

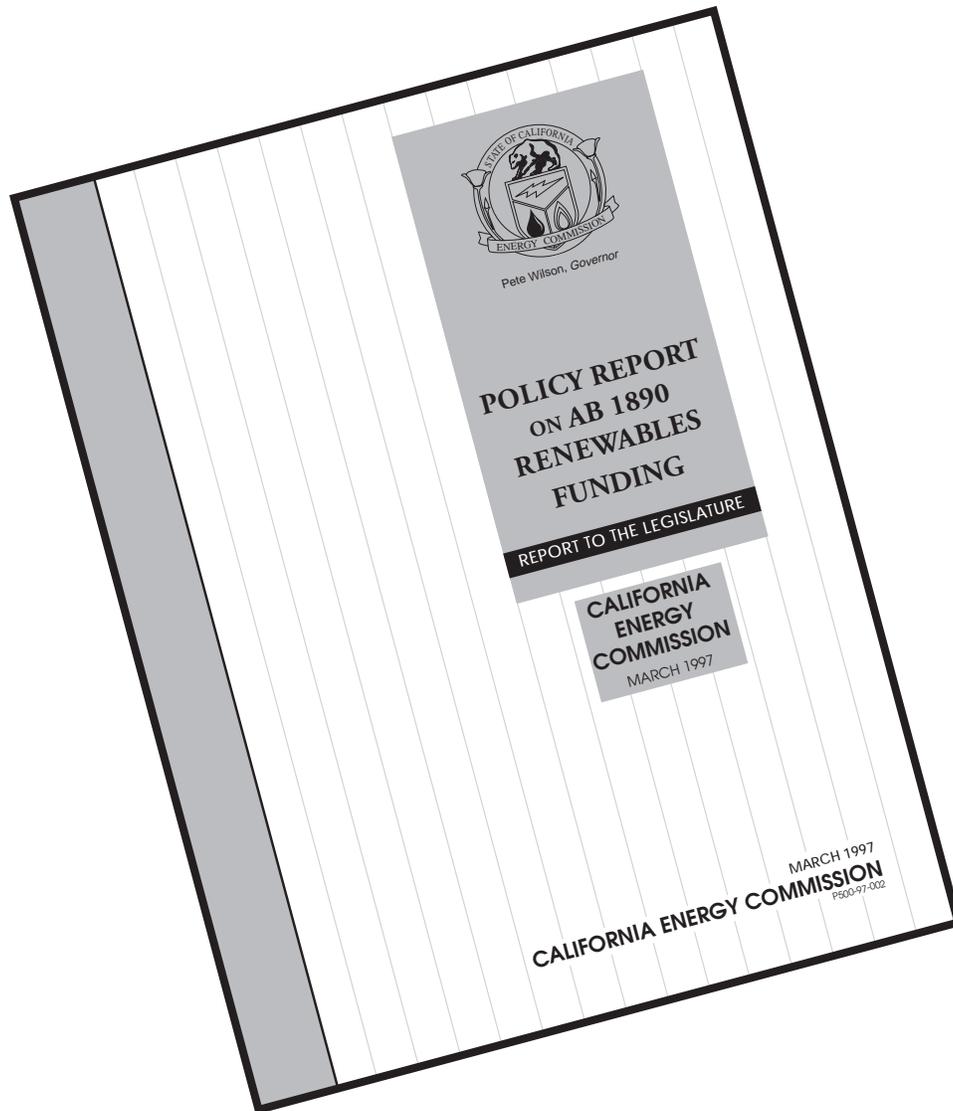


Pete Wilson, *Governor*

**POLICY REPORT  
ON AB 1890  
RENEWABLES  
FUNDING**

**REPORT TO THE LEGISLATURE**

**CALIFORNIA  
ENERGY  
COMMISSION**  
MARCH 1997



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This report was prepared by the California Energy Commission's Renewables Program Committee and is consistent with the objectives of AB 1890. The Commission adopted the views and policy recommendations contained in this report by a unanimous vote on March 20, 1997.

This report represents the conceptual policy framework rather than the details necessary to implement policies. Future procedures are expected to include changes that are necessary to effectively carry out these policies and any further Legislative guidance.

# **ACKNOWLEDGEMENTS**

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# EXECUTIVE SUMMARY

## BACKGROUND

Assembly Bill 1890 (AB 1890), enacted on September 23, 1996, deregulated the electricity industry and established broad funding and allocation guidelines for support of renewable electricity generation technologies over the period 1998 through 2001. The legislation directs the California Energy Commission (Energy Commission) to report to the Legislature by March 31, 1997, with recommendations for allocating funds for the support of renewable energy technologies. This report responds to the requirements of AB 1890.

AB 1890 directs the collection of \$540 million from existing investor-owned utility (IOU) ratepayers from 1998 to 2002 to support existing, new, and emerging renewable electricity generation technologies. The legislation directs the California Public Utilities Commission (CPUC) to transfer these funds to the California Energy Commission pending further administrative and expenditure criteria guidelines from the Legislature. Funds are to be used to:<sup>1</sup>

- 1) Support the operation of existing and the development of new and emerging in-state renewable resources
- 2) Support the operations of existing renewable technologies that provide fire suppression benefits, reduce landfill materials, and mitigate open-field agricultural burning
- 3) Support the operations of existing innovative solar thermal technologies that provide peak generation and reliability benefits

AB 1890 directs the Energy Commission to report to the Legislature by March 31, 1997, with recommendations regarding *market-based mechanisms* to allocate the funds. The programs recommended should include options and implementation mechanisms that:<sup>2</sup>

- 1) Reward the most cost-effective renewable generation
- 2) Implement a process for certifying renewable resource providers
- 3) Allow customers to receive a rebate from the renewables fund
- 4) Allocate at least 40 percent of total funds to existing and at least 40 percent to new and emerging renewables

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<sup>1</sup> Article 7, 383.a.

<sup>2</sup> Article 7, 383.b.

- 5) Use financing and other mechanisms to maximize the effectiveness of the available funds

The legislation also requires that the report include consideration of:<sup>3</sup>

- 1) The need for mechanisms to ensure that cogeneration using energy from environmental pollution in its process and microcogeneration with a total generating capacity of less than one megawatt (MW) remain competitive
- 2) Whether fuel cells should be treated as fuel switching under the legislation, and therefore be eligible to avoid the CTC

Finally, AB 1890 directs three policies that are related to but not fully addressed in this report:

1) IOUs are required to allow customers to make voluntary contributions to support renewables.<sup>4</sup> 2) Municipal utilities are directed to collect funds for public-purpose programs, including new investment in renewable resources.<sup>5</sup> 3) The California Environmental Protection Agency (CalEPA) is required to submit a report to the Legislature by March 31, 1997, that evaluates benefits of the solid-fuel biomass industry and recommends cost-shifting strategies. The legislation also requires coordination between the CalEPA and the Energy Commission's renewable policy efforts.<sup>6</sup>

The Energy Commission began collecting input from stakeholders with an En Banc Hearing on October 16, 1996. This hearing was followed by a series of five Renewables Program Committee (Committee) and staff workshops during November and December. Stakeholders presented proposals on the allocation of funds to the broad technology status categories and to specific technologies, mechanisms for distributing the funds, and certification issues. A Staff Report based in part on information presented by participants during these earlier workshops was distributed to participants for public comments on January 4, 1997, and public input on the Staff Report was received at a Committee Hearing on January 16, 1997. The Committee then developed a Committee Draft Report based upon the review of comments from the January 16 hearing and subsequent written comments. The Committee held a hearing February 27 to receive input on the Committee Draft, and comments from that hearing were incorporated into this Final Report, which was adopted by the Energy Commission on March 20, 1997.

## **ALLOCATION OF FUNDS**

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<sup>3</sup> Article 7, 383.c.

<sup>4</sup> Article 7, 381.d.

<sup>5</sup> Article 8, 385.a.

<sup>6</sup> Article 9, 389.

Participants in the Energy Commission’s proceedings presented proposals with widely varying implications for the renewables industry. A coalition comprised of most of the established renewable industries proposed allocating 60 percent to existing facilities, with support tied to market clearing prices and funds rolled over to other categories if not needed. Other proposals gave a substantial portion of the funds to emerging technologies or for the marketing of renewables directly to customers.

The Energy Commission evaluated these proposals in relation to the objectives of AB 1890 and developed the allocation strategy summarized in Figure ES-1. The Energy Commission recommends that AB 1890 renewables funding flow through four accounts, designed to provide balanced support for the renewables industry and satisfy the objectives of AB 1890. Each technology status category (existing, new, and emerging) is assigned an account. A fourth account, the consumer-side account, is designed to help develop a consumer-driven market for renewable generation. While the Energy Commission seeks to encourage the development of a consumer-driven market for renewables, the fate of the existing renewables industry should not rest wholly with the consumer market until that market has proven viable. A balance of support to existing and new suppliers is needed to ensure that suppliers will be around to provide renewable power to those consumers who desire it when the consumer market develops.

The existing technologies account is initially allocated 45 percent of the \$540 million for the support of existing renewables (with the provision that these funds may rollover to other uses if not needed). The proposal aims to maintain the benefits of the renewables industry by providing support that reflects industry needs, while encouraging movement towards a competitive market by the end of the AB 1890 funding period. Movement towards market-based competition is encouraged by phasing down funding over the four years and by allocating support to three broad tiers, rather than specific technology allocations. The first tier is allocated 25 percent of the funds, the second tier 13 percent, and the third tier 7 percent (totaling 45 percent for the entire account).

Of the 40 percent minimum AB 1890 allocates to new and emerging technologies, the new technologies account is allocated 30 percent of the funds and the emerging technologies account receives 10 percent (additional funds may become available from the existing account rollover). The Energy Commission recognizes that new renewable generation developed with AB 1890 support must eventually be competitive in the power exchange or the direct access market.<sup>7</sup> The proposal provides neither specific technology allocations nor tiers for new renewables; rather, it sets up competitive bidding mechanisms to reward the most competitive and cost-effective new renewable generation without administratively specifying technologies to be supported.

The remaining 15 percent of the funds is allocated for use in the development of a consumer-driven renewables market. The customer credit subaccount is allocated 14 percent of the

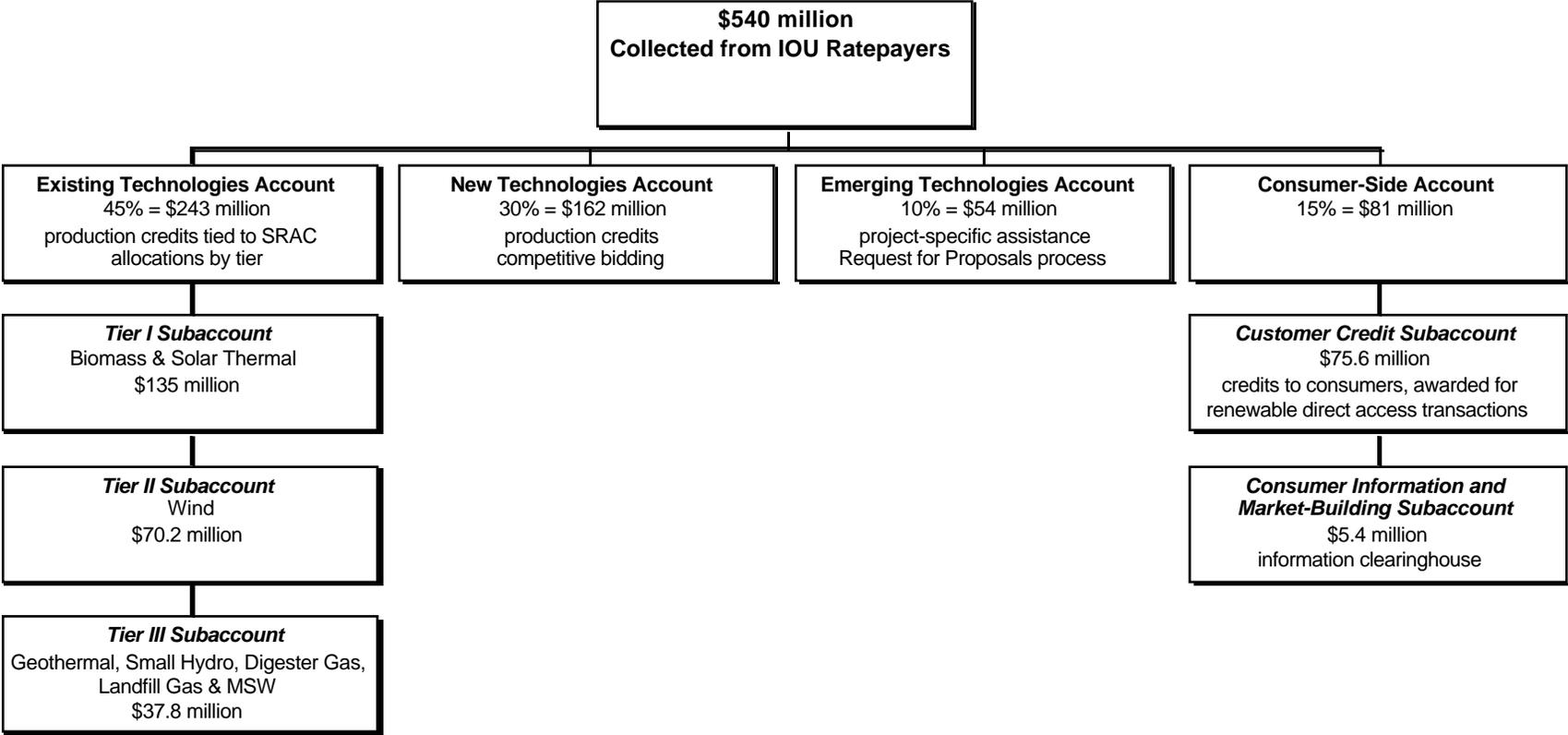
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<sup>7</sup> The term “direct access market” is used in this report to refer to both physical direct access transactions and contracts for differences.

consumer funds, which will be returned as a bill credit to consumers who purchase renewable energy from either existing, new, or emerging technologies. One percent of the funds is allocated to the consumer information and market building subaccount.

Allocations between accounts are varied over time (see Table ES-1 and Figure ES-2), while maintaining the overall allocations given previously. Funding to the existing technologies account ramps down, while funding to the new technologies account and the consumer-side account ramp up. The existing account ramps down because existing technologies must become increasingly cost-effective over the transition period and the market clearing price may increase over time, reducing the need for funding. The allocations for the new technologies and customer credit accounts increase over time because there are expected to be fewer projects and providers eligible for these funds in the early years than in the later years.

**Figure ES - 1: Proposed Allocation of AB 1890 Renewables Funds**

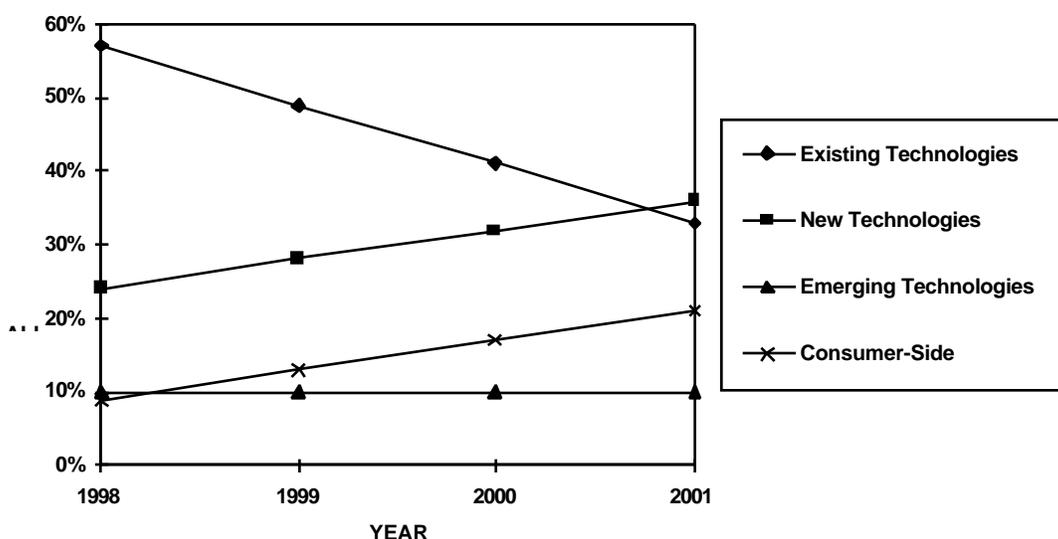


**Table ES - 1: AB 1890 Accounts - Allocations by Year**

Account	1998	1999	2000	2001	overall
Existing Technologies	57%	49%	41%	33%	45%
New Technologies	24%	28%	32%	36%	30%
Emerging Technologies	10%	10%	10%	10%	10%
Customer-Side	9%	13%	17%	21%	15%

Funds roll over within the same account when not needed, potentially increasing available funds in later years. The Energy Commission is assuming that funds will be collected from utilities and allocated to accounts in four equal allotments over a four-year period.

**Figure ES - 2: AB 1890 Accounts - Allocations by Year**



The Energy Commission proposes that funds in undersubscribed accounts for any period roll over to the same account in subsequent periods (this rollover applies also within the tiers in the existing technologies account). By the end of 2001 it will become apparent whether rollover funds are not needed in their own accounts and can be reallocated elsewhere. The first three percent (\$16.2 million) of the total AB 1890 funding for renewables, if available as rolled over funds at the end of 2001, will be allocated to emerging technologies. Any remaining rollover funds will be reallocated based on an assessment of market conditions at that time.

The Energy Commission assumes at this time that the AB 1890 funds will equal \$540 million collected evenly over a four-year period, providing \$135 million per year. The legislation is

ambiguous, however, about the timing of \$75 million. If the cash flows in the first three years are lower than the assumed level of \$135 million, then we expect that it will be possible to use undistributed funds from the new technologies account to support the existing, emerging and customer accounts at or near the levels that will occur if the funds are collected evenly over four years.

In the event that the level of undistributed funds in the new account is insufficient to fill any shortfall, then the available funds will be proportionally allocated to the various accounts based on the percentages shown in Table ES-1. Any such adjustment will not affect the overall allocation of AB 1890 funds. If the timing of cash flows makes it necessary to allocate funds to existing technologies in 2002, then those funds will be distributed using target technology prices and payment caps in effect during 2001. The Energy Commission will continue to coordinate with the CPUC to resolve the cash flow issue in a timely manner.

## **DISTRIBUTION MECHANISMS**

Since the market characteristics of the renewables industry vary substantially between existing, new, and emerging technologies and between suppliers and consumers, a “one size fits all” approach for the distribution of the renewables funds will not provide the best means to develop a self-sustaining renewable industry in California. The Energy Commission proposal contains four separate distribution mechanisms for the four accounts. The mechanisms for the existing technologies, the new technologies, and the customer-side accounts are all per kWh incentives, differentiated by characteristics particular to the circumstances of those accounts. The distribution method for the emerging technologies account will consist of project specific distribution mechanisms to be determined prior to, or as part of, multiple competitive Requests For Proposals (RFPs). The proposed distribution mechanisms are summarized in Table ES-2 and described in detail in Chapters 3 through 6.

The Energy Commission’s proposed distribution mechanisms are market-based, simple, and flexible. They allow market players to decide whether to expand or contract operations, to determine which new technologies will be built, and to choose whether to purchase electricity from renewable suppliers or from traditional sources. The mechanisms proposed include simple caps and react to market clearing prices to automatically avoid most overpayment or underpayment issues. They reflect, but do not duplicate, the proposals from stakeholders who participated in the Energy Commission’s extensive information gathering proceedings.

**Table ES - 2: Summary of Distribution Mechanisms**

<b>Distribution Mechanism</b>	<b>Features</b>
1. Per kWh Production Incentive (Existing Technologies Account)	amount determined by lesser of: 1) target prices minus market clearing prices 2) available funds divided by generation; or 3) specified production incentive caps  payments made on a monthly basis  rain check provision for scheduled plant improvements  three subaccount "tiers," with different target prices and caps
2. Per kWh Production Incentive (New Technologies Account)	allocation to specific suppliers determined by a simple auction  funds distributed over a five-year period  payments made on a monthly basis
3. Project-Specific Support (Emerging Technologies Account)	distribution mechanism determined on a project-by-project basis  could include interest rate or capital cost buy-downs, customer rebates, and other forms of assistance
4. Per kWh Consumer Incentives (Consumer Credit Subaccount)	amount determined by lesser of: 1) available funds divided by eligible renewable generation; or 2) a 1.5 cent/kWh incentive cap  payments made monthly

## Existing Technologies Account

The existing technologies account distribution mechanism is a simple cents per kWh payment tied to the relationship between target prices and the market clearing price for electricity, along with the number of kWh generated. Target prices are fixed cents per kWh levels established for the three tiers in the existing technologies account, set to reflect a competitive energy price for the technologies in the tiers, accounting for their approximate average costs and other revenue streams (e.g., tax credits and capacity payments). Payments are made only when the "market clearing price" falls below the target price for a tier, minimizing any unneeded support from the fund.<sup>8</sup> The highest target price, for Tier 1, ramps down to equal the target price for Tier 2 by 2001. Suggested target prices and production incentive caps for the existing technologies account are summarized in Table ES-3.

<sup>8</sup> The Energy Commission proposes that market clearing prices be estimated based on monthly average utility short run avoided costs (SRAC), until such time as the CPUC determines that the power exchange price adequately represents market clearing prices. At that time the monthly average power exchange price will be utilized.

**Table ES - 3: Target Prices and Payment Caps for Existing Technologies  
(Cents per kWh)**

		1998	1999	2000	2001
Tier 1 (Biomass,* Solar Thermal)	Target Price	5.0	4.5	4.0	3.5
	Cap	1.5	1.5	1.0	1.0
Tier 2 (Wind)	Target Price	3.5	3.5	3.5	3.5
	Cap	1.0	1.0	1.0	1.0
Tier 3 (Geothermal, Small Hydro, Digester Gas, Landfill Gas [LFG], and Municipal Solid Waste [MSW])	Target Price	3.0	3.0	3.0	3.0
	Cap	1.0	1.0	1.0	1.0

\*For the purposes of this report, the Energy Commission has classified whole waste tire combustion as biomass.

## **New Technologies Account**

Prospective new projects will bid for the amount of support they require. Bids will consist of a cents per kWh amount and an expected amount of generation. Projects that bid the lowest support request will receive support, subject to a 1.5 cents per kWh cap, with higher bids considered until funds are fully allocated. Winning projects will receive support for five years from their on-line date, but must be on-line prior to December 31, 2001.

## **Emerging Technologies Account**

The Energy Commission proposes that funds from the emerging technologies account be distributed to technologies or projects based on the outcome of multiple competitive Requests For Proposals (RFPs). The specific form of support for winning projects will be determined on a case by case basis. The RFPs will be administered by the Energy Commission using criteria to be developed during the implementation period following the completion of this report and its consideration by the Legislature.

## **Consumer-Side Account**

The consumer-side account includes funding for both customer credits, and for consumer information and market building activities. Of these two subaccounts, only the customer credits

require a fund distribution mechanism; the Energy Commission proposes that these funds be distributed through a simple per kWh consumption credit. The credit will be paid out through certified providers (marketers, aggregators or suppliers who sell directly to end-use consumers) with the value determined by dividing available funds by the total kWhs of qualifying renewable power sales in each period, subject to a cap of 1.5 cents per kWh. Credits received must be reflected in consumer bills.

## **PROPOSED CERTIFICATION PROCESS**

The Energy Commission proposes to certify renewable resource suppliers and providers both for eligibility for AB 1890 funds and for direct access priority (where the term “direct access” refers to both physical direct access and contracts for differences). These suppliers and providers will self-certify through a simple process described below, subject to verification by the Energy Commission. Certification as a renewable supplier or provider for the purposes of direct access priority will be based on the definitions of renewable resource technologies given in AB 1890 and further clarified in Chapter 9 of this report. Certification as a renewable resource supplier or provider for purposes of funding eligibility will be based on those definitions, but will also include the additional eligibility requirements for the particular funding accounts specified in Chapters 2 through 6.

### **Supplier Certification**

Renewable resource suppliers (generating facilities) wishing to be certified for the purposes of either participation in direct access priority or support from AB 1890 renewable funds will file a simple, standardized self-certification form with the Energy Commission. This self-certification form will include, at a minimum, the following information:

- 1) Name and location of generating facility
- 2) Name, business address, telephone and telefax numbers of contact person
- 3) Description of renewable resource technology used for power generation
- 4) Size of facility (nameplate) and capacity of interconnection to grid
- 5) Operational date of generating facility (including dates of additions such as repowering)
- 6) Type of contract with utility (if applicable) and whether and for how long the contract includes fixed energy prices
- 7) Percentage of fossil fuel, if any, used in generation (must be 25 percent or less)
- 8) Whether the certification is for accelerated direct access, payment of renewables funds, or for both accelerated direct access and payment of renewables funds

The Energy Commission recommends that each certified renewable supplier be assigned a unique supplier identification number to help maintain project confidentiality. All certified renewable suppliers will be required to report performance and other relevant information on a monthly

basis. This information will be used to verify continued eligibility for accelerated direct access (based on average annual generation) and/or to determine the level of payment to be made from the renewables funds.

## **Provider Certification**

The Energy Commission proposes that renewable resource providers (marketers, aggregators, or generators selling directly to end-use customers) seeking to participate in either accelerated direct access or support from AB 1890 renewables funds also file a simple, standardized self-certification form with the Energy Commission. The self-certification for providers will include, at a minimum, the following information:

- 1) Name, business address, telephone and telefax numbers of company
- 2) CPUC provider registration number (if available)
- 3) Contact person responsible for retail sales
- 4) Description of the proposed supply portfolio (or portfolios, if provider offers more than one generation product to customers)<sup>9</sup>
- 5) Estimated generation to be obtained from certified renewable sources
- 6) List of supplier identification numbers for certified renewable sources
- 7) Estimated generation to be obtained from other sources
- 8) Whether the certification is for accelerated direct access, payment of renewables funds, or for both accelerated direct access and payment of renewables funds

The Energy Commission endorses the use of a unique identification number for each certified renewable provider, similar to that used for suppliers. This identification number could be used for both registration with the CPUC for direct access and for certification, reporting and verification through the Energy Commission.

All certified renewable providers will be required to report performance and other relevant information on a monthly basis. This information will be used to verify continued eligibility for accelerated direct access (based on average annual generation in each supply portfolio) and/or to determine the level of payment to be made from the renewables funds.

## **Monitoring and Enforcement**

The Energy Commission proposes that an independent non-government entity under contract to the Energy Commission, or the Energy Commission itself, be responsible for certifying and

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<sup>9</sup> By supply portfolio, we mean a proposed mixture of generation options that is offered as a package to customers. Portfolios could be all renewable, all one technology, all local, all conventional, or mixtures of the above, and would have different prices reflecting the characteristics of the portfolio. Customers will then choose among the offered portfolios depending upon their preferences about generation options and prices.

monitoring renewable resource suppliers and providers. The information from monthly reports will be examined to ensure that output from a particular supplier has not been claimed more than once. Verification that providers selling to customers receiving direct access have provided 50 percent or more of the customers' load from renewable sources will be done on an annual basis.

For transactions going through the Independent System Operator, complete verification can be accomplished by cross-checking numbers filed by providers and suppliers with ISO transactions. Penalties for falsely self-certifying or reporting could vary depending on the nature of the violation and may include exclusion from payment of funds, probation for continued eligibility for accelerated direct access, cancellation of certification, repayment of and loss of any future renewables funds, or prosecution for fraud under existing state and federal laws.

## **MICROCOGENERATION, COGENERATION FUELED BY POLLUTION, AND FUEL CELLS**

AB 1890 directs the Energy Commission to include consideration of the need for mechanisms to ensure the competitiveness of microcogeneration and cogeneration fueled by pollution. The legislation also requires consideration of whether fuel cells should be treated as fuel switching for purposes of exemption from the competitive transition charge (CTC).

An economic analysis by Energy Commission staff (discussed in Appendix C) provides strong evidence of the need for mechanisms to ensure that microcogeneration and cogeneration fueled by pollution remain competitive. One such mechanism would be a CTC exemption. There may be other mechanisms that could be used; however, the Energy Commission makes no recommendation for any particular mechanism at this time without further analysis and discussion of alternative mechanisms.

The Energy Commission proposes that fuel cells be found to meet the definition of renewable technology when they use non-fossil fuels and that they be found to fall within the category of fuel switching for purposes of CTC exemptions, regardless of fuel.

## **DEFINITIONS**

AB 1890 defines "renewable resource technologies" as "electricity produced from other than a conventional power source within the meaning of Section 2805, provided that a power source utilizing more than 25 percent fossil fuel may not be included."<sup>10</sup> Renewable resource technologies include, but are not limited to, facilities that use the following energy sources to generate electricity:

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<sup>10</sup> Article 7, 381.b.3.

- 1) Solar
- 2) Wind
- 3) Geothermal
- 4) Solid fuel biomass
- 5) Whole waste tire combustion
- 6) Municipal solid waste that does not consist primarily of products originally manufactured from fossil fuels
- 7) Gas from anaerobic digestion of biological wastes
- 8) Hydropower with a generating capacity of 30 megawatts or less

The term “in-state generation” is defined as production of electricity by generation facilities physically located in the state of California. By this definition generating facilities located outside California that use renewable fuels from the state are not eligible for support, even if they own transmission lines in California.

The term “existing renewable resource facility” is defined as a facility, using a renewable resource technology, that is located in California and became operational (generating electricity for sale) prior to September 23, 1996.

The term “new renewable resource facility” is defined as a facility, using a renewable resource technology, that is located in California and became operational (generating electricity for sale) on or after September 23, 1996.

Existing facilities that are substantially refurbished on or after September 23, 1996, may compete for funding support from the new technologies account, but if successful they cannot continue to hold a utility contract that pays long-term fixed energy or capacity prices. A refurbished facility is considered to be a “new renewable resource facility” for the purposes of AB 1890 fund distribution if the fair market value of the non-refurbished portion of the facility does not exceed 20 percent of the refurbished facility’s total value. Improvements to or enhancements of existing technologies will be eligible to compete for funding support from the new technologies account if the incremental generation is not subject to sale through a utility contract that provides long-term fixed energy or capacity payments.

The term “emerging renewable (resource) technology” is defined as a renewable resource technology located in California that uses photovoltaic technology, or is determined by the Energy Commission to be emerging from research and development and to have significant commercial potential.

# Chapter 1

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## INTRODUCTION

### OVERVIEW OF AB 1890

Assembly Bill 1890 (AB 1890), enacted on September 23, 1996, provides a legislative foundation for the development of a competitive market for electricity in California, fostering a *market-driven* electricity industry. This groundbreaking legislation includes direction to:

- 1) Create an Independent System Operator (ISO) to manage California's electricity transmission network and a Power Exchange (PX) to establish a spot market for electricity access
- 2) Authorize "direct access" transactions between utilities and independent electricity suppliers and end-use customers
- 3) Establish a nonbypassable competitive transition charge (CTC) until 2002 (with some exceptions and extensions) to recover the expected costs of moving to a competitive market
- 4) Establish a rate freeze for investor-owned utilities (IOUs) at 1996 levels until the year 2002, with an immediate 10 percent reduction in residential and small commercial rates
- 5) Collect funding from rates for public purpose programs from 1998 to 2002, including energy efficiency, renewable generation, public-interest research and development, and low income programs

### LEGISLATIVE REQUIREMENTS FOR RENEWABLES

AB 1890 directs the collection of \$540 million from IOU ratepayers from 1998 to 2002 to support existing, new, and emerging renewable electricity generation technologies. The legislation directs the California Public Utilities Commission (CPUC) to transfer these funds to the California Energy Commission (Energy Commission) pending further administrative and expenditure criteria guidelines from the Legislature. The funds are to be used to:<sup>11</sup>

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<sup>11</sup> Article 7, 383.a.

- 1) Support the operation of existing and the development of new and emerging in-state renewable resources
- 2) Support the operations of existing renewable technologies that provide fire suppression benefits, reduce landfill materials, and mitigate open-field agricultural burning
- 3) Support the operations of existing innovative solar thermal technologies that provide peak generation and reliability benefits

AB 1890 directs the Energy Commission to report to the Legislature by March 31, 1997, with recommendations regarding *market-based mechanisms* to allocate the funds. The programs recommended should include options and implementation mechanisms that:<sup>12</sup>

- 1) Reward the most cost-effective renewable generation, while fostering a market for renewable resources
- 2) Implement a process for certifying renewable resource providers, to provide them with funding support and to allow accelerated direct access privileges to customers that buy 50 percent or more of their electricity from certified providers
- 3) Allow customers to receive a rebate from the renewables fund
- 4) Allocate at least 40 percent of total funds to existing and at least 40 percent to new and emerging renewables
- 5) Use financing and other mechanisms to maximize the effectiveness of the available funds

The legislation also requires that the report include consideration of:<sup>13</sup>

- 1) The need for mechanisms to ensure that cogeneration using energy from environmental pollution in its process and microgeneration with a total generating capacity of less than one megawatt (MW) remain competitive
- 2) Whether fuel cells should be treated as fuel switching under the legislation, and therefore be eligible to avoid the CTC

This report responds to these requirements of AB 1890.

Finally, AB 1890 directs three policies that are related to but not fully addressed in this report. First, the legislation directs IOUs to allow customers to make voluntary contributions to support renewables, with the CPUC specifying the fund to which the voluntary contributions are to be

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<sup>12</sup> Article 7, 383.b.

<sup>13</sup> Article 7, 383.c.

transferred.<sup>14</sup> Second, municipal utilities are directed to collect funds for public-purpose programs, including new investment in renewable resources, but AB 1890 does not specify how or whether these funds should be coordinated with the \$540 million collected from IOU ratepayers.<sup>15</sup> Third, the Secretary of the California Environmental Protection Agency (CalEPA) is required to submit a report to the Legislature by March 31, 1997, that evaluates benefits attributable to the solid-fuel biomass industry and recommends public policy strategies for shifting the costs of biomass-fired generation from electric utility ratepayers to other classes of beneficiaries. The legislation also requires coordination between the CalEPA and the Energy Commission's renewable policy efforts.<sup>16</sup>

## COMMISSION REPORT DEVELOPMENT PROCESS

The Energy Commission began to gather input from renewables stakeholders and other interested parties with an En Banc Hearing on October 16, 1996. At this hearing, the Energy Commission established the Renewables Program Committee (Committee) and assigned it the task of preparing the renewables report required by AB 1890. The En Banc Hearing was followed by a series of six Committee and staff workshops during November and December. During the workshops, staff and stakeholders presented proposals about the allocation of funds among existing, new, and emerging technologies; mechanisms for distributing the funds; methods of certifying renewable energy providers; definition of key terms; and treatment of fuel cells, microgeneration, and cogeneration using environmental pollution.

A staff draft report was mailed to the participants on January 4, 1997. The staff draft report was based upon participants' proposals during the workshops, input from Commission staff renewable technologies experts, and advice from consultants with expertise in relevant areas such as renewable technologies, financing mechanisms, and marketing mechanisms. The staff draft report also included consideration of information contained in the *Renewables Working Group Report* to the CPUC.<sup>17</sup> Public comment on the staff draft report was received at a Committee hearing on January 16, 1997, and in subsequent written submittals.

The Committee then developed a Committee draft report based upon comments from participants in Energy Commission proceedings. A second Committee hearing was held February 27, 1997, to receive input on the Committee draft report. This final report includes revisions to the Committee draft report and was adopted by the Energy Commission on March 20, 1997.

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<sup>14</sup> Article 7, 381.d.

<sup>15</sup> Article 8, 385.a.

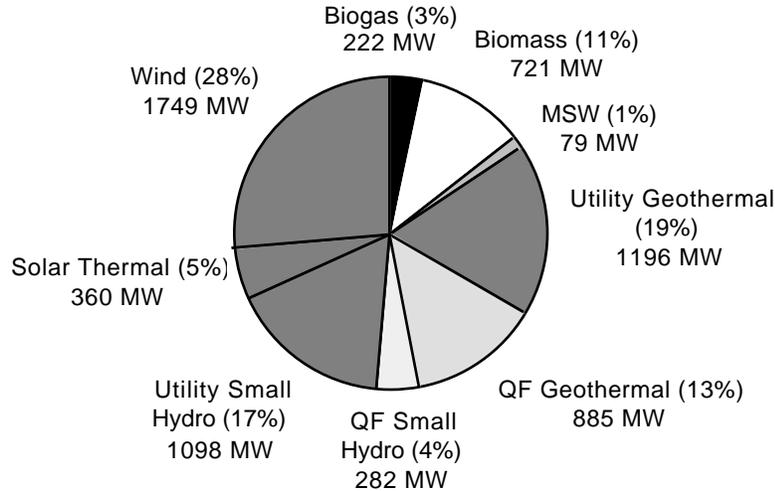
<sup>16</sup> Article 9, 389.

<sup>17</sup> *Renewables Working Group Report to the CPUC, August 1996, Energy Commission Publication # 500-96-008.*

# **HISTORY AND STATUS OF CALIFORNIA'S RENEWABLES INDUSTRY**

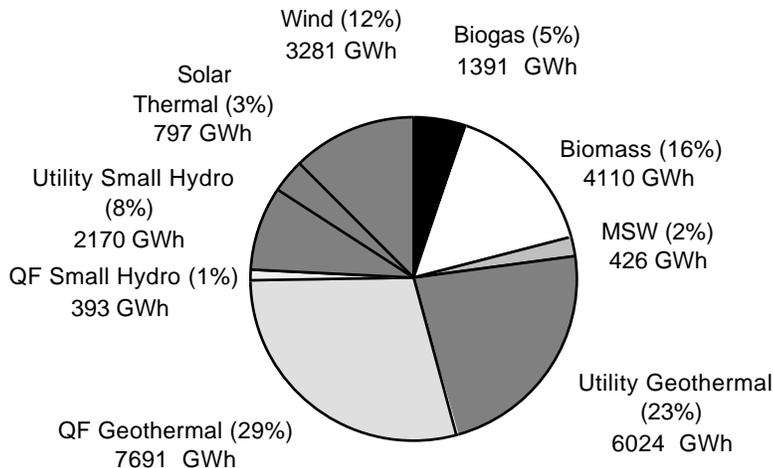
Over the past decade and a half, California has developed the largest and most diverse renewable generation industry in the world. California has nearly 6600 megawatts (MW) of independently-owned and utility-owned renewable power capacity, including solid-fuel biomass, geothermal, wind, small hydro (30 MW or less), solar, landfill gas, digester gas, and municipal solid waste (MSW) facilities. These facilities are estimated to have produced 26,000 gigawatt hours (GWh) in 1994, representing approximately 12 percent of the electricity used in California. Figures 1-1 and 1-2 show the relative capacity (MW) and generation (GWh) shares, respectively, of the technologies comprising the California renewable power industry.

**Figure 1 - 1: California's In-State Renewable Capacity  
1996 (Estimated)**



This figure includes estimates of both utility-owned and non-utility owned capacity, but no self-generation. Qualifying Facility capacity is based on the Energy Commission's QF database that includes data from the utilities' quarterly status reports on small power producers.

**Figure 1 - 2: California's In-State Renewable Generation  
1994 (Estimated)**



This figure includes estimates of both utility-owned and non-utility owned renewables generation, but no self-generation. Sources for data were *Renewables Working Group Report, 1994 Electricity Report Appendices*, and the Energy Commission's Qualifying Facility Database.

Development of the renewable industry was spurred by the federal Public Utility Regulatory Policies Act of 1978 (PURPA), which provided guidelines for state regulations to support growth of non-utility electricity suppliers. In California, PURPA was aggressively implemented in the early 1980s through four types of “standard offer” contracts, which required the state’s IOUs to purchase the output of independent generators, many of which were renewable. There were four types of standard offer contracts, known as SO1, SO2, SO3, and ISO4 (Interim Standard Offer Number 4) contracts, as well as proprietary negotiated contracts.<sup>18</sup> Most non-utility renewables in California were built under ISO4 contracts, which provided fixed energy (per kilowatt hour) payments for 10 years (based upon the IOU’s forecasted avoided energy costs over that period) as well as fixed capacity payments (per kWh).<sup>19,20</sup> Guaranteed energy and capacity payments helped to attract financing for independent energy projects.

In the 11th year of ISO4 contracts, the fixed energy prices convert to variable prices tied to the utilities’ current “short run avoided costs” (SRAC). These costs are calculated monthly by the IOUs using an agreed upon formula, currently related to the California border price of natural gas. When ISO4 contracts were signed, SRACs were expected to increase over time, but instead they decreased significantly in the late 1980s, and, except for occasional short-term increases, have since remained at low levels.

This situation has created what is known as a “price cliff” for the ISO4 contracts. SRAC prices are as much as 85 percent less than the fixed prices received at the end of the 10 year period. As these facilities move into the variable energy price period of their contracts they face sharply lower payments for energy produced. Figure 1-3 shows past and present SRAC energy prices compared to fixed ISO4 energy payments (average for PG&E, SCE and SDG&E), and illustrates two points. First, projects that are still in the fixed energy price portion of their ISO4 contracts are receiving energy payments far in excess of current SRAC levels. Second, facilities with higher variable costs will have difficulty continuing to operate after they “fall off the cliff,” when they receive sharply less revenue. Since 1993, as SRAC prices dipped below historic levels and ISO4 facilities began coming off the cliff, renewable generation has decreased in California, in contrast to regular increases throughout the late 1980s and early 1990s. Nearly 20 biomass plants comprising 200 MW of generation have gone off-line, most of which had ISO4 contracts that were terminated by negotiation. Wind capacity has decreased by over 100 MW since 1993, a result of some machines being shut down and used for parts to keep others operating. Further decreases would be expected if energy prices remain low, particularly as more facilities come off the cliff of their ISO4 contracts.

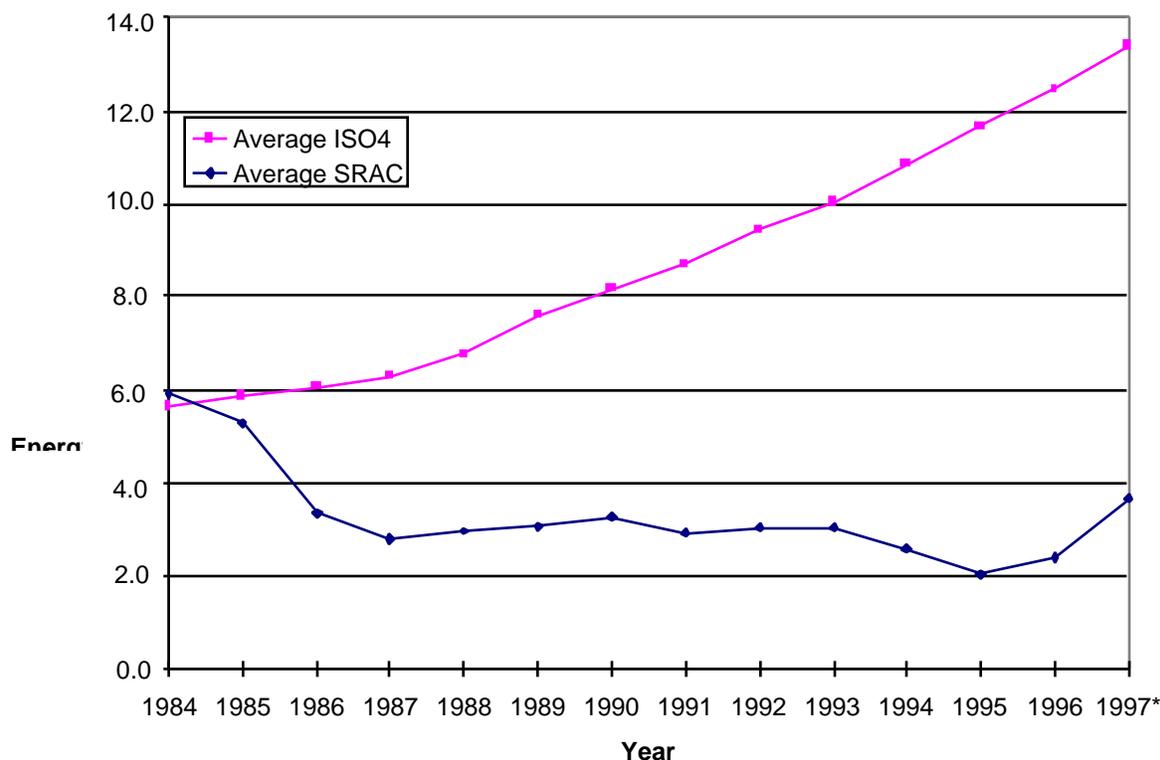
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<sup>18</sup> The Standard Offer Number 4 contracts were intended to be interim, pending final regulatory determination of standard terms. However, terms were never finalized because ISO4 offers were suspended (no longer available for new contracts) in April 1985 (SO2 offers were suspended in March 1986), after a large amount of capacity was signed.

<sup>19</sup> Avoided energy costs are estimates of the utilities’ energy procurement costs that would have been incurred were it not for the energy provided under the contracts.

<sup>20</sup> Fixed capacity payments are provided in SO2 and ISO4 contracts for the life of the contract, which is often as much as 30 years.

**Figure 1 - 3: Comparison of ISO4 and SRAC Energy Prices  
(Average of PG&E, SCE, SDG&E SRAC Levels)**



\*1997 SRAC price includes January, February, and March only; the annual average for 1997 may be significantly different.

## A COMPETITIVE RENEWABLES MARKET

AB 1890 support can reduce or reverse the declining trend in renewables generation in California. In the long run, this support will be most effective if renewable generation can successfully compete in a restructured electricity market. A successfully competitive renewables market will be characterized by: 1) a diverse group of consumers and suppliers, 2) an abundance of quality information, 3) a minimum of regulatory and administrative intervention, and 4) prices that reflect costs without hidden subsidies or non price benefits.

Renewable generators may compete in several different markets. First, projects that can bid competitively against conventionally generated electricity can and should be encouraged to participate to the fullest extent in the power exchange, taking part in the development of the competitive electricity market in California. In addition, a “green market” may provide a place where renewable electricity can sell at a premium above the conventional electricity price. Third, renewables that buy their feedstock or fuel in waste product markets must compete in that market as well as in generation markets. Finally, renewables that supply distributed power at the customer’s home or business (such as photovoltaics), operate on the customer side of the meter

and compete against the fully-imbedded retail price of electricity, rather than against the wholesale market clearing price seen by central generation facilities.

The Energy Commission believes that the future of renewable energy depends heavily on the development of a strong consumer base for renewable power. Many existing suppliers, currently supported by their long-term contracts with utilities, may not survive in a general least-cost electricity market without eventual support by a steady or sizable customer-driven market. This customer-driven market for renewable power currently exists only on a small scale; time will be required to develop this market into a vibrant and reliable source of demand for renewable power.

Development of a vibrant consumer-driven market for renewable electricity implies moving away from standard offer utility contracts to direct market transactions (although long-term contracts directly with end-use customers or their representatives may be a desirable component of the direct access market). Customers and their representatives should be able to express their preferences for renewable power or other sources of generation without the constraints that could be imposed by long-term utility contracts.

Some existing renewables generation is or may easily become free of standard offer contracts and available for direct access at the onset of the transition period. Table 1-1 below shows an estimate of the amount of renewable capacity that is potentially available for direct access starting in 1998.

**Table 1 - 1: Renewable Capacity Potentially Available for Direct Access in 1998**

	SO1 Capacity (MW)	SO3 Capacity (MW)	Surplus Capacity (MW)	Off-line Capacity (MW)	Capacity under development (MW)	Total Capacity (MW)	Total Generation (GWh)
Biogas	45	1	7	0	49	101	776
Biomass	35	0	77	185	0	298	2293
Waste to Energy	0	1	0	0	0	1	4
Geothermal	0	0	0	0	0	0	0
Hydro	36	3	0	0	0	38	64
Solar	0	0.1	0	0	0	0.1	0
Wind	68	0.3	0	0	0	68	112
<b>Total</b>	<b>183</b>	<b>4</b>	<b>84</b>	<b>185</b>	<b>49</b>	<b>505</b>	<b>3258</b>

SO1 and SO3 numbers from Energy Commission's Qualifying Facility Database. Surplus numbers supplied by PG&E and represent capacity available above contract capacity. Off-line capacity numbers supplied by biomass industry. Capacity under development from Thorneloe, Pacey, Kennelly, *Renewables Working Group Report Draft*, June 21, 1996. Additional capacity may become available from divested utility generation.

## *Chapter 2*

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# **ALLOCATION AND DISTRIBUTION OF AB 1890 FUNDS - PRINCIPLES AND STRATEGY**

## **POLICY GOALS AND PRINCIPLES**

The Energy Commission's proposal is guided by an overall goal to maximize the effectiveness of the AB 1890 renewable funds in facilitating the development of a competitive renewable industry. Three broad objectives are important components of this goal:

- 1) To facilitate development of a self-sustaining consumer-driven renewables market in the state, facilitating consumers' choice of renewable power
- 2) To encourage market-based development of new and emerging renewable resources
- 3) To maintain the benefits and diversity of the renewables industry and move towards market competitiveness with the broader electricity industry

The proposal uses market-based mechanisms, as directed by AB 1890, and maximizes competitive incentives within the constraints and guidelines of the legislation. The existing standard offer contracts limit the extent to which fully market-based mechanisms can be applied to support existing renewable industries, which are to receive a minimum of 40 percent of funds under AB 1890. AB 1890's explicit direction to support existing industries that provide fire suppression, waste reduction, agricultural waste burning, and peak reliability benefits (that is, biomass and solar thermal industries) further constrain the extent to which distribution mechanisms can be made fully competitive.

The Energy Commission's recommendations for funding accounts and for distribution mechanisms are intended to:

- 1) Minimize administrative requirements and maximize the influence of market incentives
- 2) Encourage the development of a renewables marketing infrastructure with incentives for suppliers, marketers and aggregators, and customers to participate in a renewables market

- 3) Encourage existing renewable suppliers to become competitive by improving operations and reducing costs and to establish competitive market relationships with providers and customers
- 4) Improve the effectiveness of the available funds by limiting assistance to those existing facilities that are already competitive and those that are unlikely to become competitive (i.e., using the triage principle)<sup>21</sup>

Existing renewable technologies need support to fulfill their potential to be a major part of the competitive industry after the 1998 to 2002 transition. Mechanisms that provide consumers with the information needed to participate in the market, and provide marketers the incentives required to bring consumers and suppliers together are also needed. Moreover, all mechanisms should let the market function with minimum regulatory oversight, so that consumers decide where to spend their money and producers decide what and how much to produce to satisfy the demands of consumers. Finally, for the market to provide true choices to consumers and maximum societal benefits, the prices of goods should reflect all costs and benefits, including external costs or benefits not normally priced (externalities).

## **ELIGIBILITY AND EXCLUSIONS FOR AB 1890 SUPPORT**

The proposed eligibility and exclusions for AB 1890 funding support are summarized in Table 2-1. All participants in the Energy Commission proceedings agreed that projects with ISO4 contracts still in their fixed energy price period should receive no AB 1890 funding. Some participants suggested that even *after* the end of their fixed energy price period, these projects should be excluded from funding. The Energy Commission agrees that those facilities still receiving high fixed energy payments (e.g., facilities still on the cliff or otherwise receiving fixed energy payments) do not need and should not be eligible for support from AB 1890 funds.

The Energy Commission believes, however, that ISO4 facilities past their cliff dates, and facilities with other utility contracts (SO1, SO2, SO3, and negotiated contracts not receiving long-term, fixed-price energy payments), *may need and should be eligible for* AB 1890 funding, if they meet other eligibility criteria established by the Energy Commission. ISO4 contracts comprise about 80 percent of existing independent renewable capacity, and nearly all of these facilities will be “off the cliff” before 2002. Eliminating all facilities with standard offer contracts from consideration for AB 1890 funding could make it impossible to meet AB 1890’s mandate that a minimum of 40 percent of the renewables funds be used to support existing facilities. Moreover, it would be an unjustified windfall to allocate 40 percent or more of the funds among the small pool of existing facilities that never were or are no longer associated with utility standard offer contracts.

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<sup>21</sup> Triage is a method used in medical emergencies to allocate treatment to patients so that the number of survivors is maximized. Triage is an appropriate tool when there are insufficient resources to help all that may need support.

Any facilities not receiving above-market fixed energy prices may need the transitional support provided by AB 1890 to improve operations and prepare for the competitive electricity market. Excluding support to all facilities with standard offer contracts could cause a significant decrease in the economic viability of a substantial portion of the renewables market before the direct access market is developed enough for renewables customers to have the choice to purchase this power.

**Table 2 - 1: Eligibility and Exclusions for AB 1890 Support**

Account	Eligibility and Exclusions
1. Existing Technologies Account	technologies that meet definition of an “existing renewable resource technology” are eligible unless they are: 1) receiving fixed energy price payments under a long-term contract with an existing IOU 2) can get recovery of any above market costs through the CTC (applies to existing IOU or customer utility facilities) 3) producing energy that is for use on-site or is otherwise excluded from CTC payments 4) selling generation to customers not paying the public benefits charge collected from IOUs.
2. New Technologies Account	technologies that meet the definition of a “new renewable resource technology” are eligible unless they are: 1) selling power under an existing utility contract providing long-term fixed energy or capacity payments 2) producing energy that is for use on-site or is otherwise excluded from CTC payments 3) selling generation to customers not paying the public benefits charge collected from IOUs 4) owned by customer-owned electric utilities
3. Emerging Technologies Account	technologies that meet the definition of an “emerging renewable resource technology” are eligible unless they are: 1) utility-owned generation 2) projects involving customers that receive non-IOU distribution service are excluded unless their distribution utility contributes to or coordinates with the AB 1890 renewables fund
4. Customer Credit Subaccount	any in-state renewable energy associated with direct access transactions with customers paying the public benefits charge collected from IOUs is eligible

The Energy Commission recommends that renewable facilities owned by existing investor-owned and other utilities be excluded from AB 1890 funding, unless they have been divested to operate in the direct access market as private market generators. The reason for excluding IOU-owned facilities is that: 1) IOU-owned facilities that operate will do so because they are competitive, and 2) those that do not operate because of cost-ineffectiveness will have their costs covered by the CTC. In neither case is there a need for additional support from scarce AB 1890 funds. Generation facilities owned by existing municipal and other customer-owned utilities face the same situation if they participate in the competitive market; they will either be competitive and operate or will be covered by a CTC established by the municipal utility board.

Any electricity from facilities that is used on-site, known as self-generation, should not be eligible for support from the AB 1890 funds.<sup>22</sup> Self-generation avoids the entire utility bill, including transmission, distribution, and CTC and public-goods charges. In effect, this electricity receives

<sup>22</sup> With the exception of the customer and emerging categories, where project proponents are allowed to propose emerging self-generation applications, such as customer-sited photovoltaic systems.

compensation substantially higher than wholesale market clearing prices, and needs no further support from AB 1890. In addition, self-generated electricity may not be metered, making it difficult to determine how much support would be provided on a per kWh basis. By the same token, any over-the-fence transactions granted CTC exemption status in Section 372 of AB 1890 should not receive additional renewable support from the technology funds.<sup>23</sup>

Finally, generation from facilities that is sold to municipal utility customers or to out-of-state customers is excluded from support from the AB 1890 funds. California IOU ratepayers are providing the funds, and should not be paying for renewable generation sold to customers of other utilities.

In summary, the Energy Commission excludes four broad categories of renewable facilities from AB 1890 funding support: ISO4 facilities still in their fixed energy price period and facilities under similar utility contracts, undivested utility-owned facilities, the portion of any facility that is self-generation, and generation sold to non-IOU customers. With these general exclusions, Table 2-2 shows the amount of existing renewable capacity (non-utility owned) that will be eligible for funding, by year (assuming no divestiture of utility-owned plants or restructuring of ISO4 contracts). Eligible capacity increases significantly between 1998 and 2002, as additional projects pass the end of their fixed energy price period.

**Table 2 - 2: Estimated Renewable Capacity Eligible For Funding  
(Including ISO4 Out of Fixed Energy Price Period)**

Fuel Type	1996	1998		1999		2000		2001		2002	
	Reported Operable Capacity	Estimated Eligible Capacity	% of								
	MW	MW	1996								
Biomass	721	371	51%	397	55%	638	88%	671	93%	671	93%
Solar	360	300	83%	360	100%	360	100%	360	100%	360	100%
Wind	1749	1232	70%	1380	79%	1465	84%	1619	93%	1705	97%
Geothermal	885	355	40%	648	73%	814	92%	848	96%	848	96%
Small Hydro	283	181	64%	181	64%	222	79%	267	94%	269	95%
Biogas	222	183	83%	184	83%	218	98%	220	99%	222	100%
MSW	79	60	75%	78	98%	79	100%	79	100%	79	100%
<b>Totals</b>	<b>4300</b>	<b>2681</b>	<b>62%</b>	<b>3227</b>	<b>75%</b>	<b>3796</b>	<b>88%</b>	<b>4065</b>	<b>95%</b>	<b>4154</b>	<b>97%</b>

From Energy Commission Qualifying Facility Database. Numbers represent contracted capacity, not plants actually known to be operating. Excludes utility-owned generation capacity and self generation.

## DESCRIPTION OF ACCOUNTS

<sup>23</sup> Article 6, 372.

Participants in the Energy Commission's proceedings presented proposals with widely varying implications for the renewables industry. A coalition comprised of most of the established renewable industries proposed allocating 60 percent to the existing account (with an allowance for a rollover of unused funds to other accounts each year if market clearing prices are high). In contrast, other proposals gave a substantial portion of the funds to emerging technologies, while still others used the majority of funds for the marketing of renewables directly to customers. The Energy Commission evaluated the merits and drawbacks of these proposals in relation to the established policy objectives (in Chapter 1). Using this information, the Energy Commission developed the allocation strategy summarized in Figure 2-1. This recommended approach to the allocation of AB 1890 funds incorporates some of the elements from stakeholder and staff proposals that are most compatible with the intent of the legislation.

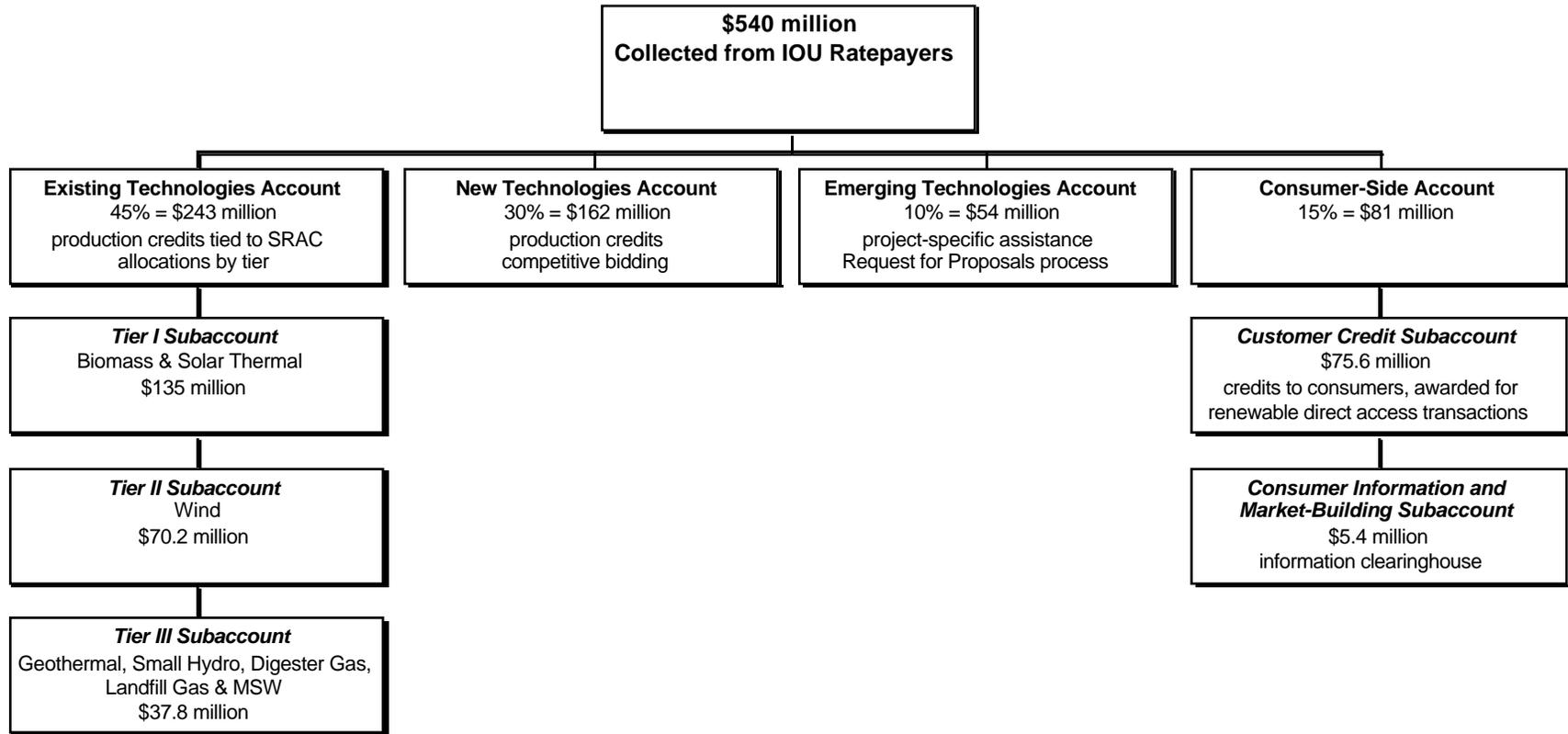
It is important to encourage renewable facilities to participate in any markets feasible for them to maximize the long-term viability of the renewables industry. Accordingly, the Energy Commission proposes that funds be allocated to develop new renewable technologies expected to become competitive with market clearing prices, to facilitate the creation of a consumer-based direct access marketing infrastructure, and to support market-building activities designed to provide potential renewable consumers with the information and certainty about their purchases needed to elicit their trusting participation in the renewables market. The allocation proposal provides incentives and support mechanisms for both the suppliers and consumers to help the renewables industry become more competitive with the broader electricity market and to foster a consumer-driven market for renewables.

The Energy Commission recommends that AB 1890 renewables funding flow through four accounts, designed to provide balanced support for the renewables industry and satisfy the objectives of AB 1890. Each technology status category (existing, new, and emerging) is assigned an account. A fourth account, the consumer-side account, is designed to help develop a consumer-driven market for renewable generation supplied by any existing, new or emerging technologies. While the Energy Commission seeks to encourage the development of a customer-driven market for renewables, believing this to be the optimal way to create a self-sustaining industry, the fate of the existing renewables industry should not rest wholly with the consumer market until that market has proven viable. A balance of support to existing and new suppliers is needed to ensure that suppliers will be around to provide renewable power to those consumers who desire it when the consumer market develops.

The existing technologies account is allocated 45 percent of the \$540 million for the support of existing renewables (these funds may rollover to other uses if not needed). The proposal aims to maintain the benefits of the renewables industry by providing support that reflects industry needs and expected benefits, while encouraging movement towards a competitive market by the end of the AB 1890 funding period. Movement towards market-based competition is encouraged by phasing down funding over the four years and by allocating support to three tiers, rather than specific technology allocations. The first tier is allocated 25 percent of the funds, the second tier 13 percent, and the third tier 7 percent (totaling 45 percent for the entire account).

Of the 40 percent minimum AB 1890 allocates to new and emerging technologies, the new technologies account is allocated 30 percent of the funds and the emerging technologies account receives 10 percent (up to 3 percent of additional funds may become available to the emerging account from the existing account rollover). The Energy Commission recognizes that new renewable generation developed with AB 1890 support must eventually become competitive in

**Figure 2 - 1: Proposed Allocation of AB 1890 Renewables Funds**



the power exchange or the direct access market.<sup>24</sup> The proposal therefore provides neither specific technology allocations nor tiers for new renewables; rather, it sets up mechanisms to reward the most competitive and cost-effective new renewable generation without administratively specifying technologies to be supported.

The remaining 15 percent of the funds is allocated for use in the development of a customer-driven renewables market. The consumer information and market building subaccount, which will receive 1 percent of the funds, is intended to help provide trustworthy information and reduce transaction costs in the nascent renewables market. The customer credit subaccount is allocated 14 percent of the consumer funds, which will be returned to consumers as a bill credit for the purchase of renewable energy from either existing, new, or emerging technologies. This subaccount is intended to help build a renewables marketing infrastructure during the transition period.

## **Timing of Funds**

The Energy Commission has developed a schedule for the allocation of funds over the four-year funding period (see Table 2-3 and Figure 2-2). To direct funds to the appropriate categories when the funds will best further AB 1890 goals, the amounts in accounts are varied over the four years, ramping up or down individual accounts (totaling to the overall allocations given above). Funding to the existing account ramps down, while funding to the new technologies account and the customer rebate account ramp up. The existing account ramps down because existing technologies must become increasingly cost-effective over the transition period and the market clearing price may increase over time, reducing the need for funding.

The allocation for new technologies increases over time because there are expected to be fewer new technology projects producing electricity in the early years than in the later years. This is true even though the Energy Commission proposes to allocate the new account funds in one auction at the beginning of the period. Allocation of the funds implies commitment to winning projects, while distribution of the funds will continue for several years afterward to allow new facilities time to come on line. The allocation to the customer-driven market account also increases over time because few suppliers or consumers are expected to be ready to participate in a consumer-driven market by 1998. Unlike the new technology funds, however, the consumer funds may be distributed at about the same time they are collected.

The Energy Commission assumes at this time that the AB 1890 funds will equal \$540 million collected evenly over a four-year period, providing \$135 million per year. The legislation is unclear, however, about the timing of \$75 million of the funds, and consequently the payments in years 1998 through 2000 could be as low as the specified minimum of \$109.5 million per year. If this \$75 million is not made available to the renewables fund until the end of the transition period

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<sup>24</sup> The term “direct access market” is used in this report to refer to both physical direct access transactions and contracts for differences.

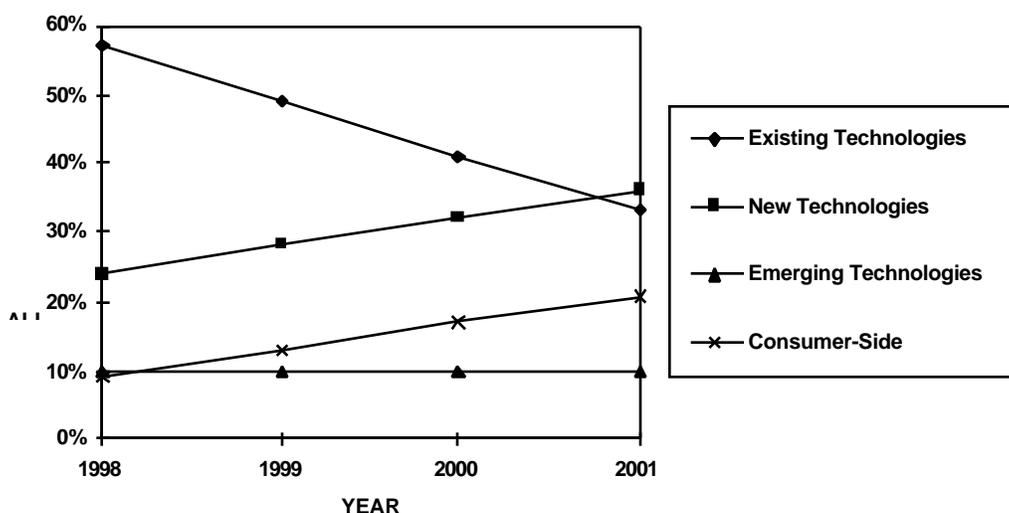
then it will become necessary to reduce the allocations to the various renewables accounts until that money is collected.

**Table 2 - 3: AB 1890 Accounts - Allocations by Year**

Account	1998	1999	2000	2001	overall
Existing Technologies	57%	49%	41%	33%	45%
New Technologies	24%	28%	32%	36%	30%
Emerging Technologies	10%	10%	10%	10%	10%
Customer-Side	9%	13%	17%	21%	15%

The Energy Commission is assuming that funds will be collected from utilities and allocated to accounts in four equal allotments over a four-year period.

**Figure 2 - 2: AB 1890 Accounts - Allocations by Year**



If the cash flows in the first three years are lower than the assumed level of \$135 million, then it should be possible to use undistributed funds from the new technologies account to support the existing, emerging and customer accounts at or near the levels that will occur if the funds are collected evenly over four years. In the event that the level of undistributed funds in the new accounts is insufficient to fill any shortfall, then the available funds will be proportionally allocated to the various accounts based on the percentages shown in Table 2-3. Any such adjustment will not affect the overall allocation of AB 1890 funds. If the timing of cash flows makes it necessary to allocate funds to existing technologies in 2002, then those funds will be distributed using target technology prices and payment caps in effect during 2001. The Energy

Commission will continue to coordinate with the CPUC to resolve the cash flow issue in a timely manner.

The eligibility criteria and distribution mechanisms for the accounts are designed to prevent oversubscription, but undersubscription is possible or even likely in any one period, as funds that are not needed are not dispensed. The Energy Commission proposes that funds in undersubscribed accounts for any period roll over to the same account in subsequent periods (this rollover applies also within the tiers in the existing technologies account). At the end of 2001, or perhaps before, the Energy Commission believes that it will become apparent whether rollover funds are not needed in their own accounts and can be reallocated elsewhere. An amount equal to three percent (\$16.2 million) of the total AB 1890 funding for renewables, if available as rolled over funds, will be allocated to emerging technologies through a subsequent RFP solicitation by the end of 2001. Remaining funds will be held in a surplus account and allocated based on an assessment of market conditions by the end of 2001.

## **DISTRIBUTION MECHANISMS**

Since the market characteristics of the renewables industry vary substantially between existing, new, and emerging technologies and between suppliers and consumers, a “one size fits all” approach for the distribution of the renewables funds will not provide the best means to develop a self-sustaining renewable industry in California. The proposal contains four separate distribution mechanisms for the four accounts. The mechanisms for the existing technologies, the new technologies, and the customer-side accounts are all per kWh incentives, differentiated by characteristics particular to the circumstances of those accounts. The distribution method for the emerging technologies account will consist of project specific distribution mechanisms that will be determined prior to, or as part of, multiple competitive Requests For Proposals (RFPs). These distribution mechanisms are summarized in Table 2-4 and described in detail in Chapters 3 through 6.

The first goal of the Energy Commission’s proposed distribution mechanisms is the use of market-based mechanisms as directed by AB 1890. The second goal is to keep the distribution mechanisms as simple and flexible as possible to minimize administrative overhead and ease decision-making. The mechanisms proposed include simple safeguards (caps) and built in flexibility to adjust to changes in market conditions (price and quantity generated) and technological developments, while automatically avoiding most overpayment or underpayment issues. The third goal is to respect the proposals from industry representatives and stakeholders who participated in the Energy Commission’s extensive information gathering proceedings, and who can be presumed to have the best information about their industries’ standing in the restructured electricity market. Finally, mechanisms (such as production incentives) were chosen

that had the least chance of triggering changes in any federal tax credits that may be received by renewable projects.<sup>25</sup>

## Existing Technologies Account

The existing technologies account distribution mechanism is a simple cents per kWh payment tied to the relationship between target prices and the market clearing price for electricity, along with the number of kWh generated. Target prices are fixed cents per kWh levels established for the

**Table 2 - 4: Summary of Distribution Mechanisms**

Distribution Mechanism	Features
1. Per kWh Production Incentive (Existing Technologies Account)	<p>amount determined by lesser of:</p> <ol style="list-style-type: none"> <li>1) target prices minus market clearing prices</li> <li>2) available funds divided by generation; or</li> <li>3) specified production incentive caps</li> </ol> <p>payments made on a monthly basis</p> <p>rain check provision for scheduled plant improvements</p> <p>three subaccount “tiers,” with different target prices and caps</p>
2. Per kWh Production Incentive (New Technologies Account)	<p>allocation to specific suppliers determined by a simple auction</p> <p>funds distributed over a five-year period</p> <p>payments made on a monthly basis</p>
3. Project-Specific Support (Emerging Technologies Account)	<p>distribution mechanism determined on a project-by-project basis</p> <p>could include interest rate or capital cost buy-downs, customer rebates, and other forms of assistance</p>
4. Per kWh Consumer Incentives (Consumer Credit Subaccount)	<p>amount determined by lesser of :</p> <ol style="list-style-type: none"> <li>1) available funds divided by eligible renewable generation;</li> <li>2) or a 1.5 cent/kWh incentive cap</li> </ol> <p>payments made monthly</p>

three tiers in the existing technologies account, set to reflect a competitive energy price for the technologies in the tiers, accounting for their approximate average costs and other revenue streams (e.g.- tax credits and capacity payments). Payments are made only when the “market clearing price” falls below the target price for a tier, minimizing any unneeded support from the fund. The highest target price, for Tier 1, ramps down to equal the target price for Tier 2 by

<sup>25</sup> Mechanisms deemed least likely to affect a variety of tax credits were operation and maintenance assistance payments, supplemental production payments, price support payments and loan guarantees.

2001. Funds that are not needed in any month will roll over within tiers, and will be available for assistance in later months, until the end of the funding period.

## **New Technologies Account**

Prospective new projects will bid for the amount of support they require. Bids will consist of a cents per kWh amount and an expected amount of generation. Projects that bid the lowest support request will receive support, with higher bids considered until funds are fully allocated. Support will be capped, however, since this account is not intended to provide temporary support for new projects that are substantially above market clearing prices and unlikely to be competitive in the long-run. Winning projects must be on-line by December 31, 2001, and credits will be paid for a five-year period.

## **Emerging Technologies Account**

The emerging technologies account must have a flexible design because the needs of emerging technologies may vary significantly from one technology to the next. The Energy Commission proposes that funds from this account be distributed to technologies or projects based on the outcome of multiple competitive Requests For Proposals (RFPs), and that the specific form of support for winning technologies or projects be determined on a case by case basis. The RFPs will be administered by the Energy Commission and evaluated based on criteria to be developed during the implementation period following the completion of this report and its consideration by the Legislature.

## **Consumer-side Account**

The consumer-side account includes funding for both customer credits, and for consumer information and market building activities. Of these two subaccounts, only the customer credits require a fund distribution mechanism; the Energy Commission proposes that these funds be distributed through a simple per kWh consumption credit. The credit will be paid out through certified providers (marketers, aggregators or suppliers who sell directly to end-use consumers) with the value determined by dividing available funds by the total kWhs of certified renewable power consumed through qualifying renewable sales in each period, subject to a cap of 1.5 cents per kWh. Credits received must be reflected in consumer bills.

# IMPLEMENTATION ISSUES

## Issues Requiring Legislative Guidance

Several general issues other than specific allocation, distribution mechanism, and certification protocol decisions are raised by AB 1890 and this report. Many of these issues cannot be resolved prior to receiving further legislative guidance.

***Program Administration:*** The Legislature has selected the Energy Commission to provide this report recommending mechanisms to allocate and administer distribution of AB 1890 funds. The Energy Commission recommends that the renewables funds be administered by the Commission with appropriate funding for administration approved through the Commission's regular budgetary process, allocating no funds from AB 1890 for this purpose. Additionally, the Energy Commission recommends that an independent organization monitor progress and determine the effectiveness of the funds and mechanisms used. Authority for administration and related activities should be made explicit by the Legislature.

***Minimum Funding Requirements:*** To make the allocation better reflect market conditions and induce renewables to move towards competition, the Energy Commission proposes to link the amount of payments to existing technologies to the market clearing price. This mechanism, however, may result in less than 40 percent of the funds going to existing facilities if market clearing prices remain high, which would jeopardize compliance with that particular AB 1890 requirement. The Energy Commission believes that efficiency gains from linking incentives to the market clearing price warrant relaxation of the 40 percent minimum. Allowance for such an outcome should be made explicit.

***Timing of Fund Expenditures:*** AB 1890 requires funds to be collected between 1998 and early 2002, but the legislation is silent about the length of the period over which the funds may be expended. In addition, it does not indicate what should happen to funds that may not be allocated for specific expenditure by the end of the collection period. Distribution mechanisms intended to maximize fund effectiveness (e.g., payments tied to market clearing prices, rain check provision payments, or payments provided for five years beyond a new facilities on-line date) imply a potential need for allocation decisions and administrative activities beyond the end of the AB 1890 fund collection period. Authority for such activities should be made explicit.

In addition, market conditions combined with the Energy Commission's proposed mechanisms imply that funds may be expended several years after they are collected and appropriated. The legislature should specify that the AB 1890 renewables funds shall be available for encumbrance and expenditure without regard to fiscal year.

***In-State Expenditures of Renewable Funds:*** The Energy Commission proposes that transactions involving sale of renewable electricity across the California border in either direction

are not eligible for AB 1890 funds. Further direction is being sought about the legal issues raised by providing support to renewables located in California, but not to those located outside the state that are engaged in electricity commerce in California and vice versa. The Energy Commission believes that it is the intent of AB 1890 to provide support only to generating facilities located within the state. In addition, the Energy Commission believes that it is unfair for California ratepayers who provide the funds for AB 1890 to subsidize out-of-state generators. Legislative direction about these transactions should be made explicit.

## **Other Implementation Issues**

*Voluntary Contributions:* The Legislation requires that utilities allow customers to make voluntary contributions through their utility bill payments and that the funds collected through these voluntary contributions be forwarded to an appropriate fund as specified by the CPUC.<sup>26</sup> Based on analysis of likely outcomes of different program design (see Appendix B), the Energy Commission recommends that funds collected through voluntary contributions be used to augment the \$540 million established by AB 1890. Contributors could be allowed to designate where their funds will go, or alternatively funds could be allocated specifically for the support of new or emerging technologies or customer-side goals. The Energy Commission recommends that the ultimate allocation and distribution of these funds be decided through implementation proceedings to be held subsequent to the adoption of this report.

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<sup>26</sup> Article 7, 381.e.

**Implementation Plan:** The Energy Commission believes that at least six months are required after the program is approved to comprehensively develop the implementation details of the AB 1890 renewables program, although the exact structure and timing of an implementation plan will depend upon the direction of the Legislature. The following milestones are provided in the context of the Energy Commission's proposal as an example of a summary draft implementation plan:

Provide Bidding Protocols for the New Account	July 1, 1997
Provide Request For Proposals for the Emerging Account	July 1, 1997
Establish Certification and Verification Process	August 1, 1997
Establish Consumer Information and Market Building Organization	August 1, 1997
Hold Bidding Procedure for New Account	September 1, 1997
Evaluate Emerging Proposals And Determine Winners	September 1, 1997
Establish Accounting Structure for Existing Account	October 1, 1997
Establish Accounting Structure for the Customer Account	October 1, 1997
Establish Accounting Structure for New Account	October 1, 1997
Establish Accounting Structure for Emerging Account	October 1, 1997

**Energy Content Labeling:** To provide adequate information for consumers to make informed choices about electricity purchases, the Energy Commission believes that California must develop or participate in development of a disclosure mechanism, or content label, for electricity providers. The content label, a concept generally favored by the renewables industry, could be used to provide simple and easy-to-understand information to consumers about items such as fuels resources used in generation, environmental factors, price and price volatility, contract terms, provider company background, etc. While efforts are underway at the state and federal level to develop a power content label, these initiatives are not expected to yield a plan in time for California's implementation of AB 1890. Nevertheless, development of broad energy content labeling guidelines in California or at the federal level will certainly have a significant impact upon consumer decisions when retail competition begins and should be closely coordinated with implementation of the renewables program.

**Exchange-Based Clearinghouse:** In order to reduce transaction costs for small renewable power producers and create a market mechanism for conducting renewable energy transactions, the Energy Commission recommends further consideration of an exchange-based clearinghouse to facilitate power exchanges in the renewable energy market. For example, such a clearinghouse

could be modeled after a commodity exchange, allowing bids and calls for a variety of time-denominated contracts for future renewables delivery. It would be more efficient to integrate such an exchange with a general electricity market exchange, if renewable attributes could be differentiated and made available for customer choice, but Power Exchange (PX) protocols and trading do not at this time seem to allow for such customer choice and they may not adequately account for the seasonal or intermittent nature of generation by some renewable technologies.

***Standard Offer Contract Restructuring:*** A key goal of AB 1890 renewables policy is to encourage the development of a customer-driven market for renewables. This goal may be hindered by the fact that the vast majority of existing renewables are obligated to sell their output to IOUs under standard offer contracts that have terms, in most cases, extending over the next 15 to 20 years. The Energy Commission recommends developing a process for contract restructuring that will encourage, but not compel, existing suppliers to restructure their contracts with utilities and become available for the direct access market. The Energy Commission's current proposal for AB 1890 funding provides some encouragement for contract restructuring, but does not supersede the overall contract restructuring proceeding taking place at the CPUC. Contract restructuring and AB 1890 renewables policy are plainly interrelated and should be coordinated to the extent feasible.

***Coordination With Other Renewable Programs:*** An important factor in the success of the California renewables program will be coordination with other local, state, federal and international renewable technology development activities. For instance, any California support for the development of photovoltaics should be coordinated with local programs (such as those sponsored by SMUD), out-of-state programs (such as those in Arizona), federal programs (such as those funded by through the USDOE and managed by NREL), and international programs (such as those underway in Japan or Germany). Coordination of renewable activities will not only yield valuable information that will benefit each technology, but will also provide opportunities for co-funding and leveraging of California renewables funds. The Energy Commission will continue to seek opportunities for coordination and collaboration with other renewables programs.

## Chapter 3

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# EXISTING TECHNOLOGIES

## ALLOCATION TO THE EXISTING TECHNOLOGIES ACCOUNT (45% = \$243 MILLION)

### Description and Rationale

The existing technologies account is designed to help maintain existing renewable technologies. The Energy Commission recommends allocating 45 percent to existing technologies (57 percent in 1998, declining to 33 percent in 2001). To spend more on existing technologies requires reducing the allocation to the customer side of the market (new and emerging are already allocated the minimum 40 percent), which could jeopardize the timely development of a consumer-driven renewables market. While AB 1890 requires that a minimum of 40 percent of the funds be allocated to existing technologies, the Energy Commission believes that allocating another 5 percent to existing facilities will help them get through the transition without unbalancing the support required for the new, emerging and customer accounts. Less support to existing technologies might lead to a significant erosion of the existing industry, particularly if market clearing prices fall significantly.

The funds in this account will be divided into three subaccounts called tiers. Each existing technology will be assigned to a tier appropriate for its general cost characteristics and potential for generation cost reduction. Solar thermal and biomass technologies are placed in Tier 1 and will be allocated 25 percent of the \$540 million.<sup>27</sup> Wind is placed in Tier 2 and will be allocated 13 percent of the funds. Geothermal, small hydro, digester gas, municipal solid waste (MSW), and landfill gas (LFG) technologies are placed in Tier 3 and allocated 7 percent of the \$540 million. Table 3-1 indicates the level of funds that will be allocated to the existing technologies account and to each of the three tiers over time.

Tier 1 is allocated approximately twice as much support as Tier 2 (25 percent vs. 13 percent). Tier 1 technologies have the greatest need for support during the transition, particularly early in the period. Initially, a higher target price and cap, reflecting need, implies that support payments for this tier are more likely to occur (given the market price) and are likely to be higher than payments for other tiers. Later in the period when target prices and caps decline to equivalence with Tier 2, and need is expected to decrease due to cost-shifting and operations and maintenance

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<sup>27</sup> For the purposes of this report, the Energy Commission has classified whole waste tire combustion as biomass.

improvements, eligible generation in Tier 1 becomes significantly higher than in Tier 2 as facilities come off their ISO4 price cliffs.

**Table 3 - 1: Existing Technology Account - Allocations by Year**

	1998	1999	2000	2001	overall
Tier 1 (Biomass, Solar Thermal)	32%	27%	23%	18%	25%
Tier 2 (Wind)	16%	14%	12%	10%	13%
Tier 3 (Geothermal, Small Hydro, Digester Gas, MSW, LFG)	9%	8%	6%	5%	7%
Existing Technologies (ALL)	57%	49%	41%	33%	45%

The Energy Commission is assuming that funds will be collected from utilities and allocated to accounts in four equal allotments over a four-year period.

Tier 3 is allocated approximately half as much support as Tier 2 (7 percent vs. 13 percent), even though Tier 3 technologies have historically provided a significantly higher level of generation. There are two reasons for this lower level of support for Tier 3. First, the Energy Commission believes that most Tier 3 technologies do not need additional support under a wide variety of market prices, reflected in the relatively low target price associated with Tier 3. Other technologies are higher in cost, but do not show potential for becoming cost competitive after the transition period.

The creation of technology tiers is both necessary and appropriate to support the competing policy objectives outlined in AB 1890. Although the legislation directs that this report include market-based mechanisms to allocate available funds and reward the most cost-effective generation, the legislation also directs that the funds be used to support existing biomass and solar thermal technologies because of the additional benefits and needs of these industries. Furthermore, the legislation states that it is the intent of the Legislature that restructuring preserve California's commitment to developing diverse, environmentally sensitive electricity resources.<sup>28</sup> We believe that the proposed allocation of funds into tiers provides the proper balance between supporting specific industries and encouraging all renewables to find ways to compete in the new market structure.

The Energy Commission proposes that all funds allocated to Tier 1, 2 or 3 roll over and remain allocated to those tiers for the entire four years. At the end of the four-year distribution period, the first \$16.2 million (3 percent of the \$540 million) of any rollover funds should be allocated to the emerging technologies account. Any additional rollover funds should be reallocated based on an assessment of market conditions at that time.

## **Eligibility and Exclusions**

The existing technology funds will be available to non-utility renewable generators meeting the definition of an existing technology, including repowered facilities that elect to remain under most types of existing long-term utility contracts. Repowered facilities that operate under SO<sub>2</sub> or SO<sub>4</sub>

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<sup>28</sup> Section 1.a.

contracts will be classified as existing, rather than new technologies for the purposes of AB 1890 funds distribution. Projects excluded from funding will include 1) facilities receiving fixed energy payments under an existing long-term contract with an IOU, 2) facilities owned by utilities, for which the capital cost has been previously recovered from utility ratepayers and/or is eligible to be recovered through the competitive transition charge, 3) self-generators, and 4) facilities owned by or selling electricity to municipal electric utilities, or out-of-state customers.

## **DISTRIBUTION MECHANISM (PER KWH PRODUCTION INCENTIVE)**

### **Description and Rationale**

The proposed distribution mechanism for existing technology funds is a per kWh production incentive based on the difference between target prices and market clearing prices subject to a cap. The Energy Commission proposes that market clearing prices be estimated based on monthly average utility short run avoided costs (SRAC) until such time as the CPUC determines that the power exchange price adequately represents market clearing prices. The level will be determined by taking the lowest of: 1) target prices minus market clearing price, 2) available funds divided by kWhs of generation, and 3) a cents per kWh production incentive cap.

The suggested target prices and production incentive caps are shown in Table 3-2.<sup>29</sup> Tier 1 technologies are those that have relatively high costs, and their incentive payments will be determined based on a target price of 5.0 cents per kWh in 1998, declining to 3.5 cents per kWh in 2001. The declining target price for Tier 1 is intended to encourage technologies in that category to find ways to become competitive by the end of the four-year transition period. Tier 2 technologies are in general more cost-competitive than Tier 1 technologies, and therefore their incentive payments will be based on a 3.5 cents per kWh target price. Finally, Tier 3 technologies are those that are the most cost competitive renewables and their incentive payments will be based on a 3.0 cents per kWh target price.

A sample calculation illustrates how the production incentive level will be determined. Assuming that the total level of generation by certified solid-fuel biomass and solar thermal suppliers during a monthly payment period is 300 gigawatt hours, the available funds during that period are \$3 million, and average market clearing price levels are 3.2 cents per kWh, the results of the three tests described above (for 1998) will be as follows:

- 1) Target price minus market clearing price levels equals 5.0 cents per kWh - 3.2 cents per kWh = 1.8 cents per kWh

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<sup>29</sup> Target prices are not based purely on levelized generation costs for the different technologies. Many existing generators have other sources of funding, such as fixed capacity payments from utilities or federal tax credits. In addition, many existing facilities have paid off most, if not all, of the debt associated with initial plant construction and are therefore able to generate at lower price levels.

- 2) Available funds divided by eligible generation equals \$3 million/300 million kWhs = 1.0 cent per kWh
- 3) The production incentive cap is 1.5 cents per kWh

Based on the lesser of these three calculations, determined in this case by available funds divided by generation, the production incentive for technologies in Tier 1 would be set at 1.0 cents per kWh for that month. Figure 3-1 illustrates the relationship between market clearing prices and the incentive payment for the proposed distribution method.

**Table 3 - 2: Target Prices and Payment Caps for Existing Technologies (Cents per kWh)**

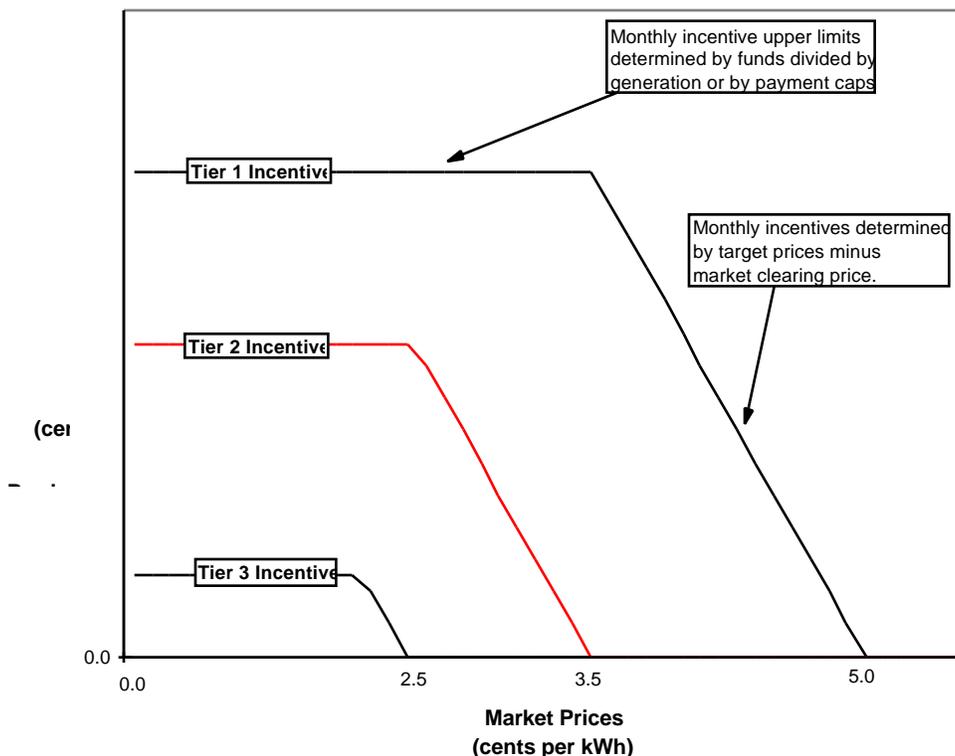
		1998	1999	2000	2001
Tier 1 (Biomass, Solar Thermal)	Target Price	5.0	4.5	4.0	3.5
	Cap	1.5	1.5	1.0	1.0
Tier 2 (Wind)	Target Price	3.5	3.5	3.5	3.5
	Cap	1.0	1.0	1.0	1.0
Tier 3 (Geothermal, Small Hydro, Digester Gas, MSW, LFG)	Target Price	3.0	3.0	3.0	3.0
	Cap	1.0	1.0	1.0	1.0

This proposed distribution mechanism represents an effective market-based system to distribute the existing technology funds to reward the most cost-effective generation. Electricity suppliers will receive payment from the fund only when they generate electricity. More cost-effective facilities will have the incentive to generate, while less cost-effective facilities will not be supported disproportionately to their ability to generate. Those facilities that cannot compete during the transition period will lose funding as they reduce generation, and those that use natural competitive advantages, cut costs or find additional sources of customer revenues will be rewarded for their actions.

Although the proposed link to market clearing prices and the proposed cap on production incentive payments may slightly increase the complexity of the incentive calculation, the Energy Commission proposes these provisions because they will help to make the best use of public resources. If market clearing prices increase significantly, as they have over the past several months, then the need of existing renewable technologies for additional revenues will decrease

dramatically.<sup>30</sup> A production incentive cap, used in conjunction with a link to market clearing prices, will prevent a situation where renewable generators receive higher support payments than needed.

**Figure 3 - 1: Relationship Between Market Clearing Price and the Production Incentive**



This figure illustrates the production incentive structure for the year 1998. Beyond that year, the illustration would appear different because of changes to the target price for Tier 1.

## Timing of Fund Distribution

The proposed payment period for the production incentive is by month. A one month lag between generation by certified suppliers and payment of funds will allow sufficient time for collection and verification of reported generation data in order to calculate the proper payment level. This will require that payment for January 1998 be based upon generation during December 1997. Payment will be made directly to suppliers at the end of each month for four years or until the allocated funds are fully distributed.

<sup>30</sup> The proposed transitional indicator of market clearing prices, utility SRAC prices, recently reached a level of over 5.0 cents per kWh, a 10 year high. At higher market price levels additional payments to existing technologies will not be necessary and funds will be rolled over for use in subsequent periods.

Certain industry representatives also expressed concern that a per kWh production incentive could become a disincentive to facilities requiring extended periods of down-time for capital improvements or repairs. Recognizing that a major objective of AB 1890 is to assist renewables in becoming cost-competitive, the Energy Commission proposes a rain check provision that will allow suppliers the option to postpone up to six months worth of generation over the four-year payment period for scheduled capital improvements or plant repairs. Plants will then qualify for the missed payments and any interest earned on them in six additional qualifying months added at the end of the payment period for a total of four and a half years of fund distribution.

During the six month qualifying period, plants will be required to generate at comparable or greater levels to receive rain check funds. The level of rain check funds held for payment will be predetermined based upon average monthly generation by the particular supplier during the year prior to the scheduled maintenance outage. Suppliers will be required to announce their intention to take a rain check outage at the beginning of the month so that only planned outages, as opposed to unscheduled outages, will qualify for the rain check provision.

## Chapter 4

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### NEW TECHNOLOGIES

#### ALLOCATION TO THE NEW TECHNOLOGIES ACCOUNT (30% = \$162 MILLION)

##### Description and Rationale

The new technologies account is designed to provide new projects with a fixed generation-based production incentive. Projects will be awarded these incentives through a competitive bid process described below. The level of funds allocated to this account will increase from 24 percent to 36 percent over the four-year period (see Table 4-1) while maintaining the proposed 30 percent allocation overall. This account is sized to maximize support for new renewable development in balance with AB 1890 direction to allocate at least 40 percent of the funds to existing technologies, allow for customer rebates and support emerging technologies (which because of differing cost characteristics must receive a separate allocation). The Energy Commission believes that providing this type of support to new renewable technologies will reward the most cost-effective technologies, use market-based mechanisms, and facilitate the development of a self-sustaining market for renewable energy technologies within this limited period of time.

**Table 4 - 1: New Technology Account - Allocations by Year**

Account	1998	1999	2000	2001	overall
New Technologies	24%	28%	32%	36%	30%

The Energy Commission is assuming for purposes of developing these policies that funds will be collected from utilities and allocated to accounts in four equal allotments over a four-year period.

##### Eligibility and Exclusions

This account will be open to new or repowered technologies as defined in Chapter 9. Repowered projects with SO<sub>2</sub> or ISO<sub>4</sub> contracts or with other utility contracts that provide fixed energy or capacity payments will be ineligible for funding from the new technologies account. Other exclusions include self generation, generation by customer-owned utility plants and generation sold to customers not paying the public goods charge collected by IOUs. Incremental generation from expansions of or enhancements to existing facilities will be eligible for funding from this

account, provided that it is not sold under an existing utility contract that provides long-term fixed energy or capacity payments.

Project developers that have requested consideration of their technology for inclusion in the emerging technology category will be eligible to compete for the new technology funds, but specific projects cannot receive funding from both the new and the emerging technologies accounts.<sup>31</sup> Repowered projects or incremental improvements that unsuccessfully bid for the new technology funds will be eligible for funding from the existing technologies account.

## **Adjustments for Oversubscription or Undersubscription**

The Energy Commission proposes that the new technology funds be allocated through a single competitive solicitation to be held in late 1997 or early 1998. If the bid is undersubscribed, then any remaining funds will be allocated through a second competitive solicitation to be held approximately six months after the finding that the first bid is undersubscribed. The production incentive for new technologies will be paid over a five-year period, commencing when an eligible facility comes on-line. Winning facilities from either solicitation that come on line after December 31, 2001, will not receive funding. The Energy Commission proposes that any funds not allocated through the second solicitation (if one is necessary) or any funds not distributed by the end of the five-year payment period be returned to the surplus account to be reallocated based on an assessment of the market conditions at that time.

## **DISTRIBUTION MECHANISM (PER KWH PRODUCTION INCENTIVE)**

### **Description and Rationale**

The proposed distribution mechanism for new renewable technologies is a cents per kWh production incentive awarded through a simple competitive bid. The results of the competitive bid will be determined based on two parameters provided in each bid: 1) the cents per kWh of incentive desired over a five-year distribution period, and 2) estimated annual average generation over that same five-year period. Production incentives will be awarded to each successive low-cost bidder until the funds from the new technologies account are completely allocated. The Energy Commission proposes a cap on the new technology production incentive of 1.5 cents per

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<sup>31</sup> For example, a photovoltaic project that buys down the cost of residential PV arrays may be successful in the emerging request for proposals process. Any systems that receive this buy down support would not be eligible for support from the new account, but PV manufacturers or representatives would be eligible to participate in the new account bid with eligible projects that did not include any systems receiving the emerging account support.

kWh. In addition, the Energy Commission recommends that no single bidder be allowed to receive more than 25 percent of the new technologies account funds.

Any competitive bid for new technologies should be designed so that bidders have an incentive to accurately and conservatively estimate the level of generation that their proposed facility will be able to provide. If bidders were to intentionally overestimate the level of generation that they could realistically provide, then the new technology funds would not be fully distributed over the five-year period. If, on the other hand, bidders were to underestimate generation, then the new technologies account funds would not be sufficient to pay for every kWh generated over the five-year period. In order to encourage firms to accurately estimate the generation capability of their proposed facility, the Energy Commission proposes that the production incentive be paid only for the amount of generation specified in the bid for the five-year payment period. Furthermore, a meaningful penalty (25 percent of the annual incentive) should be subtracted from the production incentive for any facilities that are under their self-determined five-year generation target by 5 percent or more. The Energy Commission proposes that this penalty be recovered, if necessary, from a performance bond to be posted by each winning bidder.

The level of funds allocated to new renewable technologies is limited, and therefore the language in AB 1890 seems to indicate that the funds be competitively allocated. Many stakeholders endorsed the use of a competitive bid for new technologies, but warned that the bid must be kept simple to avoid potential administrative and litigation complexities that have hindered past energy procurement auctions. Supporters of a competitive bid generally supported an auction based purely on price and expected kilowatt hours of generation.

A simple auction is more feasible when bidding for a limited production incentive amount, as proposed here, than for the entire revenue compensation for prospective resources such as occurred with the BRPU. Rather than attempting to “level the playing field” with complicated bid characteristics and details covering, for example, capacity value, environmental benefits, and reliability; the bid in this case relies as much as possible on the market decisions to value and provide for these characteristics for each potential bidder, so that they do not have to be considered in the bids. Projects that expect to recover more market value for a particular characteristic may require, and hopefully bid for, less assistance from the production incentive. Even where the market may not price or provide for the value of a particular characteristic, the first effort should be to try to establish this value in the market itself, rather than complicate the production incentive bid process.

The Energy Commission has identified a number of implementation issues that must be resolved before the competitive bid for new technologies is held. Following consideration of this report by the Legislature, the Commission will develop a process to resolve these issues and design the bidding protocol. These rules should be developed by the end of 1997 to provide sufficient time for the bid to be held and awards made by mid-1998. At a minimum the bidding protocol will:

- 1) Require a demonstration of site control and project feasibility
- 2) Specify whether the bid is a first-price or second-price auction

- 3) Allow only a single bid for a single site or project
- 4) Indicate how a tie will be broken between two or more identical bids (if necessary)
- 5) Indicate how the final marginal winning bidder(s) will be accommodated if the bid(s) is larger than the available funds can accommodate

Although the Energy Commission carefully considered project financing mechanisms for the new technology category, such as loan guarantees and interest rate buy-downs, the proposed distribution mechanism for new technologies does not currently specify how these options will be used because they appear to unduly complicate the competitive auction. Not all potential project developers need, want, or are able to use project financing assistance. Some project developers have demonstrated an ability to find attractive project financing without additional state assistance. Developers representing geothermal, wind and biogas technologies have indicated that project financing support could jeopardize federal tax credits. Others have suggested that production incentives will make private market-based financing easier and thereby eliminate the need for additional financing mechanisms.

Unlike other types of financial assistance, a generation-based production incentive could be used by developers representing all technology types and therefore provides the most equitable basis on which to conduct a competition. As the rules for the competitive bid are further developed, the Energy Commission will continue to search for a means to offer additional financing mechanisms for new technologies that will not jeopardize the simplicity or fairness of the bid.

## **Timing of Fund Distribution**

The timing for distribution of the new technology production incentives will be monthly. Payments will be made for five years commencing one month after each new generation facility begins operation. As mentioned above, each winning bidder will be required to post a performance bond to reserve allocated funds. Winning projects will be required to commence operation no later than December 31, 2001, and generate at a level within 5 percent of the self-determined generation target to recover the full value of the performance bond (including any interest earned). The production incentive program will sunset at the end of 2006, or five years after the last winning project begins operation.

## *Chapter 5*

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# **EMERGING TECHNOLOGIES**

## **ALLOCATION TO THE EMERGING TECHNOLOGIES ACCOUNT (10 PERCENT = \$54 MILLION)**

### **Description and Rationale**

This account is designed to meet the varied needs of emerging renewable technologies. The account could be used for supplier or consumer financing or for rebates to customers for purchases of distributed generation hardware (all of which were specifically requested by some industries), or other purposes as requested and approved. The funds will be allocated to projects based on a competitive process. Photovoltaics, which are specifically mentioned in AB 1890, are expected to be strong competitors for these funds.

The Energy Commission has decided to initially allocate 10 percent of the \$540 million to the emerging technologies account, while specifying that an additional allocation of rollover funds clearly not needed in other accounts may augment the account later in the transition period. The Energy Commission has allocated the first \$16.2 million (3 percent of the \$540 million) of any rollover funds to the emerging technologies account. Additional rollover beyond the first 3 percent may be allocated to support emerging technologies by the end of the transition period, depending upon market conditions at that time.

### **Eligibility and Exclusions**

AB 1890 describes an emerging renewable technology as a “new renewable technology, including, but not limited to, photovoltaic technology, that is determined by the [California Energy Commission] to be emerging from research and development and that has significant commercial potential.”<sup>32</sup> To provide a common standard by which to judge any technology seeking classification as an emerging renewable technology, the Energy Commission proposes that the following criteria be used. These criteria are intended to maximize the effectiveness of the emerging technologies account by concentrating on funding technologies and applications that are most likely to achieve significant commercial success:

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<sup>32</sup> Article 7, 381.h.

- 1) The technology must be commercially available with at least one vendor available for the sale of the system.
- 2) Vendors of any generating systems employing the technology must offer at least a five year full warranty on the entire generating system.
- 3) The technology must show at least one year of demonstrated reliable, predictable and safe performance by a full-scale facility using this technology under field conditions.
- 4) Available data must show that generating systems using the technology have a useful design life of at least 20 years.
- 5) The technology must be designed so it can produce grid-connected electricity, because:
  - a) remote applications are generally found to be cost effective and do not require financial assistance, and
  - b) end-users that are not connected to the grid are not paying the CTC.<sup>33</sup>
- 6) The technology represents a new electricity generating process not well-represented among existing grid-connected renewable generating facilities, rather than some evolutionary or incremental improvements to renewable technologies used in existing renewable resource technology generating facilities. (Examples of such evolutionary or incremental improvements will be: a) an improved blade design for wind turbines, b) less expensive well drilling techniques for geothermal, or c) a more efficient burner design for a biomass plant.)
- 7) The project must be designed exclusively for the purpose of producing electricity for sale (excluding demonstration projects that may sell to one specific customer), in contrast to a research or demonstration facility which is designed primarily for collecting additional research data.

Additional criteria will be used to determine which technologies or projects are the most qualified to receive funding through the emerging technologies account (these will be fully worked out in the Request For Proposal [RFP] process). One likely factor will be that the Energy Commission find, with reasonable probability, that the funding of such technology will produce cost reductions in the technology or sufficient California market potential such that the technology will be competitive without further financial assistance at the end of the AB 1890 support period. Another is the existence of multiple vendors for a technology, allowing competition to act to lower prices.

Furthermore, the Energy Commission will take into account all non-Energy Commission commercialization activities and programs that are relevant to the applying technology. The Energy Commission may recommend a change in funding to a technology based on the fact that

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<sup>33</sup> For technologies that may be either grid-connected or not, the installed system that is to receive funds must be grid-connected.

support is available elsewhere, and/or require coordination with other efforts to maximize the probability of success.

## **DISTRIBUTION MECHANISM (PROJECT-SPECIFIC SUPPORT)**

### **Description and Rationale**

The emerging account must have a flexible design because the needs of emerging technologies may vary significantly from one technology or project to the next. Photovoltaics, for example, require a different form of support than that needed by central station technologies; photovoltaics requires broad industry-wide assistance as opposed to financial assistance for one particular facility. Forms of project assistance may include consumer-side financing assistance (low-interest customer loans and/or instant rebates) to help make distributed generation technologies such as photovoltaics more affordable to consumers, loan guarantees or interest rate buy-downs for project financing assistance, per kWh production incentives similar to those provided for existing and new technologies, or capital cost buy-downs. The Energy Commission concludes that decisions about the optimal distribution mechanisms should be postponed until the Commission determines which technologies in addition to photovoltaics, if any, should be supported.

The Energy Commission proposes that funds from this account be distributed to technologies or projects based on the outcome of multiple competitive RFPs, and that the specific form of support for winners be determined on a case by case basis. The first RFP will be administered in late 1997 or early 1998. Proposals will be evaluated based on criteria to be developed during the implementation period following the completion of this report and its consideration by the Legislature.

### **Timing of Fund Distribution**

To provide technologies that do not yet meet all of the emerging technology criteria an opportunity to further mature, the Energy Commission recommends holding multiple requests for proposals, the outcome of which will determine which technologies or projects should receive support. Projects will be monitored for progress and any projects that fail to achieve specified performance milestones may lose their funding. Funds that become available from projects that lose funding, and/or funds rolled over from other accounts will be awarded through a subsequent solicitation by the end of 2001.



## Chapter 6

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# CONSUMER-SIDE ACCOUNT

## ALLOCATION TO CONSUMER-SIDE ACCOUNT (15 PERCENT = \$81 MILLION)

### Description and Rationale

This consumer-side account is designed to help build a customer-driven market for renewables by: 1) encouraging customer participation in the renewables market, 2) encouraging direct access marketing by renewables, and 3) encouraging a role for aggregators and marketers of renewable power. The development of a customer-driven market is key to the creation of a self-sustaining renewables industry. The consumer-side account will hold 15 percent of the \$540 million, and is divided into two subaccounts. The first of these subaccounts is the customer credit subaccount, which will be used to provide credits to customers of renewable power; the second subaccount is the consumer information and market-building subaccount, which is designed to facilitate the development of a market through the education of consumers.

*The Customer Credit Subaccount:* AB 1890 requires that the Energy Commission design programs that will “[a]llow customers to receive a rebate from the fund through mechanisms such as a reduction in their electricity bill or a direct payment from the fund for the transition charges that will otherwise apply to their purchases from renewable resource providers.”<sup>34</sup> The customer credit subaccount is designed to respond to this portion of AB 1890 by reducing the cost premium that customers may pay for renewable energy and thus encourage customers to buy renewable power. This subaccount is intended to help build a green market infrastructure during the transition period (when CTC payments may affect choice of alternate providers), going beyond helping renewables to become competitive with conventional generation technologies to also facilitate consumer choice of renewable power.

The customer credit subaccount will hold 14 percent of the \$540 million. This account is sized according to information available from direct access pilot programs and utility green marketing programs in other states, which were used to roughly project a likely level of consumer participation in the renewable power market. Using these projections, Energy Commission staff estimate that consumers renewables purchases will generate credits of approximately 1.0 to 1.5 cents per kWh.

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<sup>34</sup> Article 7, 383.b.3.

The allocation to this account ramps up over the four-year period while maintaining the 14 percent allocation overall, as shown in Table 6-1. The reason for starting with a smaller allocation and increasing it over time is because the customer base will likely be smaller in the beginning than in later years.

**Table 6 - 1: Allocations to the Customer Credit Account, by Year**

<b>Account</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>overall</b>
Customer Credit	8%	12%	16%	20%	14%

The Energy Commission is assuming that funds will be collected from utilities and allocated to accounts in four equal allotments over a four-year period.

***The Consumer Information and Market-Building Subaccount:*** A hallmark of efficient markets is easy access to reliable product information so that consumers can make informed choices. While market research over the last 20 years indicates that consumers are interested in and support renewable energy, it should not be assumed that consumers will rush to buy renewable electricity when given the choice. Consumers are likely to be wary of the direct access market in general, because it represents a change in the status quo and because they may be concerned about cost and reliability when purchasing energy from less established or familiar companies. Consumers can be expected to be skeptical of marketing claims, and to feel confused about the workings of the system or the choices available to them. Renewable energy marketers are likely to face an even larger barrier, because consumers may not immediately understand the differences between energy types or the benefits of renewable energy relative to its cost. Even with information available in the marketplace, consumers may still hesitate because of confusion about competing advertising claims. For instance, they may be uncertain about which generation technologies are more environmentally beneficial or about which energy sources are actually renewable.

The responsibility for educating the public about renewable energy choices should not rest solely with renewable energy marketers because these companies may not have the incentive to develop certain types of information helpful to the overall renewables industry or to share proprietary marketing information. The reality of California’s renewables industry is that there are numerous smaller independent generators of power. No individual firm, therefore, is likely to have the resources or incentives to collect, prepare, and disseminate general consumer-oriented information about renewable energy. A need exists for central, unbiased, and consumer-friendly source of information about renewable energy choices.

AB 1890 calls for the establishment of mechanisms that reward the most cost-effective generation of renewables, and suggests a clearinghouse as one possible mechanism. One definition of a clearinghouse is: a central institution where the collection, maintenance, and distribution of

materials or information takes place.<sup>35</sup> The Energy Commission believes that an information clearinghouse is an appropriate mechanism for informing consumers on renewable power and for other market-building activities and recommends allocating 1 percent of the \$540 million to the consumer information and market-building subaccount for the development and operation of an information clearinghouse.<sup>36</sup> This clearinghouse is tentatively named the Renewable Energy Information Clearinghouse (REIC).

The mission of this information clearinghouse will be to promote and develop a consumer-driven market for renewables. The 1 percent allocation to the REIC should be sufficient to initiate the development and dissemination of packaged consumer information pieces designed to educate consumers and promote the renewables power market. These activities can be accomplished more effectively with the active participation of renewable industry players. An implementation group composed of renewable power suppliers and providers and other relevant parties would facilitate industry participation in the REIC's activities. In order to maximize its effectiveness, the clearinghouse will need to leverage funds and/or efforts with generators, marketers, environmental organizations, research labs, the federal government, and the CPUC's Consumer Education Plan or Consumer Education Trust.

This approach is consistent with the Legislature's desire to reward the most cost-effective generation because it supports the development of an efficient market. By making reliable product information available to potential customers, the REIC will enable customers to make decisions that will reward the least-cost providers of the product. Further, by keeping its focus on the market as a whole, filling information gaps, and remaining inactive in the actual market, the REIC will permit the most innovative, entrepreneurial, and cost-reducing firms to reap the benefits of their success.

The 1 percent allocated to this account should be sufficient to establish the REIC and to initiate market-building activities, when combined or coordinated with other restructuring consumer education and information efforts. If the clearinghouse is proven effective in accomplishing its mission during the transition period, members in the renewables industry may elect to continue many of these activities through an industry-funded marketing or educational board. In addition, money may be available from the CPUC to assist in continuing this function.

## **Eligibility and Exclusions for the Customer Credit Subaccount**

Under the Energy Commission's proposal, customer credits will be awarded for purchases of qualifying renewable power through the direct access market, including both physical direct access contracts and contracts for differences. The source of power can be an existing, new, or

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<sup>35</sup> Another definition of a clearinghouse is discussed earlier in this report.

<sup>36</sup> Market-building activities are those activities that help to build a customer-driven market for renewables. Primarily, these activities consist of making sure that consumers have trustworthy information in the market.

emerging technology, thus maximizing consumer choice and providing wide flexibility to renewables marketers in developing renewable electricity generation portfolios. Customer credits are to be awarded for all qualifying power purchases (in-state generation subject to the public goods charge collected by IOUs) regardless of whether or not the power generator is receiving funding from other renewables accounts. Residential, commercial, agricultural, and industrial classes are eligible to receive the customer credits subject to a \$1,000 per year cap on the amount of credit they receive.

## **DISTRIBUTION MECHANISM FOR THE CUSTOMER CREDIT SUBACCOUNT (PER KWH CUSTOMER CREDITS)**

### **Description and Rationale**

The proposed distribution mechanism for funds from the customer credit subaccount is a simple consumption credit paid out through providers that deliver power from certified suppliers to customers in direct access contracts or contracts for differences. The value of the per kWh credit in each payment period will vary, and is determined by dividing available funds by the total kWhs of eligible renewable power consumed through qualifying sales in that period, subject to a cap.

To meet the requirements of AB 1890, the credit must be passed on to customers, but making payments to each and every customer would be extremely costly and unduly burdensome. Therefore, the Energy Commission recommends that the credit be paid out in lump sum payments to providers that sell eligible power to qualifying customers. Providers will then be required to show this credit as a line item on the customer's next electricity bill.

Although the ramping in the allocation to this subaccount allows for a market that increases in size over time, the value of the consumer credits may be quite high in the early months. The Energy Commission proposes an upper limit of 1.5 cents per kWh on the consumption credit to prevent overpayment of funds at the beginning of the direct access period. Any unused funds will remain in the customer credit fund for distribution in subsequent months. By the end of the transition period, unused funds will be reallocated based on an assessment of market conditions at that time.

Over the course of the renewables workshops and hearings, the Energy Commission received wide ranging proposals for the support of renewables marketing. Some parties proposed the creation of a marketing co-op that would use favorable tax laws to provide generation from renewables to consumers at competitive rates. Other parties expressed support for one or more government designated marketing agents to purchase renewable power and sell it, using support from AB 1890 funds to subsidize these transactions. Some parties favored preset customer rebates, allocated to renewable providers on a first-come, first-served basis. Still other parties expressed doubt about the viability of any renewables marketing program, and instead favored

reallocating customer rebate funds to suppliers for their use in developing a competitive renewables market, with or without strong consumer support for renewables.

The customer credit mechanism recommended by the Energy Commission is not intended to favor any single marketing approach, but rather to provide renewables providers and marketers with a high level of flexibility in determining how best to develop a market for renewable power. While the funds are required to be passed on to customers, both suppliers and providers will also benefit because the rebate will increase their ability to attract customers. Suppliers and providers will have the freedom to use co-op structures, marketing agents, or other innovative approaches for selling renewable power. As green marketers achieve success in facilitating transactions between renewable suppliers and customers, the incentive per kWh will decline, conditioning the market for the eventual end of the incentives in 2002.

## **Timing of Fund Distribution**

Customer credit payments will be made to power providers on a monthly basis. A one month lag between electricity consumption and payment to consumers through intermediaries or suppliers will allow sufficient time for collection and verification of reported consumption data in order to determine the payment level. Providers will be paid at the end of each month for four years. At the end of 2001, unused funds will be reallocated according to market conditions at the time.



## *Chapter 7*

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# **CERTIFICATION OF RENEWABLE SUPPLIERS AND PROVIDERS**

## **OVERVIEW AND RATIONALE**

The wording of AB 1890 implies that certification of renewable resources providers is needed for two distinct purposes. First, AB 1890 states that the recommended market-based mechanisms to allocate funds should include options and mechanisms that implement a process for certifying eligible renewable resource providers.<sup>37</sup> This language implies the need to certify both suppliers (generating facilities) and providers (marketers, aggregators, or generators selling directly to end-use customers) of renewable energy to determine their funding eligibility. Second, AB 1890 states that customers purchasing at least half their load from certified renewable resource providers shall be eligible for direct access irrespective of any phase-in (except for consumers served by municipal utilities).<sup>38</sup> For purposes of this report, direct access refers to both physical direct access contracts and contracts for differences. To ensure that these customers are indeed purchasing 50 percent of their energy from renewables, a mechanism is also necessary to certify those renewables resource suppliers and providers that wish to help customers take advantage of this direct access provision.

## **PROPOSED CERTIFICATION PROCESS**

The Energy Commission proposes to certify renewable resource suppliers and providers both for eligibility for AB 1890 funds and for direct access priority. To simplify the process, the Energy Commission proposes that these suppliers and providers self-certify as described below, subject to verification by the Energy Commission. Customers seeking accelerated direct access would not have to certify, but would be required to purchase their electricity from a certified provider. Certification as a renewable supplier or provider for the purposes of direct access priority will be based on the definitions of renewable resource technologies given in AB 1890 and further clarified in Chapter 9 of this report. Certification as a renewable resource supplier or provider for purposes of funding eligibility will also be based on those definitions but will also include the additional eligibility requirements for the particular funding accounts specified in Chapters 2 through 6.

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<sup>37</sup> Article 7, 383.b.2.

<sup>38</sup> Article 6, 365.b.2.

## **Supplier Certification**

The Energy Commission proposes that renewable resource suppliers (generating facilities) wishing to be certified for the purposes of either participation in direct access priority or support from AB 1890 renewable funds file a simple, standardized self-certification form with the Energy Commission. This self-certification form will include, at a minimum, the following information:

- 1) Name and location of generating facility
- 2) Name, business address, telephone and telefax numbers of contact person
- 3) Description of renewable resource technology used for power generation
- 4) Size of facility (nameplate) and capacity of interconnection to grid
- 5) Operational date of generating facility (including dates of additions such as repowering)
- 6) Type of contract with utility (if applicable) and whether and for how long the contract includes fixed energy prices
- 7) Percentage of fossil fuel, if any, used in generation (must be 25 percent or less)
- 8) Whether the certification is for accelerated direct access, payment of renewables funds, or for both accelerated direct access and payment of renewables funds

The Energy Commission recommends that each certified renewable supplier be assigned a unique supplier identification number, used in subsequent reporting and tracking to help maintain project confidentiality. All certified renewable suppliers will be required to report performance on a monthly basis. This information will be used to verify continued eligibility for accelerated direct access (based on average annual generation) and/or to determine the level of payment to be made from the renewables funds. The monthly reporting requirement for certified suppliers will include at a minimum the following information:

- 1) Supplier identification number
- 2) The amount of generation sold during the period
- 3) The identification number of the certified provider through which the generation was sold (if applicable)
- 4) Any changes to the original self-certification data, such as changes in generation capacity due to repowering, or changes in utility contract type

## **Provider Certification**

The Energy Commission proposes that renewable resource providers (marketers, aggregators, or generators selling directly to end-use customers) seeking either participation in accelerated direct access or support from AB 1890 renewables funds also file a simple, standardized self-certification form with the Energy Commission. The self-certification for providers will include, at a minimum, the following information:

- 1) Name, business address, telephone and telefax numbers of company

- 2) CPUC provider registration number (if available)
- 3) Contact person responsible for retail sales
- 4) Description of the proposed supply portfolio (or portfolios, if provider offers more than one generation product to customers) <sup>39</sup>
- 5) Estimated generation to be obtained from certified renewable sources
- 6) List of supplier identification numbers for certified renewable sources
- 7) Estimated generation to be obtained from other sources
- 8) Whether the certification is for accelerated direct access, payment of renewables funds, or for both accelerated direct access and payment of renewables funds

The Energy Commission recommends the use of a unique identification number for each certified renewable provider, similar to that used for suppliers. This identification number could be used for both registration with the CPUC for direct access and for certification, reporting and verification through the Energy Commission. This number could be assigned by either the Energy Commission or the CPUC and then used by both organizations in tracking the performance of each renewables provider.

All certified renewable providers will be required to report performance on a monthly basis. This information will be used to verify continued eligibility for accelerated direct access (based on average annual generation in each supply portfolio) and/or to determine the level of payment to be made from the renewables funds. The monthly reporting requirement for certified providers will include, at a minimum, the following information:

- 1) Provider identification number
- 2) The amount of generation sold during the monthly period from each certified renewable supplier
- 3) The identification number of each certified supplier
- 4) Total generation in each supply portfolio
- 5) Any changes to the original self-certification data, such as changes in certified renewable suppliers or changes in business address

## **Monitoring and Enforcement**

The Energy Commission proposes that an independent non-government entity under contract to the Energy Commission, or the Energy Commission itself, be responsible for certifying and monitoring renewable resource suppliers and providers. The information from monthly reports will be examined to ensure that output from a particular supplier has not been claimed more than once. Verification that providers selling to customers receiving direct access have provided 50 percent or more of the customers' load from renewable sources will be done on an annual basis.

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<sup>39</sup> By supply portfolio, we mean a proposed mixture of generation options that is offered as a package to customers. Portfolios could be all renewable, all one technology, all local, all conventional, or mixtures of the above, and would have different prices reflecting the characteristics of the portfolio. Customers will then choose among the offered portfolios depending upon their preferences about generation options and prices.

Since all transactions will go through the Independent System Operator (ISO), complete verification can be accomplished by cross-checking numbers filed by providers and suppliers with ISO transactions.

Penalties for falsely self-certifying or reporting could vary depending on the nature of the violation. For instance, suppliers or providers that negligently fail to report timely or accurate monthly generation data could be excluded from payment of funds for that period and placed on probation for continued eligibility for the direct access provision. Any suppliers or providers who knowingly report false information regarding generation or other performance factors could face cancellation of their certification, repayment of and loss of any future renewables funds, or prosecution for fraud under existing state and federal laws.

## *Chapter 8*

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# **MICROCOGENERATION, COGENERATION FROM ENVIRONMENTAL POLLUTION, FUEL CELLS**

## **OVERVIEW**

AB 1890 directs the Energy Commission to include consideration of the need for mechanisms to ensure that microcogeneration and cogeneration facilities using pollution in their processes remain competitive in the electric services market. The legislation also requires consideration of whether fuel cells should be treated as fuel switching for purposes of exemption from the competitive transition charge (CTC). The Energy Commission's recommendations on these issues are based on staff analysis and filings and presentations from participants in the Energy Commission's workshops and hearings.

## **MICROCOGENERATION**

AB 1890 states that "it is the policy of the state to encourage the development of cogeneration as an efficient, environmentally beneficial, competitive energy resource that will enhance the reliability of local generation supply and promote local business growth."<sup>40</sup> The same section of the legislation provides explicit CTC exemptions for self-generation and over-the-fence transactions involving nonmobile cogeneration facilities that were operational prior to December 20, 1995 (with up to 20 percent expansion allowed), or were committed to by December 20, 1995 and begin operating by January 1, 1998.<sup>41</sup> Finally, an explicit CTC exemption is allowed by the legislation for any self-generation or over-the-fence load served by nonmobile cogeneration after June 30, 2000.<sup>42</sup>

AB 1890 defines a microcogeneration facility as a facility of less than one megawatt.<sup>43</sup> The microcogeneration industry contends that the implementation of AB 1890 will hinder the viability of their industry during the transition period if the CTC is imposed on the electricity load bypassed by microcogeneration facilities. The industry believes the CTC will render many potential microcogeneration projects uneconomic. One participant to the hearings and workshops

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<sup>40</sup> Article 6, 372.a.

<sup>41</sup> Article 6, 372.a.1&2.

<sup>42</sup> Article 6, 372.a.4

<sup>43</sup> Article 1, 330.f

argued that there was legislative intent to provide new microcogeneration facilities a specific exemption from the CTC.

AB 1890 does not expressly exempt microcogeneration. Instead, utilities are permitted, but not required, to apply for a financing order to finance the transition costs for microcogeneration transactions, in order to facilitate the development of new microcogeneration applications.<sup>44</sup> In addition, the legislation implies that microcogeneration for residential customers will be exempt from the CTC.<sup>45</sup> Finally, many microcogeneration applications have historically been considered as demand-side management actions, and as such, may be considered to be eligible for a CTC exemption as a general change in usage under AB 1890.<sup>46</sup>

Energy Commission staff conducted a sensitivity analysis on previous cogeneration forecasts done for the *1994 Electricity Report* to evaluate the possible impact of a CTC on microcogeneration economics in the Southern California Edison service area. The results of the analysis indicate that a CTC of 2.5 cents per kWh for two years increases the pay back period for many microcogeneration projects to beyond 10 years. The economics of microcogeneration have already been affected by lower electricity rates and changes in rate structure; imposition of the CTC is likely to delay consideration of new microcogeneration applications until after June 30, 2000, at the earliest.

Energy Commission staff also evaluated the impact on the CTC if microcogeneration were exempted. Historically, an average of 0.954 MW of microcogeneration has been added to the three utility systems annually over the past five years. This growth occurred in a period of relatively stable rates and fuel costs. Assuming the same growth over the next four years, the impact on CTC revenue will be about 0.004 percent of total expected CTC revenues over the four-year period (see Appendix C for details).

Analysis done by Energy Commission staff shows clearly that lower electricity rates, changes in rate structure, and imposition of the CTC imply a need for mechanisms to ensure microcogeneration remains competitive. One such mechanism that has been identified and evaluated is a CTC exemption. There may be other mechanisms that could be used, however, and the Energy Commission makes no recommendation for any particular mechanism at this time without further analysis and discussion.

## **COGENERATION USING ENERGY FROM ENVIRONMENTAL POLLUTION**

AB 1890 directs the Commission to consider “the need for mechanisms to ensure that cogeneration facilities that utilize energy from environmental pollution in its process . . . remain

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<sup>44</sup> Article 6, 372.e.

<sup>45</sup> Article 6, 371.c.

<sup>46</sup> Article 6, 371.a.

competitive.”<sup>47</sup> An example of such a facility is cogeneration that burns volatile organic compounds (VOCs) to meet air district emission regulations. This technology, termed “VOCgen,” can be used by customers such as bakeries, large laundries, and plastics processors.

During the Energy Commission’s workshops and hearings, a VOCgen manufacturer claimed that the technology will not be remain economic if potential customers considering this technology have to pay the CTC. The manufacturer also argues that the VOCgen technology should qualify as a “change in usage” which, under AB 1890, automatically qualifies for a CTC exemption.<sup>48</sup>

From the Energy Commission’s analysis of microcogeneration, it is clear that the imposition of the CTC could affect its economic viability. It is logical that the VOCgen type of cogeneration installation will suffer a similar fate. Therefore, the Energy Commission concludes that there is a need for mechanisms to ensure the competitiveness of the technology. As with microcogeneration, a CTC exemption will be one such mechanism, but by no means the only one. There may be other mechanisms that could be used, and the Energy Commission makes no recommendation for any particular mechanism at this time without further analysis and discussion.

## FUEL CELLS

There are two main issues from AB 1890 related specifically to fuel cells . The first issue is whether fuel cells should be treated as fuel switching for purposes of exemption from the CTC, and the second issue is whether fuel cells should be defined as an emerging renewable technology.

AB 1890 directs the Energy Commission to determine whether fuel cells should be treated as fuel switching for purposes of application of the CTC. AB 1890 describes fuel switching as “including installation of fuel cells pending a contrary determination by the [Energy Commission].”<sup>49</sup> Fuel switching in this context is primarily defined as switching between electricity and natural gas service for satisfying energy needs. The emergence of fuel cells for either cogeneration or power-only applications could reduce demands on a electric utility’s transmission and distribution system during peak summer periods by taking advantage of the underutilized natural gas supply network. This characteristic, also possessed by traditional self-generation, could provide greater diversity and reduce higher-cost electricity supplies during peak demand periods, benefiting other electricity customers. Based on this information, the Energy Commission proposes to define fuel cells as a fuel switching technology for purposes of being exempted from the CTC.

The second issue arising from AB 1890 regarding fuel cells is whether they should be defined as a renewable technology. One workshop participant proposed that fuel cells using biogas or other

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<sup>47</sup> Article 7, 383.c.1.

<sup>48</sup> Article 6, 371.b.

<sup>49</sup> Article 6, Section 371.b.

fuels derived from renewables be classified as a renewable energy technology. There were no written or oral objections to this proposal.

A fuel cell is simply a technology which electrochemically converts hydrogen and oxygen into electricity, with heat and water as by-products. In and of itself, it is not a renewable technology; however, if it uses a fuel derived from a renewable source, it could be considered a renewable technology. Therefore, the Energy Commission recommends that fuel cells be considered a renewable resource technology for those applications that utilize a renewable resource as the primary fuel.

## *Chapter 9*

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# DEFINITIONS

## PROPOSED DEFINITIONS

### Renewable Resource Technology

AB 1890 defines “renewable resource technologies” by what they are *not* rather than what they are, as technologies using power sources other than those currently defined as “conventional power source[s]” in Section 2805 of the Public Resources Code. A conventional power source is defined in Section 2805 as power derived from nuclear energy, or the operation of a hydropower facility greater than 30 megawatts, or the combustion of fossil fuels with the exception of cogeneration. AB 1890 further excludes power sources that utilize “more than 25 percent fossil fuel.”<sup>50</sup> This report uses the term “renewable resource technology” to refer to both broad resource categories such as biomass, geothermal, hydro, solar, and wind, and to subcategories within each resource category, such as photovoltaics or solar thermal. Renewable resource technologies include, but are not limited to, facilities that use the following energy sources to generate electricity:

- 1) Solar
- 2) Wind
- 3) Geothermal
- 4) Solid-fuel biomass
- 5) Whole waste tire combustion
- 6) Municipal solid waste that does not consist primarily of products originally manufactured from fossil fuels
- 7) Gas from anaerobic digestion of biological wastes
- 8) Hydropower with a generating capacity of 30 megawatts or less

### In-state Generation

“In-state” generation is defined as production of electricity from facilities physically located within the State of California.

The legislation specifies that it is the “in-state operation and development of existing and new and emerging renewable resource technologies” that should be supported.<sup>51</sup> “In-state operation”

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<sup>50</sup> Article 7, 381.b.3.

<sup>51</sup> Article 7, 381.b.3.

implies that the generation facility should be within the state, regardless of where the fuel comes from or whether the facility's energy is transmitted through California transmission lines. By this definition, municipal waste, biomass or used tires that originate in California, but are transported outside of California for combustion and conversion into electricity, will not be eligible for support, nor will generating facilities located outside California with transmission lines in California.

## **Existing Renewable Resource Facility**

The term "existing renewable resource facility" is defined as a facility, using a renewable resource technology, that is located in California and became operational (generating electricity for sale) prior to September 23, 1996.

Substantially refurbished facilities have characteristics of both existing technologies and new technologies. For the purposes of the AB 1890 renewables program, the Energy Commission proposes that any facility originally in operation prior to September 23, 1996, refurbished, and returned on-line after that date can compete, if desired and eligible, for funding support from the new technologies account, but if unsuccessful, be classified as an existing facility.

## **New Renewable Resource Facility**

The term "new renewable resource facility" is defined as a facility, using a renewable resource technology, that is located in California and became operational (generating electricity for sale) on or after September 23, 1996.

Facilities that are substantially refurbished on or after September 23, 1996 may compete for funding support from the new technologies account, provided that they do not hold a utility contract that pays long-term fixed energy or capacity prices. A refurbished facility is considered to be a "new renewable resource facility" for the purposes of AB 1890 fund distribution if the fair market value of the non-refurbished portion of the facility does not exceed 20 percent of the refurbished facility's total value.

Improvements to or enhancements of existing technologies will be eligible to compete for funding support from the new technologies account, if the incremental generation is not subject to sale through a utility contract that provides long-term fixed energy or capacity payments.

## **Emerging Renewable (Resource) Technology**

The term "emerging renewable (resource) technology" is defined as a renewable resource technology located in California that uses photovoltaic technology, or is determined by the California Energy Resources Conservation and Development Commission to be emerging from research and development and to have significant commercial potential.

This definition is based on the language of Section 381(h) of AB 1890. The word “resource” is contained in other parts of the legislation where the term “emerging” is used, but “resource” is missing from Section 381(h) which defines the concept of “emerging.” Presumably the terms “emerging renewable resource technology” and “emerging renewable technology” are the same.

# GLOSSARY

**aggregator** - an entity responsible for planning, scheduling, accounting, billing, and settlement for energy deliveries for portfolios of sellers and/or buyers.

**avoided cost** - the price paid to non-utility power producers equal to the costs utilities avoid by not having to generate or purchase power themselves. Avoided costs may be paid for energy or capacity.

**Biennial Resource Plan Update (BRPU)** - a bidding process established by the California Public Utilities Commission in the late 1980s to determine the type, amount, cost, and other attributes of new electricity supplies to be provided.

**bilateral contract** - an agreement between two entities for the purchase and the sale of energy products and services.

**biogas** - gas produced by the breakdown of algae, sewage, and other organic substances, or a generation technology that employs this gas as a fuel. Biogas generation includes both digester gas and landfill gas technologies.

**capacity** - (electric utility) the maximum amount of electricity that a generating unit, power plant, or utility can produce under specified conditions. Capacity is measured in megawatts.

**capacity factor** - a percentage that tells how much of a power plant's capacity is used over a period of time.

**capacity payments** - payments to electricity generators for their electric generating capacity, currently based on the costs of installing a low-cost generation type (i.e. combustion turbine) that a utility would add strictly for reliability.

**central station generation** - electricity generation by a stand-alone facility, primarily for distribution over the transmission and distribution grid. Often, but not always are large scale facilities, located distant from the point of consumption and requiring the use of a long distance transmission lines..

**cogeneration** - the production from the same energy input of electricity and useful thermal energy.

**competitive transition charge (CTC)** - a charge authorized by the California Public Utilities Commission that is imposed on all investor-owned utility (IOU) ratepayers (i.e. customers that receive electricity distribution services from the IOU) to recover the costs of utility investments made on behalf of their former customers. The CTC is to be collected in a competitively-neutral manner that does not increase rates for any customer class solely due to the existence of transition costs. [Section 367, AB 1890]

**contract for differences** - a financial contract for the purchase of electricity that enables customers to purchase power under a fixed price contract without notification of such to the ISO. When the power exchange (PX) price is higher than the fixed price, the generator pays the customer the difference; when the PX price is lower than the fixed price, the customer pays the generator the difference.

**demand side management (DSM)** - measures taken to influence the level or timing of customer energy demand in order to optimize the use of available energy resources.

**direct access** - the right for a generator to engage in a bilateral contract or a contract for differences with a buyer.

**distributed generation** - a small-scale electricity generation facility that is sited in or close to a load center or at a customer's site.

**distribution system** - the substations, transformers, and lines that convey electricity from high-power transmission lines to ultimate consumers.

**divestiture** - the disposal of utility company investments, usually through the sale of the investment to another entity.

**emerging renewable technology** - see chapter 9 of this report.

**end-use customer** - a residential, commercial, agricultural, or industrial customer in the electric industry who buys electric power to be consumed as a final product (not for resale).

**energy payments** - payments for a facilities generation output over time.

**existing renewable technology** - see chapter 9 of this report.

**feedstock** - material used as input for a process, e.g.- organic matter used as fuel used for a biomass facility.

**firm energy** - power supplies that are guaranteed to be delivered under terms defined by contract.

**fixed energy payments** - payments to the generator for energy delivered that are based on a predetermined price schedule.

**fixed price period** - the period of a standard offer contract between a generator and a utility that offers fixed energy payments to the generator rather than variable payments.

**fossil fuel** - hydrocarbons, including coal, petroleum, or natural gas, occurring in and extracted from underground deposits, and mixtures or byproducts of these hydrocarbons.

**fuel cell** - a device that uses a non-combustion reaction to convert the chemical energy of fuel directly into electricity.

**fuel switching** - changing the primary source of fuel for an application or end-use (such as cooling), from one type of fuel to another. Typically used in the context of different distributed fuels used for stationary uses, such as switching from electricity to natural gas or vice versa.

**geothermal** - natural heat from within the earth, captured for production of electric power, space heating, or industrial steam.

**gigawatt (GW)** - one million kilowatts of electricity.

**gigawatt hour (GWh)** - one million kilowatt-hours of electric power.

**grid** - an system of transmission and distribution lines for the purpose of moving electricity .

**grid-connected** - a system that is connected to the electricity grid, enabling electricity to flow into (and potentially from) the grid.

**hydroelectric** - a technology that produces electricity from falling water that turns a turbine generator, referred to as hydro.

**Independent System Operator (ISO)** - an independent, nonprofit, Federal Energy Regulatory Commission regulated entity with operational control over member utilities' transmission systems to insure comparable access to all electricity buyers and sellers. Its responsibilities include providing non-discriminatory access, managing congestion, maintaining the reliability and security of the grid, and providing billing and settlement services.

**investor-owned utility** - an utility that is organized as a tax-paying business, whose properties are managed by representatives elected by shareholders.

**interim standard offer #4 contract (ISO4)** - one of the standard contracts authorized by the California Public Utilities Commission for a utility's purchase of electric power from a qualifying facility. ISO4 contracts pay for firm capacity prices up to 30 years and, for the first 10 years of the contract, , pay fixed energy payments, reverting to variable payments in the 11th year.

**kilowatt (kW)** - one thousand watts. A unit of measure for the amount of electricity needed to operate given equipment. A typical home using central air conditioning and other equipment might have a demand of 4-6 kW on a hot summer afternoon.

**kilowatt hour (kWh)** - the most commonly-used unit of measure telling the amount of electricity consumed over time. It means one kilowatt of electricity supplied for one hour. A typical California household consumes about 500 kWh in an average month.

**landfill gas (LFG)** - gas produced by the breakdown of organic matter in a landfill (composed primarily of methane and carbon dioxide) or the technology that uses this gas to produce power.

**marginal cost** - the sum that has to be paid to obtain the next increment of product or service. The marginal cost of electricity is the price to be paid for kilowatt hours above and beyond those supplied by presently available generating capacity.

**market clearing price** - the price at a location at which supply equals demand - all demand at or above this price has been satisfied, and all supply at or below this price has been purchased.

**marketer** - an entity who takes title to electric power and then resells the power to end-use customers. This entity, who acts for itself in negotiating contracts, purchases, or sales of electrical energy, is required to meet two Federal Energy Regulatory Commission tests to be certified as a Power Marketer: 1) show lack of or adequate mitigation of Transmission Power; and 2) prove non-dominance of market power.

**megawatt (MW)** - one thousand kilowatts. One megawatt is about the amount of power to meet the peak demand of a large hotel.

**megawatt hour (MWh)** - one thousand kilowatt hours

**municipal solid waste** - locally collected garbage, which can be processed and burned to produce energy.

**municipal utility** - a Local Publicly Owned (customer-owned) Electric Utility that owns or operates electric facilities subject to the jurisdiction of a municipality, as opposed to the California Public Utilities Commission.

**new renewable technology** - see chapter 9 of this report.

**non-firm energy** - electric service provided under a contract that allows the supplier to curtail or stop service on short notice.

**peak load** - the highest electrical demand within a particular period of time. Daily electric peaks on weekdays occur in late afternoon and early evening. Annual peaks occur on hot summer days.

**peaking unit** - a power generator used by a utility to produce extra electricity during peak load times.

**photovoltaic (PV)** - a technology using a semiconductor that converts light directly into electricity.

**Power Exchange (PX)** - an independent, nonprofit entity responsible for conducting an auction for the generators seeking to sell energy and for loads which are not otherwise being served by bilateral contracts. The Power Exchange will be responsible for scheduling generation, determining hourly market clearing prices for its market, and settling and billing for suppliers and retailers using its market.

**power plant** - a central station generating facility that produces electricity.

**“price cliff”** - an event corresponding to the eleventh year of an ISO4 contract, when substantially higher-than-market fixed energy payments to a generator are replaced with SRAC-determined variable payments.

**provider** - an entity that is either a supplier, marketer, or aggregator, or some combination, that provides electricity to end-use customers.

**public purpose programs** - programs that serve a broad public purpose in combination with private interests, including energy efficiency, renewable generation, public-interest research and development, and low income support programs

**Public Utilities Regulatory Policies Act of 1978 (PURPA)** - implemented by the Federal Energy Regulatory Commission and the California Public Utilities Commission . Under PURPA each electric utility is required to offer to purchase available electric energy from qualifying cogeneration and small power production facilities.

**qualifying facility (QF)** - a cogenerator or small power producer which, under federal law, has the right to sell its excess power output to the public utility. Generally, small power projects must be no larger than 80 MW, be at least 50 percent non-utility owned, and be fueled by biomass, waste, or renewable energy sources.

**repower(ed)** - generically refers to replacing a significant portion of the generating equipment at an existing facility. In the context of this report, refers to an existing renewable generation facility that retrofits its existing facility to the point that the value of the retrofit is at least 80 percent of the value of the renovated facility.

**self-generation** - generation of electricity that is used on-site and is not sold into the main power grid.

**short-run avoided cost (SRAC)** - costs are calculated monthly by the investor-owned utilities using an agreed upon formula, currently related to the California border price of natural gas.

**small hydro** - hydroelectric technology with a capacity of 30 megawatts or less.

**solid-fuel biomass** - a biomass technology that utilizes solid fuel, such wood, agricultural waste, and other organic material that may be burned to produce electricity.

**standard offer #1 contract (SO1)** - one of the standard contracts authorized by the California Public Utilities Commission for a utility’s purchase of electric power from a qualifying facility. SO1 contracts pay for as-delivered capacity with short-run energy payments.

**standard offer #2 contract (SO2)** - one of the standard contracts authorized by the California Public Utilities Commission for a utility’s purchase of electric power from a qualifying facility. SO2 contracts pay for firm capacity with short-run energy payments.

**standard offer #3 contract (SO3)** - one of the standard contracts authorized by the California Public Utilities Commission for a utility’s purchase of electric power from a qualifying facility. SO3 contracts are the same SO1 contracts but are for facilities that have a capacity of under 100 kW.

**standard offer #4 contract** - see interim standard offer #4 contract.

**supplier** - a facility that generates electricity.

**surplus capacity** - excess generating capacity not under firm contract with a utility that can be sold to non-utility buyers.

**time-of-use rates** - electricity prices that vary depending on the time period in which the energy is consumed. In a time-of-use rate structure, higher prices are charged during utility peak-load time.

**triage** - a method traditionally used in medical emergency situations where there is insufficient time or personnel to treat everyone, to sort and allocate treatment to patients according to a system of priorities designed to maximize the number of survivors.

**wheeling** - the use of the transmission facilities of one system to transmit power and energy by agreement for retail or wholesale customers on another system with a corresponding wheeling charge.

# **APPENDICES**

**Appendix A: Background on Tier Assignments for Existing Technologies**

**Appendix B: Voluntary Contributions**

**Appendix C: Microcogeneration Analysis**

**Appendix D: Electricity Product Labeling**

**Appendix E: Summary of Participant Proposals**

# **BACKGROUND ON TIER ASSIGNMENTS FOR EXISTING TECHNOLOGIES**

## **TIER 1: BIOMASS AND SOLAR THERMAL (25% = \$135 MILLION)**

### **Biomass**

The biomass industry requested 30 percent of the total funds to support all currently operating plants and to return eleven mothballed plants to operation. The industry requested no funds for new or emerging biomass and one percent for specified biomass market research. The Energy Commission recommends allocating 25 percent of the total funds to Tier 1 of the existing technologies account, which will be used to support both biomass<sup>1</sup> and solar thermal technologies. In this tier, the price cap is 1.5 cents per kWh in 1998 and 1999, and 1.0 cents per kWh in 2000 and 2001. The ability of current biomass plants to be cost-effective post 2002 appears to critically hinge on the ability to shift the costs of fuel collection and processing to non-electricity sectors. The outcome of cost shifting will be examined by the CalEPA in its report to the Legislature. In response to this reality, the Energy Commission proposal would ramp down the target price for Tier 1 technologies. This provides an incentive for Tier 1 technologies to become more cost-competitive over the four-year period.

Biomass technologies meeting the definitions of new or emerging technologies would be eligible to compete for funding from the new or emerging technologies accounts. In addition, biomass can enter the direct access market (or sell surplus energy in the direct access market if they have surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

### **Solar Thermal**

Existing solar technologies are primarily represented by the nine parabolic trough solar thermal electric generating systems (SEGS) in Southern California. These units comprise 354 MW of capacity and historically have produced approximately 797 GWh per year or about 3 percent of renewable electricity in California. While these units are important as the main existing source of solar generated electricity in the state, they represent only one of several solar technologies of the

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<sup>1</sup>For the purposes of this report, the Energy Commission has classified whole waste tire combustion as biomass.

future. The Energy Commission considered the SEGS operators' request for \$54 million, or 10 percent of total funds, to be too high given the relatively small amount of energy provided by this industry.

The Energy Commission proposal places solar thermal technologies in Tier 1 along with biomass, with an overall allocation to this Tier of 25 percent. The target price in this tier starts out at 5 cents per kWh in 1998 and decreases 0.5 cents per kWh each year of the four year transition period.

SEGS representatives argued for cash grants in lieu of production credits on the basis that they must take their facilities off line for long periods of time in order to make routine modifications and repairs, and that this would force them to lose out on any production incentive during that period. The Energy Commission proposes that SEGS receive production credits, including a rain check provision to the level of the full projected output potential. The rain check option would allow facilities to shut down for legitimate repairs and modifications and have the foregone production incentives held by the Energy Commission and awarded later for an equivalent amount of generation, immediately after the expiration of the program period in 2002. In this manner, all incentives to existing plants would be based on actual generation of electricity.

Solar technologies meeting the definitions of new or emerging technologies would be eligible to compete for funding from the new or emerging technologies accounts. In addition, solar can enter the direct access market (or sell surplus energy in the direct access market if they have surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

## **TIER 2: WIND (13% = \$70.2 MILLION)**

### **Wind**

The wind industry originally asked for a production incentive that would result in an allocation of 9 percent for existing wind and 14 percent for new wind generators (later the industry proposed that they receive 14 percent for existing and 9 percent for new wind projects). The industry defined "new" wind to include substantial retrofits and repowers of existing turbines, as these would qualify under IRS definitions as new generation and, therefore, receive federal production incentives to assist in their financing. Wind is unique in that, unlike large central station technologies, the best way to reduce high operation and maintenance costs on older turbines is to largely or completely replace them with new equipment via retrofitting or repowering. Consequently, such retrofits and repowers represent replacement of existing capacity with new equipment of higher efficiency, better design, and lower future operation and maintenance costs.

It is important to encourage the maximum amount of such repowers and retrofits because this will create a more cost-competitive wind industry and because repowers are preferable to green

field development from an environmental standpoint. Such an incentive for wind to repower is already available through the federal production credit. The Energy Commission believes that this production credit, in addition to the support available through the existing technologies account, will create an incentive for older, inefficient wind turbines to repower. In addition, wind turbines can repower and compete for funds from the new technologies account for any generation not covered by their SO<sub>2</sub> or ISO<sub>4</sub> contracts. The Energy Commission encourages but does not require wind projects to retrofit and repower wherever it is economic.

In response to the needs of the wind industry, the Energy Commission proposes to place wind technologies in Tier 2 with an overall allocation of 13 percent funding. In this tier, the target price is 3.5 cents per kWh and the price cap is 1.0 cents per kWh.

Wind technologies meeting the definitions of new or emerging technologies would be eligible to compete for funding from the new or emerging technologies accounts. In addition, wind can enter the direct access market (or sell surplus energy in the direct access market if they have surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

## **TIER 3: GEOTHERMAL, SMALL HYDRO, MSW, DIGESTER GAS, AND LANDFILL GAS (7% = \$37.8 MILLION)**

### **Geothermal**

Based on staff's knowledge of and work with the geothermal industry, it is the understanding of the Energy Commission that most of the existing facilities require little if any assistance to become competitive. Further, many of those facilities that do need support are older and small plants, and are likely to be unable to lower operating costs even with funding through AB 1890. The Energy Commission recommends allocating 7 percent of the total funds to Tier 3 of the existing technologies account, which will be used to support geothermal, small hydroelectric, digester gas, municipal solid waste, and landfill gas technologies. In this tier, the target price is set at 3.0 cents per kWh and the incentive price cap is 1.0 cents per kWh.

For new facilities, the geothermal industry indicated a need for either long-term purchase agreements or assistance in obtaining financing and reducing the cost of such financing. While potentially open to financing options, the Energy Commission's current proposal uses a competitive bid to provide a cents per kWh incentive for five years worth of production. New geothermal facilities appear to have a cost structure that will compete well in the proposed bid and make effective use of funds from the new technologies account. Geothermal technologies meeting the definitions of new or emerging technologies would be eligible as well to compete for funding from the emerging technologies accounts, where applicable. In addition, geothermal can enter the direct access market (or sell surplus energy in the direct access market if they have

surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

## **Small Hydro**

Most small-scale hydroelectric facilities (i.e. less than 30 MW) are cost competitive and have little or no need for assistance, though operating costs of existing units do vary widely. The Energy Commission proposal would place small hydroelectric technologies in Tier 3 along with geothermal, digester gas, municipal solid waste, and landfill gas technologies.

Small hydro technologies meeting the definitions of new or emerging technologies would be eligible to compete for funding from the new or emerging technologies accounts. In addition, small hydro can enter the direct access market (or sell surplus energy in the direct access market if they have surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

## **Municipal Solid Waste, Digester Gas, and Landfill Gas**

While Municipal Solid Waste (MSW) technologies tend to have high costs, these technologies are generally built for purposes of offsetting other costs and are used most often for self-generation. The purposes of MSW technologies are to generate electricity, to dispose of garbage, and to reduce tipping fees. The Tier 3 production credit is unlikely to affect the overall cost-effectiveness of this technology, and support to MSW should be minimized. This technology is appropriately placed in Tier 3.

The costs for digester gas technology are highly site-specific. Like MSW, digester gas is a technology that is built for the purposes of off-setting other costs and most often used for self-generation. The production credit is unlikely to affect the overall cost-effectiveness of this technology, and support to digester gas should be minimized. Digester gas technologies are appropriately placed in Tier 3.

Landfill gas (LFG) technologies also have site-specific costs. New LFG sites, for example, tend to be much more cost effective than older units that do not produce as much gas. Staff analysis shows that the majority of LFG facilities will remain in business at or above the Tier 3 target price Existing LFG facilities can survive post-2001 in part by cost shifting to those who deposit garbage and other materials in landfills.

MSW, digester gas, and landfill gas technologies meeting the definitions of new or emerging technologies would be eligible to compete for funding from the new or emerging technologies accounts. In addition, these technologies can enter the direct access market (or sell surplus energy in the direct access market if they have surplus-type contracts) and contract to sell electricity to marketers or customers receiving support from the customer credit subaccount.

## *Appendix B*

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# **VOLUNTARY CONTRIBUTIONS**

## **BACKGROUND AND INFORMATION ON VOLUNTARY CONTRIBUTIONS**

Section 381 (e) of AB 1890 states that “Each electrical corporation shall allow customers to make voluntary contributions through their utility bill payments as either a fixed amount or a variable amount to support programs established pursuant to paragraph (3) of subdivision (b). Funds collected by electrical corporations for these purposes shall be forwarded in a timely manner to the appropriate fund as specified by the commission.”

The interpretation of voluntary contributions is central to any recommendation about how to implement Section 381 (e), and has implications for whether the revenue received by this mechanism shall go to the Renewable Energy Fund being allocated and administered by the Commission, or to specific new renewable projects developed for or by the utilities.

Voluntary contributions may be construed narrowly to mean that utility customers may make donations to a fund at least temporarily held by the utility. This would be like many other charitable donations that people make to medical research, environmental causes or organizations, religious organizations, or political campaigns. Several utility-sponsored green pricing programs have taken this approach.

Alternatively, voluntary contributions may be interpreted broadly, giving utilities greater flexibility in how they design these programs. Green pricing experience includes a number of different programs that offer customers opportunities to support renewable energy (or “contribute”) by purchasing a quantity of electricity or capacity, or by paying monthly lease or finance fees.

Which of these interpretations is adopted has implications for:

- 1) The success of the programs (appeal to consumers, and utility motivation)
- 2) Who manages the revenue and determines how it will be spent
- 3) The extent to which voluntary contributions compete with competitive marketing of renewable energy supply

Each of these is discussed in turn in the following section.

# IMPLICATIONS OF PROGRAM DESIGN ON CHANCES OF SUCCESS

Fourteen green pricing programs are offered in the United States today. Four of these are in the category of a *donation program* (voluntary contributions defined narrowly). These programs allow customers of these utilities to determine how much they will contribute and on what schedule. Options include:

- Choosing \$1, \$2 or \$4 per month (Wisconsin Public Service's SolarWise for Schools).
- Making one-time donations or nominating any amount to be added regularly to the customer's bill (Public Service Company of Colorado, Gainesville Regional Utilities; Hawaii Electric Companies offer these options plus a regular non-monthly contribution separate from the utility bill).
- A "round-up" of the customer's bill to the next whole dollar (Public Service Company of Colorado).

The first category is regular contributions. Two programs are achieving about \$1.70 per customer per month. One program has resulted in a monthly contribution of about \$3.25 per month but with no marketing the number of participants is not growing. Participants in PSCo's round-up option contribute about \$0.49 per month.

Participation level is highest for PSCo, at a little over one percent of eligible residential customers. PSCo's program has been in operation for a little over three years.

For other program types, the range of monthly payments (or contributions) is much greater. In the second category of a *fixed monthly fee*:

- Gulf Power has one Solar for Schools project which charges \$1.75 per month.
- Sacramento Municipal Utility District charges (heavily subsidized) \$4 per month for a photovoltaic system on the participant's rooftop.
- Niagara Mohawk charged \$6 per month for unspecified new renewables (the program is on hold).
- Wisconsin Public Service offers rooftop PV for an up-front \$250 fee, plus \$30 per month, but with net metering the monthly fee is about \$17; there are also purchase options.
- Northern States Power also offers rooftop PV for \$50 per month with net metering for an effective price of about \$36 per month.

Most of these programs are open to limited numbers of customers so participation levels, as a percent of eligible customers, are not meaningful. Also, with the exception of SMUD's program, these have not been around very long.

The examples of WPS and NSP show that if a renewable product adds private value to customers, in addition to the public benefits of cleaner air, for example, some customers will make substantial voluntary contributions.

The third category of voluntary green pricing programs in the United States is the *green rate or tariff*. Examples of tariffs include the following:

- Residential customers of Traverse City Light & Power are paying an average premium of \$7.58 per month, and small commercial customers an average of \$20 per month, for 100 percent wind power.
- Detroit Edison is collecting \$6.59 per month for each 100 Watts of utility-sited PV energy. Some customers buy more than one unit, so the average payment is over \$9 per month.
- Wisconsin Electric charges a 2 cent per kWh premium for biomass and hydro, and customers choose whether they want 100, 50 or 25 percent of their energy from these sources. Typical monthly added cost is \$12, \$6 and \$3 respectively.
- Fort Collins Light & Power will charge about \$10 extra per month for 100 percent wind power.
- Portland General Electric will offer its largest commercial and industrial customers a variable amount of renewable energy at a price premium of about \$.01 per kWh, but the minimum charge will be about \$200 per month

For residential customers, these programs add revenue of roughly \$6-10 per month, three to six times the revenue per customer of the donation programs. The green tariff and fixed fee programs do not have as much participation as the donation programs, however, even in percentage terms, because most of them are either capacity- or budget-limited.

What can be concluded is that some people will pay more if the program offer is appealing enough, by offering in addition to the public environmental benefits, private benefits that only the participants share, such as price stability, net metering, or rooftop PV. Altruism only goes so far.

The implication of all this is that an interpretation of voluntary contributions that encompasses at least the variety of green pricing programs to date will likely result in higher revenues than a narrow interpretation that limits voluntary contributions to the donation approach.

## **FUNDS MANAGEMENT**

If a narrow interpretation of voluntary contributions is taken, the utilities will be collection agencies, and will turn over the revenue to the Renewable Energy Fund or other fund designated by the Energy Commission. Management of the designated fund will be the responsibility of the Commission or other designated agency.

The argument for forwarding the money to the statewide Renewable Energy Fund is that there is not enough money to begin with to meet the needs of the different renewable industries. Estimates of voluntary customer contributions as charitable donations, however, suggest that

only one to two million dollars will be raised per year. Adding this money to the pie will not ease the struggle among the various industry groups for a bigger share of funding.

## **COMPETITION WITH POWER SUPPLY MARKETING**

A question in the minds of some renewables supporters is whether the legislatively-mandated voluntary contributions program will undermine efforts to market renewable energy in retail access markets. Whether or not it will is speculation; there is no evidence to support conclusions.

The concern is described in two ways. Customers who make voluntary contributions may be less willing to buy renewable energy in the competitive retail access market, because they can act on their support for renewables more cheaply, and with less complicated decision-making, through voluntary contributions. People who share this concern might prefer a narrow definition of voluntary contributions, in part to minimize its appeal and reduce the chance of undercutting renewables in the retail access market.

If utilities offer renewable energy products for sale, as might be expected in a broad interpretation of voluntary contributions, they might be so successful as to attract some people who would otherwise have chosen to buy at least 50 percent renewables from the retail access market, and who instead choose to purchase the utility renewable product.

An opposing view is that it will not matter. Although voluntary contributions may not create a truly large benefit for renewables, they will enlarge, rather than undermine, the number of customers who will pay for renewables, and the amount of total revenue in support of renewables. This will occur because utility-offered attractive renewable products will appeal to different customer segments and thus broaden the ways in which customers can support renewable energy. These customer segments are:

- Customers who support renewables but are not sufficiently committed to buy the minimum 50 percent renewable product
- Customers who support renewables but want the security of the familiar utility or do not wish to be exposed to the uncertainty of the marketplace

This analysis concludes that those who want to go first in the competitive market, and those who want to rely significantly on renewable energy, will likely still choose the retail access market.

## *Appendix C*

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# MICROCOGENERATION ANALYSIS

AB 1890 defines a microcogeneration facility as a facility of less than one megawatt, but the legislation does not specifically exempt microcogeneration from the CTC. Comments from several microcogeneration vendors, Coast Intelligen, Valley Air Conditioning and Heating, and Texas Ohio Energy, Inc., indicated concern about the economics of new cogeneration systems if the CTC is imposed on microcogeneration. Valley Air has installed at least several facilities in 1996 that would be required to pay CTC.

The historical development of smaller cogeneration in California gives some insight on the ramifications of an exemption to the CTC revenue stream. The following information is from the 1996 Quarterly Cogeneration and Small Power Reports (second quarter) to the CPUC from Southern California Edison (SCE), Pacific Gas & Electric Company (PG&E), and San Diego Gas & Electric (SDG&E).

SCE reports 143 cogeneration facilities under 1 MW, totaling 22.7 MW, with an average size of 0.318 MW. Most of these facilities became operational between 1984 and 1996. Since January 1992, 29 facilities with capacity totaling 4.3 MW have become operational. This development reflects an average annual growth of 0.860 MW over the last five years. PG&E's quarterly report indicates 28 projects under 1 MW, totaling 5.2 MW, with an average size of 0.178 MW. Only three facilities have become operational since January 1992, with capacity totaling 0.191 MW.<sup>2</sup> This development reflects an average annual growth of 0.038 MW in the last five years. SDG&E reports 40 projects under 1 MW, totaling 7.5 MW, with an average size of 0.188 MW. Since January 1992, 11 facilities with a total capacity of 0.278 MW have become operational, reflecting an average annual growth of 0.056 MW per year in the last five years.

On an average annual basis, 0.954 MW has been added to the three utility systems over the past five years, during a period of relatively stable rates and fuel costs. Using a 1 MW growth estimate over the next four years, the following impact on the CTC revenue would result:

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<sup>2</sup> PG&E's Cogeneration and Small Power Production Quarterly Report, Second Quarter, 1996, appears to include only cogeneration 60 kw or greater (with one exception of a 25 kw project). In the ER 92 cycle PG&E submitted more complete information on QF facilities as small as 10 kw. Then (1991) there were only 17 projects less than 60 kw size, with total capacity of under 300 kw. It is not known if these projects ceased operating since then. PG&E also has previously reported separately projects with paralleling agreements. Some of these may possibly be classified as microcogeneration.

New microgeneration per year:	1 MW
Assumed Capacity factor:	88% <sup>3</sup>
Energy Production in GWh:	7.7
Assumed CTC	4.0 cents per kWh
CTC revenue loss at 4 cents per kWh:	
	1998: \$0.3 million
	1999: \$0.6 million
	2000: \$0.9 million
	2001: <u>\$1.2 million</u>
Total revenue loss:	1998-2001: \$3.0 million

Based on an average electric rates of 10 cents per kWh, and 200,000 GWh per year over the next four years, the loss represents approximately 0.004% of total revenues over the four year period.

If a CTC were imposed on new microgeneration facilities, it is probable that the economics of microgeneration would decline, reducing growth until after 2001. To test this assumption, staff evaluated the possible impact of a CTC on microgeneration economics in the SCE area through sensitivity analysis on previous cogeneration forecasts done for the *1994 Electricity Report*. Electric tariff schedules for 1996 and the Energy Commission's 1995 Adopted Natural Gas Price Forecast were used. Using a 2.5 cents per kWh CTC on college and hospital load profiles indicates that the payback period increases beyond 10 years in most instances.<sup>4</sup> A higher CTC (such as 4 cents per kWh) would virtually eliminate any facilities that somehow might have survived a CTC of 2.5 cents per kWh.

## **MICROGENERATION AS A DEMAND SIDE MANAGEMENT TOOL**

An issue was raised as to whether microgeneration can be classified as a demand side management tool. Section 371 specifically exempts from the CTC energy savings due to demand side management (DSM). Several participants provided oral and written comments asking that microgeneration be treated like demand side management.

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<sup>3</sup> Availability of small cogeneration used by Energy Commission staff to forecast cogeneration supplies in the *1994 Electricity Report*.

<sup>4</sup> A small 22 kw cogeneration system was estimated to be economic for the small hospital load profile but only if sized to meet off-peak thermal load. This generally small size of unit is not readily available to the market and was deemed not realistic.

There are several precedents for considering microcogeneration as similar to demand side management:

- 1) In December 1995, the Energy Information Administration (EIA) published a report titled "U.S. Electric Utility Demand Side Management", which reported electricity savings from various types of DSM activities including: direct control, interruptible load, other load management, and other demand side management. The category "Other Demand Side Management Savings" includes savings from:

“... those programs that capture effects of DSM programs that cannot be meaningfully included in any of the other program categories. Included are programs that promote consumers' substitution of other types of energy for electricity and *self-generation of electricity for consumer's own use* [emphasis added].”

The EIA report indicates that some electric utilities have used self-generation as a DSM tool. It also shows that, at the federal level, EIA has classified cogeneration for self-generation purposes as a demand side management activity.

- 2) In 1989, the Electric Power Research Institute (EPRI) held an "International Workshop on Innovative DSM Techniques" (EPRI-CU-6332) and devoted an entire session to cogeneration and alternatives.

“Yet the DSM concept, as it was originally developed at EPRI, embraces a whole range of possible load shape objectives, including not just conservation and load management, but load building as well, whether it be off-peak or strategic load growth per se.” (p. 1-2)

- 3) The Energy Commission's Energy Partnership Program and Institutional Conservation Program has for over 15 years evaluated cogeneration projects for local governments, water agencies, schools, and hospitals. These projects, typically under one megawatt, are evaluated in the same manner as other demand side management programs. The primary goal is to save energy, not necessarily to by-pass the utility.

# **ELECTRICITY PRODUCT LABELING**

## **BACKGROUND**

Electricity product labeling is the disclosure of standard information useful to consumers in decision-making. Labeling also serves public purposes relating to environmental policy, efficiently functioning markets, and consumer “right-to-know” as demonstrated in nutrition labeling, uniform food pricing, truth-in-lending, and other consumer protection programs.

As electricity supply markets are deregulated, consumers will be faced with making choices they have never had to make before. Informed consumer choice cannot take place in retail electricity markets without full disclosure of all relevant facts important to consumers. Pilot retail access programs have shown that customer confusion and possibly misleading claims are likely to arise from the advertising and promotion efforts of competing suppliers. As with long distance telephone advertising, consumers may have a difficult time evaluating and comparing competing claims relating to price, incentives and contract terms. In addition, electricity production and supply causes substantial resource and environmental impacts which market research consistently shows is an important consideration for consumers.

A number of groups are already pursuing the development of a labeling system for energy. The National Association of Regulatory Utility Commissioners (NARUC), at its annual meeting last November, passed a resolution in support of uniform standards for the disclosure of price, price variability, resource mix, and environmental characteristics of electricity purchases to retail and wholesale consumers. The resolution also urges states to include standards for disclosure and labeling as part of their implementation of direct access policies. The utility commissions of the states of Maine, Massachusetts, and Vermont, in their recently-issued restructuring plans, proposed that disclosure of the generation mix be required, and Vermont and Massachusetts went further in proposing disclosure of certain environmental impacts. The legislatures of these states must still decide whether to adopt these proposals. Finally, several versions of federal restructuring legislation call for disclosure and labeling of energy products.

## **GUIDELINES FOR IMPLEMENTING LABELING**

Under a labeling requirement, suppliers and providers would be required to provide certain types of information as a condition for registration in California. This information would be provided with every solicitation for a sale, and at other times and in other forums as specified. For example, there may be a requirement that suppliers and providers update quarterly,

semi-annually, or at least annually, and made available to the CPUC, to purchasing customers, and on consumer education websites.

Labeling should apply to specific electricity offers or brands, not the provider company. Many companies C whether aggregator, broker, or marketer C will provide multiple products: a price-sensitive product, an interruptible product, a high power quality/high reliability product (e.g., on-site back-up), and a green product C each aimed at a different market segment. Consumers need to be able to distinguish between these energy products in order to make an informed choice, requiring that the characteristics of each product be disclosed in a clear and readable manner.

Information which can be conveyed to the consumer includes average price, price variability, generating source mix, and environmental characteristics of electricity supply. But in order for labels to be meaningful to consumers, the consumers themselves must have a say in the design of such labels. Nutritional labels on food were developed by the Food and Drug Administration only after they conducted market research to learn what information was desired, how much information consumers could handle, and how it should be presented. Similar research is now being undertaken with regard to electricity labeling.

The Regulatory Assistance Project, with funding from The Energy Foundation and the U.S. DOE, has organized a series of focus groups of New Hampshire and Massachusetts consumers who are participating in those states' pilot programs and thus have been exposed to the advertising claims of a chaotic retail market. This research is being done in February 1997. The objectives are to learn:

- What information consumers find most useful in making decisions about electricity providers
- What information they find confusing or do not understand
- What is the best way to present the information (the label)

The work is being advised by market researchers from the Food and Drug Administration who developed the nutritional labels on food products. Results should be available by the end of March, 1997.

## **WHY CALIFORNIA MUST BEGIN DEVELOPING RULES FOR DISCLOSURE**

California should not wait for the federal government to act on disclosure issues for a number of reasons. First, it is uncertain when Congress will pass restructuring legislation, or even whether such legislation will address issues of disclosure. Even if Congress were to pass a restructuring bill this year, the timeline for the development of a national standard for energy content labels would extend considerably longer than California's timeline for restructuring. Second, if California takes the initiative in developing rules for disclosure, it is likely that California's precedent will

strongly influence the development of a federal requirement. Finally, federal restructuring legislation may leave the details of implementation up to the individual states. In any case, California cannot afford to begin the competitive era without some sort of labeling standard to help consumers sift through the barrage of competing and potentially misleading claims of energy providers.

*Appendix E* \_\_\_\_\_

**SUMMARY OF PARTICIPANT  
PROPOSALS**

Please see matrix on following page.

## APPENDIX E

### STAKEHOLDER GROUP ALLOCATION AND DISTRIBUTION MECHANISM PROPOSALS

Party	Allocation to existing, new, and emerging	Allocation to fuel resource type	Allocation to fuel or technology sub-type	Allocation to suppliers/ customers	Distribution mechanisms
<b>Biomass, Geothermal, Solar Thermal and Wind Industry Group</b>	Existing: 55% New: 36% Emerging: 8% Marketing: 1%	Biomass: 31% Geothermal: 27% Wind: 23% Solar: 18% Hydro: 0%	Landfill gas: 0% Solar Thermal: 10% Tires: part of biomass MSW: part of biomass	Determined within fuel types, but primarily supplier incentives.	Biomass: Existing - kWh incentives + industry research. Wind: Existing - kWh incentives; New - kWh incentives paid to repower existing plants. Geothermal: Existing - kWh incentives; New - revolving loan fund + customer rebates. Solar Thermal: Existing - O&M investment;
<b>Environmental Protection Group</b>	Existing: 45% New: 29% Emerging: 13%	Existing: Biomass: 25% Geothermal: 12% Wind: 13% Solar Thermal: 8%	Tire burning and landfill gas excluded. Solar Thermal gets 8% of funds.	No less than 50% of new funds must be used as customer incentives.	Existing funds allocated by technology, for use by that industry as they see fit. New funds distributed in an open competition as kWh production credits. Emerging technology funds awarded based on competitive bid - may be used for loans or cost buy-downs. No more than 50% awarded to any one company.
<b>City and Country Gov'ts Group</b>	Existing: 40% New: 48% Emerging: 10% Marketing: 2%		Include landfill, digester gas.		Programs run by California Alternative Energy Financing Authority or other experienced agency. Existing: competitive quarterly bids for a kWh production incentive. New: quarterly competitive bid for kWh incentive. Emerging: competitive bid for kWh incentive.
<b>Photovoltaic Industry Group</b>	Existing: 50% New: 25% Emerging: 25%		PV: 18% Dish/Stirling: 2% Solar Thermal: 5%	Of the 25% to emerging (\$96m), 69% goes to consumers and 25% to consumers through a loan financing program.	For PVs: Customer rebates to buy down PV system cost (Greenback program) + revolving low interest loan program + quality assurance & green marketing campaign. There should be different programs for small scale customer-sited (low cost loan program or hardware buy-down program) versus central station technologies (technology cost buy-down).
<b>Renewables Marketing Group</b>	Existing: 50% New: 40% Emerging: 10%	TBD - e.g., could be based on generation. Defer to on the allocation.	Defer to others on the allocation.	Credits given to suppliers, but payment not made until after sale to consumers.	Residential and small business consumer credits issued to suppliers on a first come first served basis. Credits issued each quarter until funds exhausted. Plan provides CTC credit incentives to leave or modify ISO4 contracts and begin seeking customers.

This matrix summarizes detailed funding allocation and distribution proposals presented by stakeholder groups on or before December 3, 1996. This matrix does not include proposals dealing with narrow issues or modifications of proposals received after that date, but the Energy Commission has carefully considered the written and oral comments of all parties in developing the recommendations made in this report.