California courts have held that electricity is a good, and thus contracts for the sale of electricity should be interpreted under the UCC.[222] Similarly, a recent federal bankruptcy court decision in California has also held that electricity is a good.[223] To provide consistency, it is recommended that the sale of RECs as a provision in an electricity purchase agreement should also be interpreted in California as a sale of goods. Even standalone contracts for the sale of RECs could reasonably be treated as contracts for the sale of goods. Doing so will provide a common framework for interpreting REC sales contracts regardless if the RECs are bundled with electricity purchases. Also, contracts for unbundled RECs seem to fit the definition of 'movable goods,' since RECs may be purchased for value, and then transferred or moved.

In the context of a retail transaction in the voluntary market, some roughly equivalent protection to contract law may be found in consumer anti-fraud laws[224] and unfair competition laws.[225] For example, it is unlawful for any person or company to directly or indirectly make statements about the sale of property or services to the public which are known to be untrue or misleading, or which should be known to be untrue or misleading with the exercise of reasonable care.[226] Thus, a false advertising statement that a renewable generator created RECs, when in fact no such renewable generation occurred, or if the RECs have already been sold or otherwise obligated to another, could be a violation.[227]

Similarly, any person who engages in unfair competition "may be enjoined . . . to restore to any person in interest any money or property, real or personal, which may have been acquired by means such as unfair competition."[228] Violators of unfair competition laws may also be liable for civil penalties as well as an injunction.[229] Unfair competition includes any "unfair or fraudulent business act" and also "unfair, deceptive, untrue or misleading advertising." [230] Thus, making false claims about the status of RECs in a retail transaction may make the seller liable under unfair competition law.

6.2. Are RECs Property?

As shown, contract and unfair competition or consumer protection laws provide enforceable rights for REC owners against another party involved *in a transaction*. But a broader question is presented by the passage of S.B. 107—are RECs property? If so, RECs may be defensible against interference by any party, even outside the scope of a specific transaction, under state property laws.[231] To the extent that a good is owned and may be exclusively sold or traded by its owner, it assumes some of the defining characteristics of property.[232] S.B. 107 defines RECs for the compliance market that may be bought, sold, and traded by their possessor, thus implying but not expressly granting a property right. The CPUC has also determined that DG RECs are owned by the generator system owner, again implying a form of property right may exist by virtue of exclusive ownership.[233]

But some precedent may be found against granting property rights to RECs in the situation of tradable pollution credits. The federal pollution credit program to control acid rain, enacted in the Clean Air Act, explicitly denies full property rights to holders of tradable pollution credits.[234] A similar analogy exists in California under a system of tradable emission reduction credits that has been implemented to facilitate compliance with air pollution standards by the California South Coast Air Quality Management District called the REgional CLean Air Incentives Market (RECLAIM).[235] The enabling legislation for this program sets out an explicit goal to adopt a market-based program in lieu of some or all command and control regulations for controlling air quality from specified sources, but does not expressly establish or deny a property right in pollution allowances.[236] However the enacting rules published by the South Coast Air Quality Management District do deny full property rights in emission reduction credits.[237] The rationale for this is to reserve the authority to later "condition, limit, suspend, or terminate" any credit rights including "the authorization to emit" pollution.[238]

RECs may be distinguished from pollution allowances, however. An obvious distinction is that RECs represent a positive environmental attribute ('greenness') and not a negative attribute such as a quantity of allowable pollution emissions. Thus, the state's interest in reserving the authority to later restrict or rescind the creation of RECs by a generator owner is lower as compared to tradable pollution credits. Granting protections afforded by property law could increase the confidence of owners that they may better protect their investment in the creation and ownership of RECs, and so improve their potential value.

Ultimately, if a property right is formally recognized in RECs, owners will have additional legal enforcement options under property law, beyond the transaction-oriented protections provided by contract, consumer protection, or unfair competition laws. For example, a court action may be brought for trespass to personal property (chattel) when another party wrongfully or intentionally harms the property, such that its value is impaired or the owner is deprived of the possession or use of the property.[239] If a wrongful acquisition, transfer, or detention of the owner's property is so serious that it harms the property's full value, then an action for conversion can be brought.[240] In California, conversion liability may exist if an actor exerts unwarranted interference with the

dominion or complete ownership of another's personal property, even if there is no physical taking of the property.[241] Californian courts have long held that conversion liability may be extended to include many types of less tangible personal property such as shares of stock, and not just the stock certificates which only memorialize the shares owned.[242]

Thus, someone that takes possession and consumes RECs (for example, to satisfy RPS obligations, or to subsequently resell them to another) without a valid transfer from the true owner, would effectively convert the RECs' value and could be liable under property law.[243] Owners of RECs could also protect their property against forced transfer or condemnation by action of federal or state law or regulation without just compensation.[244]

To offer this added assurance and legal protection to the market, and so facilitate confidence in RECs as a possible revenue source or return on the investment in renewable generation systems, it is recommended that some form of property rights should be recognized in RECs in California.

7. Conclusion

Senate Bill 107 has for the first time defined and authorized (but not adopted) tradable RECs in California legislation. This bill reflects a balance between increasing compliance flexibility for utilities under RPS obligations, with limits on the creation and trading of RECs to reduce concerns that RECs may undermine the RPS goals of developing more in-state renewable sources.

However, S.B. 107 should not be construed to prohibit or unduly limit the separate voluntary market for RECs. In addition, efforts to define and implement sufficient metering capabilities for renewable DG should be expedited, so that DG RECs may be sold into either the voluntary or compliance markets, or both. By facilitating the entry of DG RECs into an RPS compliance market as soon as possible after its adoption, possible concerns of environmental justice inherent in the RPS may be reduced, and DG owners will realize the greatest possible financial incentive toward the purchase of additional renewable generation capacity. In addition, the recognition of a property right in RECs is recommended to increase confidence in the market for tradable RECs, and so maximize their long-term value.

End Notes

[1] The last year in which the United States was reported to have the most cumulative installed solar PV by the International Energy Agency (IEA) was 1996. INTERNATIONAL ENERGY AGENCY, TRENDS IN PHOTOVOLTAIC APPLICATIONS, Report IEA-PVPS T1-15:2006 (2006), *available at* http://www.iea-pvps.org/products/download/rep1_15.pdf (last visited Nov. 29, 2006).

[2] The IEA reported in 2006 that the United States was substantially lagging behind Japan and Germany in 2005 in total solar PV capacity, with 479 megawatts installed versus the leader Germany's 1,429 megawatts installed. On a per capita basis, the United States was even further behind with a solar PV capacity of 1.62 watts/capita, while Germany was 17.31 watts/capita. *Id.*

[3] The World Wind Energy Association reported that in 2005 the U.S. had a total of 9,149 MW of wind generation capacity installed, while Spain had 10,027 MW and leader Germany had 18,428 MW installed capacity. World Wind Energy Association, http://www.wwindea.org/home/index.php (select information, then statistics) (last visited Jan. 20, 2007).

[4] *See* Energy Information Administration, Renewable Energy Annual 2004 Edition, http://www.eia.doe.gov/cneaf/solar.renewables/page/rea_data/rea_sum.html (last visited Mar. 10, 2007). The California Renewable Energy Resources Program defines eligible renewable sources slightly differently, as being "biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current" facilities, but excluding conventional large-scale hydroelectric. CAL. PUB. RES. CODE § 25741(b)(1) (West Supp. 2007).

[5] *See* Union of Concerned Scientists, Clean Energy, http://www.ucsusa.org/clean_energy/renewable_energy_basics/public-benefits-of-renewable-energy-use.html (last visited Mar. 10, 2007).

[6] California Public Utilities Commission Report to Legislature, Progress of the California Renewable Portfolio Standard, at 2 (Jan. 2006), http://www.cpuc.ca.gov/PUBLISHED/GRAPHICS/63854.pdf (last visited Mar. 10, 2007).

[7] *Id.* at 4.

[8] See California Energy Commission, Supporting Publications for 2005 Integrated Energy Policy Report, http://www.energy.ca.gov/2005_energypolicy/documents/reports_pub_number.html (last visited May. 10, 2007). Solar PV potential, limited to only commercial and residential rooftops, is estimated as 75,000 MW, while the technically feasible capacity of concentrated solar power stations is estimated at 1,061,361 MW in California. George Simons, California Solar Resources, CEC-500-2005-072-D, at 11, 19 (Apr. 2006). The technically developable potential of wind energy in California is estimated at 147,987 MW. Dora Yen-Nakafuji, California Wind Resources, CEC-500-2005-071-D, at 16 (Apr. 2006). The "most likely" California geothermal energy potential is estimated at 4,732 MW. Elaine Sison-Lebrilla, Valentino Tiangco, California Geothermal Resources, CEC-500-2005-070, at 8 (Apr. 2006). Likely biomass potential is estimated at 4,700MW in California, without dedicated crop production. California Biomass Collaborative, Biomass Resource Assessment in California, CEC-500-2005-066-D, at v (Apr. 2006). Total small hydropower and ocean wave potential is estimated at 9,642 MW in California. Mike Kane, California Small Hydropower and Ocean Wave Energy Resources, CEC-500-2005-074, at 1 (Apr. 2005). In 2003, the total summer energy capacity in California from all sources was 57,850 MW. Energy Information Administration, http://www.eia.doe.gov/cneaf/solar.renewables/page/state_profile/rsp_ca_table1.html (last visited Mar. 10, 2007).

[9] CALIFORNIA ENERGY ACTION PLAN, 5-9 (May 2003), http://www.cpuc.ca.gov/word_pdf/REPORT/28715.pdf (last visited Nov. 29, 2006) (naming two of the states six primary energy objectives as being acceleration of renewable generation goals and promotion of clean customer and utility owned distributed generation).

[10] The California RPS was originally defined in 2003 by Senate Bill 1078, and required the three large investor owned utilities in the state (Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric) to increase their procurement of electricity from eligible renewable sources by an additional one percent of retail sales each year, so that

20 percent of retail sales are from renewable sources no later than December 31, 2017. S.B. 1078 (Sher), Cal. 2001-2002 Sess., ch. 516 (*passed* Sept. 12, 2002, *effective* Jan 1, 2003), *available at* http://www.leginfo.ca.gov/bilinfo.html (last visited Nov. 29, 2006). In 2005, the California Public Utilities Commission (CPUC) took two actions to establish a more ambitious RPS goal. First, the number of utilities required to participate was increased with the addition of energy service providers, community choice aggregators, and small and multi-jurisdictional utilities. *See* Opinion on Participation of Energy Service Providers, Community Choice Aggregators, and Small and Multi-Jurisdictional Utilities in the Renewables Portfolio Standards Program, Decision 05-11-025, Proceedings on Rulemaking 04-04-026 (Cal. Pub. Util. Comm'n Nov. 18, 2005), *available at* http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov. 29, 2006). Second, the CPUC began to advance the 20 percent renewable energy target forward from the year 2017 to 2010 through its oversight of utility electricity procurement plans and contracts. *See* CALIFORNIA ENERGY ACTION PLAN, 5 (May 2003), *available at* http://www.cpuc.ca.gov/word_pdf/REPORT/28715.pdf (last visited Nov. 29, 2006). These more ambitious RPS objectives have now been codified by Senate Bill 107 of 2006. S.B. 107 (Simitian), Cal. 2005-2006 Sess., ch. 464 (*passed* Sept. 26, 2006, *effective* Jan. 1, 2007), *available at* http://www.leginfo.ca.gov/bilinfo.html (last visited Nov. 29, 2006). S.B. 107 advances the target date by which utilities should procure 20% of retail electricity sales from eligible renewable resources to the year 2010, and includes effectively all major utilities except local municipal utilities in the RPS mandate. *See* CAL. PUB. UTIL. CODE §§ 399.11-399.16 (West Supp. 2007).

[11] CAL. PUB. UTIL. CODE § 399.11(a) (West Supp. 2007).

[12] The CSI is a direct subsidy program to the purchasers of small solar generators. The CSI was originally adopted by regulatory action of the CPUC. *See* Interim Order Adopting Policies and Funding for the California Solar Initiative, Decision 06-01-024, Proceedings on Rulemaking 04-03-017 (Cal. Pub. Util. Comm'n Jan. 12, 2006). The CSI was then subsequently adopted by the legislature under Senate Bill 1 in 2006. *See* S.B. 1 (Murray), Cal. 2005-2006 Sess., ch. 132 (*passed* Aug. 21, 2006, *effective* Jan 1, 2007). The CSI is codified as CAL. PUB. RES. CODE §§ 25780-25784 and CAL. PUB. UTIL. CODE §§ 387.5, 2851 (West Supp. 2007).

[13] CAL. PUB. RES. CODE § 25780(a) (West Supp. 2007).

[14] Cal. Pub. Util. Comm'n Div. of Strategic Planning, Renewable Energy Certificates and the California Renewables Portfolio Standard Program 1 (April 20, 2006), http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov. 28, 2006) (discussing that geographic distribution of renewable resources, coupled with transmission constraints, will result in differing costs for utilities meeting their RPS obligations).

[15] The CSI authorizing statute states that incentives "shall decline each year following implementation of the California Solar Initiative, at a rate of no less than an average of 7 percent per year, and shall be zero as of December 31, 2016." CAL. PUB. UTIL. CODE § 2851(a)(1) (West Supp. 2007).

[16] *See* CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, § 1.2 (2003), http://resource-solutions.org/policy/TRChandbook/TRC_Handbook.htm (last visited Nov. 27, 2006).

[17] *See Supra* note 14.

[18] Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 28 (Cal. Pub. Util. Comm'n Jan. 11, 2007) (findings of fact no. 10), *available at* http://www.cpuc.ca.gov/static/documents/index.html (last visited Jan. 20, 2007).

[19] *See* CAL. PUB. UTIL. CODE §§ 399.13(b)-(c).

[20] Environmental justice is defined as the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation and enforcement of environmental laws, regulations and policies. CAL. PUB. RES. CODE § 71110(a) (West 2002).*See also* Environmental Justice Policy of California, http://resources.ca.gov/environmental_justic_policy_20031030.pdf (last visited Jan. 20, 2007).

[21] S.B. 107 (Simitian), Cal. 2005-2006 Sess., ch. 464 (*passed* Sept. 26, 2006, *effective* Jan. 1, 2007), *available at* http://www.leginfo.ca.gov/bilinfo.html (last visited Nov 29, 2006). S.B. 107 is codified in CAL. PUB. RES. CODE §§ 25620.1, 25740-46, 25751 and in CAL. PUB. UTIL. CODE §§ 387, 399.12-399.16.

[22] Voluntary purchasers of RECs are those who are not under a state-law imposed mandate, such as an RPS. *See infra* section 2.3.

[23] *See* U.S. Department of Energy Green Power Network, http://www.eere.energy.gov/greenpower (last visited Nov. 28, 2006).

[24] *Supra* note 16.

[25] The environmental benefits to the community at large from avoided pollution which would otherwise result from conventional power generation may be captured by the generator owner and sold as RECs. It should be noted that this definition is vague with respect to what specific pollution reduction benefits are actually captured in a REC and care should be exercised, particularly when some pollution reduction benefits may be captured in a separate tradable commodity, such as a tradable air pollution allowance credit or a greenhouse gas emission credit.

[26] The non-profit Center for Resource Solutions has compiled a handbook for state regulators that outlines basic principles and concepts of RECs or Tradable Renewable Certificates as they prefer. The handbook states that RECs are commonly used in "many different contexts for different purposes," and describes how RECs may be sold separately from electricity in different ways, or used as an accounting tool "to measure and track renewable generation." CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, § 1.2 (2003), http://resource-solutions.org/policy/TRChandbook/TRC_Handbook.htm (last visited Nov. 27, 2006).

[27] *Id.* § 1.3 (discussing use of tradable renewable certificates as an accounting and verification tool).

[28] *See* CAL. PUB. UTIL. CODE § 399.16(a)(2) (West Supp. 2007) (directing that RECs only be counted once for compliance with the RPS).

[29] In addition to Renewable Energy Credit, other names are sometimes used including Tradable Energy Credits, Renewable Energy Certificates, or Green Certificates. CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, §1.2 (2003).

[30] Unbundled tradable RECs may in principle be sold to utilities, either together with electricity or standalone, or also sold standalone to any other party who is not a grid-connected electrical service provider.

[31] In this example, by purchasing RECs the business could legitimately claim that it has used clean renewable electricity, even though the actual power delivered by the grid may come from conventional generation.

[32] The utility may own the generator itself, in which case any RECs created in-house could also potentially be tradable in downstream transactions under this model.

[33] One of the basic principles underlying RECs is that at any point in time only one entity may claim the environmental attributes of a given renewable generator output. Thus, if those environmental attributes are separated and sold to another party in the form of RECs, the remaining electricity becomes indistinguishable from any conventionally generated output. *See* CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, § 2.3.1 (2003); *See also* Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 27 (Cal. Pub. Util. Comm'n Jan 11, 2007) (findings of fact no. 8, stating that if generator owners transfer their RECs they can no longer make legitimate green claims).

[34] *See* Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 28 (Cal. Pub. Util. Comm'n Jan 11, 2007) (findings of fact no. 10 stating that RECs may potentially be sold for value into either a voluntary or a compliance market).

[35] For example, Whole Foods Market has become one of the largest voluntary purchasers of RECs to off-set its conventional electricity use, and so claim green bragging rights. Press Release, Whole Foods Market, Whole Foods Market Makes Largest Ever Purchase of Wind Energy Credits in United States (Jan. 10, 2006), http://www.wholefoods.com/company/pr_01-10-06.html (last visited Feb. 12, 2007).

[36] CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, § 1.3 (2003) (discussing use of tradable renewable certificates for retail marketers of green electricity products or as retail-only stand-alone products).

[37] For example, the City of Palo Alto Utility offers a voluntary REC green power program, with 14% of its residents participating as of early 2006. *See* http://www.cpau.com/programs/green/gindex.html (last visited Nov. 29, 2006).

[38] Supra note 10.

[39] A snapshot of some January 2007 market data found the offer price for voluntary RECs between $2.25 to $30.00 per MWh REC in different markets across the country. In the RPS compliance market, the price variability for RECs is even greater from state to state, depending upon state subsidies and specific RPS goals, varying from less than $1 per MWh REC to $270 per MWh REC. *See* Evomarkets, Monthly Market Update, http://www.evomarkets.com/mmu.

[40] This is analogous to the idea that if a party must supply 100 widgets locally, and only 50 widgets are available in the local area currently, the party must either import them or produce more locally, or some combination. In the same way, a utility that must supply a given quantity of renewable electricity must either produce that electricity locally, or import it via the transmission grid, or some combination of both. *See* CAL. PUB. UTIL. COMM'N DIV. OF STRATEGIC PLANNING, RENEWABLE ENERGY CERTIFICATES AND THE CALIFORNIA RENEWABLES PORTFOLIO STANDARD PROGRAM 1 (April 20, 2006) (discussing that geographic distribution of renewable resources, coupled with transmission constraints, will result in differing costs for utilities meeting their RPS obligations).

[41] Opinion on Participation of Energy Service Providers, Community Choice Aggregators, and Small and Multi-Jurisdictional Utilities in the Renewables Portfolio Standards Program, Decision 05-11-025, Proceedings on Rulemaking 04-04-026, 19 (Cal. Pub. Util. Comm'n Nov. 18, 2005) (stating that a possible advantage of tradable RECs may be a reduced need for reliance on congested transmission facilities to meet RPS goals).

[42] *Id.* at 19 (stating a possible advantage of tradable RECs is flexibility for project developers who may sell their output to multiple small buyers).

[43] Another possible advantage of tradable RECs is to facilitate utilities' efforts to meet RPS goals by accessing geographically distributed renewable potential, regardless of load location. *Id.*

[44] The marginal cost of production could be lower since more renewable electricity may be produced per dollar of capital investment and maintenance if the generator is sited in a more optimal location.

[45] *See Supra* note 18.

[46] For example, California offers direct incentive programs to assist homeowners and businesses to pay for a portion of a new renewable generator, the largest of which is the recently enacted California Solar Initiative, or CSI. Under the CSI, incentives provided for the purchase of solar distributed generation systems decrease each year, and eventually terminate. "The incentive level authorized by the commission shall decline each year following implementation of the California Solar Initiative, at a rate of no less than an average of 7 percent per year, and shall be zero as of December 31, 2016." Cal. Pub. Util. Code § 2851(a)(1) (West Supp. 2007).

[47] Cal. Pub. Util. Comm'n Div. of Strategic Planning, Renewable Energy Certificates and the California Renewables Portfolio Standard Program, 74 (April 20, 2006) (stating that eligibility of resources that deliver energy from out of state will produce fewer benefits that accrue to California).

[48] *Id.* at 17-18 (stating that RECs may result in ratepayers effectively subsidizing benefits accruing to others).

[49] CAL. PUB. RES. CODE § 25740.5(c) (West Supp. 2007).

[50] *Supra* note 20.

[51] *See generally* Ida Martinac, Comment, *Considering Environmental Justice in the Decision to Unbundle Renewable Energy Certificates*, 35 GOLDEN GATE U.L. REV. 491 (2005) (discussing the potential of tradable RECs in California to increase concerns of environmental justice).

[52] The CPUC has recently published a decision which discussed the future need for improved metering of small distributed generation in order to facilitate sale of RECs into an RPS compliance market. Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 25-26 (Cal. Pub. Util. Comm'n Jan 11, 2007).

[53] It is likely that the CPUC will adopt by regulation a shelf-life for RECs of as much as three years, to facilitate "flexible rules" for RPS compliance, which permit utilities to "apply excess procurement in one year to subsequent years or inadequate procurement in one year to no more than the following three years." CAL. PUB. UTIL. CODE § 399.14(a)(2)(C)(i) (West Supp. 2007). *See* CENTER FOR RESOURCE SOLUTIONS, REGULATOR'S HANDBOOK ON TRADABLE RENEWABLE CERTIFICATES, § 3.4 (2003) (discussing regulatory issues of banking tradable renewable energy credits). *See also* CAL. PUB. UTIL. COMM'N DIV. OF STRATEGIC PLANNING, RENEWABLE ENERGY CERTIFICATES AND THE CALIFORNIA RENEWABLES PORTFOLIO STANDARD PROGRAM, 75 (April 20, 2006) (discussing the need to revisit unlimited banking of tradable RECs).

[54] CAL. PUB. UTIL. CODE §§ 399.13(b)-(c).

[55] *See* Cal. Pub. Util. Comm'n Div. of Strategic Planning, Renewable Energy Certificates and the California Renewables Portfolio Standard Program 76 (April 20, 2006) (discussing the integration of tradable RECs with a system of paying for above market costs through supplemental energy payments).

[56] See Order Modifying Decision D.03-06-071 and Denying Rehearing of the Decision as Modified, Decision 03-12-065, Proceedings on Rulemaking 01-10-024, 10 (Cal. Pub. Util. Comm'n Dec. 18, 2003), available at http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov. 29, 2006) (stating a sensitivity to possible market manipulation after recent experience in the state).

[57] *See* Cal. Pub. Util. Comm'n Div. of Strategic Planning, Renewable Energy Certificates and the California Renewables Portfolio Standard Program, 77-78 (April 20, 2006) (stating that the migration to a fully tradable REC regime will absolutely require an electronic tracking system).

[58] CAL. PUB. UTIL. CODE § 399.16(a)(1) (West Supp. 2007).

[59] *See* WREGIS, http://www.westgov.org/wieb/wregis (last visited Nov. 29, 2006).

[60] Energy Policy Act, Pub. L. No. 109-58, 119 Stat 1144 (2005).

[61] Qualifying Facilities (QFs) are selected electricity generation facilities which are independent of a utility. The federal Public Utilities Regulatory Policies Act of 1978 (PURPA) directs states to certify certain cogeneration and independent electricity producers as "qualifying," and mandates that utilities purchase electricity from them via avoided cost contracts. Many QFs are renewable sources of electricity.

[62] Public Utilities Regulatory Policies Act, 16 U.S.C. § 824a-3 (2005) (cogeneration and small power production).

[63] American Ref-Fuel Co., para. 18, 105 FERC ¶61,004, 61007 (Oct. 1, 2003), *reh'g denied*, 107 FERC ¶ 61,016 (Apr. 15. 2004).

[64] *Id.* at para 23.

[65] *Id.* at para. 3.

[66] *See* S.B. 1078 (Sher), Cal. 2001-2002 Sess., ch. 516 (*passed* Sept. 12, 2002, *effective* Jan 1, 2003).

[67] See Order Initiating Implementation of the Senate Bill 1078 Renewable Portfolio Standard, Decision 03-06-071, Proceedings on Rulemaking 01-10-024 (Cal. Pub. Util. Comm'n Jun. 19, 2003) available at http://www.cpuc.ca.gov/static/documents/index.htm (last visited Jan. 20, 2007).

[68] Id. at 70 (conclusions of law No. 7).

[69] *Id.* (conclusions of law No. 8).

[70] *Id.* (conclusions of law No. 4).

[71] *Id.* (conclusions of law Nos. 7, 8).

[72] See Opinion Clarifying Participation of Distributed Generation in the Renewables Portfolio Standards Program, Decision 05-05-011, Proceedings on Rulemaking 04-04-026 (Cal. Pub. Util. Comm'n May 5, 2005), available at http://www.cpuc.ca.gov/static/documents/index.htm (last visited Jan. 20, 2007).

[73] Id. at 11 (order No. 2).

[74] See S.B. 107 (Simitian), Cal. 2005-2006 Sess., ch. 464 (passed Sept. 26, 2006, effective Jan. 1, 2007), available at http://www.leginfo.ca.gov/bilinfo.html (last visited Nov. 29, 2006).

[75] S.B. 107 impacts numerous sections of California code, with the relevant sections relating to RECs being CAL. PUB. RES. CODE §§ 25740-25746 and CAL. PUB. UTIL. CODE §§ 399.11-399.16.

[76] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007).

[77] CAL. PUB. UTIL. CODE § 399.12(g)(2) (West Supp. 2007). Health and safety code section 40709 provides that state air pollution control districts shall establish a system to register, certify and regulate banking of offset credits for the emission of air contaminants.

[78] By excluding previously defined tradable pollution credits, RECs will not impact the value of those certificates in emissions trading markets. This issue will almost certainly become a greater concern if California (and other states) adopt a carbon emissions trading scheme as part of a climate change control program. If credits to emit carbon become part of a cap and trade scheme, it will be necessary to determine how RECs will interact with that market. Conceptually, however, RECs may be considered the opposite of most traditional emission credits, since RECs are certificates that are created by avoiding the emission of pollutants, rather than a permit to allow a quantity of harmful emissions, which becomes tradable if not used by its owner.

[79] CAL. PUB. UTIL. CODE § 399.16(a)(7) (West Supp. 2007).

[80] CAL. PUB. UTIL. CODE § 399.16(a)(4) (West Supp. 2007).

[81] S. ENERGY, UTIL. AND COMMUNICATIONS COMM., BILL ANALYSIS, S.B. 107, 2005-2006 Sess. (Cal. Apr. 25, 2005), *available at* http://www.leginfo.ca.gov/bilinfo.html (last visited Nov. 29, 2006) (stating intended action of this bill, para. 2).

[82] CAL. PUB. UTIL. CODE § 399.12 (West Supp. 2007).

[83] Cal. Renewables Portfolio Standard Program, CAL. PUB. UTIL. CODE §§ 399.11-.17 (West Supp. 2007).

[84] CAL. PUB. UTIL. CODE § 399.16(a) (West Supp. 2007).

[85] *Supra* note 81.

[86] Whether, and how, S.B. 107 may affect the voluntary market for RECs is discussed later in this paper. *See Infra* section 4.

[87] CAL. PUB. UTIL. CODE § 399.16(a) (West Supp. 2007).

[88] CAL. PUB. UTIL. CODE § 399.16(a)(7) (West Supp. 2007).

[89] CAL. PUB. UTIL. CODE § 399.16(a)(9) (West Supp. 2007).

[90] Decision 07-01-018, *supra* note 18 (finding of fact no. 15).

[91] CAL. PUB. UTIL. CODE § 399.16(a) (West Supp. 2007).

[92] CAL. PUB. UTIL. CODE § 399.16(a)(1) (West Supp. 2007). The California Energy Commission has announced that WREGIS is intended to be that REC tracking system, which is expected to be operation in 2007. *See* http://www.westgov.org/wieb/wregis (last visited Nov. 29, 2006).

[93] CAL. PUB. UTIL. CODE § 399.13(b) (West Supp. 2007).

[94] CAL. PUB. UTIL. CODE § 399.16(a)(8) (West Supp. 2007). If supplemental energy payments [subsidies] are insufficient to cover all above market costs, utilities may limit their annual procurement of renewable resources to the level which can be purchased with available supplemental energy payments. CAL. PUB. UTIL. CODE § 399.15(b)(5) (West Supp. 2007). Utility ratepayers are assessed a "nonbypassbale system benefits charge" on their utility bill, part of which is placed in a renewable resources trust fund and which is referred to as the "renewable energy public goods charge." CAL. PUB. RES. CODE § 25741(d) (West Supp. 2007). Fifty-one and one-half percent of this renewable energy public goods charge is allocated to programs "to foster the development of new in-state renewable electricity generation facilities." CAL. PUB. RES. CODE § 25743(a) (West Supp. 2007). These funds are disbursed in the form of "supplemental energy payments" or SEPs that cover the above market costs of eligible renewable resources as approved by the CPUC. CAL. PUB. RES. CODE § 25743(b)(1) (West Supp. 2007).

[95] CAL. PUB. RES. CODE § 25743(b)(1)(G)(i) (West Supp. 2007).

[96] S. Energy, Util. and Communications Comm., Bill Analysis, S.B. 107, 2005-2006 Sess. (Cal. Apr. 25, 2005) (comments section para. 4, "Should ratepayers pay for RPS excesses?").

[97] CAL. PUB. UTIL. CODE § 399.16(b) (West Supp. 2007).

[98] The effort to balance compliance flexibility against concerns that RPS goals could be undermined by the excessive use of tradable RECs, is discussed in the legislative history of S.B. 107. S. ENERGY, UTIL. AND COMMUNICATIONS COMM., BILL ANALYSIS, S.B. 107, 2005-2006 Sess. (Cal. Apr. 25, 2005) (comments section para. 2, "[w]ill REC trading further the purposes of the RPS?").

[99] Id.

[100] Id.

[101] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007).

[102] CAL. PUB. UTIL. CODE § 399.12(a) (West Supp. 2007), *referring to* CAL. PUB. RES. CODE § 25741.

[103] CAL. PUB. RES. CODE § 25741(b)(1) (West Supp. 2007) (listing eligible renewable fuel sources).

[104] CAL. PUB. RES. CODE § 25741(b)(2)(A) (West Supp. 2007).

[105] Id.

[106] The Western Electricity Coordinating Council (WECC) coordinates and promotes electric system reliability and supports efficient competitive power markets among members, and includes the Canadian provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of 14 western states including all of California. See WECC, http://www.wecc.biz/ (last visited Jan. 5, 2007).

[107] CAL. PUB. RES. CODE § 25741(b)(2)(B) (West Supp. 2007). Additional eligibility criteria include meeting California environmental quality standards, and being a new generator that enters service after January 1, 2005. Alternatively, incremental generation from new expansion or repowering of a generator after January 1, 2005 may also be eligible as long as that generator meets all other eligibility requirements or if the generator was part of a utility's initial renewable baseline as calculated at the inception of the RPS program. CAL. PUB. RES. CODE § 25741(b)(2)(C) (West Supp. 2007).

[108] CAL. PUB. RES. CODE § 25741(a) (West Supp. 2007).

[109] CAL. PUB. RES. CODE § 25741(b)(2)(B)(iii) (West Supp. 2007).

[110] S. ENERGY, UTIL. AND COMMUNICATIONS COMM., BILL ANALYSIS, S.B. 107, 2005-2006 Sess. (Cal. Apr. 25, 2005) (comments section, para. 2). *See also* CAL. PUB. RES. CODE § 25740.5(c) (West Supp. 2007).

[111] CAL. PUB. RES. CODE § 25741(a) (West Supp. 2007).

[112] Id.

[113] CAL. PUB. RES. CODE § 25740.5(c) (West Supp. 2007).

[114] CAL. PUB. RES. CODE § 25741(a) (West Supp. 2007).

[115] CAL. PUB. UTIL. CODE § 399.16(a)(5) (West Supp. 2007).

[116] *Id.* This exception allows parties with the foresight to make an explicit agreement for the disposition of RECs to continue to honor their contractual agreement.

[117] Id.

[118] This limitation also has the benefit of avoiding an unexpected windfall to one party or another in a prior electricity purchase contract, who would unexpectedly find themselves the possessor of potentially valuable RECs. And since most prior electricity purchase contracts would be silent as to the disposition of RECs (given that RECs were not defined when many of these contracts were executed), the problem of which party (generator or utility) should retain the RECs and receive that windfall is also avoided. The exception for prior contracts that anticipated the advent of RECs and so explicitly address their disposition allows those parties to continue to honor their agreement without being penalized by this new statute.

[119] CAL. PUB. UTIL. CODE § 399.12(g)(3) (West Supp. 2007).

[120] Public Utilities Regulatory Policies Act, 16 U.S.C. § 824a-3 (2005) (cogeneration and small power production).

[121] CAL. PUB. UTIL. CODE § 399.16(a)(6) (West Supp. 2007).

[122] Unless an express term exists in the contract for the disposition of RECs. CAL. PUB. UTIL. CODE § 399.16(a)(5) (West Supp. 2007).

[123] Opinion Clarifying Participation of Distributed Generation in the Renewables Portfolio Standards Program, Decision 05-05-011, Proceedings on Rulemaking 04-04-026, n.3 (Cal. Pub. Util. Comm'n May 5, 2005) (stating that parties already had an opportunity to provide input to the Commission on the issue of RECs associated with QFs).

[124] *See* Edward A. Holt, Ryan Wiser & Mark Bolinger, Who Owns Renewable Energy Certificates? An Exploration of Policy Options and Practice, x-xiii (Ernest Orlando Lawrence Berkley National Laboratory LBNL-59965, April 2006), http://eetd.lbl.gov/ea/ems/re-pubs.html (last visited Nov. 28, 2006).

[125] CAL. PUB. UTIL. CODE § 399.16(a)(6) (West Supp. 2007).

[126] The deregulated California electricity market has several categories of utilities and non-utility electricity service providers, including a number of municipal utility districts which provide electric service to local residents. *See* California Energy Commission, Electric Utility Companies in California, http://www.energy.ca.gov/electricity/utilities.html.

[127] CAL. PUB. UTIL. CODE § 399.12(h)(4)(C) (West Supp. 2007).

[128] That is, a municipal utility may acquire RECs through electricity procurement from renewable generators, and then sell them unbundled to other utilities in the state who are under an RPS obligation.

[129] CAL. PUB. UTIL. CODE § 399.13(d) (West Supp. 2007).

[130] CAL. PUB. UTIL. CODE § 399.13(d)(1) (West Supp. 2007) *referring to* CAL. PUB. UTIL. CODE § 387.

[131] CAL. PUB. UTIL. CODE § 399.13(d)(2) (West Supp. 2007).

[132] CAL. PUB. UTIL. CODE § 399.14(a)(2)(D) (West Supp. 2007).

[133] CAL. PUB. UTIL. CODE § 399.16(a)(3) (West Supp. 2007).

[134] By consuming electricity for local needs at the point of generation, some portion of the output of a generator may be used in-house and so never delivered to a retail seller, local utility, or the Independent System Operation via the grid. It is important to note that this implied limitation may be overridden by CPUC regulatory action, and likely does not apply to small distributed generation (DG). The creation and ownership of DG RECs is discussed in more detail later in this paper. *See Infra* section 5.

[135] CAL. PUB. UTIL. CODE § 399.16(a)(4) (West Supp. 2007). It is not defined how exactly this revenue should be applied to benefit ratepayers, though this limitation would likely preclude the use of revenues from RECs toward a direct return to investors.

[136] CAL. PUB. UTIL. CODE § 399.16(a)(7) (West Supp. 2007).

[137] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007).

[138] CAL. PUB. UTIL. CODE § 399.16(a)(3) (West Supp. 2007).

[139] If the out-of-state utility was selling the RECs and the electricity to the same California utility, the RECs would effectively be bundled at the time of sale. But presumably the out-of-state utility may separate and sell unbundled RECs to one in-state utility, while at the same time selling the associated electricity to a different in-state utility, and still comply with the statute.

[140] The overall issue of DG production of RECs for the RPS compliance market is discussed later in this paper. *See Infra* section 5. The CPUC has identified a possible need for advanced metering of DG to facilitate compatibility with WREGIS in a recent decision. Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 30 (Cal. Pub. Util. Comm'n Jan 11, 2007) (conclusions of law no. 7).

[141] Supra note 98.

[142] *Supra* section 2.3.

[143] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007).

[144] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007); *See also* CAL. PUB. UTIL. CODE § 399.16(a)(1) (West Supp. 2007). A state government supervised tracking system, like WREGIS, will issue RPS-eligible RECs and track them from birth to retirement to ensure no double counting. In the voluntary market, a private organization typically fulfills a somewhat similar role by certifying the creation of RECs, and also independently verifying the renewable status of the generators. One of the largest certification programs for the voluntary REC market is the green-e program, operated by the Center for Resource Solutions. *See* http://www.green-e.org (last visited Nov. 28, 2006). It should be noted that for small distributed generation, REC creation for the voluntary market is often just estimated based on the placarded theoretical capacity of the generator, rather than its actual output, since meters to measure total production are typically not installed (DG is typically metered only at the interconnect to the grid to measure any net electricity use). This lack of metering capability is a hurdle for the participation of DG in the RPS compliance market, which requires more accurate REC accounting to comply with S.B. 107.

[145] CAL. PUB. UTIL. CODE § 399.16(a)(3) (West Supp. 2007).

[146] CAL. PUB. UTIL. CODE § 399.12 (West Supp. 2007); *See also* CAL. PUB. UTIL. CODE § 399.16(a) (West Supp. 2007).

[147] Supra note 81.

[148] See Opinion Clarifying Participation of Distributed Generation in the Renewables Portfolio Standards Program, Decision 05-05-011, Proceedings on Rulemaking 04-04-026 (Cal. Pub. Util. Comm'n May 5, 2005).

[149] *Id* at 20.

[150] Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 20 (Cal. Pub. Util. Comm'n Jan 11, 2007).

[151] *Id.* at 28 (finding of fact no. 10).

[152] *Id.* at 4.

[153] *Id.* at 18 (stating "we agree that RECs could have significant value and may play a critical role in decisions to invest in renewable DG").

[154] CAL. PUB. UTIL. CODE § 399.11(b) (West Supp. 2007) (stating a policy goal of the RPS as "[i]ncreasing California's reliance on eligible renewable energy resources.").

[155] *See* CALIFORNIA ENERGY ACTION PLAN, 5-9 (May 2003), *available at* http://www.cpuc.ca.gov/word_pdf/REPORT/28715.pdf (last visited Nov. 29, 2006) (naming two primary energy

objectives as being acceleration of renewable generation goals and promotion of clean distributed generation); *See* CAL. PUB. RES. CODE § 25780(a) (West Supp. 2007) (stating goals of the California Solar Initiative).

[156] Decision 05-05-011, supra note 72, at n.1 (defining DG as a parallel or stand-alone electric generation unit located at or near the point of consumption, and connected to the grid).

[157] CAL. PUB. UTIL. CODE § 399.12(h)(4)(A) (West Supp. 2007), *referring to* CAL. PUB. UTIL. CODE § 218(b).

[158] CAL. PUB. UTIL. CODE § 399.14(a)(2)(D) (West Supp. 2007).

[159] The net metering program was first authorized in statute by S.B. 656 in 1995. Net metering is currently codified as CAL. PUB. UTIL. CODE § 2827 (West Supp. 2007).

[160] CAL. PUB. UTIL. CODE § 2827(a) (West Supp. 2007).

[161] *See* CAL. PUB. UTIL. CODE § 2827(h) (West Supp. 2007).

[162] CAL. PUB. UTIL. CODE § 2827(h)(1) (West Supp. 2007).

[163] The two steps would be an interconnect agreement and a separate net metering tariff agreement. For example, Pacific Gas & Electric has both a Net Metering Tariff Application, available at http://www.pge.com/tariffs/pdf/E79-994.pdf, and also an Interconnect Agreement available at http://www.pge.com/tariffs/pdf/E79-854.pdf (last visited Nov. 29, 2006). The Southern California Edison Net Metering Agreement is available at http://www.sce.com/NR/rdonlyres/9E7322FD-8B22-4C16-B4C2-08323227A2D3/0/NEMeFormUnder10kWAgreement.pdf (last visited Nov. 29, 2006). The San Diego Gas & Electric Interconnect Agreement is available at http://www.sdge.com/business/NEM%20Agreement.pdf (last visited Nov 29, 2006).

[164] *Id.*

[165] *See* CAL. PUB. UTIL. CODE § 2827 (West Supp. 2007).

[166] CAL. PUB. UTIL. CODE § 2827(h)(3) (West Supp. 2007).

[167] CAL. PUB. UTIL. CODE § 399.14(a)(2)(D) (West Supp. 2007).

[168] Decision 05-05-011, *supra* note 72, at 11 (order no. 2).

[169] *Id.* at 4.

[170] *See* Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 30 (Cal. Pub. Util. Comm'n Jan 11, 2007), *available at* http://www.cpuc.ca.gov/static/documents/index.html (last visited Jan. 20, 2007).

[171] CAL. PUB. UTIL. CODE §§ 379.5-379.6 (West 2004). *See also* Order to Modify the Self Generation Incentive Program and Implement Assembly Bill 1685, Decision 04-12-045, Proceedings on Rulemaking 04-03-017 (Cal. Pub. Util. Comm'n Dec. 16, 2004) *available at* http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov 29, 2006).

[172] The California Solar Initiative (CSI) was originally adopted by CPUC rulemaking. *See* Interim Order Adopting Policies and Funding for the California Solar Initiative, Decision 06-01-024, Proceedings on Rulemaking 04-03-017, (Cal. Pub. Util. Comm'n Jan.12, 2006), http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov 29, 2006). The CSI was later enacted legislatively with minor changes by S.B. 1 passed in 2006. *See* S.B. 1 (Murray), Cal. 2005-2006 Sess., ch. 132 (*passed* Aug. 21, 2006, *effective* Jan. 1, 2007), *available at* http://www.leginfo.ca.gov/bilinfo.html (last visited Nov 29, 2006). The portions of S.B. 1 that enact the CSI have been codified into the CAL. PUB. RES. CODE §§ 25780-25784, and also CAL. PUB. UTIL. CODE §§ 387.5, 2851.

[173] All investor owned utilities in California use essentially the same SGIP contract. The Pacific Gas & Electric 2006 SGIP contract form is available at http://www.pge.com/docs/pdfs/suppliers_purchasing/new_generator/incentive/2006_SGIP_Contract-r0-060127.pdf (last visited Nov. 29, 2006). The Southern California Edison 2006 SGIP contract is available at http://www.sce.com/RebatesandSavings/SelfGenerationIncentiveProgram/2006Handbook.htm (last visited Nov. 29,

2006). A sample San Diego Gas & Electric SGIP agreement is available from the San Diego Regional Energy Office at http://www.sdenergy.org/uploads/SDREO_2006_Sample_Contract.pdf (last visited, Nov. 29, 2006).

[174] Decision 07-01-018, *supra* note 170, at 10.

[175] An implied-in-law contract provision is defined as "[a]n obligation created by law for the sake of justice; specifically an obligation imposed by law because of some special relationship between [the parties], or because one of them would otherwise be unjustly enriched." Black's Law Dictionary, 345 (8th ed. 2004). It is an agreement imposed by the law regardless of the intentions of the parties. Because of this lack of agreement or intent, an implied-in-law provision is an obligation created by law and so is often referred to as a quasi-contract rather than a true contract. See Weitzenkorn v. Lesser, 40 Cal. 2d. 778, 794 (1953). For example, in California, "[t]here is an implied covenant of good faith and fair dealing in every contract," which is held to be "an expression of public policy" in California. Spindle v. Travelers Ins., 66 Cal. App. 3d 951, 958-9 (1977). Thus, obligations implied-in-law and imposed on contracting parties are generally those required to uphold public policy interests. Thus, regulators who are considering whether renewable DG subsidy contracts may imply-in-law a transfer of RECs to utilities must consider relevant public policy goals, including avoiding any possible unjust enrichment of either party

[176] Decision 07-01-018, *supra* note 170, at 22.

[177] In a loose analogy, the grid can be thought of as a large battery for net metered generators, where excess production is temporarily stored, and then recalled and consumed at times when local generation does not meet local needs.

[178] CAL. PUB. UTIL. CODE § 2827(g) (West Supp. 2007).

[179] For example, utilities may avoid capital costs of building new generation or transmission infrastructure, or reduce fossil fuel costs.

[180] Such benefits include stimulating industry growth and creating jobs, or enhancing diversity in the energy supply, or reducing public health costs through cleaner air.

[181] Decision 07-01-018, *supra* note 170.

[182] *Id.* at 29 (conclusions of law no. 2).

[183] *Id.* at 30 (conclusions of law no. 3).

[184] *Id.* at 29 (findings of fact nos. 20-21).

[185] *Id.* (findings of fact no. 23).

[186] The Renewable Energy Resources Program is a funding mechanism for various programs to help increase the amount of electricity generated from renewable sources. More than half of the money collected is allocated for payments to utilities to subsidize above market costs of the RPS program, while ten percent is allocated toward renewable DG purchase subsidies under the Emerging Renewables Program. *See* CAL. PUB. RES. CODE §§ 25740 – 25751 (West Supp. 2007). The Emerging Renewables Program is now being incorporated into the CSI. *See* CAL. PUB. RES. CODE § 25744.5 (West Supp. 2007); *See also* CAL. PUB. UTIL. CODE § 2851(e)(3) (West Supp. 2007);

[187] CAL. PUB. RES. CODE § 25747(c) (West 2004).

[188] Decision 05-05-011, *supra* note 72, at 11 (order No. 2).

[189] *Id.* at 5.

[190] Decision 07-01-018, *supra* note 170, at 10. Fairly calculating a relative share of ownership afforded by a subsidy would necessitate determining the ratio of ratepayer financial input to the creation of RECs as compared to the input by the DG owner. This is complex because the subsidy may purchase more than just the environmental attributes captured in the RECs. For example, the statute authorizing CSI subsidies states an environmental goal of pollution reduction, an economic goal of establishing a self-sufficient solar industry, and energy consumer goals of avoiding ratepayer costs for peak-rate generation and realizing additional system reliability. CAL. PUB. RES. CODE § 25780(b) (West Supp. 2007). Thus, it would be necessary to decide what portion of the subsidy should be allocated to the environmental benefits that are later captured in the RECs versus the portion of the subsidy that paid for other benefits which are not part of the

REC (i.e., economic and consumer benefits). This would necessarily be a subjective determination. In addition, the level of subsidies provided changes with time, and the purchase and installation costs input by the DG purchaser would also be highly variable. This would create considerable administrative hassles in tracking and accounting for the ratepayer-funded share of RECs produced from each individual DG system. Thus, there is no clear objective basis for determining the relative share of RECs that each party has paid, and the hassles of accounting makes fair apportionment highly impractical.

[191] Decision 07-01-018, *supra* note 170, at 30 (conclusions of law no. 3).

[192] *Id.* at 16.

[193] *Id.* at 2.

[194] *Id* at 16.

[195] *Id.* at 3.

[196] It is important to note that while this discussion focuses on the policy of the CSI for a self-sustaining *solar* industry, the same rationale exists for any type of DG (wind power, etc.). If those other (non-solar) renewable sources are to become self-sustaining just as solar, then retaining RECs and being able to sell them is an important source of funds for the generator owner. This decision should not be read as strictly limited to solar DG only. It is merely that the CSI is a recent and very large program, so its goals are in the forefront of the policy considerations in the state. Further, the order presented in this CPUC decision explicitly states that owners of "Renewable Distributed Generation" shall own all RECs, not just solar DG. Decision 07-01-018, *supra* note 170, at 31 (order no. 1).

[197] Decision 07-01-018, *supra* note 170, at 18.

[198] *Id.*

[199] *Id.*

[200] *Id.* at 28 (findings of fact nos. 11, 14, 16).

[201] *Id.* (findings of fact no. 13). Subsidies today are often structured as a lump sum paid when a generator is purchased, calculated as a specified dollar amount per unit of installed generating capacity. Such an incentive helps to pay for the purchase of the generator, but is a one-time event and gives no incentive to the owner to actually use the generator on an ongoing basis. A performance-based incentive, however, is structured to pay the incentive over time as the generator is used in service. Thus, the generator owner has an incentive to keep the generator working.

[202] *Id.* (findings of fact no. 12).

[203] *Id.* at 25.

[204] *Id.* at 28 (findings of fact no. 15).

[205] CAL. PUB. UTIL. CODE § 399.16(a)(1) (West Supp. 2007).

[206] Decision 07-01-018, *supra* note 170, at 25-26.

[207] *Id.* at 30 (conclusions of law no. 7).

[208] CAL. PUB. UTIL. CODE § 399.12(g)(1) (West Supp. 2007).

[209] Customer side of the meter in this context refers to generated electricity that is consumed in-house, so never passes to the grid-side of the meter. Interim Opinion on Order Instituting Rulemaking to Establish Policies and Cost Recovery Mechanisms for Generation Procurement and Renewable Resource Development, Decision 02-10-062, Proceedings on Rulemaking 01-10-024, 21 (Cal. Pub. Util. Comm'n Oct. 24, 2002).

[210] Decision 07-01-018, *supra* note 170, at 29 (conclusions of law no. 1).

[211] This measurement at the grid interconnect is required for calculating net metering credits.

[212] Accurate metering of actual RECs produced by the DG not only could be used to satisfy the requirements of S.B. 107 for the RPS compliance market, it could also improve the accuracy of any RECs sold into the voluntary market as well. Today, without such metering, the potential "nameplate capacity" of small DG is sometimes used to estimate production of RECs for the voluntary market. But with an accessible meter, a commercial consolidator or verification service could accurately measure actual RECs produced for the voluntary market, just as a utility would be able to read and report actual RECs for the RPS compliance market via WREGIS as required by S.B. 107.

[213] *Supra* note 20.

[214] Decision 05-05-011, supra note 72.

[215] Cal. Pub. Util. Comm'n Div. of Strategic Planning, Renewable Energy Certificates and the California Renewables Portfolio Standard Program 77-78 (April 20, 2006) (stating that the migration to a fully tradable REC regime will absolutely require an electronic tracking system). *See also* Cal. Pub. Util. Code § 399.16(a)(1) (West Supp. 2007).

[216] Clearly, enforceable rights in RECs may be important to both the compliance and the voluntary markets. But these rights may be especially needed in the voluntary market, given the absence of WREGIS, and also the limited regulatory oversight of market participants (the CPUC role will be very much diminished as utilities will generally not be participating in the voluntary market). Note that private organizations can and do offer certification and verification of RECs in the voluntary market, but such programs are not mandatory or regulated. For example, *See* Center for Resource Solutions, Green-e Program, http://www.green-e.org (last visited Nov. 28, 2006).

[217] For example, a generator could attempt to 'double sell' some given RECs to both markets at the same time.

[218] CAL. PUB. UTIL. CODE § 399.14(a)(2)(D) (West Supp. 2007).

[219] For example, RECs may be sold in a bulk quantity from a consolidator to a commercial business in a contractual transaction. At the same time, RECs may also be offered in a retail sales model to a large number of consumers who might wish to purchase a green power product for their home electricity consumption. Thus, the voluntary market is typically a mix of retail and contractual transactions.

[220] For example, New York has decided that electricity is a service and so contracts are interpreted under contract common law. *See* Bowen v. Niagara Mohawk Power Corp., 590 N.Y.S.2d 628 (1992) (holding that the provision of electricity is a service in the context of a product liability issue).

[221] CAL. COMM. CODE § 2105 (West 2006).

[222] Baldwin-Lima-Hamilton Corp. v. Super. Ct., 208 Cal. App. 2d. 803, 819 (1962) (holding that "[e]lectricity is a commodity which, like other goods, can be manufactured, transported and sold").

[223] Puget Sound Energy v. Pacific Gas & Elec., 271 B.R. 628, 640 (N.D. Cal. 2002).

[224] See the California Department of Consumer Affairs for a listing of significant state and federal consumer protection laws at http://www.dca.ca.gov/legal/m-1.html (last visited Nov. 29, 2006).

[225] CAL. BUS. & PROF. CODE § 17200 et seq. (West 1997). To the extent unfair competition laws are not preempted by federal law, they may be applied to transactions in the voluntary market. The Federal Energy Regulatory Commission decided RECs find their authority solely in state law, so no preemption should exist. *See supra* note 63.

[226] CAL. BUS. & PROF. CODE § 17500 (West 1997).

[227] CAL. BUS. & PROF. CODE § 17500 (West 1997).

[228] CAL. BUS. & PROF. CODE § 17203 (West Supp. 2004).

[229] CAL. BUS. & PROF. CODE §§ 17206-17207 (West 1997).

[230] CAL. BUS. & PROF. CODE §§ 17200 (West 1997).

[231] Two conceptual frameworks for property ownership of RECs may exist. First, a REC may be considered a thing of value created from the use of tangible personal property, specifically from the use of renewable generator equipment.

Under California property law, any created value or increase in personal property derived from the use of personal property is itself the exclusive possession of the property owner under the doctrine of accessions. See generally Cal. Civ. Code §§ 1025-30 (West 2006) (defining property by accession in California). In other words, the owner of a thing also owns everything it produces. Cal Civ Code § 732 (West 2006).

Another possible framework for property rights is the doctrine of capture, often applied to natural resources. In California, the owner of real property where a natural resource is found has the exclusive right to develop that resource, but only gains title to the resource as personal property to the extent it is captured or severed from the land. For example, oil and gas become personal property only when it is brought to the surface and reduced to possession. Pacific Gas & Elec. Co. v. Zuckerman, 189 Cal. App. 3d 1113, 1137-38 (1987).

These principles may be applied to RECs. By definition, RECs will only come into existence from the use of generation equipment (somebody's personal property) that captures the solar, wind, geothermal or other qualifying resource from the natural environment on somebody's land. To the extent that RECs are recognized by law as a thing that can be bought, sold, or traded, then RECs should also be owned by the owner of the generator. If a third-party owns the generator being used on another's land (e.g., if a generator is leased), a term can be included in the lease agreement to recognize any respective ownership shares or royalties in the value produced by the generator, including RECs.

[232] Cal. Civ. Code § 654 (West 2006) (stating "the ownership of a thing is the right of one or more persons to possess and use it to the exclusion of others . . . [T]he thing of which there may be ownership is called property.").

[233] Opinion Adopting Methods to Determine the Renewable Energy Credits from Renewable Distributed Generation, Decision 07-01-018, Proceedings on Rulemaking 06-03-004, 30 (Cal. Pub. Util. Comm'n Jan 11, 2007) (conclusions of law no. 3).

[234] 42 U.S.C.A. § 7651b(f) (West 2006) (stating "An allowance allocated under this subchapter is a limited authorization to emit sulfur dioxide . . . [s]uch allowance does not constitute a property right.").

[235] See the South Coast Air Quality Management District Web site at http://www.aqmd.gov/reclaim/reclaim.html (last visited Nov. 22, 2006).

[236] Cal. Health & Safety Code § 39616 (West 2006).

[237] South Coast Air Quality Management District, Rule 2007(b)(3) (*adopted* October 15 1993, *as amended* May 6 2005), http://arb.ca.gov/drdb/sc/curhtml/r2007.pdf (last visited Nov. 29, 2006).

[238] *Id.* at Rule 2007(b)(4).

[239] Restatement (Second) of Torts § 217 (1965)

[240] *See* BLACKS LAW DICTIONARY, 356 (8th Ed. 2004).

[241] Mears v. Crocker First Nat. Bank of San Francisco, 84 Cal. App. 2d. 637, 644 (1948).

[242] Payne v. Elliot, 54 Cal. 339, 342 (1880). See also Mears v. Crocker First Nat. Bank of San Francisco, 84 Cal. App. 2d. 637, 644 (1948).

[243] For example, if a utility were to misappropriate RECs from a renewable generator to comply with a part of its RPS obligation, when in fact no RPS electricity purchase agreement or other REC transfer agreement existed, the true owner (such as the generator) of those RECs would be deprived of rightful possession outside of the context of a contractual transaction. Another possible scenario might be a retail marketer claiming possession and selling RECs from a DG owner as part of a green energy offering to retail or business consumers, without a valid contract transferring those RECs from the true owner. Property law would give that true owner a cause of action.

[244] In other words, if a REC is property, then a government law or regulatory action which condemns or forces the sale of those RECs without just compensation to the owner could potentially be an unconstitutional taking. U.S. CONST. amend. V. It should be noted that the CPUC has stated it believes no unconstitutional taking occurs by requiring RECs to be bundled with a sale of electricity to a utility, since the generator is not obligated to participate in selling their output under the RPS program at all, and if they chose to do so they may price their combined output to include the value of the RECs in any manner the market for electricity will bear. Order Initiating Implementation of the Senate Bill 1078

Renewable Portfolio Standard, Decision 03-06-071, Proceedings on Rulemaking 01-10-024, 15 (Cal. Pub. Util. Comm'n Jun. 19, 2003), *available at* http://www.cpuc.ca.gov/static/documents/index.htm (last visited Nov. 29, 2006).