Hydropower in Green -Pricing Programs–Buyer Beware

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What's the Beef?

There are now 850 electric utilities – nearly a quarter of all the utilities – offering green-pricing programs in the United States. These programs allow the utilities' customers to voluntarily pay a premium rate for the green product – electricity generated from renewable-energy.

Some utilities identify the specific renewable-energy facilities that are included in their green-pricing program, but most do not, and instead only disclose the various renewable energy types – solar, wind, biomass, geothermal and hydro– comprising their green-power product.

This lack of information about the specific facilities – particularly hydropower dams – from which electricity is sourced for green-pricing programs concerns the Hydropower Reform Coalition (HRC), because hydropower projects are not intrinsically "green." While flowing water is a renewable-energy source, the cumulative, the cumulative impacts to local environment across the nation from converting water's kinetic energy to electricity is comparable to the impacts of fossil fuel power plants on a per megawatt basis.

Unless, the hydropower facility has received certification from the Low-Impact Hydropower Institute (LIHI), HRC does not consider electricity sourced from conventional hydropower projects to be appropriate to green-pricing programs.

As explained below, even after extensive research, HRC is only able to identify some of the hydropower facilities that are sourced in various green-pricing programs, and very few are LIHI certified.

Birthing Green-Pricing

The first green-pricing programs were implemented in the mid-1990s. Between 1993 and 1997, 13 utilities offered a green product at a premium rate. The impetus for green-pricing programs was the reluctance of most state legislatures and utility commissions to mandate programs – mainly Renewable Portfolio Standards and System-wide Benefits – that would require utility investment in renewable-energy systems. Voluntary green-pricing programs, therefore, appealed to politicians and regulators whose support for such a voluntary approach would highlight their support for renewable energy at the same time allow them to avoid political conflict; especially from those more concerned about rates than sustainable, low-impact energy, particularly the larger industrial and commercial ratepayers. Similarly, utilities supported green pricing because it fit their objectives of gaining green-power, marketing experience; enhancing corporate image; and fending off increasing regulatory and public pressure to do more about supporting renewable energy development.

Green-Pricing Bare Bones

The utility's customers agree to pay an extra "premium" for green-power. The "green-power" premium is justified due to the higher cost of generating "green" electricity. This premium is tacked on to the customer's regular monthly bill. In most green-pricing programs, the utility's customers' premium that is based on the number of 100 KWh blocks of green power they choose to purchase each month. Because the electricity is commingled in the transmission and distribution system, the utility cannot actually deliver the electricity from the renewable energy source to the customer's meter.

During the first generation of green-pricing programs, customers were paying a premium for the higher-cost electricity from renewable-energy facilities that utilities either owned or which were independently owned but for which the utility had contracts for the power.

As more utilities implemented green-pricing programs, direct ownership and/or direct power purchase contracts became the exception not the rule. Rather than obtain the actual electricity from a renewable energy facility, utilities contracted for the purchase of the so-called environmental attributes of the renewable energy via Renewable Energy Certificates (RECs).

The electricity is the tangible product produced from renewable energy, while the REC is primarily the intangible environmental benefits that purport to accompany the electricity. Ostensibly, the higher cost of electricity generated from renewable energy can be understood as the cost of providing the environmental attributes of clean electricity and this is the basis for the green-power program "premium." The electricity and its intangible benefits can be sold together as one product, or the electricity can be separated (unbundled) from its intangible benefits, which are then sold as separate products. One REC represents the environmental attributes of one-megawatt hour of renewable electricity, which are marketed and sold separate from actual megawatt hour of electricity. Thus, the actual energy can be sold to one utility, while the RECs can be sold to another utility. While the megawatt hour of energy is used immediately, the associated REC can be kept in suspended animation until sometime in the future when it is "re-united" with another megawatt hour of electricity that is used by the REC's current owner, at which point the REC is extinguished. A REC, then, can be conceptualized as a "deed" of intangible property (a commodity) whose ownership can change hands until the owner re-unites the intangible benefits of the REC with electricity, at which point the "deed" of intangible property is, thereby, extinguished.

RECs are available from REC marketers who purchase RECs from renewable generators and then resell them to utilities or end users (a few have their own generation as well). Some are active only at the wholesale level (that is, they sell only to utilities and to large end users), whereas others are largely retail vendors. Some marketers are nonprofits, some are utility subsidiaries, and some are for-profit companies. REC brokers facilitate market transactions. Brokers generally do not take ownership of the RECs at any point; rather, they act as matchmakers between sellers and buyers. Brokers list offers and bid prices for various types of RECs-differentiated by geographic location, generation type, and vintage.

Of course, the REC market depends upon the trust of buyers and sellers in the integrity of each REC. Most RECS are sold in the mandatory RPS market When RECs are used for state RPS compliance, the state utility commissions typically require certification of the renewable energy facilities from which RECs are sourced and each REC is assigned a serial numbers. Usually, the RECs sold in the

voluntary, green-pricing market, however, are not subject to state certification requirements and are not assigned serial numbers, albeit RECs that have been RPS certified can be sold in the voluntary market, subject to one-time use only, of course. Voluntary certification programs are available to the voluntary REC market. Green-e is the most widely used voluntary REC certification and verification program, with more than a 60% market share of all voluntary renewable energy sold through the end of 2006.

Hide the Hydropower Facility?

When a utility purchases energy directly from a renewable energy generator for its green-pricing program, the utility can readily identify the specific facility that is sourced for its green-pricing program. When a utility acquires RECs unbundled from the generator, the generator is identified in the REC. Most utilities, however, do not disclose the specific facilities from which the obtain energy and/or RECs. Even if the utility's customer were to request information about specific facilities from the utility, the utility may prohibited by its contract with the REC seller from providing said information. Further, if RECs are Green-e certified, the only information that Green-e publicly discloses are the types of renewable energy sources; stating that confidentiality agreements with REC marketers and brokers prevent it from disclosing the specific facilities it has certified. At most, some states require utilities disclose the generic type of energy resource and proportion of each resource that comprise the green-pricing program product.

UTILITY TRANSPARENCY

The Green Power Network, a project of the Department of Energy's National Renewable Energy Laboratory maintains a web listing of green-pricing programs and the types of energy resources that are sourced. Further research by HRC of those utilities listed by the Green Power Network as sourcing hydropower for green-pricing reveals:

- Twelve investor owned utilities, 52 municipal utilities, three G&Ts (serving 69 member coops and municipals), and one federal power authority (Bonneville Power Authority) do not currently source from hydropower.
- 12 investor-owned utilities, 150 municipal utilities, four public utility districts, 26 cooperatives, one Generation and Transmission Cooperative (serving 16 member coops) currently include hydropower in their green-pricing program (see Appendix I).
- Of those utilities currently sourcing hydropower, only three investor-owned utilities, one municipal, one public utility district and one cooperative identify the specific hydropower facilities.
- HRC contacted the ten utilities that actually purchase hydroelectric power for their green-pricing program for the names of the facilities: Four responded with information (two no longer purchase hydropower; two identified hydropower facilities).
- Interestingly some utilities identify the wind and solar projects but not the hydro facilities that comprise their green- power product.

MARKETER TRANSPARENCY

Because HRC was unable to contact every utility individually and because six of the ten utilities HRC did contact chose not to respond, HRC also attempted to obtain this information from REC marketers. There are 15 REC marketers currently selling Green-e RECs sourced from hydropower projects.

- None of the REC marketing companies' websites identified any specific hydropower projects from which RECs are sourced (see Appendix II).
- HRC contacted three of the largest REC marketers to request information about the specific hydropower projects: 1) Sterling Planet and Powerex would not provide the names of any hydropower facilities from which the RECs market are sourced, citing this information as proprietary and explaining the release of this information would be of benefit to their competitors. 2) Community Energy provided HRC with a list of hydropower facilities from which its RECs have historically been sourced.*
- Community Energy provided the names of 26 facilities, installed capacity and nearby town. After further research, HRC succeeded in identifying 1) the river in which the power plant is sited; 2) dimensions of the dam; 3) the mode of operation; and 4) FERC jurisdiction for all but three power plants (see Appendix III). HRC did not attempt to independently ascertain the historic and ongoing environmental impacts associated with these projects.

CERTIFICATION TRANSPARENCY

Green-e itself refused HRC's request to provide any information about the hydropower generators which Green-e has certified. As mentioned above, Green-e explained that confidentiality agreements with its clients – the REC marketers – prohibit Green-e from publicly disclosing the specific hydropower facilities. Yet, the Green-e website contains a web page entitled "Tracking Attestations Received:" a chart of the individual renewable energy facilities that Green-e has certified that are tracked by the various regional power pool and ISOs' (independent system operator) tracking systems. This list of facilities includes wind, solar, geothermal, and biomass projects, but no hydropower project listed.* Supposedly, all Green-e certified generators are tracked by the appropriate regional tracking system. For example, the NEPOOL public database of generators includes a Green-e certified hydropower project (Valley Hydro, NE-ISO asset #14623).

Pig-in-a-poke? Caveat Emptor!

Fundamentally, the lack of transparency in green-pricing programs about specific hydropower plants goes against the grain of informed consumer choice, which is the hallmark of these programs: green pricing is predicated on customers' interest in supporting development of green energy. Utilities and many of their customers believe renewable energy generators are intrinsically "green and clean," and, consequently, do not see the need to disclose the specific facilities sourced in the green-pricing program.

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* Community Energy markets Green-e RECs, but apparently its hydropower RECs are not Green-e certified.

* This listing of generators by Green-e does not square with its aforementioned contention that it cannot reveal generators that have been Green-e certified due to confidentiality agreements with its client REC marketers.

Yet, there is certainly disagreement about whether all hydropower is clean and green as can be discerned by a comparison of state hydropower eligibility in state Renewable Energy Portfolio Standards' (RPS). A few states do not place any eligibility restrictions on hydropower; however, most do by stipulating only hydropower plants of a certain installed capacity or less as eligible. Since most states do not regulate utility green-pricing programs, RPS criteria do not apply to green pricing in those states. Nonetheless, state RPS influences utility and customer perception of renewable energy and can have a bearing on the energy and/or RECs that are available to green-power programs.

While there is awareness that many hydropower projects have significant environmental impacts and should no be considered clean and green – lack of greenhouse-gas emissions notwithstanding – there is as yet no common standard among state RPS programs or utility green-pricing programs by which to certify a particular hydropower project. What is common is the presumption that size mattes when it comes to judging the green quotient of hydropower. Yet the size criterion is fundamentally illogical: if a hydropower plant greater than say 30 MW is not acceptable, then the impacts from seven 5 MW hydropower plants should not be acceptable. Clearly, size is not a valid proxy for impacts. Environmental impacts are site and project specific rather than size specific. Consequently, hydropower plants must be assessed on a case-by-case basis, which is why transparency in green-pricing programs is essential.

As indicated above, HRC, however, was not able to independently evaluate the specific hydropower. Serendipitously, while researching the hydropower facilities from which Community Energy has historically sourced its RECs, HRC learned that the operation of four projects impairs their respective water bodies. Given that HRC was unable to identify most of the hydropower plants currently sourced in green-pricing programs across the nation, HRC recommends:

- Customers should decline to participate in green-pricing programs that do not disclose the particular hydropower plants that are sourced.
- All states require utilities to disclose the individual hydropower project sourced for voluntary green-pricing programs.

The lack of transparency undermines the credibility of the utilities, the independent certifying agency, the REC brokers and REC marketers. Nonetheless, even if there were to be transparency, HRC does not agree that size is an acceptable criterion. HRC advocates instead that only LIHI-certified projects be eligible for green-pricing programs.

HYDRO IN GREEN-PRICING PROGRAMS
(as of July 2009)

STATE	UTILITY	UTILITY TYPE	PROGRAM NAME	PROGRAM WEB ADDRESS	PROGRAM CONTACT	ENERGY SOURCED	PREMIUM	HYDRO PROJECTS	NOTES
AR	Arkansas Valley Cooperative Corp. G&T; G&T provides green-pricing program to 16 distriibution cooperatives (view comment for list of cooperatives).	Cooperative (Generation and Transmission, G&T)	Green Power Program is housed and operated by G&T for all its member distribution cooperatives.	http://www.aecc.com/green_power.shtml	None identified (other than customer service) Each cooperative has separate contact (typically, customer service)	Energy purchase RECs	$5.00 monthly per 100 KWh "block"	Hydro projects not identified	Premium will be deposited into "Greenpowerfund," established in 2008. Fund to be used 1) to build green-power facilities that the cooperatives determine are feasible, including hydro; 2) to purchase green power from the electricity market, if it is affordable and available; 3) to further help the cooperatives educate members about ways to make their homes and businesses more energy efficient. *Requested information on specific projects,(voice mail Doug White, 7/09/09) no reply received .*
AZ	Salt River Project-Agricultural Improvement and Power District	Public utility district	EarthWise Energy	http://www.srpnet.com/environment/earthwise/home.aspx	Lori Singleton, Environmental Initiatives Manager lasingle@srpnet.com	Utility-owned generation	Contribution in $3.00 increments	Arizona Falls	Project is identified at website. Hydropower project is 750 KW facility located in the Arizona canal, owned and operated by SRP. Apparently FERC non-jurisdictional. Green-pricing premium is unclear. From the information presented on the website, It appears the premium is a monthly contribution that is not tied to either blocks of energy or customer usage.
CA	Burbank Water and Power	Municipal	Green Energy Champion	http://www.burbankwaterandpower.com	John Joyce 818-238-3653	Energy purchase	$.02 KWh	Hydro projects not identified	Renewable power purchased from existing sources; utility may also build own sources. According to published program information, hydroelectric power is from small projects"with no damage to the stream or wildlife." Currently the program does not source from hydro facilities, but will if source becomes available. (John Joyce, personal communication (phone), 7/08/09)
CA	Sacramento Muncipal Utility District	Municipal	Greenergy	http://smud.org/community-environment/greenhome.html	Mike Zannakis 916-452-3211 MZannak@smud.org	Utility-owned generation Energy purchase RECs	$6.00 monthly for 100% of KWH from renewables $3.00 monthly for 50% of KWh from	Hydro projects not identified	Majority of renewable energy is purchased
CT	Connecticut Light & Power	Investor owned	CT Clean Energy Options	http://www.cl-p.com/home/saveenergy/goinggreen/cleanenergyoptions.aspx	None identified	RECs	1) SterlingPlanet premium 100% at $0.0115/ KWh 50% at $0.00575/ KWh or 2) Community Energy premium 100% at $0.013 per kWh ot 50% at $0.0065 per kWh	Hydro projects not identified	Consumers choose between the two REC providers that participate in the Clean Energy Options program: a) SterlingPlanet (http://www.sterlingplanet.com) b) Community Energy (www.newwindenergy.com). SterlingPlanet and Community Energy RECs differ in the energy-sources comprise their RECs. Premiums differ depending upon which provider the consumer chooses.
CT	United Illuminating	Investor owned	CT Clean Energy Options	http://www.uinet.com/uinet/connect/UINet/Top+Navigator/Customer+Care/Electric+Suppliers+-+Aggregators+Licensed+by+the+DPUC+to+Provide+Electricity+to+Connecticut+Residential+Customers	None identified (other than customer service)	RECs	1) SterlingPlanet premium 100% at $0.0115/ KWh 50% at $0.00575/ KWh or 2) Community Energy premium 100% at $0.013 per kWh ot 50% at $0.0065 per kWh	Hydro projects not identified	Consumers choose between the two REC providers that participate in the Clean Energy Options program: a) SterlingPlanet (http://www.sterlingplanet.com) b) Community Energy (www.newwindenergy.com). SterlingPlanet and Community Energy RECs differ in the energy-sources comprise their RECs. Premiums differ depending upon which provider the consumer chooses.

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CO	Holy Cross Energy	Cooperative	Local Renewable Energy Pool	http://www.holycross.com/	None identified (other than customer service)	Energy purchase	$2.33/KWh	Hydro projects not identified	Website lists program, but does not provide any information to consumers about the program
IL	Naperville	Municipal	Renewable Energy Program	http://www.naperville.il.us/renewable.aspx	Michelle Hickey-Fouts MichelleHF@comcast.net 630-281-0184	Energy purchase	200 kWh/$5 monthly 400 kWh/$10 monthly 600 kWh/$15 monthly 800 kWh/$20 monthly 1000 kWh/$25 monthly	Hydro projects not identified	Program states hydroelectricity is from Illinois facilities
KY	Louisville Gas & Electric	Investor owned	Green Energy	Green Energy: http://www.eon-us.com/green	None identified (other than customer service)	RECs	$5/month per 300KWh "block"	Mother Ann Lee Hydroelectric Plant	Project identified at website. Project is 2 MW, run-of-river, LIHI-certified, owned and operated by Lock 7 partners. FERC license 1992 (#539). Green Energy Program is housed and operated by E.ON (http://www.eon-us.com/lge/about_lge.asp), which is the parent company of the utility (http://www.eon-us.com/lge/about_lge.asp) The premiums will be used to purchase Renewable Energy Certificates (RECs) that come from renewable energy sources in Kentucky and
KY	KU	Investor owned	Green Energy	http://www.eon-us.com/green	None identified (other than customer service)	RECs	$5.00/month per 300KWh "block"	Mother Ann Lee Hydroelectric Plant	Project identified at website. Project is 2 MW, run-of-river, LIHI-certified; located on the Kentuck River, Harrodsburg, Kentucky; owned and operated by Lock 7 partners. FERC license 1992 (#539). Green Energy Program is housed and operated by E.ON (http://www.eon-us.com/lge/about_lge.asp), which is the parent company of the utility (http://www.eon-us.com/about_ku.asp). The premiums will be used to purchase Renewable Energy Certificates (RECs) that come from renewable energy sources in Kentucky and
MA	Concord Municipal Light Plant	Municipal	Green Power	http://www.concordnet.org/pages/ConcordMA_LightPlant/index	Dale Cronan dcronan@concordma.gov	Energy purchase	$3.00/month per 300KWh "block"	Powder Mill dam	Project identified at website. Repowering old hydropower plant located on the Assabet River; the 160-kW run-of- the river facility under construction expected to be on line Fall 2009; owned and operated by Acton Hydro. FERC
MA	National Grid	Investor owned	GreenUp	www.NewWindEnergy.com www.greenstart.net www.sterlingplanet.com	Community Energy 1-866-WIND-123 Massachusetts Energy Consumers Alliance 1-800-287-3950 Sterling Planet 877-457-2306	RECs	$0.024 surcharge per kwh used each month	Hydro projects not identified	National Grid's Massachusett's Green-up is transacted through Community Energy, Massachusetts Energy Consumers Alliance, and Sterling Planett; customers choose from among the three providers. Hydro sourced by Massachusetts Energy consumers Alliance is all LIHI certified (see http://www.massenergy.com/Green.Label.html). Hydro sourced by Sterling Planet is either from hydro plants 30 megawatts or less, or facilities relicensed by FERC after 1986, or facilities certified by the Low Impact Hydropower Institute (see https://www.sterlingplanet.com/upload/File/MA_Label.pdf).

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MI	Lansing Board of Water and Light	Municipal	Green Wise	http://www.lbwl.com/gwp.asp	None identified (other than customer service)	Utility-owned generation Energy purchase	$7.50/month per 250 KWh "block"	Moore's Park Kleber	Projects not identified on web site. 0.6 MW facility on Grand River at Moore's Park owned operated by City of Lansing. FERC licensed 1994 (#10684) Kleber hydroelectric plant (FERC licensed), 1.76 MW on Black River near Cheboygan, Michigan, owned and operated by Tower Kleber Limited (Ontario Canada). FERC licensed 1994 (#10615). The BWL purchases about 750,000 kWh per month. (Jan Nelson, principal engineer, personal communication (email), 7/10/09).
MN	Xcel, parent company: Northern States Power Co., Public Service Company of Colorado, Southwestern Public Service Company.	Investor owned	Renewable Development Fund	http://www.xcelenergy.com/Company/Environment/Renewable%20Development%20Fund/Pages/RenewableDevelopmentFund.aspx	Timothy Edman RDFstaff@xcelenergy.com 800-354-3060	Utility-owned generation	Contribution	Lower St. Anthony Falls (under construction)	Projects identified at website. 10.3 MW on the Mississippi River, Minneapolis, MN; turbines to be retrofit on existing concrete dam 58-foot high by 213-foot long. FERC license 2006 (#12451) $5 million grant for proposed Crown Hydro hydroproject at Upper St. Anthony Falls Xcel operates in several states (Minnesota, Wisconsin, South Dakota, North Dakota, Colorado, and Texas. Apparently Xcel's green-pricing program is only to contribute to its renewable-energy fund for projects
NC	Dominion North Carolina Power	Investor owned	NC Green Power	http://www.ncgreenpower.org (utility: Dominion Power: http://www.dom.com/dominion-north-carolina-power/customer-service/energy-conservation/green-power.jsp)	919-716-6398 (Green power program phone)	Energy purchases from within the state	$4.00/month per 100 KWh "block" $2.50/month per 100 KWh "block," (when buying at least 100 blocks/month)	4 projects	Projects identififed at website. 365 KW facility; Statesville, NC; Haneline Power (owner) 4 KW facility; Robbinsville, NC; Everett Williams (owner); 2 facilities (no information capacity or location); Mayo Hydropower (owner)
NC	Duke Energy	Investor owned	NC Green Power	http://www.ncgreenpower.org (utility: Duke Energy: http://www.duke-energy.com)	919-716-6398 (Green power program phone)	Energy purchases from within the state	$4.00/month per 100 KWh "block" $2.50/month per 100 KWh "block," (when buying at least 100 blocks/month)	Same 4 projects	Projects identififed at website. 365 KW facility; Statesville, NC; Haneline Power (owner) FERC license status? 4 KW facility; Robbinsville, NC; Everett Williams (owner); FERC license status? 2 facilities (no information capacity or location); Mayo Hydropower (owner). FERC license status?
NC	21 municipal utilities offer NC Green Power (view comment for list of utilities):	Municipal	NC Green Power	http://www.ncgreenpower.org (each utility has own web address)	919-716-6398 (Green power program phone)	Energy purchases from within the state	$4.00/month per 100 KWh "block" $2.50/month per 100 KWh "block," (when buying at least 100 blocks/month)	Same 4 projects	Projects identififed at website. 365 KW facility; Statesville, NC; Haneline Power (owner) 4 KW facility; Robbinsville, NC; Everett Williams (owner); 2 facilities (no information capacity or location); Mayo Hydropower (owner)
NC	22 Cooperatives offering NC Green Power: (view comment for list of participating cooperatives).	Cooperative	NC Green Power	Separate addresses for each cooperative NC Green Power: http://www.ncgreenpower.org	919-716-6401	Energy purchases from within the state	$4.00/month per 100 KWh "block" $2.50/month per 100 KWh "block," (when buying at least 100 blocks/month)	Same 4 projects	Projects identififed at website. 365 KW facility; Statesville, NC; Haneline Power (owner) 4 KW facility; Robbinsville, NC; Everett Williams (owner); 2 facilities (no information capacity or location); Mayo Hydropower (owner)

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NC	Progress Energy	Investor owned	NC Green Power	Progress Energy: http://www.progress-energy.com	919-716-6402	Energy purchases from within the state	$4.00/month per 100 KWh "block" $2.50/month per 100 KWh "block," (when buying at least 100 blocks/month)	Same 4 projects	Projects identififed at website. 365 KW facility; Statesville, NC; Haneline Power (owner) 4 KW facility; Robbinsville, NC; Everett Williams (owner); 2 facilities (no information capacity or location); Mayo Hydropower (owner)
NY	National Grid	Investor owned	GreenUp	www.NewWindEnergy.com www.envirogen.net www.sterlingplanet.com www.greenmountain.com	Community Energy 1-866-WIND-123 EnviroGen 888-828-8358 Green Mountain Energy Electricity 800-810-7300 Sterling Planet 877-457-2306	RECs	Premium varies among providers: Community Energy -- $0.025 surcharge per kwh used each month. EnviroGen -- $0.01 surcharge per kwh used each month. Green Mountain -- $0.015 surcharge per kwh used each month. Sterling Planet -- $0.016 surcharge per kwh used each month.	Hydro projects not identified	National Grid's New York's Green-up is transacted through Community Energy, Enviro Gen, Green Mountain Energy, and Sterling Planett; customers choose from among the four providers. Community Energy does not source from any hydro for its NY GreenUp Program (see https://www.nationalgridus.com/niagaramohawk/non_html/renew_community2.pdf). Envirogen sources RECS from hydro facilities whose output is equal to, or less than 30 megawatts, or facilities re-licensed by FERC after 1986 (see https://www.nationalgridus.com/niagaramohawk/non_html/renew_envirogen.pdf). Green Mountain sources RECs from hydro facilities whose output is equal to or less than 30 megawatts, or facilities relicensed by FERC after 1986, or facilities certified by the Low Impact Hydropower Institute (see https://www.nationalgridus.com/niagaramohawk/non_html/renew_green.pdf). Sterling Planet soureces RECs from hydro facilities whose output is equal to or less than 30 megawatts, or facilities relicensed by FERC after 1986, or facilities certified by the Low Impact
OH	American Municipal Power (AMP) provides green-pricing program to its municipal utilty units. 123 municipal electric systems in six states are units of AMP (view comment for list of members).	Nonprofit wholesale power supplier	Eco Smart	http://amppartners.org/consumers/conservation-sustainability/ecosmart/l	Julia Blankenship Manager of clean energy 614-337-6222 jblankenship@amp-ohio.org.	RECs	$0.013/KWh based on customer usage	Belleville Hydroelectric Station	Project identified at website. 42 MW, run-of- river located on the Ohio River at the Belleville Locks and Dam. FERC license 1989 (#6939) Dam is owned and operated by Army Corps of Engineers, hydro is managed by AMP on behalf of 42 member communities participating in Ohio Municipal Electric Generation Agency Joint Venture 5. Currently, AMP is developing five new hydroelectric projects that will add more than 350 MW of new, renewable generation to the region. These run-of-the-river hydroelectric facilities will be installed on existing dams on the Ohio River. Program literature suggests that it is RECs from the AMP-member hydro plants that are sold to AMP's member customers! If indeed RECs from AMP member projects are sold to AMP-member customers, then some members are paying a premium for the same energy distributed to their fellow customers. HRC requested clarification of this on 7/06/09, but AMP program manager provided no information. As additional hydroelectric projects are developed,
RI	National Grid	Investor owned	GreenUp	www.NewWindEnergy.com www.GreenStart.net*	Community Energy, Inc. 866-WIND-123 People's Power & Light	RECs	$0.024 surcharge per kwh used each month	Hydro projects not identified	National Grid's Rhode Island's Green-up is transacted through Community Energy and People's Power & Light; customers choose between the two providers.

STATE	UTILITY	UTILITY TYPE	PROGRAM NAME	PROGRAM WEB ADDRESS	PROGRAM CONTACT	ENERGY SOURCED	PREMIUM	HYDRO PROJECTS	NOTES
UT	City of St. George	Municipal	Clearn Green Power	http://www.sgcity.org/conservation/	Rene Fleming 435-627-4848 rene.fleming@sgcity.org	Utility-owned generation Energy purchases	$2.95/month per 100 KWh "block"	Pine Valley Jordanelle Dam	Projects not identified. Program brochure (download at http://www.sgcity.org/wp/CleanGreenPowerBrochure.pdf) states that low-impact hydro is sourced for the Clean Green Power program, while the picture of a hydropower facility adorning the brochure is Glen Canyon dam. Hydro in green-pricing program: 1) Pine Valley 650 KW project on water line, owned and operated by the city. FERC exemption (#11218). 2) 4MW power purchase from LIHI-certified Jordanelle Dam, 12 MW storage project on Provo River, Heber City Utah, owned and operated by Central Utah Water Conservancy District. FERC non-juridictional. (Rene Fleming, personal communication (email), 7/09/09)
TX	Bandera Cooperative	Cooperative	Choose to Renew	http://www.banderaelectric.com/choose_to_renew.htm	None identified (other than customer service)	Energy purchase	$0.06426/KWh per 100 KWh "blocks" up to 100% of monthly consumption l	Hydro projects not identified	Program was closed to new participants in 2005 due to lack of new supplies. As of April 2009, Choose to Renew rate of $0.06426 KWh was less than regular rate of $$0.07159. *Requested information about hydro facilities (email*
VA	Applachian Power	Investor owned	Green Pricing Option	https://www.appalachianpower.com/CustomerService/YourBill/GreenPricing/Default.aspx	None identified (other than customer service)	RECs	$1.50/month per 100 KWh "block" (2 blocks minimum)	Summersville	Hydro projects not identified. NREL's Green Power Network states that Summersville hydroelectric is a source of RECs for Appalachian Power's green-pricing program. (http://apps3.eere.energy.gov/greenpower/markets/pricing.shtml?page=2&companyid=696) Summersville is an 80 MW storage projected located on the Gauley River in Nicholas and Fayette counties, WV, owned an operated by Gauley River Partners. FERC license 1992 (#10813). The project is LIHI certified (1995).
VA	Dominion Virginia Power	Investor owned	VA Green Power	http://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/green-power.jsp	None identified (other than customer service)	RECs	100% of monthy use: $0.015/KWh Less than 100%: $2.00 per month per ~133 KWh "block."	Hydro projects not identified	RECs sourced from solar, wind, biomass, and low-impact hydro power generated at facilities located in several Midwestern and Southeastern states within the regions covered by the South Eastern Reliability Council (SERC) and Reliability First Corporation (RFC).
WA	Benton PUD	Public utility district (county)	Green Power	http://www.bentonpud.org/conservation/green_power.php	None identified (other than customer service)	Utility-owned generation Energy purchase	Monthly contribution not tied to any energy quantity	Hydro projects not identified	
WA	Orcas Power Light & Cooperative	Cooperative	Green Power	http://www.opalco.com/energy-efficiency/green-power/fact-sheet/	None identified (other than customer service)	Energy purchase	$4.00/month per 100 KWh "block"	Hydro projects not identified	Orcas has 30 projects interconnected to its grid from which it is purchasing energy for its green-pricing program.
WA	Peninsula Light Company	Cooperative	Green By Choice	http://www.penlight.org/greenpower.asp	None identified (other than customer service)	Energy purchase	$2.80/month per 100 KWh "block"	Packwood Lake	Project identified on website. 27.5 MW run-of- river, located at Packwood Lake, Packwood WA, owned and operated by Energy Northwest. FERC license 1960 (#2244).

NOTES:

1) Green Power Network's web page " "Green Pricing Utility Programs by State" (http://apps3.eere.energy.gov/greenpower/markets/pricing.shtml?page=1) lists the renewable energy sources included in the green-pricing product.

2) HRC researched each utility identified by Green Power Network as sourcing hydropower to determine if hydropower is currently being sourced and if the utility identifiies specific hydro facilities in its program literature.

3) HRC has been able to identify only some of the specific hydropower facilities sourced in utility green-pricing programs.

REC BROKERS/MARKETERS
(Source: Geen-e http://www.green-e.org/base/re_products?cust=#res)
(As of July 2009)

BROKER/MARKETER	WEB ADDRESS	NOTES
3 Degrees	http://www.3degreesinc.com/products/recs/	No projects specified
3 Phases Renewables	http://www.3phasesrenewables.com/recs.html	"low-impact" hydro mentioned on masthead of web page, but no projects are specified nor is there any explanation of "low-impact" hydro.
Blue Star	http://www.bluestarenergy.com/greenpower.html	No information on green-power products on website regarding energy sources for RECs; unable to determine, therefore,whether sourced from hydropower.
CarbonFund	http://www.carbonfund.org/site/business/alt/green_power	No information on green-power products on website regarding energy sources for RECs; unable to determine, therefore,whether sourced from hydropower.
Clear Sky Power	http://www.clearskypower.com/	No information on green-power products on website regarding energy sources for RECs; unable to determine, therefore,whether sourced from hydropower.
Con Edison Solutions	http://www.conedsolutions.com/faqs_green_power.html	Hydropower from small, run-of-the-river facilities located in upstate New York. No projects specified.
Direct Energy	http://www.directenergybusiness.com/makemegreen-faq.php	No projects specified.
Entark Global, Limited	http://www.entark.com	No projects specified.
Good Energy	http://www.goodenergy.com/store/staticPages/New_York_Small_Existing_Hydro_New_York_State_Public_Service_Commission_12_Month_certificate.htm	No projects specified. Two types of RECs: 1) New York 100% Small Existing Hydro New York State Public Service Commission 12 Month Certificate; 2) New York 100% LIHI Existing Hydro New York State Public Service Commission 12 Month Certificate.
Green Energy Marketing	http://www.gotgreenenergy.com/home.html	No projects specified.
Hess Corpporation	http://www.hessenergy.com/green/renewable.aspx	No projects specified.
PEPCO Energy Services	http://www.pepcoenergy.com/NaturalGasElectricity/default.aspx	No projects specified.
Powerex	http://www.powerex.com/offer/pnw.htm	No projects specified.
Sterling Planet	http://www.sterlingplanet.com/upload/File/Sterling%20Planet%203%20Steps%20to%20Carbon%20Neutrality%20Fact%20Sheet.pdf	No projects specified.
GDF Suez Energy Resources NA	http://www.gdfsuezenergyresources.com/Prodserv/prodserv_CarbonManagementSolutions.aspx#labelUnCertifiedREC	No hydro projects specified.

HISTORICAL LIST OF FACILITIES SOURCED FOR RECS FOR COMMUNITY ENERGY INC.'S ENERGY PRODUCTS THRU 12/31/2008

(Source: Katherine Barrett, Community Energy, Personal Communication, 7/27/09; Community Energy provided only name, location, and capacity)

FACILITY	LOCATION	WATER WAY	NAMEPLATE CAPACITY	OWNERSHIP	FERC PROJECT #	PROJECT DESCRIPTION	NOTES
[FACILITIES SOURCED FOR RECS FOR CONNECTICUT CLEAN ENERGY OPTIONS]							
Bradford (Smith)	Bradford, VT	Waits River	1.49 MW	Central Vermont Public Service Corporation	2488 (exempt)	run-of-river concrete dam -- 66-foot high by 194-foot long	exemption 1982
East Pittsford	Rutland	East Creek	3.1 MW	Central Vermont Public Service Corporation	unlicensed (non-jurisdictional)	storage earth-filled dam -- 967- foot long by 51-foot high	East Pittford dam and Glen dam comprise what CVPSC calls the "N Rutland Composite" State of Vermont identifies the reach of East Creek affected by the dam on its impaired waters list due to low dissolved oxygen and flow fluctuations.
Fairfax Falls	Farifax, VT	Lamoille River	2.1 MW	Central Vermont Public Service Corporation	2205	run-of-river concrete dam -- 344-foot long by 45-foot high	license 2005
Glen	Rutland	East Creek	2.5 MW	Central Vermont Public Service Corporation	unlicensed (non-jurisdictional)	run-of-river concrete dam -- 31-foot high by 1,755-foot long	Glen dam and East Pittford dam comprise what CVPSC calls the "N Rutland Composite" Glen is run-of-river, but since it functions in tandem with East Pittford, Glen's energy peaks and ebbs with East Pittford storage and release from the Chittenden Reservoir. State of Vermont identifies the reach of East Creek affected by the dam on its impaired waters list due to flow and fish passage threat.
Passumpsic	Passumpsic, VT	Passumpsic River	0.7 MW	Central Vermont Public Service Corporation	2400	run-of-river concrete dam -- 122 -foot long by 10-feet high.	

FACILITY	LOCATION	WATER WAY	NAMEPLATE CAPACITY	OWNERSHIP	FERC PROJECT #	PROJECT DESCRIPTION	NOTES
Patch	Rutland, VT	East Creek	0.3 MW	Central Vermont Public Service Corporation	unlicensed (non-jurisdictional)	run-of-river concrete dam -- 390-foot long by 30-foot high	Patch is run-of-river, but since it functions in tandem with East Pittford, Patch's energy peaks and ebbs with East Pittford storage and release from the Chittenden Reservoir. State of Vermont identifies the reach of East Creek affected by the dam on its impaired waters list due to flow and fish passage threat
Slack Dam	Springfield, VT	Black River	.410 MW	Springfield Hydroelectric Co.	8014 (exempt)	run-of-river concrete dam -- 30-foot high (no information found on length).	exemption 1985
Salisbury	Salisbury, VT	Sucker Brook	1.2 MW	Central Vermont Public Service Corporation	unlicensed (non-jurisdictional)	run-of-river concrete dam -- 8-foot high by 93-foot foot long.	Salisbury is run-of-river, but since it functions in tandem with Silver Lake, Salisbury's energy peaks and ebbs with East Pittford storage and release from Sugar Hill Reservoir. State of Vermont identifies the reach of Leicester River affected by the dam on its impaired waters list due to flow and fish passage threat
Silver Lake	Leicester, VT	Sucker Brook	2.2 MW	Central Vermont Public Service Corporation	11478	Storage for peaking. Silver Lake Project includes Sugar Hill storage reservoir and Goshen dam, Sucker Brook diversion dam, and Silver Lake Development. 1) Goshen dam -- earthen, 60-foot-high, 680-foot-long. 2) Sucker Brook diversion dam -- earthen, 665-foot-long by 38-foot-high. 3) Silver Lake dam -- concrete, 257-foot-long by 30-foot-high.	license 2006 Silver Lake, Salisbury, and Weybridge dams comprise what CVPSC calls the "Middlebury Composite"
Weybridge	Leicester.VT	Otter Creek	3.0 MW	Central Vermont Public Service Corporation	2731	Storage for peaking concrete dam -- 30-foot-high, 302-foot-long concrete	license 2001

FACILITY	LOCATION	WATER WAY	NAMEPLATE CAPACITY	OWNERSHIP	FERC PROJECT #	PROJECT DESCRIPTION	NOTES
[FACILITIES SOURCED FOR RECS FOR NATIONAL GRID GREENUP PROGRAMS]							
Arnold Falls	St. Johnsbury, VT	Passumpsic River	0.5 MW	Central Vermont Public Service Corporation	2399	Two timber crib dams: North dam is 189-foot long by 18-foot high; South dam is 66-foot long by 15-foot high. Timber dams to be replaced with concrete dams beginning in 2009.	license 1994
Glen	West Lebanon, NH	Mascoma River	1.5 MW	Enel North America	8405	no information found on mode of operation or facility	license 1987
Hosiery Mill	Hillsborough, NH	Congtoocook River	1.0 MW	Enel North America	6116	run-of-river (no information found on dam)	license 1984
Kelleys Falls	Manchester	Piscataquog River	.45 MW	Enel North America	3025	storage concrete dam --24-foot high by 220-foot long.	license 1984
Lower Middlebury	Leicester.VT	Otter Creek	2.2 MW	Central Vermont Public Service Corporation	2737	run-of-river concrete dam -- 478 -foot long by 30 -foot high	license 2001
Norway	Norway, ME	Pennesseewassee Stream	0.3 MW	Ridgewood Maine Hydro Partners	UL 90-15 ([non jurisdictional)	no information found on mode of operation or facility	
Pierce Mills	St. Johnsbury, VT	Passumpsic River	0.25 MW	Central Vermont Public Service Corporation	2396	run-of-river concrete dam 93-foot long by 18-foot high	license 1994
South Berwick	South Berwick, ME	Salmon Falls River	1.2 MW	Enel North America	11163	run-of-river concrete gravity dam 290 -foot long by 18 -foot high	license 1997 Community Energy states the anme of the project is Salmon Falls; FERC lists it as South Berwick. according to FERC license, the project has always been operated primarily in a run-of-river mode
Taftsville	Taftsville, VT	Ottauquechee River	0.5 MW	Central Vermont Public Service Corporation	2490	run-of-river concrete gravity dam approximately 220 -foot long and 16 -foot high.	license 1994

FACILITY	LOCATION	WATER WAY	NAMEPLATE CAPACITY	OWNERSHIP	FERC PROJECT #	PROJECT DESCRIPTION	NOTES
[FACILITIES SOURCED FOR RECS FOR NY NATIONAL GRID GREENUP PROGRAMS]							
Groveville	Beacon, NY	Hudson River	0.9 MW	Enel North America	3511	run-of-river concrete dam -- 312-foot long by 45 -foot high	license 1982 inventoried by New York DEC as Glenham Dam
High Falls	Chateaquay, NY	Deer River	1.7 MW	Enel North America	3754 exempt	run-of-river concrete dam 175 -foot long by 25 -foot high	exemption 1983
Mohawk Paper Mills Inc.	Waterford, NY	Mohawk River	3.3 MW	Adirondack Hydro-Fourth Branch, LLC	3605 (exempt)	run-of-river concrete dam -- 600-foot long by 11-foot high	exemption 1983 located at Bock Island
New York State Dam	Waterford, NY	Mohawk River	11.5 MW	NYSD Limited Partnership	7481	mode of operation? concrete dam -- 1950 -foot long by 21 -foot high	license 1987 also known as Champlain Street Dam
Sissonville	Potsdam	Raquette River	3.0 MW	Sissonville Limited Partnership	9260	run-of-river concrete dam 450 -foot long by 20 -foot high.	license 1988
Walden	Walden, NY	Walkill River	2.8 MW	Consolidated Hydro NY, Inc	4428	storage concrete dam -- 165 -foot long by 15 -foot high	license 1982
[FACILITIES SOURCED FOR RECS FOR NJ CLEAN ENERGY OPTIONS]							
Raystownt (William F. Matson)	Huntington, PA	Juniata River	21.0 MW	Alleghany Electric Cooperative	2769	run-of-river earth and rock dam: 225 -foot high (length not provided in LIHI documentation)	license 1982 LIHI certified 2006