Technology Advisory Council
Initial Recommendations in the aftermath of Hurricane Sandy
Report dated 11/19/12

Hurricane Sandy hit the New York City area on October 29th, making landfall in central New Jersey. High winds, but little rain, was the primary effect of the storm. The winds toppled trees into power lines, roads, cars and houses. 80% of Scarsdale residents lost power, many roads were impassible due to downed trees and wires, internet service was affected as well. Scarsdale was not unique. The storm produced widespread damage from Fairfield County Connecticut all the way south to at least Maryland. This document is a collection of ideas on how to best prepare the Village to weather future storms and emergencies to provide for the safety of Village residents and continued operation of emergency and support services.

The Technology Advisory Council (TAC) met on 11/19/12 to brainstorm on what could be done to mitigate the effects of future events like Sandy. Present were Chair Bruce Wells, Dan Kraut, Daniel Finger, Randy Guggenheimer, Drew Hahn, Scott Rompala, Iliya Rybchin.

Immediate Recommendations

Move Scarsdale.com web server into the cloud
The computer hosting Scarsdale.com (the Village web site) was physically located in Village Hall and was not publically accessable after the storm. There were two issues that contributed to this. First, Village Hall lost power. Staff was able to power the web server and other important machines from a generator to solve this immediate issue. The bigger problem was that internet service to Village Hall provided by Lightpath was severed, causing the web site to be inaccessible to the public for 9(?) days after the storm. Although Lightpath had two separate lines coming into Village Hall, both lines ran together on the same utility poles for over a mile, representing a single point of failure. The committee also notes that even if the two lines ran in different physical directions, it is still extremely likely that both lines could be interrupted simultaneously in the future.

For these reasons, the TAC feels that the web server should be moved immediately into the cloud. Internet based hosting (the cloud) of the web server would have enabled the server to be up 24/7 during the storm and afterward. Several TAC members have cloud based web servers, and all were up without issue throughout the storm. TAC members have experience with 1 and 1 and Amazon web hosting. A shared Microsoft web server hosting package on 1 and 1 costs $5 a month and would be sufficient for Scarsdale.com. Other packages can be purchased with more features if staff feels they are needed (like server side includes), but the basic package includes limited bandwidth and generous web space. 1 and 1 includes two physical locations for dual redundancy and automatic fall over in case one location is affected. This configuration also reduces maintenance downtimes.

Host Village email server in the cloud

Similar to the website being inaccessible to the public, because the Village mail server was hosted in Village Hall, scarsdale.com email accounts did not operate outside Village Hall until internet service was restored.

The TAC recommends the email server be hosted in the cloud as well. Options include going to [Google Apps for Government](). This would include email, calendar, Drive (documents, spreadsheets, etc) and other features. It would be accessible from any internet enabled device. TAC believes pricing is $5 per user per month. Other options would include Microsoft cloud products, or continuing to manage our email server ourselves, but a on remote site. Costs should be evaluated for each option, including the costs of server licenses, users licenses for individual apps and cost of maintenance. Depending on the number of Scarsdale.com email addresses used, different numbers of users could impact the final price.

Private Village web page with contact details of all staff

One of the issues brought to the TAC's attentions was the lack of the ability to contact staff due to not having access to staff personal information including private email addresses and phone numbers. This was primarily caused by non functioning scarsdale.com email addresses that would be solved by cloud hosting of the email server, but TAC believes more redundancy should be incorporated for future unforeseen circumstances.

The TAC recommends a private area of the web site be set up for personal staff information that can be accessed and updated by staff. A database should be made available that includes relevant personal contact information for all staff including home and personal cell phone numbers, private email address, home addresses, and other relevant information. Access to an employee's personal information would only be available to the system administrator and the individual employee. Various levels of access could then be granted to different levels of staff on a need to know basis. For example, cell phone and private email addresses might be made available to all staff if the normal scarsdale.com and phone system were to be down due to unforeseen reasons. All this information would be behind an employee login and not available to the general public.

Content Management System (CMS) for web site with multi person access to update in time of emergency

One of the issues that surfaced with Hurricane Sandy was getting information out to Village residents. Fortunately, wireless internet service seemed to work well for most residents. Since most phones and personal electronic devices can now access the internet through wireless services, residents are not completely without the ability to access information on the internet. The problem was the Scarsdale.com website was not able to be easily updated and and could not be reached, as detailed above.

The TAC recommends that a CMS be installed on the web server and administrative access to it be given to multiple staff members, including police and fire officials, the Mayor and possibly other Trustees. The content should be on the front page of the web site, or at least a prominent link from the front page should be available. Ideally, the CMS would require a login and list

who the author is, the time of the post, and have an archive function so edits can be seen as to when and who made them. This will insure that information can be posted in a timely fashion for residents and have a historical trail available.

All critical information should be on the web server

All Village departments should be able to keep critical information on the web server so it can be easily reached in case of emergency. This would be password protected and use best industry practices for security including keeping all software up to date with the latest patches. Ideally a system that allows multiple levels of access on a need to know basis with multiple persons being able to access any specific piece of information. This would allow for redundancy in case the primary person was unavailable.

The TAC will investigate and recommend software for this purpose.

Critical information should be backed up nightly so it is accessible if the cloud servers go down.

While the TAC believes that cloud hosting is very reliable, it is possible that unforeseen circumstances could render it unavailable at some point. If the information was downloaded and saved on an eReader stored at Village Hall and the Public Service building, it would be available in the event of a large internet failure. This process could be automated and run unattended.

Example of information that would be needed in an internet failure would be the RUOK (Are You OK) list, and other information such as staff contact information.

Ensure that everyone in Village knows that they should sign up for Blackboard Connect.

Many residents complained that the Village was not communicating with residents during the storm. Actually, the Village was extremely proactive with sending out updates through the Blackboard Connect system. The TAC applauds the decision to employ this system for the Village and notes it was up 24/7, as it is a cloud based system.

The problem came from the failure of the residential telephone system. Many people did not have home telephone service available due to lack of power and down telephone lines. Many residents are on Voice over IP (intenet, VoIP) phones that need electric power and an internet connection to function. The Blackboard Connect system used reverse 911 information, where the system was seeded with phone numbers to call from the 911 system. This provides home phone numbers, which were exactly the phone numbers that were not working due to downed utility poles.

The TAC recommends that the Village redouble the efforts to inform residents of the existence of the Emergency Notification System and get all residents to sign up and register additional phone numbers and email addresses. This should be done through multiple means including but not limited to, inserts in water and tax bill mailings, Village newsletter, cable TV

announcements, Inquirer articles, and the online sites, and possibly banners. A banner hung in multiple locations could simply say "Sign up for emergency notifications: scarsdale.com" This idea could be extended futher to push residents to use Scarsdale.com, like "Pay your taxes online: Scarsdale.com" and "Tree blocking road? Scarsdale.com". This brings up to the next point.

Road closings on Scarsdale.com
Crowd sourcing is becoming a widely used and accepted norm. Wikipedia is probably the most successful example. We should have a way for residents to report road closures, trees down, flooding and other public safety issues. Residents could go to Scarsdale.com to see (and update) the map. More sensitive information, like power outages could be displayed after a confirmed login. We don't want non-residents to know where houses have no power for security reasons.

Mobile devices with GPS are now prevalent and could be used to report issues. A Scarsdale App (or mobile website) could be used with a GPS enabled device to register a problem. The user, arriving on the scene of a downed tree, flooding, washout, etc, could simply start the app (or visit the mobile site), select the problem from a list of issues we want to track, and essentially say, there is a problem right here. We would then have the users name, email address, location, reported problem, and time of the incident. This data would then be aggregated on the website for all to see. Police and public works employees could then update the database by saying the problem has been resolved, or still exists, etc, when they visit the scene in the course of their work. This system would not be a substitute for normal procedures, but simply a fast way for the public to report and find problems. Individuals who report a problem could report the problem as resolved, or anyone with resolve permissions (police, fire, staff, etc) could also mark it fixed, or update the status. Residents would also be given the chance to add more information to an existing report, or create a new report, based on how close they are to an existing issue. In the example of flooding, multiple reports would show the extent of the same flood, so would probably be separate reports, but a tree down may be reached from opposite sides of the road, but would be the same incident. Obviously the system should not be used to report immediate emergencies like fire or request for police or medical assistance.

Examples of things that could be tracked would include potholes, wildlife (coyotes and stray dogs), downed trees, graffiti, road closings, ice on roads, and other hazardous conditions.

A potential solution may be http://www.publicstuff.com/. There are indications that some communities effectively used this solution during the storm The TAC will investigate ready made solutions for this application.

Things to Investigate

Twitter

A member of TAC got the most storm related information from Twitter. The Village should consider this form of communication. Text messaging can be done on the most basic of phones. Twitter limits messages to 128 characters, so the Village updates done by the Mayor would not fit, but small tweets would, for example the Mayor could tweet "Library has power, no internet, but hot drinks to warm you up. Open till 11pm, I am here till 3pm, come by to talk" We could also tweet road openings or things like "The Village Center has power and internet at various shops, stores are open, but service stations on Scarsdale Ave are now out of gas"

A key advantage to Twitter is redundancy of information dissemination. A single tweet can can appear on Twitter, on SMS, on email, posted on Facebook, posted on LinkedIn, etc. Additionally, because many other officials/sources were constantly Tweeting during the storm (Rob Astorino, ConEd, Governor Cuomo, Scarsdale10583, Scarsdale Patch, LoHud.com, etc.), Twitter offers an effective way to aggregate information from multiple sources.

VoIP phones village wide
One of the problems experienced during the storm was lack of phone service because of loss of Lightpath services. If we changed the Village phone system to a completely cloud hosted PBX system, an individual phone could be moved to any location with internet and keep it's extension and phone number. This would allow to move offices without internet or power to locations that had both. In Sandy, the DPW had power and internet, but the Public Safety build was without internet. With VoIP PBX phones, the DPW building (or any other location with internet and power, like a private residence or business) could be easily converted into alternative office space and command center.

Backup Mobile Phones and Data Cards
To provide additional redundancy for voice communication and data access, the village should consider purchasing a number of prepaid cellphones and 4G data cards. The phones and cards can be stored in Village Hall and distributed to key village employees in the event of catastrophic communication failure. Due to the nature of how cell phone systems are deployed, there is much greater probability of cell coverage than fixed line access. Even if cell towers in the village are not operational, employees can drive to neighboring areas that have cell connectivity to make calls and access the internet. Beyond the initial investment of buying phones and data cards, prepaid mobile products do not require monthly subscriptions. Voice/ data charges will only be incurred when devices are used in an emergency.

Mobile web communication
The majority of internet browsing is done via mobile devices. Therefore, Scarsdale residents are as likely (possibly more likely) to visit Scarsdale.com via a mobile device (phone or tablet). In the event catostrophic power/internet failure, it's likely that 100% of traffic to scarsdale.com may come from mobile devices. Our current site is not optimized for mobile usage. We should redesign our website to be more "mobile friendly". The site can be rebuilt using HTML5 and adaptive design principles resulting in a site that automatically adjusts based on the device that is used to access it. A side benefit would be a site that better complies with ADA guidelines.

There may not be a need to redesign the entire scarsdale.com site. However the home page and key content pages (emergency notices, school information, contact details, etc.) should be built in a mobile-friendly format.

Down the road, it may make sense to build and deploy a "Scarsdale App". However, due to the complexity of maintaining and updating apps on multiple platforms (iOS, Android, Blackberry, Windows, etc.), it may not be initially feasible to deploy apps. A mobile-optimized web site should address the majority of the critical needs.

Other ideas not specifically technology related

These ideas came up in discussions, but were not specifically technology related.

Look into the possibility of Scarsdale running it's own electric utility, like the Village does for water. Another possibility is to contract with out of town utility crews that could be called into action if needed to supplement Con Ed. This might result in faster response times. Burying utilities should also be investigated. Current pricing is about 1 million a mile, and with today's bond rates, it might make sense. Property values may also increase because underground utilities are highly desired and becoming more so.

Post physical notes on bulletin boards village wide. Updates like road closing, shelter info and other information could be posted. The problem is getting people to know to look for them and updating them.