GREEN INITIATIVE
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SUSTAINABILITY BRIEF

Hydroelectric power on the Fox River

Background

This group has been charged with evaluating opportunities to supplement Elgin's traditional electric supply sources with renewable power. We evaluated alternatives based on cost, environmental impact, sustainability and achieving Elgin's goal of maximizing the use of local renewable energy sources.

Rationale

The process started with the group's identification of hydroelectric power as a viable option for Elgin to consider. We hosted speakers to discuss their own feasibility studies, including Chuck Emmert, City of Elgin resident, Mark Matousek, Schneider Engineering and Kyla Jacobsen, Water Director . On an individual basis, we reviewed the reports studying the potential for hydroelectric at the Kimball Street Dam. The reports were provided by North American Hydro (not economically feasible) and IIT/IPRO (positive cash flow in 5 – 15 years depending on energy rates).

The first factor in our decision is economic viability. Based upon the findings of the reports we reviewed, it appears that the City of Elgin has a potential for a quick payback on the investment. In particular the City should investigate the prospect of "green energy" grants, which could keep the capital costs more in line with the more-optimistic IIT report levels.

If grants are not available or costs are higher than anticipated, the return on investment (ROI) is quite long. However this factor is offset by the fact that the dam is a required permanent fixture that will require maintenance, regardless. So a longer ROI is more acceptable than with more-transient assets. With the scheduling restrictions that applying for grants may impose, and the length of time the permitting process requires, the sooner this process begins, the sooner the project will break-even.

Another factor was environmental impact. An advantage that Elgin has in this undertaking is that the dam itself has been in place for over a century and because it is used as the City's drinking water source, it has the approvals in place to remain indefinitely. Another advantage is that the long-term existence of the dam means that the addition of hydro-generators will have a very small environmental impact (the real impact occurred in the 19th century when it was first installed).

The nature of the low-head at the site dictates that small-hydro is the obvious solution. Based upon the findings in the IIT/IPRO report and our discussions with Mark Matousek, an added benefit of small-hydro is the minimal impact on the natural environment. The construction of the generator is when the most harm may occur. It is important that care be taken to minimize the release of contaminants into the water supply during construction. Noise and human intrusion during the construction will also affect wildlife and the public.

With the addition of the inflatable bladder on the top of the dam, periodically the water level above the dam will rise about a foot over 2 miles above current elevations. This will have an impact on flora, fauna, and residents along the riverfront. However, it is anticipated that operational controls will prevent any increased flooding, the most serious negative impact. Also, the bladder will mostly impact the stream's elevation during low flow events. Nonetheless, this will likely require permitting from the Army Corps of Engineers. As this could be a significant issue that is not reviewed in the IIT study, its impact should be investigated early in the City's evaluation.

Another concern would be the harm to fish that the generator may cause. The IIT/IPRO proposal includes safeguards such as barriers that prevent large fish from passing into the turbines and blade placement/revolutions that allow smaller fish to pass through unharmed.

Environmental advantages of the proposed system include reduced fossil fuel consumption, reduced emissions from the burning of the fossil fuels, and harnessing a local renewable power supply that is currently wasted.

Position Statement

After months of discussion and research, the consensus of the group is that the City should pursue the installation of a hydroelectric power plant at the existing Kimball Street Dam.

For a copy of this report and more information about Elgin's sustainability initiatives please visit www.cityofelgin.org/green.