

28 January 2014

Madison Water Utility Board

Madeline Gotkowitz, President
Bruce Mayer, Vice President
Larry Nelson, Secretary
Patrick Delmore, Board Member
P. Michael DePue, Board Member
Lauren Cnare, Alder Board Member
Anita Weier, Alder Board Member
Doug Voegeli, Ex-Officio Board Member

119 E. Olin Avenue
Madison, WI 53713

SUBJECT: Lake View Hill Reservoir, CAP process, MWU Water Tower assets

Dear Board Members:

The following communication is lengthy, but after the opening 3-page letter, the remaining pages have many images.

I hope these images will inspire the Board to think very differently about the MWU's water tower assets, and their incredible potential for ecocultural benefits, including renewable energy, outdoors recreation, and place-based public art. I hope my comments will be useful with regard to future improvements to the Madison Water Utility's CAP process. Last, I hope the information provided will help the MWU reconsider some public health issues related to co-location of wireless facilities on its water towers.

By now, the MWU staff has asked you to review a report that was shared with the public last summer (<http://cranesinc.org/presentations/NEWT-PROPOSAL-v2013-07-31sm.pdf>). It includes a summary of communications with staff from the summer of 2012. In a nutshell, the Northsiders for an Eco-cultural Water Tower (NEWT) report recommended that the replacement Lake View Hill Reservoir be considered from an eco-cultural perspective, and in relationship to other public projects in the nearby environs. Copious information, ideas, and exemplars were included in the report, which was authored by several Northside citizens, following consultation with others. A summary of the report was published last summer in the Northside News, a free bi-monthly publication that is mailed to all northside households.

In September 2013, MWU staff convened an onsite public meeting, as a prelude to forming a CAP for the Lake View Hill Reservoir. One of the key points made by attendees was the need to coordinate the water tower project with others in the environs, as well as stormwater runoff and chloride mitigation called for in the 2009 Lake View Hill Master Plan. The MWU staff was asked to take responsibility for connecting all this public works activity, especially with regard to communications with the CAP and interdepartmental, intergovernmental, and wireless entities. About a dozen citizens indicated interest in CAP participation, and were placed on an email list.

CAP meetings were held on October 30 and December 11, 2013 (all of which were recorded by a citizen participant). Neither meeting was scheduled in consultation with citizen CAP participants. Three or four citizens attended each of these CAP meetings, in addition to 6-10 city or county employees, advisors, or electeds.

Many questions were asked at the October meeting. Some were answered then, or by way postings to the MWU webpage for this project. Some questions required research by MWU staff, the SEH consultant, or the Potter Lawson project architect, including:

- 1) Could the exterior of the reservoir be no-maintenance, using materials such as CorTen? What would be the cost-savings? Could these be used to fund proposed ecocultural amenities, including re-purposing of the former water tower.
- 2) What are the security issues for public access, including a proposed view or education platform at canopy level? Which agency has authority and what is the scope of their authority?

- 3) Given that (a) the private facility owners collocated on the old water tower must, while the new tower is being constructed, build a substantial new tower and then relocate there; and, (b) the wireless industry's rapid move away from tower-dependent, over-the-horizon transmission technology: Can the wireless facilities be permanently relocated to the new tower? Could this be an opportunity to combine related outbuildings, improving park and neighborhood aesthetics?

Some answers to these questions were provided at the December 11th CAP meeting, literally (i.e., handed out at the meeting, with no opportunity for prior review). We did learn the 50-year life-cycle service cost of various preliminary design options would be ~\$4--4.7million. Of that, about \$900,000 would be for painting both the interior and exterior of the water tower.

Unfortunately, some of the other information provided at the December 11 CAP meeting was incomplete, misleading, or wrong (more on that follows below). Also, some of this information presented by staff or consultants, and related citizen questions on December 11, were not documented in the minutes for the meeting. Regarding the additional CAP citizen questions asked on December 11, here are the entire "minutes" covering those:

5. CAP Questions

I.e., this part of the CAP meeting minutes was just a repetition of the December 11 agenda item.

Finding the information presented December 11 unsatisfying, I did some research of my own. It soon became clear that fuller and more correct information was readily available. So I asked MWU staff to schedule another CAP meeting in January, so that it could be shared with other CAP participants (even if that required delaying the public meeting that was being planned for January 2014). Staff denied my request, and said this information should instead be provided to the MWU board at its January 28th meeting.

My research over the holidays and since has revealed the following:

- 1)The WDNR does not have authority over public access to water towers, only security for access hatches and air intake openings. These can be secured with, respectively, locks and screens, as well as other technology such as lighting and cameras. While the WDNR is not aware of any viewing of public platforms on water towers in Wisconsin, they have no authority over such things, which are a MWU decision. While their spokesperson says that the WDNR would recommend against building such structures on water towers, that stance is apparently one based on fear of the unknown, because he did not know such structures exist all over the world.
- 2)The 2009 Lake View Hill County Park master plan explicitly calls for consideration of a publicly accessible viewing platform on any new water tower, as well as re-purposing of the old water tower.
- 3)Cor-Ten is indeed feasible for water towers, and has been used for that purpose in the USA. Pitting and condensation are not prohibitive problems. CorTen is used extensively even in Japan, where salt water is usually an additional factor. There is extensive industry information available about CorTen, including cathodic protection for CorTen, water tanks, above or below ground.
- 4)There are ways to protect users of a publicly accessible view platform from the Electro-Magnetic Radiation emitted by wireless facilities, even if both are mounted on the new water tower.
- 5)Etc.

A "Public Meeting" was held January 15, 2014 at the Warner Park Community Recreation Center. This was not a traditional public meeting, but rather used the WisDOT-type format: Individuals or small groups were able to get information from stations and staff/consultants. Three or four non-CAP citizens attended this event, which was not scheduled in consultation with citizen CAP participants.

Unfortunately, the summary of the anonymous January 15 public input that is posted to the MWU website contains incorrect claims about the Lake View Hill Reservoir site, as well as some unsupported claims about certain exterior materials and surface treatments that were discussed during the CAP. These

claims could have been countered at a traditional public meeting, but that was not possible because of the “meeting” format chosen by MWU staff.

In a nutshell, the MWU process was so lacking in participation that it does not allow anyone to make claims about either neighborhood or Northside positions regarding this facility, or the ecocultural features that have been proposed by NEWT.

Also, some folks who have participated in the CAP or provided comments to MWU seem to have contradicted themselves. Here are two examples:

- 1) At the September on-site meeting, a neighborhood leader stated opposition to controlled public access to a view platform, whether on a re-purposed old water tower or on the new water tower. She was certainly aware that consideration of old water tower re-use and view platforms on the old or new water towers consideration of view platforms is called for in the 2009 Lake View Hill County Park master plan (please see below for excerpts).

Oddly, a couple months later that same person and her spouse wrote to the Madison Plan Commission in support of a proposed community gathering place and shelter a bit down the hill to the south. This support for Lake View Hill park amenities and activities was given despite the fact that the 2009 master plan calls for any new gathering place to be sited to the west, and makes it clear that no shelter is to be built.

- 2) A CAP participant at the December meeting shared concern about the impact on birds of a proposed ecocultural feature: renewable energy production, perhaps using vertical wind turbines atop the new water tower.

Birds do alight on or within the current water tower, and some also fly near it. However, this person is also on the board of the Friends of Lake View Hill park, which years ago was provided peer-reviewed research findings that dogs, leashed or not, dramatically reduce bird populations in conservation areas.

The FOLVH board also has for years been questioned about the impacts of pesticide applications on flora and fauna, including birds. Last summer, concerns were raised about unwarranted pesticide application to native plants that are a known food source for native birds.

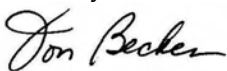
Last, the FOLVH board is aware of the Electro-Magnetic Radiation (EMR) from the wireless facilities, details of which were recently shared with the CAP. EMR is a human health concern near the top of the tower. Concerns have been raised about the effects of EMR on private wireless company workers who do maintenance on the facilities (which may also expose the City and County to liability). The effects of EMR on wildlife are being researched more fully of late; some relevant studies were included in the NEWT report, including potential impacts on migration navigation by birds, bees, and other critters.

Dog walking, pesticide applications to native plants, and EMR impacts almost certainly have more impact than will renewable energy facilities, whether wind or solar photo-voltaic. It is difficult to reconcile concern about the theoretical impacts of certain renewable energy structures on birds with the failure to mitigate known impacts.

Please find below a compilation of additional information relevant to the Lake View Hill Reservoir. I hope these inspire MWU and the municipality that it serves to think more comprehensively and creatively about the Lake View Reservoir as well as all its water tower assets.

In communities across the world, such an approach has enhanced the environment, increased the quality of life for residents, and reduced life-cycle costs for tax-payers.

Sincerely,



Lake View Reservoir CAP

Water Tower Exterior Options: Some Preliminary Findings

Jon Becker

DRAFTv.2014-01-28

At the 11 December 2013 CAP meeting, a 50-year Life Cycle Analysis was provided, indicating that the new tower will cost about \$4,000,000 to 4,620,000 million, depending on which of three concept designs is considered. It was estimated that about \$900,000-1,000,000 is for painting, interior and exterior.

The interior painting is mandatory, because it assures drinking water supply hygiene. It may be possible to eliminate some or all of the exterior painting by using a no- or low-maintenance exterior material, such as CorTen, aluminum, or concrete. That could potentially save \$300,000–500,000 during the water tower's 50-Year Life Cycle.

The Public Service Commission (PSC) reviews water tower proposals. By law it must give priority to fiscal impacts on water utility customers. However, the PSC might, if a case were made for general public benefits, be able to allow some or all of the savings to be redirected to enhance the water tower environmentally, functionally, or aesthetically. Or, the savings from the no/low-maintenance exterior might inspire the City of Madison to dedicate some or all of those funds toward provision of the eco-cultural features requested by Northsiders who submitted the NEWT proposal (Summer 2013).

As was mentioned above, Cor-Ten Steel, also known as “weathering steel” is a no-maintenance option for the exterior. Many folks are familiar with this material because ATC uses it for large transmission line towers (e.g., along HWY 113 northwest of Madison). Some are familiar with its use as a screen around a water tank atop an MGE building on East Main Street in Madison (for images of this and many other Cor-Ten structures, see *Image-inations* section of NEWT proposal, page 17, available as a PDF for download at CRANESinc.org).

At the October CAP meeting, a request was made to MWU and its consultant to check out the use of Cor-Ten in water tanks and other relevant municipal infrastructure. At the December 11th CAP meeting, discouraging information was provided that, upon later review, apparently was found in a Wiki article (http://en.wikipedia.org/wiki/Weathering_steel):

Using weathering steel in construction presents several challenges. Ensuring that weld-points weather at the same rate as the other materials may require special welding techniques or material. Weathering steel is not rustproof in itself. If water is allowed to accumulate in pockets, those areas will experience higher corrosion rates, so provision for drainage must be made. Weathering steel is sensitive to humid subtropical climates. In such environments, it is possible that the protective patina may not stabilize but instead continue to corrode. ... Weathering steel's normal surface weathering can also lead to rust stains on nearby surfaces.

The U.S. Steel Tower in Pittsburgh, Pennsylvania was constructed by U.S. Steel in part to showcase COR-TEN steel. The initial weathering of the material resulted in a discoloration of the surrounding city sidewalks, as well as other nearby buildings. A cleanup effort was orchestrated by the corporation once weathering was complete to clean the markings. A few of the nearby sidewalks were left uncleaned, and remain a rust color.

The problems of condensation and subsequent pitting were emphasized by the MWU's consultant. However, that Wiki article goes on to say:

This problem has been reduced in newer formulations of weathering steel. Staining can be prevented if the structure can be designed so that water does not drain from the steel onto concrete where stains would be visible

What about the October request by CAP for existing water towers that built with Cor-Ten? The MWU's consultant informed the CAP that it had been unable to find any such structure that had been built in the USA.

However, such a water tower does exist.



Fletcher Hills Water Tank is located in El Cajon, CA, 22 miles west of San Diego's harbor on the Pacific Ocean.

This Cor-Ten Water Tower was designed and built by Pitt-Demoines Steel Inc., which also built the famous St. Louis Arch.

HELIXWATER operates the Fletcher Hills water tower. Staff provided the following information:

In a email message dated 1/14/14 11:21:04 AM, Eric.Fockler@HELIXWATER.org, wrote:

In regards to our Fletcher Hills Tank, condensation has not been an issue and we have not had any unanticipated corrosion problems. As long as the layer is not disturbed there is no metal loss. The tank was put in service in 1996. We took ownership of the tank upon completion and perform our own service and maintenance. The coating is in good condition and has performed as we expected and would recommend Cor-Ten for other tanks but, you would need to determine if it would be a good fit aesthetically. This is currently our only Cor-Ten tank and do not have any in the works to construct.

Eric Fockler, Cathodic Protection Technician
Office (619) 596-1399 / Mobile (619) 905-9613 / Eric.Fockler@HELIXWATER.org

During a telephone call earlier in January, Jim Tomaluso stated:

We do have to deal with water. Despite periods of high humidity, corrosion has not been an issue.

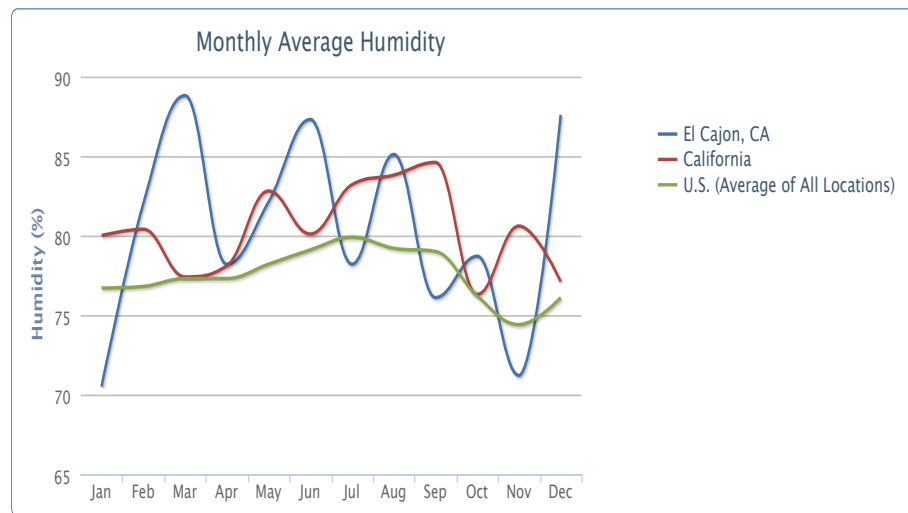
Jim Tomasulo, Director of Engineering
(619) 667- 6201
jim.tomasulo@helixwater.org.
HELIXWATER.org

It does indeed get surprisingly humid in El Cajon:

Humidity

Annual Average Humidity, #992

El Cajon, CA	80.49%
California	80.36%
U.S.	77.52%



<http://www.usa.com/el-cajon-ca-weather.htm>

Note that Eric Fockler is a Cathodic Protection Technician.

Following the dismayed (but incomplete) information about Cor-Ten provided at the October Cap meeting, there was a request that cathodic protection be investigated. It was reported at the December 11th CAP meeting that the consultant had been unable to find any information about using cathodic approaches to preventing Cor-Ten corrosion.

However, a Google keyword search turned up this article:

CORROSION CONTROL WITH CATHODIC PROTECTION

http://www.corrosionist.com/corrosion_control_methods_cathodic_protection.htm

Excerpt:

Definition of Cathodic Protection

Cathodic protection is a method to reduce corrosion by minimizing the difference in [potential between anode and cathode](#).

INTRODUCTION.

Cathodic protection is achieved by applying a current to the structure to be protected (such as a pipeline) from some outside source. When enough current is applied, the whole structure will be at one potential; thus, anode and cathode sites will not exist. Cathodic protection is commonly used on many types of structures, such as pipelines, underground storage tanks, locks, and ship hulls.

Cathodic protection is second only to the use of [protective coatings](#) as a means of [corrosion control](#). It is widely used for protecting buried and waterfront structures and for protecting the interiors of water storage tanks. In some cases, such as underground pipelines, field experience has shown that cathodic is such an effective means of providing the required levels of safety in the operation of the systems that cathodic protection is required by regulation.

If renewable energy were to be produced by the Lake View Hill water tower, it would be possible to provide Cathodic Protection without increasing the energy costs of regular operation.

In Japan, where both tropical humidity and salt water are almost always a significant municipal concern, the Cor-Ten alloy has been reformulated to provide protection from corrosion:

The NIPPON STEEL NEWS [http://www.steel.org/~media/Files/SMDI/Construction/Bridges - All - News - COR-TEN 50th Anniversary on the Market.pdf](http://www.steel.org/~media/Files/SMDI/Construction/Bridges-All-News-COR-TEN%2050th%20Anniversary%20on%20the%20Market.pdf)

Interestingly, a [rectangular](#) Cor-Ten water tower was proposed in Finland, for a 2001 design competition:



http://commons.wikimedia.org/wiki/File:Kerava_New_Water_Tower_H0207_Vesitorni_illalla_C.jpg

In the end however, Kerava municipality apparently decided to build something different, but also beautiful:



http://commons.wikimedia.org/wiki/File:Kerava_New_Water_Tower_H0207_Vesitorni_illalla_C.jpg

Kerava's water tower appears to have an aluminum exterior, which would require little or no maintenance. The incised, abstract openings are aesthetic pleasing, but perhaps also have a functional benefit. The geodesic dome atop the water tower probably screens wireless or radar transmission facilities, but it has been illuminated for aesthetic effect.

Here's another Finnish water tower, in Hanko, which I think is painted or stained concrete (note the observation deck and restaurant, accessible from the unprotected ground level vicinity of the site)



Here's, another Scandinavian water tower, likely made with concrete (note the observation deck above, shielded by its roof from the wireless facilities atop the structure):



Speaking of viewing or educational platforms, at the October CAP meeting, there was a request that MWU research that possibility for the Lake View Hill Reservoir. At the December 11th meeting, MWU reminded us that the WDNR has certain regulatory authority over water towers, including security. A brief summary of MWU/consultant communications with WDNR was presented.

Some might have mistakenly come away from this CAP meeting thinking that the WDNR can prevent other public functions from being incorporated into Lake View Hill Reservoir.

CAP participants were told by MWU's consultant that a certain WDNR staffer was the contact for such queries. Later, we learned that the contact was actually Mark Harder. Following a telephone conversation with Mark, I asked that he summarize his points by email. This is what he sent:

In a message dated 12/16/13 6:43:17 PM, Mark.Harder@wisconsin.gov writes:

As we talked about today:

The Department security regulations for water towers are in s. NR 811.64(2)(d), Wis. Adm. Code that requires (in part) locks and any other security measures necessary to prevent trespassing, vandalism and sabotage. Based on this authority the Department could not prevent controlled public access to a water tower; however, the Department recommends against public access to any municipal water system infrastructure. To my knowledge, there is no public access to any municipal water tower in Wisconsin.

Potential access points to the stored water include the door in to base of the tower, access hatches on the outside of the water tower structure and the vents. Doors and hatches are required to be locked and typically include additional security features that are connected to the SCADA system. The vents are required to be designed to prevent birds, insects and dust from getting into the stored water. Vents typically just have a wire mesh screen so the Department recommends that additional security design features be included if public access is allowed.

Additional features for both water system and public safety would have to be included in the water tower design if the water system decides to provide public access. Some items that are not directly related to Department regulations include the ability to install and use antennas and/or other equipment that may provide an income stream to the municipality and the ability to maintain the structure (including painting) should be considered.

If you have additional questions please contact me by email or by phone at (608) 267-5262.

Mark Harder

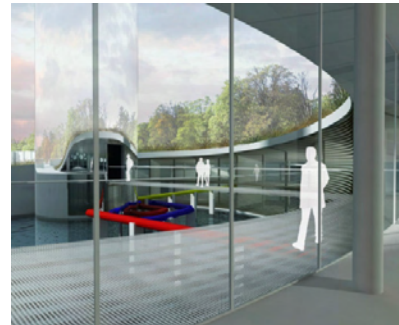
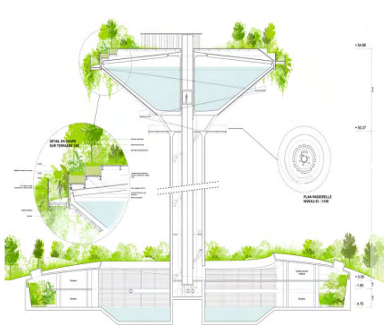
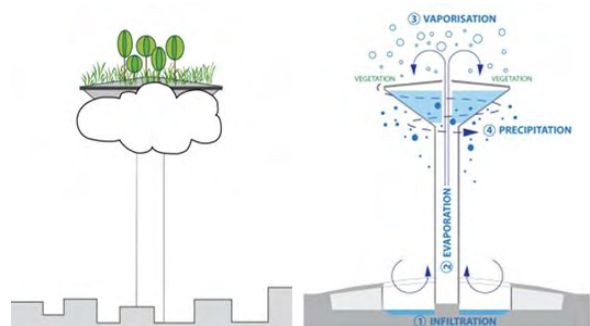
So the hatches and vents must be secured, using such the usual approaches, such as design, locks, video cameras, motion detectors, etc. But the WDNR does not have the authority to prevent "controlled public access to a water tower." Also, they appear to be open to public access with adequate security measures.

It seem there is not a publicly accessible viewing / educational platforms on any Wisconsin water tower. But there are many elsewhere here in the USA and abroad. Some are also used as cafes or restaurants. Most are reached by stairs, others by elevator (either of which can be designed for access to ADA requirements).

Here are some of the many images available on the internet:

Castle in the Sky

is a water tower concept for Latina, Italy that goes above and beyond just storing water for the city.



Dreamed up by Atelier Ramdam Architects out of Paris, France, this heavenly design includes **public garden space**, a **sky deck** and an incredible mechanism that vaporizes water to create the tower's very own rain!

The slender water tower **sits in a below grade reservoir full of incoming water**. **The tower's shaft is coated in highly reflective metal in order to "disappear" as it rises up into the sky**, where it meets the water storage tank and the sky deck and gardens. Public access is achieved through an elevator in the shaft and the sky deck can be used for festivities, parties or just viewing the city.

At the bottom of the tower is a **large landscaped public park**, which also acts to filter rain and storm water into the reservoir. Water is pumped up into the tank to irrigate the sky gardens, and as moisture builds up in the air around the tower it is expected to precipitate onto the park underneath. The bit about making rain seems somewhat questionable but the concept seems interesting and could help cool the city.

<http://inhabitat.com/castle-in-the-sky-italian-water-tower-creates-its-own-rain/>

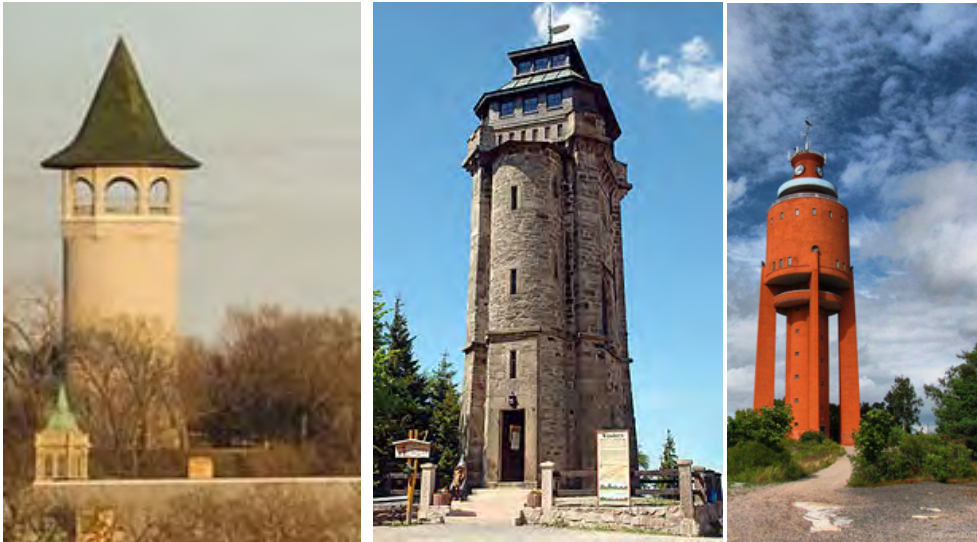
A funicular carries folks to a viewing dome atop the Ericsson Globe Arena in Sweden:



Some more:



Old school:



Accessibility design idea (to observation deck that is not on a water tower):



Folks can walk atop this one (there's a fence around the perimeter of the top):



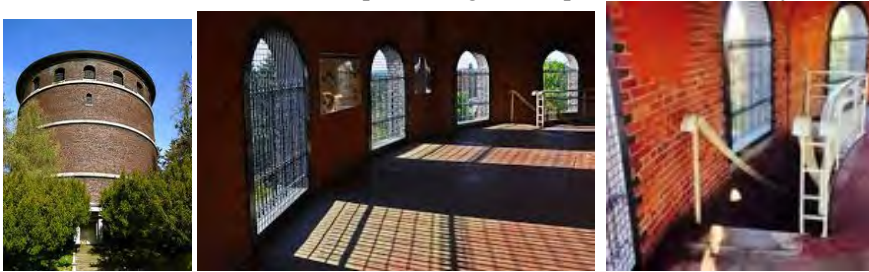
A hotel/treehouse with reflective "camouflage" shows how a structure can disappear within a woods:



Re-purposed from decommissioned water tower (note enclosed / secure stairways):



Seattle's Volunteer Park Water Tower (providing much-prized views of city and ocean):



Enclosed / safe access:



At CAP, there have been queries how public access to a platform on the water tower would be controlled, as well as concerns about liability for accidents. These are important questions, yet it is clear that many communities have found solutions. Many of those communities have also taken advantage of the many opportunities for environmental, aesthetic, and community enhancement that water towers can provide, beyond their utilitarian functions.

It should be noted that most of the questions about public safety have come from a single CAP participant and his spouse, despite being knowledgeable about the summary of public comments in the 2009 Lake View Hill Park master plan, which includes these statements:

- *The Health and Human Services office building and water tower would provide elevated views to even more surrounding cultural and natural resources*
- *Build a tower in the woods to take advantage of the views*
- *Public water utility may be willing to provide an overlook from the new water- tower, which will most likely have to be built in the next five years*

And, while identifying "constraints" related to potential unwanted users as well as liability, the adopted 2009 Lake View Hill Master Plan also calls for the following consideration:

- *Emphasize the water tower as an educational tool and potential viewing platform if/when it is rebuilt*

Curiously, this same couple has written to the City of Madison Plan Commission in support of expanding public activities and amenities in Lake View Hill Park, at another nearby location:

Stouder, Heather

From: Sue Gleason [REDACTED]
Sent: Saturday, November 02, 2013 9:31 AM
To: Stouder, Heather; Anita Weier; Melissa-Sargent
Cc: Kwitek, Sara; Darren Marsh; Huttner, Laura; Rob Nebel
Subject: Proposal for Lake View Nurse's Dorm

Hello all,

I just noticed the Oct. 30th deadline for comments on the Lake View Nurse's Dorm. I was keyed into the Nov 18th meeting and didn't see that date so my apologies for being late.

I am writing as an individual and not in any official capacity with the neighborhood association or the county parks friends group.

We are one of the closest neighbors to the property and along with my husband, would like to register our strong support for the proposed plan. I think they did a nice job of listening to feedback at the Sept. Friends meeting and developing a plan that honors the property's history, creates a fantastic viewing area, and also blends the area nicely with the campus and the park landscape.

I do not share the concerns of others that this will invite partying or vandalism and instead think it will bring more visitors to appreciate the park. Our property is nearest to the water tower and upper parking lot and I can share that over the years we have had a few parties but very few compared to the dozens of people that hike the trails every day. We recently wondered if the new kiosk and picnic tables would invite more noisy gatherings but they have only provided a place for scouts and other volunteers to gather.

So basically, we love the proposal, think it accomplishes what most want to see for the property and based on our experience of the past 27 years, think the benefits will greatly outweigh any isolated incidents that might occur.

Thank you,

Sue Gleason and Mark Hottmann
[REDACTED] Esch Lane

ps - I will be out of town for a work conference on Nov 18th but please feel free to share these comments if it is appropriate.

This proposal actually was contrary to the public input that for the 2009 master plan, and also did not fully nor accurately reflect public input from a recent consultant-led process.

The City Plan Commission referred the matter, so the County now is revisiting the entire matter.

Wireless Facilities

The building of the new water tower provides an opportunity to address safety concerns that accompany the Electro-Magnetic Radiation (EMR) from wireless transmission facilities mounted on the current or new water tower. Unaddressed, EMR could limit activities on public amenities proposed for location on or near the new water tower. Fortunately, there are options.

Private and municipal (911) wireless facilities will need to be relocated during removal of the old tower and construction of the new tower. The private companies will need to build a new tower, with about the same height as the water tower, (ca. 170 feet). It will probably be a mono-pole design, requiring a 120' underground section for stability. Then they will have to relocate their facilities to this new structure. Presumably municipal facilities will also be relocated there.

During the CAP process, MWU staff informed participants that this new wireless tower would be an interim structure, with facilities relocated on to the new water tower upon its completion. Staff emphasized that co-location comes under federal authority. But co-location is a federal goal, not a requirement. Alternatives are possible.

Those include building the new wireless tower so that it can serve the community until tower-mounted, over-the-horizon transmission is no longer necessary. This may happen rather soon, according to an article that was included in the Summer 2012 NEWT report.

So, a new wireless tower would likely only for a short time add another structure to an area of the county's Lake View Hill campus that is, unfortunately, already jumbled.

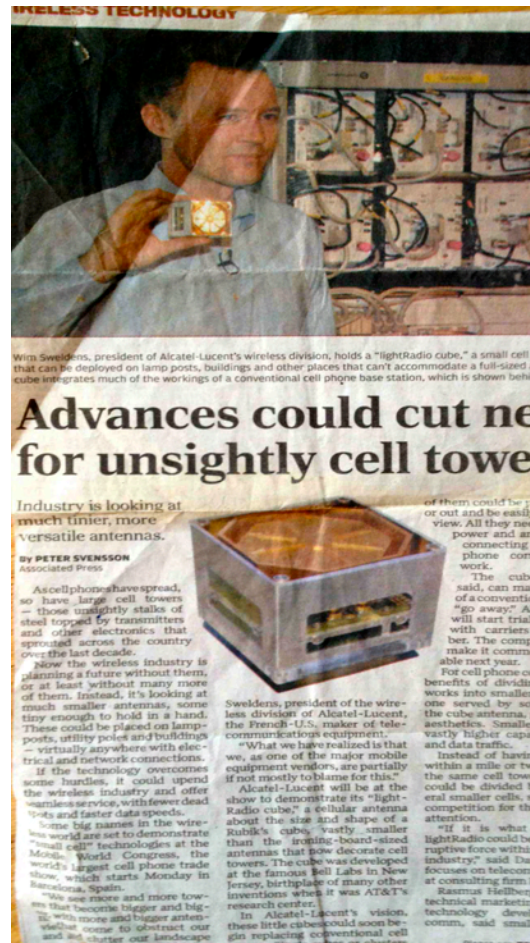
Staff provided the CAP with current EMR information for the Lake View Hill facility. I shared these with a wireless industry expert.* According to him, EMR can be absorbed either by thick structures or carbon-infused paint, similar to that which is used for "stealth" airplanes or ships.

So long as the signal is not reflected up into the wireless transmission path, absorption will not hinder either private or municipal wireless operations.

EMR exposure should be reduced insofar as possible. Due to high EMR readings, neighbors living near the existing facility have already had to install expensive counter-measures, such as carbon-infused paint and metal curtains.

Maintenance staff for the private and public wireless facilities atop the current water tower need to be protected during repairs and service. This is Risk Management 101.

In any event, construction of the new water tower provides an opportunity to mitigate EMR exposure, for people and other critters.



* Mr. Long

Bird/Turbine conflicts

<http://rsbl.royalsocietypublishing.org/content/3/6/611.full>

Abstract

Dog walking is among the world's most popular recreational activities, attracting millions of people to natural areas each year with diverse benefits to human and canine health. But conservation managers often ban dog walking from natural areas fearing that wildlife will see dogs as potential predators and abandon their natural habitats, resulting in outcry at the restricted access to public land.

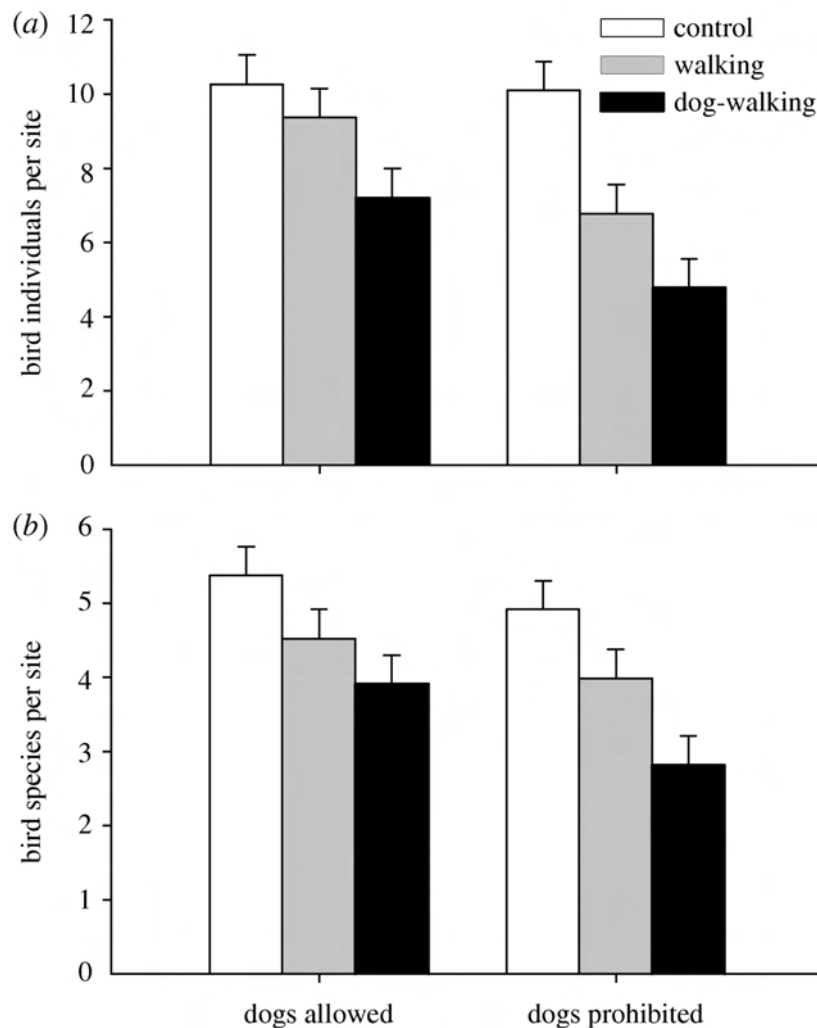
Arguments are passionate on both sides and debate has remained subjective and unresolved because experimental evidence of the ecological impacts of dog walking has been lacking.

Here we show that dog walking in woodland leads to a 35% reduction in bird diversity and 41% reduction in abundance, both in areas where dog walking is common and where dogs are prohibited.

These results argue against access by dog walkers to sensitive conservation areas.

EXCERPT

These results reveal that even dogs restrained on leads can disturb birds sufficiently to induce displacement and cause a depauperate local bird fauna.



Addison Texas EcoCultural WaterTower

Information about this structure was included in the NEWT report, after it was brought to the attention of the group by one of its members, Northsider Bill Bauer (City of Madison Parks landscape designer, retired).

Vertical wind turbines are just one option for co-locating renewable energy generation on the water tower. Solar photo-voltaic panels are another.



Late in 2012, I shared the following by email with CAP participants:

Attached folder holds 3 PDFs with info.

See also links/text below, including news that Texas A&M University Corpus Christi is also installing 12 similar UGE-4K turbine systems.

Note that a 1500 SF wind energy education center was built into the Addison water tower 's base, apparently designed in such a way as to still protect reservoir security. A 9th VAWT was apparently mounted at ground level for educational reasons.

The ecocultural project includes a landscape design that is both artful and, for educational purposes, low energy and all-native/natural (e.g., no pesticides allowed). I find the concrete tower itself to be not so artistic, btw.

The reported energy outputs are "anticipated" not actual. The turbines were supposed to power the water tower operations with a net zero energy outcome, but during some months falls short of that goal. Also, Addison does not appear to have done an EROI or cost/benefit analysis of the turbine installation, which did receive substantial grant funding,

I noticed that the surplus energy which is sometimes generated is not large enough to merit a feed-in tariff from the electrical utility company, so asked if it was just spilled on to the grid. Response just received:

In a message dated 1/7/14 2:54:16 PM, jshroyer@addisontx.gov writes:

Jon,

I believe that is correct, the surplus energy goes back out into the grid.

Thanks,

Jason Shroyer, EIT | Assistant Director
Infrastructure Operations & Services
Town of Addison | 16801 Westgrove Dr. | Addison TX 75001
Office 972.450.2849 | fax 972.450.2837 | jshroyer@addisontx.gov

MORE ADDISON TX ECOCULTURAL WATER TOWER INFO:

<http://www.addisontexaswatertower.com/>

Thanks to the Texas State Energy Conservation Office (SECO), the Town of Addison was able to fund part of its new elevated municipal water tower with an American Recovery and Reinvestment Act of 2009 grant. The SECO grant helped Addison procure nine vertical axis wind turbines (VAWTs) from GREEN POWER 4 TEXAS, a wind and solar distributor-installer in Houston, Texas, and one of the leading distributors globally for the vertical axis wind turbine manufacturer Urban Green Energy.

According to KZTV10, Texas A&M University Corpus Christi is also installing 12 similar UGE-4K turbine systems under a similar SECO grant.

Since these ruggedized turbines, with a rated wind speed of at least 140 mph, have a life expectancy of 20 years or more, a generation of Texas students will benefit greatly from learning about renewable energy jobs in the water tower's ground-floor green energy education center.

This visual and hands-on teaching tool is important because Texas ERCOT leads all other states for installed wind turbine capacity and wind energy generation. In fact, on March 7, 2012, Texas' ERCOT grid shattered a second time the nation's wind power generation record, according to RenewableEnergyWorld.com. And, because Texas' large installed base of utility-scale and small wind turbines will require regular maintenance -- like any building or car -- Texas has a vested interest in training the next generation for green jobs, like optimizing power generation and energy production performance.

This summer, to kick-off Addison's green teaching, wind turbine distributor-installer GREEN POWER 4 TEXAS has offered to teach Addison families Momentum Bay's GREEN [BOOT CAMP] course.

Mark Alan Robinson, energy and sustainability consultant at and founder of GREEN POWER 4 TEXAS said, "Our clients realize that solar panels, wind turbines and other renewable energy installations are about more than the energy they produce. Green energy cleans our Texas air for all Texans families, especially children, the elderly, and those with asthma, emphysema or other cardiovascular and pulmonary conditions. Green power allows Texas to make available precious water supplies for irrigation and agriculture.

For example, on March 1, 2012, the Austin-American Statesman reported that the Lower Colorado River Authority (LCRA) decided to cut off irrigation water to all South Texas rice farmers, threatening a \$400 million per year agricultural industry.

Consequently, water scarcity, water quality, the Texas drought and other water issues have risen to the main issue before the 2013 Texas Legislature.

As such, Momentum Bay and GREEN POWER 4 TEXAS (855-467-8987 or 855-GNR-8WTR) will be offering simple, globally proven, advanced water technologies, including Atmospheric Water Generation (AWG) units.

Additionally, GREEN POWER 4 TEXAS will donate a miniature fruit tree orchard -- improving Texas' air quality and alleviating Texas' reliance on food stamps. Over

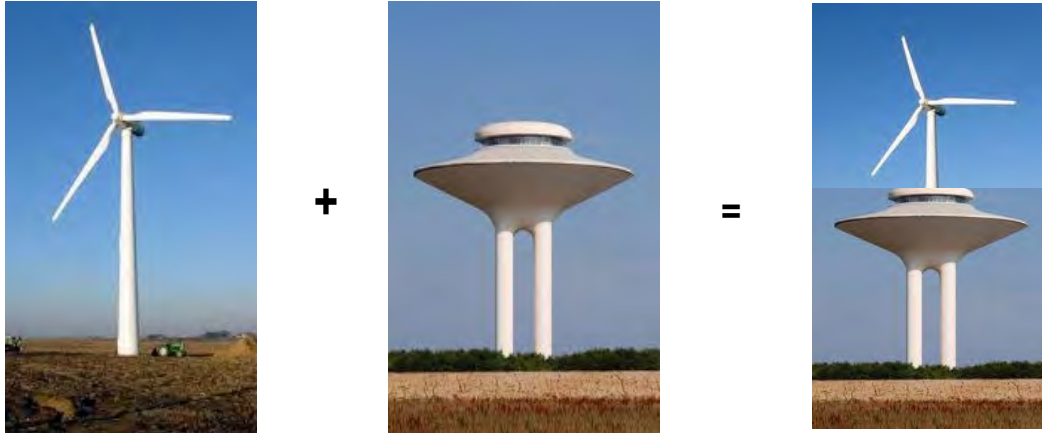
<http://www.bradjgoldberg.com/water-tower/town-addison-texas/water-tower-vertical-axis-wind-turbines-addison-texas-artist-design-0>

"WATER TOWER" ELEVATED WATER TOWER DESIGN, TOWN OF ADDISON, TEXAS

The Town of Addison, Texas asked the artist to design a 1.5 million gallon elevated water storage tank to serve the Town's growing water needs, recognizing the many functional constraints of this engineering project. The design features a custom, 145 foot tall concrete pedestal topped by a 50 foot high x 90 foot diameter steel tank on top of which sits eight, five kilowatt vertical axis wind turbines. At nearly 200 feet in the air, winds will activate the turbines which will be net-metered and grid tied into the Town's power utility. The energy produced will more than offset the electrical usage of the water tower facility. A power generating monitoring system will be located inside the base of the pedestal for educational and research purposes.

Often City libraries are built inside a “gray box” provide by a developer of a building with other functions, or floors above. Could MWU take better advantage of its facility sites, by working with MGE to design and build combination water / wind towers, reducing capital costs.

COULD



OR COULD



“For utility scale turbines the tower is about 30% of capital costs and its foundation and construction may be 20% of installation costs. So spreading those costs across more functions could save big dough. Not sure which, MW sized [utility grade] turbine or municipal water tower, takes more concrete and steel in its foundation.”

~ Wind industry consultant, Mr. O'Kelly
(18 JAN 2014 email communication to Jon Becker)

W2Tower Concept®

© 2014 Jon Becker. All rights reserved.