

Memorandum

 To: Kate Lawrence
 Leif Engstrom

Date: June 5, 2014

From: Kari Hewitt, LEED AP, CEM

Re: Recommendations for Restructuring Board

This memorandum serves to provide guidance to the City of Albany regarding potential capital investments or other projects that are likely to produce operational savings for the City. It is VHB's intention to provide preliminary information and recommendations for the City to consider in its discussions with the New York State Financial Restructuring Board for Local Governments.

As the Development Consultant for the City of Albany's Energy Master Plan, developed through the New York Power Authority's Five Cities Energy Master Plan project, VHB has coordinated with a team of consultants to benchmark the City's municipal energy use, conduct energy audits on a set of 23 municipal buildings, and to develop energy conservation measure (ECM) recommendations. The City of Albany's annual building energy costs are approximately \$1.8 million. The buildings audited for this project represent nearly half of the total building energy costs.

Building	Address	Estimated Energy Cost (\$)
AFD - Arbor Hill	700 Manning Blvd.	\$20,823
AFD - Southend	289 South Pearl St.	\$34,906
AFD - Station #9	360 Delaware Ave.	\$16,899
Albany Visitors Center	21 Quackenbush St.	\$26,474
Answers Plant - Landfill Rapp Road Shop	525 Rapp Road	\$47,165
APD - West Station / AFD - Station #4	223 Washington Ave. Ext.	\$15,697
Bleeker Stadium Locker House	775 Clinton Ave.	\$31,748
City Hall	24 Eagle St.	\$95,174
Department of General Services	1 Richard Connors Blvd.	\$110,157
Golf Course Club House / Maint. Bldg.	65 O'Neil Road	N/A
Palace Theatre	21 Clinton Ave.	\$96,419
Public Safety HQ Building / Communications	165 Henry Johnson Blvd.	\$35,600
Swinburne Park - Maintenance Building	809 Clinton Ave.	\$24,646
Interstate 90 (Cont. Project) West of Yarbboro Pump Station	36 Kneeland St	\$2,847
McCormack Rd Sewage Disposal	McCormack Rd.	\$18,166
Water Dept. Administration	35 Erie Blvd	\$64,162

Feura Bush Water Filtration Pant	501 Old Quarry Road, Bethlehem, NY	\$77,432
Alcove Reservoir Guard House	Alcove Road	\$3,206
Alcove Reservoir Farm House	17 Waterboard Rd	\$4,711
Alcove Reservoir Barn	Route 111, Coeymans	\$1,965
Basic Creek Reservoir	Route 404, Westerlo	\$453
Loudonville Reservoir	Albany Shaker Road	\$97,553
Six Mile Waterworks Supply House	Fuller Road	\$46,715
TOTAL		\$872,918

Building Efficiency Opportunities

VHB’s sub-consultants, Novus Engineering and JK Muir, identified a large number of ECMs that could produce energy and maintenance savings in municipal buildings. A draft report summarizing all of those recommendations will be made available to the City in the coming weeks, but this memo provides a high level overview of the types of ECMs that could be implemented. The ECMs generally fall into ten categories:

1. Energy efficiency funding (ex: revolving energy fund; hiring an energy manager)
2. Retro-commissioning (RCx)
3. Lighting upgrades
4. Building controls
5. Building envelope improvements
6. Consumption reductions (ex: plug load reductions)
7. Pump upgrades
8. HVAC upgrades
9. Domestic Hot Water system upgrades
10. Plumbing improvements

Based on the ECMs identified for the 11 non-Water Department buildings audited, the City could make the following investments that could generate the estimated annual savings shown below.

Initiative	Cost	Savings	Payback (yrs)
Building Controls	\$25,000	\$31,000	<1
Building Envelope	\$41,000	\$13,000	3.2
Consumption	\$1,300	\$1,200	1
DHW	\$15,000	\$3,000	5
Funding¹	\$330,000	Unknown at this time	NA
HVAC	\$171,000	\$20,000 - \$40,000	4-8
Lighting	\$115,000	\$25,000	4.6
Plumbing	\$12,000	\$1,200	10

¹ Funding category includes hiring of an Energy Manager and setting up a revolving energy fund, both of which are investments that will produce significant energy savings, but are dependent on the types of projects implemented with their support. Therefore, savings and payback cannot be estimated at this time. The \$330,000 investment assumes \$250,000 to capitalize a revolving fund and \$80,000 for hiring of an Energy Manager.

Pumps	\$17,000	\$5,000	3.4
RCx	\$50,000	\$25,000	2
Total²	\$447,300	\$134,400	3.3

The above costs and savings only reflect opportunities in 11 of the City's buildings, while the City operates closer to 50 buildings, many of which would be likely to benefit from similar energy saving measures. This means that while a large investment would be required to implement projects throughout a larger number of City buildings, the operational savings would also be greater as well, in addition to reducing the City's greenhouse gas emissions. The above investments produce an estimated 15% energy cost savings. A 15% reduction in total annual building energy costs would be equivalent to an annual savings of approximately \$270,000. While it is important to remember that these are preliminary estimates, there is clearly significant energy and cost savings potential.

The consultant team has identified a set of options for approaching the implementation of energy improvements in municipal buildings that should be considered by the City and the Financial Restructuring Board. These options could be considered individually or in combination.

1. Set up a revolving energy fund (Funding)
 - a. Establish an energy fund to purchase equipment to implement quick payback measures that can be installed by existing maintenance staff.
 - b. Start fund with grants or budget allocation.
 - i. The restructuring board could be an ideal funding source that fits this purpose well.
 - c. Replenish energy fund based on ongoing energy savings to fund future projects. Commit 80% of savings to be paid back into the fund for the life of the improvement.
 - d. Make sure that rebates and incentives are paid back to the fund.
 - e. Balance short term payback projects with long term payback projects.
 - f. Develop standard operating procedure (SOP) to streamline fund withdrawals and standardize fund deposits.
2. Hire an Energy Manager (Funding)
 - a. Duties would be to identify, manage, and coordinate energy projects throughout the City.
 - b. Help direct funding for energy projects throughout the City.
 - c. Increase transparency of city energy consumption and future goals.
 - d. Tie bonuses to realized energy savings.
3. Update existing service contracts (HVAC)
 - a. Use service contracts to implement ECMs without straining maintenance personnel or requiring additional training.

² Totals do not include the Funding category.

- b. Ensures work is completed on an annual basis by third party and does not add to retirement/overhead expenses.
4. Reallocate existing resources (Building controls, Building Envelope, DHW, HVAC, Lighting, Plumbing, Pumps)
 - a. Update job descriptions to utilize existing staff to carry out ECM implementation on a part-time basis.
 - b. Schedule work to provide time for ECM work.
5. Increase resource base (Building controls, Building envelope, Plumbing)
 - a. Hire additional maintenance personnel to assist current staff and provide more time for ECM implementation.
 - b. Hire apprentices and journeymen as many projects cited do not require highly trained tradesmen.
 - c. Implement college internship program to provide labor source for implementation of lower level ECMs (installing and programming new thermostats, tracking energy savings, and keeping Portfolio Manager® or other energy data management system up to date).
6. Update work order system (Building Controls, Consumption, HVAC)
 - a. Update system to include no-cost ECMs such as:
 - i. Making sure that programmable thermostats are actually programmed and schedules are posted.
 - ii. Closing and latching windows and checking that storm windows are closed at beginning of winter.
 - b. Include low cost ECMS such as:
 - i. Lighting upgrades.
 - ii. Simple controls upgrades.
 - iii. Steam trap maintenance.
 - c. Energy manager can translate the ECMs identified into PMs.
7. Utilize NYSERDA FlexTech funding to cost share higher level technical assistance
 - a. Providing technical assistance to the Energy Manager to identify and prioritize additional ECMs and prepare scopes of work for more complex projects.
 - b. Conduct energy audits for the remaining City buildings to identify additional short-term and long-term measures.
 - c. Provide detailed review for large scale capital projects.
 - d. Retro-commission poorly functioning buildings to achieve short term energy savings.

Streetlight Opportunities

The City's streetlights represent 24% of total municipal energy consumption while representing 40% of total energy costs. Due to the significant portion of the City's energy budget that is spent on streetlights, the consultant team has also coordinated with National Grid and the City to assess options for buying back streetlight assets and converting them to more efficient lighting technologies. The consultant team has met with the City and National Grid to discuss options for upgrading streetlights to more efficient technologies, specifically LED, and also to potentially buy back the streetlight assets. Additionally, Wendel, the Development Consultant for the City of Buffalo's Energy Master Plan, has been investigating buyback and conversion of streetlight options for the City of Buffalo.

The City of Albany has approximately 10,300 non-LED streetlights that are owned by National Grid. The City pays National Grid for the energy usage and maintenance of the streetlight fixtures and assets. The City's estimated annual streetlight cost is \$3,900,000. Wendel has estimated the following potential savings for the City if it were to buy back the streetlights and convert to LED technologies. This is based on per unit estimates from a similar preliminary investigation for the City of Buffalo.

Energy Savings: \$646,000 per year
Maintenance Savings: \$2,600,000 per year
Buyback Cost: \$30,900,000 (\$3,000 per unit)
LED Upgrade Cost: \$18,100,000
New Annual Maintenance Costs: Not yet known

Without adjusting for the new annual maintenance costs, the payback would be 15 years based on the above figures.

National Grid has indicated that it is working toward upgrading its streetlights to LEDs in the near future. National Grid estimated that it would be another year or two before it has determined pricing for the new technology and then pricing will need to be approved by the Public Service Commission. One option for the City is to continue its arrangement with National Grid. However, National Grid has indicated that the majority of savings realized will be from reduced energy use since the maintenance savings are expected to be offset by the incremental cost of converting to LEDs. The drawback to this option is that it does not address the significant non-energy maintenance costs the City is currently paying National Grid.

A second option is for "Permanent Discontinuance" under which National Grid would remove all assets or make them inoperable and then the City would have to pay "book value" for the assets and/or removal costs in addition to replacement costs. The third option, which is not clearly defined in the existing tariff is for a direct purchase "as is" from National Grid. The price would need to be negotiated based on an inventory of existing assets and conditions as well as a "business value" to be determined by National Grid. If the City takes ownership of the streetlights, they will be charged at an SC3 rate for electricity used by the fixtures.

It is important to note that all of the estimates provided in this memo are still preliminary and as the Energy Master Plan is further developed, baseline data will be confirmed, and costs and savings will be refined.