RPS CASE STUDY
— TEXAS —

BACKGROUND

With a population of 19 million and total annual retail electricity sales of 280 million megawatt-hours, Texas is one the largest and highest energy use states in the U.S. Coal, gas and nuclear energy dominate electricity supply, and severe air quality problems in the major metropolitan areas of the state exist. Texas is blessed with one of the strongest wind resources in the United States, however, with more modest resources for biomass, hydro, and landfill gas generation. Those resources have only begun to be tapped, with less than 200 MW of wind power installed through 2000.

After failed attempts to pass restructuring legislation in 1998 (and numerous studies by legislative committees and the Public Utilities Commission), Texas' electricity restructuring legislation was signed by the Governor in June 1999, establishing an open competitive market for retail electricity sales beginning in 2002. The electricity restructuring bill contained a number of significant environmental provisions, including what has become one of the most aggressive RPS policies in the United States, requiring 2000 MW of new renewable energy sources by 2009. Eligible technologies include solar, wind, geothermal, hydro, wave, tidal, biomass, and landfill gas.

RPS Summary

TIME-LINE

RPS Legislation	June 1999
RPS Rulemaking Begins	June 1999
RPS Rulemaking Ends	December 2000
RPS Begins	January 2002
RPS Ends	January 2020

STANDARD
Varies – increases to 2000 MW of new renewables by 2009

RESPONSIBILITY OF RPS FALLS ON:
Electric Service Provider

ELIGIBLE TECHNOLOGIES
solar, wind, geothermal, hydroelectric, wave, tidal, biomass, biomass-based waste, landfill gas (including renewable energy based generation-offset technologies and off-grid technologies)

CREDIT TRADING Yes

PENALITIES FOR NON-COMPLIANCE:
$.05/kWh for shortfall on power or credit purchases

Texas offers an excellent case study in the process and substance of developing an effective RPS. Texas was the first state to develop a comprehensive RPS rule incorporating renewable energy credits. Texas is also acknowledged to now be the leader in the development of an efficient and effective RPS, having tackled a number of RPS design issues with significant thoughtfulness. The Texas RPS rule is frequently pointed to as a model for other states to follow.

LEGISLATIVE PROCESS

Legislative discussion regarding retail electric competition began in 1995. Having been rejected previously, a comprehensive restructuring package was finally agreed to and signed by the state governor in May 1999. Texas' RPS requirement is included in this restructuring bill. As detailed in Appendix A, key features of the Texas RPS legislation include:

- renewable energy targets expressed in capacity terms of 2000 MW of additional renewables capacity by 2009, with cumulative total installed capacity targets of 1,280 MW by 2003 and 2,880 MW by 2009 (880 MW of which comes from existing facilities),
- eligible resources that are defined to include solar, wind, geothermal, hydroelectric, wave, tidal, biomass, biomass-based waste, and landfill gas
- requirements that the PUC establish a renewable energy credit trading system and develop rules to implement the RPS by January 1, 2000.

As illustrated by the lack of detail in the legislation, many of the design and implementation requirements of the RPS were left to the Texas Public Utilities Commission.

Some of the key goals of the Texas RPS were as follows:

- First, many of the major metropolitan areas of Texas experience severe air quality problems, and the deployment of renewable energy was viewed by some as providing a way to alleviate those air quality concerns.
- Second, key to bringing many of the legislators on board with the concept was selling the RPS as a way of increasing employment in rural areas and increasing the tax base for rural communities. Indeed, the two lobbyists hired by the renewable energy industry during the legislative process had a strong history of backing rural employment and economic development interests.
- Finally, many of the utilities in Texas had relatively recently been required to poll their customers on their interest in and willingness to pay a premium for renewable electricity. The wide support for renewable energy shown by Texas consumers in these surveys went a long way in convincing the legislature, the public utilities commission, and even the utilities themselves that an RPS might be looked upon favorably by their constituencies.

Critical to the development of the RPS in Texas was the coordinated actions of the renewable energy and environmental communities. Having recognized that an RPS might be approved within comprehensive restructuring legislation, a variety of renewable energy advocates and companies banded together to create a coalition of interests to lobby for and promote the RPS before the legislature during hearings and discussions regarding electricity reform. This effort represented the most comprehensive and coordinated attempt in any state to create an RPS.

In addition to these environmental and renewable energy interests, important stakeholders in the overall electricity reform process included utilities, competitive electricity suppliers, consumer advocates, and large industrial customer interests. As with the majority of state RPS legislation, Texas' RPS was embedded in a much larger bill to restructure the entire electricity industry in the state. As such, the RPS was viewed by most stakeholders as only one small piece of a much larger package of measures. That said, numerous attempts were made by utility and large

consumer interests to gut or amend the RPS in significant ways. In large part due to the combined efforts of the renewable energy and environmental communities (as well as compromises made by utilities to gain the support of these environmental organizations for the entire restructuring bill), attempts to derail or immobilize the RPS were largely unsuccessful and reasonable RPS legislation was enacted.

REGULATORY PROCESS

Given the January 1, 2000 deadline provided by the RPS legislation to develop the implementation rule for the RPS, the Texas PUC had at most six months to develop the many operational details for the RPS. To do so, the PUC initiated the RPS rulemaking by issuing a request for comments on some of the critical design features of the RPS on June 21, 1999.

After receiving this first round of comments, an initial open workshop to discuss RPS design issues was held on July 27, 1999. An important outcome of this initial meeting was the establishment of a technical task force of RPS stakeholders to work independently to attempt to create consensus recommendations on RPS design for the public utilities commission. Active stakeholders included renewable energy companies, local and national environmental and renewable energy advocacy organizations, electric utilities, small and large consumer interests, and competitive electricity suppliers.

This task force, and its various sub-groups, met several times in person and communicated extensively via e-mail during August and early September to discuss and resolve RPS design issues, including:

- resource eligibility guidelines,
- how and whether to translate the capacity targets in the RPS legislation into percent electricity supply purchase obligations,
- the design and features of the renewable energy credit trading program,
- start and end dates for the RPS,
- non-compliance sanctions and enforcement, and
- the treatment of existing renewable resources and municipal utilities.

Based on the results of this stakeholder task force process, which developed consensus in many but not all areas, the PUC issued a draft RPS rule in early October 1999 and asked for detailed comments on the content of the rule. After additional comment periods and public workshops, the PUC issued its final RPS rule on December 20, 1999, which is attached as Appendix B.

The rule itself went into considerable detail on the design and implementation of the RPS. Important elements of the rule included:

- development of a process to convert legislative capacity targets into renewable energy percentage electricity purchase requirements,
- use of existing renewable energy sources to offset new renewable energy purchase requirements,
- description of the functions and features of the renewable energy credit trading program,
- strong sanctions for retail suppliers that fail to meet their RPS obligations,

- several RPS design elements to increase the flexibility in meeting RPS obligations, including credit banking, credit for early compliance, and a 3-month reconciliation period at the end of each 1-year compliance period in which REC purchase shortfalls can be made up,
- specificity on the beginning and end-dates of the RPS (including a durable purchase requirement that will last until 2019), and
- detailed guidance on resource eligibility requirements, including renewable energy based generation-offset (e.g., solar hot water) technologies and off-grid technologies.

OVERALL ANALYSIS AND CONCLUSIONS

Texas was the first state to develop a comprehensive RPS rule incorporating renewable energy credits and is now acknowledged to be the leader in the development of a comprehensive and effective RPS, having tackled a number of RPS design issues with significant thoughtfulness. Sources of this success lie in both the collaborative stakeholder process used by the PUC to craft the rule and the strong commitment of the PUC and its staff to develop an effective RPS.

The PUCs use of a collaborative, stakeholder-driven process for ironing out difficult RPS design issues allowed the various stakeholders to come to consensus on numerous design issues, and to negotiate on those issues on which consensus was difficult. The end result, through substantial give and take, is an RPS rule that is both strong enough to ensure compliance but flexible enough to ensure cost effectiveness. This rule – so far the best in the country – was completed even though the PUC was given just 6 months of deliberation.

The strong commitment of the commission to create an effective rule and to not allow certain utility interests (who were often most opposed to the RPS in the first place) to dominate the proceedings was also essential. As one of first retail access issues on docket, the commission had an even greater incentive to create a give-and-take, collaborative environment to start off its retail competition proceedings on the right foot. This process demonstrates that, given only modest guidance by the legislation, a regulatory body can (if constituted appropriately) design the details of an RPS policy effectively.

Though the first renewable energy purchase obligations do not begin until 2002, the success of the Texas RPS is already being demonstrated. Two utilities have already issues requests-for-proposals for 625,000 MWh of renewable electricity per year, and another utility has actively purchased the rights to numerous landfill gas resources. Renewable energy credit trades are rumored to be as low as 0.5 cents/kWh, representing only a modest incremental cost of renewable electricity relative to traditional alternatives. The transmission operator has already received more than 2,600 MW of renewable energy transmission access study requests, demonstrating substantial interest in the Texas renewable energy market.

APPENDIX A. RPS LEGISLATIVE EXCERPT

The following text related to Texas's RPS is excerpted from Texas's electricity restructuring legislation (S.B. 7).

Sec. 39.904. GOAL FOR RENEWABLE ENERGY.

(a) It is the intent of the legislature that by January 1, 2009, an additional 2,000 megawatts of generating capacity from renewable energy technologies will have been installed in this state. The cumulative installed renewable capacity in this state shall total 1,280 megawatts by January 1, 2003, 1,730 megawatts by January 1, 2005, 2,280 megawatts by January 1, 2007, and 2,880 megawatts by January 1, 2009.

(b) The commission shall establish a renewable energy credits trading program. Any retail electric provider, municipally owned utility, or electric cooperative that does not satisfy the requirements of Subsection (a) by directly owning or purchasing capacity using renewable energy technologies shall purchase sufficient renewable energy credits to satisfy the requirements by holding renewable energy credits in lieu of capacity from renewable energy technologies.

(c) Not later than January 1, 2000, the commission shall adopt rules necessary to administer and enforce this section. At a minimum, the rules shall:

(1) establish the minimum annual renewable energy requirement for each retail electric provider, municipally owned utility, and electric cooperative operating in this state in a manner reasonably calculated by the commission to produce, on a statewide basis, compliance with the requirement prescribed by Subsection (a); and

(2) specify reasonable performance standards that all renewable capacity additions must meet to count against the requirement prescribed by Subsection (a) and that:

(A) are designed and operated so as to maximize the energy output from the capacity additions in accordance with then-current industry standards; and

(B) encourage the development, construction, and operation of new renewable energy projects at those sites in this state that have the greatest economic potential for capture and development of this state's environmentally beneficial renewable resources.

(d) In this section, "renewable energy technology" means any technology that exclusively relies on an energy source that is naturally regenerated over a short time and derived directly from the sun, indirectly from the sun, or from moving water or other natural movements and mechanisms of the environment. Renewable energy technologies include those that rely on energy derived directly from the sun, on wind, geothermal, hydroelectric, wave, or tidal energy, or on biomass or biomass-based waste products, including landfill gas. A renewable energy technology does not rely on energy resources derived from fossil fuels, waste products from fossil fuels, or waste products from inorganic sources.

(e) A municipally owned utility operating a gas distribution system may credit toward satisfaction of the requirements of this section any production or acquisition of landfill gas supplied to the gas distribution system, based on conversion to kilowatt hours of the thermal energy content in British thermal units of the renewable source and using for the conversion factor the annual heat rate of the most efficient gas-fired unit of the combined utility's electric system as measured in British thermal units per kilowatt hour and using the British thermal unit measurement based on the higher heating value measurement.

(f) A municipally owned utility operating a gas distribution system may credit toward satisfaction of the requirements of this section any production or acquisition of landfill gas supplied to the gas distribution system, based on conversion to kilowatt hours of the thermal energy content in British thermal units of the renewable source and using for the conversion factor the systemwide average heat rate of the gas-fired units of the combined utility's electric system as measured in British thermal units per kilowatt hour.

APPENDIX B. RPS REGULATORY RULE

The following text is the final RPS rule adopted by the Texas Public Utilities Commission:

§25.173. Goal for Renewable Energy.

(a) **Purpose.** The purpose of this section is to ensure that an additional 2,000 megawatts (MW) of generating capacity from renewable energy technologies is installed in Texas by 2009 pursuant to the Public Utility Regulatory Act (PURA) §39.904, to establish a renewable energy credits trading program that would ensure that the new renewable energy capacity is built in the most efficient and economical manner, to encourage the development, construction, and operation of new renewable energy resources at those sites in this state that have the greatest economic potential for capture and development of this state's environmentally beneficial resources, to protect and enhance the quality of the environment in Texas through increased use of renewable resources, to respond to customers' expressed preferences for renewable resources by ensuring that all customers have access to providers of energy generated by renewable energy resources pursuant to PURA §39.101(b)(3), and to ensure that the cumulative installed renewable capacity in Texas will be at least 2,880 MW by January 1, 2009.

(b) **Application.** This section applies to power generation companies as defined in §25.5 of this title (relating to definitions), and competitive retailers as defined in subsection (c) of this section. This section shall not apply to an electric utility subject to PURA §39.102(c) until the expiration of the utility's rate freeze period.

(c) **Definitions.**

(1) **Competitive retailer—**A municipally-owned utility, generation and transmission cooperative (G&T), or distribution cooperative that offers customer choice in the restructured competitive electric power market in Texas or a retail electric provider (REP) as defined in §25.5 of this title.

(2) **Compliance period—**A calendar year beginning January 1 and ending December 31 of each year in which renewable energy credits are required of a competitive retailer.

(3) **Designated representative—**A responsible natural person authorized by the owners or operators of a renewable resource to register that resource with the program administrator. The designated representative must have the authority to represent and legally bind the owners and operators of the renewable resource in all matters pertaining to the renewable energy credits trading program.

(4) **Early banking—**Awarding renewable energy credits (RECs) to generators for sale in the trading program prior to the program's first compliance period.

(5) **Existing facilities—**Renewable energy generators placed in service before September 1, 1999.

(6) **Generation offset technology—**Any renewable technology that reduces the demand for electricity at a site where a customer consumes electricity. An example of this technology is solar water heating.

(7) **New facilities—**Renewable energy generators placed in service on or after September 1, 1999. A new facility includes the incremental capacity and associated energy from an existing renewable facility achieved through repowering activities undertaken on or after September 1, 1999.

(8) **Off-grid generation—**The generation of renewable energy in an application that is not interconnected to a utility transmission or distribution system.

(9) **Program administrator—**The entity approved by the commission that is responsible for carrying out the administrative responsibilities related to the renewable energy credits trading program as set forth in subsection (g) of this section.

(10) **REC offset (offset)**—An REC offset represents one MWh of renewable energy from an existing facility that may be used in place of an REC to meet a renewable energy requirement imposed under this section. REC offsets may not be traded, shall be calculated as set forth in subsection (i) of this section, and shall be applied as set forth in subsection (h) of this section.

(11) **Renewable energy credit (REC or credit)—**An REC represents one megawatt hour (MWh) of renewable energy that is physically metered and verified in Texas and meets the requirements set forth in subsection (e) of this section.

(12) **Renewable energy credit account (REC account)—**An account maintained by the renewable energy credits trading program administrator for the purpose of tracking the production, sale, transfer, purchase, and retirement of RECs by a program participant.

(13) **Renewable energy credits trading program (trading program)—**The process of awarding, trading, tracking, and submitting RECs as a means of meeting the renewable energy requirements set out in subsection (d) of this section.

(14) **Renewable energy resource (renewable resource)—** A resource that produces energy derived from renewable energy technologies.

(15) **Renewable energy technology—**Any technology that exclusively relies on an energy source that is naturally regenerated over a short time and derived directly from the sun, indirectly from the sun, or from moving water or other natural movements and mechanisms of the environment. Renewable energy technologies include those that rely on energy derived directly from the sun, on wind, geothermal, hydroelectric, wave, or tidal energy, or on biomass or biomass-based waste products, including landfill gas. A renewable energy technology does not rely on energy resources derived from fossil fuels, or waste products from inorganic sources.

(16) **Repowering—**Modernizing or upgrading an existing facility in order to increase its capacity or efficiency.

(17) **Settlement period—**The first calendar quarter following a compliance period in which the settlement process for that compliance year takes place.

(18) **Small producer—**A renewable resource that is less than two megawatts (MW) in size.

(d) **Renewable energy credits trading program (trading program).** Renewable energy credits may be generated, transferred, and retired by renewable energy power generators, competitive retailers, and other market participants as set forth in this section.

(1) The program administrator shall apportion a renewable resource requirement among all competitive retailers as a percentage of the retail sales of each competitive retailer as set forth in subsection (h) of this section. Each competitive retailer shall be responsible for retiring sufficient RECs as set forth in subsections (h) and (k) of this section to comply with this section. The requirement to purchase RECs pursuant to this section becomes effective on the date each competitive retailer begins serving retail electric customers in Texas.

(2) A power generating company may participate in the program and may generate RECs and buy or sell RECs as set forth in subsection (j) of this section.

(3) RECs shall be credited on an energy basis as set forth in subsection (j) of this section.

(4) Municipally-owned utilities and distribution cooperatives that do not offer customer choice are not obligated to purchase RECs. However, regardless of whether the municipally-owned utility or distribution cooperative offers customer choice, a municipally-owned utility or distribution cooperative possessing renewable resources that meet the requirements of subsection (e) of this section may sell RECs generated by such a resource to competitive retailers as set forth in subsection (j) of this section.

(5) Except where specifically stated, the provisions of this section shall apply uniformly to all participants in the trading program.

(e) **Facilities eligible for producing RECs in the renewable energy credits trading program.** For a renewable facility to be eligible to produce RECs in the trading program it must be either a new facility or a small producer as defined in subsection (c) of this section and must also meet the requirements of this subsection:

(1) A renewable energy resource must not be ineligible under subsection (f) of this section and must register pursuant to subsection (n) of this section;

(2) The facility's above-market costs must not be included in the rates of any utility, municipally-owned utility, or distribution cooperative through base rates, a power cost recovery factor (PCRF), stranded cost recovery mechanism, or any other fixed or variable rate element charged to end users;

(3) For a renewable energy technology that requires fossil fuel, the facility's use of fossil fuel must not exceed 2.0% of the total annual fuel input on a British thermal unit (BTU) or equivalent basis;

(4) The output of the facility must be readily capable of being physically metered and verified in Texas by the program administrator. Energy from a renewable facility that is delivered into a

transmission system where it is commingled with electricity from non-renewable resources can not be verified as delivered to Texas customers. A facility is not ineligible by virtue of the fact that the facility is a generation-offset, off-grid, or on-site distributed renewable facility if it otherwise meets the requirements of this section; and

(5) For a municipally owned utility operating a gas distribution system, any production or acquisition of landfill gas that is directly supplied to the gas distribution system is eligible to produce RECs based upon the conversion of the thermal energy in BTUs to electric energy in kWh using for the conversion factor the systemwide average heat rate of the gas-fired units of the combined utility's electric system as measured in BTUs per kWh.

(6) For industry-standard thermal technologies, the RECs can be earned only on the renewable portion of energy production. Furthermore, the contribution toward statewide renewable capacity megawatt goals from such facilities would be equal to the fraction of the facility's annual MWh energy output from renewable fuel multiplied by the facility's nameplate MW capacity.

(f) **Facilities not eligible for producing RECs in the renewable energy credits trading program.** A renewable facility is not eligible to produce RECs in the trading program if it is:

(1) A renewable energy capacity addition associated with an emissions reductions project described in Health and Safety Code §382.05193, that is used to satisfy the permit requirements in Health and Safety Code §382.0519;

(2) An existing facility that is not a small producer as defined in subsection (c) of this section; or

(3) An existing fossil plant that is repowered to use a renewable fuel.

(g) **Responsibilities of program administrator.** No later than June 1, 2000, the commission shall approve an independent entity to serve as the trading program administrator. At a minimum, the program administrator shall perform the following functions:

(1) Create accounts that track RECs for each participant in the trading program;

(2) Award RECs to registered renewable energy facilities on a quarterly basis based on verified meter reads;

(3) Assign offsets to competitive retailers on an annual basis based on a nomination submitted by the competitive retailer pursuant to subsection (n) of this section;

(4) Annually retire RECs that each competitive retailer submits to meet its renewable energy requirement;

(5) Retire RECs at the end of each REC's three-year life;

(6) Maintain public information on its website that provides trading program information to interested buyers and sellers of RECs;

(7) Create an exchange procedure where persons may purchase and sell RECs. The exchange shall ensure the anonymity of persons purchasing or selling RECs. The program administrator may delegate this function to an independent third party. The commission shall approve any such delegation;

(8) Make public each month the total energy sales of competitive retailers in Texas for the previous month;

(9) Perform audits of generators participating in the trading program to verify accuracy of metered production data;

(10) Allocate the renewable energy responsibility to each competitive retailer in accordance with subsection (h) of this section; and

(11) Submit an annual report to the commission. Beginning with the program's first compliance period, the program administrator shall submit a report to the commission on or before April 15 of each calendar year. The report shall contain information pertaining to renewable energy power generators and competitive retailers. At a minimum, the report shall contain:

(A) the amount of existing and new renewable energy capacity in MW installed in the state by technology type, the owner/operator of each facility, the date each facility began to produce energy, the amount of energy generated in megawatt-hours (MWh) each quarter for all capacity participating in the trading program or that was retired from service; and

(B) a listing of all competitive retailers participating in the trading program, each competitive retailer's renewable energy credit requirement, the number of offsets used by each competitive retailer, the number of credits retired by each competitive retailer, a listing of

all competitive retailers that were in compliance with the REC requirement, a listing of all competitive retailers that failed to retire sufficient REC requirement, and the deficiency of each competitive retailer that failed to retire sufficient RECs to meet its REC requirement.

(h) **Allocation of REC purchase requirement to competitive retailers.** The program administrator shall allocate REC requirements among competitive retailers. Any renewable capacity that is retired before January 1, 2009 or any capacity shortfalls that arise due to purchases of RECs from out-of-state facilities shall be replaced and incorporated into the allocation methodology set forth in this subsection. Any changes to the allocation methodology to reflect replacement capacity shall occur two compliance periods after which the facility was retired or capacity shortfall occurred. The program administrator shall use the following methodology to determine the total annual REC requirement for a given year and the final REC requirement for individual competitive retailers:

(1) The total statewide REC requirement for each compliance period shall be calculated in terms of MWh and shall be equal to the renewable capacity target multiplied by 8,760 hours per year, multiplied by the appropriate capacity conversion factor set forth in subsection (i) of this section. The renewable energy capacity targets for the compliance period beginning January 1, of the year indicated shall be:

(A) 400 MW of new resources in 2002;
(B) 400 MW of new resources in 2003;
(C) 850 MW of new resources in 2004;
(D) 850 MW of new resources 2005;
(E) 1,400 MW of new resources in 2006;
(F) 1,400 MW of new resources in 2007;
(G) 2,000 MW of new resources in 2008; and
(H) 2,000 MW of new resources in 2009 through 2019.

(2) The final REC requirement for an individual competitive retailer for a compliance period shall be calculated as follows:

(A) Each competitive retailer's preliminary REC requirement is determined by dividing its total retail energy sales in Texas by the total retail sales in Texas of all competitive retailers, and multiplying that percentage by the total statewide REC requirement for that compliance period.

(B) The adjusted REC requirement for each competitive retailer that is entitled to an offset is determined by reducing its preliminary REC requirement by the offsets to which it qualifies, as determined under subsection (i) of this section, with the maximum reduction equal to the competitive retailer's preliminary REC requirement. The total reductions for all competitive retailers is equal to the total usable offsets for that compliance period.

(C) Each competitive retailer's final REC requirement for a compliance period shall be increased to recapture the total usable offsets calculated under subparagraph (B) of this paragraph. The additional REC requirement shall be calculated by dividing the competitive retailer's adjusted REC requirement by the total adjusted REC requirement of all competitive retailers. This fraction shall be multiplied by the total usable offsets for that compliance period and this amount shall be added to the competitive retailer's adjusted REC requirement to produce the competitive retailer's final REC requirement for the compliance period.

(i) **Nomination and calculation of REC offsets.**

(1) A REP, municipally-owned utility, G&T cooperative, distribution cooperative, or an affiliate of a REP, municipally-owned utility, or distribution cooperative, may apply offsets to meet all or a portion of its renewable energy purchase requirement, as calculated in subsection (h) of this section, only if those offsets are nominated in a filing with the commission by June 1, 2001. A G&T may nominate the combined offsets for itself and its member distribution cooperatives upon the presentation of a resolution by its Board authorizing it to do so.

(2) The commission shall verify any designations of REC offsets and notify the program administrator of its determination by December 31, 2001.

(3) REC offsets shall be equal to the average annual MWh output of an existing resource for the years 1991-2000 or the entire life of the existing resource, whichever is less.

(4) REC offsets qualify for use in a compliance period under subsection (h) of this section only to the extent that:

(A) The resource producing the REC offset has continuously since September 1, 1999 been owned by or its output has been committed under contract to a utility, municipally-owned utility, or cooperative nominating the resource under paragraph (1) of this subsection or, if the resource has been committed under a contract that expired after September 1, 1999 and before January 1, 2002, it is owned by or its output has been committed under contract to a utility, municipally-owned utility, or cooperative on January 1, 2002; and

(B) The facility producing the REC offsets is operated and producing energy during the compliance period in a manner consistent with historic practice.

(5) If the production from a facility producing the REC offset energy ceases for any reason, the competitive retailer may no longer claim the REC offset against its REC requirement.

(j) **Calculation of capacity conversion factor.** The capacity conversion factor used by the program administrator to allocate credits to competitive retailers shall be calculated as follows:

(1) The capacity conversion factor (CCF) shall be administratively set at 35% for 2002 and 2003, the first two compliance periods of the program.

(2) During the fourth quarter of the second compliance year (2003), the CCF shall be readjusted to reflect actual generator performance data associated with all renewable resources in the trading program. The program administrator shall adjust the CCF every two years thereafter and shall:

(A) be based on all renewable energy resources in the trading program for which at least 12 months of performance data is available;

(B) represent a weighted average of generator performance;

(C) use all valid performance data that is available for each renewable resource; and

(D) ensure that the renewable capacity goals are attained.

(k) **Production and transfer of RECs.** The program administrator shall administer a trading program for renewable energy credits in accordance with the requirements of this subsection.

(1) A REC will be awarded to the owner of a renewable resource when a MWh is metered at that renewable resource. A generator producing 0.5 MWh or greater as its last unit generated should be awarded one REC on a quarterly basis. The program administrator shall record the amount of metered MWh and credit the REC account of the renewable resource that generated the energy on a quarterly basis.

(2) The transfer of RECs between parties shall be effective only when the transfer is recorded by the program administrator.

(3) The program administrator shall require that RECs be adequately identified prior to recording a transfer and shall issue an acknowledgement of the transaction to parties upon provision of adequate information. At a minimum, the following information shall be provided:

(A) identification of the parties;

(B) REC serial number, REC issue date, and the renewable resource that produced the REC;

(C) the number of RECs to be transferred; and

(D) the transaction date.

(4) A competitive retailer shall surrender RECs to the program administrator for retirement from the market in order to meet its REC allocation for a compliance period. The program administrator will document all REC retirements annually.

(5) On or after each April 1, the program administrator will retire RECs that have not been retired by competitive retailers and have reached the end of their three-year life.

(6) The program administrator may establish a procedure to ensure that the award, transfer, and retirement of credits are accurately recorded.

(l) **Settlement process.** Beginning in January 2003, the first quarter following the compliance period shall be the settlement period during which the following actions shall occur:

(1) By January 31, the program administrator will notify each competitive retailer of its total REC requirement for the previous compliance period as determined pursuant to subsection (h) of this section.

(2) By March 31, each competitive retailer must submit credits to the program administrator from its account equivalent to its REC requirement for the previous compliance period. If the competitive retailer has insufficient credits in its account to satisfy its obligation, and this shortfall exceeds the applicable deficit allowance as set forth in subsection (m)(2) of this section, the competitive retailer is subject to the penalty provisions in subsection (o) of this section.

(m) **Trading program compliance cycle.**

(1) The first compliance period shall begin on January 1, 2002 and there will be 18 consecutive compliance periods. Early banking of RECs is permissible and may commence no earlier than July 1, 2001. The program's first settlement period shall take place during the first quarter of 2003.

(2) A competitive retailer may incur a deficit allowance equal to 5.0% of its REC requirement in 2002 and 2003 (the first two compliance periods of the program). This 5.0% deficit allowance shall not apply to entities that initiate customer choice after 2003. During the first settlement period, each competitive retailer will be subject to a penalty for any REC shortfall that is greater than 5.0% of its REC requirement under subsection (h) of this section. During the second settlement period, each competitive retailer will be subject to the penalty process for any REC shortfall greater than 5.0% of the second year REC allocation. All competitive retailers incurring a 5.0% deficit pursuant to this subsection must make up the amount of RECs associated with the deficit in the next compliance period.

(3) The issue date of RECs created by a renewable energy resource shall coincide with the beginning of the compliance year in which the credits are generated. All RECs shall have a life of three compliance periods, after which the program administrator will retire them from the trading program.

(4) Each REC that is not used in the year of its creation may be banked and is valid for the next two compliance years.

(5) A competitive retailer may meet its renewable energy requirements for a compliance period with RECs issued in or prior to that compliance period which have not been retired.

(n) **Registration and certification of renewable energy facilities.** The commission shall register and certify all renewable facilities that will produce either REC offsets or RECs for sale in the trading program. To be awarded RECs or REC offsets, a power generator must complete the registration process described in this subsection. The program administrator shall not award offsets or credits for energy produced by a power generator before it has been certified by the commission.

(1) The designated representative of the generating facility shall file an application with the commission on a form approved by the commission for each renewable energy generation facility. At a minimum, the application shall include the location, owner, technology, and rated capacity of the facility and shall demonstrate that the facility meets the resource eligibility criteria in subsection (e) of this section.

(2) No later than 30 days after the designated representative files the certification form with the commission, the commission shall inform both the program administrator and the designated representative whether the renewable facility has met the certification requirements. At that time, the commission shall either certify the renewable facility as eligible to receive either RECs or offsets, or describe any insufficiencies to be remedied. If the application is contested, the time for acting is extended by 30 days.

(3) Upon receiving notice of certification of new facilities, the program administrator shall create an REC account for the designated representative of the renewable resource.

(4) The commission may make on-site visits to any certified unit of a renewable energy resource and may decertify any unit if it is not in compliance with the provisions of this subsection.

(5) A decertified renewable generator may not be awarded RECs. However, any RECs awarded by the program administrator and transferred to a competitive retailer prior to the decertification remain valid.

(o) **Penalties and enforcement.** If by April 1 of the year following a compliance year it is determined that a competitive retailer with an allocated REC purchase requirement has insufficient credits to satisfy its allocation, the competitive retailer shall be subject to the administrative penalty provisions of PURA §15.023 as specified in this subsection.

(1) Except as provided in paragraph (4) of this subsection, a penalty will be assessed for that portion of the deficient credits.

(2) The penalty shall be the lesser of $50 per MWh or, upon presentation of suitable evidence of market value by the competitive retailer, 200% of the average market value of credits for that compliance period.

(3) There will be no obligation on the competitive retailer to purchase RECs for deficits, whether or not the deficit was within or was not within the competitive retailer's reasonable control, except as set forth in subsection (m)(2) of this section.

(4) In the event that the commission determines that events beyond the reasonable control of a competitive retailer prevented it from meeting its REC requirement there will be no penalty assessed.

(5) A party is responsible for conducting sufficient advance planning to acquire its allotment of RECs. Failure of the spot or short-term market to supply a party with the allocated number of RECs shall not constitute an event outside the competitive retailer's reasonable control. Events or circumstances that are outside of a party's reasonable control may include weather-related damage, mechanical failure, lack of transmission capacity or availability, strikes, lockouts, actions of a governmental authority that adversely effect the generation, transmission, or distribution of renewable energy from an eligible resource under contract to a purchaser.

(p) **Renewable resources eligible for sale in the Texas wholesale and retail markets.** Any energy produced by a renewable resource may be bought and sold in the Texas wholesale market or to retail customers in Texas and marketed as renewable energy if it is generated from a resource that meets the definition in subsection (c)(14) of this section.

(q) **Periodic review.** The commission shall periodically assess the effectiveness of the energy-based credits trading program in this section to maximize the energy output from the new capacity additions and ensure that the goal for renewable energy is achieved in the most economically-efficient manner. If the energy-based trading program is not effective, performance standards will be designed to ensure that the cumulative installed renewable capacity in Texas meets the requirements of PURA §39.904.

This agency hereby certifies that the rule, as adopted, has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority. It is therefore ordered by the Public Utility Commission of Texas that rule §25.173 relating to Goal for Renewable Energy is hereby adopted with changes to the text as proposed.

ISSUED IN AUSTIN, TEXAS ON THE 20th DAY OF DECEMBER 1999.

RPS CASE STUDY
— WISCONSIN —

BACKGROUND

The state of Wisconsin has the 18th largest population (5 million) and 24th largest utility generation capacity (retail sales equal 59 million megawatt-hours per year) in the United States. Coal and nuclear power dominate the electricity generation mix in the state.

In October 1999, Wisconsin became the first and only U.S. state to legislate an RPS absent retail competition. Wisconsin has moved slowly in establishing electricity competition in the state, moving towards wholesale electricity competition but not retail choice. However, in its move to wholesale competition, the state has developed modest renewable energy goals and targets. In 1998, for example, electricity reliability legislation required the installation of 50 MW of renewable electric capacity. Though not blessed with an abundance of renewable energy resources, biomass, hydropower and wind resources are all present in the state. When the state passed further wholesale electricity competition legislation in 1999 (embedded in the state budget), it came as little surprise that a more aggressive renewable energy policy was developed.

RPS Summary

TIME-LINE

RPS Legislation	October 1999
RPS Rulemaking Begins	Early 2000
RPS Rulemaking Ends	Late 2000
RPS Requirement Begins	January 2001
RPS Requirement Ends	Unclear

STANDARD
0.5% in 2001, increasing to 2.2% in 2011 (0.6% can come from existing resources)

RESPONSIBILITY OF RPS FALLS ON:
Utility

ELIGIBLE TECHNOLOGIES
renewably-fuelled fuel cells, tidal or wave energy, solar, wind, geothermal, biomass, small hydro (under 60 MW)

CREDIT TRADING Yes

PENALTY FOR NON-COMPLIANCE: Fines from $5,000 to $500,000/yr, and other actions.

Wisconsin's RPS begins at 0.5% of electricity sales in 2001, increasing to 2.2% by 2011. 0.6% can come from renewable energy facilities installed before January 1, 1998, with the remainder coming from new wind, solar, biomass, geothermal, tidal, wave, and small hydro (under 60 MW) generation sources. Investor-owned, municipal, and cooperative utilities are all subject to the requirement, with certain exemptions described later. Because Wisconsin has established an RPS (with credit trading) outside of retail electricity competition, it offers a useful case study for the Chinese situation.

LEGISLATIVE PROCESS

Wisconsin's RPS legislation, signed into law in October 1999 as part of a larger electric utility reform package and included in Appendix A, includes the following elements:

- a renewable energy purchase requirement rising from 0.5% of retail sales in 2001 to 2.2% of retail sales in 2011,
- an allowance that 0.6% of the requirement can be met with existing renewable facilities installed before January 1, 1998,
- detailed definitions for eligible resources, which includes renewably fuelled fuel cells, tidal or wave energy, solar, wind, geothermal, biomass, and small (under 60 MW) hydro (the biomass portion of a biomass cofiring facility is also eligible),
- allowance for renewable energy credit trading and banking,
- the broad outlines for demonstrating compliance with the renewable energy purchase obligations,
- detail on how utilities will recover the costs of the RPS renewable energy purchase obligations,
- exemptions for certain utilities that already supply more than 10% of its load with renewable energy,
- modest penalties ($5,000 - $50,000) for utilities that fail to meet their RPS obligations or that file false information, and
- direction to the public utilities commission to develop rules that provide detailed guidance on the mechanics of the RPS obligation.

As is evident from this discussion and the text in Appendix A, compared to Maine and even Texas, Wisconsin's legislation provides considerably more detail on important RPS design features. That said, Wisconsin's public utility commission has been obligated with providing further detail into the operation and design of the RPS.

The primary goal of Wisconsin's RPS was to build upon past support for renewable energy in the state and provide the employment, economic development, environmental, and electricity reliability benefits of renewable energy. An explicit objective included increasing the amount of renewable energy serving Wisconsin customers, not just the support of existing renewables supply as in Maine. This was the purpose of restricting to 0.6% the contribution of existing renewable in meeting the RPS obligations of utilities.

Discussions on the RPS in Wisconsin began in 1996 before the public utilities commission, which ultimately decided against including such a renewables policy in its electricity regulatory plans. However, at that time a coalition of environmental, renewable energy, and certain small utility stakeholders formed in support of explicit renewable energy targets.

Beginning and 1998, this coalition and another coalition consisting of large utility and industrial customer interests began discussing a consensus package of electricity regulatory reform efforts to propose to the state legislature. By early 1999, a consensus emerged on these electricity regulatory reform efforts, which included an RPS as well as other public benefits funding for energy efficiency and renewable energy. This consensus package was then forwarded to the legislature for their consideration. After a 9-month process – and at least 3 months of intensive

legislative efforts and hearings – the legislature passed and the governor signed the bill including the RPS.

Though the RPS was viewed by most as a small component of the overall legislative package, it was one of few items that focused on benefits for the public rather than the electric utilities. As such, though the RPS proponents were required to fight off certain challenges in the legislature, the RPS escaped the legislative process more or less unchanged from its original version and with widespread support by a diverse group of stakeholders. Due to the consensus nature of the legislative proposal, in order to gain support for the RPS, RPS proponents therefore also supported other aspects of the larger bill, which included issues related to electricity transmission and utility investments outside of the state.

REGULATORY PROCESS

To develop the design details for the RPS, the Wisconsin PUC has recently initiated a rulemaking effort to obtain information from interested stakeholders on the implementation and operation of Wisconsin's RPS and to develop detailed rules for the implementation of the RPS. This inquiry began in early 2000 and very preliminary rules were sent to the legislature by the Commission on April 29, 2000 based loosely on the RPS rules established in the state of Texas (see Appendix B).

Beginning in May 2000, a stakeholder collaborative including utilities, clean energy advocates, and the PUC (organized by a local renewable energy advocacy organization in order to lessen the burden on the PUC) began meeting to discuss RPS design issues and develop proposed final RPS rules. These discussions are not yet completed, but are intended to lead to consensus on the appropriate design of the final rules. The group hopes to complete its process by July, with the PUC issuing final rule during fall 2000. Some of the more important issues being raised by stakeholders in this process include:

- how the renewable energy credit trading system is to be administered, especially given the small number (just a handful) of potential buyers,
- to what extent credit banking will be allowed from one year to the next, and should credit for early compliance be provided,
- detailed specification for eligible renewable energy technologies,
- whether renewables sold under customer-driven green power programs be eligible to meet a utility's RPS obligation, and
- whether the penalties for non-compliance will be sufficient to ensure compliance with the RPS.

OVERALL ANALYSIS AND CONCLUSIONS

Wisconsin's RPS rules have not yet been finalized, and the RPS obligations themselves do not begin until 2001 with the expectation that existing renewable resources will largely meet the renewables purchase obligation in the first years. There is therefore little to report on the actual operation of the Wisconsin RPS.

On one hand, the development of the Wisconsin RPS demonstrates that an RPS mechanism (even with credit trading) can reasonably be established in a regulated, non-retail choice context.

In such a context, accounting, verification, and compliance demonstration procedures are far simpler than under retail choice as only a handful of regulated utilities are responsible for meeting RPS obligations. Accordingly, the rulemaking process for Wisconsin's RPS appears as if it will be far simpler than similar processes in other states that have developed an RPS as part of overall retail electricity reform. It will also proceed on an expedited timeframe, given the brief period between legislative establishment of the RPS (October 1999) and the first RPS compliance period (2001). Using the RPS rule established in Texas as a model for RPS implementation also looks to speed the process.

On the other hand, several policy design challenges still face the Wisconsin stakeholders, and a number of passages in the RPS legislation should be the source of some concern:

- First, the penalty mechanisms established by the RPS legislation may not alone be sufficient to ensure full compliance as the maximum size of the penalty is far exceeded by projected RPS compliance costs. Additional penalties imposed by the PUC may be required.
- Second, a lack of clarity on when the renewable energy purchase obligations will end – if not rectified – could create substantial uncertainty for renewable energy developers and investors.
- Third, with few buyers of renewable energy credits, it is unclear what the most effective and efficient form of renewable energy credit administration might be.

APPENDIX A. RPS LEGISLATIVE EXCERPT

The following text is the RPS legislation passed in Wisconsin:

SECTION 2334t. 196.378 of the statutes is created to read:

196.378 Renewable resources. (1) DEFINITIONS. In this section:

(a) "Biomass" means a resource that derives energy from wood or plant material or residue, biological waste, crops grown for use as a resource or landfill gases. "Biomass" does not include garbage, as defined in s. 289.01(9), or nonvegetation–based industrial, commercial or household waste, except that "biomass" includes refuse–derived fuel used for a renewable facility that was in service in this state before January 1, 1998.

(am) "Biomass cofired facility" means a renewable facility in which biomass and conventional resources are fired together.

(b) "Conventional resource" means a resource that derives energy from coal, oil, nuclear power or natural gas, except for natural gas used in a fuel cell.

(bm) "Department" means the department of administration.

(c) "Electric provider" means an electric utility or retail electric cooperative.

(d) "Electric utility" means a public utility that sells electricity at retail. For purposes of this paragraph, a public utility is not considered to sell electricity at retail solely on the basis of its ownership or operation of a retail electric distribution system.

(e) "Excludable renewable energy" means the portion of an electric provider's total renewable energy that is supplied from renewable facilities that were placed in
service before January 1, 1998, and that, before January 1, 1998, derived electricity from hydroelectric power, even if the output of the renewable facilities is used to satisfy requirements under federal law.

(f) "Nonsystem renewable energy" means the amount of electricity that an electric provider sells to its retail customers or members and that is supplied or allocated
under executed wholesale purchase contracts from renewable facilities that are not owned or operated by the electric provider. "Nonsystem renewable energy" does not include any electricity that is not used to satisfy the electric provider's retail load obligations.

(g) "Renewable facility" means an installed and operational electric generating facility in which electricity is derived from a renewable resource. "Renewable facility" includes a facility the installation or operation of which is required under federal law, but does not include a facility the installation or operation of which is required under the laws of another state even if the installation or operation of the facility is also required under federal law.

(h) "Renewable resource" means any of the following:

1. A resource that derives electricity from any of the following:

a. A fuel cell that uses, as determined by the commission, a renewable fuel.

b. Tidal or wave action.

c. Solar thermal electric or photovoltaic energy.

d. Wind power.

e. Geothermal technology.

g. Biomass.

1m. A resource with a capacity of less than 60 megawatts that derives electricity from hydroelectric power.

2. Any other resource, except a conventional resource, that the commission designates as a renewable resource in rules promulgated under sub. (4).

(i) "Renewable resource credit" means a credit calculated in accordance with rules promulgated under sub. (3)(a).

(j) "Resource" means a source of energy used to generate electric power.

(k) "Retail electric cooperative" means a cooperative association organized under ch. 185 that sells electricity at retail to its members only. For purposes of this paragraph,
a cooperative association is not considered to sell electricity at retail solely on the basis of its ownership or operation of a retail electric distribution system.

(n) "System renewable energy" means the amount of electricity that an electric provider sells to its retail customers or members and that is supplied by renewable
facilities owned or operated by the electric provider.

(o) “Total renewable energy” means the sum of an electric provider’s system and nonsystem renewable energy.

(2) RENEWABLE RESOURCE ENERGY. (a) Each electric provider shall provide to its retail electric customers or members total renewable energy in at least the following
percentages of its total retail electric sales, either directly or through renewable resource credits from another electric provider:

1. By December 31, 2001, 0.5%.
2. By December 31, 2003, 0.85%.
3. By December 31, 2005, 1.2%.
4. By December 31, 2007, 1.55%.
5. By December 31, 2009, 1.9%.
6. By December 31, 2011, 2.2%.

(b) For purposes of determining compliance with par. (a):

1. Total retail electric sales shall be calculated on the basis of an average of an electric provider’s retail electric sales in this state during the prior 3 years.

2. The amount of electricity supplied by a biomass cofired facility that may be counted toward satisfying the requirements of par. (a) shall be an amount equal to the
product of the maximum amount of electricity that the facility is capable of generating and the ratio of the energy content of the biomass fuels to the energy content
of both the biomass and conventional resources.

3. Any excludable renewable energy that exceeds 0.6% of an electric provider’s total retail electric sales shall be excluded from the electric provider’s total
renewable energy.

4. The members of a municipal electric company, as defined in s. 66.073 (3) (d), may aggregate and allocate renewable energy among themselves.

(c) No later than April 15 annually, an electric provider shall submit a report to the department that describes the electric provider’s compliance with par. (a). Reports under this paragraph may include certifications from wholesale suppliers regarding the sources and amounts of energy supplied to an electric provider. The department may specify the documentation that is required to be included with reports submitted under this
paragraph.

(d) The commission shall allow an electric utility to recover from ratepayers the cost of providing total renewable energy to its retail customers in amounts that equal or exceed the percentages specified in par. (a). Subject to any approval of the commission that is necessary, an electric utility may recover costs under this paragraph by any of the following methods:

1. Allocating the costs equally to all customers on a kilowatt–hour basis.

2. Establishing alternative price structures, including price structures under which customers pay a premium for renewable energy.

3. Any combination of the methods specified in subds. 1. and 2.

(e) 1. This subsection does not apply to any of the following:

a. An electric provider that provides more than 10% of its summer peak demand in this state from renewable facilities.

b. An electric provider that provides more than 10% of its summer peak demand from renewable resources.

2. For purposes of calculating the percentages under subd. 1., an electric provider may include renewable facilities located in this or another state and renewable facilities located on its or another electric provider’s system.

3. Notwithstanding subd. 1., this subsection applies to an electric provider unless the electric provider provides documentation to the commission that establishes, to the satisfaction of the commission, that the electric provider satisfies the requirements under subd. 1. a. or b.

(3) RENEWABLE RESOURCE CREDITS. (a) An electric provider that provides total renewable energy to its retail electric customers or members in excess of the percentages specified in sub. (2) (a) 1. to 6. may, in the applicable year, sell to any other electric provider a renewable resource credit or a portion of a renewable resource credit at any negotiated price. Alternatively, an electric provider may use a renewable resource credit or portion of a renewable resource credit in a subsequent year to establish compliance with sub. (2) (a). The commission shall promulgate rules that establish requirements for the use of a renewable resource credit, including calculating the amount of a renewable resource credit.

(b) The commission may promulgate rules that establish requirements and procedures for a sale under par. (a).

(4) RULES. The commission may promulgate rules that designate a resource, except for a conventional resource, as a renewable resource in addition to the resources specified in sub. (1) (h) 1. and 1m.

(5) PENALTY. Any person who violates sub. (2) or any wholesale supplier who provides an electric provider with a false or misleading certification regarding the sources or amounts of energy supplied to the electric provider shall forfeit not less than $5,000 nor more than $500,000. Forfeitures under this subsection shall be enforced by action on behalf of the state by the attorney general. A court imposing a forfeiture under this subsection shall consider all of the following in determining the amount of the forfeiture:

(a) The appropriateness of the forfeiture to the person's or wholesale supplier's volume of business.

(b) The gravity of the violation.

(c) Whether a violation of sub. (2) is due to circumstances beyond the violator's control.

APPENDIX B. DRAFT RPS REGULATORY RULE

Pre-hearing Draft
March 2000
Clearinghouse Rule_____
Docket 1-AC-192

PROPOSED ORDER OF THE STATE OF WISCONSIN
PUBLIC SERVICE COMMISSION ADOPTING RULES

The Public Service Commission of Wisconsin proposes an order to create ch. PSC 117, relating to the use of renewable resource credits.

Analysis Prepared by the Public Service Commission of Wisconsin

Statutory authority: ss. 196.02(1) and (3), 196.378(3) and 227.11, Stats.
Statute interpreted: s. 196.378, Stats.

1999 Wis. Act 9 created a renewable portfolio standard, requiring electric providers to meet certain minimum percentages of their retail sales with renewable resources. The minimum percentage gradually increases, as follows:

Year 2001:	0.5 percent of total retail electric sales.
Year 2003:	0.85 percent of total retail electric sales.
Year 2005:	1.2 percent of total retail electric sales.
Year 2007:	1.55 percent of total retail electric sales.
Year 2009:	1.9 percent of total retail electric sales.
Year 2011:	2.2 percent of total retail electric sales.

In lieu of providing renewable energy to its customers, an electric provider can purchase a renewable resource credit. Under the newly created statutes, the Commission must "promulgate rules that establish requirements for the use of a renewable resource credit, including the amount of a renewable resource credit." The proposed rules address the requirements and procedures for the use of renewable resource credits.

The proposed rules establish a renewable resource credits trading program and describe the minimum criteria for renewable energy facilities to be eligible for production of credits in the trading program. The proposed rules also describe the duties of a program administrator, who supervises and implements the trading program. The program administrator is required to create a trading account for program participants and to award renewable resource credits to the account of a certified renewable facility according to the amount of renewable energy produced at the facility. The program administrator must retire renewable resource credits upon their use to satisfy an electric provider's minimum renewable energy requirement. If a credit is not used within five years after its creation, it expires.

SECTION 1. PSC 117 is created to read:

CHAPTER PSC 117
RENEWABLE RESOURCE CREDIT TRADING PROGRAM

PSC 117.01 Scope. This chapter applies to each renewable facility that creates RRCs and each electric provider that uses a RRC to meet the requirements of s. 196.378 (2) (a), Stats.

PSC 117.02 Definitions. The definitions specified in s. 196.378, Stats., also apply to this chapter. In this chapter:

(1) "Compliance period" means a calendar year, beginning January 1, during which an electric provider is required to deliver renewable energy under s. 196.378 (2) (a), Stats.

(2) "Commission" means the public service commission

(3) "Designated representative" means the person authorized by the owner or operator of a renewable resource to register that resource with the program administrator or to take title to the RRCs created by a facility.

(4) "Exempt electric provider" means an electric provider that has met the exemption requirements of 196.378(2)(e), Stats.

(5) "MWh" means megawatt-hour.

(6) "Program administrator" means the entity responsible for carrying out the administrative responsibilities related to the renewable resource credit trading program.

(7) "RRC" means a renewable resource credit.

(8) "Renewable energy" means energy that is supplied by a renewable facility.

(9) "Renewable resource credit" means one MWh of renewable energy that is physically metered and otherwise meets the requirements set forth in this chapter.

(10) "RRC account" means the account that the program administrator maintains in order to track the creation, sale, transfer, purchase, and retirement of a RRC by a program participant.

(11) "RRC trading program" means the process of creating, trading, tracking, and submitting RRCs.

PSC 117.03 Use of renewable resource credits. An electric provider may use a RRC in its RRC account to comply with s. 196.378 (2) (a), Stats., only if, during that compliance period, the electric provider meets its entire minimum percentage requirement under s. 196.378 (2) (a), Stats., by using RRCs in its RRC account.

PSC 117.04 Facilities eligible for creating renewable resource credits. (1) A facility may create RRCs for use in the RRC trading program only if it is a renewable facility and meets all of the following requirements:

(a) The energy output of the facility is physically metered and the accuracy of the metering is verified by the program administrator.

(b) The facility registers with, and is certified by, the commission under s. PSC 117.06.

(2) A renewable facility that is used to qualify for an exemption under s. 196.378 (2) (e), Stats., in any compliance period, is not eligible to create RRCs for use in the RRC trading program during that compliance period.

(3) A biomass cofired facility may use only the renewable portion of its energy production, based on the relative energy content of the fuels, to create RRCs in the applicable reporting period.

PSC 117.05 Creation and transfer of renewable resource credits. (1) The program administrator shall administer a trading program for RRCs.

(2) (a) Beginning on January 1, 2001, an owner of a certified renewable facility creates a RRC when it meters one MWh of renewable energy at the facility. The energy metered for this purpose may not be used to meet any electric provider's minimum percentage requirement under s. 196.378 (2) (a), Stats., other than through the use of its associated RRC.

(b) Within 15 days of the end of each calendar quarter, the owner of each participating renewable facility shall:

1. Report the amount of renewable energy generated during that quarter to the program administrator.

2. Identify all electric providers to which the energy was sold and the amount sold to each electric provider.

3. Provide, to each electric provider that purchased renewable energy from the facility during that quarter, an accounting of the renewable energy sold to the electric provider that qualifies for participation in the RRC trading program.

(c) On a quarterly basis, the program administrator shall record the amount of metered MWh reported for each certified renewable facility. The program administrator shall credit the renewable facility's RRC account, or the account of the facility's designated representative, with the number of RRCs created.

(3) When a RRC is credited to an account under sub. (2), the account owner may sell or transfer the RRC to any person. Any person buying or receiving a RRC shall report the sale or transfer to the program administrator within 10 days of the transaction. The program administrator shall then credit the RRC account of the new owner and debit the RRC account of the prior owner. A RRC may continue to be sold or traded to meet the minimum percentage requirements of s. 196.378 (2) (a), Stats., only if each buyer or transferee reports the transaction to the program administrator within 10 days of its consummation.

(4) (a) When an electric provider uses a RRC to comply with the minimum percentage requirements of s. 196.378 (2) (a), Stats., the program administrator shall retire the RRC.

(b) A RRC has a maximum life of five years. Annually, on or after April 1, the program administrator shall retire each RRC that has reached the end of its five-year life and has not otherwise been retired under par. (a).

(5) Subject to commission approval, the program administrator may establish any procedure necessary to ensure that the award, transfer, and retirement of credits are accurately recorded.

PSC 117.06 Certification of renewable facilities. **(1)** No renewable facility may participate in the RRC trading program until it is certified by the commission. The program administrator may not award RRCs for any energy produced by a renewable facility before the date that the commission certifies the facility.

(2) To obtain commission certification, the owner of a renewable facility, or a designated representative, shall provide the following registration information in a format approved by the commission:

(a) The renewable facility's location, owner, technology, date placed in service, and rated capacity.

(b) Information that demonstrates the renewable facility meets the resource eligibility criteria under s. PSC 117.04.

(c) Any other information the commission determines to be necessary.

(3) The commission shall inform both the program administrator and the facility owner, or its designated representative, whether it has certified a renewable facility for which it has received an application under sub. (2).

(4) The program administrator shall create a RRC account for each renewable facility that the commission certifies.

(5) The commission may make on-site visits to any certified unit of a renewable facility to determine its compliance with this chapter and with s. 196.378, Stats., and may decertify any unit that it finds not to be in compliance.

(6) The program administrator may not create RRCs for a decertified renewable facility.

PSC 117.07 Renewable resource credit program administrator. (1) The commission's program administrator shall:

(a) Identify the number of RRCs necessary for each participating electric provider to comply with the minimum percentage requirements of s. 196.378 (2) (a), Stats.

(b) Create an RRC account to track RRCs for each program participant.

(c) Credit RRCs to RRC accounts under s. PSC 117.05 (2).

(d) Retire RRCs under s. PSC 117.05 (4)

(e) Maintain program information on an internet website for traders and the public in general.

(f) Audit renewable facilities that participate in the trading program to verify the accuracy of metered production data.

(g) Perform any other function designated by the commission.

(2) The program administrator may create an exchange procedure for purchasing and selling RRCs.

(3) Annually, in consultation with the program administrator, the commission shall determine the annual fee, if any, it assesses electric providers for the purpose of funding the program administrator. The commission shall allocate this fee among non-exempt electric providers, based on the renewable resource requirement of each non-exempt electric provider. The commission shall calculate each non-electric provider's renewable resource requirement as a percentage of the total renewable resource requirement of all non-exempt electric providers under s. 196.378 (2) (a), Stats. The fee allocation of each non-exempt electric provider shall be the product of the total annual fee and the non-exempt electric provider's percentage of the total renewable resource requirement.

(4) The commission shall invoice each non-exempt electric provider for its portion of the renewable trading credits fee annually.

(5) Each non-exempt electric provider shall pay to the commission the invoiced amount within 30 days after the commission delivers its invoice under sub. (4).

EFFECTIVE DATE: This rule shall take effect on the first day of the month following publication in the Wisconsin administrative register, as provided in s. 227.22 (2) (intro.), Stats.

(End)

RPS CASE STUDY
— MAINE —

BACKGROUND

Maine, a state located in the Northeastern-most point in the United States, has a population of 1.2 million and total retail sales of electricity of approximately 12 million megawatt-hours per year. Electricity generation in Maine is dominated by nuclear, hydropower, and biomass electricity sources, and non-utility biomass generation has a particularly strong presence in the state due to favorable state renewable energy policies of the past.

When the Maine legislature passed electricity restructuring legislation in May 1997, it became the first states to create a renewables portfolio standard (RPS) as an element of its electricity restructuring package. The beginning of retail choice in Maine, as well as the initiation date for the RPS, was March 2000, making Maine the first and so far only state to have an RPS up and running.

RPS Summary

TIME-LINE

RPS Legislation	May 1997
RPS Rulemaking Begins	February 1998
RPS Legislative Revisions	May 1999
RPS Rulemaking Ends	June 1999
RPS Requirement Begins	March 2000
RPS Review	2005
RPS Requirement Ends	unclear

STANDARD 30%

RESPONSIBILITY OF RPS FALLS ON:
Electric Service Provider

ELIGIBLE TECHNOLOGIES
fuel cells, tidal power, solar, wind, geothermal, hydro, MSW, biomass (all under 100 MW), as well as cogeneration systems

CREDIT TRADING No

PENALITIES FOR NON-COMPLIANCE:
Fines and possible license revocation.

The RPS in Maine, shaped both by its enabling legislation and regulations to promulgate the legislation, requires all retail electricity suppliers in the state to supply their end-use electricity customers with 30% eligible resources beginning in March 2000. Though an apparently high percentage requirement, Maine's eligibility guidelines are broad. Eligible resources include fuel cells, tidal power, solar, wind, geothermal, hydro, MSW, and biomass (all under 100 MW), as well as cogeneration systems (including natural gas and coal). These systems must serve the New England grid to qualify for the RPS.

Maine presents an interesting case because the state already has the highest percentage of renewable energy use in the country at approximately 50% of total generation (note: most of this renewable capacity is hydropower and biomass). Thus, while Maine's renewable energy portfolio standard is the highest in the country, the percentage is far lower than what the state already uses. As will be shown below, this dynamic will make the Maine RPS an ineffective policy tool, offering some important lessons on the design of an RPS.

LEGISLATIVE PROCESS AND RESULTS

Maine's RPS legislation, signed into law in May 1997 and included below in Appendix A, includes the following features:

- a 30% eligible resource purchase requirement, beginning at the onset of retail competition, or March 2000,
- eligible resources that are defined to include fuel cells, tidal, solar, wind, geothermal, hydro, biomass, and MSW (under 100 MW), as well as high efficiency cogeneration of any size, that sell power into the New England control area, and
- a mandatory review of the portfolio requirement, with possible recommendations for amendment, no later than 5 years after the beginning of retail competition.

After significant additional legislative debate regarding the merits and drawbacks of the RPS, and after considering the abandonment of this policy for another form of renewable energy support or lifting the 100 MW size cap for hydropower, minor revisions to the RPS statute were finalized in May 1999, including:

- specifying that only "high-efficiency" cogeneration systems might qualify for the RPS,
- and effectively applying the portfolio standard to every retail electricity product rather than to aggregate retail supplier demand.

As illustrated by the lack of detail in the legislation shown in Appendix A and summarized above, many of the design and implementation requirements of the RPS were left to the Maine Public Utilities Commission to handle through a rulemaking process.

The primary objective of Maine's RPS was to help protect the existing indigenous biomass and cogeneration industries in the state. Concern was raised before the legislature that, absent further support, existing biomass and industrial cogeneration plants may close, with a related loss in rural jobs and income. Accordingly, the purpose of the RPS was much more to protect an existing industrial base than to encourage the increased development of new renewable energy sources. Secondary objectives of the RPS included a desire to maintain electricity reliability through a diversity of supply sources and to maintain the environmental quality of the state.

As with the majority of state RPS legislation, Maine's RPS was embedded in a much larger bill to restructure the electricity industry in the state. As such, the RPS was viewed by most stakeholders as only one small piece of a much larger package of measures. Important stakeholders in the overall legislative drafting process included electric utilities, independent power producers, renewable energy owners, developers, and advocates, environmental advocates, and competitive electricity service providers.

REGULATORY PROCESS AND RESULTS

In order to develop the operational and design details for the RPS, the Maine PUC first initiated an inquiry to obtain information from interested stakeholders on the implementation and operation of Maine's RPS. This inquiry began in February 1998. The Commission received comments on specific RPS design questions, circulated a draft RPS rule, and convened a technical workshop with interested parties to further discuss RPS implementation issues.

Upon the completion of this inquiry, in August 1998 the Commission launched a more formal rulemaking process to actually establish the standards that would govern the implementation of the RPS. A proposed RPS rule was circulated at this time. After receiving additional comments on this rule, in December 1998 the PUC provisionally adopted the RPS rule. After receiving legislative approval, the final RPS rule was completed in June 1999. This rule is attached below as Appendix B.

Participants in the regulatory process included: local and national environmental and renewable energy advocacy organizations, green power marketers, other competitive electricity suppliers, electric utilities, and consumer advocates

Important issues raised by a number of environmental and renewable energy stakeholders (but opposed by utility interests) included:

- a desire to amend the purchase requirement to ensure the development of "new" renewable resources and to establish purchase bands to ensure a diversity of renewable energy supply sources, and
- a desire to apply the standard on each electricity product sold rather than on aggregate sales by retail suppliers.

The first issue was deemed inconsistent with the RPS legislation, whereas the latter was effectively dealt with in the legislative revisions to the RPS in May 1999.

In establishing the regulatory framework for Maine's RPS and implementing the RPS legislation, important decisions made by the Public Utilities Commission included:

- Not allowing renewable energy credit trading due to potential policy coordination challenges with fuel source disclosure regulations and concerns over the administrative requirements of a credit trading system.
- Outlining the compliance reporting and verification protocol that would be followed.
- Listing potential sanctions for non-compliance with the RPS, which give retail suppliers substantial flexibility if they fail to meet the RPS requirements.
- Highlighting a variety of features to give retail suppliers additional flexibility in meeting the RPS requirements.
- Clarifying that the renewables-portion of a multi-fuel hybrid facility may qualify for meeting the RPS.

OVERALL ANALYSIS AND CONCLUSIONS

Maine is the first U.S. state to have actual experience with the operations of the RPS. So far, this experience shows some of the pitfalls of ill-conceived RPS design. Experience in Maine shows that eligible renewable generators are receiving an $0.001/kWh premium for their renewable generation in the state, just a 3% increase in wholesale commodity prices. Clearly, this level of incentive is insufficient to bring any new renewable resources on line. It is also insufficient to meaningfully support existing renewable projects that are at risk of closure, the principle goal of Maine's RPS in the first place.

This failure of the RPS to meet even its own limited goals results from overly broad resource eligibility guidelines. By allowing all existing hydro, biomass, and MSW under 100 MW in size to qualify, as well as fossil-fuelled cogeneration systems throughout New England, eligible supply far exceeds RPS-derived demand. The result is predictable: extremely low levels of support to renewable energy projects that need that support. Renewable energy and environmental advocates have continued to be active in the legislative process in attempting to further restrict resource eligibility in order to more meaningfully support renewable generation, but have not yet met with success.

Other noted problems with the RPS legislation and regulations in Maine include:

- Overly lenient enforcement of the RPS, with too much flexibility afforded to retail suppliers that fail to meet their RPS purchase obligations.
- Uncertainty in the fate of the RPS after the 5-year review period, shifting significant uncertainty and risk to renewable energy developers.
- Disallowing renewable energy credit trading, thereby lessening the cost-reducing dynamic of the RPS with a credit trading system.

Despite these failures, Maine does provide some useful RPS design experience. As the first state to establish RPS legislation and regulations, stakeholders in Maine were the first to wrestle with difficult RPS design choices. The process there shows that, given legislative guidance, regulators can design detailed RPS regulations within a period of one to one and a half years with substantial input from a wide variety of stakeholders. It is also evident that regulators can and will make a number of RPS design and implementation choices, only some of which need be specified in RPS legislation. Engaging a broad group of stakeholders in this design process can identify critical design features to incorporate in the rule.

APPENDIX A. RPS LEGISLATIVE EXCERPT

The following text related to Maine's RPS is excerpted from Maine's electricity restructuring legislation (L.D. 1804. "An Act to Restructure the State's Electric Industry." May 29, 1997, with 1999 legislative revisions).

§ 3210. Renewable resources

1. Policy. In order to ensure an adequate and reliable supply of electricity for Maine residents and to encourage the use of renewable, efficient and indigenous resources, it is the policy of this State to encourage the generation of electricity from renewable and efficient sources and to diversify electricity production on which residents of this State rely in a manner consistent with this section.

2. Definitions. As used in this section, unless the context otherwise indicates, the following terms have the following meanings.

A. "Efficient resource" means a source of electrical generation that:

(1) Qualifies as a qualifying cogeneration facility under the Federal Energy Regulatory Commission rules, 18 Code of Federal Regulations, Part 292, Subpart B, as in effect on January 1, 1997, was constructed prior to January 1, 1997 and meets the following efficiency standard:

(a) During any calendar year, the sum of the useful power output and the useful thermal energy output of the facility is no less than 60% of the total energy input to the facility.

For purposes of this paragraph, the term "useful power output" means the electrical or mechanical energy made available for use, exclusive of any energy used in the power production process. For purposes of this paragraph, the term "useful thermal energy" means thermal energy made available to an industrial or commercial process, net of any heat contained in condensate return and makeup water, used in a heating application or used in a space cooling application.

B. "Eligible resource" means a source of electrical generation that:

(1) Generates power that can physically be delivered to the control region in which the New England Power Pool, or its successor as approved by the Federal Energy Regulatory Commission, has authority over transmission, or to the Maritimes Control Area; and

(2) Is either a renewable resource or an efficient resource.

C. "Renewable resource" means a source of electrical generation:

(1) That qualifies as a small power production facility under the Federal Energy Regulatory Commission rules, 18 Code of Federal Regulations, Part 292, Subpart B, as in effect on January 1, 1997; or

(2) Whose total power production capacity does not exceed 100 megawatts and that relies on one or more of the following:

(a) Fuel cells;

(b) Tidal power;
(c) Solar arrays and installations;
(d) Wind power installations;
(e) Geothermal installations;
(f) Hydroelectric generators;
(g) Biomass generators; or
(h) Generators fueled by municipal solid waste in conjunction with recycling.

3. Portfolio requirements. As a condition of licensing pursuant to section 3203, each competitive electricity provider in this State must demonstrate in a manner satisfactory to the commission that no less than 30% of its portfolio of supply sources for retail electricity sales in this State is accounted for by eligible resources. If a competitive electricity provider represents to a customer that the provider is selling to the customer a portfolio of supply sources that includes more than 30% eligible resources, the resources necessary to supply more than 30% of that customer's load may not be applied to meet the aggregate 30% portfolio requirement. Rules adopted under this subsection are major substantive rules pursuant to Title 5, chapter 375, subchapter II-A.

4. Report. In view of property tax benefits, developments in other states and the development of a market for tradable credits for satisfying eligible resource requirements, the commission shall review the 30% portfolio requirement and make a recommendation for any change to the joint standing committee of the Legislature having jurisdiction over utilities and energy matters no later than 5 years after the beginning of retail competition.

APPENDIX B. RPS REGULATORY RULE

Web location for Maine's final RPS rule:
http://janus.state.me.us/mpuc/rules/Part%203/ch-311.pdf

SUMMARY OF RPS CASE STUDIES

The three case studies presented here – Texas, Wisconsin, and Maine – provide a rich source of lessons and experiences of relevance to the design and operation of an RPS in China. These lessons are presented below in two section, the first of which emphasizes process-related lessons and the second of which emphasizes policy design lessons:

PROCESS RELATED LESSONS

- The politics of renewable energy policy in the U.S. made it much more likely to adopt an RPS as a component of a larger electricity reform package. Stand-alone RPS legislation appears unlikely in the United States, given strong opposition to such policies in some sectors (e.g., utilities and industrial consumers). This suggests that an RPS in China may be more feasibly implemented as part of larger electricity reform legislation.

- Designing RPS legislation carries with it great risks, as those opposed to the legislation will seek to derail the policy altogether or nullify the effectiveness of the RPS. Results in Maine show that RPS legislation that is poorly designed will have a devastating impact on the usefulness of the policy. A strong and broad coalition of stakeholders that are willing to vocally support and promote the RPS is essential.

- In all three case studies presented, the legislation that established the RPS provided only a fraction of the detail necessary to implement an effective RPS. Regulatory involvement to design the operational details of the RPS was necessary in all cases. What is essential is that RPS legislation provide clear authority to a regulatory agency to establish and enforce the RPS, and that the designated regulatory agency have a strong commitment to carrying out this mandate.

- Where open, stakeholder driven processes were involved (including renewable energy, environmental, utility, and retail supplier interests), RPS regulations were better thought out and designed.

- RPS legislative processes in the U.S. lasted from as little as a matter of weeks to months of intense negotiation, but were frequently preceded with months to years of stakeholder discussions and negotiations.

- Effective RPS rulemaking proceedings in the U.S. have lasted as little as six months to as much as 2 years. If the RPS is to drive new renewables development, it is essential that rulemaking proceedings conclude some time (1-2 years at a minimum) before the first RPS purchase obligation takes effect.

RPS DESIGN LESSONS

- ***Clarity of Policy Goals:*** An effective RPS may be designed in many possible ways, reflecting various possible policy objectives. Thoughtful consideration of policy objectives must precede the development of the RPS itself. In the U.S., the objectives of RPS policies range from supporting existing renewable energy facilities and improvement in the job and economic prospects for rural communities to driving the development of new renewable energy sources, improving air quality, and enhancing electricity reliability.

- ***Renewable Energy Targets:*** An effective RPS requires well-defined and clear renewable energy purchase obligations that will drive development of new renewable electricity supply. Inadequate attention in Maine to the interactions between the renewable energy purchase obligations and guidelines for eligible renewable energy technologies has resulted in an RPS that is unlikely to meet even Maine's more limited policy objectives.

- ***Policy Duration.*** Uncertainty in the duration of an RPS (as exists in Maine and perhaps Wisconsin) can create an unfavorable environment for the financing of renewable energy technologies. Texas' RPS rule – which ends the RPS purchase obligations in 2019, ten years after the final increase in the percentage obligation – is a model for how an RPS should be designed.

- ***Enforcement:*** An effective RPS will apply a well-defined and strong set of sanctions to those utilities and retail suppliers that fail to meet their RPS targets. The sanctions in both Maine and Wisconsin may be insufficient to ensure overall compliance.

- ***Credit Trading:*** While not an essential element of an effective RPS, the use of tradable renewable energy credits has many benefits. The Texas RPS shows that a well developed REC system can be used to verify compliance with the RPS and may serve as a good model for the development of such a REC system in China.

- ***Compliance Flexibility:*** Along with strong enforcement actions, it is essential that a certain amount of flexibility be provided to utilities and retail suppliers in meeting their renewable purchase obligations to ensure that costs to do not increase considerably. Some of the mechanisms used in Maine and Texas to increase compliance flexibility are essential.

- ***RPS in Non-Restructured Electricity Markets:*** The development of the Wisconsin RPS demonstrates that an RPS (even with credit trading) can reasonably be established in a regulated, non-retail choice context. In such a context, accounting, verification, and compliance demonstration procedures may be simpler than under retail choice as a smaller number of regulated utilities are responsible for meeting RPS obligations.