(DRAFT) Form 3X Bundle Assessment

# Introduction

In 2017, the Federal Election Commission (FEC) published a study of its current electronic platform, including a survey of the existing functionality of the FEC’s free filing software and an in-depth investigation of needs expressed by filers. The recommendations of this study served as the foundation for FEC’s new electronic filing platform. In July 2018, FEC awarded a contract to develop a “bundle” of applications and APIs based on the Form 3X, which was branded as NextGen eFiling Phase 1. Phase 2 will be rebranded as FECFile Online and will continue the work of developing a secure, custom-built, open-source, cloud-based electronic filing data application.

The assessment that follows supports FEC’s ability to proceed into Phase 2 by 1) assessing the previous development for the Form 3X bundle using a Quality Assurance Surveillance Plan (QASP) covering thirteen deliverable areas supported by multiple evaluation factors; and 2) determining the feasibility of integrating previously developed code into Phase 2 work.

# Assessment, Part 1: Evaluation Against Quality Assurance Surveillance Plan

## Assessment Ratings Key

| **Assessment** | **Description** | **Example** |
| --- | --- | --- |
| Pass | Fully passes specified Acceptable Quality Level (AQL) criteria | *90% code coverage (vs. 85% required for AQL).* |
| Not Met (Marginal) | Does not meet AQL. With relatively minor adjustments to deliverable or criteria, this deliverable could meet the AQL. | *A large number of linting warnings are found, but are either trivial or could be configured in the scanning tool.* |
| Not Met (No Evidence Presented) | Does not meet AQL. Evidence of compliance is not consistently presented. | *No code reviews on merge exist in the public repository, but other evidence is inconclusive.* |
| Not Met (Significant) | Does not meet AQL. Evidence presented shows clear gaps. | *50% code coverage (vs. 85% required for AQL).* |

## Assessment Results: Summary

| **Deliverable** | **Assessment** | **Acceptable Quality Level (AQL)** | **AQL Result** |
| --- | --- | --- | --- |
| Tested code | Not Met (Significant) | Minimum of 85% test coverage of all code with meaningful tests as determined by the agency. For example see testing best practices and section on test-driven development (TDD) in FEC efiling study. | < 13% |
| Tests are run as part of the CI/CD pipeline | No evidence found |
| At least one approving review before code changes are merged | No evidence found |
| Properly styled code | Not Met (Significant) | 0 linting errors and 0 warnings with automated linter tests (such as flake8 and eslint) | 53,350 Total; 2,014 Moderate+ |
| Passing tests are required in CI/CD pipeline to deploy code | Passing tests not enforced |
| Accessibility | Not Met (Significant) | Less than 10 minimal errors and no major errors reported using an automated scanner and manual testing | 203 errors; 296 warnings |
| Easily distinguishable/high contrast colors, type and interactive elements | 4 manual findings |
| Functional keyboard/tab navigation | 3 manual findings |
| All non-text content has a text alternative that serves the equivalent purpose | 2 manual findings |
| Clear webpage title that describes their topic and function/purpose | Single title for entire app |
| Deployment | Not Met (Significant) | Successful build with a single command | Pass |
| Deployable to cloud.gov in a single command | Possible with minor fixes |
| CI/CD scripts are public | CI/CD scripts in repo root |
| Branching strategy is followed | See discussion for details |
| Documentation |  |  |  |
| Security |  |  |  |
| User research | N/A |  | N/A |
| Open source |  |  |  |
| Design and usability |  |  |  |
| Cloud-native application | PRELIMINARY | PRELIMINARY | PRELIMINARY |
| Performance | N/A |  | N/A |
| Mobile accessible | N/A |  | N/A |
| Accepted features | N/A |  | N/A |

# Deliverable: Tested Code

**Overall Performance Standard:**

* *Code delivered must have substantial test code coverage and a clean code base*
* *Code goes through peer review before merge*

**Overall Assessment:** Not Met (Significant)

## Test Coverage

**AQL**: *Minimum of 85% test coverage of all code with meaningful tests as determined by the agency. For example see testing best practices and section on test-driven development (TDD) in FEC efiling study.*

**Assessment:** Not Met (Significant)

**Assessment Method:** Manual run of existing unit tests.

**Discussion:** Some minor modifications were required to get the application and unit tests running. While modifications were not significant, this could potentially indicate that unit tests were not maintained throughout the project.

| Repository | Language | Coverage |
| --- | --- | --- |
| fecfile-online Django | Python | 13% |
| fecfile-online Angular | Typescript | (Test not running successfully. Will be re-tested after seed database and logins established.) |
| fecfile-ImageGenerator | Python | 0% |
| fecfile-Validate | Python | 0% |

## CI/CD Pipeline

**AQL:** *Tests are run as part of the CI/CD pipeline*

**Assessment:** Not Met (No Evidence Found)

**Assessment Method:** Manual review of Jenkins scripts.

**Discussion:** We were unable to find specific evidence that automated tests were run in a CI/CD pipeline. In the Jenkins CI/CD scripts in the repository, we identified where static code analysis is being run, but automated unit tests were not called here, which would have been a logical place to do so. Given the lack of evidence of unit testing at this step (and anywhere else), it appears that unit testing is not being executed as part of the CI/CD pipeline.

However, it is possible that automated unit testing was configured elsewhere in the Jenkins pipeline--for instance, Jenkins does allow for tests and plug-ins to be configured solely in the UI (i.e. not through Jenkinsfiles or other artifacts that would leave a footprint in the repository) and this is a common practice. As such, we are assessing this factor as not met due to lack of positive evidence otherwise.

## Code Review

***AQL****: At least one approving review before code changes are merged*

**Assessment:** Not Met (No Evidence Found)

**Assessment Method:** Manual review of repository, comments, and pull requests

**Discussion:** We were unable to find specific evidence in Github that changes were peer reviewed before merge. Examination of pull requests and commit history in the GitHub repository did not identify consistent code review processes or comments (e.g. comments on merge). There were only 2 pull requests on fecfile-online, 2 on fecfile-validate, and 15 on fecfile-imagegenerator, with the majority of these pull requests corresponding to sprint tagging activities (i.e as opposed to individual code review activities).

While pull requests and comments on merge would be the most visible evidence of required code reviews, it is possible that code review occurred and was documented elsewhere. Consistent evidence of this, however, was not discoverable. For example, in the FEC New eFiling JIRA project, there are 30 tickets (out of 1000+) that utilize the “In Code Review” status. This may indicate that a less formal procedure was utilized, but was not well documented. As such, we are assessing this factor as not met due to lack of positive evidence otherwise.

# Deliverable: Properly Styled Code

**Overall Performance Standard**:

* *Code is automatically checked for linting errors*

**Overall Assessment:** Not Met (Significant)

### Linting

**AQL*:*** *0 linting errors and 0 warnings with automated linter tests (such as flake8 and eslint)*

**Assessment:** Not Met (Significant)

**Assessment Method:** flake8 and eslint automated tests with manual adjudication of scan results

**Discussion:** Overall, the code base does not meet the AQL for linting. Currently, linting scans result in 53,350 total errors and warnings. However, upon manual review and adjudication of these findings, we would recommend only 2,014 as either Moderate or High priority--these require actual developer review and remediation. The vast majority of linting errors and warnings are Low or Trivial priority, with the majority of those errors being addressable through automated script fixes (e.g. spacing and other non-functional style violations that can be fixed by linting tools or IDEs). Details for each repository and tool are listed below.

**Recommended Priority Key**:

* High: Likely a bug or logic error with actual impact; needs developer intervention
* Moderate: Could be related to a bug or logic error with actual impact; likely needs developer intervention
* Low: Change has semantic value but likely not an error; may need developer intervention
* Trivial: Style or readability issue but not an error; unlikely to need direct developer intervention (i.e. can be scripted or automated through tooling)

#### fecfile-online django-backend Python Code flake8 Results

| Count | flake8 Code | Description | Rec. Priority | Auto Fixable |
| --- | --- | --- | --- | --- |
| 183 | E722 | do not use bare 'except' | Moderate | No |
| 178 | F841 | local variable is assigned to but never used | Moderate | No |
| 28 | W605 | invalid escape sequence '\w' | Moderate | No |
| 11 | F811 | redefinition of unused 'datetime' from line 11 | Moderate | No |
| 5 | F523 | '...'.format(...) has unused arguments at position(s): 0 | Moderate | No |
| 2 | E402 | module level import not at top of file | Moderate | No |
| 2 | F403 | 'from .views import \*' used; unable to detect undefined names | Moderate | No |
| 1 | F524 | '...'.format(...) is missing argument(s) for placeholder(s): 1 | Moderate | No |
| 1 | F632 | use ==/!= to compare constant literals (str, bytes, int, float, tuple) | Moderate | No |
| 264 | E265 | block comment should start with '# ' | Low | Yes |
| 247 | F401 | module imported but unused | Low | No |
| 28 | E711 | comparison to None should be 'if cond is None:' | Low | No |
| 13 | E701 | multiple statements on one line (colon) | Low | Yes |
| 7 | E703 | statement ends with a semicolon | Low | No |
| 6 | E713 | test for membership should be 'not in' | Low | No |
| 3 | E712 | comparison to False should be 'if cond is False:' or 'if not cond:' | Low | No |
| 5336 | E501 | line too long (95 > 79 characters) | Trivial | Yes |
| 2811 | W291 | trailing whitespace | Trivial | Yes |
| 454 | E231 | missing whitespace after ':' | Trivial | Yes |
| 397 | E117 | over-indented | Trivial | Yes |
| 149 | E225 | missing whitespace around operator | Trivial | Yes |
| 149 | E302 | expected 2 blank lines, found 1 | Trivial | Yes |
| 112 | W293 | blank line contains whitespace | Trivial | Yes |
| 107 | E203 | whitespace before ':' | Trivial | Yes |
| 81 | E128 | continuation line under-indented for visual indent | Trivial | Yes |
| 61 | E303 | too many blank lines (2) | Trivial | Yes |
| 50 | E101 | indentation contains mixed spaces and tabs | Trivial | Yes |
| 50 | W191 | indentation contains tabs | Trivial | Yes |
| 47 | E251 | unexpected spaces around keyword / parameter equals | Trivial | Yes |
| 45 | F821 | undefined name 'get\_entities' | Trivial | No |
| 43 | E111 | indentation is not a multiple of 4 | Trivial | Yes |
| 43 | E122 | continuation line missing indentation or outdented | Trivial | Yes |
| 39 | E222 | multiple spaces after operator | Trivial | Yes |
| 33 | E261 | at least two spaces before inline comment | Trivial | Yes |
| 32 | E127 | continuation line over-indented for visual indent | Trivial | Yes |
| 23 | E262 | inline comment should start with '# ' | Trivial | Yes |
| 22 | E221 | multiple spaces before operator | Trivial | Yes |
| 20 | E201 | whitespace after '{' | Trivial | Yes |
| 17 | E202 | whitespace before ')' | Trivial | Yes |
| 17 | W292 | no newline at end of file | Trivial | Yes |
| 14 | E305 | expected 2 blank lines after class or function definition, found 0 | Trivial | Yes |
| 13 | E115 | expected an indented block (comment) | Trivial | Yes |
| 13 | E211 | whitespace before '(' | Trivial | Yes |
| 9 | E116 | unexpected indentation (comment) | Trivial | Yes |
| 9 | E124 | closing bracket does not match visual indentation | Trivial | Yes |
| 4 | E114 | indentation is not a multiple of 4 (comment) | Trivial | Yes |
| 4 | E271 | multiple spaces after keyword | Trivial | Yes |
| 4 | W391 | blank line at end of file | Trivial | Yes |
| 2 | E131 | continuation line unaligned for hanging indent | Trivial | Yes |
| 1 | E125 | continuation line with same indent as next logical line | Trivial | Yes |
| 1 | E228 | missing whitespace around modulo operator | Trivial | Yes |
| 1 | E266 | too many leading '#' for block comment | Trivial | Yes |
| 1 | E272 | multiple spaces before keyword | Trivial | Yes |
| 1 | E301 | expected 1 blank line, found 0 | Trivial | Yes |
| 1 | E304 | blank lines found after function decorator | Trivial | Yes |

#### fecfile-online frontend Typescript Code eslint Results

| Count | Error | Rec. Priority | Auto Fixable |
| --- | --- | --- | --- |
| 3 | [Error/no-duplicate-case] | High | No |
| 768 | [Error/no-undef] | Moderate | No |
| 649 | [Error/no-unused-vars] | Moderate | No |
| 5 | [Error/no-use-before-define] | Moderate | No |
| 5 | [Error/array-callback-return] | Moderate | No |
| 3 | [Error/no-case-declarations] | Moderate | No |
| 2 | [Error/no-constant-condition] | Moderate | No |
| 1 | [Error/valid-typeof] | Moderate | No |
| 1 | [Error/no-fallthrough] - switch case fall through. | Moderate | No |
| 1 | [Error/new-cap] | Moderate | No |
| 681 | [Error/camelcase] | Low | No |
| 306 | [Error/no-prototype-builtins] | Low | No |
| 304 | [Error/prefer-const] | Low | No |
| 125 | [Error/no-useless-constructor] | Low | No |
| 117 | [Error/no-unneeded-ternary] | Low | No |
| 70 | [Error/no-empty] | Low | No |
| 48 | [Error/no-unused-expressions] | Low | No |
| 18 | [Warning/no-var] | Low | No |
| 18 | [Error/no-mixed-operators] | Low | No |
| 17 | [Error/node/handle-callback-err] | Low | No |
| 15 | [Error/eqeqeq] | Low | No |
| 12 | [Error/no-useless-return] | Low | No |
| 10 | [Error/no-useless-escape] | Low | No |
| 10 | [Error/import/no-duplicates] | Low | No |
| 5 | [Error/no-return-assign] | Low | No |
| 4 | [Error/no-array-constructor] | Low | No |
| 3 | [Error/no-template-curly-in-string] | Low | No |
| 2 | [Error/no-sequences] | Low | No |
| 1 | [Error/default-case-last] | Low | No |
| 20730 | [Error/semi] | Trivial | Yes |
| 4875 | [Error/indent] | Trivial | Yes |
| 2805 | [Error/space-before-function-paren] | Trivial | Yes |
| 1712 | [Error/quotes] | Trivial | Yes |
| 886 | [Error/quote-props] | Trivial | Yes |
| 790 | [Error/spaced-comment] | Trivial | Yes |
| 776 | [Error/no-trailing-spaces] | Trivial | Yes |
| 716 | [Error/keyword-spacing] | Trivial | Yes |
| 692 | [Error/object-curly-spacing] | Trivial | Yes |
| 639 | [Error/space-before-blocks] | Trivial | Yes |
| 630 | [Error/padded-blocks] | Trivial | Yes |
| 580 | [Error/no-multiple-empty-lines] | Trivial | Yes |
| 419 | [Error/dot-notation] | Trivial | Yes |
| 399 | [Error/key-spacing] | Trivial | Yes |
| 267 | [Error/comma-spacing] | Trivial | Yes |
| 240 | [Error/brace-style] | Trivial | Yes |
| 213 | [Error/array-bracket-spacing] | Trivial | Yes |
| 166 | [Error/comma-dangle] | Trivial | Yes |
| 123 | [Error/no-tabs] | Trivial | Yes |
| 121 | [Error/no-multi-spaces] | Trivial | Yes |
| 106 | [Error/space-infix-ops] | Trivial | Yes |
| 99 | [Error/operator-linebreak] | Trivial | Yes |
| 95 | [Error/lines-between-class-members] | Trivial | Yes |
| 74 | [Error/space-in-parens] | Trivial | Yes |
| 38 | [Error/object-property-newline] | Trivial | Yes |
| 38 | [Error/arrow-spacing] | Trivial | Yes |
| 34 | [Error/object-curly-newline] | Trivial | Yes |
| 25 | [Error/eol-last] | Trivial | Yes |
| 16 | [Error/block-spacing] | Trivial | Yes |
| 14 | [Error/multiline-ternary] | Trivial | Yes |
| 8 | [Error/prefer-regex-literals] | Trivial | Yes |
| 7 | [Error/yoda] | Trivial | Yes |
| 5 | [Error/func-call-spacing] | Trivial | Yes |
| 4 | [Error/semi-spacing] | Trivial | Yes |
| 4 | [Error/no-mixed-spaces-and-tabs] | Trivial | Yes |
| 4 | [Error/dot-location] | Trivial | Yes |
| 2 | [Error/no-whitespace-before-property] | Trivial | Yes |
| 1 | [Error/space-unary-ops] | Trivial | Yes |
| 1 | [Error/no-unexpected-multiline] | Trivial | Yes |

#### fecfile-ImageGenerator Python Code flake8 Results

| Count | flake8 Code | Description | Rec. Priority | Auto Fixable |
| --- | --- | --- | --- | --- |
| 55 | C901 | function is too complex | Moderate | No |
| 10 | E722 | do not use bare 'except' | Moderate | No |
| 6 | F632 | use ==/!= to compare constant literals (str, bytes, int, float, tuple) | Moderate | No |
| 3 | F811 | redefinition of unused function | Moderate | No |
| 86 | F841 | local variable is assigned to but never used | Moderate | No |
| 41 | F401 | module imported but unused | Low | No |
| 1 | E117 | over-indented | Trivial | Yes |
| 1 | E121 | continuation line under-indented for hanging indent | Trivial | Yes |
| 3 | E123 | closing bracket does not match indentation of opening bracket's line | Trivial | Yes |
| 2 | E125 | continuation line with same indent as next logical line | Trivial | Yes |
| 3 | E126 | continuation line over-indented for hanging indent | Trivial | Yes |
| 13 | E127 | continuation line over-indented for visual indent | Trivial | Yes |
| 70 | E128 | continuation line under-indented for visual indent | Trivial | Yes |
| 6 | E201 | whitespace after '{' | Trivial | Yes |
| 6 | E202 | whitespace before ']' | Trivial | Yes |
| 3 | E203 | whitespace before ':' | Trivial | Yes |
| 1 | E211 | whitespace before '[' | Trivial | Yes |
| 4 | E221 | multiple spaces before operator | Trivial | Yes |
| 7 | E222 | multiple spaces after operator | Trivial | Yes |
| 29T | E225 | missing whitespace around operator | Trivial | Yes |
| 70 | E226 | missing whitespace around arithmetic operator | Trivial | Yes |
| 8 | E228 | missing whitespace around modulo operator | Trivial | Yes |
| 48 | E231 | missing whitespace after ',' | Trivial | Yes |
| 5 | E265 | block comment should start with '# ' | Trivial | Yes |
| 1 | E266 | too many leading '#' for block comment | Trivial | Yes |
| 1 | E272 | multiple spaces before keyword | Trivial | Yes |
| 12 | E302 | expected 2 blank lines, found 3 | Trivial | Yes |
| 51 | E303 | too many blank lines (3) | Trivial | Yes |
| 31 | W291 | trailing whitespace | Trivial | Yes |
| 3 | W292 | no newline at end of file | Trivial | Yes |
| 56 | W293 | blank line contains whitespace | Trivial | Yes |

#### fecfile-Validate Python Code flake8 Results

| Count | flake8 Code | Description | Rec. Priority | Auto Fixable |
| --- | --- | --- | --- | --- |
| 1 | F821 | undefined name | High | No |
| 4 | C901 | function is too complex | Moderate | No |
| 1 | E713 | test for membership should be 'not in' | Low | No |
| 5 | F401 | module imported but unused | Low | No |
| 3 | F841 | local variable is assigned to but never used | Low | No |
| 1 | E117 | over-indented | Trivial | Yes |
| 2 | E126 | continuation line over-indented for hanging indent | Trivial | Yes |
| 4 | E127 | continuation line over-indented for visual indent | Trivial | Yes |
| 13 | E128 | continuation line under-indented for visual indent | Trivial | Yes |
| 7 | E222 | multiple spaces after operator | Trivial | Yes |
| 5 | E225 | missing whitespace around operator | Trivial | Yes |
| 1 | E226 | missing whitespace around arithmetic operator | Trivial | Yes |
| 40 | E231 | missing whitespace after ',' | Trivial | Yes |
| 1 | E265 | block comment should start with '# ' | Trivial | Yes |
| 15 | E302 | expected 2 blank lines, found 3 | Trivial | Yes |
| 1 | E303 | too many blank lines (3) | Trivial | Yes |
| 7 | E305 | expected 2 blank lines after class or function definition, found 0 | Trivial | Yes |
| 47 | W291 | trailing whitespace | Trivial | Yes |
| 3 | W293 | blank line contains whitespace | Trivial | Yes |

## Passing Code Style Required for Deployment

**AQL**: *Passing tests are required in CI/CD pipeline to deploy code*

**Assessment:** Not Met (Significant)

**Assessment Method:** Manual review of deployment scripts

**Discussion:** There is no evidence that linting tools are run during CI/CD deployment, nor are passing tests required for a deployment as part of the Jenkins scripts provided.

# Deliverable: Accessibility

**Overall Performance Standard:**

* *Web Content Accessibility Guidelines 2.1 AA and section 508 standards*

**Overall Assessment:** Not Met (Significant)

## Automated Scanning

**AQL***: Less than 10 minimal errors and no major errors reported using an automated scanner and manual testing*

**Assessment:** Not Met (Significant)

**Assessment Method:** HTML Code Sniffer execution of both Section 508 and WCAG AA criteria per page, manual review of page and HTML Code Sniffer results

**Discussion:** For the purpose of this initial evaluation, testing was performed through manual execution of HTML Code Sniffer on individual pages. Results for both the Section 508 and WCAG AA errors and warnings were combined in the page counts.

At the time of this initial scan, a full sample database was not available and some portions of the application could not be examined. However, we would expect the overall trend to be similar in scale and actual findings, given that we were able to evaluate a representative sample of pages.

There were some common errors found in the header and footer of the application. As a result, these errors are duplicated on every page in the system. For readability, we have combined the four errors below as “Shared header/footer errors” in the “Error Categories” column. These errors are included in the error counts. The four error categories that comprise “Shared header/footer errors” are:

* Image element missing alt text
* Link using anchor that does not exist
* Heading tag found with no content
* Heading structure not logically nested

#### Accessibility Errors and Warnings

| Page | Total Errors | Total Warnings | Error Categories |
| --- | --- | --- | --- |
| Login Page | 3 | 8 | * Shared header/footer errors * Link using anchor that does not exist * Insufficient text contrast |
| Dashboard | 17 | 19 | * Shared header/footer errors * Insufficient text contrast |
| Reports | 15 | 22 | * Shared header/footer errors |
| Contacts | 18 | 22 | * Shared header/footer errors * checkbox element without name/label * Form field without label * button without name/label |
| Add New Contact | 46 | 36 | * Shared header/footer errors * Form does not contain a submit button * Text input element does not have a name * Form field should be labeled * Button with insufficient contrast |
| Tools - All Transactions | 26 | 18 | * Shared header/footer errors * Duplicate id attribute * Insufficient contrast |
| Tools - Import/Export | 15 | 20 | * Shared header/footer errors |
| Tools - First Time COH | 7 | 11 | * Shared header/footer errors * Form does not contain a submit button * Text input element does not have a name * Form field missing label * Duplicate ID |
| Notifications | 16 | 28 | * Shared header/footer errors * Heading tag with no content |
| Profile - Account | 16 | 53 | * Shared header/footer errors * Button with insufficient contrast |
| Profile - Add Account | 24 | 59 | * Shared header/footer errors * Heading tag with no content * Text input element does not have a name * Form field missing label |

## Color and Contrast

**AQL***: Easily distinguishable/high contrast colors, type and interactive elements*

**Assessment:** Not Met (Marginal)

**Assessment Method:** HTML Code Sniffer execution of both Section 508 and WCAG AA criteria per page, manual review of page and HTML Code Sniffer results

**Discussion:** Overall, only a small number of elements were identified as not being easily distinguishable or having sufficient contrast, based on HTML Code Sniffer’s checks and manual review:

* The 'Report Issue' button in the site footer
* Red text present on the Login page
* Red error/warning text used across the site
* The aqua colored buttons

Given the small number and relatively low effort for fixing these items (i.e. by modifying colors and/or increasing font sizes), we recommend treating this criteria as only marginally not met.

## Keyboard Navigation

**AQL:** *Functional keyboard/tab navigation*

**Assessment:** Not Met (Marginal)

**Assessment Method:** Manual testing and review

**Discussion:** Most pages have sufficient keyboard navigation with a few exceptions:

* Login page: The Show/Hide password icon cannot be activated by keyboard
* Site header menu: The Search Contacts and Search Transactions menu items can not be focused using the keyboard
* Search Transactions page: The Filter Options left hand menu does not provide a way to expand sections with keyboard controls

Given the small number and relatively low effort for fixing these items (i.e. by modifying the specific instances identified), we recommend treating this criteria as only marginally not met.

## Text Labels

**AQL***: All non-text content has a text alternative that serves the equivalent purpose*

**Assessment:** Not Met (Marginal)

**Assessment Method:** Manual testing and review

**Discussion:** There is very little non-text content, but some of the images present are missing alt text. Specifically, the FEC logo in the upper left corner and the show/hide password icon.

Given the small number and relatively low effort for fixing these items (i.e. by modifying the specific instances identified), we recommend treating this criteria as only marginally not met.

## Page Titles

**AQL***:* Clear webpage title that describes their topic and function/purpose

**Assessment:** Pass

**Assessment Method:** Manual testing and review

**Discussion:** The web page title for FECFile Online is "FECFile Online," but is not dynamically changed or updated during navigation. This title is descriptive of the application and technically meets the letter of the specification, given that FECFile Online is a single page application (SPA) that technically never changes to another page.

Best practices for accessibility with SPAs recommends that the page title be dynamically updated as a user navigates to other parts of the site (i.e. when they would experience a “page change”). For adherence to the spirit as much as the letter of this specification, it may be desired to dynamically adjust the title text as part of navigation.

# Deliverable: Deployment

**Overall Performance Standard:**

* *Code must successfully build and deploy into staging environment*

## Single Command Build

**AQL:** *Successful build with a single command*

**Assessment:** Pass

**Assessment Method:** Manual review

**Discussion:** Code deployment is being managed using Jenkins Pipelines, and there is a Jenkins Pipeline file for each of the 3 fecfile repositories being examined. These pipeline files, named Jenkinsfile, are JSON files that define the tasks necessary to run a continuous delivery pipeline using a suite of plugins. The current Jenkinsfile files build the deployment Docker images and then deploy them to a Kubernetes controlled cluster located in the Amazon Web Services (AWS) cloud. There are three target environments defined in the deployment pipeline: DEV, QA, and UAT.

Without direct access to the related AWS clusters, the team is not able to test these deployments directly. However, based on review of the scripts, these files appear to support FEC’s goal of building with a single command using Jenkins CLI..

## Cloud.gov Deployment

**AQL:** *Deployable to cloud.gov in a single command*

**Assessment:** Not Met (Marginal)

**Assessment Method:** Manual review

**Discussion:** Technically, the existing deployment scripts do not deploy to cloud.gov. However, based on the team’s review of the existing Jenkinsfile JSON files, it will be possible to modify them to deploy the Docker image to [cloud.go](http://cloud.gov/)v rather than the AWS cloud. To do this, the Dockerfile build file will need to be modified so that it meets the requirements of cloud.gov. The switch kubectl command in the Jenkinsfile that pushes out the deployment to the target environment will need to be replaced with the appropriate "cf push" command.

## Public CI/CD Scripts

**AQL**: *CI/CD scripts are public*

**Assessment:** Pass

**Assessment Method:** Manual review

**Discussion:** The CI/DC scripts are public and maintained in the Jenkinsfile present at the root of each of the 3 repositories.

## Branching Strategy

**AQL**: *Branching strategy is followed*

**Assessment:** Not Pass (Significant)

**Assessment Method:** Manual review

**Discussion:** The repositories are not currently using the Git Issues feature, which is a key aspect of the FEC Contributing Guidelines[[1]](#footnote-0). The repositories have separate branches for each sprint but these appear to have been managed through the internal development team’s Agile sprint process and associated JIRA tickets. In addition, the usage of pull requests (PRs) seems inconsistent, as only the fecfile-ImageGenerator repository uses them consistently--and, in most cases, these PRs are used for full sprint commits.

| Repository | Branches | Open Issues | Closed Issues | Open PRs | Closed PRs |
| --- | --- | --- | --- | --- | --- |
| fecfile-online | 3 | 0 | 0 | 1 | 1 |
| fecfile-Validate | 13 | 0 | 0 | 0 | 2 |
| fecfile-ImageGenerator | 21 | 0 | 0 | 8 | 15 |

# Deliverable: Documentation

(Placeholder)

# Deliverable: Security

(Placeholder)

# Deliverable: User Research

*Not applicable for this assessment, per FEC guidance.*

# Deliverable: Open Source

(Placeholder)

# Deliverable: Design and Usability

(Placeholder)

# Deliverable: Cloud-native application

*NOTE: The findings below are preliminary and will be updated as further evaluations are completed.*

| **12 Factor** | **Findings** | **Compliant** |
| --- | --- | --- |
| Codebase | Each codebase is in a single repo although it could be determined that fecfile-online/django-backend and fecfile-online/front-end do not share any common code and should be split into different repositories. This finding is preliminary and may change with further evaluation of the code. | TBD |
| Dependencies | The repos correctly capture the programming language supporting libraries in the repos by using the Python requirements.txt file and the Node package.json file | Yes |
| Config | The 12-factor recommendation is to have fully independent environment variables defined in each environment that are then referenced by the app. This includes not defining environments such as “dev” or “prod” in configuration files. Examples breaking this policy can be found in the code base. One example is in fecfile-ImageGenerator/config.py where app variables are set with “dev” references. Also, the hardcoding of values in the environments file in fecfile-online/front-end/src/environments breaks this principle. | No |
| Backing services | Resources consumed by the app need to be removed or replaced without code changes. To meet this requirement, references and needed configuration settings should be placed in system environment variables. This best practice is related to #3 Config and examples in the code base that do not conform can be found in the files referenced there. | No |
| Build, release, run | The current build process as managed by the Jenkinsfile in each repo does create a unique release ID and then merges in configuration values when creating the Docker image which is then used as the release. This process conforms to the factor best practices. | Yes |
| Processes | The initial review of the codebase of the 3 repositories has not uncovered any features that permanently save data to the file system. This finding is preliminary and may change with further evaluation of the code. | TBD |
| Port binding | Port binding is handled in the fashion recommended by 12 Factors via the Docker runtime environments and their port binding. | Yes |
| Concurrency | A review of the code has not resulted in the discovery of code that creates, manages, or removes local processes such as daemons or local permanent files that would prohibit horizontal scaling of the runtime Docker images. | Yes |
| Disposability | Long running file and data validation processes could be interrupted and not completed when a sudden system shutdown occurs. More examination and testing of running code is necessary. | TBD |
| Dev/prod parity | Use of the Docker images built with the same process for all hosting environments (i.e. dev, qa, stage, prod) that use the same backing services and same versions complies to this Factor best practices. | Yes |
| Logs | The Python-based backend applications all use the Python logging package which, by default, log messages as a stream to the console (STDERR) and can be rerouted by the system if necessary. This conforms to the 12 Factor best practices. | Yes |
| Admin process | Administrative code should be maintained in the same repository as the applications code and run in the same environment as the application. This usually entails logging in remotely to the environment to be affected. More investigation necessary to determine. | TBD |

# Deliverable: Performance

*Not applicable for this assessment, per FEC guidance.*

# Deliverable: Mobile Accessible

*Not applicable for this assessment, per FEC guidance.*

# Deliverable: Accepted Features

*Not applicable for this assessment, per FEC guidance.*

# Assessment, Part 2: Feasibility of Integrating Previously Developed Code

(Placeholder)

1. “Default Contributor License Agreement.” [github.com/fecgov/FEC/blob/master/CONTRIBUTING.md#branches](https://github.com/fecgov/FEC/blob/master/CONTRIBUTING.md#branches). Federal Election Commission. Last accessed October 17, 2021. [↑](#footnote-ref-0)