DOD Purchase of Renewable Energy Credits Under the National Defense Authorization Act of 2012

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Summary

The Energy Policy Act (EPAct) of 2005 established renewable energy goals for federal government agencies. The National Defense Authorization Act for Fiscal Year 2012 directs the Secretary of Defense "to establish a policy to maximize savings for the bulk purchase of replacement renewable energy certificates in connection with the development of facility energy projects using renewable energy sources." This requires that each service purchase replacement renewable energy certificates (RECs) through either a centralized purchasing authority within the respective department, or the Defense Logistics Agency (DLA). A REC certifies that a renewable power generator has produced a certain amount of power according to set requirements and standards. In meeting past goals for using renewable-generated electricity, federal agencies purchased RECs without purchasing the associated power. In 2008, GAO reported that federal agencies continued to rely on RECs rather than site-generated renewable energy to meet EPAct goals.

Though no statute has specifically authorized federal agencies to purchase RECs, they have become an attractive option for some federal facilities in meeting renewable energy mandates, particularly where renewable power was not readily available. Early on, federal agencies purchased RECs without purchasing the associated electricity in order to meet the building energy-intensity reduction goals of the National Energy Conservation Policy Act.

The Department of Energy's Federal Energy Management Program (FEMP) has advised, "Because it defines renewable energy broadly, many different REC types can count towards an agency's renewable energy consumption requirement under EPAct 2005." Section 203 of EPAct 2005 specifies that renewable energy must be consumed to be credited toward the renewable energy goal (42 U.S.C. 15852(a)). However, Congress has not provided federal agencies explicit statutory authority to purchase RECs for meeting EPAct goals.

Presently, 29 states and the District of Columbia have adopted Renewable Portfolio Standards (RPS), while nine states and three power authorities have adopted nonbinding (voluntary) standards. There are two markets for RECs: voluntary and compliance. The voluntary market consists of businesses and individuals (and federal agencies) purchasing renewable energy beyond the amounts present in standard utility service contracts. Compliance markets are those where state renewable portfolio standards or other legal mandates require utilities and electricity providers to provide or purchase renewable energy as part of the portfolio offered to their regular customers. Renewable energy generators can sell RECs by advertising on a tracking system bulletin board, using a broker to assist in finding a buyer, or using an auction or exchange platform to sell RECs.

The REC marketplace that continues to evolve reflects a balkanized approach that states have individually taken in creating their own RPS. Ten regional REC tracking systems now operate across the United States and Canada. Purchasing RECs is not the same as purchasing energy, however. In states with an RPS, purchased power already includes a percentage of renewable-generated power that is included in the consumer's utility bill. Purchasing RECs in those states would represent additional costs without the associated power. DOD views such REC purchases as an expenditure that does not contribute to its energy security posture.

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Introduction

The National Defense Authorization Act for Fiscal Year 2012 (NDAA; P.L. 112-81, §2824) directs the Secretary of Defense "to establish a policy to maximize savings for the bulk purchase of replacement renewable energy certificates (RECs) in connection with the development of facility energy projects using renewable energy sources."[1] The provision requires that each service acquire replacement RECs through either a centralized purchasing authority within the respective department, or the Defense Logistics Agency (DLA). It presumes that either agency brings the commensurate expertise in the RECs to purchase them and obtain the best value for the military department. Central purchasing could offer inherent advantages in efficiency and economy. DOD's executive agent for purchasing energy in bulk is the Defense Logistics Agency-Energy (DLA-E), which operates through a working capital fund to purchase fuel and power for its clients—the armed services and some non-defense federal agencies. Purchasing RECs would logically extend DLA-E's mission (which DLA-E already does to a limited extent).

Background

The federal renewable energy policies that serve as the backdrop for the NDAA-REC provision evolved from several decades of effort directed toward reducing federal building energy-intensity; an era marked by increasing energy costs and expectations for increased energy demand throughout the commercial and domestic sectors. The 1978 National Energy Conservation Policy Act (NECPA, P.L. 95-619) initiated a program of retrofitting federal buildings to improve energy efficiency. It also required federal agencies, including DOD, to report annually on their progress in meeting energy consumption goals for facilities.

The Consolidated Omnibus Budget Reconciliation Act of 1985 (also called the Deficit Reduction Act, P.L. 99-272) amended NECPA by authorizing energy savings contracts of up to 25 years. The 1992 Energy Policy Act (P.L. 102-486) further amended NECPA by authorizing Energy Savings Performance Contracts (ESPCs) that offered federal agencies a novel means of making energy efficiency improvements to aging buildings and facilities.

The Energy Policy Act of 2005 (P.L. 109-58, EPAct), in Section 203, established renewable energy goals for federal government agencies. For total energy consumed by the federal government, EPAct required increasing minimum amounts of energy to come from renewable sources to the extent "economically and technically feasible":

- Not less than 3% in fiscal years 2007 through 2009;
- Not less than 5% in fiscal years 2010 through 2012; and
- Not less than 7.5% in fiscal year 2013 and each fiscal year thereafter.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management, 2007) required that at least half the required renewable energy that a federal agency consumed in a fiscal year should come from "new renewable energy sources, and … to the extent

[1] §2824, Use of Centralized Purchasing Agents for Renewable Energy Certificates to Reduce Cost of Facility Energy Projects Using Renewable Energy Sources and Improve Efficiencies.

feasible, the agency implements renewable energy generation projects on agency property for agency use." While federal agencies can choose to purchase renewable electricity or obtain renewable energy by other means, the executive order also directed them to build their own renewable energy projects on federal property (when feasible) so that they can consume the renewable power produced on-site.

The Department of Energy's Federal Energy Management Program (FEMP) has advised, "Because it defines renewable energy broadly, many different REC types can count towards an agency's renewable energy consumption requirement under EPAct 2005."[2] Section 203 of EPAct 2005 specifies that renewable energy must be consumed to be credited toward the renewable energy goal (42 U.S.C. 15852(a)).[3] However, Congress has not provided federal agencies explicit statutory authority to purchase RECs for meeting EPAct goals.

Both U.S. total energy demand and U.S. energy generation have declined in the last decade. The last two decades, in particular, mark a rapid change in the deregulation and re-regulation of the electric power industry that has created opportunities for renewable energy generators, created niche markets and incentives for renewable energy, and created a market for issuing and tracking renewable energy credits.

RECs became an attractive option for some federal facilities intent on meeting renewable energy mandates, particularly where renewable power was not readily available. Early on, federal agencies purchased RECs without purchasing the associated electricity in order to meet the building energy-intensity reduction goals of NECPA.

Renewable Energy Certificate

A REC is a tradable, non-tangible energy commodity in the United States that represents proof that one megawatt-hour (MWh) of electricity was generated from an eligible renewable energy (solar, wind, biomass, ocean, geothermal, municipal solid waste, "new" hydroelectric generation) resource. Its purchase conveys the right to claim the environmental benefit associated with renewable generated electricity. A REC identifies the characteristics of the particular generator such as location, the emissions output of the generator, the fuel the generator used to produce the electricity, and the date the generator went into service (also known as its pedigree). The marketplace may sell RECs separately from the megawatt-hours of generated electricity with which they are associated.

State renewable portfolio standards (RPS) have created a market for trading RECs. Every megawatt-hour of power generated from eligible renewable sources creates a certain amount of RECs, usually in a one-to-one ratio. In some markets, RECs can trade separately from the power they represent, while in others they must remain "bundled" together.

The market for purchasing RECs is complex and evolving. Some states already require that electric utilities obtain certain amounts of the electricity they deliver to end-use customers from renewable-generated electricity. Electricity markets already offer three main products: capacity (megawatts); power (traded in megawatt-hours); and ancillary services (services that ensure reliability and support transmission of electricity from generators to customer loads).[4] Power and

[2] U.S. DOE Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program, *Quick Guide to Renewable Energy Certificates (RECs)*, July 2011, http://www1.eere.energy.gov/femp/pdfs/rec_guide.pdf.

[3] U.S. DOE Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program, *Renewable Energy Requirement Guidance for EPACT 2005 and Executive Order 13423*. p. 6, http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf.

[4] Ancillary services may include load regulation, spinning reserve, non-spinning reserve, replacement reserve, and voltage support. See http://www.eia.gov/tools/glossary/index.cfm.

capacity sold in bundled form represents "firm power"—power or producing capacity intended to be available during the period covered by a guaranteed commitment to deliver, even under adverse conditions.[5] This is the pricing plan for renewable and non-renewable energy purchases used widely by commercial and industrial customers (including DOD).

DOD Electricity Use

Federal spending on electricity represents only from 17% to 18% of total federal energy use, and roughly one-third-of-1% of the federal discretionary budget. When FEMP last reported on federal energy consumption in 2007, spending on electricity amounted to $4.4 billion for 56,497 gigawatt-hours at an average cost of roughly $78 per MWh.[6] At the time, electricity rates ranged from $82/MWh for industrial users to $120/MWh for commercial users. DOD as late as FY2012 reports spending $4.10 billion on energy for its facilities worldwide.

DOD activities occupy more than 316,000 buildings and an additional 182,000 structures on 536 military installations worldwide. In FY2010 DOD reported that it consumed approximately 211,000 billion British thermal units (Btu) of energy in its facilities.[7] DOD's U.S. facilities consumed closer to 187,759 billion Btu. Approximately 45% of the energy DOD facilities consumed came from electricity; 34% from natural gas; and the remaining percentages were fuel oil (9%), coal (7%), purchased steam (3%), and liquefied petroleum gas/propane/other fuels (2%).[8] (See **Figure 1**.) CRS estimated that DOD consumed 24,765 thousand MWh of electric power at its U.S. facilities by applying a factor of 45% to total site-delivered energy (in Btu) and then converting Btu to electric power.[9]

To mark their progress towards reducing energy intensity in buildings under NECPA and later EPAct, DOD and other federal agencies aggregate overall energy use in Btu per square foot of building space for reporting purposes.[10] Neither policy requires DOD or other federal agencies to report their electricity consumption on a state-by-state basis. In order to gauge the best opportunities for DOD to purchase RECs in the current REC market, CRS needed some measure of state-by-state electricity use, and made an "across the board" assumption on electricity use based on **Figure 1**.

[5] http://www.eia.gov/tools/glossary/index.cfm.

[6] Federal Energy Management Program, *Annual Report to Congress*, Table A-4 and A-5, January 27, 2010, http://www1.eere.energy.gov/femp/regulations/facility_reports.html.

A gigawatt is the equivalent of 1,000 megawatts.

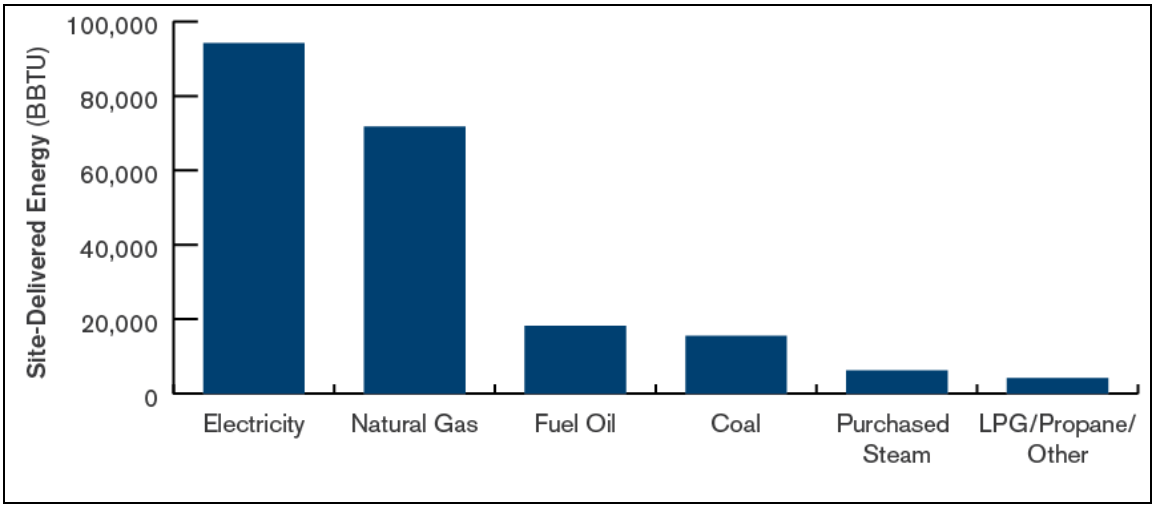
[7] Office of the Deputy Under Secretary of Defense (Installations and Environment), *Department of Defense Annual Energy Management Report Fiscal Year 2010*, July 2011, http://www.acq.osd.mil/ie/energy/energymgmt_report/main.shtml.

[8] *Department of Defense Annual Energy Management Report Fiscal Year 2010*, p. B-3.

[9] 1 Btu = 0.00000029307107 MWh.

[10] DOD reports its energy use annually to the Federal Energy Management Program, as required of all federal agencies by the National Energy Conservation Policy Act of 1992 (as amended by the Energy Policy Act of 2005). 10 USC § 2911. See *Department of Defense Annual Energy Management Report Fiscal Year 2010* for floor space.

Figure 1. DOD Site-Delivered Energy by Type in FY2010



Source: *Department of Defense Annual Energy Management Report Fiscal Year 2010*, Figure 2.3, p. 16.

Notes: DOD consumed about 187.8 billion British thermal units (BBTU) of energy during FY2010 in U.S. facilities subject to energy-intensity reduction goals; electricity amounted to roughly 24.7 thousand MWh.

By aggregating site-delivered energy data (Btu) that DOD reported by facility, CRS was able to estimate DOD power demand (MWh) by state (**Table 1**).[11] The **Table 1** estimates are intended for comparative purposes only, as factors such as regional climate variations, geography, and the availability of natural gas are likely to skew overall energy preference for, or use of, electricity.

Table 1. DOD Site Delivered Energy and Estimated Power Demand

State	Site Delivered Energy Billion Btu	Estimated Power Thousand MWh	State	Site Delivered Energy Billion Btu	Estimated Power Thousand MWh
Virginia	15,678	2,068	Kansas	2,279	301
Maryland	12,442	1,641	New Mexico	2,102	277
California	11,819	1,559	Louisiana	1,871	247
Texas	11,754	1,550	Arizona	1,801	238
North Dakota	9,977	1,315	Mississippi	1,765	233
Alaska	8,906	1,175	Wisconsin	1,723	227
North Carolina	8,124	1,071	Arkansas	1,627	215
Georgia	7,988	1,053	Indiana	1,441	190
Florida	6,899	910	Connecticut	1,412	186
Washington	6,258	825	Massachusetts	1,167	154
Oklahoma	5,499	725	Nevada	1,164	153
Alabama	4,667	615	New Hampshire	1,158	153
Colorado	4,524	597	Nebraska	1,046	138

[11] Department of Defense, *Annual Energy Management Report Fiscal Year 2001*, Appendix I-Energy Consumption and Intensity by Installation.

State	Site Delivered Energy Billion Btu	Estimated Power Thousand MWh	State	Site Delivered Energy Billion Btu	Estimated Power Thousand MWh
South Dakota	4,440	586	Michigan	976	129
Ohio	4,120	543	Iowa	911	120
Illinois	3,857	509	West Virginia	906	120
Pennsylvania	3,809	502	Rhode Island	875	115
Tennessee	3,775	498	Idaho	681	90
Utah	3,744	494	Montana	663	87
New Jersey	3,737	492	Wyoming	550	73
South Carolina	3,646	481	Delaware	543	72
District of Columbia	3,346	441	Minnesota	361	48
New York	3,200	422	Maine	255	34
Kentucky	3,080	406	Oregon	205	27
Missouri	2,544	336	Vermont	83	11
Hawaii	2,377	313	**Total**	**187,759**	**24,762**

Source: *Department of Defense Annual Energy Management Report Fiscal Year 2010, Appendix I-Energy Consumption and Intensity by Installation.*

Notes: Estimated Power applies a factor of 45% in converting Btu to MWh. Factors such as regional climate variations, geography, and the availability of natural gas are likely to skew overall energy preference for, or use of, electricity.

As **Table 1** shows, DOD consumed over half of its estimated power demand (some 13,167 thousand MWh) in 10 states: Virginia, Maryland, California, Texas, North Dakota, Alaska, North Carolina, Georgia, Florida, and Washington. As this report discuss further below, these states' policies promoting renewable energy use vary considerably. In states with restructured power markets, for example, DOD may take advantage of retail choice programs and buy power directly from merchant generators through a local utility.

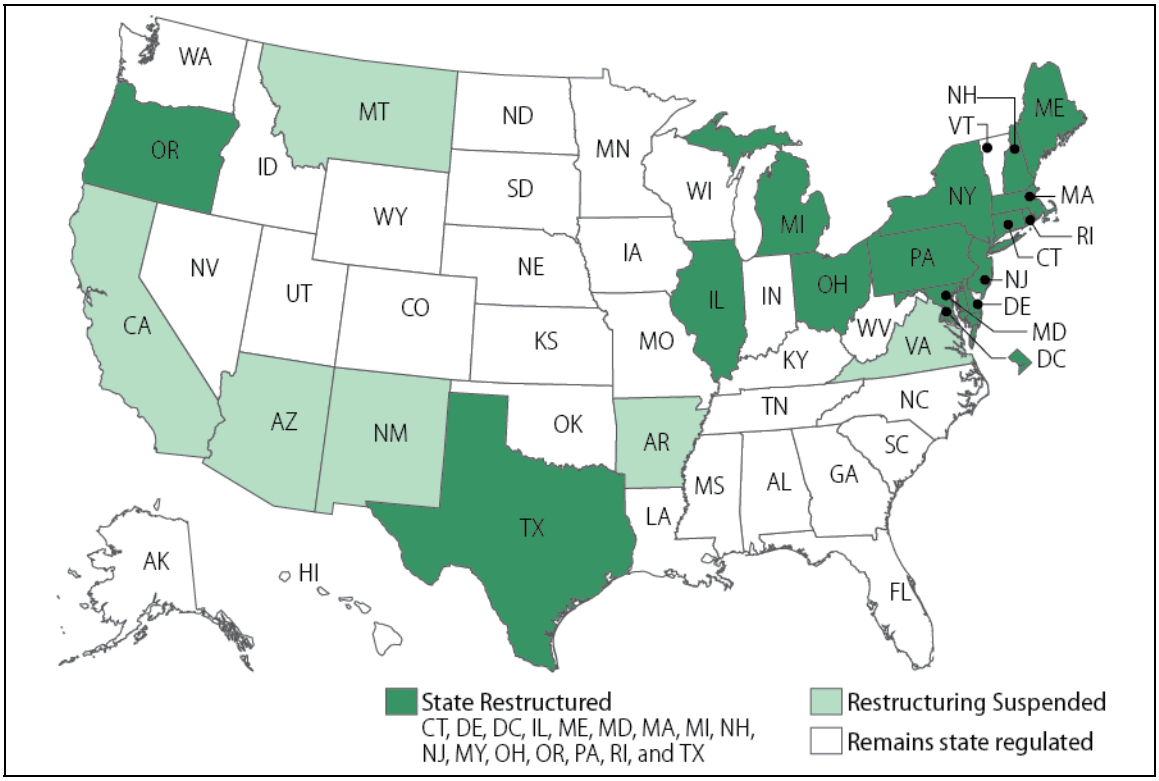
Restructured Power Markets and Retail Choice

The Public Utility Regulatory Policies Act of 1978 (PURPA) and the Energy Policy Act of 1992 (EPAct '92) had obligated retail utilities to buy capacity and energy from certain types of "qualifying facilities." In 1996, the Federal Energy Regulatory Commission (FERC) issued Order 888 to encourage wholesale competition through non-discriminatory open access to public utility transmission lines.[12] The order offered customers the opportunity to contract power separately from distribution through their local utility (i.e., unbundled service), and various states have since moved toward restructuring their power markets. Ideally, restructuring promised electricity consumers the opportunity to contract with the lowest cost supplier of electric power independent of local utility service.

[12] Federal Energy Regulatory Commission, *Order No. 888*, http://www.ferc.gov/legal/maj-ord-reg/land-docs/order888.asp.

Today, only 16 states have fully restructured to allow their utility customers retail choice in purchasing power (**Figure 2**). These states presumably should offer DOD the opportunity to purchase RECs and the associated power (if available). In states that remain regulated, DOD may be restricted to purchasing bundled electric service from local utilities.

Figure 2. State Restructured Power Markets



Source: CRS.

Notes: Sixteen states' power markets (CT, DE, DC, IL, ME, MD, MA, MI, NH, NJ, NY, OH, OR, PA, RI, and TX) have restructured power markets that allow utility customers the option of buying unbundled utility service.

PURPA also defined a new class of qualifying generating facilities (QFs) that would receive special rate and regulatory treatment under FERC, and allowed these entities to sell power to electric utilities. Under PURPA, QFs include "small power" production facilities that generate less than 80 megawatts using solar, wind, geothermal, biomass, or waste; that is, renewable energy generators. In response to restructuring, states began instituting requirements for utilities to include a certain portion of new sources of renewable-generated electricity in their generating capacity. At the time, renewable sources of electricity appeared to offer cost-competitive alternatives to conventional fossil and nuclear generated power, and thereby benefited the utility rate-payer. For a further discussion on deregulation, see **Appendix A**.

State Renewable Portfolio Standards

A Renewable Portfolio Standard (RPS) is a state requirement that a certain portion of the power that utilities sell to end-use (retail) customers must include electricity generated from a renewable resource by a certain date. Some states have mandatory RPS requirements, while others have voluntary programs. States with mandatory RPS rules require that either a percent of an electric

supplier's energy sales (MWh) or installed capacity (MW) come from renewable resources (see **Figure 3**). While the United States as a whole has not adopted a national renewable portfolio standard, most states have established their own standards. The standards as well as the definitions of renewable energy vary from state to state, and the requirements are different because states have designed RPS rules independently. States also tend to define RPS rules to take advantage of their unique renewable resources. Thus, each state's unique set of resources and goals has resulted in a patchwork of conflicting rules that determine a renewable energy project's eligibility for participating in an RPS. Presently, 29 states and the District of Columbia have adopted binding RPS policies; 8 states have adopted nonbinding (voluntary) standards.[13]

Renewable Portfolio Standard

A renewable portfolio standard is a policy that requires electricity providers to obtain a minimum percentage of their power from renewable energy resources. Currently, 29 states, the District of Columbia, and two territories have RPS policies in place. Eight states and two territories have adopted renewable portfolio goals instead of a binding RPS.

In 2011, RPS rules required 133 million MWh of electricity from renewable facilities, which is slightly more than 3% of the total 4,000 million MWh of U.S. electricity produced in 2011.[14] One forecast predicts that RPS requirements will grow to 210 million MWh by 2015.[15] In total, states will require an estimated 100,000 megawatts of new renewable capacity by 2035, which could represent 7% of total U.S. retail electricity sales.[16]

Generally, states organize REC products into tiers, depending on the resources they promote. When a state creates or revises its RPS, it may place a new REC product (associated with the newer qualifying renewable energy project) in a higher tier than older projects. The REC tiers may depend on generating technology, start-up date, and geographic location. Newer projects generally qualify as Tier I vintage, while RECs from older projects may be relegated to lower tiers and eventually phased out (sunset provision). The projects may continue to operate even though the RECs phase out. Over time, the RPS percentage requirements attached to upper tier exceeds the lower tier. Newer tier RECs also command higher prices (discussed below). RPS mandates generally leave it up to the utilities to determine how they will comply. Typically, a utility will competitively solicit the supply needed to meet its RPS obligation or seek RECs on a secondary market.[17]

States have also encouraged a market for selling and trading RECs. However, the marketplace that evolved reflects the balkanized approach that states have individually taken in creating their own renewable portfolio standards. Essentially, there are two markets for renewable energy—voluntary and compliance. The voluntary market for renewable energy consists of businesses and individuals purchasing renewable energy beyond the amounts present in standard utility service or provided through government requirements. Compliance markets are those where state

[13] Department of Energy, *Database of State Incentives for Renewables & Efficiency*, http://www.dsireusa.org/summarytables/index.cfm?ee=1&RE=1.

[14] Platt's Special Report, *Renewable Energy Certificates*, April 2012, http://www.platts.com.

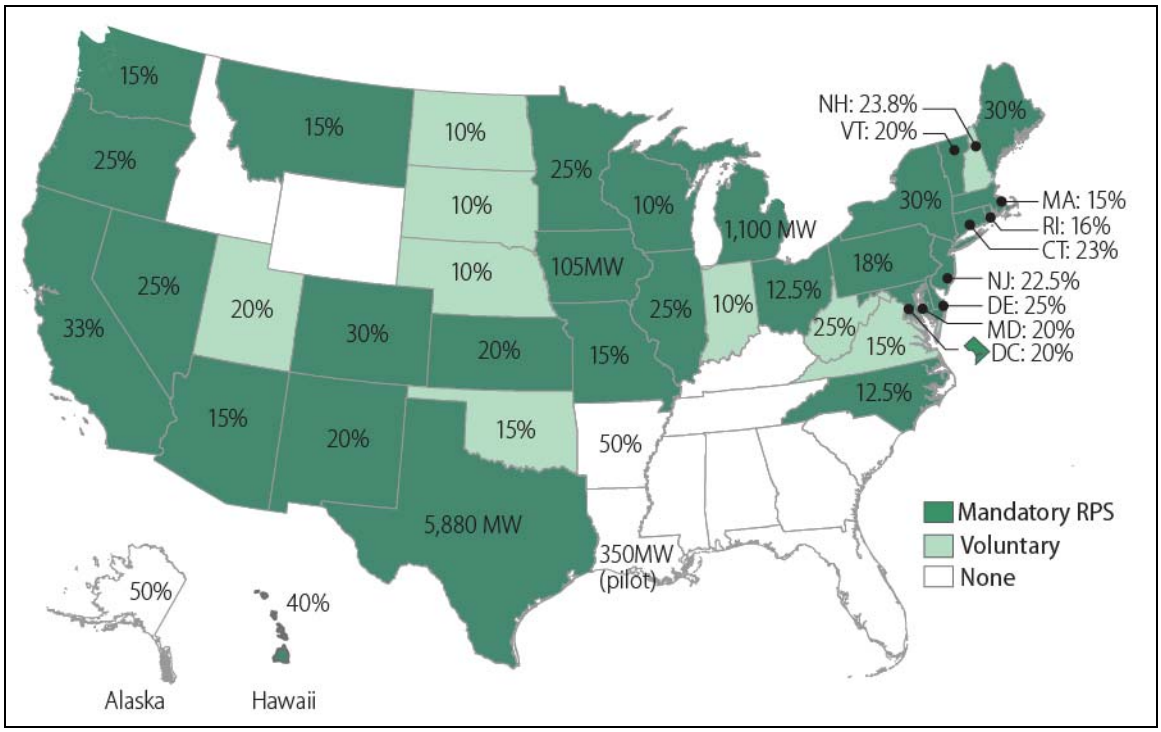
[15] Ibid.

[16] DOE, *2010 Wind Technologies Market Report*, p. 62-63.

[17] That is, a utility will issue a request for proposals and select the projects that offer the most promising package of siting, operational expertise, and cost.

renewable portfolio standards or other legal mandates require utilities and electricity providers to provide or purchase renewable energy as part of the portfolio offered to their regular customers.

Figure 3. State Renewable Portfolio Standards and Goals



Source: Energy Information Administration, Status of Electricity Restructuring by State as of September 2010

Notes:

State	RPS Policy	RPS Goal	Goal Date	State	RPS Policy	RPS Goal	Goal Date	State	RPS Policy	RPS Goal	Goal Date
AZ	Mandate	15%	2025	ME	Mandate	40%	2017	NC	Mandate	12.50%	2021
CA	Mandate	33%	2020	MD	Mandate	20%	2022	NV	Mandate	25%	2025
CO	Mandate	30%	2020	MA	Mandate	15%	2020	OH	Mandate	12.50%	2025
CT	Mandate	23%	2020	MI	Mandate	1,100mW	2015	OR	Mandate	25%	2025
DE	Mandate	25%	2025	MN	Mandate	25%	2025	PA	Mandate	18%	2020
DC	Mandate	20%	2020	MO	Mandate	15%	2021	RI	Mandate	16%	2020
HI	Mandate	40%	2030	MT	Mandate	15%	2015	TX	Mandate	5880mW	2025
IA	Mandate	105MW	2010	NJ	Mandate	22.50%	2020	VT	Mandate	20%	2017
IL	Mandate	25%	2025	NM	Mandate	20%	2020	WA	Mandate	15%	2020
KS	Mandate	20%	2020	NY	Mandate	30%	2015	WI	Mandate	10%	2015
IN	Voluntary	10%	2025	AL	NA	NA	NA	LA	Study	350MkW	2013
ND	Voluntary	10%	2010	AK	NA	50%	2025	FL	Study	NA	NA
NE	Voluntary	10%	2020	AR	NA	NA	NA				
NH	Voluntary	23.80%	2025	GA	NA	NA	NA				
OK	Voluntary	15%	2015	ID	NA	NA	NA				

State	RPS Policy	RPS Goal	Goal Date	State	RPS Policy	RPS Goal	Goal Date	State	RPS Policy	RPS Goal	Goal Date
SD	Voluntary	10%	2015	KY	NA	NA	NA				
TN	Voluntary	NA	NA	MS	NA	NA	NA				
UT	Voluntary	20%	2025	SC	NA	NA	NA				
VA	Voluntary	15%	2025	WY	NA	NA	NA				
WV	Voluntary	NA	NA								

The REC Market

RECs, also known as "Green Tags" or "Green Certificates," certify that a renewable power generator has produced a certain amount of power according to set requirements and standards. When the generators produce power at a specified amount, a state issues them the right to sell a REC. A REC sold with the electricity it represents is a "bundled sale"; one sold separately to a different buyer is an "unbundled sale."

RECs have varying attributes depending upon the underlying renewable energy source. As an example, the *Master Renewable Energy Certificate Purchase and Sale Agreement,* which has its basis in state laws of California and New York, defines three REC products:[18]

- A *standard* REC includes all environmental attributes arising from the generation of electricity associated with the REC, whether or not the environmental attributes have been verified or certified and whether or not creditable under any existing applicable program;
- A *basic* REC consists solely of a certification of the generation of electricity by a renewable energy source, without any additional environmental attributes;
- A *specified* REC includes specified environmental attributes in addition to the generation of electricity by a renewable resource.

Parties may tailor the Master Agreement to the laws of any state and to the delivery requirements of Regional Transmission Organizations.

Renewable energy generators have several ways to sell RECs.[19] They can advertise their credits on a tracking system bulletin board, use an aggregator or broker to either purchase the RECs directly or to assist the generator in finding a buyer, or use an auction or exchange platform to sell RECs.

Currently, 10 regional REC tracking systems operate across the United State and Canada.[20] (See **Figure 4**.) This includes the North American Renewables Registry (NARR), which provides a

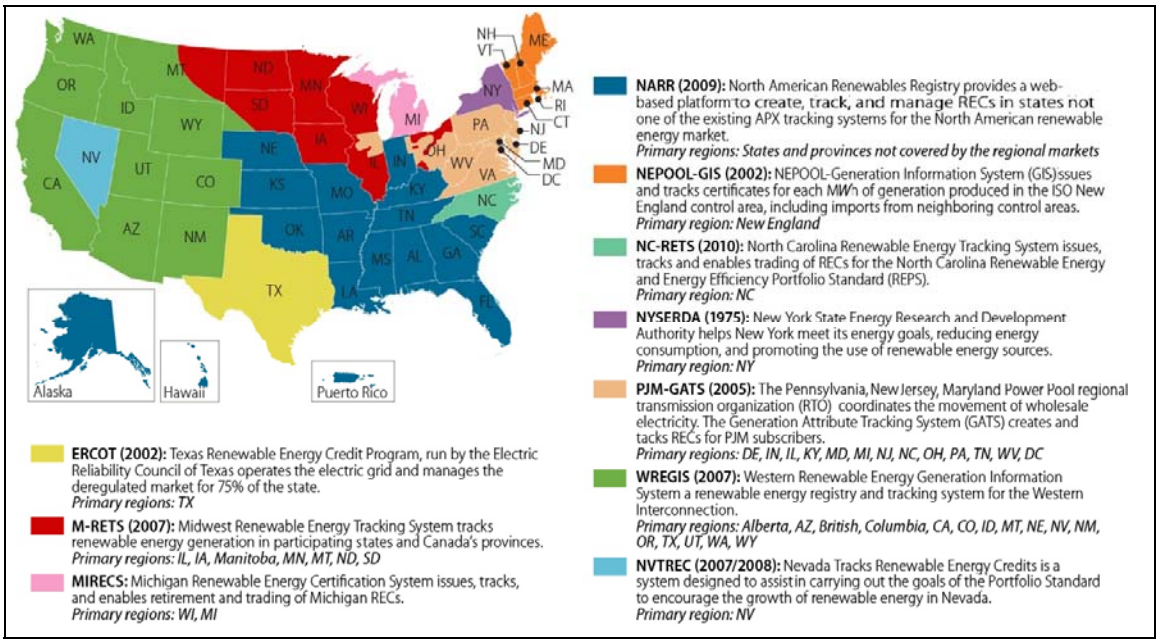
[18] Assembled by a working group comprised of the American Council on Renewable Energy, the Environmental Markets Association and the American Bar Association's Section on Environment, Energy and Resources, http://apps.americanbar.org/environ/committees/renewableenergy/RECMasterContract.pdf.

[19] PJM, http://www.pjm-eis.com/getting-started/how-do-I-sell-recs.aspx?p=1.

[20] Department of Energy—Energy Efficiency & Renewable Energy, *Green Power Markets*, Renewable Energy Certificates (RECs) National REC Tracking System, http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=3.

web-based platform to create, track, and manage RECs in states not covered by one of the existing APX tracking systems for the North American renewable energy market.[21] APX initiated REC trading when it created a California market in 1999. REC tracking systems provide a basis for creating, managing, and retiring RECs, to ensure that each REC counts only once. Tracking systems also provide load-serving entities (LSEs) the means of demonstrating compliance with state renewable energy and related environmental policies, including renewable portfolio standards (RPS).[22]

Figure 4. Renewable Energy Tracking Systems



Source: Adopted by CRS from the Environmental Tracking System of North America, *The Intersection Between Carbon, RECs, and Tracking: Accounting and Tracking the Carbon Attributes of Renewable Energy*, February 2010, http://www.etnna.org/publications.html. DOE Energy Efficiency & Renewable Energy, Green Power Markets, http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=3.

Notes: The North American certificate tracking systems for electricity are regionally based and created primarily to provide a mechanism to monitor compliance with state RPS programs.

REC Prices

REC prices depend on a number of factors, including generation technology, generation year (vintage), purchased volume, generation region, and whether the RECs meet compliance obligations or serve voluntary retail consumers.[23] REC prices in both the voluntary and compliance markets can be difficult to determine without the assistance of a broker. Only a few

[21] APX, Inc. provides a software transaction platform for creating and managing RECs. http://www.apx.com/

[22] Load serving entities (LSEs) provide electric service to end-users and wholesale customers. LSEs include the competitive retailers (CRs) that sell electricity at retail in the competitive market. ERCOT, http://www.ercot.com/services/rq/lse/.

[23] U.S. DOE Office of Energy Efficiency & Renewable Energy, *Renewable Energy Certificates (RECs), REC Prices*, http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5.

sources publically disclose REC prices: PJM-GATS, the state of New Jersey, and brokers at SRECTrade[24] and Flett Exchange.[25] Maryland, Pennsylvania, and the District of Columbia are the only jurisdictions that require public disclosure of REC prices. The Intercontinental Exchange (ICE), formerly the Chicago Climate Futures Exchange, reports prices for the REC futures its clears for Connecticut, Massachusetts, and New Jersey.[26]

Generally, REC sales in mandatory RPS markets command higher prices than RECs in voluntary markets, and higher tier (newer vintage) RECs command higher prices than lower tier (older vintage) RECs (see **Table 2**). In voluntary REC markets (nine states), wind prices in October 2011 ranged from $1 to $2.75. In compliance REC markets, wind prices ranged from a few cents to over $40. Solar Renewable Energy Credits (SRECS) have sold as low as $15 in Ohio and as high as $320 in Massachusetts.

Table 2. Renewable Energy Certificate Markets (July 12, 2012)

$/MWh

	RPS Policy	Low Price	Mid Price	High Price
Class I/Tier 1 RECs				
Connecticut	Mandatory	45.00	46.50	48.00
Maryland	Mandatory	3.20	3.25	3.30
Massachusetts	Mandatory	58.00	59.00	60.00
New Jersey	Mandatory	3.20	3.25	3.30
Ohio In-State	Mandatory	2.00	2.50	3.00
Pennsylvania	Mandatory	3.15	3.20	3.25
Texas	Mandatory	2.50	2.55	2.60
Solar RECs				
Maryland	Mandatory	200.00	205.00	210.00
Massachusetts	Mandatory	305.00	312.50	320.00
New Jersey	Mandatory	135.00	140.00	145.00
Ohio In-State	Mandatory	150.00	162.50	175.00
Pennsylvania	Mandatory	20.00	22.50	25.00

[24] SRECTrade currently operates monthly auctions for Solar Renewable Energy Certificates (SRECs) in the District of Columbia, Delaware, Massachusetts, Maryland, North Carolina, New Jersey, Ohio, and Pennsylvania. In SREC states, the Renewable Portfolio Standard (RPS) requires electricity suppliers to secure a portion of their electricity from solar generators. The SREC program provides a means for Solar Renewable Energy Certificates (SRECs) to be created for every megawatt-hour of solar electricity created.

- 1 SREC = 1,000 kWh of solar electricity = 1 MWh of solar electricity
- 10 kW solar capacity = ~12 SRECs per year

The SREC sells separately from the electricity it represents (unbundled). The value of an SREC is determined by the market subject to supply and demand constraints. SRECs can be sold to electricity suppliers needing to meet their solar RPS requirement. The market is typically capped by a fine or solar alternative compliance payment (SACP) paid by any electricity suppliers for every SREC they fall short of the requirement. The sale of SRECs is intended to promote the growth of distributed solar by shortening the time it takes to earn a return on the investment. http://www.srectrade.com/

[25] See Flett Exchange, http://www.flettexchange.com/.

[26] ICE Report Center, Category—End of Day Report, Market—ICE OTE, Report—ICE OTC Physical Environmental Settlements, https://www.theice.com/marketdata/reports/ReportCenter.shtml#report/129.

	RPS Policy	Low Price	Mid Price	High Price
California RPS				
California Bundled REC (Bucket 1)	Mandatory	35.00	37.50	40.00
California Bundled REC (Bucket 2)	Mandatory	6.00	9.00	12.00
California Tradable REC (Bucket 3)	Mandatory	0.75	1.12	1.50
National RECs				
National, any technology	Voluntary	0.65	0.70	0.75
National, wind	Voluntary	0.75	0.82	0.90

Source: Platts, Megawatt Daily, July 13, 2012.

Notes: Prices are for the value of the environment attribute of the renewable energy certificate only and do not include energy. Bundled transactions are normalized by subtracting the market price of electricity. Prices are for a given day, in this case July 12, 2012.

DOD Electricity Demand vs. State RPS

Twenty-nine states have not restructured their electric power industries (i.e., do not offer customer choice of unbundled utility service). See **Figure 5** and **Table 3**. Of those states, 19 have adopted RPS goals.[27] Estimated DOD demand in those 19 states represents 1,001 thousand MWh or almost 56% of DOD's renewable energy goal of 1,857 thousand MWh (7.5% of 24,765 thousand MWh). From DOD's perspective, the opportunity to buy RECs independent of utility service may be limited if it exists at all. However, at least in the 19 states that have adopted RPS goals, DOD will be consuming the renewable-generated power (as part of the electricity it obtains) under their utility-service contracts.

The 16 states that have restructured, adopted an RPS, and have introduced a REC market would appear to offer DOD the best opportunity to purchase RECs unbundled from utility service. (Considering that, federal facilities must consume renewable energy in order to meet Section 203 of EPAct goals raises the question should facilities also have to consume the electricity directly associated with RECs.) However, the 16 restructured states represent only 28% of DOD's estimated power demand, which may limit DOD's opportunity to meet overall RPS goals by buying RECs in these markets exclusively. Other factors such as transmission grid interconnection may place further limitations on DOD's opportunity to buy more RECs in these markets to make up for fewer opportunities in other states. These states have RPS goal-dates that are at least a decade or more out, which introduces some uncertainty about their RECs' future availability. However, DOD utility bills in these states will begin to reflect increasing proportions of renewable-generated power as its utility service providers must comply with the state RPS goals. This raises the question as to whether DOD would be competing for the same RECs that utilities must buy to meet state RPS goals. A REC is a co-product of renewable energy generation sold in the blended electricity product that everyone receives in an RPS state.

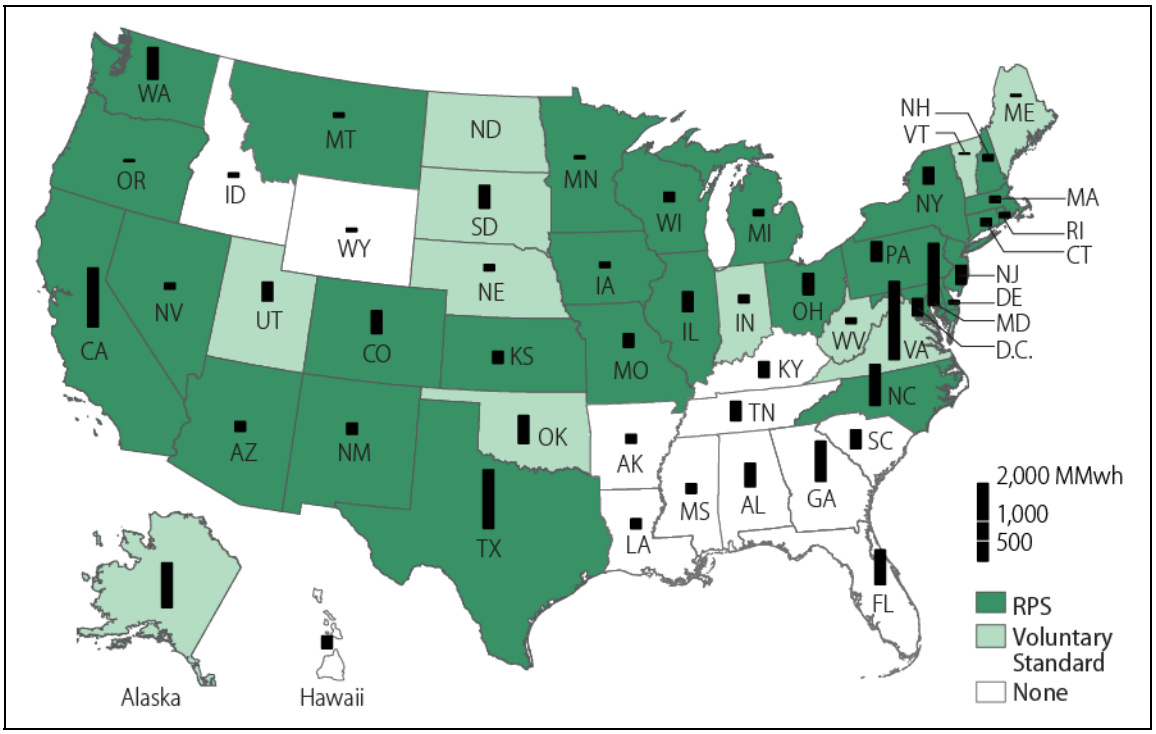
Although six states (Arizona, Arkansas, California, New Mexico, Montana, and Virginia) have suspended restructuring (i.e., power and service remain bundled), all but Arizona have adopted an RPS. DOD's estimated demand in these states amounts to 333 thousand MWh, or barely 18% of the renewable energy goal. Virginia and California represent states where DOD power demand is

[27] AK, CO, HI, IN, IA, KS, LA, MN, MO, NE, NV, NC, ND, OK, SD, UT, VT, WA, WI.

highest. However, utility service in these states will include a certain amount of renewable-generated power to satisfy state renewable portfolio standards. The opportunity to buy RECs from markets outside these states along with the associated power will depend on open access to wholesale transmission.

Figure 5. DOD Power Demand vs. State RPS

Thousand Megawatt-hours



Source: Created by CRS based on data from EIA and DOD.

Notes: DOD power demand estimated on the basis that 45% of the energy DOD facilities consumed in FY2010 came from electricity as reported in the FY2010 DOD Annual Energy Management Report (reported in Btu and converted to MWh). See **Table 3**.

The NDAA goal of purchasing of RECs is (arguably) to promote the development of new renewable energy projects and increase the availability of renewable-generated electricity, given the volume of purchasing that DOD presumably brings to the market. However, compared to the state's projected RPS sales (1,702,079 thousand MWh summed from **Table 3**), DOD's 7.5% renewable energy goal (1,890 thousand MWh) represents roughly 0.11% of the projected RPS goal. Selling RECs separately from the electricity produced by renewable energy projects can help some projects become more viable, and attractive to investors. Purchasing RECs is generally a compliance strategy for meeting RPS or similar goals, and by itself does little to promote new renewable energy projects.

Table 3. State RPS Goals, Retail Power Sales, and Projected RPS Sales vs. DOD Demand Estimate (2010)

Million MegaWatt-hours (MMWh)

Mandatory RPS						Voluntary RPS						No RPS					
State	RPS Goal	RPS Date	Retail Sales MMWH	Projected RPS Sales MMWh	7.5% DOD Estimated Demand MMWh	State	RPS Goal	RPS Date	Retail Sales MMWH	Projected RPS Sales MMWh	7.5% DOD Estimated Demand MMWh	State	RPS Goal	RPS Date	Retail Sales MMWh	Projected RPS Sales MMWH	7.5% DOD Estimated Demand MMWh
CT	23%	2020	30,392	6,990	14	ME	40%	2017	11,532	4,613	34	AL	NA	NA	90,863	0	46
DE	25%	2025	11,606	2,906	5	AK	50%	2025	6,247	3,124	88	AR	NA	NA	48,194	0	16
DC	20%	2020	11,877	2,375	33	IN	10%	2025	105,994	10,599	14	AZ	15%	2025	72,831	10,925	18
IL	25%	2025	144,761	36,190	38	NE	10%	2020	29,850	2,985	10	CA	33%	2020	258,525	85,313	117
MD	20%	2022	65,336	13,067	123	ND	10%	2010	12,956	1,296	99	CO	30%	2020	52,918	15,875	45
MA	15%	2020	57,123	8,569	12	OK	15%	2015	57,846	8,677	54	FL	NA	NA	231,210	0	68
MI	1,100mW	2015	103,649	*3,180	10	SD	10%	2015	11,356	1,136	44	GA	NA	NA	140,672	0	79
NH	23.80%	2025	10,890	2,592	11	UT	20%	2025	28,044	5,609	37	HI	40%	2030	10,017	4,007	24
NJ	22.50%	2020	79,179	17,815	37	VT	20%	2017	5,595	1,119	1	ID	NA	NA	22,798	0	7
NY	30%	2015	144,624	43,387	32	WV	NA	NA	32,032	0	9	IA	105mW	2010	45,445	*304	9
OH	12.50%	2025	154,145	19,268	41	VA	15%	2025	113,806	17,071	155	KS	20%	2020	40,421	8,084	23
OR	25%	2025	46,026	11,507	2	**Total**			**415,258**	**56,229**	**545**	KY	NA	NA	93,569	0	30
PA	18%	2020	148,964	26,814	38							LA	350mW	2013	85,080	*1,012	19
RI	16%	2020	7,799	1,247,876	9							MN	25%	2025	67,800	16,950	4
TX	5880mW	2025	358,458	*16,998	116							MO	15%	2021	86,085	12,913	25
Total			**1,374,829**	**1,439,356**	**521**							MS	NA	NA	49,687	0	17
												MT	15%	2015	13,423	2,014	7
												NM	20%	2020	22,428	4,486	21
												NV	25%	2025	33,773	8,443	12
												NC	12.50%	2021	136,415	17,052	80
												SC	NA	NA	82,479	0	36
												TN	NA	NA	103,522	0	37
												WA	15%	2020	90,380	13,557	62
												WI	10%	2015	68,752	6,875	17
												WY	NA	NA	17,114	0	5
												Total			**1,964,401**	**206,494**	**824**

Source: FERC, "Renewable Power & Energy Efficiency Market: Renewable Portfolio Standards," http://www.ferc.gov/market-oversight/othr-mkts/renew/othr-rnw-rps.pdf. EIA State Electricity Profiles January 30, 2012, http://www.eia.gov/electricity/state/index.cfm. **Notes:** Estimated RPS Sales calculated from RPS Goal x Retail Sales, and in the case of Goals stated as capacity RPS Mw x 365 days x 24 hours x 33% availability. DOD power demand estimated on the basis that 45% of the energy DOD facilities consumed is reported in Btu and converted to KW.

DLA Energy Purchasing

DOD's executive agent for purchasing bulk energy commodities (fuel, natural gas, and electricity) is DLA-Energy (DLA-E), which also acts on behalf of some federal agencies (see **Figure B-1** for a breakdown). It also offers assistance in purchasing renewable energy through its Renewable Energy Initiatives team.[28]

DLA-E aggregates all of its clients' fuel or energy requirements in order to buy energy in bulk (at wholesale prices). (See **Appendix B**.) It then "resells" the energy commodities to its clients with a surcharge to cover its operational costs. DLA-E does not receive annual appropriations; instead, it operates a working capital fund that clients "repay" when they purchase their commodities. DOD clients budget their fuel or energy requirements in their operation-and-maintenance (O&M) accounts as part of the annually appropriated National Defense Authorization Act.

DLA-E derives its general procurement authority from 10 U.S.C. Section 2304 (Contract: Competition Requirement), since this gives DOD the authority to buy almost any kind of supply or service. In addition, DLA-E also works through brokers to assist installations and facilities in purchasing RECs. A working capital fund provides a means of financing inventories of stores, supplies, materials, and equipment as well as industrial/commercial-type activities commonly provided through DOD departments or agencies through accounts established by the Treasury Department. (See **Appendix C**.)

Current DLA-E REC Purchasing

In FY2010, DLA-E purchased 440.5 thousand MWh of RECs (the equivalent of 1,503 billion Btu). This met roughly one-fourth of DOD's renewable 7.5% energy goal. DLA-E purchased two-thirds on behalf of the Air Force, and the remaining one-third on behalf of the Army. The Navy generally relies on RECs to meet its renewable energy goals, but does purchase renewable energy when the cost is competitive with local sources of conventional power. The Air Force is the largest DOD user of renewable electric energy, meeting its goals primarily through the purchase of renewable energy and RECs.

Renewable energy generators rely on brokers to sell and trade the associated RECs, and federal facilities interested in acquiring RECs must go through the same brokers. Renewable energy generators can also convey RECs through a power purchase agreement (PPA) if the renewable energy generator contracts with a utility to supply power. However, DOD opportunities to contract RECS through a PPA may be limited, given certain contractual limitations.[29]

In meeting past goals for using renewable-generated electricity, federal agencies were able to purchase RECs without purchasing the associated power. Merchant renewable energy generators in some jurisdictions can usually sell RECs in one megawatt-hour blocks, and may be able to sell them separately from the physical electricity with which they are associated. This previously allowed some federal customers to satisfy EPAct energy-intensity reduction goals with RECs generated elsewhere (but without the associated power transmitted through the grid to them). In

[28] http://www.desc.dla.mil/

[29] See CRS Report R41960, *Federal Agency Authority to Contract for Electric Power and Renewable Energy Supply*, by (name redacted).

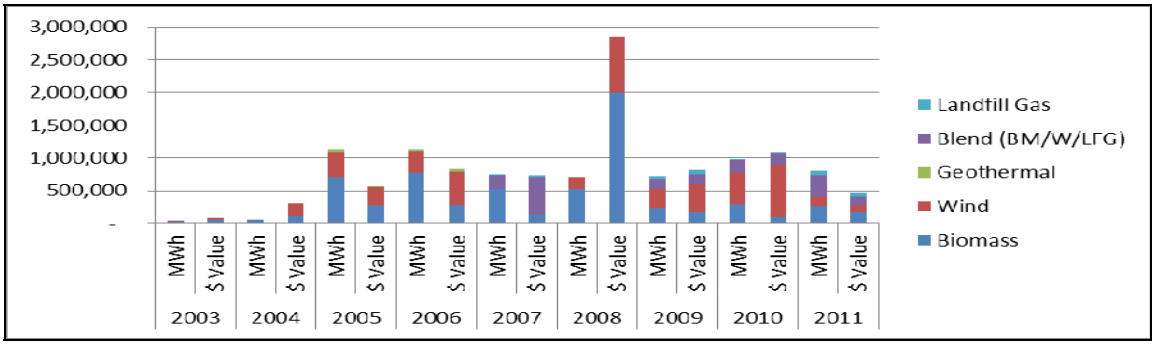
2008, GAO reported that federal agencies continued to rely on RECs rather than site-generated renewable energy to meet EPAct goals.[30] Given the need for firm uninterruptable power, the argument for buying RECs is that agencies are better served than taking physical delivery of intermittent and variable renewable power. However, the RECs purchased added additionally to energy costs, and no real delivery of kilowatts followed.

DLA-Energy offers assistance in purchasing renewable energy through its Renewable Energy Initiatives team.[31] Since 2003, DLA-E has purchased RECs for multiple sources of renewable energy (see **Figure 6**), with wind and biomass the most prevalent as of late.

At present, DLA-E can only respond to individual client requests to buy RECs. Accurate agency reporting on state-by-state electricity consumption might better aid DLA-E in developing a strategy for identifying the regional markets with the best opportunities for buying RECs to meet goals. Individual states have taken a balkanized and uncoordinated approach in adopting renewable portfolio standards. This has created a REC market with many brokers and prices that are neither transparent nor aligned.

Figure 6. Summary of DLA-E REC Purchases

2003-2011



Source: DLA-Energy.

Notes: For FY2011, EPAct 2005 required that not less than 5% of total electricity consumed by the federal government came from renewable energy. For FY2012, the requirement rises to 7.5%.

Policy Discussion

Federal energy-efficiency policy is a legacy of an era of energy price shocks, increasing reliance on imported petroleum, and increasing demand for electric power. By compelling federal agencies to become more energy efficient, policy makers saw a means of making additional generating capacity available to utility ratepayers. As long as the cost of making building energy-efficiency improvements did not exceed an agency's past spending on energy, the improvements were justified. The improvements do not necessarily reduce overall agency spending, as the energy savings must pay for the improvements. Nor did they necessarily reduce the taxpayer

[30] U.S. Government Accountability Office, *Federal Energy Management-Addressing Challenges Through Better Plans and Clarifying the Greenhouse Gas Emission Measure Will Help Meet Long-Term Goals for Buildings*, GAO-08-977, September 2008, http://www.gao.gov/new.items/d08977.pdf.

[31] http://www.desc.dla.mil/

burden. The Energy Independence and Security Act of 2007 (EISA, P.L. 110-140) mandated a 30% energy reduction goal for federal buildings that potentially represented $1.1 billion in savings if the reduction came from reduced electricity use, assuming rates stayed constant.

CRS estimated DOD electricity demand by state to compare the demand to state REC markets, the rationale being that states with robust REC markets and comparatively high DOD electricity demand should presumably represent the best opportunities for capitalizing on bulk REC purchases. However, this raises the question whether purchasing retail electricity in these states would already meet the NDAA-goal, as states with RPS programs mandate their utilities to include increasing amounts of renewable-generated power.

As the result of the 2007 U.S. Supreme Court decision that the Clean Air Act requires the federal government to impose limits on emissions once it has determined that they are causing harm,[32] the Environmental Protection Agency (EPA) began rulemaking on limiting CO_2 emissions. (A federal appeals court recently upheld a finding by the EPA that heat-trapping gases from industry and vehicles endanger public health, defeating states that had sued to block agency rules.)[33] Congress debated whether to limit carbon dioxide emissions in 2009 and 2010 in the American Clean Energy and Security Act (H.R. 2454), but the lack of consensus in the Senate effectively ended the debate. Also in 2009, the newly elected Obama Administration issued Executive Order 13514*, Federal Leadership in Environmental, Energy, and Economic Performance*, that directed federal agencies to establish an integrated strategy towards sustainability and making reductions in greenhouse gas (GHG) emissions a priority. As a consequence of these new regulatory and policy initiatives, the focus on reducing building energy-intensity shifted to reducing GHG emissions (primarily CO_2) associated with the fossil energy consumed in supplying their electricity, ideally through increased substitution of renewable energy resources. These may come at an additional cost, however, when pursued through purchasing RECs, as the NDAA provision proposes. Critics of the Obama policy may make the argument that it attempts to promote federal subsidization of a renewable energy industry in the absence of a federal renewable energy portfolio standard, as numerous states have already adopted. The true cost of realizing the policy objective is difficult to estimate, at best.

RECs provide a compliance strategy for meeting GHG emissions,[34] but do not necessarily advance renewable energy development or deployment. If the NDAA goal is to develop and deploy more renewable energy projects, then NDAA should place emphasis on encouraging such projects.

In the absence of statutory language authorizing agencies to purchase RECs for meeting EPAct goals, FEMP had interpreted the Section 203 goal to mean that federal agencies must consume renewable energy to count it toward meeting energy efficiency goals. This raises the policy question should facilities consume the power associated with RECs they buy in order to count them toward meeting the NDAA provision. In that regard, DOD has stated that

[32] U.S. Supreme Court, *Commonwealth of Massachusetts et al. v. Environmental Protection Agency*, November 29, 2007. See CRS Report R41103, *Federal Agency Actions Following the Supreme Court's Climate Change Decision in Massachusetts v. EPA: A Chronology*, by (name redacted).

[33] U.S. Court of Appeals for the District of Columbia, Coalition for Responsible Regulation, Inc., et al., Petitioners v. Environmental Protection Agency, Respondent State of Michigan, et al., Interveners; June 26, 2012.

[34] Assuming the renewable energy is low-carbon or carbon-neutral. The lifecycle GHG emissions from some renewable sources (mainly biomass energy) have been questioned.

> RECs are useful to DoD in that they can improve economic returns for investors that may construct renewable energy projects on DoD land. This makes projects feasible that would otherwise not be attractive to investors. However, RECs are not energy, and if DoD purchases them, they are an expenditure that does not contribute to energy security posture. DoD sees minimal benefit in purchasing RECs beyond assisting with compliance with renewable energy mandates, and in general would prefer to allocate funds directly on energy or projects that produce it.[35]

If the NDAA provision intends to stimulate new renewable energy projects, alternative means already exist. Secretary of Defense Leon Panetta and Secretary of the Interior Ken Salazar have signed a Memorandum of Understanding (MOU) that encourages appropriate development of renewable energy projects on public lands withdrawn (set aside) for defense-related purposes, and other onshore and offshore areas near military installations.[36] DOD has already made underutilized land available for several large-scale photovoltaic projects through which DOD benefits from payments that offset its installation electricity costs. (See CRS Report R41960, *Federal Agency Authority to Contract for Electric Power and Renewable Energy Supply*, by (name redacted)).

[35] *Department of Defense Annual Energy Management Report Fiscal Year 2010*, p. 27.

[36] Memorandum of Understanding between the Department of Defense and the Department of the Interior on Renewable Energy and a Renewable Energy Partnership Plan, July 20, 2012.

Appendix A. Deregulation and Restructuring of the Electric Power Market

Industry restructuring and deregulation are sometimes discussed synonymously, but are slightly different. Restructuring is a result of states trying to introduce competition and customer choice, while deregulation breaks up a vertical monopoly on electricity long held by utility companies, separating the electricity functions into competitive generation, from still-regulated transmission and distribution functions.

Prior to 1935, holding companies controlled the bulk of the nation's electric and gas distribution networks. The Public Utility Holding Company Act (PUHCA) of 1935 dismantled much of the existing holding-company structure that exploited the operating utility companies and gave the Securities and Exchange Commission (SEC) power to promote physical integration of electric utilities in the interest of improving engineering efficiency. Local utilities held customers captive and charged rates regulated by state public utility commissions (PUCs). In essence, the PUCs required electric companies to serve a given area at a given price, but simultaneously guaranteed that these companies would receive stable and, in many cases, very generous profits, and freedom from the threat of rivals' competitive entry. Electric utilities that owned their own bulk power transmission lines could restrict their competitors' ability to move power (and thus offer utility customers competitively priced power) by restricting access to their transmission lines. Military installations relied on either self-generated power or, where local utility service was available, on utility service agreements to purchase electric power. While PUHCA had created an electric power industry structure that essentially lasted until the mid-1990s, high energy prices during the 1970s led policy makers to look at dismantling it to promote competitive pricing, among other goals.

Congress began deregulating the industry with the Public Utility Regulatory Policies Act of 1978 (PURPA), followed by the Energy Policy Act of 1992 (EPAct) that allowed new entities to acquire generation facilities and provide electrical energy for sale to electric utilities. In 1996, the Federal Energy Regulatory Commission (FERC) issued Order 888 to encourage wholesale competition. Prior to Order 888, electric utilities that owned bulk-power transmission lines could restrict their competitors' ability to move power by restricting access to their transmission lines. The FERC order required utilities to allow other electric suppliers access to their transmission lines as an incentive for more competitiveness in the power market.[37]

PURPA defined a new class of qualifying generating facilities (QFs) that would receive special rate and regulatory treatment under FERC. Under the PURPA definition, QFs include "small power" production facilities that generate less than 80 megawatts using solar, wind, geothermal, biomass, or waste; that is, renewable energy generators. PURPA also required utilities to buy power from QFs within their service territory (with some exceptions) at the utility's "avoided cost" of power production via a state authorized "power purchase" contract (more commonly referred to as a power purchase agreement).

[37] 16 U.S.C. §824i (Interconnection) approved interconnections of electric energy producers (utilities, cogenerator, or small power producers) to any electric utility transmission facilities to sell or exchange electricity. 16 U.S.C. §824j (Wheeling Authority) approved any electric utility to provide transmission services to any electric energy producer (or any other electric energy generating entity) requiring a transmitting utility for sale for resale.

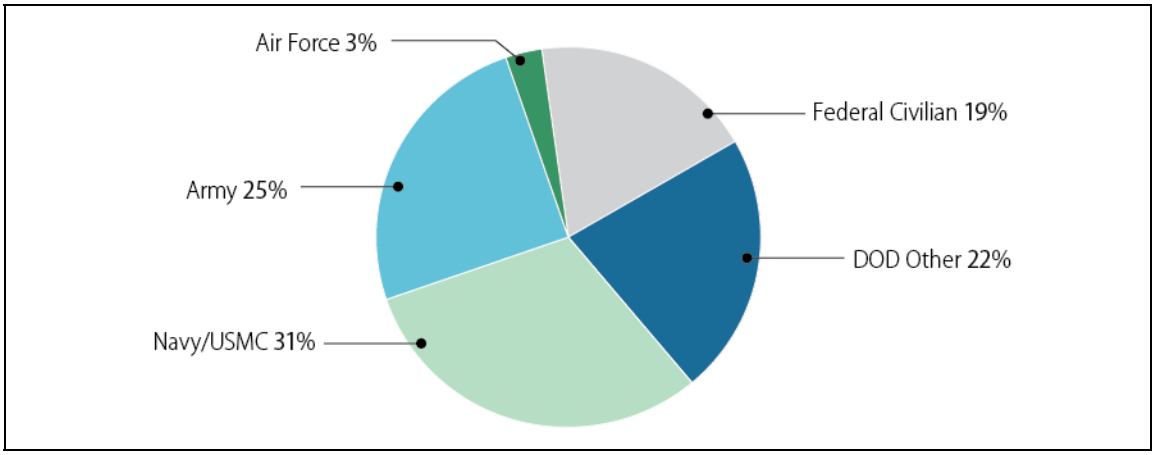
The FERC order also opened the opportunity to contract power separately from distribution, and various states moved to open power markets to retail customers. Ideally, the state power market restructuring that followed promised retail consumers the opportunity to contract with the lowest cost supplier of electric power independent of local utility service (unbundled service).

Appendix B. DLA-E Electricity Contract Awards

While most of DLA-E contract awards are for fuel, an increasing number are for electricity. DLA-E's contract portfolio exceeds 17.1 MWh of electricity valued at $1.2 billion.[38] (CRS estimated that DOD consumes some 24.8 million MWh.) DLA-E does not buy all of DOD's electricity, as some installations buy directly from their local utilities in regulated markets. DLA-E's largest customer is the Navy followed by the Army (**Figure B-1**). In 2011, it awarded over $416 million in new electricity contracts (**Figure B-2**).

Figure B-1. DLA Electricity Customer Segmentation

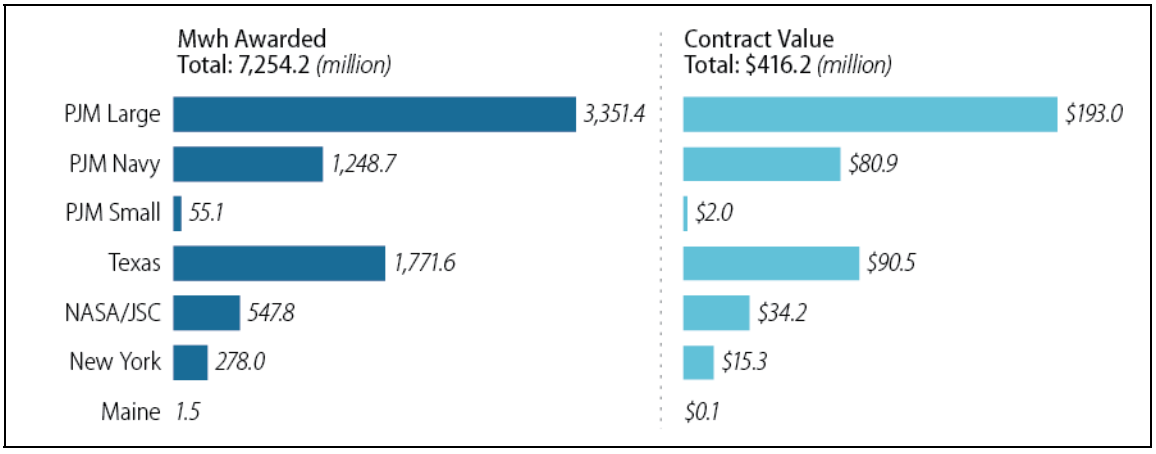
% $ under contract



Source: DLA Energy, FY2011 Fact Book.

Figure B-2. DLA Electricity Contract Awards

FY2011

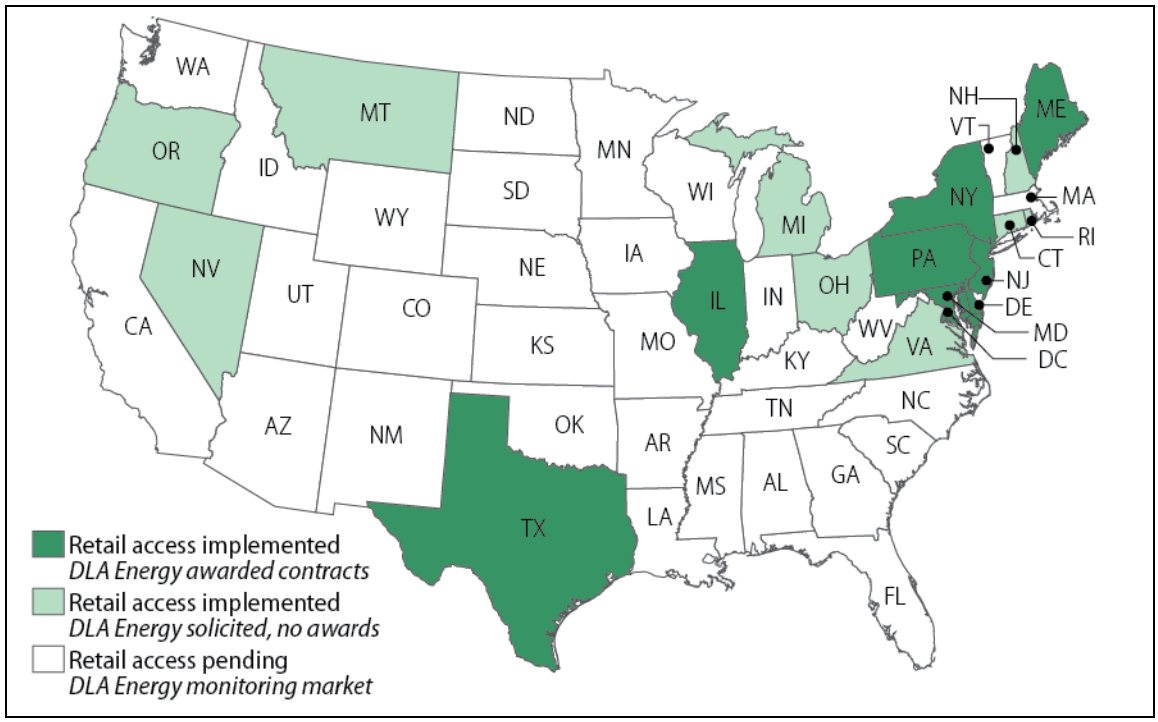


Source: DLA Energy, FY2011 Fact Book.

[38] Gwendolyn J. Crimiel, Legislative Affairs, HQ Defense Logistics Agency, #redacted#.

DLA Energy has awarded multi-year energy contracts in states which have been deregulated or restructured and has received requirements from customers. These states are Delaware, the District of Columbia, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Texas (**Figure B-3**).

Figure B-3. Installation Energy Contract Awards



Source: DLA Energy, FY2011 Fact Book.

Notes: DLA Energy has experience in all states in which deregulation/restructuring has occurred and in which requirements have been received: Delaware, the District of Columbia, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Texas. DLA Energy has not reported on any activity in Alaska or Hawaii regarding installation energy contract awards.

Appendix C. Laws Affecting DLA-E Procurement

Intra-governmental revolving funds (which include working-capital funds) are accounts that record collections earmarked by law for a specific purpose and associated budget authority, obligations, and outlays for business-like activity conducted primarily within the government.[39] Collections are credited to the expenditure account, and funds are included in the budget.

A federal agency can perform reimbursable work for another federal agency under authorization that allows the use of advances or reimbursements in return for providing others with goods and services.[40] Authority exists in various laws that establish revolving funds, including franchise funds and working capital funds; provisions in appropriations that allow agencies to use the amounts they collect; and the Economy Act (31 U.S.C. §1535, Agency Agreements).

When authorized by law, an agency may credit payments to a revolving fund established to order goods or services. Revolving funds operate on a reimbursable basis when working capital (undisbursed cash) is available; otherwise, advance payments must accompany orders.

DLA Working Capital Funds

Previously, DOD and other federal agencies depended on annual appropriations to finance industrial or commercial-type activities. That required Congress to issue individual allotments and required federal agencies to account for them by reporting under the allotment line item (a time and paperwork intensive means of accounting).

Congress authorized the DOD to establish working capital funds to operate commercial and industrial-type activities by directly "costing" the activities' products under the 1949 Title IV (§405) amendments to the National Security Act of 1947 (NSA). The NSA amendment (Title 10 U.S.C. §2208(a), Working-Capital Funds) placed emphasis on increasing the activities' efficiency by directly billing the ordering agency for the cost of work performed or the cost of manufacturing of an item. While the amount of cash an agency keeps on hand ebbs and flows, working capital funds are not immune to budget cuts.

DOD currently operates six working capital funds (DOD refers to these as activities): three within the Defense Logistics Agency (DLA), two within the Defense Information Systems Agency (DISA), and one by Defense Finance and Accounting Service (DFAS). A separate Army Corps of Engineers fund provides expenses necessary to maintain and operate the plant and equipment used in civil works functions.

DLA (organized in the early 1960s) operates the Supply Chain Management (SCM), Energy Management, and Document Services funds.

- The SCM fund manages the DLA materiel from initial purchase to distribution and storage, and then finally reutilization or disposal.

[39] Office of Management and Budget, *Section 20, Terms and Concepts*, OMB Circular No. A-11 (2008), 2008, p. 38.

[40] Office of Management and Budget, *Section 20, Terms and Concepts*, Section 20, 2008, p. 41.

- The Energy Management fund provides worldwide energy support for the military services and other authorized customers (discussed further below).
- Document Services provides products and services produced either in-house or procured through the Government Printing Office.

DFAS, organized in 1991, provides pay and financial information for the military services. DISA, reorganized in 1991, provides command and control capabilities and related enterprise infrastructure for the military services and national leaders.

The Army Corps of Engineers uses a separate revolving fund for expenses necessary to maintain and operate the plant and equipment used in civil works functions (33 U.S.C. §701b-10, Revolving Fund; Establishment; Availability; Reimbursement; Transfer of Funds; Limitation). The revolving fund is available without fiscal year limitation. The Secretary of the Army originally established the fund by capitalizing inventories, plant, and equipment of the civil works functions of the Corps of Engineers that were on hand at the time.

Anti-Deficiency Act

The Antideficiency Act (31 U.S.C. §1341, Limitations on Expending and Obligating Funds) prohibits an officer or employee of the U.S. government from making or authorizing an expenditure exceeding an amount available by appropriation, or making an obligation before an appropriation is made (unless authorized by law). That is, an agency cannot disburse revolving funds into a negative cash position in anticipation of federal disbursements.

The Congressional Budget Act

The Congressional Budget Act of 1974, as amended (31 U.S.C. 1535) defined spending authority as authority provided in laws other than appropriation acts to obligate the U.S. government to make payments. More specifically, it includes contract authority, authority to borrow, authority to forgo the collection of proprietary offsetting receipts (the use of monetary credits or bartering), and authority to make any other payments for which the budget authority is not provided in advance by appropriation acts. The latter includes, but is not limited to, authority to make payments from offsetting collections from nonfederal sources credited to appropriation or fund accounts.

The Economy Act

The Economy Act of 1932 authorizes an agency to place an order with a major organization unit within the same agency or another federal agency for goods and service, provided that the ordering agency has enough money to pay for the order. Transactions authorized by the Economy Act are limited by the statutory requirement that the amount obligated by the ordering appropriation is required to be deobligated to the extent that the agency or unit filling the order has not incurred obligations before the end of the period of availability of the ordering appropriation. Under the Economy Act, payment (via expenditure transfer) may be made in advance or reimbursements may be made. Advances and reimbursements from other federal government appropriations are available for obligation when the ordering appropriation records a valid obligation to cover the order. The act states that the providing (servicing) agency shall

charge the ordering (requesting) agency "on the basis of the actual cost of goods or services provided" as agreed to by the agencies.

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