

Purchasing Renewable Energy: A Guidebook for Federal Agencies

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Introduction

Customer choice is emerging as a defining feature of retail electricity markets. Nearly half of all states have either restructured their electricity markets or have firm plans to move toward retail competition in the next few years.¹ Even in states that have not yet adopted retail electricity competition, consumers often have the opportunity to participate in utility green pricing programs by paying a premium to have renewable energy supplied to the grid by their local utility. Whether by purchasing renewable energy from a competitive supplier or by participating in a regulated green pricing program with a local utility, there is now an unprecedented opportunity for consumers to influence how their electricity is produced.

While no form of electric power generation is completely benign, electricity generated from renewable resources such as solar, wind, geothermal or biomass is typically regarded as environmentally preferable to electricity from traditional energy sources such as coal, oil, nuclear, and natural gas. Increasing customer choice provides opportunities for all consumers—households, businesses, non-profit organizations, and governments—to reduce their impact on the environment. For the fed-

¹In addition, the U.S. Congress is discussing national restructuring legislation. For information on electricity restructuring around the country, see FEMP's restructuring webpage at <http://pnnl-utilityrestructuring.pnl.gov/>.

Text Box 1

Case Study: The U.S. Environmental Protection Agency's Region 9 Laboratory

In July 1999, the U.S. Environmental Protection Agency's (EPA) Region 9 laboratory located in Richmond, California, became the first federal facility to be powered by 100% renewable energy. This precedent-setting event grew out of the EPA's desire to procure electricity in a manner consistent with their organizational mission of protecting the environment. Following normal contracting procedures, the General Services Administration (GSA) issued a request for proposals (RFP) on behalf of the EPA in February 1999. The RFP specified requirements for 100% eligible California renewable power, excluding waste tire and municipal solid waste. The RFP required that the product be Green-e certified, and specified that in the case of a tie between competing bids, priority would be given to the proposal containing the most new renewable power (with "new" defined per California law as facilities that became operational on or after September 23, 1996). In December 1998, the EPA, GSA, technical advisors from two national laboratories (NREL and LBNL), a representative from Green-e, and prospective contractors held a pre-bid meeting to answer questions and iron out potential stumbling blocks in this novel process. The final RFP incorporated comments from the pre-bid meeting. After reviewing bids, the GSA awarded a 3-year contract in May 1999 to the Sacramento Municipal Utility District (SMUD) to provide 100% renewable power. The EPA will purchase the green power at a 10% premium to the applicable utility tariff (with a ceiling of \$0.01/kWh), and is working with the building owner to institute a series of energy-efficient improvements that will create savings to offset some of the premium. The EPA laboratory uses 1.8 million kWh of electricity annually, enough to power 181 typical households. By meeting this load with 100% renewable power, the EPA will cut greenhouse gas (GHG) emissions (CO₂ equivalent) by more than 2.3 million pounds per year.



eral government, the largest consumer of electricity in the U.S. with an annual electricity bill of approximately \$3.5 billion, this new-found ability to make a difference is enormous.

Until recently, there has been widespread uncertainty among agencies over whether or not the purchase of renewable energy is within their authority in the first place. Given long-standing requirements that Federal agencies contract for goods and services almost exclu-

sively on a least-cost basis, many contracting officers have been reluctant to pursue renewable energy purchase opportunities. Executive Order 13123 (see Text Box 2) attempts to clarify this issue, by directing agencies to “strive to expand the use of renewable energy within its facilities and in its activities by...purchasing electricity from renewable energy sources.” In addition, a number of agencies have successfully completed procurements of renewable ener-

Text Box 2

Executive Order 13123

Sec. 204. Renewable Energy. Each agency shall strive to expand the use of renewable energy within its facilities and in its activities by implementing renewable energy projects and by purchasing electricity from renewable energy sources.

Sec. 301. Annual Budget Submission. Each agency's budget submission to OMB shall specifically request funding necessary to achieve the goals of this order.

Sec. 404. Electricity Use. To advance the greenhouse gas and renewable energy goals of this order, and reduce source energy use, each agency shall strive to use electricity from clean, efficient, and renewable energy sources.

(a) Competitive Power. Agencies shall take advantage of competitive opportunities in the electricity and natural gas markets to reduce costs and enhance services...

(b) Reduced Greenhouse Gas Intensity of Electric Power....Agencies shall consider the greenhouse gas intensity of the source of the electricity and strive to minimize the greenhouse gas intensity of purchased electricity.

(c) Purchasing Electricity from Renewable Energy Sources.

(1) Each agency shall evaluate its current use of electricity from renewable energy sources and report this level in its annual report to the President. Based on this review, each agency should adopt policies and pursue projects that increase the use of such electricity. Agencies should include provisions for the purchase of electricity from renewable energy sources as a component of their requests for bids whenever procuring electricity. Agencies may use savings from energy efficiency projects to pay additional incremental costs of electricity from renewable energy sources.

Sec. 406(c) Retention of Savings and Rebates. Agencies granted statutory authority to retain a portion of savings generated from efficient energy and water management are encouraged to permit the retention of the savings at the facility or site where the savings occur to provide greater incentive for that facility and its site managers to undertake more energy management initiatives, invest in renewable energy systems, and purchase electricity from renewable energy sources.

Sec. 605. Amendments to Federal Regulations. The Federal Acquisition Regulation and other Federal regulations shall be amended to reflect changes made by this order, including an amendment to facilitate agency purchases of electricity from renewable energy sources.

gy in regions around the country (See Text Boxes 1, 3, 4, 5 & 6). While the question of authority has not been definitively addressed by statute,² sufficient resolution has been achieved to enable Federal agencies to move forward with renewable energy purchases.



Overview

This guidebook is intended to inform Federal agencies on their opportunities to purchase renewable energy. Definitions of renewable energy and green power³ are discussed and potential benefits and costs of Federal renewable energy purchases are identified.

In addition, procurement issues and approaches are identified that are appropriate for both regulated and restructured markets. Drawing upon lessons learned from agencies that have recently completed or are currently pursuing renewable energy purchases (see Text Boxes 1, 3, 4, 5 & 6), key elements of a successful renewable energy procurement are outlined. Agencies that are interested only in participating in procurements run by the General Services Administration (GSA) or the Defense Energy Support Center (DESC) should turn directly to Section 5.3 of this document.

²Efforts are underway to incorporate language from Executive Order 13123 into the Federal Acquisition Regulations (FAR), carrying the force of law. FAR Case 1999-011 contains the proposed rules and can be found by searching www.arnet.gov/far/ for "1999-011."

³This document focuses on electricity generated from renewable energy resources. While potentially of interest to some, the issues relating to green power are beyond the scope of this document. Please see Appendix A for a brief discussion of green power issues. Also, we use the term "renewable energy" to refer to electricity generated from renewable energy resources. In addition, this document focuses only on electricity provided through the grid, and does not consider on-site renewable electricity generation, which has its own set of issues too broad to address here.



Audience

This guidebook is intended primarily for Federal agency energy managers and contracting officers with facilities located in states that have opened their electricity markets to retail competition or with facilities in areas served by investor-owned or municipal utilities offering green-pricing programs. Other federal agency representatives with an interest in renewable energy may find this document useful as well.



What Is Renewable Energy?

Renewable energy is originally a scientific term referring to energy resources that are replenished naturally over relatively short time scales. For example, the energy from sunlight used in a photovoltaic system will be replenished by more sunlight to follow. The process by which petroleum supplies, on the other hand, are restored takes millions of years. In a scientific sense, renewable energy does not refer to the degree of environmental impact of the resource, although it is widely agreed that most renewable resources are significantly more environmentally-benign than conventional energy resources. For policy purposes in recent years, both the federal government and a number of state governments have developed definitions of renewable energy.

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Federal Definitions

In a recent Executive Order and in energy legislation from the late 1970s, the Federal government has adopted the following definitions of renewable energy:

- Executive Order 13123 defines renewable energy as “energy produced by solar, wind, geothermal, and biomass power”.⁴
- In addition to solar, wind, geothermal, and biomass, the Public Utilities Regulatory Policy Act (PURPA) of 1978 included hydropower facilities of less than 30 MW capacity and other resources such as municipal solid waste in defining renewable energy.

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State Definitions

Many states that have opened their electricity market to retail competition have defined renewable power within their restructuring legislation. In most cases, states have listed the types of resources that are considered eligible to participate in a state’s renewable program. As examples:⁵

- California and Pennsylvania have basically adopted the PURPA definition of renewable energy, although Pennsylvania specifies “low-head” hydro instead of setting capacity limits.
- Massachusetts added fuel cells utilizing renewable fuels and ocean or tidal energy to the mix.

⁴Executive Order 13123, Section 710.

⁵See Appendix B for a comprehensive listing of state definitions of renewable energy.

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Non-Governmental Organizations

Non-profit organizations interested in assisting the development of markets for renewable energy have developed programs for evaluating and certifying electricity products on the market. These programs have focused on the broader concept of green power, rather than renewable energy, but may be useful to contracting officers looking to establish characteristics of commercial renewable energy products or to verify delivery of renewable energy products.

The Center for Resource Solutions (CRS), a San Francisco-based non-profit, has developed “Green-e” certification standards for green power products in California, New England, and the Mid-Atlantic region and intends to roll-out in other regions as they open for competition. To be Green-e certified in California, a product must consist of at least 50% renewable-energy-based electricity, where “renewable energy” is defined as energy from biomass (including waste-to-energy and landfill gas), geothermal, solar, wind, and small hydro.⁶ Any non-renewable portion of a product must be no more polluting than system power, and must not contain any nuclear power beyond that contained in any system power purchased for the product.

In the second year that a market is open for competition, Green-e requires 5% of a certified product to come from new renewable generation (with the cutoff date for “new” facilities set according to state legislation or regional convention). This standard rises to 10% the following year, and continues to increase at 5% per year toward an ultimate goal of 25% new renewables by the fifth year of competition.

⁶Any hydro facility less than 30 MW capacity is currently considered renewable. In conjunction with environmental groups, green power marketers, and representatives of the hydropower industry, CRS has recently released low-impact hydro certification standards. These standards, which consider many more variables than just capacity size, will eventually replace Green-e’s current 30 MW limit.

Text Box 3

Case Study: GSA Mid-Atlantic Region

In March 2000, the GSA Mid-Atlantic Region awarded its first contract for 100% new renewable power, to be received at eight federal facilities in the Philadelphia area, including the pavilion that houses the Liberty Bell. The combined load of the eight facilities is 2.7 million kWh per year. The one-year contract was awarded to the Energy Cooperative Association of Pennsylvania (ECAP), a member-owned, not-for-profit cooperative providing electricity, home heating oil, energy efficiency services, and solar systems to its residential, commercial, and government members in the Philadelphia area. ECAP will supply electricity generated from 100% newly-tapped landfill gas, and will charge a slight premium over default rates. The mid-Atlantic region could see additional federal green power purchases in the near future, as GSA's solicitation included facilities in New Jersey, which are outside of ECAP's Pennsylvania-based service territory and so were not included in the final contract.

Green-e standards are reviewed regularly and are modified on a regional basis as necessary to reflect market availability and/or address the concerns of local stakeholders in each state.⁷ For example, the “green-e” standards in the New England and Mid-Atlantic regions include additional requirements for biomass generation performance.

In 2000, CRS also developed accreditation standards for utility green pricing programs. This new effort focuses on establishing floor requirements for resource and environmental content, as well as pricing and marketing guidelines, to be modified by local stakeholder groups. As such it is a more flexible approach than that taken with competitive suppliers. For additional information about the Center for Resource Solutions and the Green-e Program, go to <http://www.green-e.org/>.

The Pace University Energy Project has developed another approach called the “Power Scorecard.” When completed, the Scorecard will allow users to see how energy products compare on the basis of air, water, and land quality impacts. The Power Scorecard ranks

⁷ For example, even though it is defined as a renewable energy source within Pennsylvania's restructuring legislation, municipal solid waste is not Green-e certifiable in Pennsylvania due to regional stakeholder concerns.

different power generation technologies from 0 (no impact) to 10 (high impact) in eight different categories, and then applies those rankings to a user-supplied resource mix to arrive at an overall assessment of the product. This approach allows for flexibility in defining what is green, and for evaluating whether a product fits the definition. Environmental groups and others will be able to use Scorecard results to endorse certain products that meet the standards they feel are most important.



Factors to Consider in Evaluating Renewable Energy Options

As suggested in the section above, there are a number of important considerations in evaluating renewable energy products. These issues are considered explicitly in the question and answer section that follows.

What types of renewable resources are being offered?

Wind, solar, and geothermal power are typically uncontested as environmentally preferable energy sources. Each is renewable and non-emitting, with little impact on the land or local habitats.⁸ Hydropower, biomass, and municipal solid waste are regarded as somewhat more controversial among certain environmental groups. Hydropower dams may drastically alter river habitats and fish populations, biomass facilities may emit significant quantities of NO_x, and burning municipal solid waste may release heavy metals and other toxins into the environment.

What percentage of the renewable energy offered is generated by new versus existing facilities (vintage)?

Environmental groups often argue that purchasing power from a pre-existing renewable generation facility does not necessarily yield incremental environmental benefits.

⁸There have been concerns about increased bird mortality near wind farms, although recent design improvements are likely to reduce these concerns.

Presumably an existing facility sold power into the grid prior to a specific renewable energy purchase and would have continued to provide power into the grid in the absence of that purchase, regardless of whether or not it was capturing a price premium. Purchasing from existing facilities, therefore, does not necessarily change the composition (or the “greenness”) of a region’s generation mix.⁹ To enhance the likelihood that a purchase will have a positive environmental impact, agencies can specify that some percentage of their power must come from new renewable generation facilities.

What percentage of the total electricity purchase is generated from renewable resources?

Since conventional power generation is currently less expensive than renewable power generation, one way to reduce the cost of a renewable energy purchase is to contract for a product that is comprised of some combination of renewable and non-renewable generation. Furthermore, in some parts of the country, regional shortages of renewable generating facilities could limit the renewable content of an agency’s purchase to something less than 100% of the agency’s total electricity needs. It is generally agreed that as the ratio of an electricity purchases’ renewable to non-renewable generation increases, so does the environmental benefit, all else held constant.

What types of resources make up the non-renewable portion of the purchase?

Customers may also consider the environmental characteristics of any non-renewable generation resources when evaluating the environmental characteristics of the overall electricity purchase. It is conceivable that an offer from a retail supplier that includes 50% of the electricity from renewable resources and 50% from coal-fired power plants may actually be more polluting than the power they have been receiving from their local utility (i.e., “system power”). Furthermore, nuclear power—while

⁹It can, however, provide support for existing renewable generation facilities that otherwise would have been under-utilized or would not have captured any green premium on their power sales. And in the case where demand for green power exceeds supply, purchasing from existing facilities can lead to the installation of new renewable generation capacity.

emitting few criteria pollutants or greenhouse gases—is generally considered environmentally undesirable due to the problems of nuclear waste disposal and the potential for catastrophic radiation leaks.

Summary

While it is true that purchasing a high proportion of an agency’s electricity needs from newly constructed renewable energy facilities is highly desirable from an environmental perspective, this is not to suggest that purchasing small percentages of renewable energy is undesirable. Electricity purchases including, for example, just ten percent renewable energy requirements, can represent important steps toward meeting the renewable energy goals of EO13123 and reducing the environmental impacts of electricity consumption by federal agencies.



The Benefits and Costs of Federal Renewable Energy Purchases

Benefits of Federal purchases of renewable energy can be divided into those that accrue to society as a whole and those that benefit the purchasing agency directly.



Benefits

Social benefits of Federal purchases include the following:

- **Reduced environmental impacts.** In 1998, electricity generation released roughly 13 million tons of SO₂ and 6 million tons of NO_x into the atmosphere, contributing to acid rain and urban smog. Fossil fuel generation also released over 2 billion tons of CO₂—the greenhouse gas most implicated in causing global climate change. Particulate emis-

sions from fossil fuel combustion degrade air quality and can lead to an increased incidence of respiratory complications. In contrast, generating electricity from renewable resources typically causes only marginal (or zero) net emissions of any of these pollutants.

- **Increased fuel diversity.** Renewable resources are typically located in or near the region they are used to serve, which reduces the risk of price shocks caused by disruptions in fuel supplies resulting from transportation difficulties, cartel actions or international conflict.
- **Local job creation.** Because renewable resources are typically local, jobs are created to install and operate renewable generation facilities, which, in addition, tend to be more labor intensive per Kwh generated than conventional generation facilities.¹⁰
- **Stimulate long-term production cost reductions.** Because most renewable technologies have yet to be produced at high production volumes, there remain significant production cost reduction opportunities for some renewable technologies as their market penetration increases.
- **Market transformation.** Given the size of the Federal government's utility bill, significant purchases of renewable energy by Federal agencies could stimulate the overall renewable energy market. Strong Federal demand will demonstrate that switching to renewable energy is a national priority, will call attention to societal and customer benefits, and may contribute to reductions in product costs. These factors may influence others, such as state and local governments, to follow suit with their own purchases of renewable energy. In this way, Federal purchases can be leveraged, leading to the creation of additional public goods and further

¹⁰National Wind Coordinating Committee, The Effect of Wind Energy Development on State and Local Economies, Wind Energy Issue Brief No. 5, January 1997. Visit the NWCC at <http://www.nationalwind.org>.

market transformation.

Benefits accruing directly to a Federal agency from a renewable energy purchase include:

- **Compliance with Executive Order 13123.** EO13123 direct Federal agencies to favor the purchase of renewable energy. Complying early will put an agency ahead of the curve in meeting the President's energy efficiency and greenhouse gas reduction goals, and will prevent the need to re-contract for power once the language from these two orders is incorporated into the Federal Acquisition Regulations (FAR).¹¹
- **Compliance with or anticipation of state and federal renewable portfolio standards (RPS).** Eight states have already established renewable portfolio standards and a national RPS is currently being considered by Congress.¹²
- **Increased visibility.** Presidential awards shall be conferred upon those agency energy management teams that strive to comply with EO13123. Energy scorecards will be tallied for each agency to gauge the degree of compliance.
- **Accomplishment of an agency's organizational mission.** Many in the Federal government understand the overall mission of the government to include a commitment to environmental protection. Beyond that general obligation, individual agencies often have specific missions that can benefit from the purchase of renewable energy. The EPA, for example, is charged with protecting the environment, while the DOE has become the first agency to make a department-wide commitment to renewables, pledging to purchase 3% of its electricity needs from non-hydro renewable energy sources by 2005,

¹¹The Federal Acquisition Regulations (FAR) can be accessed online at <http://www.arinet.gov/far/>.

¹²For more information on renewable portfolio standards, see the Union of Concerned Scientists at <http://www.ucsusa.org/energy/brf.rps.html> or Lawrence Berkeley Laboratory's Electricity Markets and Policy Group (<http://eande.lbl.gov/EA/EMP>).

increasing to 7.5% by 2010.

- **Demonstrate responsiveness.** The purchase of renewable energy represents a clear demonstration of the agency's responsiveness to its customers (or citizens), the majority of whom, according to multiple surveys, favor renewable energy.¹³
- **Potential to receive tradable pollution credits.** The EPA is considering NOx permit set-asides for government (and other) facilities that reduce their emissions.¹⁴



Costs

The costs of renewable energy purchases come in two forms: price premiums above traditional power and transactions costs stemming from contracting challenges.

- **Price premiums.** Renewable energy is generally more expensive than conventional power sources (e.g., coal and gas-fired generation). Estimated price premiums for a renewable energy purchase compared to the cost of conventional power range from 0.5-4¢/kWh, although the premium varies by resource and region.¹⁵ Price premiums for renewables may be reduced by taking advantage of various state and Federal incentives for renewable energy. For example, California consumers currently receive a 1¢/kWh credit for switching to renewable energy.¹⁶ In some cases this credit more than offsets

the price premium for renewable energy.

- **Contracting challenges.** Renewable energy power may also be more difficult for an agency to purchase than conventional power, generating indirect transactions costs in addition to any price premiums. Efforts to add renewable energy and green power products (and electricity in general) to the Federal Supply Schedules are underway, but until such streamlining measures are adopted, agencies wishing to purchase renewable energy will most likely have to spend the extra time and money issuing or participating in an RFP. On the other hand, expertise developed as a result of recent purchases is serving to reduce the contracting challenges associated with renewable energy purchases.



Sources of and Limits to the Authority to Purchase Renewable Energy

Contracting officers wishing to pursue innovative purchase opportunities have historically referenced the FAR and other regulations for specific authorization to do so. The Federal Acquisition Streamlining Act of 1994 and the Federal Acquisition Reform Act of 1996 addressed this predicament by encouraging contracting officers to take initiative and pursue opportunities they believe to be in the best interests of the government.¹⁷

¹³Farhar, Barbara C. and Ashley H. Houston. 1996. *Willingness to Pay for Electricity from Renewable Energy*. National Renewable Energy Laboratory. Golden, CO. September.

¹⁴For more information on emissions credits, see *A Guide to the Clean Air Act for the Renewable Energy Community* by David R. Wooley, at <http://www.repp.org>.

¹⁵Although it is clearly the exception, there have been some green power products in PA that were cheaper than the traditional system mix.

¹⁶For more information on the customer credit in California, see the California Energy Commission at <http://www.energy.ca.gov/greenpower/index.html>.

¹⁷See FAR 1.102(d) at <http://www.arnet.gov/far>.



Executive Order 13123

On June 3, 1999, President Clinton issued “Executive Order 13123—Greening the Government Through Efficient Energy Management”. This order directs Federal agencies to “expand the use of renewable energy within its facilities and in its activities by implementing renewable energy projects and by purchasing electricity from renewable energy sources.”¹⁸ Agencies are encouraged to take advantage of competitive power opportunities to fulfill the order’s goals, and should “include provisions for the purchase of electricity from renewable energy sources as a component of their requests for bids whenever procuring electricity.”¹⁹ Perhaps most empowering, E.O. 13123 directs agencies to request funding from the Office of Management and Budget for the purpose of achieving the order’s objectives (see Text Box 2).



FAR Part 23

FAR Part 23 seeks to minimize the environmental impacts of federal purchases. Part 23.2 addresses energy conservation and efficiency, and is the section into which FAR Case 1999-011 proposes to incorporate much of Executive Order 13123. Part 23.7 directs agencies to contract for environmentally preferable and energy-efficient products and services. “Environmentally preferable” is defined by FAR Part 2.101 to mean “products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.”²⁰ This comparison may consider raw materials acquisition, production,

¹⁸Executive Order 13123, Section 204

¹⁹E.O. 13123, Sections 404(a) and 404(c)(1)

²⁰E.O. 13101, Section 201

manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.” Although EO 13123 and language specific to renewable energy have not yet been incorporated into FAR Part 23, a strong argument can currently be made that electricity generated from renewable resources fits the definition of “environmentally preferable.”



Cost Minimization

The FAR has traditionally focused on minimizing the government’s costs by strongly favoring the procurement of least-cost goods and services. This policy often left contracting officers with little leeway to make value-added decisions. The recent wave of procurement reform, however, has more closely aligned federal acquisition procedures with commercial sector practices through a stated preference for commercial products and the adoption of commercial business practices. In addition, the traditional focus on least cost procurement has shifted to one of obtaining the best value.²¹



Best Value

In determining best value, contracting officers can consider an array of other factors, besides least cost, including environmental and energy efficiency considerations.²² As formally defined in the FAR, best value means “the expected outcome of an acquisition that, in the Government’s estimation, provides the greatest overall benefit in response to the requirement.”²³

²¹See FAR part 1.102(a)

²²In addition to environmental and energy efficiency considerations, other factors determining best value include special features that are not provided by a comparable supply or service, trade-in considerations, probable life relative to comparable items, warranty considerations, maintenance availability, and past performance. See FAR Part 8.404(b)(2).

²³See FAR Part 2.101



45 Specification of Requirements

Part 11 of the FAR— “Describing Agency Needs”— states that environmental objectives, including the purchase of environmentally preferable products and services, must be considered when specifying requirements.²⁴ Requirements for renewable energy should be specific enough to limit the number of factors to be evaluated among competing offers, but general enough so as not to jeopardize the product’s status as a “commercial item”.²⁵



46 Commercial Items

In restructured electricity markets, the most direct path to a renewable energy purchase is to make use of the “commercial items” provisions in FAR Part 12. Commercial items are broadly defined as goods and services sold competitively in the commercial marketplace in substantial quantities.²⁶ Since an active competitive market reduces procurement risks, agencies are strongly encouraged to favor the purchase of commercial items—both through specific language to that effect and authorization to use less stringent acquisition procedures.²⁷

With large volumes being commercially traded in public markets each day, electricity is undisputed as a standard commercial item. As a specific type of electricity, renewable energy’s status as a commercial item is slightly less definitive. Support for such a designation is aided by the ongoing development of active

renewable energy exchanges where commercial entities buy and sell renewable energy in large quantities.²⁸ In addition, certification efforts by state and non-governmental organizations such as Green-e help to establish renewable energy as a commercial item by establishing a brand name (e.g., “Green-e certified renewable energy”). Green-e certification provides additional value to the federal government because of other functions such as verification and tracking, auditing, and establishing a code of supplier ethics.” As an example, the GSA used the commercial item designation in the EPA Richmond purchase, specifying Green-e certified power (see Text Box 1).

Even in the absence of an active renewable energy market, agencies could specify a requirement for electricity (the standard commercial item) generated from renewable resources (a specification in addition to the standard commercial item). In most cases, the favorable contracting procedures afforded commercial items would still be applicable.²⁹

As renewable energy requirement specifications become more and more specific, however, the ability to claim commercial item status grows weaker. While the boundary between what is and is not considered a commercial item will no doubt be highly case-specific, in general an agency should be wary of specifying any requirement beyond what is currently commercially available. The use of legislative or Green-e definitions of renewable energy green power also provides justification for a claim of commercial item status.



47 Federal Attempts to Purchase Renewable Energy

As of May 2000, there have been several successful purchases of renewable energy by Federal agencies such as the EPA, DOE, GSA, and the USPS (see Text Boxes 1, 3, 4, 5 & 6 for examples). These examples provide addi-

²⁴See FAR Part 11.002(d)

²⁵How clearly an agency specifies its requirements during the solicitation process is a major determinant of the relative importance of cost in determining best value. In general, as requirements become more clearly defined, the importance of price relative to other considerations increases. See FAR Part 15.101

²⁶See FAR section 2.101 for complete definition.

²⁷See FAR part 12

²⁸Visit the Automated Power Exchange (APX) at www.apx.com.

²⁹Personal communication with Virgil Ostrander, December 14, 1999.

tional evidence that federal procurement officers have the necessary authority to purchase renewable energy.



Procurement Approaches

Federal agencies may have opportunities to purchase renewable energy both in areas that have opened their electricity markets to competition, as well as those that remain fully regulated. In states that have not restructured and established retail competition, Federal renewable energy purchase options will be limited to whatever the local utility is willing to provide.



Fully Regulated Market

If the utility offers a green pricing program, agencies should find out the specific enrollment or sign-up procedures. If a GSA area-wide contract is already in place with this utility, completion of documents for both the specific program and for use of the area-wide contract may be necessary. In the case of utility green pricing programs, no solicitation is required, since the utility serving the agency remains the same (see Text Box 4).



Restructured/Competitive Markets

In a competitive market, agencies must use competitive acquisition procedures to “shop” for renewable energy from a variety of providers. Since an agency will be evaluating competing offers, normal solicitation procedures must be followed. Federal agencies can take two solicitation approaches—making use of designated contracting agencies, such as the GSA or the Defense

Text Box 4

Case Study: Federal hub in Denver area

Though Colorado has not restructured its electricity markets, the Public Service Company of Colorado (PSCO) offers a wind power green pricing option called WindSource, which it sells in blocks of 100 kWh/month at a premium of \$2.50 per block (or \$0.025/kWh). On April 27, 2000, Energy Secretary Bill Richardson announced that thirty federal agencies in the Denver area had committed to buying more than 25 million kWh of wind power per year through the WindSource program, supporting the installation of roughly 10 MW of new wind turbine capacity. The multi-agency commitment—deemed the largest purchase of wind power in the nation—was orchestrated by the Denver Federal Executive Board (DFEB), which represents over 130 federal agencies in the area, with assistance from DOE's Golden Field Office, DOE's Denver Regional Office (DRO), the National Renewable Energy Laboratory (NREL), the General Services Administration (GSA) and the Environmental Protection Agency (EPA). Fort Carson in Colorado Springs and the Rocky Flats Environmental Test Site together comprise about 30% of the aggregated purchase, and a number of other agencies, including the EPA Golden laboratory and the DOE's Golden Field and Denver Regional Offices, have demonstrated their environmental leadership by purchasing 100% of their electricity needs from WindSource.

This wind purchase demonstrates the degree of creativity and cooperation sometimes needed to successfully complete and fund a green power purchase. For example, DRO, which sublets its space from the DOE Golden Field Office, who in turn leases it through a GSA contract with a private landlord who pays the utility bills, has had to overcome this complicated tenant/landlord arrangement in order to complete their purchase. GSA is currently working to remove such barriers by helping those federal agencies in leased buildings to reimburse their landlords for the wind purchase cost. Meanwhile, the Federal Energy Management Program (FEMP) is working with agencies to improve their energy efficiency and reduce their energy usage as a way to defray the added cost of the wind power premium. Similarly, NREL and EPA are funding a portion of their WindSource purchase through savings from an alternative natural gas supply contract with GSA. By working together, these agencies are helping to make green power a viable option in Colorado.

Energy Support Center (DESC), or serving as the contracting agency themselves. While serving as the contracting agency offers increased control and flexibility, the designated contracting agencies are developing significant expertise in the area of competitive electricity power procurement, including renewables (see Text Boxes 1, 3 & 5 for examples of federal purchases in restructured markets utilizing designated contracting agencies).



Using GSA or DESC

GSA Power Procurement Services

GSA has been active in assisting other Federal Agencies in the procurement of renewable energy or green power (see Text Boxes 1, 3, 4 & 5). In addition to the successful procurements already completed, GSA is developing the expertise to meet specific price targets by “mixing and matching” various forms of conventional and renewable generation.³⁰ GSA believes that by packaging the electrical requirements of extremely large and similar electric loads utilizing a cohesive and intelligent strategy, the government can reap the benefits of the economies of scale involved in a mass procurement.

But the GSA strategy is not limited to the simple aggregation of the electrical loads of Federal agencies. GSA recognizes that there are facilities within the Federal community that use massive amounts of electricity in a manner that is looked upon favorably by the energy service providers that are competing in the restructured electricity markets. For these customers, GSA seeks specific prices for those facilities and works with the facility managers to develop strategies that will result in lower long-term electricity prices in the restructured marketplace. The GSA recognizes the important challenge of providing electricity to the Federal community at reasonable prices, while at the same time protecting the environment for future generations. As a result of their efforts thus far, GSA is making significant progress towards the availability of renewable energy at little or no price premium (for more information on GSA’s efforts to purchase renewables, see <http://www.gsa.gov/pbs/centers/energy/green.htm>).

Although not currently listed on the GSA’s Federal Supply Schedules, electricity service and green power products are promising can-

didates for future listing. Procurement reform has prompted an overhaul of the Schedules, transforming them into a useful tool not only for smaller, generic purchases, but also for large-dollar-volume, agency-wide services. There are several new features of supply schedules that make them particularly well suited to serve the needs of those purchasing electricity in a restructured market:

- Multiple award schedules (MAS) list competing contractors offering comparable products and services. MAS contracts are awarded to all companies offering commercial items whose price has been determined to be fair by the GSA. The use of MAS is considered a competitive procedure, under FAR 6.102(d)(3).
- Maximum order limitations have been removed, and replaced with maximum order thresholds, beyond which an agency is required to seek a price reduction from the contractor.³³
- MAS contracts are priced on a most-favored commercial customer basis, and a price reduction clause requires the contractor to lower the agency’s price in lock step with any corresponding price reductions to its most-favored commercial customer.

For the latest information on Federal Supply Schedules, see <http://pub.fss.gsa.gov/sched/>. GSA also has an environmental products web page at <http://pub.fss.gsa.gov/environ/>.

DESC Power Procurement Services

Under the DESC Electricity Program, solicitations are issued as states are restructured and periodically thereafter (based on the contract length). When multiple states permitting competition are located within (completely or partially) the boundaries of a power pool, NERC region or Independent System Operator, requirements within these states are solicited simultaneously. To date, DESC has engaged the market in the following states: Rhode Island, California, New York, Pennsylvania, Illinois, New Jersey, Connecticut, and Maine

³⁰Personal correspondence with Lindsey Lee, Public Utilities Specialist, U.S. General Services Administration, March 2, 2000.

and will be active in each state as restructuring continues. While a majority of the requirements contained in DESC electricity solicitations are DoD accounts, federal civilian activities may participate as well (as is the case in the DoD natural gas program).

All procurements are done on a best value basis. Line items are established for each individual activity, usually for each metered account. Terms and conditions within a given solicitation can be tailored to the needs of individual activities, including pricing mechanisms and contract performance periods through the use of “flexible aggregation.” Offerors are not mandated to offer on every line item of government-created aggregates, but instead have the opportunity to offer on individual line items within the solicitation, create and offer on “all-or-none aggregates,” or do both. DESC believes that this approach allows the market to identify if synergies exist by aggregating line items together into one or more groups. Each offered price is compared to the Default Service Tariff (DST) of the applicable utility. An award is made when cost avoidance can be determined for each line item, unless the requiring activity has a different objective, such as stable prices in a market where the utility tariff is based on a market index, or the purchase of renewables.

The DESC Electricity Program offers a variety of pricing options, performance periods and billing options which can be tailored to market conditions and individual needs. The objective of the program is to minimize the amount of effort required at the level of the requiring activity. DESC contract support is cradle to grave, from the identification of requirements through award and contract administration.



Agency Procurement

If an agency does not deem it advantageous to request assistance from the GSA or DESC, it may

Text Box 5

Case Study: GSA New England

Before the Rhode Island and Massachusetts markets had even opened for competition, the General Services Administration (GSA) was envisioning the power of aggregation and the benefits of renewable energy in the New England region. After meeting with federal agencies in the six-state region to assess potential interest, GSA in early 1998 issued a request for proposals (RFP) for a 5-year indefinite delivery/indefinite quantity (IDIQ) contract that required a minimum of 4% of GSA's load be met by renewable energy sources. The contract, awarded to Enron Energy Services (EES), relies on each individual state's definition of a renewable energy source; the definition contained in Massachusetts' restructuring legislation applies if a state doesn't specify their own definition.

Interest in the renewable energy portion of the GSA contract has been slow to develop for three main reasons. First, restructuring legislation mandated standard offer (i.e., default) service rates that were initially below the wholesale price of electricity in New England, making it nearly impossible for marketers to compete with incumbent utilities for the first two years of open competition. Second, the status of restructuring legislation in Massachusetts was in question for much of 1998 until a November ballot initiative aimed at repeal failed. Third, Massachusetts and Rhode Island were the only two New England states to open their markets to competition during 1998 and 1999, reducing the potential for region-wide aggregation.

With standard offer rates in some Massachusetts service territories now at 4.5¢/kWh (allowing marketers a margin above wholesale), GSA is seeing renewed interest in its contract. In fact, GSA and EES recently completed negotiations in which GSA agreed to forego its discount in order to purchase 4.5 million kWh/year of a 100% renewable product likely consisting of a mix of landfill gas and wind power. This purchase, which will go into effect in October 2000, will account for about 10% of the GSA's load in Massachusetts. The premium works out to be roughly 15%, but since GSA will fund the purchase through foregone savings, their total cost of service will be no higher than the going market rate. At present, no other federal agencies have signed on to the green portion of the contract.

contract separately for electric service by meeting the requirements of FAR Part 12 as described in Section 4.6 above (See Text Box 6 for an example of a federal purchase of renewable energy in a competitive market completed by an agency's procurement officers). If the solicitation is for a contract exceeding one year in duration, the agency will need to request delegation of contracting authority from the GSA.³²

³²Per FAR 41.103(b), “Other agencies requiring utility service contracts for periods over one year, but not exceeding ten years, may request a delegation of authority from GSA...”



Key Elements of a Successful Procurement Process

Once an agency has settled on a procurement approach, the following “key elements” can help guide the agency through a successful solicitation process.



Assemble a Multi-Function Energy Team

Since electricity services affect many different departments within an agency, bringing representatives from as many of these departments as possible on board from the beginning can prevent unwelcome surprises down the road. For example, a renewable energy purchase may provoke widely differing responses from representatives of an agency’s accounting or finance departments (who may be most concerned with cost) and environmental department (who may be most concerned with the “greenness” of the purchase). Involving both groups from the start can help assure that the final solicitation satisfies everyone’s needs. Experience has demonstrated that failure to form a team will often lead to contention down the line, whereas inclusion of representatives of a variety of interested departments has proven to be important in completing procurements of renewable energy.



Determine Agency Objectives

Economic

If economic considerations are an overriding concern, an agency can make use of a number of different methods for reducing budget impacts (see Section 6.7 below), or can start

with a low percentage of renewable energy with an aim to increase the level over time as costs decrease.

Environmental

An agency’s strategic objectives, such as complying with Executive Order 13123, enhancing public relations, or being viewed as an “environmental champion,” may significantly affect the requirements of the agency as specified in its electricity purchase solicitation. In general, the stronger an agency’s motivation to purchase renewable energy and be viewed as an environmental champion, the more attention it should pay to the issues described in section 2.4 (i.e., renewable resource type, vintage,³³ percentage of product, and composition of any non-renewable portion).



Obtain Management Buy-In and Expense Approval

Because renewable energy is likely to cost more than conventional power, contracting officers should seek approval for the purchase approach or increased budgetary outlay from the appropriate senior managers within the agency. Even if an agency is using direct access or energy efficiency savings to fund a renewable energy purchase, approval by senior management to forego some or all of the savings will help to ensure a smooth purchase. Thus far, based on experiences gained from procurements of renewable energy by Federal agencies, it has been necessary in all cases to obtain management approval before these purchases could be completed.

³³Vintage refers to the issue of older generation facilities versus newly constructed facilities. See Section 2.4 for additional discussion of this issue.

64 Obtain Agency Electricity Consumption Data

An agency's electricity consumption data should be part of any RFP, and is required by GSA when they are assisting in the procurement. At a minimum, monthly electricity consumption data should be provided; peak demand and/or interval data are valuable where available. An agency should study its consumption data over the past year prior to specifying requirements.

65 Select Renewable Energy Requirements

Agencies will need to define and specify their renewable energy requirements. Agencies may want to look either to Executive Order 13123 or state restructuring legislation for guidance on which resources should be considered environmentally preferable. The three other important variables—vintage, percentage of a product that is supplied with renewable energy, and composition of any non-renewable portion—should also be considered to the extent consistent with an agency's environmental objectives. Agencies with strong environmental objectives will prefer higher percentages of renewables, more new renewables, and non-renewable generation with environmental characteristics that are no worse than the current system mix.

To streamline the definitional process, agencies may wish to make use of the criteria already established by third-party certification efforts, such as Green-e or the Pace Scorecard. Specifying that only Green-e certified products will be accepted may also help address verification concerns as Green-e conducts annual audits of all certified products.

66 Select Verification Approach

The ability to confirm that the agreed upon quantity of renewable energy was actually delivered into the grid and was sold only to the contracting agency is a crucial part of any renewable energy purchase.

One verification option is to utilize existing state regulatory mechanisms and, in particular, the verification methods that are used to comply with state fuel mix and/or air emissions disclosure requirements. Another approach is to conduct a private audit, or require that power sales be tracked as part of the supplier's regular financial audit. Perhaps the simplest approach is to rely on third-party efforts, such as Green-e's annual audits of certified products.

67 Evaluate Quantity and Cost Considerations

Agencies can specify requirements for renewable energy in terms of either minimum quantity or maximum cost limits. While minimum quantity specifications are straightforward, costs can be limited in a number of ways. First, the agency can specify a price cap, either on a cents per kWh basis or as an index linked to market rates,³⁴ beyond which they will not purchase green power. Alternatively, the cap could apply only to the renewable or green premium over conventional power. If direct access or energy efficiency projects result in cost savings, an agency can apply some percentage of those savings to purchase renewable energy, controlling the cost by limiting the percentage of foregone savings. Finally, the agency could set a limit to their

³⁴This index can be linked to the retail price of electric service from the local utility (tariff rates) or the wholesale price of power from one of the available wholesale markets. Other indexing approaches may be possible as well.

total budget for electricity from both renewable and non-renewable generation. Agency decisions regarding cost and quantity trade-offs should be made during the procurement planning phase of the process. By being flexible about the portion of their load served by renewable energy, agencies can control the overall cost of the renewable energy purchase.

Renewable Energy Price Premiums and Defining “Business As Usual”

Although it is commonly claimed that renewable energy costs more than conventional power, electricity restructuring has created some subtleties to this argument that bear directly on agencies’ ability to purchase renewable energy. Because utilities are continuing to offer electric service under regulated tariffs, while competitive suppliers offer service under market-based prices, there are two possible baselines against which the cost of renewable energy service may be compared—(1) electric service under default utility tariffs, and (2) electric service under the lowest priced competitive electric service alternative. Because the “proper” baseline has not been legally specified as of this writing, contracting officers are able to use their own judgment in determining the proper baseline. Text Box 6 highlights the case of the U.S. Postal Service in California in which the default utility tariff was used in determining the price baseline.

Bundling for Cost Control

Renewable energy purchases can be bundled in at least two ways – (1) with conventional power in blended service and (2) with energy efficiency. Bundling renewable energy with conventional power is relatively straightforward and has the advantage of providing opportunities for any price premiums to be controlled or eliminated. Text Box 6 describes a renewable energy procurement that utilized blending renewable and conventional power as a means of cost control.³⁵

Although great potential exists for using the savings associated with energy efficiency to fund a price premium associated with renew-

able energy, a procedure to do so has not yet been formally established. Enterprising agencies are encouraged to develop a procurement strategy that will take advantage of savings retained from reductions in electricity or other energy bills from efficiency projects to reduce or eliminate renewable energy price premiums. Under this approach, no budgetary increases would be necessary to pay for renewable energy. E.O. 13123 specifically encourages the use of savings from energy efficiency to pay for renewable energy (See Text Box 2).



Determine Contract Length

Contract length should be considered in conjunction with several other factors. For instance, how an agency chooses to handle quantity and cost considerations interacts directly with contract length. If an agency chooses a fixed price per kWh rate or even a fixed renewable premium, a longer contract increases price risk. Conversely, a longer contract (typically 3 years or more) should reduce risk to the supplier, allowing them to offer a lower rate than under a shorter contract.



Arrange a Pre-Bid Meeting to Facilitate Understanding

Experience has shown that convening all the interested parties to a renewable energy purchase in a pre-bid meeting can greatly facilitate the contracting process.³⁶ Providing potential contractors with a forum to offer feedback on the RFP can help agencies ensure that their requirements are realistic and can be met in an effective manner. Such a meeting also provides potential offerors an opportunity to

³⁵As it turned out, no blending was required because state renewable energy subsidies reduced the price of the purchase to acceptable levels.

³⁶See EPA Richmond case study (Text Box 1).

learn more about the (potentially complicated) federal procurement process.



Capture the Benefits of the Purchase

After successfully completing a renewable energy purchase, an agency may consider one or more of the following actions in order to publicize their efforts: (1) spread the word that the agency has complied with Executive Order 13123, (2) investigate whether the agency is eligible for any kind of tradable emissions credits, (3) seek public endorsements from environmental groups, and (4) capitalize on positive public relations by broadcasting the agency's efforts and accomplishments using various media to interested customers, citizens, and other agencies.



Summary and Conclusions

The benefits of renewable energy are enormous, and as the nation's largest purchaser of electricity, the Federal government can have a significant impact on the way that power is produced now and in the future. Federal agencies have an unprecedented and increasing range of options for purchasing renewable energy. In those states that have restructured their electricity markets, retail access allows customers to choose their electricity supplier and, by extension, how their electricity is produced. In regulated markets, utility green pricing programs enable customers to support the addition of renewable energy to the grid without leaving their incumbent utility. Moreover, recent Executive Orders direct Federal agencies to increase their use of renewable energy.

With increasing emphasis on "best value" purchasing and explicit consideration of environmental characteristics, contracting officers

now have more authority than ever before to pursue purchases of renewable energy. Acting in the government's— and society's—best interests, contracting officers can take advantage of the strategies outlined in this guidebook to help move the United States towards a more sustainable energy future.

Text Box 6

Case Study: The United States Postal Service (California)

In one of the largest renewable energy purchases to date, the United States Postal Service (USPS) announced in April 2000 that it will power roughly 1,100 of its facilities in California with 100% renewable energy. Go-Green.com was awarded a three-year contract to supply more than 30 million kWh each year of certified renewable power, most of which is geothermal and biomass generation, at a cost equal to the California Power Exchange (PX) clearing price, which is also the "default service" or "standard offer" rate in California. The USPS chose to purchase the highest percentage of renewable energy possible without paying a premium above the PX price. Because of subsidies available in California, the USPS was able to procure 100% renewable energy for all the facilities served under the contract and there was no need to blend conventional generation in order to meet the pricing requirements. Lawrence Berkeley National Laboratory provided technical assistance in developing the competitive solicitation, issued back in the summer of 1999, and evaluating responses.

This purchase was motivated by the desire of the USPS both to comply with Executive Order 13123 and to take a federal leadership role in promoting the use of renewable energy. After the military, the USPS, with roughly 40,000 postal facilities nationwide, is the largest federal consumer of electricity.

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What is Green Power?

Green power is primarily a marketing rather than a scientific term. While there is currently no single standard definition of the phrase “green power,” there is general agreement that the term refers to electricity products that include significant proportions of electricity generated from energy resources that are both renewable and environmentally preferable.³⁷

Differences in defining the phrase arise primarily from the differing assessments of the environmental impacts of harnessing specific resources and of the relative significance of each impact. While burning municipal solid waste (MSW) is not considered green by some organizations concerned about the resulting (toxic) air emissions and the effect on incentives to reduce waste and to recycle, others consider MSW to be “green” because it converts ever-replenished waste into energy and eases the burden at landfills. Hydropower is clearly a renewable resource, but its perceived “greenness” depends on differing levels of concern about impacts on local habitats, river ecology, and fish populations. Because of the importance of hydropower resources in the current national generation mix, the debate over its “greenness” has been rather heated.³⁸

Rather than any specific resource being clearly both renewable and environmentally preferable and, therefore, clearly “green,” there is instead a continuum of “brown” to “green” along which all energy resources fall.

Perhaps even more difficult than assessing the “greenness” of an energy resource is determining the “greenness” of an electricity prod-

uct made up of several different energy sources. A product containing 20% wind power may actually be quite polluting if the remaining 80% comes from a dirty coal plant. As is the case with specific energy resources, a continuum from brown to green power products exists as well.

In an effort to head off questionable marketing practices, Attorneys General in various states have also been examining the question of what constitutes green power.³⁹ Their efforts have mainly focused on defining what types of claims marketers can make about their products without being deceptive and in violation of state consumer protection laws.

³⁷Although not a renewable generation technology in a scientific sense, fuel cells using natural gas as fuel are explicitly included in certain state renewable resource programs. Other emerging technologies may also be included in such programs in the future.

³⁸Efforts to establish standards for “low impact” hydropower that would help resolve these issues are currently underway or recently completed in several venues. The Low-Impact Hydro Institute recently received their first application for certification. See www.lowimpacthydro.org.

³⁹See the *Environmental Marketing Guidelines for Electricity* recently issued by the National Association of Attorneys General, dated December 1999.



State Definitions of Renewable Energy

	Wind	Solar	Geothermal	Biomass	Municipal Solid Waste	Ocean-based	Hydro	Fuel Cells ⁴⁰
California ⁴¹	X	X	X	X ⁴²	X ⁴³	X ⁴⁴	X ⁴⁵	X ⁴⁶
Connecticut (Class I)	X	X		X ⁴⁷				X
Connecticut (Class II) ⁴⁸				X ⁴⁹	X		X	
Connecticut (SBC)	X	X		X ⁵⁰		X		X
Delaware ⁵¹	X	X	X	X ⁵²			X ⁵⁴	
Illinois	X	X	X	X ⁵³			X	X
Maine ⁵⁵	X	X	X	X	X	X	X	
Maryland	X	X	X	X	X	X	X	
Massachusetts	X	X	X	X ⁵⁶	X ⁵⁷	X	X ⁵⁷	X ⁵⁸
Montana ⁵⁹	X	X	X	X			X	
Nevada	X	X	X	X ⁶⁰				
New Jersey (Class I)	X	X	X	X ⁶¹		X		X
New Jersey (Class II) ⁶²³					X ⁶³		X ⁶³	
New Mexico	X	X	X	X ⁶⁴			X	X ⁵⁸
New York ⁶⁵	X	X	X	X			X	X
Ohio ⁶⁶	X	X	X	X			X	X
Oregon	X	X	X	X ⁷⁸	X		X ⁶⁸	
Pennsylvania	X	X	X	X ⁶⁹	X		X ⁷⁰	
Rhode Island	X	X	X	X ⁷¹			X ⁷²	X ⁷³
Texas	X	X	X	X		X	X	
Wisconsin	X	X	X	X		X	X ⁷⁴	X ⁵⁸

NOTES

- ⁴⁰Unless otherwise specified, fuel cells are not required to use renewable fuels. States that have not specifically defined fuel cells as renewable energy have not been marked, even though fuel cells would presumably be eligible for renewable energy status as long as they use a renewable fuel.
- ⁴¹To be eligible for System Benefits Charge (SBSC) funds, the generation facility must be physically located in the state (in addition to other requirements).
- ⁴²Includes solid-fuel biomass, landfill gas, and gas from the anaerobic digestion of biological wastes.
- ⁴³MSW includes whole waste tire consumption, as well as waste that does not consist primarily of products originally manufactured from fossil fuels.
- ⁴⁴Ocean-based power is not specifically called out in legislation, but neither is it specifically excluded. AB 1890 defines renewable technologies as technologies using power sources other than those defined as "conventional power sources": nuclear energy, hydropower larger than 30 MW, and the combustion of fossil fuels (with the exception of co-generation). Ocean-based power seems to fit this definition.
- ⁴⁵Hydro must be no larger than 30 MW.
- ⁴⁶Fuel cells are defined as an emerging renewable technology as long as they use renewable fuel.
- ⁴⁷Includes landfill gas and new biomass facilities (with "new" defined as a facility that begins operating after July 1, 1998), where the biomass is cultivated and harvested in a sustainable manner ("sustainable" has not been defined).
- ⁴⁸Connecticut's restructuring legislation specifically allows Class II RPS requirements to be met by either Class I or Class II renewable energy sources (see Table above).
- ⁴⁹Includes any biomass facilities that are not eligible for Class I status.
- ⁵⁰Landfill gas and low emission advanced biomass conversion technologies.
- ⁵¹Delaware defines "green power" to mean any product containing at least 50% of the eligible renewable resources listed.
- ⁵²The burning of agricultural wastes and landfill gas.
- ⁵³Includes dedicated crops grown for energy production and organic waste biomass, but excludes waste wood and landscape waste.
- ⁵⁴Hydropower must not involve new construction or significant expansion of dams.
- ⁵⁵Only facilities under 100 MW qualify as renewable energy facilities.
- ⁵⁶Includes landfill gas, as well as low-emission, advanced biomass power conversion technologies, such as gasification using such biomass fuels as wood, agricultural, or food wastes, energy crops, biogas, biodiesel, or organic refuse-derived fuel.
- ⁵⁷Waste-to-energy and hydro defined as renewable, but not counted as "new"

renewables for the purposes of the RPS.

- ⁵⁸Fuel cells must use renewable fuels.
- ⁵⁹Additional criteria may be imposed on biomass and hydro.
- ⁶⁰Biomass must be naturally regenerated.
- ⁶¹Includes methane gas from landfills or a biomass facility, provided that the biomass is cultivated and harvested in a sustainable manner.
- ⁶²New Jersey's restructuring legislation specifically allows Class II RPS requirements to be met by either Class I or Class II renewable energy sources.
- ⁶³Resource recovery and hydro facilities must be located where retail competition is allowed and must be determined by the Commissioner of Environmental Protection to meet the highest environmental standards and to have minimal impacts on the environment and local communities.
- ⁶⁴Includes landfill gas and anaerobically digested waste biomass.
- ⁶⁵These resources are mentioned in New York's SBC plan, but there is no explicit definition of renewable energy.
- ⁶⁶These resources are defined in reference to net-metering.
- ⁶⁷Includes low-emission nontoxic biomass based on solid organic fuels from wood, forest, and field residues; dedicated energy crops available on a renewable basis; and landfill gas and digester gas.
- ⁶⁸Hydro must be located outside of protected areas as defined by Federal law.
- ⁶⁹Landfill and mine-based methane gas, and sustainable biomass.
- ⁷⁰Only "low-head" hydro.
- ⁷¹Biomass must be sustainably managed.
- ⁷²Only hydro under 100MW that does not require construction of new dams.
- ⁷³Fuel cells are considered an energy-efficiency technology to be included in DSM programs, and therefore are eligible for SBC funds.
- ⁷⁴Only hydro under 60 MW.



Information and Assistance Regarding Renewable Energy and Green Power

For Additional Resources On the Internet:

1. For further assistance or specific questions relating to green power, contact FEMP on the web at <http://www.eren.doe.gov/femp/>.
2. The Green Power Network is a good source for up-to-date news <http://www.eren.doe.gov/green-power/>

Assistance with Green Power Purchases is Available From the Following Federal Agencies and National Labs:

For Assistance Issuing Solicitations:

General Services Administration

Virgil Ostrander, 202-501-3994

Lindsey Lee, 202-501-2291

Defense Energy Support Center

John Nelson, 703-767-8669

For Assistance with Program Resources:

Department of Energy – Federal Energy Management Program

Anne Sprunt Crawley, 202-586-1505

Brad Gustafson, 202-586-2204

Tatiana Muessel, 202-586-9230

For Technical Assistance, including market intelligence, market rules and development of Requirements and Statements of Work:

Charles Goldman, Lawrence Berkeley National Laboratory, CAGoldman@lbl.gov, 510-486-4637

William Golove, Lawrence Berkeley National Laboratory, WHGolove@lbl.gov, 510-486-5229

Chandra Shah, National Renewable Energy Laboratory, chandra_shah@nrel.gov, 303-384-7557

Ryan Wisner, Lawrence Berkeley National Laboratory, RHWisner@lbl.gov, 510-486-5474