

Small Hydropower Potential in Missouri

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The overall objective of this research is to advance our understanding of how, and to what degree, small hydropower development can aid in the fight against global warming. The leading cause of climate change today is the burning of fossil fuels related to energy production. One approach to reducing greenhouse gas emissions, therefore, is to more actively switch to proven renewable technologies, including small hydropower, in the production of electricity and reduce the use of fossil fuels in electricity production. We make the important distinction in this research project between “small” and “traditional” hydropower plants, because “small” hydropower, at generation capacities of less than 30 MW per site, has few to no negative effects on local river ecosystems. This makes their benefits to reducing greenhouse gas emissions even more appealing. Additionally, small hydropower is a proven technology with a number of benefits besides just emissions-free electric power, including domestic reliability, decentralization externalities, and significant energy efficiency properties. Finally, development of small hydropower sites throughout Missouri would create jobs, help to satisfy growing energy demands, and qualify under Missouri’s new Renewable Portfolio Standard, passed by the voters in November, 2008.

This research documents the small hydropower sites available for development within the state of Missouri, the amount of carbon emissions that could be reduced by building these sites, and finally, it provides site-specific benefit-cost analyses of actual construction of these small hydropower plants. Preliminary results of this research find that while the costs of small hydropower development are not always small, the relative benefits are often much larger than expected. Small hydropower development would also create jobs, spur the economy, and strengthen valuable energy infrastructure in the U.S.