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MEMORANDUM

October 7, 2013

TO: Members of the Water Resources Review Committee

FROM: David Beaujon, Senior Research Analyst, 303-866-4781

SUBJECT: State and Federal Policies to Promote Small and Low-Impact Hydropower

Summary

This memorandum identifies state laws and other policies to promote small and low-impact hydroelectric generation in Colorado. Specifically, it:

- identifies types of hydro electricity that satisfy Colorado's renewable energy standard;
- describes a 2011 law that requires the Public Utilities Commission (PUC) to consider certain types of hydroelectricity when reviewing generation acquisitions for electric utilities;
- summarizes recommendations of the Water Resources Review Committee concerning hydroelectricity;
- identifies state loan and grant programs for small hydroelectric projects; and
- summarizes 2013 federal legislation authorizing the use of U.S. Bureau of Reclamation conduit facilities for hydropower development.

Colorado's Renewable Energy Standard and Hydroelectricity

RPS for investor-owned utilities. In 2004, Colorado voters approved Amendment 37, which created the renewable energy standard for investor-owned utilities. According to the measure's non-statutory declaration of legislative intent, renewable energy resources "minimize water use for electricity generation, diversify Colorado's energy resources, reduce the impact of volatile fuel prices, and improve the natural environment of the state." In 2010, the General Assembly increased the renewable portfolio standard (RPS) for investor-owned utilities according to the following schedule:

- 12 percent of electricity sales in Colorado for 2011 through 2014;
- 20 percent of electricity sales in Colorado for 2015 through 2019; and
- 30 percent of electricity sales in Colorado for 2020 and thereafter.¹

¹Section 40-2-124 (1)(c), C.R.S.

Eligible small hydroelectric resources. Under the RPS, new hydroelectricity facilities up to 10 megawatts (MW), and hydroelectricity facilities up to 30 MW in existence on January 1, 2005, qualify as eligible energy resources.²

Ineligible hydroelectric resources. Under the law, eligible energy resources also include electricity obtained by converting heat from exhaust stacks and pipes that would otherwise be lost energy. Only recycled energy from generation units of 15 MW or less satisfy the RPS. The law specifically excludes energy from pumped hydroelectricity generation from qualifying as recycled energy.³ Pumped storage facilities are hydroelectric generation facilities that use an upper and lower reservoir system. Water from the upper reservoir is released for electric generation during periods of high demand for electricity. The water is then captured in the lower reservoir and pumped back into the upper reservoir during periods of low demand when electricity is cheaper. Pumped storage plants enable excess off-peak generation capacity to be used during peak periods, thereby reducing the need for new peak generation facilities. They may also increase the reliability of solar and wind resources by capturing energy during periods of peak production and storing it for release during periods of low productivity, such as at night or during calm weather. Pumped storage facilities also provide a quicker response to customer demand than other electric generation facilities such as coal-fired plants. There are three pumped storage facilities in Colorado:

- Cabin Creek – 300 MW facility near Georgetown;
- Mount Elbert – 200 MW facility near Leadville; and
- Flatiron/Carter Lake – 8 MW facility near Loveland.

Distributed generation. The law requires that a portion of the RPS be met through retail or wholesale distributed generation using renewable energy resources. Retail distributed generation is defined as a system that is located on a customer's facility and is interconnected on the customer's side of the utility meter. It must also provide electric energy primarily to serve the customer's load and be sized to supply no more than 120 percent of the customer's average annual consumption of electricity at that site.⁴ Wholesale distributed generation is defined as a renewable energy resource with a nameplate rating of up to 30 MW that does not qualify as retail distributed generation. Investor-owned utilities must obtain the following percentage of their retail sales from either wholesale distributed generation or retail distributed generation:

- 1 percent for 2011 through 2012;
- 1.25 percent for 2013 and 2014;
- 1.75 percent for 2015 and 2016;
- 2 percent for 2017 through 2019; and
- 3 percent for 2020 and thereafter.⁵

Public Utilities Commission and implementation of the RPS. The Public Utilities Commission (PUC) is charged with implementing the RPS for investor-owned electric utilities that are subject to rate regulation. The commission regulates the recovery of costs incurred by utilities to satisfy the RPS. It also oversees utilities to ensure that they meet the renewable energy standard in the most cost-effective manner, including the review of renewable energy supply contracts. Distributed generation amounts in the electric resource standard for the years 2015 and thereafter may be changed by the PUC after December 31, 2014, if it finds, upon application by

²Section 40-2-124 (1)(a)(VII), C.R.S.

³Section 40-2-124 (1)(a)(VI), C.R.S.

⁴Section 40-2-124 (1)(a)(VIII), C.R.S.

⁵Section 40-2-124 (1)(c), C.R.S.

a qualifying retail utility, that these percentage requirements are no longer in the public interest. If the commission finds that the public interest requires an increase in the distributed generation requirements, the commission must report its findings to the General Assembly.⁶

RPS for electric cooperatives and municipal utilities. In 2007, the General Assembly enacted an RPS for municipally owned utilities serving at least 40,000 customers and electric cooperatives. The same eligible energy resources satisfy the RPS for electric cooperatives and municipally owned utilities as investor-owned utilities. Specifically, municipally owned utilities serving over 40,000 customers and electric cooperatives serving less than 100,000 meters must generate or obtain electricity from renewable resources according to the following schedule:

- 3 percent for 2011 through 2014;
- 6 percent for 2015 through 2019; and
- 10 percent for 2020 and after.⁷

RPS for larger electric cooperatives and generation and transmission cooperative electric associations. Pursuant to Senate Bill 13-252, electric cooperatives serving 100,000 or more meters must generate or obtain 20 percent of their electricity from renewable resources by 2020.⁸ Intermountain Rural Electric Association is the only electric cooperative in Colorado that serves more than 100,000 meters. Senate Bill 13-252 also requires that generation and transmission cooperative electric associations that provide electricity directly at wholesale to cooperative electric associations in Colorado generate or obtain 20 percent of their electricity from renewable resources.⁹ Tri-State Generation and Transmission Association provides power to 18 of the 22 cooperative electric associations in Colorado. Consequently, 20 percent of the electricity provided by Tri-State Generation and Transmission Association must be from eligible renewable energy by 2020.

Generation Acquisition for Electric Utilities

Hydroelectricity and pumped hydroelectricity. State law also requires the PUC to give the fullest possible consideration to the cost-effective implementation of clean energy and energy-efficiency technologies in its consideration of generation acquisitions for electric utilities, bearing in mind factors such as energy security, economic prosperity, environmental protection, and insulation from fuel price increases. In the 2011, the law was amended to add hydroelectricity and pumped hydroelectricity to the list of technologies that the PUC may consider. Specifically, the commission may consider, at a utility's request, the cost-effective implementation of pumped hydroelectric projects, taking into account the potential benefits or impacts of the proposed facility on fishery health. It may also consider new hydroelectric facilities that add to existing water infrastructure, such as a reservoir, ditch, or pipeline, and don't result in any change in the quantity or timing of diversions or releases for purposes of peak power generation. The commission may also consider new facilities that are placed into production as part of new water infrastructure operated for purposes other than the production of electricity.¹⁰

⁶Section 40-2-124 (1)(c)(II)(C), C.R.S.

⁷Section 40-2-124 (1)(c)(V), C.R.S.

⁸Section 40-2-124 (1)(c)(V.5), C.R.S.

⁹Section 40-2-124 (8)(b), C.R.S.

¹⁰Section 40-2-123 (3.2)(c), C.R.S.

Water Resources Review Committee Recommendations Concerning Hydroelectricity

Hydroelectric facilities and property taxes. In 2009, the Water Resources Review Committee recommended legislation that specified that for purposes of property taxation, new small or low-impact hydroelectric energy facilities would be valued using the income approach.¹¹ This means that the actual value is based on the projected gross revenue of such facilities, measured in nominal dollars. This income approach contrasts with the traditional cost approach, where property taxes decline over time as assets depreciate. Eligible hydroelectric energy facilities include new facilities with a nameplate rating of less than 10 MW; new facilities that have a nameplate rating greater than 10 MW installed as part of existing water infrastructure projects; and certain new water infrastructure projects that include specified environmental protections.

2008 review of renewable energy standard. In 2008, state law was amended to require the Water Resources Review Committee to study the feasibility of expanding the types of hydroelectricity that qualify as an eligible energy resource under Colorado's renewable energy standard.¹² During the 2008 interim, the committee was required to consider:

- issues related to the appropriate definition of eligible hydroelectricity;
- environmental impacts of hydroelectricity;
- potential for hydroelectricity to displace other eligible energy resources; and
- whether the inclusion of hydroelectricity as an eligible energy resource violates the intent of Amendment 37.

The committee held a hearing in 2008 to consider whether the definition of eligible renewable energy resources should be expanded to include hydroelectric facilities that met certain environmental criteria and pumped hydroelectricity. The committee did not recommend legislation to change the definition of renewable energy resources or make other recommendations.

State Loans and Grants for Small Hydroelectric Power Projects

Colorado Water Resources and Power Development Authority. The Board of Directors of the Colorado Water Resources and Power Development Authority authorized \$150,000 for matching grants for the evaluation and development of hydroelectric projects up to 5 MW for 2013. Grants are limited to \$15,000 for each project. The authority also provides loans for hydroelectric projects up to 5 MW. Loans are limited to a maximum of \$2 million per governmental agency. The interest rate for these loans is two percent, and the maximum term is 20 years. Eligible projects include new hydroelectric facilities, pipelines, the necessary remodel or reconfiguration of the building housing the facilities, and transmission lines. Eligible borrowers are limited to governmental entities including cities, towns, counties, water districts, water and sanitation districts, metropolitan districts, water conservancy districts, water conservation districts, and irrigation districts.

Colorado Water Conservation Board. The Colorado Water Conservation Board (CWCB) may loan moneys from the CWCB Construction Fund and the Perpetual Base Account for projects that protect the hydroelectric energy resources and supplies of the State of Colorado. The interest rate for these loans is two percent, and the maximum term is 30 years. Eligible borrowers include governmental entities, as well as private entities such as irrigation companies. The Colorado Water Resources and Power Development Authority and the CWCB may jointly fund small hydropower facilities in Colorado sponsored by governmental agencies. Governmental agencies seeking more

¹¹Senate Bill 10-019

¹²House Bill 08-1222

than \$2 million are eligible to receive the first \$2 million from the authority, and the remaining may be available from the CWCB.

ACRE Program and micro-hydro. In 2006, the General Assembly created the Agriculture Value-Added Cash Fund to promote agricultural energy-related projects and research and transferred \$1.5 million from the Severance Tax Trust Fund for the program. In 2012, this program was extended until July 1, 2017. The General Assembly also authorized annual transfers of up to \$500,000 from Tier 2 of the Operational Account of the Severance Tax Trust Fund. The Colorado Agricultural Value-Added Development Board in the Colorado Department of Agriculture administers the allocation of these moneys through the Advancing Colorado's Renewable Energy (ACRE) Program. In order to be eligible for this money, a project must benefit Colorado's agriculture industry and may include biofuels development, hydropower, biomass conversion, wind, and solar energy. The department is currently using ACRE moneys to develop a statewide micro-hydro roadmap for agriculture that identifies current technological capacity, economic conditions influencing implementation, and bureaucratic hurdles to deployment. It will also seek to determine the most cost-effective circumstances for implementation and identify necessary steps for statewide or sector-wide deployment of micro-hydro.

2013 Federal Legislation Concerning Hydropower Development

Small conduit hydropower legislation. On August 9, 2013, President Obama signed a law that authorizes the U.S. Secretary of the Interior to contract for the development of small conduit hydropower at U.S. Bureau of Reclamation facilities.¹³ Such facilities are limited to 5 MW or less and must be located on a tunnel, canal, pipeline, aqueduct, flume, ditch, or similar manmade water conveyance. The secretary must offer to lease the electricity produced by such facilities to an irrigation district or water users association operating or receiving water from the applicable conduit prior to offering it to other parties. The law directs the bureau to apply its categorical exclusion process under the National Environmental Policy Act of 1969 (NEPA) to small conduit hydropower development, except with respect to siting of associated transmission facilities on federal lands. Such exclusions enable the agency to approve a project without an environmental assessment or an environmental impact statement. The law designates the bureau's Power Resources Office as the lead office for such small conduit hydropower policy and procedure-setting activities, thereby excluding such activities from the jurisdiction of the Federal Energy Regulatory Commission (FERC). It also declares that nothing in the act:

- obligates specified power administrations to purchase or market the power produced by such facilities;
- alters or impedes the delivery and management of water for original project purposes;
- alters or affects any existing agreements for conduit hydropower development projects or disposition of revenues; or
- alters or affects any existing preliminary permit, license, or exemption issued by FERC or any project for which an application has been filed with FERC as of the date of the law's enactment.

¹³Public Law 113–24, August 9, 2013.

Streamlined permitting for small hydropower projects. President Obama also signed into law the Hydropower Regulatory Efficiency Act of 2013 which exempts certain conduit hydropower facilities from the licensing requirements of the Federal Power Act (FPA). Specifically, the law:

- increases the FERC licensing exemption for small hydro projects from 5 MW to 10 MW;
- exempts conduit projects up to 5 MW from FERC jurisdiction;
- increases the size of private small conduit hydroelectric facilities eligible for discretionary exemption from 15 MW to 40 MW;
- authorizes FERC to grant developers preliminary permit extensions to allow continued site investigation and license preparation work for projects that are proceeding in good faith and with reasonable diligence;
- directs FERC to explore a potential two-year licensing process for hydropower development at existing non-powered dams and closed-loop pumped storage projects; and
- directs the Department of Energy to study opportunities for pumped storage projects to support integration of intermittent renewable resource development and provide grid reliability benefits, as well as a study of hydropower potential from existing conduits.