AMP Uses Ohio’s Resources for an Energy-Efficient Future (Columbus, OH)

Based in Columbus, Ohio, American Municipal Power (AMP) is utilizing the geographic advantages of Ohio’s many rivers to generate an emissions-free form of energy—hydroelectric power. Hydropower constitutes a significant portion of AMP’s assets, providing 15-20 percent of all power in their generation projects. To reach their organizational goals and reliability standards within the MISO and PJM markets, AMP partners with 79 municipal communities across seven states including Ohio, Michigan, Kentucky, Virginia, West Virginia, Pennsylvania, and Delaware along with the Central Virginia Electric Cooperative (CVEC). Compared to other renewable energy technologies, hydroelectric power produces energy 60-70 percent of the time, making it the most efficient form of renewable energy as compared to wind, solar or others. Most hydropower projects have a 70-100 year lifespan and low operating and maintenance costs depending on their geography and power ratings.

Hydropower has secured itself as a reliable form of renewable energy and is a significant part of many state and regional energy-related objectives. Touted as a way to maximize utility of existing dams, the U.S. Department of Energy (DOE) estimates there is more than 15,000 MW of potential power from larger hydro projects on existing large dams and 60,000 MW of potential power on smaller dams (Russell 2010). DOE’s estimates were derived from an analysis of the geographic locations most suitable for hydropower that the Midwest—and the U.S. as a whole—had to offer.
Currently, only 3 percent of the nation’s dams are wired for energy production, yet power generated by hydroelectric facilities could increase, at a minimum, by 23,000 MW by 2025, according to a different report released by the Electric Power Research Institute. Hydropower generates about 77,000 MW, or 8 percent of the nation’s electricity, according to the Energy Information Administration (Russell 2008). (Hydropower generation fluctuates its potential throughout seasons and is at peak during summer months.) Ocean-wave-energy technologies and new conventional hydropower at existing non-powered dams will increase capacity and diversify renewable electricity in states across the U.S.

A Clean Energy Option
AMP is currently working on five new hydroelectric projects under construction on the Ohio River that collectively will add more than 350 MW of additional generation to the region, enough to serve more than 250,000 households. The projects will place powerhouses adjacent to or attached to five concrete dams built by the Army Corps of Engineers in the late 1960s and 1970s and will use the dams’ existing head and flow rates to produce electricity without changing the Ohio River’s overall flow (Russell 2010).

Proponents of hydroelectric power say AMP’s projects could help reduce annual CO₂ emissions by 2 million metric tons. “Here in the Midwest we are trying to walk a balance, just as California is balancing severe drought, water usage, and environmental integrity,” said Phil Meier, vice president of AMP’s hydroelectric development and operations. Meier added that when accounting for transportation infrastructure needs and watershed management priorities along the Ohio River, hydroelectric power serves as the best option for viable long-term renewable energy to reach electricity needs in the region with minimal environmental impact.

Once online, AMP’s five planned projects will be able to report emissions using AMP’s generation statistics by analyzing the carbon intensity factors of the region and multiplying those by the energy output of the individual hydropower project to produce a CO₂ savings that is associated with the project’s operation. Though the company does not measure direct or indirect emissions from the construction of its generation facilities, national statistics show that these hydro technologies will save energy consumers a great deal over the long-term in addition to providing utilities a reliable source of renewable energy for decades. The National Hydropower Association states hydroelectric “fuel” avoids 225 million metric tons of carbon pollution in the U.S. each year – equal to the output of approximately 42 million passenger cars.

“AMP is ahead of the renewable curve [compared to competing power suppliers], and any regulations that may come down as a result of federal or state energy requirements will be easily managed,” Meier said when asked about Ohio’s Senate Bill 310 and the Clean Power Plan proposed by the U.S. Environmental Protection Agency. (Note both were proposed as of the writing of this
piece.) For example, one of the company’s most valued accomplishments has come from their Bellville plant, where more than 1 Gigawatt-hours per year is produced with no emissions.

Community Involvement
AMP gives its municipal members the flexibility to choose which projects they believe will most benefit their community. Once a project is chosen, the hydropower plant is constructed, and the power generated goes to the specific municipal partner’s power grid. As an added incentive, AMP provides $1-2 million for recreational facilities to communities undertaking hydropower projects and typically creates 500-600 construction jobs and 7-9 permanent jobs per project. AMP makes it a priority to use materials, products and contractors from within Ohio on the construction of their projects.

“Hydropower allows AMP and its municipal members to come together to diversify their energy portfolio as well as diversifying the risk associated with energy production,” explained Meier. Communities often work with AMP to build off of existing infrastructure and address potential benefits or obstacles that may occur as part of the development process. The company’s largest footprint is in the State of Ohio, where they have five new projects in progress, including the Meldahl project, which is one of the company’s more unique partnerships.

The Meldahl Hydroelectric facility, currently under construction, will become the largest hydroelectric power plant on the Ohio River with an estimated capacity of 105 MW. Photo credit: American Municipal Power.

The project, located in Hamilton, Ohio, took a unique approach compared to other hydropower projects. Since Hamilton already had a 50-year license issued by the Federal Energy Regulatory Commission (FERC) to construct and operate a 105 MW hydropower project, AMP helped by managing the construction of the site; now, the city and AMP each have joint ownership of the Meldahl project. The city already owns one hydroelectric power plant, the Greenup Plant, and has a total of 70 MW of generating capacity. Sixty days after Meldahl becomes operational, a 49 percent ownership stake will be sold to AMP and Hamilton will retain the rights for a 51 percent share of the energy output from the facility. The project will use bulb turbines to generate an average gross annual output of approximately 558 million kilowatt-hours (kWh). Over 40 percent of the city’s energy is supplied by renewable energy sources, growing to 70 percent upon completion of Meldahl.
“When small or large communities come together to accomplish something, they increase their purchasing power as a result of pooling their strengths,” said an AMP spokesman. AMP serves as an example of how companies can use Ohio’s natural resources to their advantage for an energy-efficient future. With new projects on the horizon, the company is poised to be a leader in both the energy and hydropower industries.

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-Mathew Roberts, Voinovich School Scholar, Ohio University Voinovich School (June 2014)

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