ENVIRONMENTAL RULES FOR HYDROPOWER IN STATE RENEWABLE PORTFOLIO STANDARDS

by

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Disclaimer

Introduction

Hydropower is an eligible technology in most of the states' renewable portfolio standards (RPS), but there are generally restrictions on which hydro projects can be included, because of the technology's maturity, established financial footing, and environmental concerns. Several states, including Connecticut, Maine, Oregon, and Washington, are currently considering revisions to their RPS that would change the way hydropower is treated in meeting renewable energy targets. In addition, a few states are considering strengthening or better defining their environmental qualifications for hydropower.

The most common environmental criterion in state RPSs is a capacity limit; most RPSs allow hydropower facilities under 30 MW to count towards RPS targets. Other states, such as California, have more restrictive definitions of renewable energy and limit hydropower's inclusion in the RPS with additional environmental criteria. This paper looks at the various approaches states have taken in their RPS policies to safeguard the environment when hydropower is developed. It describes the rules for hydropower qualification, especially those having to do with environmental standards.

Hydropower and Renewable Portfolio Standards

Renewable Portfolio Standards, also sometimes called renewable electricity standards or clean electricity standards, are used to mandate the generation of electricity from renewable or other clean energy resources. These policies generally require that a certain percentage of the electricity sold within the state comes from designated energy resources. In almost all of the RPSs[1], hydropower is an eligible resource.

The hydropower rules related to RPSs differ from state to state, but generally restrict hydropower by capacity/size, vintage, or technology. The predominant limiting factor to hydropower RPS inclusion is age. RPSs generally give the highest priority to new or recent renewable energy development, thereby excluding most hydroelectric facilities given that most were installed decades ago. In addition, because of concern over the ecological impacts of large dams, large hydropower (most frequently defined as greater than 30 megawatts (MW)[2]), is limited in

[1] There are mandatory RPSs in 29 states, plus the District of Columbia and Puerto Rico, as well as voluntary renewable targets in 8 states.

[2] Different states have different definitions of small hydropower. There is no standard definition of "small," but 30 MW is the general upper limit.

inclusion in state RPSs. In contrast, 25 states allow small hydro, generally defined between 3 and 60 MW, depending upon the state.[3]

It is common for state RPSs to divide their energy target requirements into two or more resource tiers or classes; these tiers promote particular technologies (notably solar PV) and require that a certain percentage of the RPS be met through the tier. As it relates to hydropower, RPS tiers differentiate by capacity, vintage, or hydro technology. For example, Maine's Tier 1 is for new renewable facilities, whereas Tier 2 is for existing renewable facilities. Both tiers include hydropower. New Jersey's Tier 1 allows hydropower facilities less than 3 MW, whereas its Tier 2 allows facilities up to 30 MW. Nineteen states and the District of Columbia have multiple tiers.[4] Leaving aside the tiers restricted to solar, six of these states (including DC) exclude hydropower from one or more tier, but include other renewable technologies such as wind, biomass, and landfill gas.[5]

Recently, several states—particularly in New England and the Pacific Northwest—have been reassessing hydropower's role in their renewable energy portfolios and have been considering either expanding eligibility for existing hydropower or including large hydro facilities. As states increase their renewable energy targets, several have questioned what types of hydropower should count towards RPS targets. The U.S. Department of Energy estimates that existing non-powered dams have the potential to add up to 12 GW of renewable power.[6] And the National Hydropower Association advocates modernizing turbines at existing electricity-generating facilities to increase efficiencies and add new capacity, as well as adding generation capacity to existing non-powered dams.[7]

Regulation

When it comes to environmental regulation of hydropower, the Federal Energy Regulatory Commission's (FERC) hydropower licensing process serves as a baseline. FERC works to minimize environmental damage through its regulatory authority to oversee a series of federal environmental laws (e.g., the National Environmental Policy Act) and by requiring that all project applicants communicate with relevant federal and state stakeholders. After a lengthy review process, a qualifying hydropower facility receives a FERC license that typically lasts 30 to 50 years.

[3] Wisconsin defines "small hydropower" as less than 60 MW.
[4] See the RPS DSIRE spreadsheet here: http://dsireusa.org/rpsdata/index.cfm
[5] The six states excluding hydropower from one or more tiers are: Arizona, Connecticut, District of Columbia, Massachusetts, Missouri, and New Hampshire.
[6] An April 2012 U.S. DOE report assessed the energy potential at non-powered dams: http://nhaap.ornl.gov/system/files/NHAAP_NPD_FY11_Final_Report.pdf
[7] National Hydropower Association's policy priorities call for improving efficiencies and modernizing equipment: http://www.hydro.org/tech-and-policy/policy-priorities/clean-renewable-electricity-standards/

RPS hydropower eligibility varies significantly from state to state. There are many factors that affect how projects are regulated, licensed, and relicensed. These include size and capacity, ownership, age, technology type (e.g., reservoir or run-of-river), and environmental considerations. States, local agencies, and other federal agencies may also have regulations that impact hydropower facilities.[8]

New Construction

Of the 30 states (including the District of Columbia) in which hydropower is eligible for the RPS, 23 allow new hydropower development and 5 others explicitly prohibit new dams.[9] Two of the states prohibiting new dams allow new run-of-river facilities to qualify for the RPS.[10] A handful of others prohibit new development, but will make exceptions for dams under a certain capacity or allow capacity increases as a result of efficiency upgrades or incremental production. Fifteen states restrict new hydropower development to 50 MWs or less in at least one tier.

Size Restrictions

Eight states do not place any capacity limits on new impoundments.[11] Michigan and New Hampshire (Tier 2) do not place capacity restrictions for new run-of-river projects or for incremental increases or efficiency gains.

However, the majority of states allowing existing hydropower facilities to qualify for the RPS restrict eligibility to "small" hydro facilities.[12] Twelve states allow existing facilities under 30 MW in at least one tier[13], though five other states do not specify a capacity limit.[14] The capacity cap is intended to reduce the environmental impacts associated with larger hydropower facilities, though the operation (not the size) of a facility often has an equal, if not greater, impact on the environment. Consequently, some states have placed additional restrictions on small facilities. Connecticut has some of the most stringent criteria for new small hydropower in

[8] Examples of federal, state, and local agencies that can regulate hydropower facilities include the U.S. Forest Service, the U.S. Fish and Wildlife Service, state Fish and Wildlife agencies, and local water authorities.
[9] Five states prohibit new dams: IL, MD, MI, NH, and WA. CT and MA prohibit new dams in Tier 2.
[10] Connecticut is considering replacing its Class I "run-of-river" criterion with Low Impact Hydropower Institute certification. MI and MA Tier 2 allow new run-of-river.
[11] HA, NC, NM, OH, and PA do not have capacity limits for new developments. NY and DC do not place capacity limits in one of their tiers. WI does not have a limit for large hydropower (<60 MW) completed after 2011.
[12] Again, small hydropower is usually defined as 30 MW, but this upper limit is somewhat arbitrary.
[13] Eleven of these tiers limit "small" development to 10 MW or less. The Massachusetts Department of Energy Resources has proposed revisions to the RPS, expanding eligibility for existing hydroelectric facilities from 25 MW to 30 MW as a Class I resource. http://www.mass.gov/eea/docs/doer/renewables/225-cmr-14-00-draft-reg-doer-021413-tracked-changes.pdf
[14] AZ, D.C., HA, IL, and KS do not specify a capacity limit for existing facilities.

its Class I. To qualify, a hydropower project must be less than 5 MW, be run-of-river, and have been built after 2003.

Washington places one of the strictest RPS restrictions on hydropower, allowing only the efficiency gains on existing projects to qualify for the RPS. Maine, on the other hand, is considering a new bill that would allow new or existing hydropower facilities up to 400 MW to qualify for the RPS.[15] A proposal in Connecticut would allow large-scale hydropower to qualify as a Class I resource in a separate "contracted tier." The state's Department of Energy and Environmental Protection has presented to the legislature a plan to use large hydropower to fulfill 2% of the Class I target in 2014 with an annual increase of 1% up to a maximum of 7.5% in 2020.[16]

Environmental Requirements

As mentioned above, states divide hydropower into two size categories—large and small—and tend to use installed generating capacity as an environmental criterion for RPS eligibility. The majority only count small hydro towards RPS targets. Capacity limits alone, however, do not safeguard the environment from ecological and land-use impacts. To minimize environmental impacts, some states prohibit new impoundments or diversions, allow only incremental production increases, or allow only efficiency gains. Twelve state RPSs place additional environmental restrictions on hydropower eligibility.[17]

Among the states with hydropower environmental regulations in RPSs, the following environmental values are the most commonly protected by states:

- Adequate water flow to protect aquatic life and wildlife
- Fish passage
- Water quality
- Watershed protection

The Ohio Alternative Energy Portfolio Standard, for example, does not place a capacity limit on new or vintage hydropower facilities (including those in adjoining states), but it does require that all facilities meet its strict environmental standards. These include: (1) providing for river

[15] In March 2013, state lawmakers contemplated a bill that would remove the 100 MW limit on all renewable energy technologies: http://bangordailynews.com/2013/03/13/politics/state-house/lepage-measure-would-remove-100-megawatt-cap-for-all-renewables/

[16] CT DEEP released a draft study in March 2013 recommending a revised RPS with a flexible "contracted tier" structure: http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/67d62db9c92d7f6885257b320066e509/$FILE/DEEP%20RPS%20STUDY.pdf

[17] The following states apply some kind of specific environmental restriction on hydropower in RPS: AZ, CA, CT, DE, ME, MA, NH, NJ, NY, OH, OR, and PA.

flows that are not detrimental for fish, wildlife, and water quality, including seasonal flow fluctuations as defined by the applicable licensing agency for the facility; (2) demonstrating compliance with the water quality standards of the state; (3) complying with the recommendations of the Ohio Environmental Protection Agency; and (4) in cases where the facility is not regulated by FERC, complying with similar requirements as recommended by agencies with jurisdiction over the facility.

Four states require project certification by the Low Impact Hydropower Institute (LIHI) for RPS inclusion.[18] LIHI is a non-profit organization that seeks to reduce the environmental impacts of hydropower projects. It offers a voluntary certification program to identify and recognize hydropower facilities that have minimal environmental impacts. Its Certification Program has established eight criteria by which to evaluate the environmental impacts of hydropower facilities. These criteria include: river flows, water quality, fish passage and protection, watershed protection, threatened and endangered species protection, cultural resource protection, recreation, and facilities recommended for removal. The criteria can be applied to existing and new facilities. In addition, LIHI checks state and federal compliance documents and the applicant must ensure that it is meeting all required federal, state, and local standards. LIHI does not certify pumped storage facilities or new impoundments. In general, these environmental criteria afford greater environmental protection than current legal requirements.[19] In 2009, LIHI reported 46 certified projects in 24 states. As of April 2013, there are over 100 certified projects.[20]

New York, the largest hydropower producer east of the Rocky Mountains, generates more than 17% of the state's electricity demand from hydropower. The state has determined that hydropower can play a significant role in grid resiliency and expects hydropower to grow incrementally as a mainstay of renewable power generation in the state.[21] The state's policies support hydropower, both new and old, including through its RPS. While the state does not require LIHI certification, it has set its own rigorous environmental review requirements. The state limits RPS eligibility to new facilities with up to 30 MW of capacity and does not allow any new impoundments. Qualifying new facilities must meet the following environmental standards: (1) enforcement of all mitigation measures required as conditions of various state, local, and federal ordinances, regulations and licenses that govern the construction and operation of a project; (2) within practical limits, coordination of plant operations with any other water-

[18] DE, MA, OR, and PA require LIHI certification in at least one tier. Utah requires LIHI certification for its voluntary Renewable Portfolio Goal.
[19] LIHI Certification Handbook http://www.lowimpacthydro.org/assets/files/LIHI%20HandbookDecember%202011%281%29.pdf
[20] Low Impact Hydropower Institute, Certified Facilities. Accessed April 15, 2013. http://www.lowimpacthydro.org/certified-facilities/
[21] http://www.dec.ny.gov/energy/43242.html

control facilities that influence water levels or flows to mitigate impacts and protect indigenous species and habitat; (3) compensation for loss of significant habitat by the creation of similar habitats, supporting the same stock, at or near the development site within the same ecological unit; (4) installation of fish passages to maintain pre-existing migration patterns both up and downstream; and (5) installation of measures necessary to minimize fish mortality.

Pumped Hydroelectric Storage

Pumped hydroelectric storage projects vary in their environmental impacts, with some using relatively low-impact pumped storage technologies, such as off-channel or closed-loop pumped storage.[22] States vary in how they treat pumped storage within their RPSs. Nine states explicitly ban pumped storage projects from the RPS.[23] Those states that allow pumped storage generally require that the pumping be powered by renewable energy. California allows pumped storage facilities to qualify for the RPS if the facility meets the state requirements for small hydro-electric facilities and if the electricity used to pump the water into the storage reservoir qualifies as RPS eligible. Similarly, pumped storage facilities in the Northern Maine Independent System Administrator area are eligible if the pumping needs are met using an eligible renewable resource. New York's main tier allows pumped storage powered by tidal energy.

Conclusion

The majority of states with an RPS include hydropower; of these, 23 count some new hydro-power development towards RPS targets. Each state treats hydropower inclusion differently, some with explicit environmental restrictions; others embrace new development without any capacity limits or additional environmental restrictions beyond their FERC license (if FERC-applicable). States have a variety of criteria they can apply when considering whether and how hydropower resources should qualify for RPSs. As states consider the eligibility of existing or large hydropower, they can look to the environmental restrictions other states have already adopted to minimize environmental impacts. These restrictions include safeguarding water flows, fish passage, watershed protection, and endangered species, and in some cases, requiring LIHI certification.

The table below lists the states' rules for RPS hydropower qualification and shows the states' varied approaches to regulating hydropower.

[22] Closed-loop or off-channel pumped storage systems present minimal to no impact on existing river systems because the reservoirs are located in areas geographically separated from existing river systems.
[23] The following states prohibit pumped storage: CO, D.C., MD, MI, MO, OR, PA, DE, and MA.

State Rules for Hydropower Qualifications in RPS

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Arizona	10 MW (for new hydro)		Pre-1997 facilities that satisfy certain improved capacity criteria are eligible. New distributed generation facilities under 10 MW also eligible.	√	no
Eligibility Notes: Facilities constructed before 1997 must meet one of the following 2 criteria: 1) New increased capacity of existing facility must be due to improved technological or operational efficiencies. The electric kWh eligible to meet annual renewable energy requirement shall be limited to the new, incremental kWh output resulting from capacity increase that is delivered to AZ customers to meet annual renewable energy requirements. Or 2) Generation from pre-1997 hydropower facilities that are used to firm or regulate the output of other eligible, intermittent renewable resources. The electricity kWh eligible to meet the annual RE requirements shall be limited to the kWH actually generated to firm or regulate the output of intermittent RE resources delivered to AZ customers. Distributed hydropower generation is eligible if the new hydropower generator is 10 MW or less, installed after Jan. 1, 2006, that is a low-head, micro-hydro run-of-the-river system that does not require any new damming of the flow of the stream; or an existing dam that adds power generation equipment without requiring a new dam, diversion structures, or a change in water flow that will adversely impact fish, wildlife, or water quality; or, generation using canals or other irrigation systems.					
http://www.azsos.gov/PUBLIC_SERVICES/Title_14/14-02.htm#ARTICLE_18					
California	30	1	Pre-existing small and conduit hydroelectric facilities eligible if on-line prior to Jan. 1, 2006. New small and conduit hydoelectric facilities eligible if on-line on or after Jan.1, 2006. Some restrictions apply.	√	no
Eligibility Notes: Pre-existing small and conduit hydroelectric facilities must have nameplate capacity of 30 MW or less, with an exception for eligible efficiency improvements made after Jan. 1, 2008. Facility must be under contract to, or owned by, retail seller or local publicly-owned electric utility as of Dec. 31, 2005. Efficiency improvements are eligible if facility either has received certification from State Water Resources Control Board (within 15 years of improvements), or has a certification pursuant to Section 401 of the Clean Water Act which has authority to issue certification. Efficiency improvements cannot result in an adverse impact on instream beneficial uses or cause a change in the volume or timing of streamflow. Any new or repowered small or conduit hydroelectric facility must also have a nameplate capacity of 30 MW or less, and must demonstrate that it can operate without adversely impacting the instream beneficial uses or causing a change in the volume or timing of streamflow. Pumped storage is eligible if it meets the small hydro eligibility requirements and if the energy used to pump the water is generated from an RPS-eligible resource. Also eligible for the RPS is any incremental generation that results from efficiency improvements; there is no restriction on generating capacity for efficiency improvements. In addition, existing hydroelectric facilities that operate as part of a water supply or conveyance system are eligible up to 40 MW.					
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.32 http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=25001-26000&file=25740-25751					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Colorado	10	1	New facilities must be <=10MW for Tier 1 Primary schedule. Existing facilities as of Jan. 1, 2005 must be <=30 MW for Tier I primary and secondary schedule.	√	no
Eligibility Notes: New facilities must be <=10MW for Tier 1 Primary schedule. Pumped storage hydropower ineligible.					
http://www.lexisnexis.com/hottopics/colorado?source=COLO;CODE&tocpath=1OAKHVS0WO0QM862O,2FOCPJHQM08A5TSSH,3WQHMGCO79KWSZNBS;1GS04RM0GOTFOKZCX,2OMG4M8US0WO0QM47,386HKWSZNBSGSSDDS;1XZFOWOTC10GWHVJX,2OXQPSTKJD8D9OVOH,3S07YQXYJF6COTV7E&shortheader=no					
Colorado	30	2	None specified	√	no
Eligibility Notes: At least 50% of distributed generation tier must come from customer-sited resources. Maximum size is also 30 MW for primary schedule. Pumped storage hydropower ineligible.					
Connecticut	5	1	Run-of-river facilities that began operation after July 1, 2003 are eligible.	√	no
Eligibility Notes: Applies to facilities in operation after July 1, 2003. Facility must be run-of-river hydro of 5 MW or less. Facility cannot cause an appreciable change in river flow.					
http://www.dpuc.state.ct.us/electric.nsf/$FormRenewableEnergyView?OpenForm					
Connecticut	5	2	Run-of-river facilities that began operation prior to July 1, 2003 are eligible.	no	no
Eligibility Notes: Run-of-river hydropower facilities are eligible provided such facilities have a generating capacity of not more than five MWs, do not cause an appreciable change in the riverflow, and began operation prior to July 1, 2003.					
Delaware	30	1	None specified	√	√
Eligibility Notes: To be an Eligible Energy Resource under the Act, a hydroelectric facility shall: 1) have a maximum design capacity of 30 MW or less from all generating units combined; and 2) meet DNREC standards including Low-Impact Hydro standards. DNREC standards include: 1) cannot diminish water quality and/or adversely impact watersheds; 2) provide an adequate water flow for protection of aquatic life and for safe and effective fish passage; 3) protect state and federally-designated threatened and endangered species and their habitat; 4) protect cultural and historic resources; 5) preserve or improve public access and recreation opportunities; and 6) meet the certification standards established by the Low Impact Hydropower Institute or their successors.					
http://depsc.delaware.gov/orders/8139.pdf					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
District of Columbia	none specified	2	None specified	√	no
Eligibility Notes: Pumped storage hydropwer generation is ineligible.					
http://www.dcpsc.org/pdf_files/commorders/orderpdf/orderno_16738_FC945.pdf					
Hawaii	?	1	None specified	√	no
Eligibility Notes: Hydropower is defined as "falling water" without any further clarification. All hydropower would presumably be eligible.					
http://www.capitol.hawaii.gov/hrscurrent/Vol05_Ch0261-0319/HRS0269/HRS_0269-0091.HTM					
Illinois	none		None specified	no	no
Eligibility Notes: New construction or significant expansion of hydropower dams is ineligible. http://www.ilga.gov/legislation/97/SB/PDF/09700SB1652lv.pdf					
http://www.ilga.gov/legislation/97/SB/PDF/09700SB1652lv.pdf					
Iowa	"small hydro" only, but no explicit limit	1	None specified	√	no
Eligibility Notes: Only "small" facilities are eligible, but no explicit capacity limit given. Small hydro is defined as "a hydroelectric facility at a dam." No hydro is currently included in utilities' designated capacities.					
http://coolice.legis.iowa.gov/Cool-ICE/default.asp?Category=billinfo&Service=IowaCode&input=476.41					
Kansas	10 MW (for all new hydro, except new pumped storage)		Hydropower facilities installed on or after May 28, 2009 are governed by a size limitation of 10 MW, whereas existing hydropower resources are not.	√	no
Eligibility Notes: Existing hydropower is not restricted. New facilities are limited to 10 MW.					
http://www.kslegislature.org/li/b2013_14/statute/066_000_0000_chapter/066_012_0000_article/066_012_0056_section/066_012_0056_k/					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Maine	100	1	Tier I is composed of new renewables that came on-line after Sept.1, 2005.	√	no
Eligibility Notes: A new renewable resource is a generation facility that: 1) has an in-service date after Sept. 1, 2005; 2) has been added to an existing facility after Sept. 1, 2005; 3) has been refurbished after Sept. 1, 2005 and is operating beyond its useful life or is employing an alternate technology that significantly increases the efficiency of the generation process; and 4) has not operated for at least 2 consecutive years or was not recognized by ISO-NE prior to Sept. 1, 2005. The generation facility must be certified by the Commission as a new renewable resource before it qualifies for the RPS. Hydropower requirements in Tier 1 are more stringent than Tier 2. The facility must meet all state and federal fish passage requirements.					
Maine	100	2	None specified	unspecified	no
Eligibility Notes: In the existing renewables tier, eligibility includes capacity at 100 MW or less. Regulations for pumped-storage hydropower facilities state: pumped storage facilities shall be treated in accordance with the GIS rules for service in the ISO-NE area. For service in the NMISA area, energy from pumped storage facilities must serve all of its pumping requirements using an eligible resource or a new renewable resource to satisfy portfolio requirements.					
http://www.mainelegislature.org/legis/bills/bills_125th/chapters/PUBLIC413.asp					
Maryland	30	1	Eligibility restricted to small hydroelectric plants (systems less than 30 MW) that were in operation as of Jan. 1, 2004.	no new impoundments	no
Eligibility Notes: New dams/impoundments ineligible. Must be licensed or exempt from licensing by FERC.					
http://www.dsd.state.md.us/comar/subtitle_chapters/20_Chapters.aspx#Subtitle61					
Maryland	none	2	Must be in existence as of Jan. 1, 2004.	no	no
Eligibility Notes: Pumped storage hydropower ineligible. Must be at a dam in existence as of Jan. 1, 2004, but there are no size restrictions.					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Massachusetts	30	1	Certain new hydroelectric facilities that began commercial operation after 1997 are eligible, as is certain incremental new energy from increased capacity or efficiency improvements at existing hydroelectric facilities.	√	√
Eligibility Notes: Hydropower facilities must meet environmental standards and be 25 MW or less. No new dams are eligible, but new production or incremental additions at existing dams are eligible. Department can consider facilities that have been denied LIHI certification. Must meet environmental standards, including LIHI Certification. Only energy from new facilities having a capacity of up to 25 MW or attributable to improvements that incrementally increase capacity or efficiency by up to 25 MW at an exisitng hydro facility shall qualify. No facility can involve pumped storage or construction of any new dam or water diversion structure after Jan. 1, 1998. The unit must meet appropriate and site-specific standards that address adequate and healthy river flows, water quality standards, fish passage and protection measures and mitigation, and enhancement opportunities in the impacted watershed.					
http://www.mass.gov/eea/docs/doer/renewables/biomass/225-cmr-14-00-final-reg-doer-081712-clean-copy.pdf					
Massachusetts	7.5	2	Certain existing hydroelectric facilities (constructed prior to Jan. 1, 2008) up to 7.5 MW are eligible.	no	√
Eligibility Notes: Electrical energy from a generation unit that uses flowing fresh water as the primary energy resource, with or without a dam structure or other means of regulating water flow, and that is not located at a facility that uses mechanical or electrical energy to pump water into a storage facility is eligible. The Department can consider facilites that have been denied LIHI certification. Must meet certain environmental standards and have LIHI certification. Standards addresss adequate and healthy river flows, water quality standards, fish passage and preotaction measures and mitigation and enhancement opportunities in the impacted watershed.					
http://www.lawlib.state.ma.us/source/mass/cmr/cmrtext/225CMR15.pdf					
Michigan	none	1	None specified	no new damed hydro	no
Eligibility Notes: Existing traditional facilities (impoundments) and water current facilities (run-of-river) are eligible. No size restrictions on otherwise eligible facilities. No pumped storage, but off-peak renewable energy generation stored using advanced electric storage technology or hyroelectric pumped storage and used during peak demand receives an additional 1/5 credit per MWh. Upgrades that increase the efficiency of existing dams are eligible.					
http://www7.dleg.state.mi.us/orr/Files%5CORR%5C2008-042_LR_orr-draft.pdf					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Minnesota	100	1	None specified	√	no
Eligibility Notes: Eligible facilities must be 100 MW or less.					
https://www.revisor.mn.gov/statutes/?id=216b.1691					
Missouri	10		None specified	unspecified	no
Eligibility Notes: Eligible facilities must be 10 MW or less, with no new dams or diversions. Pumped storage hydropower ineligible. If an improvement does not require a new diversion or impoundment of water and incrementally increases the nameplate rating of each generator, up to ten MW, the improvement qualifies as an eligible resource.					
http://www.moga.mo.gov/statutes/chapters/chap393.htm http://www.sos.mo.gov/adrules/csr/current/10csr/10c140-8.pdf					
Montana	10 MW (existing) and 15 MW (new)	1	Certain new hydroelectric projects up to 15 MW installed at an existing reservoir or on an existing irrigation system that did not have hydroelectric generation as of April 16, 2009.	yes, but no new impoundments or diversions	no
Eligible facilities cannot have new dams or diversions and must be 10 MW or less, except a facility up to 15 MW installed at an existing resevoir or irrigation system that did not have hydroelectric generation as of April 16, 2009.					
http://data.opi.mt.gov/bills/mca/69/3/69-3-2004.htm					
Nevada	30	1	Post-2003 dams ineligible.	yes, but no dams or reservoirs	no
Eligibility Notes: Waterpower is defined as the power derived from standing, running, or falling water which is used for any plant, facility, equipment, or system to generate electricity if the generating capacity of system total is not more than 30 MW. Waterpower includes water that pumped to higher elevation. It does not include power derived from water stored in a reservoir or dam unless the water is exclusively for irrigation, the dam was in existence prior to Jan.1, 2003, and the capacity is not more than 30 MW. Also ineligible are systems that require new or increased appropriation or diversion of water, or that require fossil fuel for its creation.					
http://www.leg.state.nv.us/Session/76th2011/Bills/AB/AB150_EN.pdf					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
New Hampshire	none	1	Tier 1 eligibility restricted to new renewable energy generation on-line as of Jan. 1, 2006.	No, but incremental production okay	no
Eligibility Notes: The incremental new production of electricity in any year from a hydroelectric generating facility of any capacity, over its historical generation baseline at existing facilities is permitted. There are no explicit size limits, but the implication would be that no new dams or impoundments are permitted.					
http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XXXIV-362-F.htm					
New Hampshire	5	4	Post-2006 dams ineligible.	no	no
Eligibility Notes: Facility must be 5 MW or less, existing as of Jan. 01, 2006, and incorporate FERC requirements for fish passages and must be connected to NH electric grid. Needs to have all state water quality certifications.					
New Jersey	3	1	Facilities placed in service after July 23, 2012 and less than 3 MW are eligible.	√	no
Eligibility Notes: Eligible facilities must be located in NJ, connected to distribution grid, certified as low-impact by nationally-recognized organization with variety of minimum review criteria applicable to river flows, water quality, fish passage and protection, watershed protections, threatened and endangered species protection, cultural resource protection, recreation, and facilities recommended for removal.					
http://www.lexisnexis.com/hottopics/njcode/					
New Jersey	3-30 MW	2	None specified	unspecified	no
Eligibility Notes: In addition to meeting environmental standards, hydropower facilities must be located where retail competition is permitted. Hydropower projects must receive approval from the Commissioner of Environmental Protection that facilities meet the highest environmental standards and minimize impact to the environment and local communities.					
New Mexico	none	1	Post-July 2007 dams eligible.	√	no
http://www.nmcpr.state.nm.us/NMAC/parts/title17/17.009.0572.htm					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
New York	none	Main Tier	Post-2003 facilities eligible.	√	no
Eligibility Notes: Certain existing hydroelectrict facilities built prior to January 1, 2003, may also be eligible if they demonstrate a need for financial support. Existing facilities under 5 MW may be eligible. No new storage impoundment. Eligibility limited to the incremental production associated with the upgrade. Small hydro (5MW or less) projects are eligible for RPS in the customer-sited tier on a case-by-case basis. New run-of-river facility capacity limited to 30 MW or less. Environmental criteria incllude: 1) enforcement of all mitigation measures required as conditions of various state, local, and federal ordinances, regulations and licenses that govern the construction and operation of a project; 2) within practical limits, coordination of plant operations with any other water-control facilities that influence water levels or flows to mitigate impacts and protect indigenous species and habitat; 3) compensation for loss of significant habitat by the creation of similar habitats, supporting the same stock, at or near the development site within the same ecological unit; 4) installation of fish passages to maintain pre-existing migration patterns both up and downstream; and 5) installation of measures necessary to minimize fish mortaility. Facility must also have certain state and federal permits.					
http://www3.dps.ny.gov/W/PSCWeb.nsf/All/1008ED2F934294AE85257687006F38BD?OpenDocument#psc					
North Carolina	10	1, primary schedule	None specified	√	no
Eligibility Notes: Existing or new hydroelectric power facilities are eligible if generation capacity is 10 MW or less and delivers electricity to power supplier.					
http://www.ncuc.commerce.state.nc.us/reps/reps.htm					
North Carolina	"large" (more than 10 MW, but no explicit size limits)	1, secondary schedule	None specified	√	no
Eligibility Notes: Rural Electric Co-ops/Municipal utilities may use large hydropower to meet up to 30% of the renewable energy requirement. This includes allocations made by the Southeastern Power Administration.					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Ohio	none	1	Eligible facility must have been placed in service as of Jan. 1, 1998 or later.	√	no
Eligibility Notes: Significant environmental restrictions are placed on hydropower, but no size limits or limits on new dams or vintage. Significant environmental restrictions for a "hydroelectric facility," defined as a hydroelectric generating facility that is located at a dam on a river, or on any water discharged to a river, that is within or bordering this state or within or bordering an adjoining state and meets all of the following standards: 1) the facility provides for river flows that are not detrimental for fish, wildlife, and water quality, including seasonal flow fluctuations as defined by the applicable licensing agency for the facility; 2) the facility demonstrates that it complies with the water quality standards of this state, which compliance may consist of certification under Section 401 of the "Clean Water Act of 1977," 91 Stat. 1598, 1599, 33 U.S.C. 1341, and demonstrates that it has not contributed to a finding by this state that the river has impaired water quality under Section 303(d) of the "Clean Water Act of 1977," 114 Stat. 870, 33 U.S.C. 1313; 3) the facility complies with mandatory prescriptions regarding fish passage as required by the Federal Energy Regulatory Commission license issued for the project, regarding fish protection for riverine, anadromous, and catadromous fish; 4) the facility complies with the recommendations of the Ohio environmental protection agency and with the terms of its federal energy regulatory commission license regarding watershed protection, mitigation, or enhancement, to the extent of each agency's respective jurisdiction over the facility; 5) the facility complies with provisions of the "Endangered Species Act of 1973," 87 Stat. 884, 16 U.S.C. 1531 to 1544, as amended; 6) the facility does not harm cultural resources of the area. This can be shown through compliance with the terms of its federal energy regulatory commission license or, if the facility is not regulated by that commission, through development of a plan approved by the Ohio historic preservation office, to the extent it has jurisdiction over the facility; 7) the facility complies with the terms of its federal energy regulatory commission license or exemption that are related to recreational access, accommodation, and facilities or, if the facility is not regulated by that commission, the facility complies with similar requirements as are recommended by resource agencies, to the extent they have jurisdiction over the facility; and the facility provides access to water to the public without fee or charge; and 8) the facility is not recommended for removal by any federal agency or agency of any state, to the extent the particular agency has jurisdiction over the facility.					
http://www.puco.ohio.gov/puco/index.cfm/industry-information/industry-topics/ohioe28099s-renewable-and-advanced-energy-portfolio-standard/					
Oregon	40-50 MW		Facilities constructed after Jan. 1, 1995 eligible. All LIHI-certified facilities are eligible, regardless of age. See eligibility notes for exceptions.	yes, but cannot be in a "protected area."	√
Eligibility Notes: Post Jan. 1, 1995 hydroelectric facilities are eligible if the facility is located outside any protected area designated by the Pacific Northwest Electric Power and Conservation Planning Council as of July 23, 1999, or any area protected by the federal Wild and Scenic Rivers Act or the Oregon Scenic Waterways Act; or if the electricity is attributable to efficiency upgrades made on or after Jan. 1, 1995. Exceptions include: Up to 50 average MWs of electricity per year generated by an Oregon electric utility from certified low-impact hydroelectric facilities described in ORS 469A.020 (4)(a) may be used to comply with the RPS, without regard to the number of certified facilities operated by the electric utility or the generating capacity of those facilities. Up to 40 average MWs of electricity per year generated by certified low-impact facilities described in ORS 469A.020 (4)(b) may be used to comply with the RPS, without regard to the number of certified facilities or the generating capacity of those facilities. Efficiency upgrades at a Bonneville Power Administration facility that became operational before Jan. 1, 1995 may be used to comply with RPS for the portion of electricity generation attributable to Oregon retail load.					
http://www.oregon.gov/ENERGY/RENEW/Pages/RPS_home.aspx http://www.leg.state.or.us/ors/469a.html					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Pennsylvania	50	1	Eligible facilities must have been licensed by FERC on or prior to Jan. 1, 1984, and facility must be held, at least in part, by commonwealth municipal or electric cooperative on July 1, 2007.	√	√
Eligibility Notes: Eligibility includes new and existing low-impact hydro facilities. Low-impact hydropower consists of any technology that harnesses the hydroelectric potential of moving water impoundemts, provided that such development does not adversely impact aquatic systems, meets the certification standards of LIHI and American Rivers, Inc., provides adequate water flow for protection of aquatic life and for safe and effective fish passage, protects against erosion,and protects cultural and historic resources.					
http://www.puc.pa.gov/consumer_info/electricity/alternative_energy.aspx					
Pennsylvania		2	None specified	√	no
Eligibility Notes: Tier 2 eligibility includes new and existing large scale hydropower. Large-scale hydropower means the production of electric power by harnessing the hydroelectric potential of moving water impoundments, including pumped storage.					
Rhode Island	30		None specified	√	no
Eligibility Notes: A small hydro facility is defined as a facility employing one or more tubine generators and with an aggregate capacity not exceeding 30 MW. To qualify as a new renewable energy resource, a small hydro facility cannot involve any new impoundment or diversion of water with an average salinity of 20 ppt or less.					
http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26.1/INDEX.HTM					
Texas	Less than 10 MW for small hydro, and up to 150MW for repowered hydro		Qualifying systems are systems installed after September 1999.	√	no
Eligibility Notes: To be eligible to produce RECs, facility must be either a new facility, which includes the incremental capacity and associated energy from an existing facility achieved through repowering activities undertaken on or after Sept. 1999. Or be a small producer, which is defined as a renewable resource that is less than 10 MW. Small hydro is defined as "a hydroelectric facility at a dam." No hydro is currently included in utilities designated capacities. Only repowered facilities, which are defined as an existing facility that has been modernized or upgraded to use renewable energy technology to produce electricity. A repowered facility may earn RECs for the energy produced in proportion to 150 divided by nameplate capacity.					
http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.173/25.173ei.aspx					

State	Capacity limit (MW)	Tier	Online date	New hydropower allowed?	LIHI Certification Required?
Washington	not specified		After March 31, 1999, only the incremental electricity produced as a result of efficiency imrovements are eligible.	no	no
Eligibility Notes: Must be located in Pacific NW. Hydroelectric generation in irrigation pipes and canals located in Pacific NW is eligible. New diversions and impoundments are ineligible. http://apps.leg.wa.gov/RCW/default.aspx?cite=19.285					
http://apps.leg.wa.gov/RCW/default.aspx?cite=19.285					
Wisconsin	no limit		Large hydropower (60+mw) is eligible if the dam was completed in 2011 or later. Small hydro (60MW or less) is eligible if placed into service after Jan. 2004 (with some exceptions).	√	no
Eligibility Notes: For small hydropower (less than 60 MW), utilities receive credit for: 1) the sum of all hydro purchased in a reporting year; or 2) the average of the amounts of hydropower generated by facilities owned or operated by the utility for 2001,2002, and 2003, adjusted to reflect the permanet removal from service of any of those facilties and adjusted to reflect any capacity increases from improvements made after Jan. 2004; and 3) the amount of hydropower generated in the reporting year by facilities owned or operated by the electric provider that are initially placed in service on or after Jan.1, 2004. Electricity from large hydro can be counted towards the RPS beginning December 31, 2015, if the facility was placed in service on or after Dec. 1, 2010. Hydropower generated in Manitoba may count toward compliance if the province has informed the PSC in writing of final licenses under Canadian law.					
http://psc.wi.gov/utilityInfo/electric/renewableResource.htm					
Puerto Rico	none specified		Hydroelectric facilities are eligible only for the energy generated from an increase in efficeincy or increased generating capacity achieved before July 2010. New hydropower facilities built after July 2010 are eligible.	√	no
Eligibility notes: Qualified hydroelectric energy is classified as a "sustainable renewable energy" resource.					
http://www.prgef.com/RenewablePlatform.aspx					