



**WATER SUPPLY CITIZENS
ADVISORY COMMITTEE**
to the Mass. Water Resources Authority

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Joint WSCAC/WAC Meeting

Tuesday, March 18th, 2014

Location: The Waterworks Museum

WSCAC Members in Bold in Attendance:

Whitney Beals, WSCAC Chair, NE Forestry
Andrea Donlon, CRWC

Gerald Eves, Trout Unlimited

Michael Baram, BU & CFL

Martha Morgan, Nashua River Watershed

Mason Phelps, Millers River Watershed

Bill Fadden, OARS and SuAsCo Wild & Scenic Rivers

Alice Clemente, Blackstone River Watershed

Elie Saroufim, Boston Water & Sewer

Paul Lauenstein, NepRWA

Nancy Bryant, SuAsCo

Dona Motts, MA League of Women Voters

Martin Pillsbury, MAPC

WAC Members in Attendance:

Craig Allen

Elie Saroufim, BWSC

Bill Katz

Vincent Spada (Woodward & Curran)

Wayne Chouinard, Town of Arlington

Non-Members in Attendance:

Lexi Dewey, WSCAC staff

Fabiola DeCarvalho, Town of Framingham

Kurt Kelly, Arlington

Denise Breiteneicher, MWRA

Wendy Leo, MWRA

Sue Costa, WSCAC staff

Janna Shub

Pamela Cady, Town of Action

Andreae Downs, WAC staff

MWRA Energy Initiatives - Denise Breiteneicher

Denise gave the committees some information about the MWRA team that works on energy. Kristen Patneau covers Deer Island as well as the wind and solar projects. Denise is responsible for energy conservation efforts for field operations –all other facilities but Deer Island.

Water is an energy intensive business. The MWRA used 206 megawatt hours in 2013 to run all of their facilities. Their total electricity costs in 2013 were \$21 million or about 10% of direct expenses.

The Authority has a multipronged approach to energy. They conduct energy audits to identify areas where they can save energy/money, purchase the most energy efficient equipment, optimize processes and seek to optimize grants and other monies available from utilities. All their Requests For Proposals (RFPs) include standard energy language.

The 2006 Green Communities Act allows state agencies and municipalities to work directly with its utility, its contractors, and subcontractors to procure energy conservation services without going out to bid separately if they are less than \$100,000 dollars.

Q: Paul asked why the MWRA wouldn't want to go out to bid.

A: Denise explained that the utility has already gotten competitive bids. The Green Communities Act simply eliminates the need for redundancy in the bidding process.

Q: Bill Fadden asked a question about a map Denise presented.

A: Denise explained that the map was not complete and was meant to give a general sense of the system.

Some completed projects include:

- Turning off the mixers that mix soda ash into the water at Carroll Water Treatment Plant. The turbulence of the incoming water is enough to mix the soda ash without using the mixers.
- Process optimization at Deer Island. The shaft height of the main pump station was adjusted so the pumps do not need to come on as often.
- Another project involved air changes in wastewater stations. If a building is occupied, it is necessary to have twelve air changes an hour. If they are not occupied, six air changes per hour are required. Some buildings are not occupied for extended periods of time so it was possible to change the amount of air changes to only 6 per hour when these building are unoccupied.
- The MWRA is also in the process of changing over to LEDs for both exterior and interior lighting. Lighting controls were added to turn lights on and off based on whether an area is occupied. In addition, an energy management system (EMS) was installed at the Chelsea facility. EMS's were also installed in Southborough and in the Charlestown Navy Yard offices.
- Variable frequency drives (VFDs) were installed in water pump stations. This allows pumps to be run at variable speeds of 25%, 50%, etc. rather than just on or off.

Q: Paul asked about LED lights and whether they were as bright as the lights being replaced.

A: Although the lumens are equivalent, the perception is that LEDs are brighter. Andreae mentioned that Newton has found that LEDs cover more area with the equivalent lumens.

Denise presented a graph showing energy use reductions from January 2008 to July 2013 at the Chelsea facility and noted that during this same period building occupancy was increased.

Q: Andreae asked if there was a point at which the Chelsea facility could become "solar ready" with solar ready being defined as having energy use low enough to power completely with solar power.

A: A consultant is doing a solar assessment of every MWRA building that does not currently have solar and will be making recommendations. Whether energy usage at Chelsea can/will reach the "solar ready" standard is not yet known.

Paul noted that the reduction in usage at Chelsea from 2008 to 2013 appeared from the graph to be about 25%. Denise said it was 25-30%.

Denise spoke about payback periods and why the MWRA does not have a required payback range. The Authority takes into account the useful life of the energy improvement versus the payback. A longer payback makes sense for some projects but not for others.

Denise had pictures from many of the energy initiatives at the various facilities. Paul asked more about payback and Denise noted the analysis they do is a simple payback analysis that does not take into account interest costs. She further noted that reduced maintenance costs are typically not included in the payback analysis.

N-Star and the MWRA have signed a memorandum of understanding (MOU). It is non-binding but it sets goals to work toward. The MWRA goal is to reduce their electrical demand from N-Star by 15%. The MOU increases the *minimum* rebate to the

MWRA on kWhs saved to 30 cents per/kWh. The rebate varies but in general the minimum before the MOU was 25 cents/kWh saved.

Q: Paul noted that the rebate is higher than what N-Star charges for electricity.

A: Denise said that is correct. On average the MWRA pays about 14 cents per/kWh.

Q: Paul asked if the MWRA got hit with the 16% increase in electricity costs in January.

A: They have a three year contract so they did not get the increase.

About 45% of the MWRA's total energy profile is from renewable sources including energy purchases of green energy. The Authority generates about 25% from hydropower, solar, and wind. They also take part in demand response. This means they have backup generators that enable them to go off the grid when requested by ISO-NE to prevent brown-outs. ISO NE pays the Authority to be part of this program. The four headworks, Carroll Water Treatment Plant, and Deer Island are enrolled in the demand response program.

Q: Andreae asked about the steam turbine replacement.

A: Denise will send Andreae information because she did not have the energy improvement figures with her.

Q: There were several questions on the Deer Island experimental wind turbine.

A: The turbine was installed free of charge by the manufacturer as a pilot project. Once they have worked out all the bugs, a newer version will be installed at Deer Island – again free of cost to the MWRA.

This style of turbine is more efficient at lower wind speeds. Although it is less noisy, it may still make a whish noise – Denise wasn't certain how much quieter it was. The light flickering issue caused by the turning blades does not occur with this turbine. Wind turbines require more maintenance than hydropower or solar installations.

Denise presented a picture of Deer Island with all the various types of energy generation highlighted. She noted that the Loring Road turbine is an in-line turbine that goes between two water tanks. The primary goal of the MWRA is water delivery so energy improvements are done very carefully to ensure there is no interruption or problem distributing water to customers.

The MWRA aggressively pursues rebates and grants and received \$33 million from Economic Recovery Act funds for shovel-ready projects. From FY2002 to FY2011 annual energy saving went from \$6 million per year to \$24 million.

A pilot co-digestion project that will increase digester gas for energy is beginning this year. It will be a pilot program for up to three years - current Board approval is for one year only. The estimated benefit to the MWRA would be a 4% to 8% increase in gas production or an additional 480,000 kWh in energy production. Trucking in food waste through Winthrop may be a problem for the MWRA – bringing it in on barges may be an option. Andreae noted that some large companies are investing in private digesters.

Summing up Denise noted that the MWRA would be looking for more in-line hydro opportunities. Once the Authority receives the solar assessment report they will consider other solar projects. They are not currently looking at solar panels for parking lots – Andreae noted that Lexington is adding solar panels to parking lots. The Red Hook Whole foods and the Framingham REI have also added panels to parking lots.

The MWRA has purchased a lot of alternative fuel vehicles and as already noted they are purchasing green energy. Their MIS people do green computing and the Authority recycles. Denise stressed that it is important to talk in terms of energy per unit to remove the impact of rainy versus dry years etc. The MWRA is working toward being able to look at more unit metrics - a summer intern will be utilized to get this project off the ground.

Denise shared some renewal energy generation metrics provided by Steve Estes-Smargiassi. Steve was unable to be at the meeting. Paul asked for some clarification of what the metrics showed and Denise went into more detail. She also circulated the report around the room so Paul could see all the detail. One of the goals of the metrics is for the staff to know what is going on, where there are problems, what's working, what's off-line, etc.

- Q: Dona asked about the design of solar panels. She noted the concern of firefighters that solar panels mounted on the roof remain active during a fire. They can also prevent access to the fire.
- A: Denise is aware of the issues and said research is being done.
- Q: Paul asked about new generations of solar panels that are more efficient and the cost benefit impact.
- A: Denise noted that N-Star is a great resource for questions and information on these types of issues.
- Q: Paul noted from a financial standpoint low interest rates are benefit to doing these projects.
- A: Denise said that is true.

Paul suggested using consistent units rather than mixing megawatts and kilowatts. Denise will convert everything to be consistent before sending us her presentation for posting on the web.

WAC Business –Andreae Downs

WAC minutes were voted and approved. Andreae noted the next meeting of WAC was scheduled for April 8th. She then adjourned the WAC portion of the meeting.

WSCAC Business –Lexi Dewey

Lexi brought the WSCAC portion of the meeting to order and asked for a motion to vote on the WSCAC December 2013 and February 2014 meeting summaries. A motion was made, seconded, voted. Both summaries were approved.

Bill asked about the upcoming redundant pump station at the Carroll Water Treatment Plant and the Authority's energy efficiency. Paul noted there had been a presentation on this very topic a year ago. He recalled that the Authority was able to buy a smaller pump due to the steady decline in demand and conservation measures. Paul noted that peak demand continues to decline. The new pump is an redundancy project to lift the water up to the Carroll Water Treatment plant if there is a problem with the Quabbin aqueduct.

Bill asked about a replacement for Dave Copes who is now the Director of Waterworks. Guy Foss will replace Dave as Director of Western Operations. Additional MWRA people retiring are Marcis Kempe, Dan O'Brien and Rick Trubiano. The Authority is promoting from within and back filling now vacant positions.

There was some discussion on staff reductions over the last few years as well as where the MWRA is looking for new hires (i.e. where they are getting their training). Elie and Andreae noted that the Authority goes to engineering and vocational schools (for plumbers and electricians), high schools, etc. New positions are posted weekly.

Paul asked about MWRA's public relations and how many staff are involved. Kevin McCluskey is the Director of Public Affairs, Ria Convery is the Deputy Director of Communications and Meg Tabacsko is the Project Manager for School Education. There is also a position titled Community Relations Manager.

There was a discussion about the potential reactivation of the Framingham Birch Road wells. While it was Lexi's understanding that the town was no longer interested, Fabiola DeCarvalho and Bill Fadden mentioned that Framingham is working on Phase 2 with USGS and continuing to move forward.

The meeting was adjourned.