The City of New York Web Accessibility Report

June 30, 2017

Abstract: This report analyzes the state of accessibility of websites managed by or on behalf of the City of New York. The analysis is based on the City of New York Accessibility Scoring Methodology which is derived from WCAG 2.0 Level AA standards. The report covers topics such as Local Law 26 of 2016, accessibility scoring methodology, statistics on the accessibility of City agency websites, training efforts to raise awareness and an accessibility plan moving forward. Data is based on a representative sample of pages from a sample of City agency websites. The passing score used is 75%. The results show that based on the scoring methodology 100% of "new" template websites have an accessibility score higher than 75%, 11% of "old" template websites have an accessibility score higher than 75%, 67% of "non-templated" websites have an accessibility score higher than 75%, and 73% of "outside-hosted" websites have an accessibility score higher than 75%.

Part 1: Introduction

The web is increasingly becoming a platform for applying for and accessing City services. It's also giving us the opportunity to reach more people. However, not everyone's needs are the same. Almost one million New Yorkers have some form of disability. Design, whether it's in physical architecture or an organization's website, has the power to stop someone from accessing something they need. The disability community has assistive technology and other tools to access the web. The design and coding of the websites that people with disabilities visit can determine whether users feel successful or frustrated in accomplishing their task.

Accessibility is the practice of designing or enhancing the physical, social, or virtual environment so that people of all abilities are able to perceive and interact with them independently. Since the disability community faces extra barriers, it is the City's responsibility to help all New Yorkers access City services available through the web. The Americans with Disabilities Act (ADA) already requires government entities to make their services and websites accessible. And as of March 14, 2016, accessibility requirements were codified in Local Law 26, which requires New York City to adopt a protocol for City websites relating to website accessibility for persons with disabilities.

Defining Disability

The Americans with Disabilities Act (ADA) was signed by George H. Bush on July 26th, 1990. The ADA defines disability as a physical or mental impairment that substantially limits one or more major life activities including, but not limited to: caring for oneself; performing manual tasks; seeing; hearing; eating; sleeping; walking; standing; lifting; bending; speaking; breathing; learning; reading; concentrating; thinking; communicating; and working.

For the purposes of web accessibility, this report will focus on disabilities that affect the eyes, ears, hands, and brain. Some examples are blindness, deafness, learning disabilities, cognitive disabilities, motor-function disabilities, neurological disabilities, or a combination of the above.

What is Assistive Technology?

Assistive Technology (AT) is any piece of equipment, product, or system that is used to maintain or improve the functional capacities of people with disabilities. Common examples include wheelchairs, hearing aids, crutches or even glasses and contact lenses. The following are examples of assistive technologies that are used by people with disabilities to interact with websites.

Screen Readers

For members of the blind and low vision community, there are a few ways to access computers and websites. A [screen reader](#) is software that uses synthesized speech to read the screen's contents out loud. The user interacts and navigates through the content by using touch gestures or keyboard commands.

Screen Magnifiers

People with low vision use [screen magnifiers](#) to enlarge the contents of the screen. Screen magnifiers can also change background and font colors for better contrast.

Hands-Free Technologies

For those with motor-function disabilities, there are ways to control computers and smart devices through the use of voice commands, head wands, mouth sticks, switch controls, and alternative keyboards.

[Read more about assistive technology for motor-function disabilities.](#)

Part 2: Local Law 26

Signed on March 14, 2016, [Local Law 26 adds a new section 23-802 to the Administrative Code](#) concerning the adoption of a protocol relating to the accessibility of websites managed by and on behalf of the City of New York. It requires:

- The Mayor must appoint a designee to enact this law.
- The City of New York must adopt either the [Web Content Accessibility Guidelines](#) (WCAG) 2.0 AA standard or [Section 508](#) federal standards codified at 36 CFR 1194.22.
- A report on the compliance of all websites managed by or on behalf of the City of New York that must be submitted no later than July 1, 2017.

- A subsequent report must be submitted every two years thereafter.

The law also states that compliance does not require an agency to take any action that would result in a fundamental alteration in the nature of a service, program, or activity or in undue financial and administrative burdens.

Designee

The Mayor's designee is the Digital Accessibility Coordinator, who is a [Department of Information Technology and Telecommunication](#) (DoITT) employee. DoITT partners with the [Mayor's Office for People with Disabilities](#) (MOPD) in this effort with assistance from the [Mayor's Office of Technology and Innovation](#) (MOTI) and [Mayor's Office of Operations](#) (OPS). Other City agencies have contributed as needed.

Standards

The City of New York has chosen to adopt the [WCAG 2.0 level AA](#) standard. The federal government has adopted this standard, as well as other governmental entities worldwide. The guidelines were created by the [World Wide Web Consortium](#) (W3C).

The Web Content Accessibility Guidelines 2.0 are based on [four principles of accessibility](#). These principles dictate the criteria a website must have in order to be accessible. Content must be:

1. Perceivable
2. Operable
3. Understandable
4. Robust

For purposes of this study, the criteria behind the principles laid out in WCAG 2.0 are used as a [checklist](#) that pertains to each of the four principles. The checklist items have numbers associated with them.

Perceivable

Website users must be able to perceive all of the information that is being presented regardless of their ability to see or hear. This principle pertains to checklist items that start with the number 1. For example, 1.1, 1.2.1, 1.2.3, etc. Checklist items include "1.1 text alternatives," "1.3.1 info and relationships," and "1.3.2 meaningful sequence."

Operable

User interface components and navigation must be operable. The interface should not require interaction that a user cannot perform. This principle pertains to checklist items that start with the number 2. For example, 2.1.1, 2.1.2, etc. Checklist items include "2.1.1 Keyboard," "2.1.2 no keyboard traps," and "2.2.1 timing adjustable."

Understandable

The content and interface must be understandable. Users must be able to understand the information as well as the operation of the user interface. The content or operation cannot be beyond their understanding. This principle pertains to checklist items that start with the number 3. For example, 3.1.1, 3.1.2, etc. Checklist items include "3.1.1 language of page" and "3.1.2 language of parts."

Robust

As technologies and user agents evolve, the content should remain accessible. This principle pertains to checklist items that start with the number 4. For example, 4.1.1 and 4.1.2. Checklist items include "4.1.1 parsing" and "4.1.2 name, role, value."

Part 3: Testing Methods

To measure compliance with WCAG 2.0 guidelines, testing was performed on various City of New York agency websites. Testing involves measuring whether or not the elements and content that make up a webpage are reflecting success criterion from the [WCAG 2.0 checklist](#). Success Criterion are the specific components that a webpage must adhere to succeed for each of the criteria mentioned above. Websites were tested on some of the following:

- Color contrast: text, background, links, and other significant areas must meet the required color contrast ratio.
- Text resizing: users should be able to magnify the webpage up to two times.
- Alt-text: text descriptions should be included for images, logos, and pictures. This text is not visible on screen. It is embedded for screen reading technologies to interpret for users.
- Keyboard access: all links, buttons, and other interactive controls should be navigable by pressing the tab key only.
- Heading structures: the headings and sub-headings that make up a page should be properly formatted to work with assistive technologies.
- Forms: all input fields should have text labels and validation errors should be easy to perceive and correct.
- Content that plays automatically: content that is longer than three seconds and can be played automatically should be easily disabled.
- Captions: captions should be provided for video or audio content.
- Audio description: videos should have an audio track that verbally describes what is happening visually.
- Video controls: all embedded videos should have accessible controls with text labels and should not disappear once the video starts playing.

Manual and automated testing methods were used. A combination of the following two methods was used to measure compliance:

- Automated testing: an automated tool is usually a web browser add-on that generates a report when the user submits a webpage address.

Such a report would contain a list of errors. For example, a page might have three images that are missing alt-text.

- Manual testing: manual testing entails a person visiting the website using assistive technology and manually testing it by going through the contents to find accessibility barriers. For example, a user might report that a page has a rotating hero that distracts or confuses users with various disabilities.

Automated Testing Tools

A number of automated tools were considered for the purposes of testing websites' accessibility. The tools include aXe, tota11y and WAVE. WAVE was found to be the most useful to test for color contrast, missing document language, and duplicate labels. The W3C Markup validation Service was used to test for checklist items "4.1.1 parsing" and "4.1.2 name, role, value."

Manual Testing Tools

Manual testing included using a combination of assistive technologies, web browsers, and operating systems.

Windows 7 version 6.1.7601 was used for testing. For this operating system, the following assistive technologies were used:

- JAWS version 17
- NVDA version 2016.1

For Windows, the browsers tested include the following:

- Internet Explorer version 11.0.9
- Google Chrome version 58.0.302
- Mozilla Firefox version 53.0.232

Mac OS 10.12.3 was used for testing. For this operating system, the following browsers were used in conjunction with the built-in screen reader called Voiceover:

- Safari version 10.0.3
- Google Chrome version 58.0.3029
- Mozilla Firefox version 53.0.

City of New York Web Accessibility Scoring Methodology

The following methodology was created to measure accessibility based on the WCAG 2.0 level AA standards that the City of New York has chosen to adopt. In Appendix 1, each checklist item is measured and given a score between 0 and 1. For example, "1.1 text alternatives" pertains to the number of images that appear on a page. To measure, all images on a page were counted, then the number of instances of alt-text for each image was counted. An average was calculated from those figures. For example, if there were three images and three alt-texts, then the score would be 1. If there were six images and only three alt-texts, the score would be .5.

Some checklist items were given a 0 or 1 score instead of an average. For example, checklist item "2.1.2 no keyboard traps" was not useful to count. It either exists on the page or not. Therefore, scores given were either 0 or 1.

In other cases, scores were rounded to the nearest quarter because of ambiguity. For example, the checklist item "1.3.1 info and relationships" pertains to proper syntax and heading structures. Since a heading structure that is not proper can still be useful, scores such as 0, .25, .5, .75 and 1 are given to pages regarding this criteria.

Some checklist items are not applicable for all pages. For example, checklist item "1.2.1 audio only and video only pre-recorded media" is not applicable if the page does not have media such as a video or podcast. When a checklist item was not applicable, it was not counted towards the average checklist score for the page.

Finally, all applicable checklist items for each page tested were averaged to calculate a City of New York Accessibility Score for that page. That score is then turned into a percentage. The passing score used is 75%. For more detailed info, please refer to Appendix 1 under the "Info" tab.

Part 4: City of New York Websites

A citywide outreach effort was made to compile a list of websites owned by the City of New York. The following website and page counts are based on that effort.

The City of New York owns and manages websites that are both public-facing and for City employee use. Internal websites include, for example, training modules and directories. Public-facing websites were the main focus of this report because they are used by a wider audience.

There are two types of public-facing websites. The first are websites that reside on the NYC.gov server. For the purposes of this report, these websites will be referred to as NYC.gov server-hosted websites. Within this type, there are two templates used to create websites for City agencies: the "old" and "new" templates. There are also some websites on NYC.gov that are "non-templated," which means that they were built with static HTML. The second type of websites are ones hosted outside of the NYC.gov server. For the purposes of this report, they will be referred to as outside-hosted websites.

NYC.gov Server-Hosted Websites

The following are types of public-facing websites that reside on the NYC.gov server.

Old Template Websites

There are 72 websites on the NYC.gov server that use the "old" template. This template offers fewer accessibility features than the "new" template. For a list of websites that use the "old" template, please refer to Appendix 2 under the tab "Old-Template Sites."

New Template Websites

There are 128 websites on the NYC.gov server that use the "new" template. This template is formatted in such a way that is more accessible than the "old" template. For a list of websites that use the "new" template, please refer to Appendix 2 under the tab "New-Template Sites."

"Non-Templated" Websites

There are nine websites on the NYC.gov server that are not templated, and are built with static HTML. For a list of websites that are not templated, please refer to Appendix 2 under the tab "Non-Templated Sites."

Differences Between the "Old" and "New" Templates

There are many differences between the templates that make the "new" template more accessible than the "old" template. From a foundational perspective, the "new" template uses HTML 5 while the "old" template uses HTML 4. It is considered an accessibility best practice to use HTML 5.

Furthermore, the "new" template allows for better implementation of the following features:

- Heading structures
- Alt-text for images
- Labels for form fields
- Accessible error reporting for forms
- Keyboard access
- Color contrast
- Accessible Captchas
- Larger base font (16 pixels)
- Rotating hero

Outside-Hosted Websites

There are 72 websites hosted outside of the NYC.gov server, which may still be hosted by the City. An example is [the New York City Council website](). For a list, please refer to Appendix 2 under the tab "Outside-Hosted Sites."

Scope/Pages Tested

For both NYC.gov server-hosted and outside-hosted sites, representative samples were used for testing purposes. The samples included the following:

- Select homepages;
- Select "About" pages;
- Select "Contact" pages;
- Select "E-mail the Commissioner" pages; and
- Select accessibility or disability services pages.

On the NYC.gov server-hosted websites there are 30,000+ pages associated with 200 websites and a total of 58 pages were tested. For the nine "non-templated" websites, a total of 18 pages were tested. For the 72 outside-hosted websites, a total of 15 pages were tested. This makes for a total of 91 pages tested.

Reasoning

The reasons a sample of the three types of pages were chosen is as follows:

- The homepages tend to be unique from the rest of the pages on each website.
- The "About" pages are consistently included on websites and tend to have similar layouts to those of other pages.
- The "Contact" pages usually have forms that need to be manually tested. If the "Contact" page is accessible, visitors will be able to establish contact with a City agency to get answers they may not be able to find by navigating the website.

Part 5: City of New York Websites Accessibility Summary

The following table is a summary of testing results. Percentages are referring to an accessibility score that was calculated based on City of New York Web Accessibility Scoring Methodology. For more detailed info, please refer to Appendix 1.

Website Type	Scores Under 75%	Scores Above 75%	Scores Above 80%	Scores Above 90%	Average
NYC.gov Server-Hosted "Old" Template	16	2	1	0	67%
NYC.gov Server-Hosted "New" Template	0	40	39	20	88%
Non-Templated	6	12	9	3	79%
Outside-Hosted	4	11	8	1	81%
Total	26	65	57	24	79%

Part 6: Accessibility Plan

The following plan sets forth the accessibility goals that DoITT and MOPD have set in order to improve City of New York websites.

NYC.gov Server-Hosted Websites

Non-templated Websites

NYC.gov server-hosted "non-templated" websites will be addressed in the following ways:

- The Digital Accessibility Coordinator will be reaching out to specific City agencies with regards to accessibility remediations for the 9 "non-templated" websites.
- DoITT and other City agencies will inform the Digital Accessibility Coordinator about new "non-templated" websites for accessibility testing and remediations.

Templated NYC.gov Server-Hosted Websites

NYC.gov server-hosted "templated" websites are composed of two main parts. The first part is the template with which each site is built. There are two types: the "old" and the "new" templates. The second part is the website's content. The content is managed by IT professionals and communications personnel in each specific agency, and/or DoITT using a vendor-provided software product called TeamSite (version 7.3.2.0.0).

For NYC.gov server-hosted websites that are templated, the City will employ five primary strategies:

- Make forms more accessible;
- Work with agencies to improve the accessibility of their website content and correct color contrast;
- Make accessibility enhancements to the "new" template;
- Transition all remaining "old" template websites to the "new" template; and
- Implement an accessibility accreditation process for all new websites.

Form Changes

As of June 2017, DoITT deployed updated cascading style sheets (CSS) and HTML, which will improve color contrast and screen reader compatibility for forms on "new" template sites. There are three categories of forms on "new" template sites —agency head/commissioner forms, "other" existing forms, and "new" forms.

- Agency Head/Commissioner Forms: DoITT has begun converting old-style agency head forms to the new-style agency head forms, and expects to complete the conversion by the end of August 2017.
- "Other" Existing Forms: After converting the agency head forms, DoITT will convert other existing forms to the new style. There are 608 existing forms on NYC.gov ("new-template" websites) to be converted.
- "New" Forms: Moving forward, all "new" forms will be created using the updated CSS and HTML.

Content and Style Changes

MOPD and DoITT have been working on a step-by-step guide for content creators. It will include instructions on how to add alt-text for images, improve color contrast, format headings properly, as well as caption and audio describe videos.

The guide will show content creators how to improve the accessibility of existing content in addition to new content that takes into consideration City of New York Accessibility Standards laid out in this report. As of June 2017, MOPD and DoITT have reached out to City agencies whose websites are on the "new" template to implement the changes, and are working with agencies to fix color contrast issues identified during testing. For a list of content changes, please refer to Appendix 3.

New Template Changes

MOPD and DoITT have been examining the "new" template and its various forms and creating a list of accessibility best practices.

Changes include enhancements to page titles, headings, forms, and rotating slides that appear on homepages. The changes to websites using the "new" template will further the effort to reach a higher level of accessibility. The list of changes are expected to be implemented by the end of 2017. For more details about the list, please refer to Appendix 4.

Transitioning from "Old" to "New" Template

The "old" template is being phased out. Therefore, MOPD and DoITT have decided to focus their efforts on making enhancements to the "new" template. Testing of the "new" template shows that it has a higher level of accessibility. The process of transitioning websites using the "old" template to the "new" template is expected to be completed by the submission of the next report, which is due July 1, 2019.

Accessibility Accreditation Process

Before a new website goes live on NYC.gov, it goes through a site review process at DoITT. As of May 10, 2017, the Digital Accessibility Coordinator is part of that process, ensuring that all new websites that the City creates using TeamSite will be tested and enhanced for accessibility before launch or shortly thereafter.

Internal Websites

Internal websites and training modules will also be examined to insure enhanced accessibility across all City platforms. Focus on internal websites is expected to start in 2018.

Plan for Outside-Hosted Websites

The accessibility of procured websites such as [Access NYC Front Door](#), [NYC Well](#), Department of Cultural Affairs (DCLA) [cultural plan survey](#) and [Growing Up NYC](#) has been tested and improved. As MOPD/DoITT are informed of new procurements, the Digital Accessibility Coordinator will test and share feedback with each vendor. To the extent practicable, each vender will comply with the Digital Accessibility Coordinator's recommendations.

Remediations to existing outside-hosted websites are expected to be completed by the next report, which is due July 1st, 2019.

At this point it is still unclear whether all vendors will comply with these requirements.

Procurements

Along with those efforts, the following [Request for Proposal](#) (RFP) language was created and shared with agencies to be included in procurements of digital products.

> "In March, 2016 the City Council enacted [Local Law 26](#), which set a requirement for accessibility of City websites by adopting one of the two following standards:
>
> - [the Web Content Accessibility Guidelines (WCAG) 2.0 Level AA](#)
> - [Section 508](#) federal standards
>
> For "Product name" we will be using [the Web Content Accessibility Guidelines (WCAG) 2.0 Level AA](#). This product must be compliant with WCAG 2.0 Level AA no later than the time of launch. The technology strategy and implementation by the software vendor must meet the standard. Of particular interest for technical implementation are screen reader compatibility, text resizing, color contrast, keyboard accessibility, captioning and audio description for video content wherever applicable. The "Agency procuring" will coordinate accessibility testing with the Mayor's Office for People with Disabilities (MOPD) during the design process and after launch. The vendor is responsible for working with "procurement agency" or MOPD during the design process and remediating any accessibility issues. Once the product is launched, the vendor is responsible for remediating any accessibility issues reported by MOPD within 90 days."

Future Initiatives

In the next two years, The City will undertake the following:

- Apply accessibility standards to Internal websites and training modules
- Produce a policy regarding Audio description and captioning for all video content released to the public
- Produce a plain language accessibility policy for City of New York agency websites
- Produce an accessibility policy for electronic documents posted on City of New York agency websites

- Produce an accessibility policy for Web apps and widgets on City agency websites
- Produce an accessibility policy for Mobile apps associated with City services

Part 7: Guides, Trainings, and Outreach

Some efforts have been taken to increase awareness within City agencies about Local Law 26, the WCAG 2.0 guidelines, and the Web Accessibility Plan. These efforts include the following:

- Building relationships with DoITT employees that manage templates, code and oversee the NYC.gov server-hosted website creation process;
- Creating accessibility best practices guides that will be shared with City agencies as well as the public; and
- Training DOITT employees, content creators, TeamSite users, as well as vendors on how to make websites accessible.

Relationships

The Digital Accessibility Coordinator has developed relationships with DOITT employees who set standards, manage templates, and create and approve new websites. It is through this effort that MOPD and DoITT have created the list of changes to make for the "new" template, issued the directive for transition, and develop the accreditation process.

Guides

The following guides are being created and will be shared with City agencies:

City of New York Web Accessibility Guide

An in-depth guide on web accessibility and best practices. It contains explanations, examples, and links for further support. This guide will be shared with DoITT employees and posted on the MOPD website as a downloadable document. The goal of creating this guide is to increase

awareness of accessibility standards and requirements. It will also build empathy among developers who might not be aware of who benefits from accessibility and how.

This guide will also be included in NYC's Digital Resource Hub. This resource hub will act as a reference for City of New York agency web developers as well as other entities seeking guidance on web development.

The guide is expected to be completed by the end of August 2017 and distributed starting September 2017.

NYC Accessible Social Media Guide

A guide for City employees who manage social media accounts for their agencies was created in 2016. It contains information on how to create accessible social media posts on Facebook, Twitter and Instagram. Topics covered include describing pictures and captioning videos. Instructions are given on the following:

- The proper language when referring to people with disabilities
- How to describe what is in an image
- How to enable the alt-text feature on Twitter
- The proper format to use for image descriptions on Facebook and Instagram

In July 2016, this guide was shared with City agency staff who manage social media accounts, and is publically available on the [MOPD website](). In conjunction with this release, a training was conducted for social media managers.

City of New York Mobile Apps Accessibility Guide

The City is creating a guide on accessibility best practices for developing Android and iOS apps based on Google and Apple accessibility guidelines for developers. It is expected to be completed by the end of 2017 and distributed to DoITT app developers and relevant vendors in 2018.

Digital Resource Hub

The Mayor's Office of Technology and Innovation is developing a website that will provide city employees digital resources such as how to create websites, apps, and electronic documents. This hub will include a section dedicated to digital accessibility. It will have information from the Web Accessibility Guide mentioned above. It will include topics such as:

- Alt-text
- Heading structures
- Accessible forms
- Color contrast
- Keyboard access
- Accessible video controls
- Captions for videos
- Audio description for videos
- Plain language

Trainings

Digital Accessibility trainings have been conducted with City agencies and vendors to further increase awareness. These trainings are usually one to two hours long and are meant to introduce the topic of digital accessibility, build empathy, and demonstrate accessible and inaccessible digital content. Topics include the following:

- The disability community/Disability Studies
- Laws about disability
- Proper language when referring to people with disabilities
- Oppressive language that should not be used
- An exercise where attendees experience inaccessibility
- Intro to WCAG 2.0
- Accessibility best practices
- Demonstration of Assistive Technology
- Demonstration of accessible websites and documents
- Demonstration of audio description

Trainings have been conducted for the following organizations:

- Accessible social media training for social media managers
- Web accessibility training for the Department of Education(DOE) (two trainings)
- Digital accessibility training for CORO (group of public and private professionals)
- Digital accessibility training for Blue State Digital (vendor working on two websites for NYC)

Training for TeamSite Users

TeamSite is the content management system that DoITT and content creators from each agency use to manage content on their NYC.gov domain websites. Currently there is a TeamSite training that all TeamSite Users take. MOPD and DoITT are working in conjunction to include accessibility guidelines into the TeamSite training and its accompanying guide. It is expected to be complete by the end of 2017 and included in TeamSite trainings starting 2018.

Conclusion

The City of New York is committed to making its websites accessible and adhering to the requirements of Local Law 26. WCAG 2.0 Level AA has been chosen to be adopted and a City of New York Web Accessibility Scoring Methodology has been created based on those guidelines. As of July 1st, 2017, 71% of websites evaluated are accessible according to the methodology. As the City of New York transitions to the "new" template, more websites will be adhering to that standard. Furthermore, increased awareness through guides and trainings will help ensure that future websites will uphold higher levels of accessibility. It is expected that policies will be set in place to address apps, internal websites, and video content accessibility by the next report due on July 1st, 2019.