



COMMENTS OF AMERICAN MUNICIPAL POWER, INC.  
IN RESPONSE TO THE  
REQUEST FOR INFORMATION

DE-FOA-0000629

U.S. Department of Energy (DOE)  
Office of Energy Efficiency and Renewable Energy

“HYDROPOWER ADVANCEMENT PROJECT (HAP)”

February 21, 2012



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Executive Summary

American Municipal Power, Inc. (AMP) is a power supply and services provider for 129 member municipal electric communities and systems in seven states (Delaware, Kentucky, Michigan, Ohio, Pennsylvania, Virginia, and West Virginia). AMP members jointly own and operate electric generation facilities using a broad portfolio of fuels and technologies across our footprint, including the 42-MW Belleville Hydroelectric Plant located at the Belleville Locks and Dam on the Ohio River. Two AMP members separately own and operate the Hannibal Hydroelectric Plant (City of New Martinsville, WV) and the Greenup Hydroelectric Plant (Hamilton, OH), also situated on the Ohio River.

Based in part on the success that the Belleville facility has achieved in its over 10 years of operation and the knowledge that additional hydroelectric development on the Ohio River was possible, AMP has embarked on what is currently the largest development of new hydroelectric facilities in the nation. AMP has four run-of-the-river projects currently under construction at existing locks and dams, totaling nearly 300 MW, with two additional projects in the permitting and licensing stages.

AMP’s comments in response to the Request for Information (RFI) on the “Hydropower Advancement Project” (HAP) stem from our experience with hydroelectric projects on the Ohio River and focus on promoting an increase in upstream pool levels by the U.S. Army Corps of Engineers (USACE) in order to maximize energy production.



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Explanation of response format:

AMP provides below a brief description of our current hydroelectric project development efforts, with several recommendations. For ease of response to the specific topics and questions from the RFI, AMP has also included those specific topics and questions, and added our responses in **highlighted** format.

AMP Hydroelectric Development and Hydro Efficiency Improvements

On the Ohio River, the predominant technology being used for hydroelectric power is bulb turbines, where the turbine and generator are rotated horizontally to maximize efficiency. There are numerous projects that use this type of generation. The projects that are currently operating are as follows:

- Hannibal – City of New Martinsville, WV (35 MW / 230,000 MWhs annually)
- Belleville – OMEGA JV5 / AMP (42 MW / 250,000 MWhs annually)
- Racine – American Electric Power (est. 48 MW / est. 245,000 MWhs annually)
- Greenup – City of Hamilton, Ohio (70 MW / 285,450 MWhs annually)

Projects currently under construction and scheduled to be completed by 2015 include:

- Cannelton (84 MW / 456,000 MWhs annually)
- Meldahl (105 MW / 558,000 MWhs annually)
- Smithland (72 MW / 379,000 MWhs annually)
- Willow Island (35 MW / 239,000 MWhs annually)

Two additional projects are in the permitting and licensing stages (Pike Island and RC Byrd).

Since these projects are bulb design, they are capable of producing 5% additional energy with an increase in the upstream pool level. One (1) foot of additional headwater can be gained by simply having the USACE regulate the headwaters at the dam to be at the upper level of the gauge settings as authorized by Congress. This would only require a directive from the USACE HQ or Ohio River Division memo to the districts to operate in this manner to maximize energy production.

AMP knows of no opposition to this measure as it is within the USACE operating parameters. This proposal does not affect the environment or navigation interests on the Ohio River.

The benefit would be an additional 50,000 MWhs generated annually based upon those projects currently operating. By 2015, when units under construction will be operational, an additional 81,850 MWhs could be generated. At a conservative value of \$50 per MWh, this would result in an additional \$2,500,000 in revenue in the first year and in 2015, an additional \$4,092,500. This would also increase fees paid to the FERC by an immediate \$100,000 annually and another \$163,700 in 2015.

#### RFI Topics and Questions:

1. The appropriateness of the objectives and rationale that a standard assessment methodology and analysis of improvement opportunities can accelerate improvements and expansions to increase annual generation and/or value of hydropower assets at existing U.S. hydropower facilities.

**NO SPECIFIC AMP COMMENTS**

2. Facility Assessment components:

- a. Facility and team selection, including (i) whether teams and facilities should be selected jointly or independently and (ii) how independent teams and facilities should be coordinated into a campaign of multiple assessments.

**NO SPECIFIC AMP COMMENTS**

- b. Assessment scope.

**NO SPECIFIC AMP COMMENTS**

3. The following questions:

- a. What can be done to accelerate the improvement and expansion of existing federally and non-federally owned hydropower facilities?

While we applaud the recent agreement between the U.S. Army Corps of Engineers (USACE) and the Federal Energy Regulatory Commission (FERC), we are concerned that the USACE still requires redundant permitting requirements through the 404 permits and 408 permits, despite the FERC review process. This delays projects by more than a year and costs nearly \$1M additional just in redundant work. The process could be improved by establishing joint review teams from a district, division, and headquarters level to expedite permitting reviews and approvals.

- What role can U.S. Government play in the improvement and expansion of existing hydropower facilities in order to increase the generation and value provided by these assets? As noted above, the U.S. Government can improve

and streamline the permitting process without changing existing laws or regulations by establishing joint review teams between the agencies.

- What barriers are preventing hydropower owners and operators from implementing improvements and expansions at existing hydropower assets? Uncertainty in the regulatory environment and redundant regulations cause barriers.
- What incentives and/or policy changes would expedite improvements and expansions to existing hydropower assets?

NO SPECIFIC AMP COMMENTS

- b. What information is needed to develop a case to move forward to feasibility studies leading to improvement or expansion projects? For example:
- High level estimation and valuation of benefits and costs of improvements  
For AMP's projects, the benefit would be an estimated additional 50,000 MWhs generated annually based upon those projects currently operating. In 2015 to 2016, once projects under construction are operational, an additional 81,850 MWhs could be generated. At a conservative value of \$50 per MWh, this would result in an additional \$2,500,000 in revenue in the first year and in 2015, an additional \$4,092,500. This would also increase fees paid to the FERC by an immediate \$100,000 annually and another \$163,700 in 2015.
  - Understanding of how asset conditions (including deterioration) and operating conditions are related to efficiency and production  
Developing a consistent USACE operating policy including the management of pool levels at each dam would help bolster energy forecasting and production.
- c. What information is needed from a feasibility study to develop a business case (benefit-cost ratio, return on investment, internal rate of return and LCOE) for investment decisions on improvement or expansion projects? For example detailed estimates of benefits and costs for improvements.  
Energy gains, costs, policy changes, power costs, and time to implement would all be examples of information that could be requested.
- d. As a hydropower facility owner, would you allow and participate in HAP assessments at your facility?  
Yes, pending approval by our project participants and Board.
- e. As a hydropower consultant, would you consider participation in the facility assessment team(s) that will execute standard facility assessments?  
NA
- f. As a hydropower consultant, would you consider providing proposals with five to ten facilities for assessment by a team assembled by you? If so, would that team be consistent with the team proposed in Table 1?  
NA
- g. What are the challenges and timelines associated with obtaining commitments from facility owners for assessment?  
NO SPECIFIC AMP COMMENTS

- h. Is it practical to require facilities to provide sensitive data (including design documents, test data, Generating Availability Data System (GADS) performance data) to facilitate analyses of condition and performance correlation?  
**NO SPECIFIC AMP COMMENTS**
  - i. Would hydropower facility owners/operators allow the use of business sensitive data (collected above) for aggregate analyses if such data is protected and presented only in aggregate form for multiple facilities that are assessed?  
**NO SPECIFIC AMP COMMENTS**
  - j. Please comment on the proposed assessment scope including manpower requirements as it relates to a cost estimate of \$50,000-\$100,000 (depending on the facility size) per assessment.  
**This seems like a reasonable cost.**
  - k. How will the collective assessment results be useful to facility managers in benchmarking facility condition and performance?  
**It would provide validation of the proposed concepts and approaches and provide backing to get it accomplished.**
4. Alternatives or adjustments to the HAP methodology that would enable DOE and stakeholders to accelerate the increase of hydropower generation through efficiency, capacity and water utilization improvements at existing U.S. hydropower facilities.  
**The methodology should grant superiority based upon the maximum energy gained. The projects with the highest gains should be the first studied and approved.**