Democracy Suite® EMS Election Event Designer User Guide

Version: 5.11-CO::6

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DOMINION VOTING

Our customers come first.

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CHAPTER 1: INTRODUCTION

1.1 Document Use

This document is intended for use with the Democracy Suite® 5.11 platform.

1.2 Relevant Disclaimers

This document may make reference to certain Democracy Suite functionalities that are not part of the current 5.11-CO campaign and should be disregarded throughout the document.

For a full list of relevant disclaimers, please see the "Relevant Disclaimers" section in the *2.02 - Democracy Suite® System Overview* Document.

1.3 Getting to Know Election Event Designer

The Election Event Designer client application can be regarded as the most imperative piece of your Election Management System (EMS), as it is solely responsible for designing your election during the pre-voting stage of your election event. The creation of your election event within Election Event Designer is referred to as an **Election Project**. It is through this Election Project that your election's ballots and tabulators will be defined, styled, and deemed ready for election day.

NOTE: *Election Event Designer in not designed to run in the multi-client environment. It should always run as a single instance.*

With that said, the EMS Election Event Designer application's functionality is divided into five stages. Each stage is completed in the order listed below to ensure all of the information necessary to program an election is entered into the application successfully. The application does not permit the skipping of steps. However, you are capable of returning to an earlier step should you need to make changes. The five stages of the election project are:

1. **Stage One: Election Project Definition**: The initial election project stage enables the steps for creating an election project, configuring system properties, and defining such election entities as political divisioning, language profiles, offices, contests, and choices. These election entities can also be imported into the system from external systems. Once a user defines an election event, they can begin to undertake the process of creating a ballot structure. Ballots represent a collection of election entities, which are organized and defined in specific combinations of geopolitical, elector

grouping, and language profile associations. Ballot structure creation does not represent the generation of ballot file(s) artifacts (i.e. PDFs, PNGs, XMLs, etc.) Once ballot structures are created, the election project transitions to the second stage, Election Project Styling.

2. **Stage Two: Election Project Styling**: In this stage, paper and AVS ballots are styled according to the defined language profiles to be supported within the election project. For example, choice and contest representation on the physical (PDF or PNG) ballot can be defined during this stage. This stage also allows users to define and apply templates for ballot headers, contests, choices and other static text to appear on the ballot. The user can preview ballot artwork as a PDF file. Once a user is satisfied with the ballot artwork, they can initiate the process of creating official ballot manifestations. PDF, PNG, PCL or XML file formats can be created depending on the type of tabulator the ballot will ultimately run through. Once generated, the official ballots are stored on the Network Attached Storage (NAS) server for a given election project. The system also provides the option to synthesize audio files for a given set of language profiles.
3. **Stage Three: Ballots Generated**: In this stage, official ballots have been created and exist on the EMS NAS server, and the user can proofread and listen to synthesized audio files for verification purposes. If required, the user also has the option to generate audio files using built-in control and/or attach pre-recorded audio files and create or modify voting locations and tabulators during this stage. Once the user completes the final preparation of the election project data, they can begin to generate the election files for tabulators. These election files will be stored on the EMS NAS server for every tabulator defined in a given election project.
4. **Stage Four: Ready for Elections**: In this stage, the system is now ready for the election, and the user can program memory cards and security keys. Once the user has programmed and labeled memory cards and security keys, the system can be used for voting. Voting can be performed using different voting methods: absentee voters can vote by mail, election day voters can use tabulators to cast their ballots at the voting location.
    - **Stage 1A: Last Minute Definition**: This stage allows for late modifications within this system even after the election files have been created and the initial voting session (i.e. absentee voting) has begun. This stage's functionality is based on the election definition cycles, which allow users to define election projects and perform some of the advanced voting options. Users can modify, add, or disable election project data for voting that takes place on election day. If last minute definition is undertaken, the system enters 'Election Definition Cycle 2', which initiates a new set of election cycles as described below.

- **Stage 2A, 3A, 4A: Election Definition Cycle 2**: By transitioning from Last Minute Definition to Election Project Styling in Cycle 2, the system creates new ballot instances based on the newly added and defined data. In this state, the user can filter and delete unneeded ballot manifestations. When transitioning to the new Ballots Generated stage, the system will only create ballot manifestation files for the changed ballots. In the final transition to the Ready For Election stage, the system will collect all data from all election definition cycles. As a result, election files will be applicable for all ballots from all election cycles.

5. **Stage 5: Election Project Closed**: In this stage, the system prepares the Election Project for archiving. Once in this stage, the Election Project cannot be used for organizing another election event.

NOTE: *Using multiple EED instances is not allowed.*

The purpose of the Democracy Suite® EMS Election Event Designer User Guide is to walk you through the stages outlined above in order to guarantee your election is programmed successfully.

Chapter 2: Starting Election Event Designer

1. Once you have successfully installed EMS Election Event Designer, a shortcut will automatically appear on your Desktop (see see Figure 2-1):

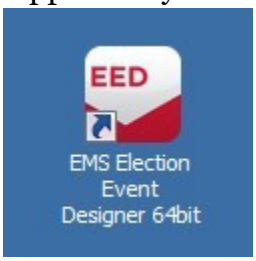

Figure 2-1: Election Event Designer: Desktop Shortcut

2. Double-click on the icon.
3. Localization Settings screen appears. See. see Figure 2-2. Select the localization shema from the list and click OK.

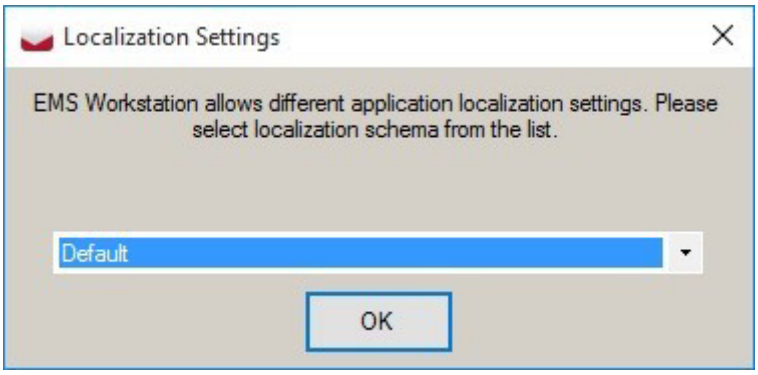

Figure 2-2: Localization Settings Screen

4. The introduction screen appears. See see Figure 2-3.

Figure 2-3: Welcome Splash Screen

Home screen can be divided into four sections (see see Figure 2-4): The 'Navigation' menu, on the left side of the screen provides you with a listing of activities that can be performed within Election Event Designer. The Navigation menu groups the majority of activities for election project definition and management.

The Context Sensitive Screen, located on the right side of the application, is the area in which these activities are performed. Selecting any activity from the lists located on the Navigation menu will open up the activity within the Context Sensitive Screen.

The toolbar, located at the top of the screen, provides you with menu options and key application functionalities. As discussed in Chapter 1, some of these cannot be performed until other actions have been completed.

The Progress Bar, located at the bottom of the screen, displays information about the progress of various processes you will perform. These can include ballot content generation, official ballot generation, and election files generation. The toolbar will also display the name of the active Election Project, the stage the project is in, the name of the user that opened the project, and the role that has been assigned to them.

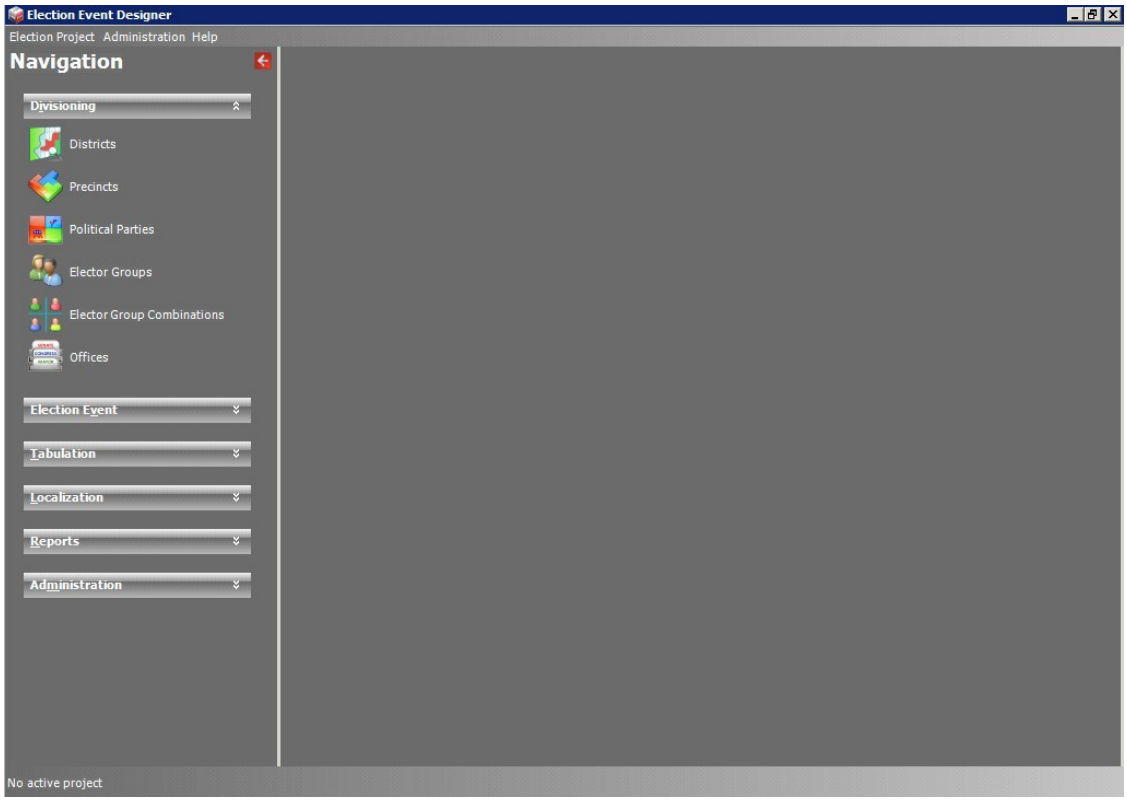

Figure 2-4: The Election Event Designer Home Screen

2.1 Common Actions

You will become familiar with the common actions used within Election Event Designer as you read through this user guide. However, a complete list of actions can be found in Appendix C for reference. Typically, these actions will appear in the context sensitive screen, or in dialogs throughout the application. Note that some of these actions have prerequisites, and thus cannot be performed prior to executing other actions.

2.2 Specific Actions

You will become familiar with the specific actions used within Election Event Designer as you read through this user guide. However, a complete list of actions can be found in Appendix D for reference. Typically, these actions will appear in the context sensitive screen, or in dialogs throughout the application. Note that some of these actions have prerequisites, and thus cannot be performed prior to executing other actions.

CHAPTER 3: DEFINING AN ELECTION PROJECT

3.1 Setting the Network Parameters

If you are creating an Election Project for the first time, you must first set the network parameters. Setting these parameters ensures that your project will be saved to the correct EMS Database Server. In doing so, the Election Management System creates a project folder for each Election Project on the Network Access Storage EED server. This folder operates as a file repository for all of the files you produce. To set your network parameters, click the 'Administration' menu item on the top toolbar, and select 'EMS Application Server Settings' EMS Applicatio.n Server Settings. The 'Network Settings' dialog appears. See see Figure 3-1

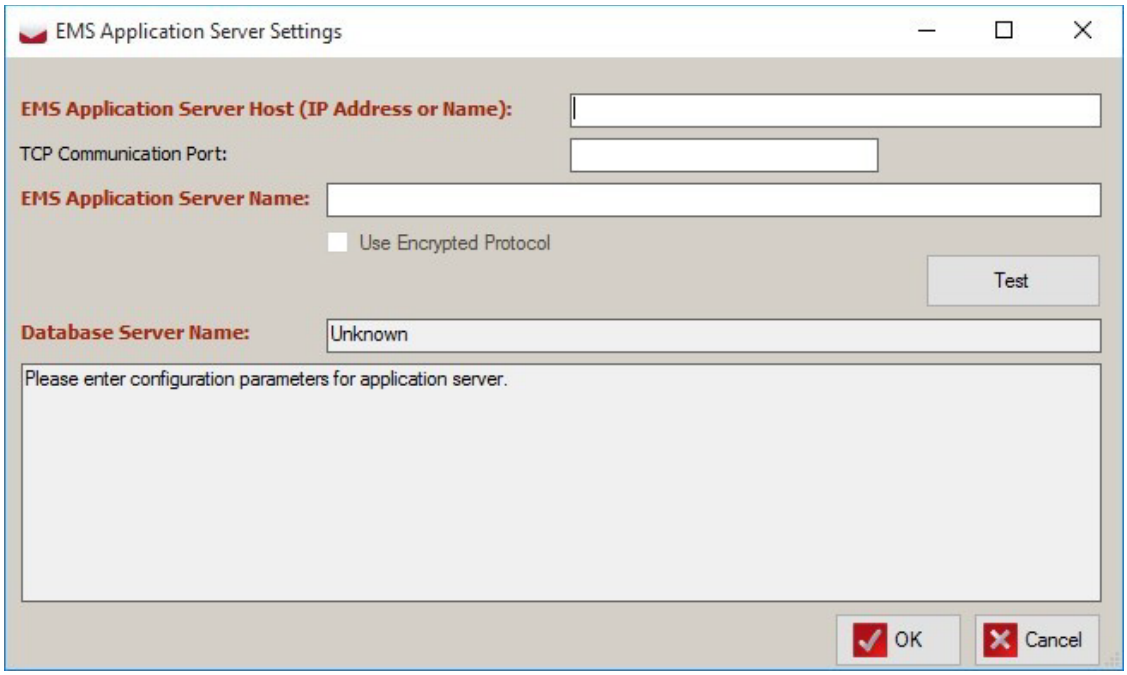

Figure 3-1: Network Settings

Within the Network Settings dialog:

1. Type in the IP Address or Name of the EMS Application ServerEMS Application Server host. Note that your IP Address will differ from the address depicted above. If you are running an EMS Express ConfigurationEMS Express Configuration in 'localhost' instead of an IP Address.
2. In the 'EMS Application Server Name' field, type 'emsapplicationserver'.
3. Click 'Test' to confirm that the entered parameters are correct. If the parameters have been entered correctly, click 'OK' to save the entered data.

4. If the connection fails, check the entered parameters. If the connection continues to fail, check if EMS Application server host is online and contact our technical support.

3.2 Creating an Election Project

Once your network parameters have been set and successfully tested, you can begin creating your Election Project. From the 'Election Project' menu item in the top toolbar, select 'Create New Election Project'. The 'Create New Election Project' window appears, see see Figure 3-2.

1. Within the Create New Election ProjectCreate New Election Project window, enter the name of your project. Dominion Voting Systems recommends using the name of your election.
2. Within the Description field, enter a description that best suits the purpose of your project.
3. Within the Election Event TypeElection Event Type drop-down menu, select the type of election for which this project will be made.
4. Enter the date the election will be held on in the Election Event Date.
5. In the Jurisdiction Name field, enter the jurisdiction for which this project will be made.
6. Within the Jurisdiction Type drop-down menu, enter the type of jurisdiction for which this project will be made. For example, if the election you are creating is being organized at a county level, please enter County for Jurisdiction Type.

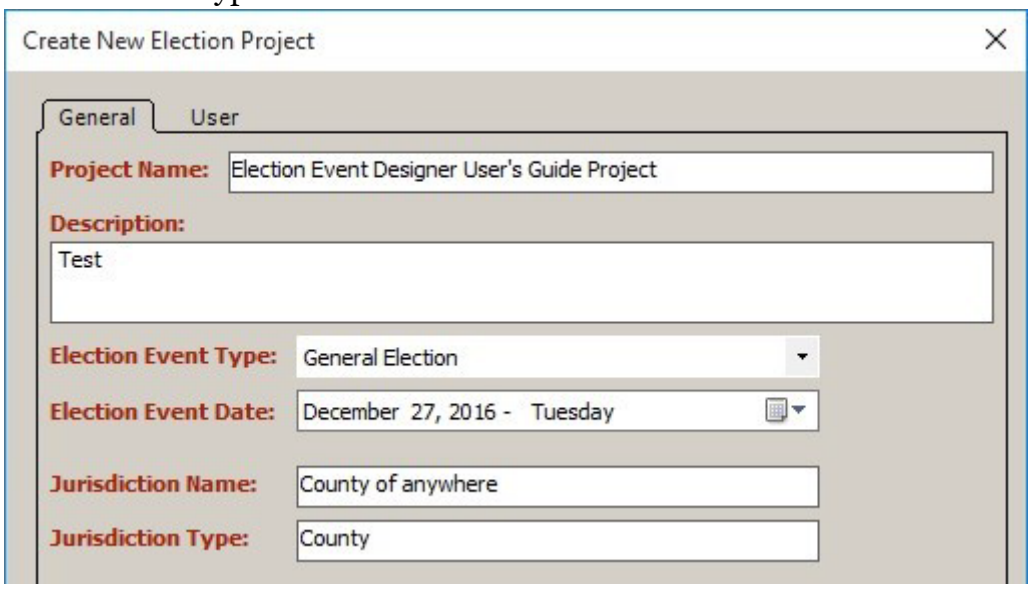

Figure 3-2: Create New Election Project: General Tab

7. Once you have entered all of the required information on the General tab, click the 'User' tab.

8. Enter the contact information of the main election officer and the passwords for the AdminAdmin role and Techadvisor roles.
9. Once all fields have been entered, click 'OK' to begin creating the Election Project. This may take several minutes.
10. You will be notified in the bottom field of the User tab that the Election Project has been created successfully.
11. Click 'Close' to return to the home screen.

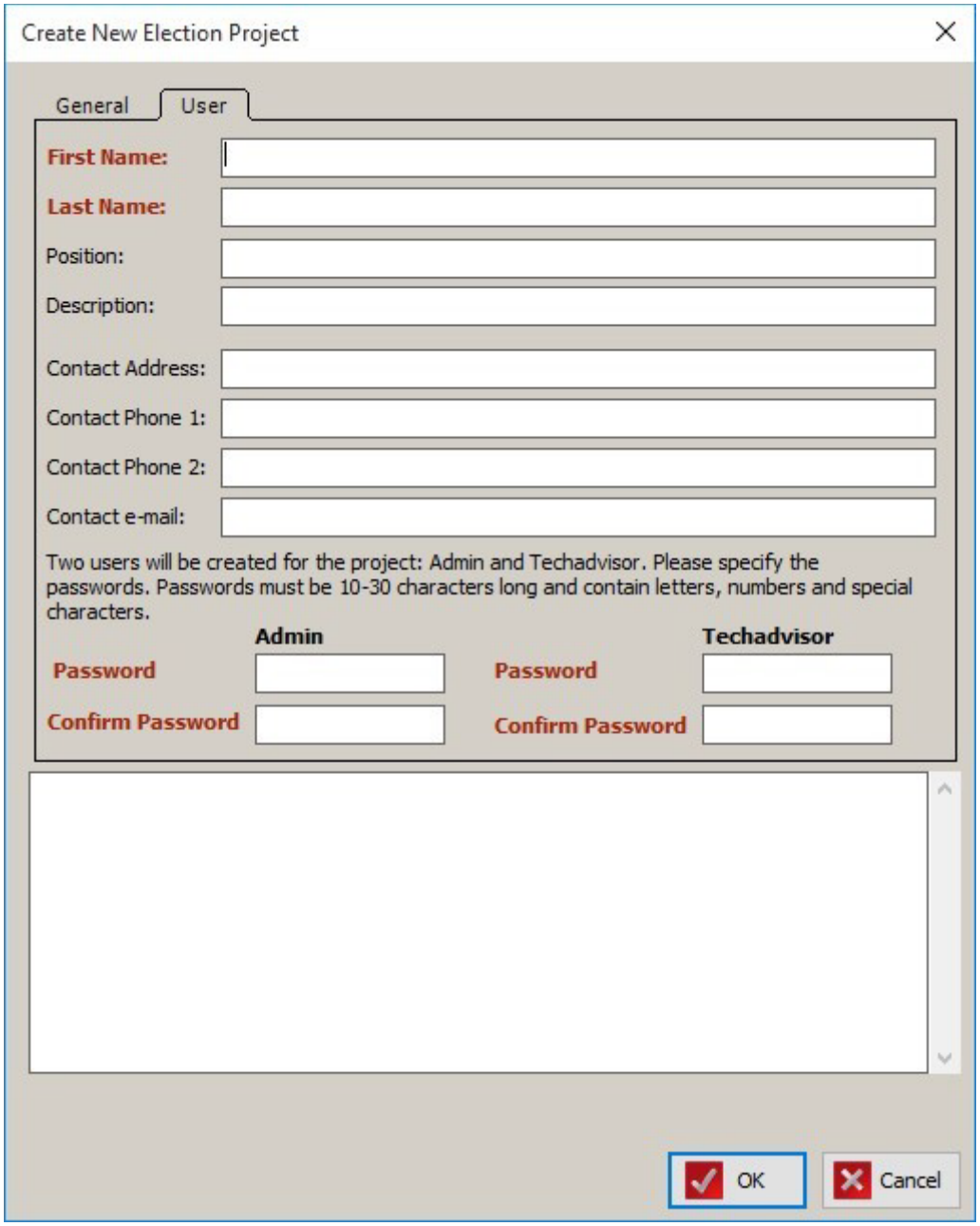

Figure 3-3: Create New Election Project: User Tab

3.3 Opening an Election Project

Once the Election Project has been created, you can open it by navigating to the 'Election Project' menu item in the top toolbar and selecting 'Open Project'. An 'Open Project' window appears, see see Figure 3-4.

1. Select your project from the list of available Election Projects and click 'OK'.
2. A login dialog appears. Enter the credentials you created when creating the Election Project. Note that the username and password fields are case sensitive.
3. Upon successful login, a dialog appears indicating that the Ballot Style has not been set. Click 'OK', and perform the steps outlined in the next section.

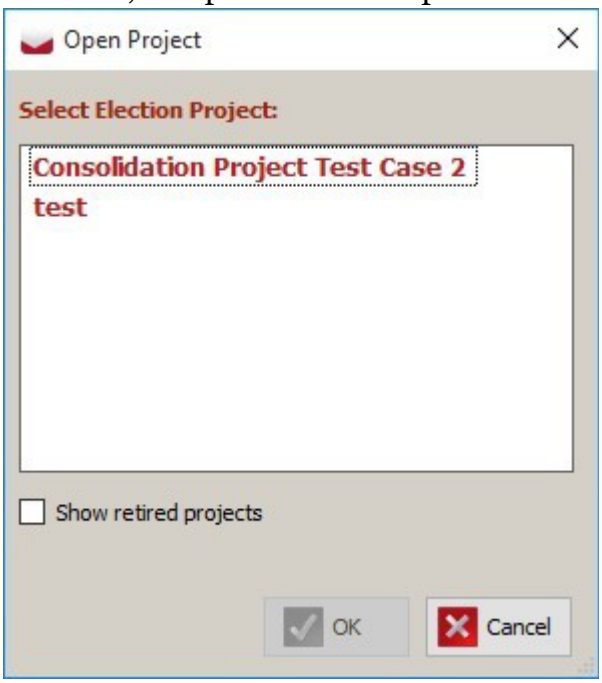

Figure 3-4: Open Project

3.4 Closing Election Project

In case that user attempts to change the project or to change network settings, it is required to close project.

1. Expand the **Election Project** item from the main menu and click on the **Close Project** option or **Ctrl+W**.
2. The project is closed, and the Status Bar now reads as "No active project".

3.5 Election Event Properties

Once you have opened your Election Project, navigate to the **Settings** menu item on the top toolbar and click **Election Event Properties**. An Election Event

dialog appears containing the information you entered when creating your Election Project, including the Election Project Signature, which is a unique identifier for the project generated when the project was created. All available fields can be seen in the figure below (see Figure 3-5).

1. If you wish to roll back from an upper to a lower project stage, select an option from the “Election Project Status” field. Changing the status allows you to make modifications to your election project that cannot be executed in the current stage. The following transitions are allowed by the system:

- From Election Event Definition to:
  - Election Project Styling
- From Election Project Styling to:
  - Ballots Generated

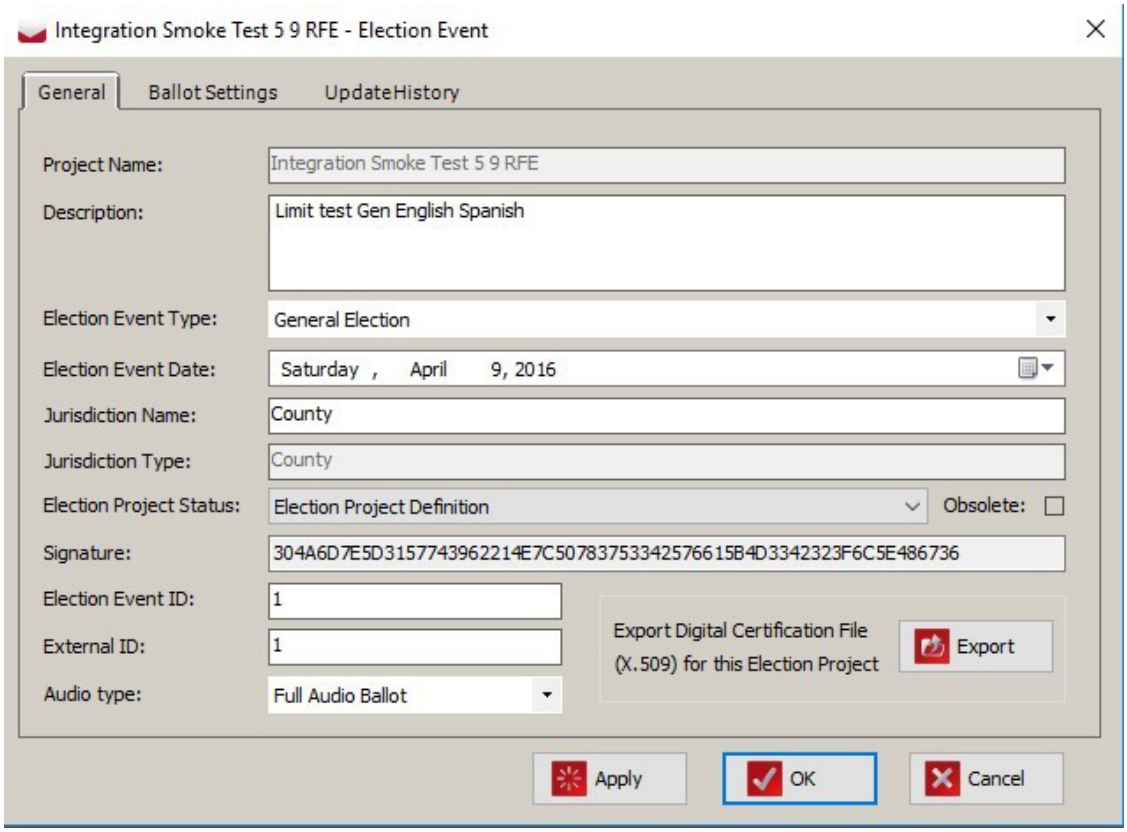

Figure 3-5: Election Event Properties: General Tab

  - Election Event Definition
  - Last Minute Definition
- From Ballots Generated to:
  - Ready for Election
  - Election Event Definition

    - Election Project Styling
    - Last Minute Definition
- From Ready for Election to:
    - Election Event Definition
    - Ballots Generated
    - Last Minute Definition
- From Last Minute Definition to:
    - Election Event Definition
    - Election Project Styling

2. Once complete, click the **Apply** button.
3. A dialog appears asking you to confirm the project status change actions.
4. Click the **Continue** button to confirm your changes. **Note**: Some information will be lost and certain actions will need to be repeated.

3.5.1 Exporting the Digital Certification File

In order to verify the authenticity and integrity of the ballot PDF file, install the Election Project Digital Certificate on your PC:

1. Expand the **Settings** menu and select the 'Election Event Properties' menu option.
2. Click **Export**.
3. Save the file in .pfx file format to your local computer.
4. The Save As dialog appears. Navigate to the local folder to store the certificate.
5. Click **Save**.
6. After the certificate has been successfully exported, click **OK**.
7. Right-click on the certificate file name and select the **Install PFX** option. This launches the Certificate Import Wizard.

8. Certificate Import Wizard appears. Select Current User or Local Machine and click 'Next'.

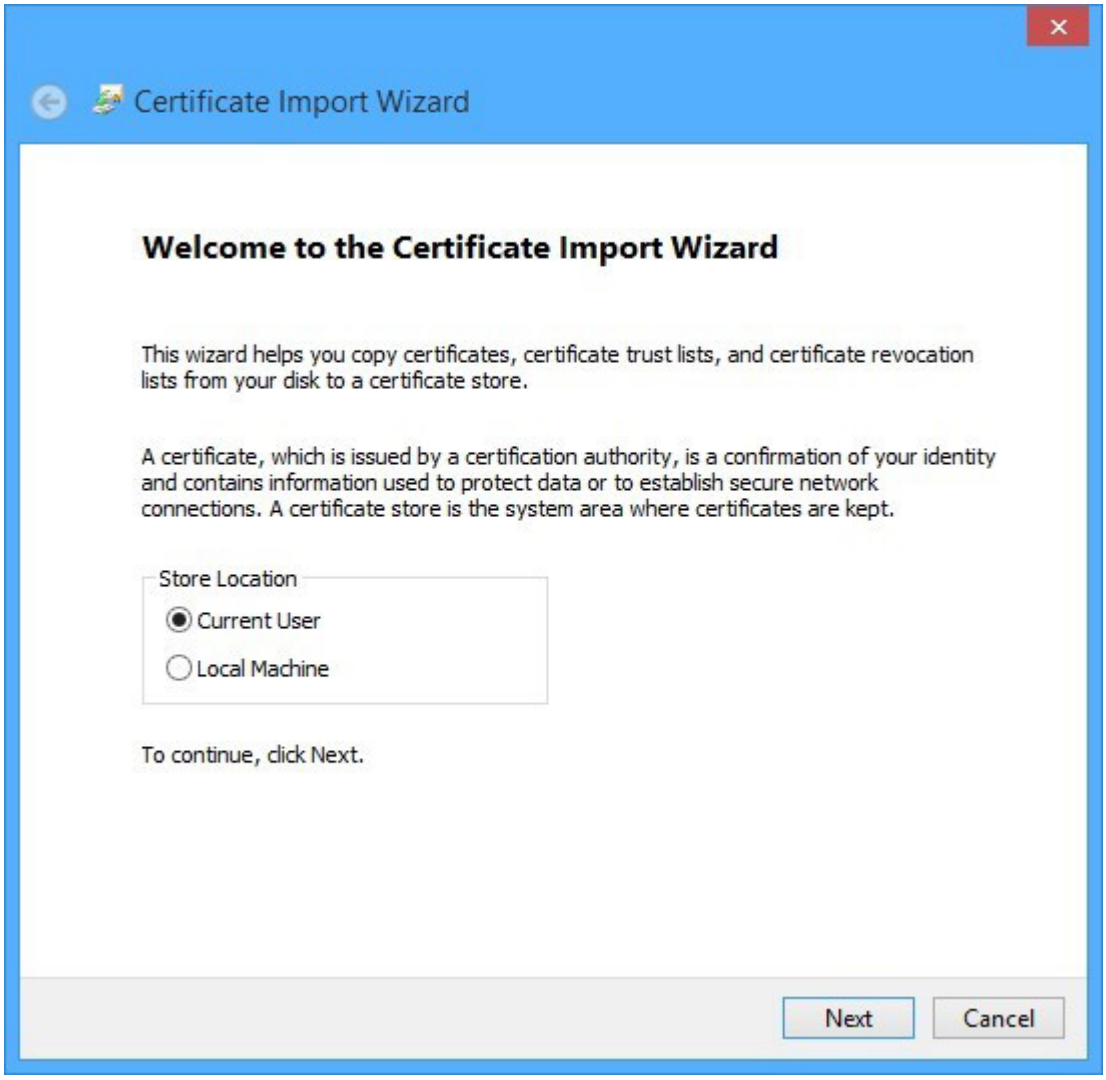

Figure 3-6: Certificate Import Wizard screen

9. Select the file you wish to import and click 'Next'.

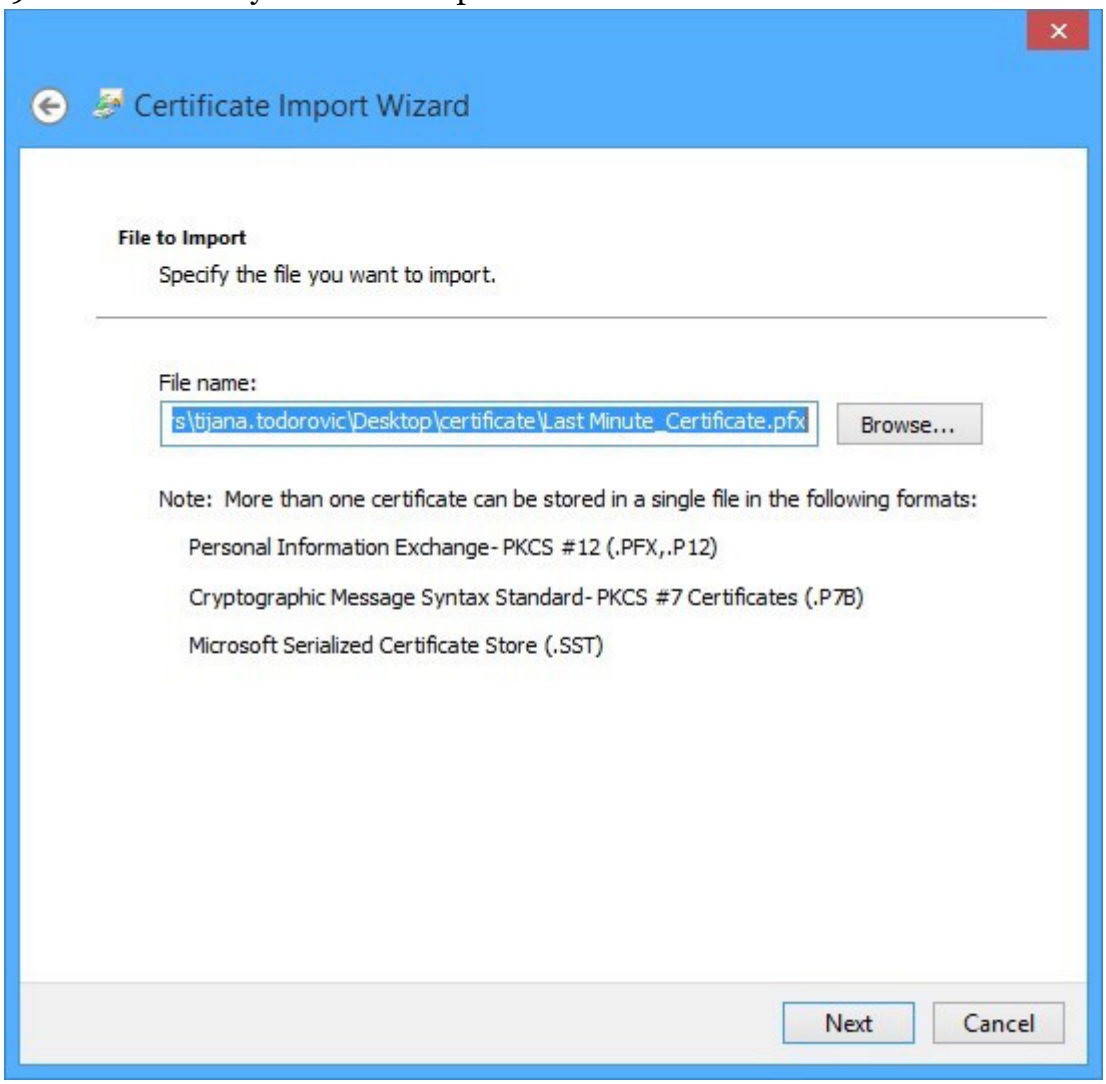

Figure 3-7: File to Import screen

10. Do not enter a password for the digital certificate. Click 'Next'.

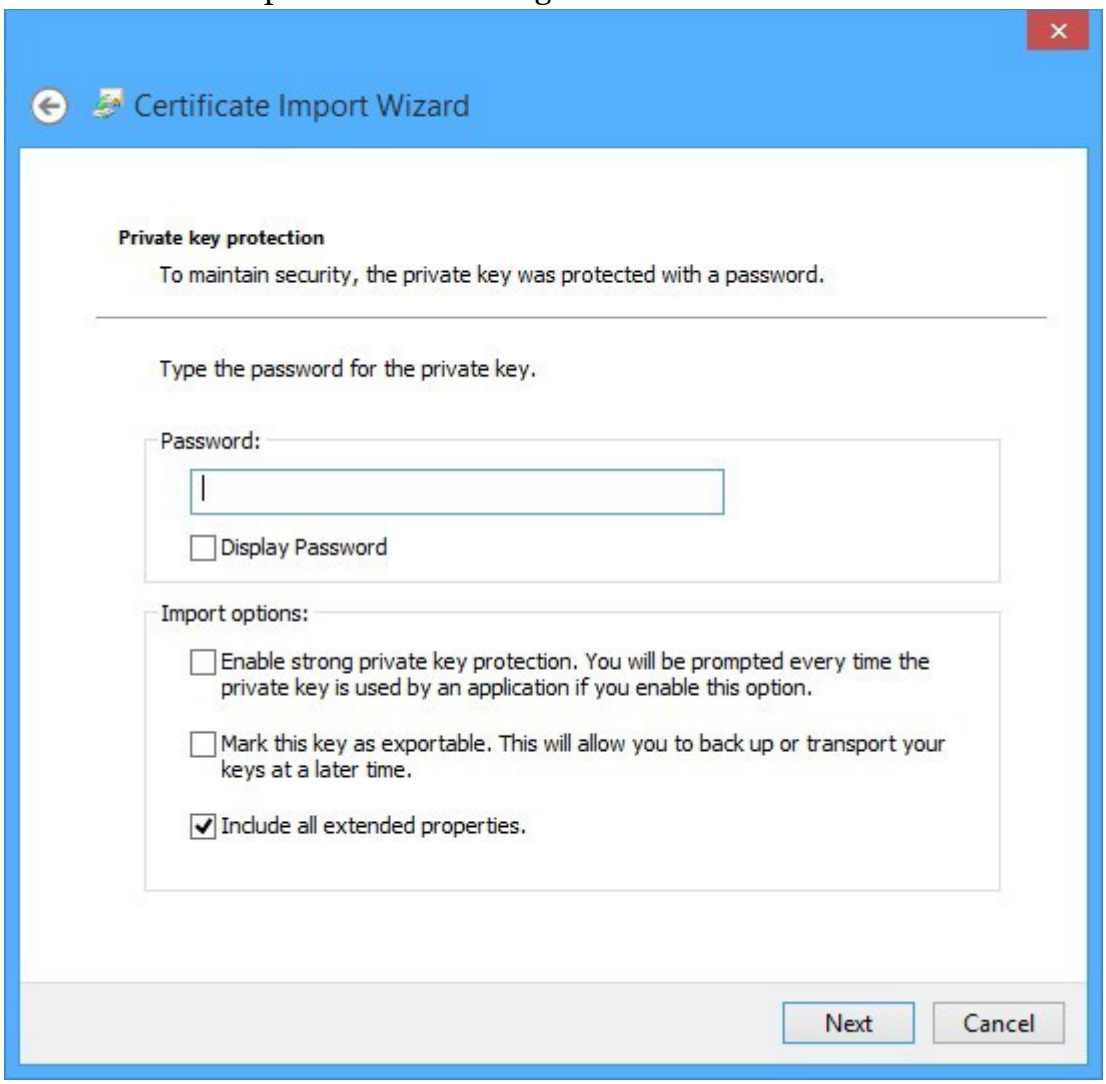

Figure 3-8: Private Key protection screen

11. Certificate store screen appears. Click Next.

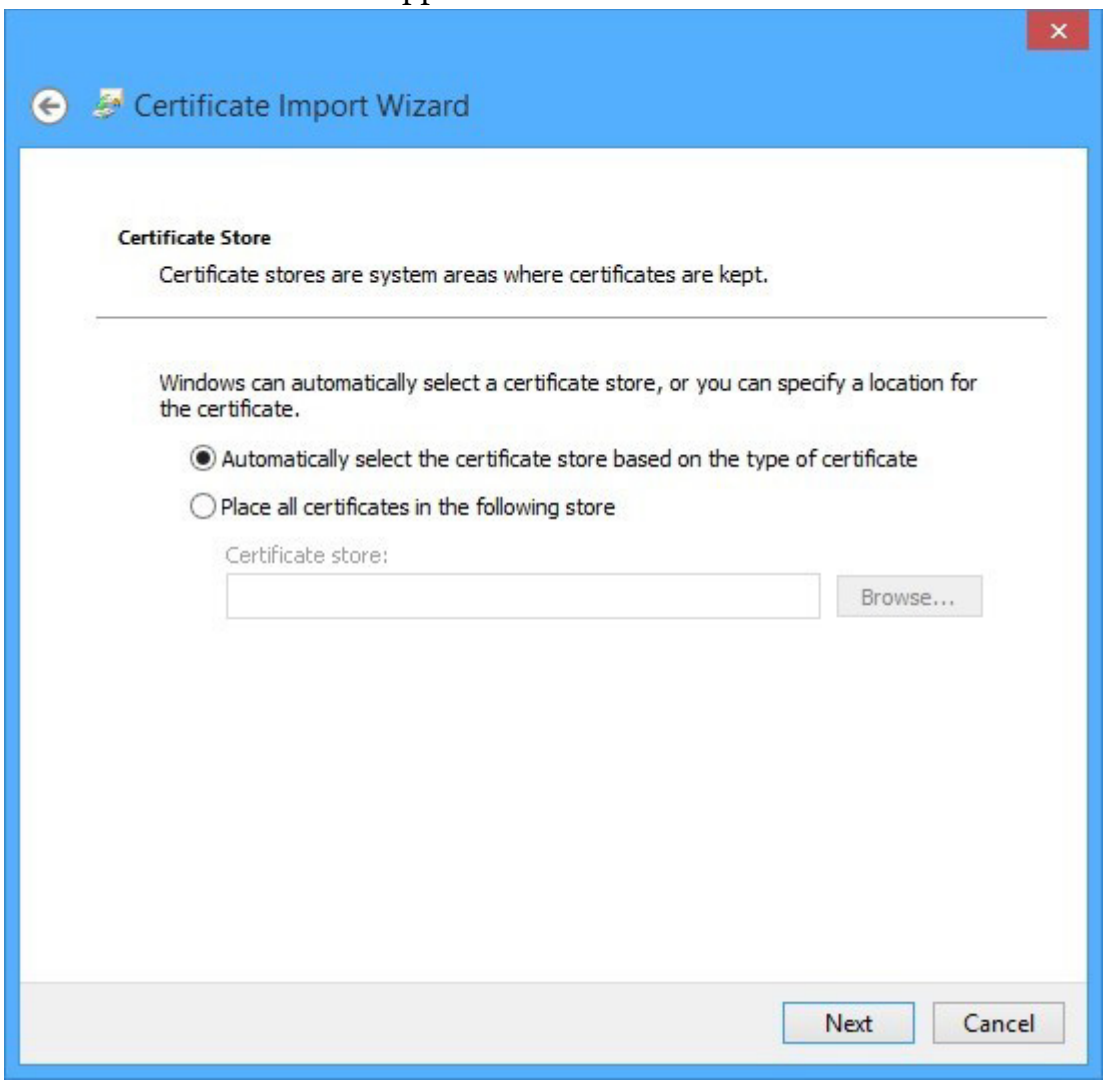

Figure 3-9: Certificate Store screen

12. Click ‘Finish’.

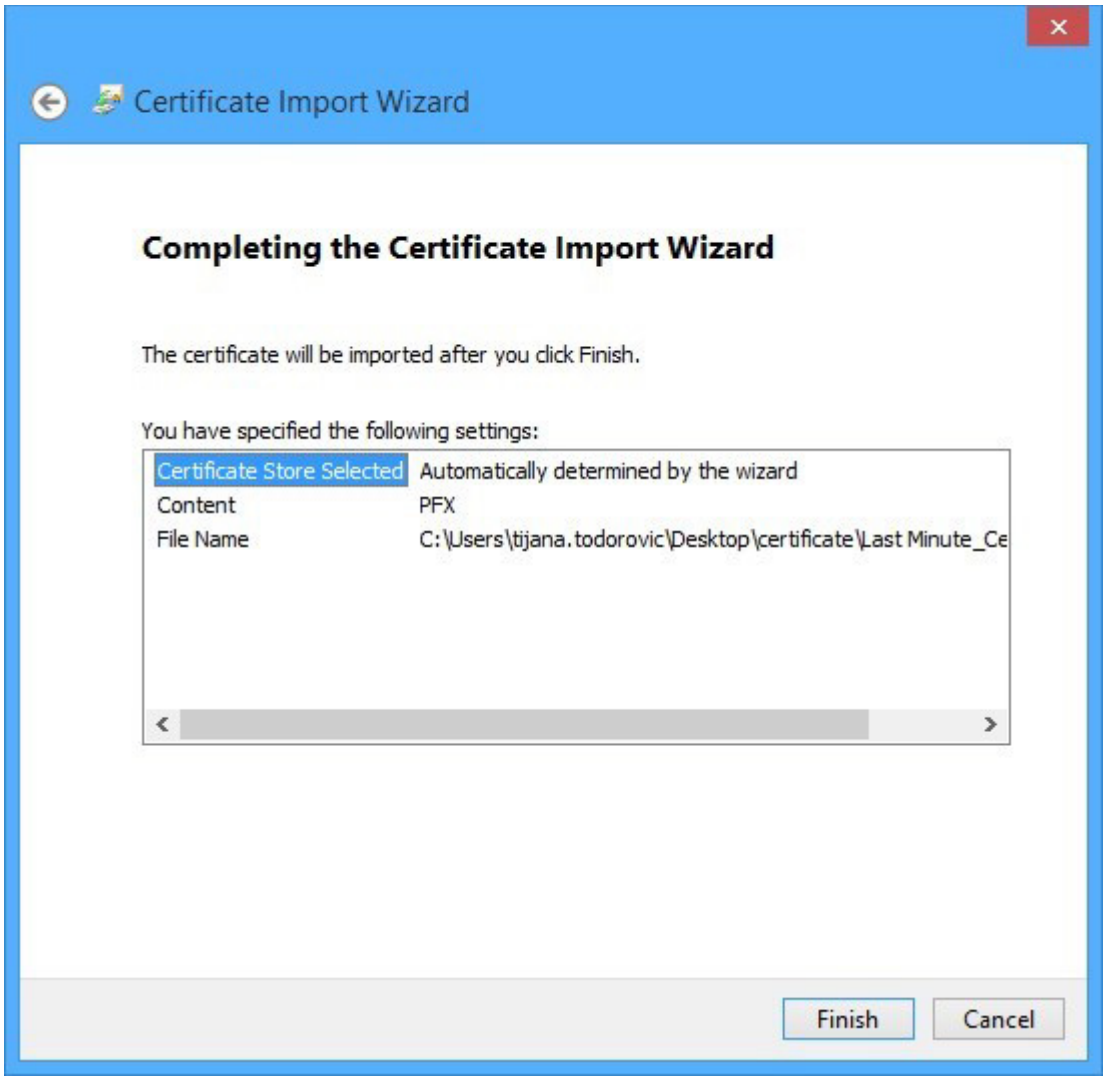

Figure 3-10: Completing the Certificate Import Wizard screen

13. You will receive confirmation that the certificate was successfully imported. Click ‘Ok’ to close the confirmation screen.
14. Once imported, you may verify the digital certificate for the ballot produced by Election Event Designer. Select a ballot PDF file from your election project and open it. The ballot file loads in Acrobat Reader.
15. Click the ‘Signatures’ option, to verify that the signature is valid and that the file has not been changed since the signature was applied.
16. To save all changes, click ‘Apply’ and click ‘OK’.

3.5.2 Ballot Settings tab

1. Within the Ballot Settings tab, click ‘Browse’. A ‘Ballot Style’ selection window appears, see Figure 3-11.

2. From the list of available ballot styles, select one that best suits your project and click 'OK'.
3. The Ballot Style field is now populated with the selection you have made.
4. Click 'Apply' to save changes and stay on Election Event dialog, or click 'OK' to close the dialog and return to the home screen.

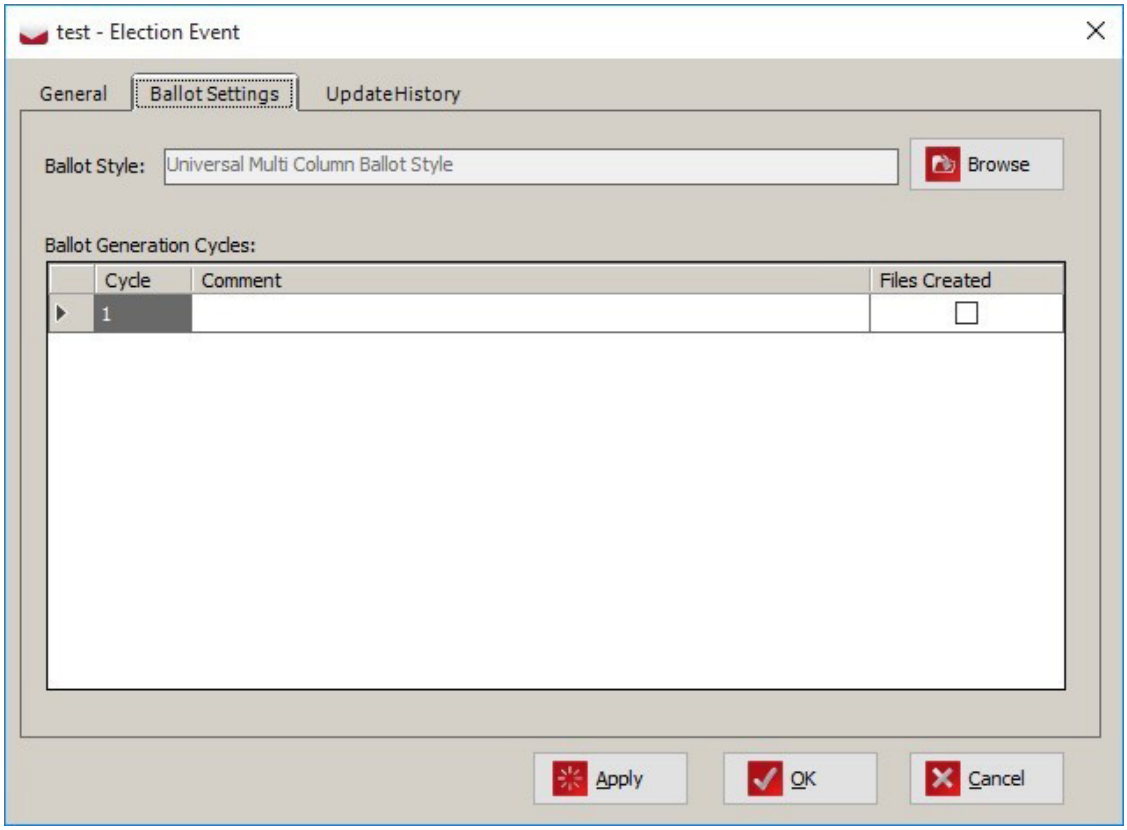

Figure 3-11: Election Event Properties: Ballot Settings Tab

3.5.3 Update History tab

1. Within the Update History tab, you can see all updates from project creation sorted by date and application version (see Figure 3-12).

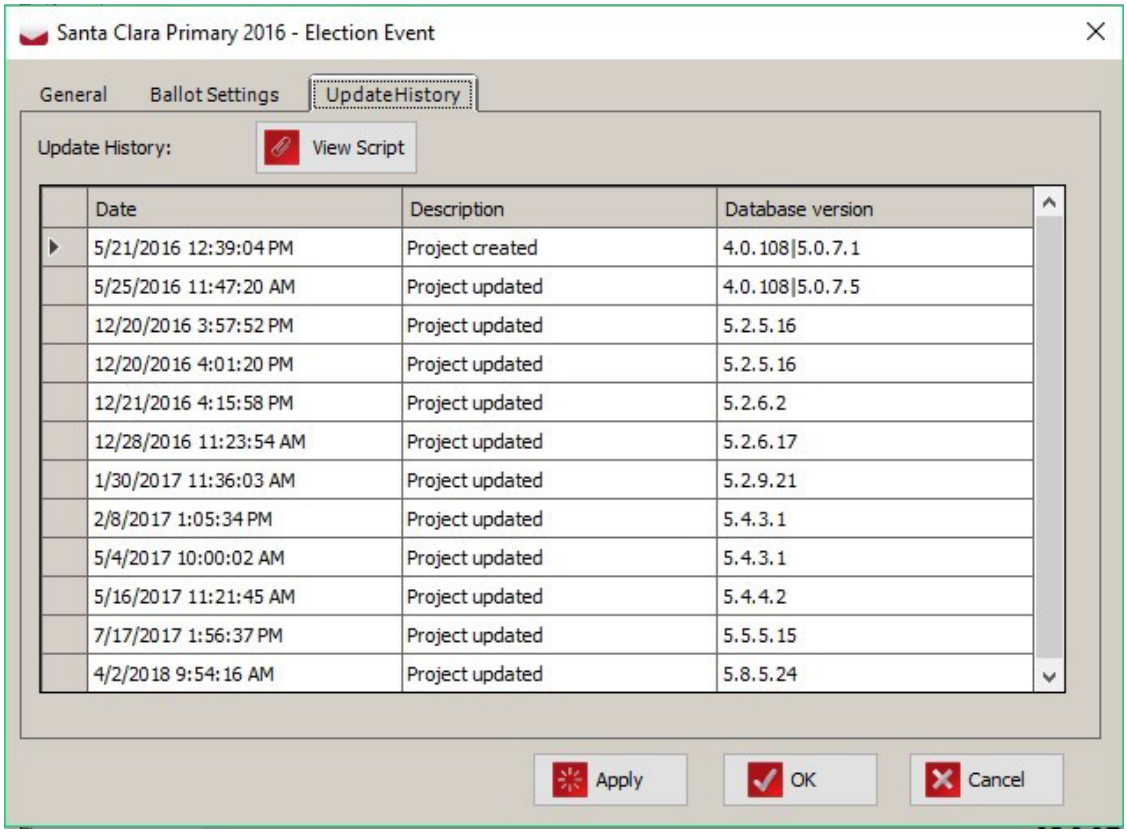

Figure 3-12: Election Event Properties: Update History

2. To see update script, double-click on row or click on the View Script button. The View Script dialog opens. You have the option to read whole script or copy it to the clipboard.

3.6 Generating Audio in EMS

There are three ways to generate audio files in EMS:

NOTE: Make sure that audio file is at least 200 ms long.

1. Using **Cepstral**, a third party tool, as a component of EMS to synthesize audio.
2. Using the **EMS Audio Studio** application to record and import audio files into an election project.
3. Using an **external application** to produce audio files in the .wav (Wave) format. The audio files can be manually imported into Election Event Designer (EED) during the Ballots Generated project phase.

The first step is to ensure the election project is set up to support audio voting. See sections 5.16 and 4.7.4.

3.6.1 Cepstral

When using Cepstral, you must set **Voice** for **Audio in Audio Language** profile for each language separately. See section Defining language Profiles 4.13. You must also define a voice that will be used to distinguish the text to be synthesized as Voice for Audio.

EMS supports English and Spanish language synthesis with Cepstral there are male and female voices for each language:

- English male - David
- English female - Alison
- Spanish male - Miguel
- Spanish female - Marta

Synthesized text is dependent upon the format of the text on the ballot.

A ballot language profile may contain multiple audio language profiles. In such cases, ballot content text is rendered on the ballot in multiple languages, whereas audio files are generated for each individual language. In this situation, it is necessary to make use of template keywords #VS#Allison (denoting The start of audio language one) and #VE# (denoting end of audio language one) before and after the text to be synthesized to audio.

The voice at the end of the keyword represents 'Voice for Audio'. Using different voices, allows for the creation of audio files in different languages. Audio files are generated using the function **Action** - **Ballots** - **Create ballots** & **Audio Files**.

The following is an example of how keywords are applied for English and Spanish text to appear on the audio ballot. In the example, the text for the 'President' contest and the 'Vote for' instruction appears in both languages:

- President
- Presidente
- Vote for one
- Voto para uno

In order to achieve the above, the text must be formatted in the following way:

Base / Audio language templates can be created (one for English and one for Spanish), using keywords and textual units:

- English template
- #Unit#1 #Unit#2
- where Textual Unit 1 is President and Textual Unit 2 is Vote for one.
- Spanish template
- #Unit#1 #Unit#2
- where Textual Unit 1 is Presidente and Textual Unit 2 is Vote para uno.

Or create English RTF and Spanish RTF. Two separate audio files will be created: one for English and one for Spanish.

It is also possible to combine multiple voices in a generated audio file. This is helpful when a candidate name is not pronounced well in the originally intended language. To define a voice other than the default voice for the language, use keywords #VS#Voice for start and #VE# for end.

For example: Define English voice (David) as default for English language and Miguel for Spanish. A candidate named Pablo Picasso is not pronounced well in English, the generator can be made to use the Spanish language voice to pronounce the name.

For Senator #VS#Miguel Pablo Picasso #VE# is candidate.

The text between the keywords (#VS#Miguel and #VE#) is created using the Spanish voice Miguel.

In a case where English and Spanish languages are not sufficient as choices, please use one of the other two methods of generating audio.

The ballot may include a candidate name in one language, along with their occupation in two or more different languages (see example below, with English and Spanish instances of the occupation).

Albert Einstein

Scientist

Cientifico

Again, Base / Audio language templates can be used, where multiple voices are combined.

English template

#VS#Allison #Unit#1 #Unit#2 #VE#

where Unit 1 is name ‘Albert Einstein’ and Unit 2 is occupation ‘Scientist’

Spanish template

#VS#Allison #Unit#1 #VE# #VS#Miguel #Unit#2 #VE#

where Unit 1 is name ‘Albert Einstein’ and Unit 2 is occupation ‘Cientifico’. Name is pronounced in English, while occupation is pronounced in Spanish.

Alternately, you can also create English RTF and Spanish RTF

Creation of a single audio file for a case such as this is not supported with Cepstral. If the user would like to use an audio file for combining languages in this manner, methods 2. or 3. should be used.

3.6.2 Audio Studio

For details on how to generate audio files using EMS Audio Studio, please refer to the Democracy Suite® EMS Audio Studio User Guide.

3.6.3 External Application

Audio files (in .wav format) that are produced by an external application may be manually imported and associated with the appropriate object.

NOTE: When recording audio files, ensure they are created with the following settings:

- Compression: Uncompressed
- Sample Rate: 11025 Hz
- Sample Type: 16 Bit
- Channel: Mono

NOTE: These steps should be performed in election status Ballots Generated.

Audio files can be manually associated to following entities: Election Event dialog, Political Parties dialog, Contest dialog, Choice dialog, Choice Prototypes dialog and Contest Headings dialog.

To manually associate audio files, please see the Translations section 5.16.

3.7 Project Parameters

Project Parameters are defined as the changes and settings you make that affect your entire Election Project. Most of these parameters must be addressed during the Election Project Definition phase.

To open the Project Parameters window, click the ‘Settings’ menu item in the top toolbar and select ‘Project Parameters’.

3.7.1 Project Parameters: General Tab

The following configurable options exist in 'Project Parameters' 'General' tab (see Figure 3-13):

3.7.2 General Tabulation Options

1. **Tabulator PIN Type and Default Tabulator PIN**: The 'Default' setting within the 'Tabulator PIN Type' assigns the PIN specified in the 'Default Tabulator PIN' to all tabulators. Selecting 'Random' generates a random PIN for each tabulator.
2. **Random User PIN Length**: You can specify the length of randomly created Security Key PIN. The Generated PIN length will fall between a defined range of 4 to 8 characters.
3. **Unify Tabulator Security Keys**: When this checkbox is selected, all tabulators share a single iButton Security Key. This mode is very useful in a testing environment when using many tabulators at once. If the checkbox is not selected, each tabulator is assigned a unique key. For security reasons, it is not recommended to use unified security keys in a real election.
4. **Set Tabulator Number Automatically**: When this checkbox is selected, tabulator ID numbers are set automatically by Election Event Designer once the election files are created. Leave the box unchecked to manually define tabulator numbers.

5. **Card Partition Size**: This option determines how much space on the Compact Flash cards will be available for election files and audio ballots. It is recommended to use 512 MB as partition size at all times

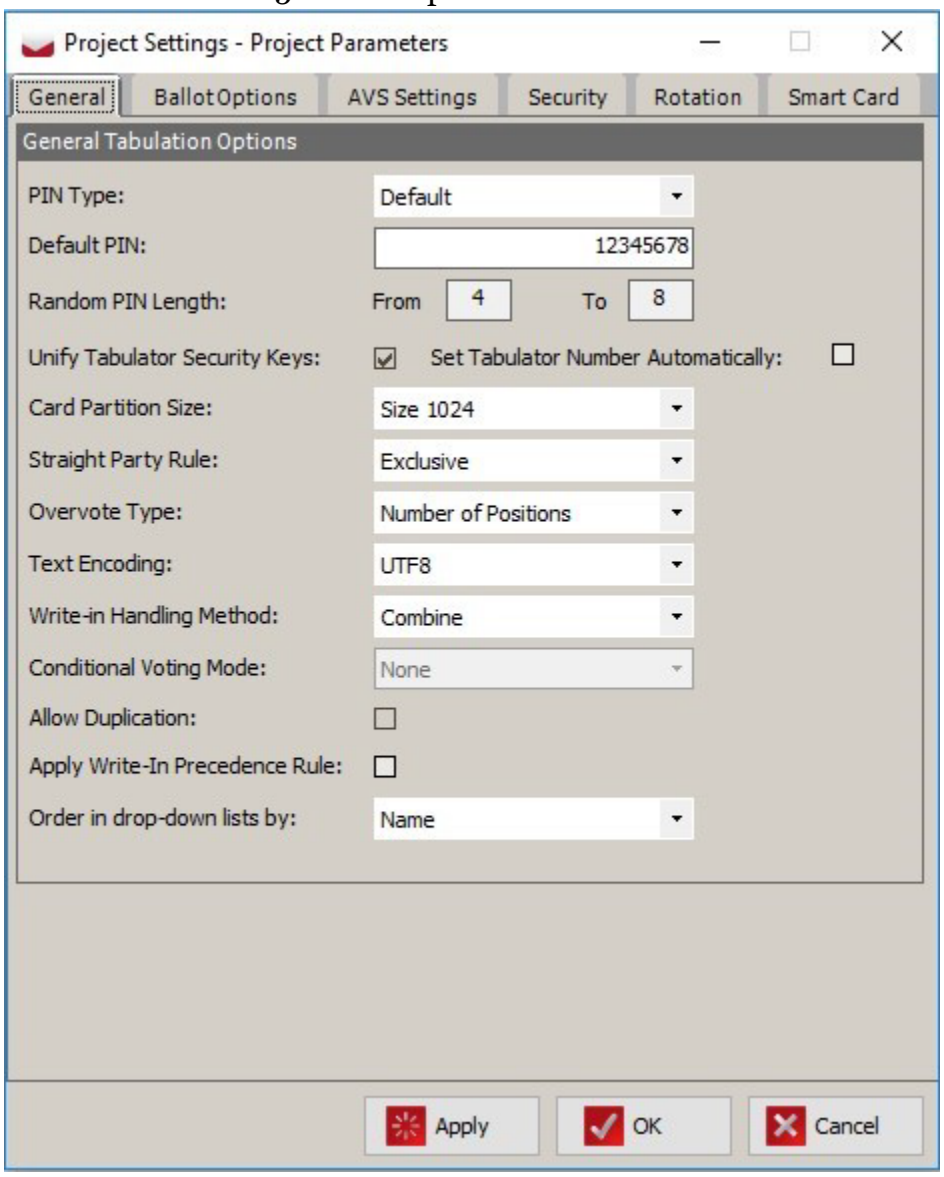

Figure 3-13: Project Parameters: General Tab

6. **Straight Party Rule**: To specify the mode of the Straight Party contest in your project, the following options are available in the combo-box:
   - Exclusive If the user does not explicitly select choices in the contest that is influenced by their selection in the Straight Party contest, then all choices affiliated with the selected Straight Party choice will be counted implicitly. In case the voter explicitly selects a choice in the influenced contest, that choice is the only one counted.
   - Inclusive This rule attempts to combine explicit selections with the implicit ones, as long as the total number of selected voting boxes does

not exceed the number of available positions. If the total number of selected voting boxes does not exceed this number, only the explicit selections are counted.

- Strict Inclusive This rule always combines implicit and explicit selections even if this results in an overvote. This mode should be used for Group contests.
- Mixed In this mode, in a Vote for = N contest, implicit selection takes place for the first N candidates on the ballot with the selected party affiliation. The number of candidates affiliated to a single party may be more or less than the vote for.

7. **Overvote Type**: If you want to set the overwrite type, choose the 'Single' or 'Number of Position' options within the Overwrite Type drop-down menu. When you select the 'Single' option, the overvotes are counted as the number of times a contest was overvoted. When you select the 'Number of Position', the overvotes are counted as the number of times a contest was overvoted multiplied by the number of positions (Vote For) for that contest.
8. **Text Encoding**: You can specify text encoding used in project. There are two values:
   - Latin1 represent standard English letters and special characters. Used in projects for English language users.
   - UTF8 represent whole character set. Used for non-English regions (Cyrillic, Arabian).
9. **Write-in Handling Method**: Within this drop-down menu, you can select whether to present the write-in results as one consolidated number. Or, you can choose to tally and report the write-in votes separately.
10. **Conditional Voting Mode**: Allows the user to indicate whether Provisional or Challenge Voting is supported in the current election project. **NOTE**: Conditional Voting Mode cannot be changed in Ready for Elections phase.
11. **Allow Duplication**: Allows the user to specify whether duplication of results is allowed during the resolution of Provisional sessions. For more info about duplication, see section **Duplication of Provisional Votes** in the Democracy Suite® EMS Results Tally & Reporting User Guide. This is only applicable to Provisional mode of Conditional Voting. **NOTE**:This setting can only be changed in the RTR application, once the project is in Ready for Elections phase.
12. **Create WinEDS mapping files** : When using the EMS system in combination with the WinEDS/HAAT system, you must produce a number of mapping files that allow the HAAT module to transfer results back into WinEDS.

13. **Write-In Precedence rule**: If the Write-In Precedence rule is enabled for the election project (in the project parameters), the following behaviour will take place: In any contest where the combination of votes for both regular and write-in positions would result in an overvote, any votes for regular candidates are ignored and only the write-in position votes are recorded. For example: In a Vote for One contest, with 5 regular candidates and one write-in position, if the voter marks all voting boxes, including the write-in, the result is not recorded as a regular vote for the write-in position instead of an overvote.
14. **Order in drop-down lists by**: There are two options available for setting the drop down list order: **Name** and **GlobalOrder** Depending on the preferred setting, the items in the EED drop down lists will be sorted either by GlobalOrder or Name.

3.7.3 Project Parameters: Ballot Options Tab

3.7.3.1 Ballot Generation Options

In this tab, see Figure 3-14, the user can adjust settings related to automated process of audio generation.

1. **Lead Card Consolidation Level**: This setting allows the user to control the level of consolidation for the lead card in the multi-card scenario, and the only card in a one-card scenario, possible levels that can be selected:
    - **Precinct Portion**: separate lead cards will be generated for each precinct portion.
    - **Precinct**: separate lead cards will be generated for each precinct.
    - **Ballot Type**: a single lead card will be generated for each ballot type.

- **Card**: the lead card will be consolidated across multiple ballot types. However the consolidation of the lead card will not consolidate across ballot groups.

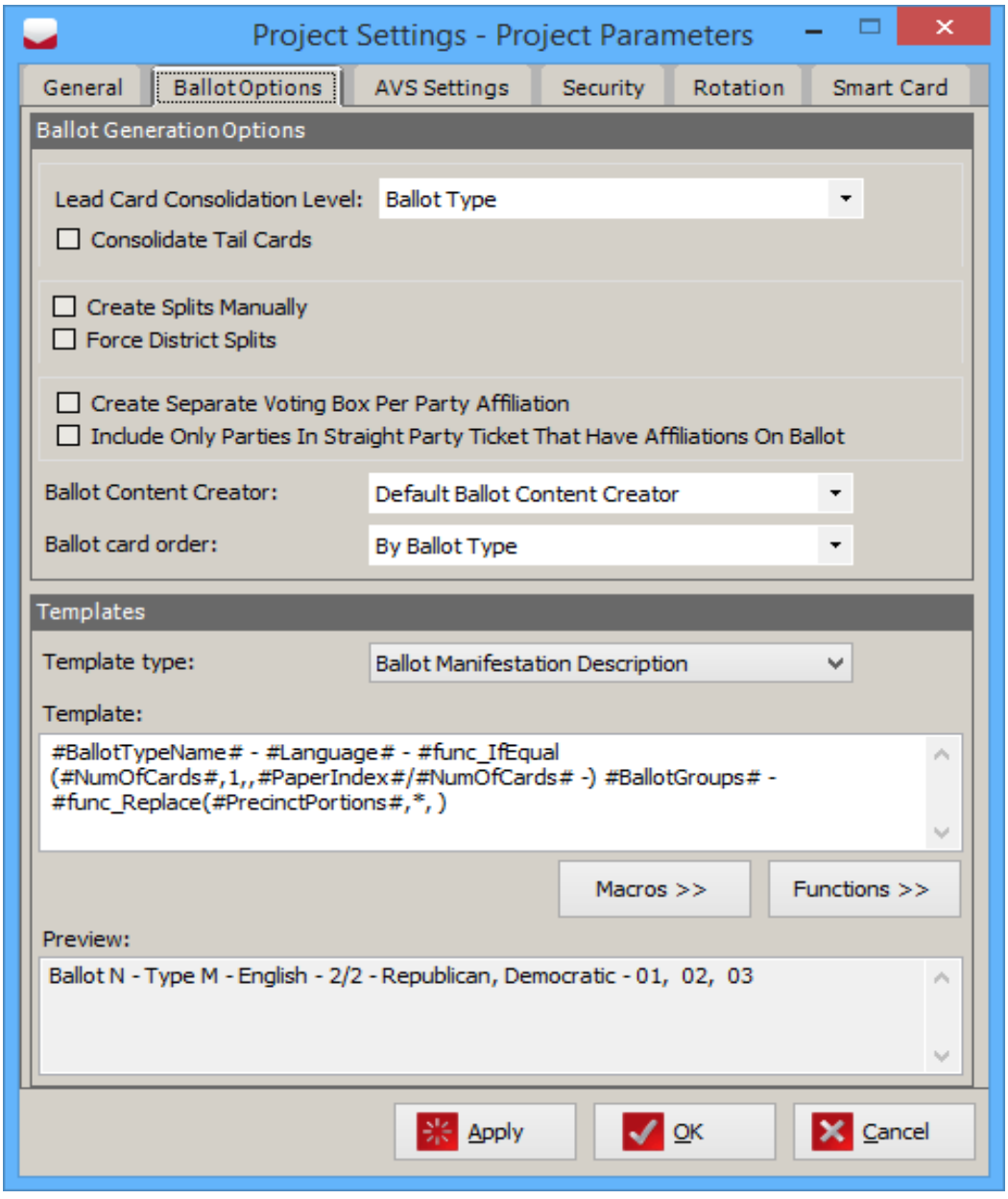

Figure 3-14: Project Parameters: Ballot Options Tab

2. **Consolidate Tail Cards**: If this setting is not checked, the tail cards will be generated according to the lead card consolidation level. If checked, the tail cards will consolidate across multiple ballot types and even ballot groups. For example if the tail card in a closed primary election contains only non-partisan contests, the card can consolidate across ballot groups, allowing the card to be used by multiple parties.

3. **Create splits manually**: When multiple districts for one district type are added to the precinct, EED automatically creates all possible splits. Select the **Create splits manually** checkbox so you can create any required splits manually.
4. **Force District Splits**: When this checkbox is checked, ballots are generated in such a way that they do not cross any district boundary, even if ballot content between two districts is equivalent. This can be convenient in cases where ballot content is equivalent across different districts, but a different ballot header is required for each district.
5. **Create Separate Voting Box Per Party Affiliation**: This setting allows you to control creation of voting boxes (options) for candidates who are affiliated with two or more parties: If this setting is checked, separate voting option will be created for each party affiliation. If this setting is not checked, one voting option will be created per candidate. In this case EED will automatically create composite party for each combination of party affiliations, during the Ballot Content Generation process, which takes place during the transition from the Election Project Definition to the Election Project Styling phase. Composite parties are used only for displaying candidate multiple party affiliation on ballots and reports.
6. **Include Only Parties In Straight Party Ticket That Have Affiliations On Ballot**: When this setting is checked, straight party tickets will be generated in such a way that they contain only those parties that have affiliations on a ballot. Parties that do not have candidates on a ballot will not be presented on a straight party ticket.
7. **Ballot Content Creator**: The two options in the combo box are:
    - **Default Ballot Content Creator**: if this option is selected, EED will calculate ballot content using the election definition data, and will disregard any explicit ballot information that was provided from the import via the EDT application.
    - **Data Importer Supplement Creator**: if this option is selected, EED will use the explicit ballot information that was imported from the EDT sheet and originates from an external system such as WinEDS. This

allows EED to produce ballots in the exact same way as in the external system without re-calculating the ballot content.

8. **Ballot card order**: By ballot type: generated ballot cards will be sorted by ballot type first.

If there are ballot types attached to multiple precincts, the resulting order will be: ballot type 1 – precinct 1, ballot type 2 – precinct 2 … ballot type 5 – precinct 1, ballot type 5 – precinct 2.

- By precinct: generated ballot cards will be sorted by precinct first.

If there are ballot types attached to multiple precincts, the resulting order will be: ballot type 1 – precinct 1, ballot type 2 – precinct 1 … ballot type 1 – precinct 5, ballot type 2 – precinct 5.

3.7.3.2 Templates

In this section of Project Parameters, it is possible to set a convention for the ballot description and identifiers.

Template Type: This combo box allows the user the pick to what attribute of the ballot the templates will be applied to. It is possible to apply templates to the following:

- Ballot Manifestation Description
- Ballot Manifestation External ID
- Ballot Artwork File Name

Template: This field is used for constructing the actual template for the selected Type. The user can type any arbitrary information in the field, but they can also make use of two types of keywords, described below. The user can either manually type the keywords, or make use of the following two buttons, in order to include them at the current location of the cursor in the template field.

- **Macros**: These keywords are replaced with actual data that they refer to. For example #Language# with add the language of the ballot, e.g. ”Spanish”. This may be a single value or a list of values (e.g. #Precinct Portions)
- **Functions**: These keywords take parameters, perform an operation and return a result. For example #func Replace(#Language#,*,-) will replace all occurrences of * in the data retrieved by the #Language# macro with - character. Functions may also contain other functions as arguments.

Preview: This field displays the resolved output for the specified template to the user.

Below are a couple of examples of Templates:

Ballot manifestation description:

Template: #BallotTypeName# - #Language# #PrecinctPortions#

Result: Ballot 1 Type 1 English 01,02,03

Ballot external id:

Template: Ext - #IntMachineId#

Result: Ext - 1001

NOTE: Special care must be taken when constructing templates for Ballot Artwork File Name to ensure ever single file has a unique name. In case a non-unique template is constructed, an error will occur during the ballot generation process.

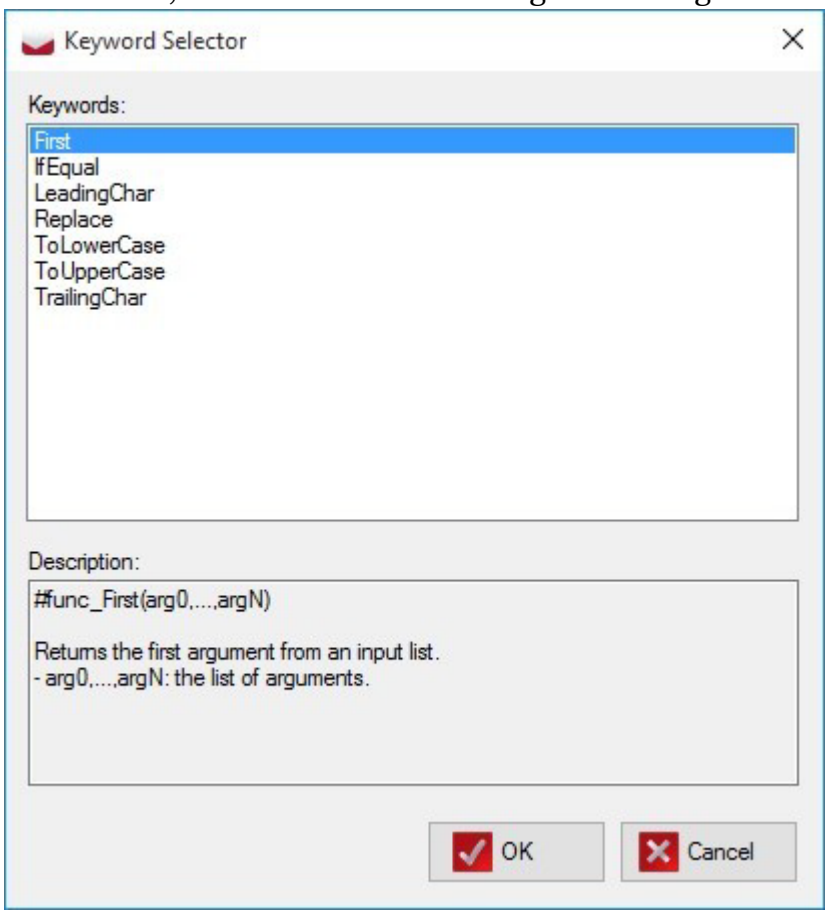

Figure 3-15: Keyword Selector screen

3.7.4 Project Parameters: AVS Settings Tab

The 'AVS Settings' tab, see Figure 3-16, allows you to configure the audio options within your Election Project. For audio options, see Section 4.6 Generating Audio in EMS.

1. **Automatic Generation of Audio**: In this section the user can adjust settings related to automated process of audio generation.

- **Audio Synthesis Voices Path**: Path to Cepstral is automatically populated during server components setup.
- **Pause between words**: This field can be increased if you require longer pauses between each word spoken in your synthesized audio files.
- **Generate Audio for Write-Ins**: When checked, audio files will be generated for any specified Write-In text, during the generation of audio files.

2. **Accessible Voting Session Support** In this section the user can make adjustments related to Accessible Voting Sessions. These settings have impact on project size

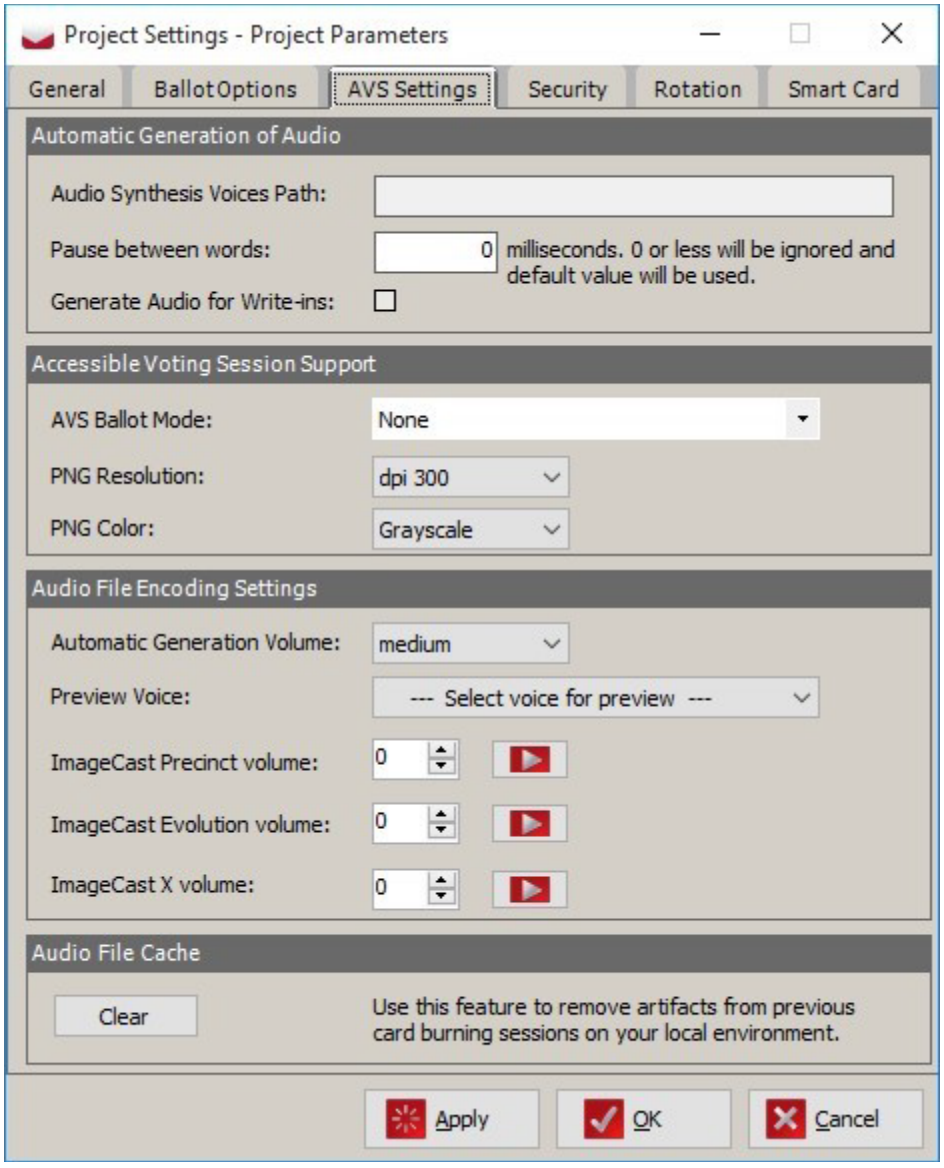

Figure 3-16: Project Parameters: AVS Settings Tab

- **AVS Ballot Mode**: This indicates the type of ballot to be displayed on tabulators where voting is performed on electronic ballots. The available choices are:
  - Full Face ballot is an option that sets mode of ballot presentation in ImageCast Evolution Accessible Voting Session (AVS). If selected, the ballot, on the ImageCast Evolution screen, will display the entire face of the ballot, as it appears on paper-based ballot. In this case, EMS EED will create PNGs that will be used to present the full ballot face.
  - Rolling (Contest by Contest) ballot is another option that sets mode of ballot presentation in ImageCast Evolution AVS. If selected, contests, on the ImageCast Evolution screen, will be presented one after another. This mode enables significant decrease in project size as it does not require additional resources for the display of ballot content. In addition to these options, user needs to define Full Audio type during project creation (please refer to Section Election Event Properties 4.5). In addition, each ballot that processes AVS ballots, needs to have AVS support enabled (please refer to Section Defining Tabulators 6.5).

NOTE: When setting the Project Parameters for ImageCast X in EED, make sure that the Accessible Voting Session Support option AVS Ballot Mode is set to any option except for Full Face Ballot.

- **PNG Resolution**: The selected value indicates the resolution at which Full-Face AVS ballots will be generated.
- **PNG Color**: The selected value indicates whether the Full-Face AVS ballots will be generated in colour or greyscale.

3. **Audio File Encoding Settings** In this section the user can adjust the volume level of all audio files produced and converted by EMS.
   - **Automatic Generation Volume** Allows the user to set the volume level at which automatic generation of audio process will produce audio files
   - **Preview Voice** Allows the user to select the voice to be used while previewing audio volume adjustments.
   - **ImageCast Precinct Volume** Allows the user to adjust relative volume of audio converted to format that is supported on the ImageCast Precinct tabulator
   - **ImageCast Evolution Volume** Allows the user to adjust relative volume of audio converted to format that is supported on the ImageCast Evolution tabulator
   - **ImageCast X Volume** Allows the user to adjust relative volume of audio converted to format that is supported on the ImageCast® X BMD

The user can also preview volume adjustments (using the **play** button) for each of the available audio format conversions.

4. **Audio File Cache** - Use this feature to remove artifacts from previous card burning sessions on your local environment.

3.7.5 Project Parameters: Security Tab

The 'Security' tab, see Figure 3-17, allows you to configure how your Election Project will be protected.

EMS uses various security approaches to protect data and its flow inside the system. The elements used are: encryption keys, digital certificates and digital signature keys.

In the Election Project Definition stage of the process, the user is able to reset the existing security settings by using the **Regenerate** button. After confirmation, the system regenerates all security elements in the project. This means that any existing project output (e.g. ballots, election files and result files) that is already protected will not be usable any more.

The option to **Regenerate Security elements after copy project action** is used to ensure that a copy of the project will have different security elements, so that any output from original project will not be compatible with the created copy. The option to **Regenerate Security elements before generating election files** resets digital signature elements for the tabulators before the programming

of the election cards. This ensures that any previously programmed election card is not compatible with the project.

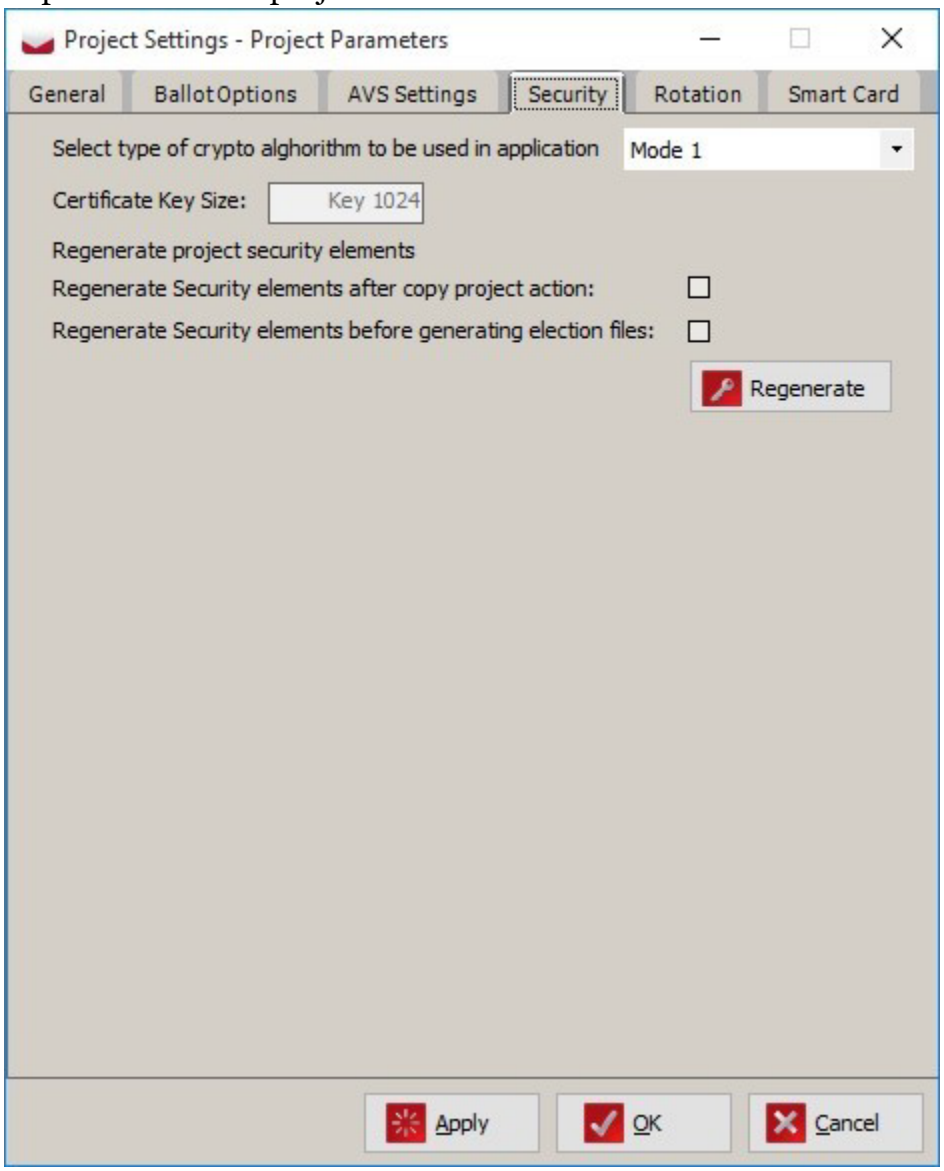

Figure 3-17: Project Parameters: Security Tab

Select Type of crypto alghorithm to be used in application: **Mode** 1, the system uses the AES128 crypto algorithm to protect data on the election card. In this mode all participants in the process use the same encryption keys.

NOTE: Mode 2 and Mode 3 are not supported on ImageCast® Evolution platform.

3.7.6 Project Parameters: Rotation Tab

The 'Rotation' tab, see Figure 3-18, allows you to set global rotation settings.

1. **Split rotations** checkbox: this checkbox controls if splits are applied to entire precincts or their splits.
2. **Enforce Maximum Deviation** checkbox: when selected, the process validates whether all choices within the rotated contests have been distributed fairly amongst the eligible voters for each rotated contest/
3. **Maximum Deviation**: this textbox allows the user to set the maximum allowed deviation.

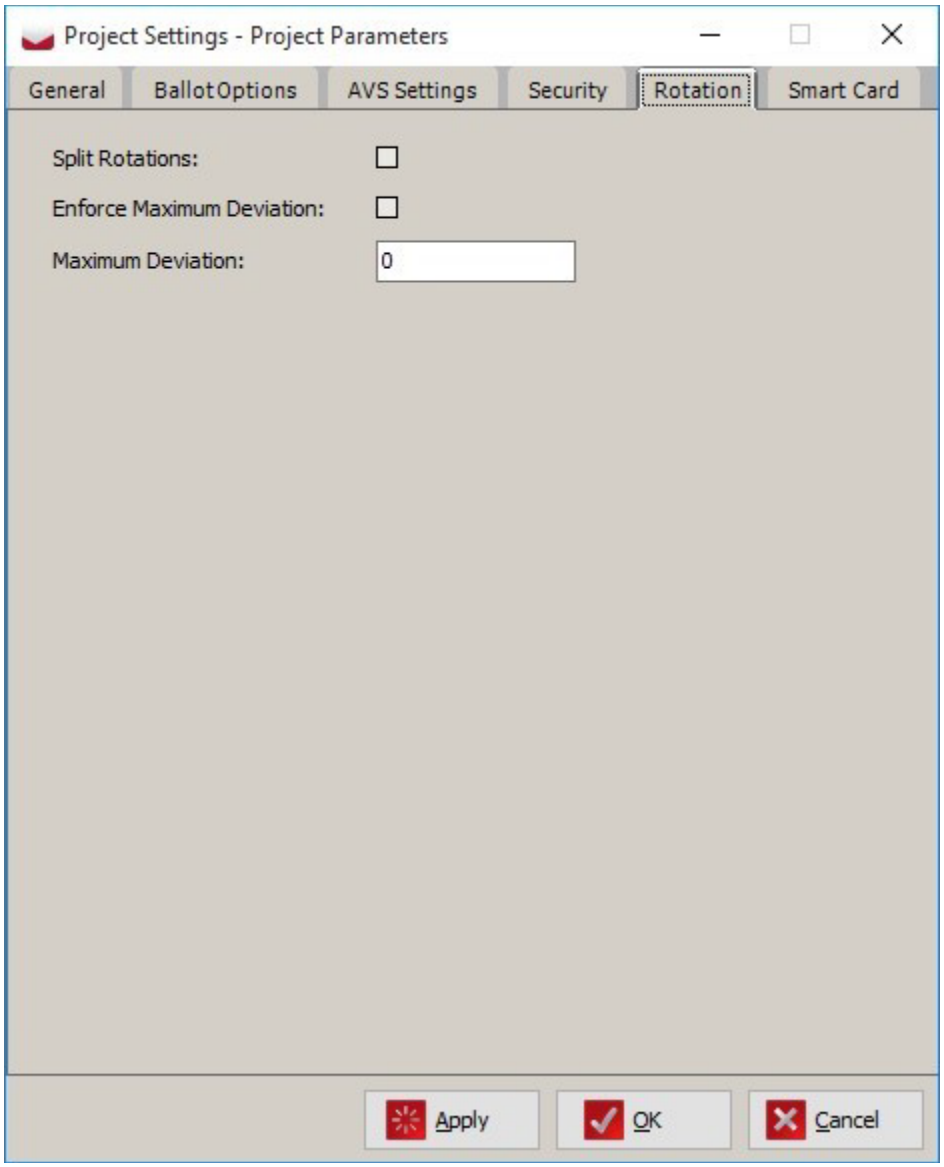

Figure 3-18: Project Parameters: Rotation Tab

3.7.7 Project Parameters: Smart Card Tab

For more information about the contents of this tab, please refer to subsection Programming Security Keys and Cards 7.2.2.

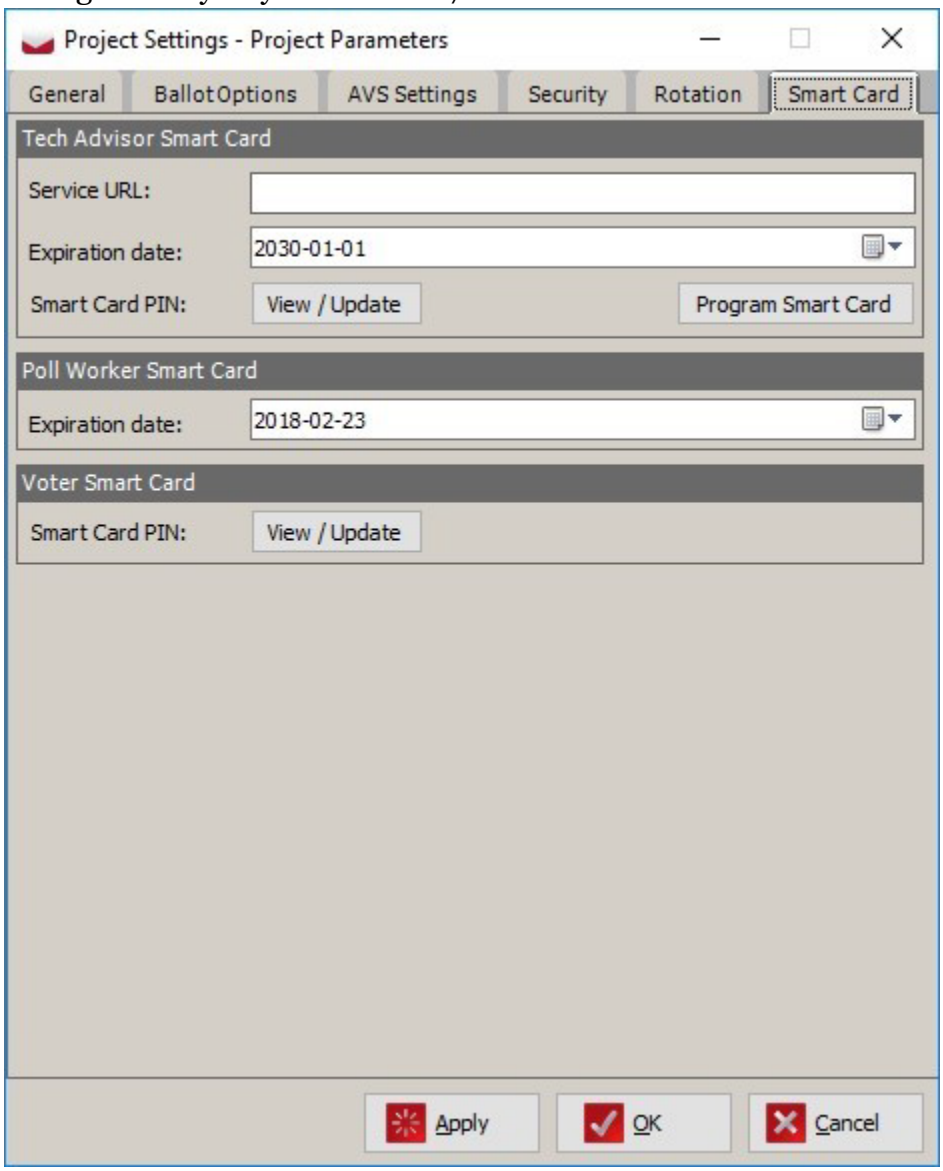

Figure 3-19: Project Parameters: Rotation Tab

3.8 Ballot Style

Ballot Style parameters are the configurable options that allow you to style the ballot according to the needs of your election and jurisdictional requirements. In order to open the Ballot Style Parameters dialog, see Figure 3-20, click on the 'Settings' menu item in the top toolbar and select 'Ballot Style'.

1. **Default Font Family and Sizes**: This section of the **General** tab allows you to set the font sizes of all textual elements on the ballot.

2. **Default Ballot Parameters**: This section allows you to set the following:
    - The starting number on which all Ballot IDs are based. For example, if the user enters 10, then the subsequent ballot IDs will be 11, 12, 13, 14, etc. No ballots will have numbers from 1 to 9.
    - The type of polling box. If changes are made to the polling box parameters, threshold value warning message are displayed.

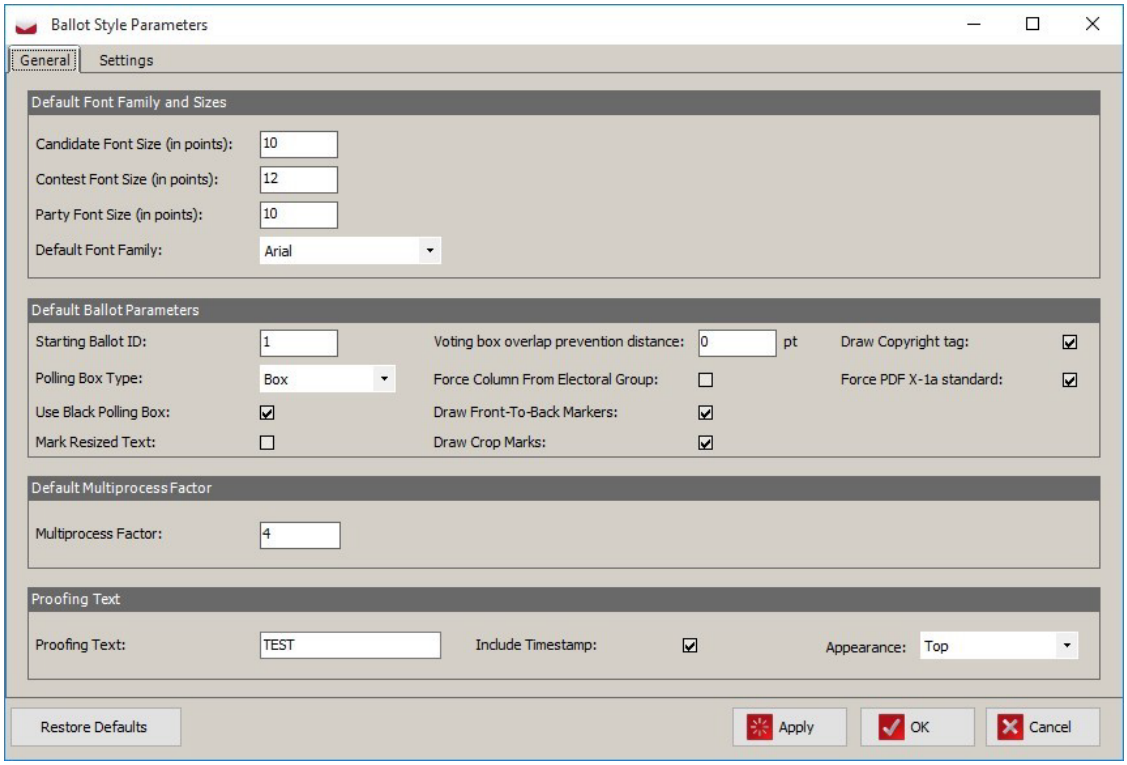

Figure 3-20: Ballot Style Parameters: General Tab

- The colour of the voting box (black or red). If changes are made to the polling box parameters, threshold value warning message are displayed.
- Whether resized text will be highlighted in red on the ballot preview. To highlight resized text, select the **Mark Resized Text** option.
- **Voting box overlap prevention distance**: This is used to specified the maximum distance (in points) between voting targets on the front and back of paper ballot artwork, for which a warning will be provided to the user when generating the paper ballot artwork. If the targets are further apart than the specified distance, then the warning will not be triggered.
- Whether crop marks appear in each corner of the ballot card. To create these crop marks, select the **Draw Crop Marks** option
- Whether contests lay out will be based on Column index defined for Elector group. To set this option, select the **Force Column from**

Electoral Group option. See section Elector Groups 4.18 and Contest Positioning 4.21.4.

- Whether front-to-back registration marks are rendered on double-sided ballots in order to align the reverse and front sides of the ballot. To set this option, select **Draw Front to Back Markers**.
- **Draw copyright tag**: When this is checked, a copyright notice will be printed on the official paper ballot artwork.
- **Force PDF X-1a standard**: When checked it forces created ballot PDFs to satisfy PDF X-1a standard. This is a specific set of rules that should be applied when rendering a PDF document (for example use CMYK color space for each object in PDF).

3. **Default Multiprocess Factor**: This setting improves server performance when generating ballots and audio by increasing the number of simultaneous processes. Its value can be set to equal the number of logical cores on the server. For example, a server with a quad-core processor will have a set multi-process factor of 4. A server with a quad-core processor, with two threads per processor, will have a set multiprocess factor of 8.
4. **Proofing Text**: This section allows you to set the parameters to control overlay text on proofing ballots this feature is used to print some configurable text on ballots which are not used for the actual election. The user can control the text, include the date and time of ballot creation, and adjust the appearance: 'Proofing Text': Text to be displayed on the proofing ballot, for example PROOF, TEST. 'Include Timestamp' checkbox: If selected, the date and time the proofing ballot was generated will be rendered beside the proofing text. Appearance drop-down menu has 'Top' and 'Diagonal' options. If 'Top' is selected, proofing text is rendered at the top of the ballot above the timing markers. If 'Diagonal' is selected, proofing text is rendered diagonally across the face of the ballot.

Clicking on the 'Restore Defaults' button returns all of the values on the General tab to their initial state. Do not click this button after your ballots have been generated.

3.8.1 Ballot Style Parameters: Settings Tab

Depending of the selected ballot style, the user has the ability to select different options from 'Settings' tab in 'Ballot Style Parameters' dialog, see see Figure 3-21:

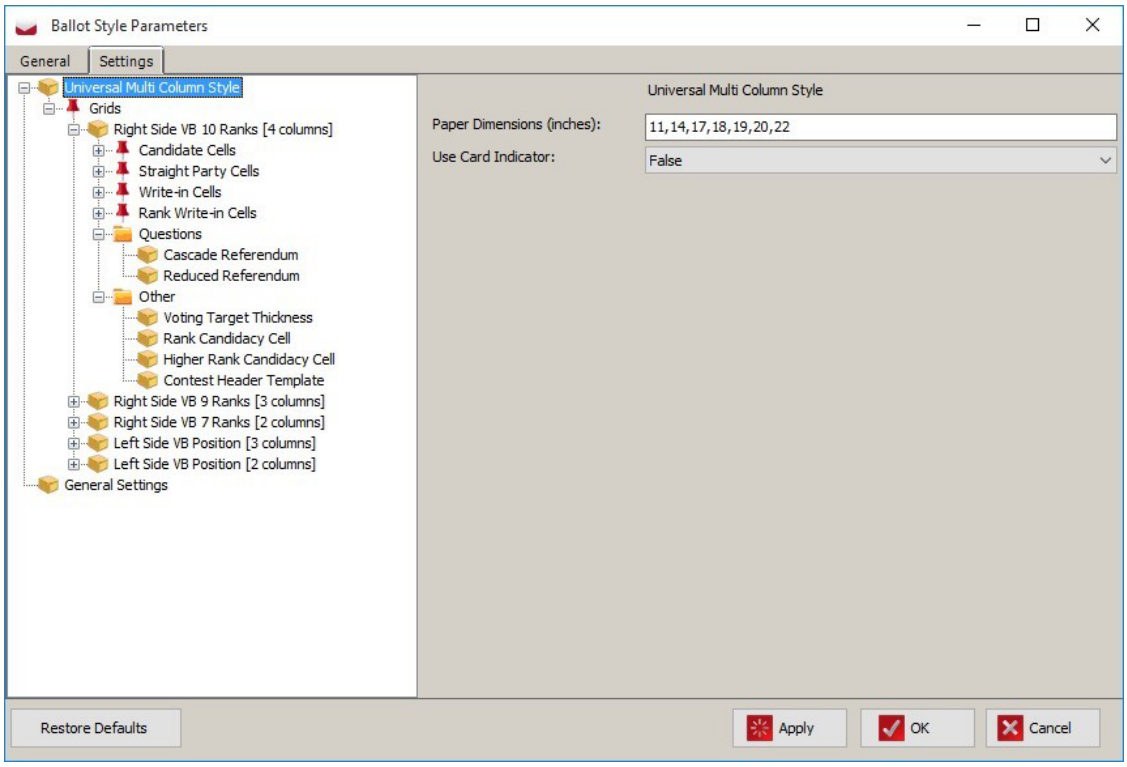

Figure 3-21: Ballot Style Parameters - Settings tab

General Settings:

1. Contests edges - allows you to set contests borders.
2. Contest heading separator separates Contest heading and Contest in points.
   - There are five grids available; three with voting boxes on the right side of candidate name and two with voting boxes on the left side. The following options are available for each grid:

   a. Candidate cell template - contains several candidate cells templates, allowing you to choose a candidate cell without an image, or with an image left of text, an image right of text, or an image below voting box.

   b. Straight party cell templates - contains several straight party cells templates, allowing you to choose a straight party cell with an image left of text, right of text of below of text. **NOTE**: Images positioned bellow text for Straight Party cells are displayed in their actual size. **NOTE**: Certain parameters can be overridden in the Contest dialog, by using the Style tab for specific contests. See section Defining Contests 4.21.

c. Questions settings are organized in the 'Questions' group which contains Cascade Referendum and Reduced Referendum Questions. Cascade Referendum has inline voting boxes. Reduced Referendum Question displays text around voting boxes which are placed in the bottom right corner. Borders can be set for both Cascade Referendum and Reduced Referendum Questions.

d. Voting Target Thickness (part of Other group) - Set the thickness of voting boxes. **WARNING**: If the color black is used for a voting box, do not specify a voting box thickness greater than 0.2 points, as you will run the risk of causing ambiguous marks on your paper ballots. These marks may cause the ballot to be rejected when scanned by an ImageCast® tabulator.

e. Rank Candidacy Cell (part of Other group) - settings for rank candidacy cell. Rank candidacy cell is first cell in the rank choice row that displays the candidate name. Borders can be set for rank choice cell.

f. Higher Rank Candidacy Cell (part of Other group) - settings for higher rank candidacy cell in rank contest. Higher rank cell is a cell that contains a voting box without a candidate name. It appears after the cell with the candidate name in the rank choice row. Borders can be set for this option.

g. Rank Write-in Cell (part of Other group) - settings for write-in cell of rank choice contest that allow you to set borders.

h. Contest Header Template (part of Other group) - settings for contest header template. The bottom border for contest header template can be set for this option.

Once you have set your desired options, click 'Apply', and click 'OK' to save your changes and close the dialog.

3.9 Administration: Application User

Every new Election Project is preconfigured to include one user account, with administrative privileges, and one default 'Technical Advisor' user account, for advanced system configuration activities. Because Election Event Designer is part of an Election Project-based platform, each Election Project has its own set of users and associated roles.

Dominion Voting Systems strongly recommends creating customer-specific user accounts for everyday use. To open the 'Application Users' menu, expand the 'Administration' menu item in the Navigation menu and click on 'Application Users'. The Administration - Application User context sensitive screen appears. Click 'Search' for a list of all available users.

If you have yet to define additional users, only the default user accounts as described above, see see Figure 3-22. You can create additional users by performing the steps outlined below.

NOTE: In order to use RTR you must setup users with RTR roles. No default user has any of those roles defined. When a user is initially created it has a status of initial and is not available for login. The status must be changed to Active to allow the user to login.

1. From the 'Application' drop-down menu, select 'EMS EED'.
2. Click 'Create New'.
3. An 'Application User' dialog appears.
4. Within the dialog, enter the following information:
    - Enter an appropriate username.
    - From the 'Role' drop-down menu, select the role that the new user will be assigned.

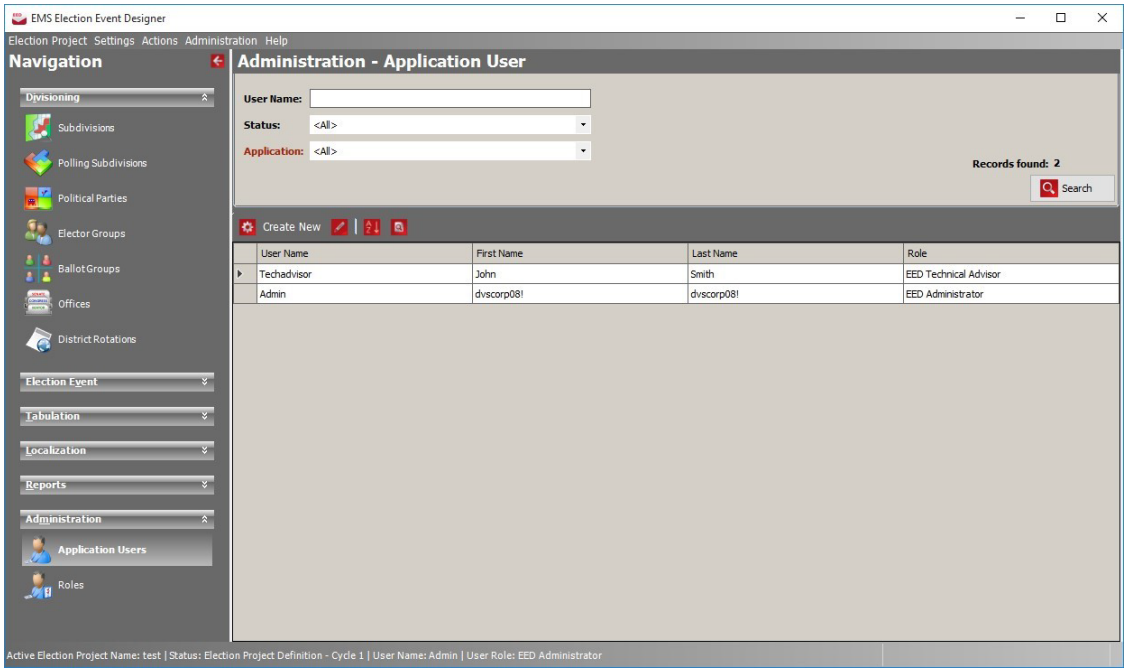

Figure 3-22: Administration: Application User

- Choose whether or not you wish to automatically create a password manually or through the use of the 'Generate Password' button. If you choose manually, enter a case sensitive password in the enabled fields.
    - Default password type - Minimum length is 8 characters which must include at least one number and one letter from the alphabet.

- Strong password type - Minimum length should be 10 characters which must include at least one number, one special character and one letter from the alphabet.
- Weak password type - minimum six characters.

- Add the relevant contact information on the right side of the dialog.

5. If you select 'Automatically create Password', you can click 'Print Data' to generate a text file containing all information necessary for the new user to successfully log in. This can be saved or printed for your records. Note that once the Application User dialog is closed, you will no longer be able to view the password you have selected.
6. Click 'Save and Close' to close the dialog and return to the Administration - Application User context sensitive screen.

3.9.1 Disabling Accounts

Dominion recommends that the default passwords be changed, or default users be disabled during an election event. To disable the default, or any other created account, perform the following:

1. Double-click on the user you wish to disable or change passwords for.
2. The user's 'Application User' dialog appears.
3. To change their password,'Generate Password', and click the 'Print Data' for your records as discussed above.
4. To disable the user, change the 'Status' drop-down list to 'Inactive'.
5. Click 'Save and Close' to finish.

3.10 Device Configuration Files (DCF), Machine Behavioral Settings (MBS) and Machine Configuration Files (MCF)

There are currently three different types of configuration files, each of which is used with a different set of tabulator types:

- Device Configuration Files (DCF) format is used by the ImageCast® Precinct and ImageCast® Central tabulators.
- Machine Behavioral Settings (MBS) format is used by the ImageCast® Evolution tabulator.
- Machine Configuration Files (MCF) format is used by the ImageCast® X tabulator.

NOTE: You must be logged onto your election project as the 'Techadvisor' to upgrade these files in NAS folder.

3.10.1 Upgrade the DCF, MBS or MCF File on the EMS Server

In some cases, it may be necessary to update the DCF, MBS or MCF file on the EMS server from the default version. To do this, follow the steps below:

1. In Election Event Designer, open any election project as the 'Techadvisor' user.
2. From the menu bar, select Administration, System Settings, Upgrade Device Configuration, DCF, MBS or MCF.

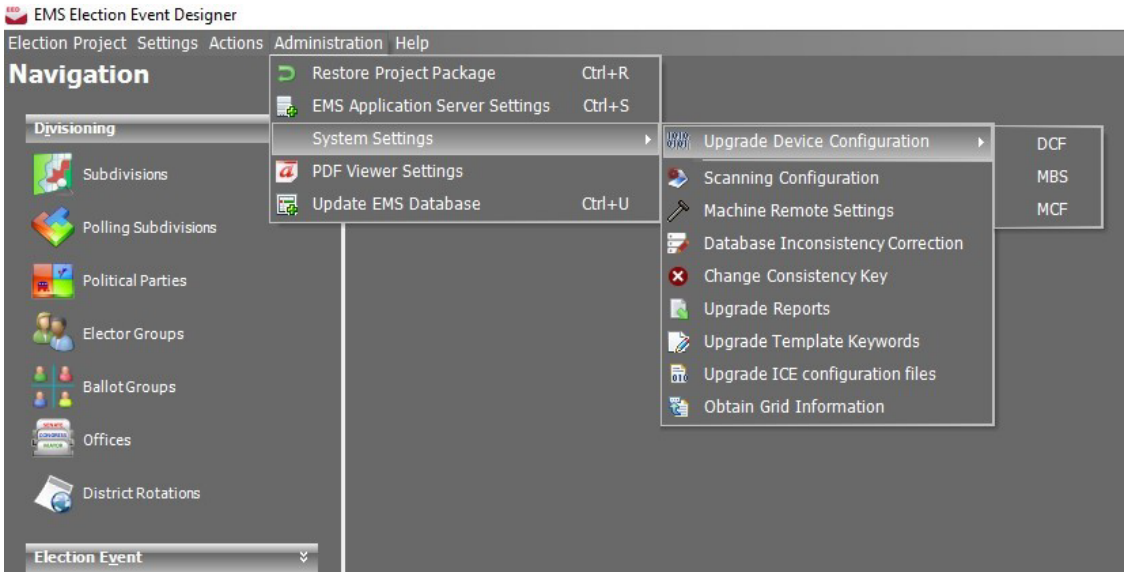

Figure 3-23: Upgrade DCF, MBS or MCF

3. A file browser window opens. Select the desired DCF, MBS or MCF file and click 'Open.'

NOTE: DCF, MBS and MCF files are distributed with an associated hash file. The hash file has the same name as the DCF, MBS or MCF file, but has the extension

'.sha.' The DCF, MBS or MCF file can only be loaded if the hash file is in the same folder. See see Figure 3-24.

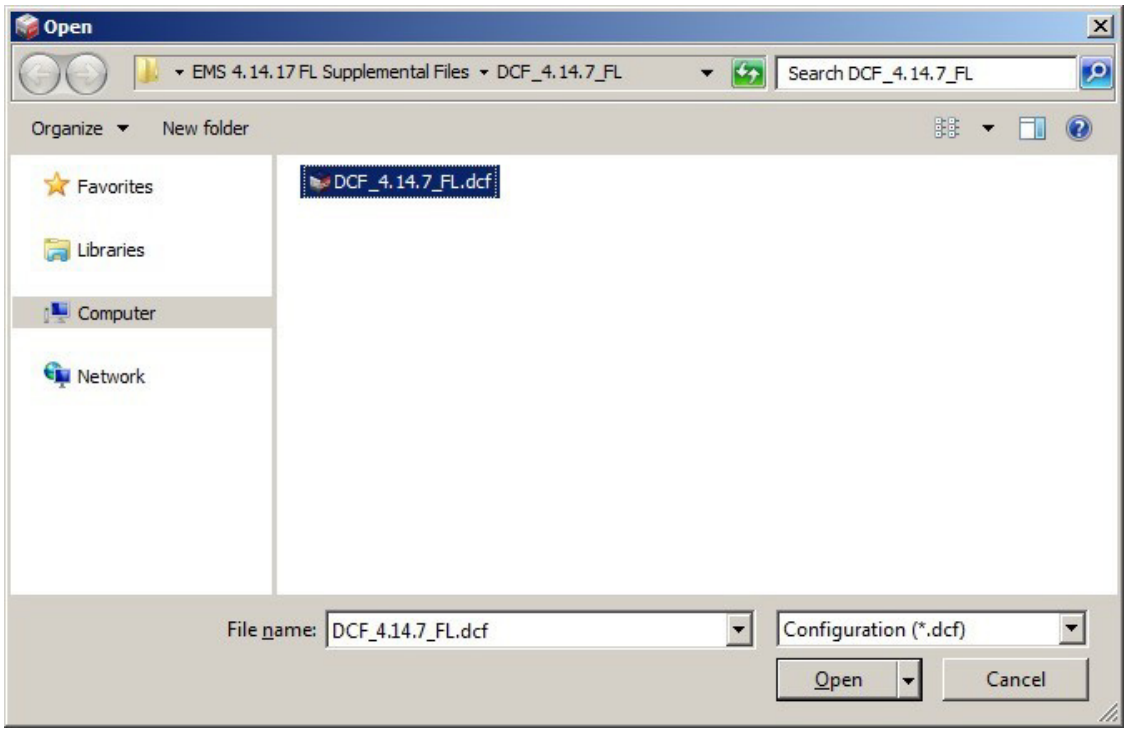

Figure 3-24: Select DCF or MBS file

4. A Success dialog appears. See see Figure 3-25. The new DCF, MBS or MCF file has been uploaded to the EMS server and is ready to be imported into new and existing election projects.

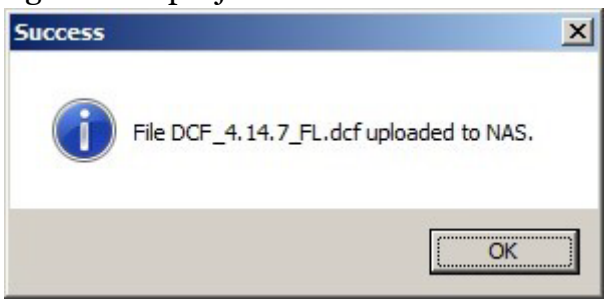

Figure 3-25: Success dialog

Steps for importing the DCF, MBS or MCF file into an election project can be found in subsections 4.10.2, 4.10.3 and 4.10.4.

3.10.2 Importing the DCFs into Election Event Designer

In order to import Device Configuration Files into Election Event Designer perform the following steps:

1. Click on the 'Election Project' menu item on the top toolbar. Select 'Import', 'Device Configuration', and 'DCF Settings', see Figure 3-26.

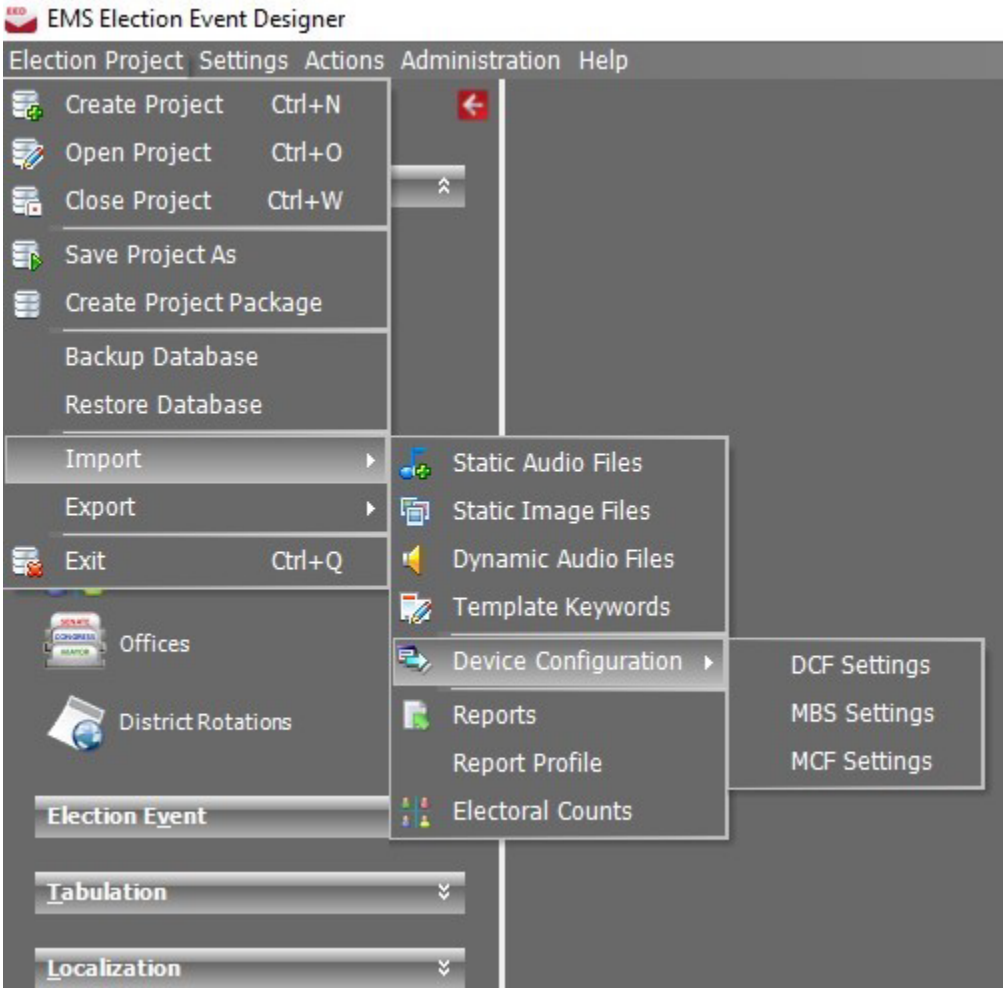

Figure 3-26: Importing Device Configuration Files

2. A dialog will appears asking if you wish to import machine configuration. Click 'Yes' to continue, or 'No' to return to the home screen.
3. A progress bar appears while the DCF Settings are being imported. Once complete, a confirmation that the import is completed appears. Click 'OK' to continue.

3.10.3 Importing the MBS into Election Event Designer

Perform the following steps in order to import Device Configuration Files into Election Event Designer:

1. Click on the 'Election Project' menu item on the top toolbar. Select 'Import', 'Device Configuration', and 'MBS Settings', see Figure 3-27.

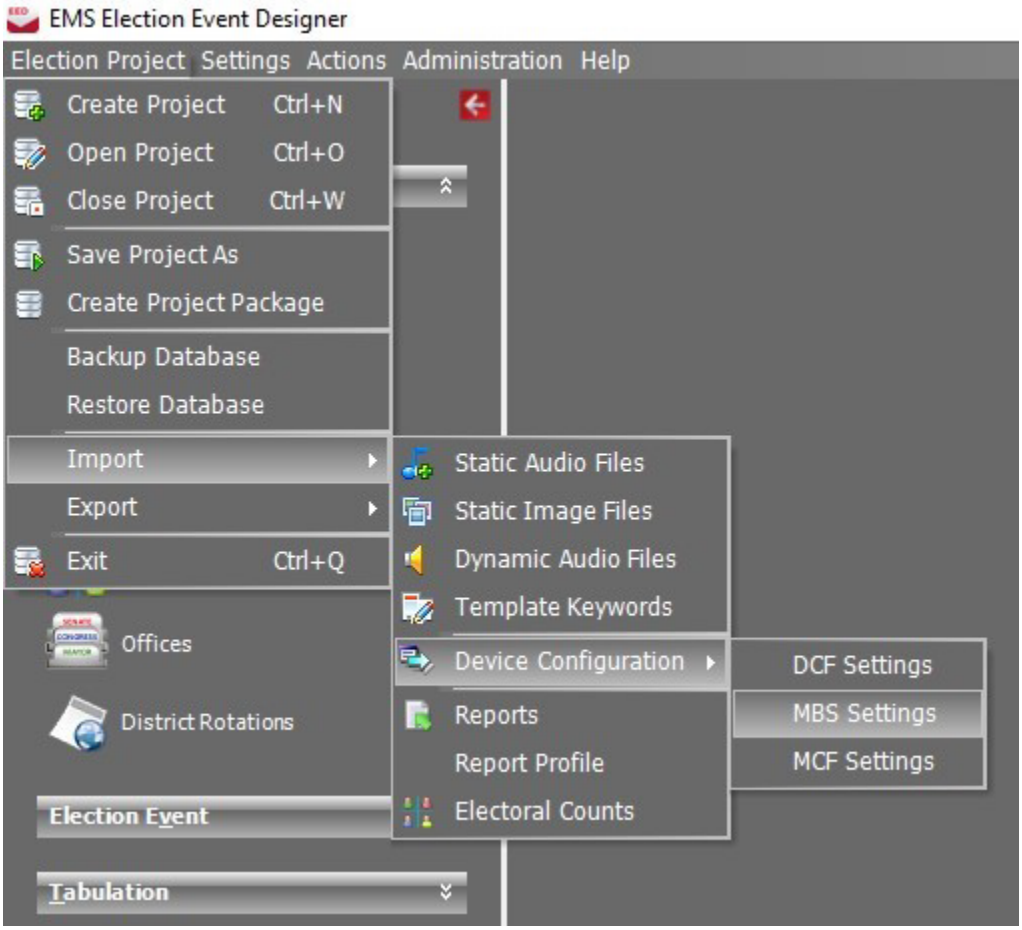

Figure 3-27: Importing Machine Behavioral Settings

2. A dialog appears asking if you wish to import machine configuration. Click 'Yes' to continue, or 'No' to return to the home screen.
3. A progress bar appears while the MBS Settings are being imported. When complete, a confirmation that the import is completed appears. Click 'OK' to continue.

3.10.4 Importing the MCF into Election Event Designer

Perform the following steps in order to import Machine Configuration Files into Election Event Designer:

1. Click on the 'Election Project' menu item on the top toolbar. Select 'Import', 'Device Configuration', and 'MCF Settings', see Figure 3-28.

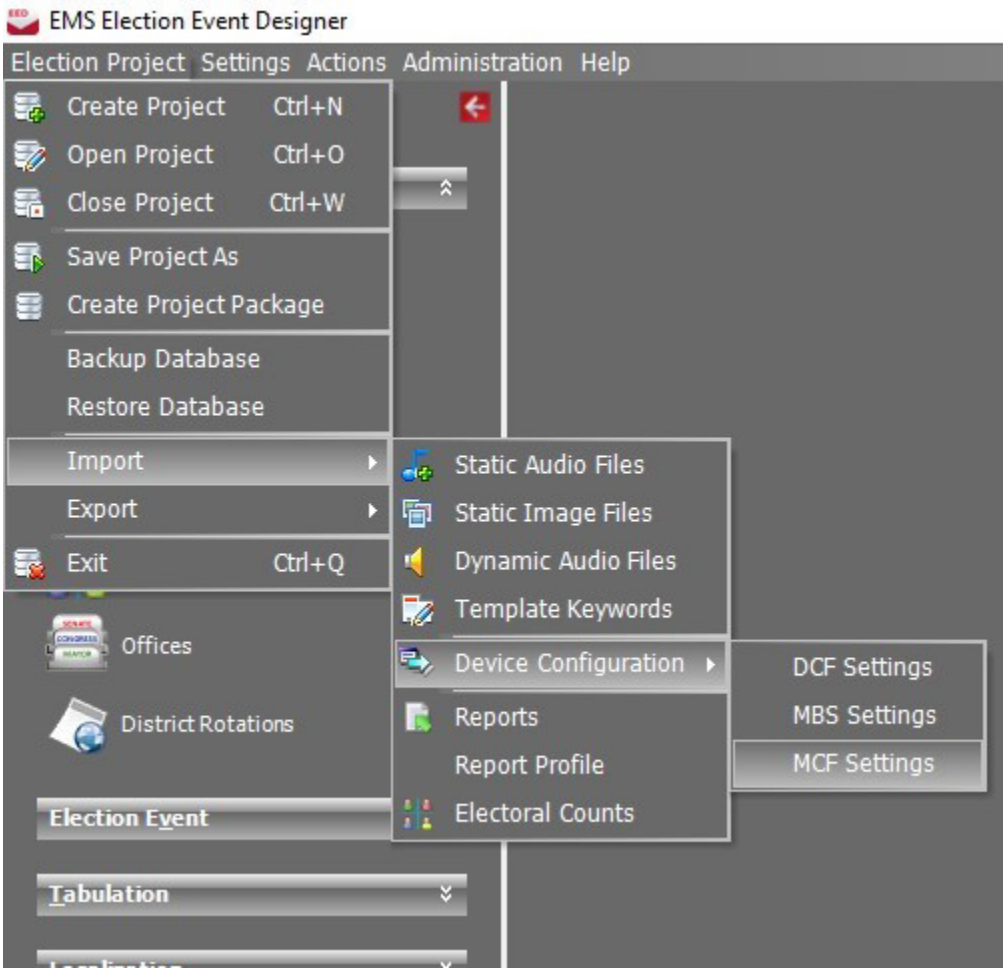

Figure 3-28: Importing Machine Configuration Settings

2. A dialog appears asking if you wish to import machine configuration. Click 'Yes' to continue, or 'No' to return to the home screen.
3. A progress bar appears while the MCF Settings are being imported. When complete, a confirmation that the import is completed appears. Click 'OK' to continue.

3.10.5 MCF file updating procedure

1. Browse to **NAS\Common folder** and replace old **MCF** (.mcf and .sha files) with new ones.
2. Open Election Event Designer.
3. Rollback project to Ballots Generated status: **Settings** - **Election Event Properties** - **General** tab - **Election Project Status**.

4. Navigate to the **Election Project** - **Import** - **Device Configuration** - **MCF Settings**, to import new MCF settings.
5. Navigate to **Tabulation** - **Configurations**.
6. Select **ImageCast X** for **Tabulator type**.
7. Select **ICX DRE** for **Etalon**.
8. Click **Create New**.
9. Newly created MCF object for ICX DRE is created and Device Configuration dialog is opened.
10. In **Device Configuration Data** tab -**Main Settings**, just check if the Result locations option is set by default to usb1 k device
11. In **Tabulators** tab click **Connect** and connect all ICX tabulators.
12. Regenerate election files: **Actions** - **Tabulation** - **Generate Election Files**.

3.11 Importing the Template Keywords File (TCO)

The Template Keywords File is required for defining ballot headers, and contest and choice templates. This definition will occurs during ballot styling. The Template Keywords File will be provided by Dominion technical personnel. However, it must be imported by the user into every new election project.

1. From the 'Election Project' menu item in the top toolbar, select 'Import' and then 'Template Keyword', see Figure 3-29.

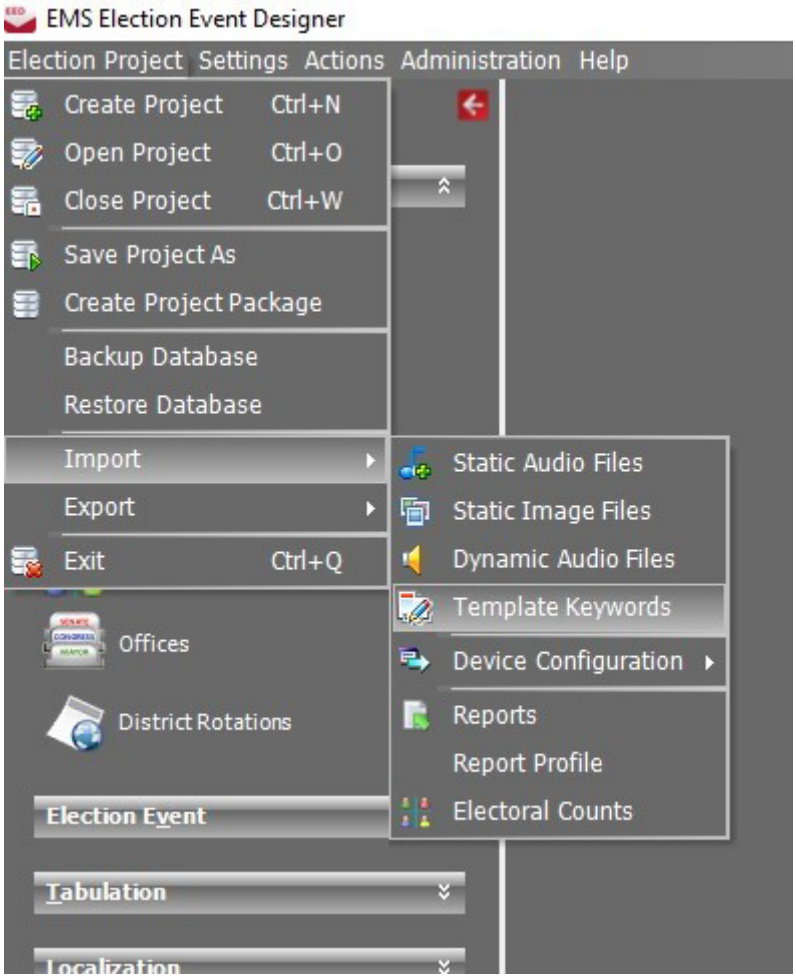

Figure 3-29: Importing Template Keywords File

2. An 'Import Template Keyword File' dialog appears, listing all available .tco files and their version numbers.
3. Select the applicable template keyword file you wish to import into your project and click the 'Import' button.
4. Once complete, you will receive a notification that the template objects have been imported successfully. Click 'OK' to close the dialog and return to the home screen.

3.12 ICP Voter Display Message Language Customization

Voter messages that appear on the ICP tabulator's LCD screen can be customized using other languages to override the default English voter display messages. This is achieved by creating language files that state existing ICP voter messages in the

new, desired language. One file is created for each language. The files are copied to the ICP's CF card when DCM is run. The CF card then updates the tabulator.

For a listing of existing ICP voter messages that can be made available in other languages, please see Appendix J ICP Voter Message IDs.

To create a language file that will override the default English voter display messages:

1. On NAS, create a new text file.
2. Open the file and edit it using the following format:

File version number <tab> language identification string

Message ID <tab> font code <tab> voter message in language of choice string

Message ID <tab> font code <tab> voter message in language of choice string

Message ID <tab> font code <tab> voter message in language of choice string

Message ID <tab> font code <tab> voter message in language of choice string

NOTE:

- The file version number is always "2".
- For a listing of message IDs to be used and their associated messages, please see Appendix J ICP Voter Message IDs
- The font code consists of two letters in the following format:
  - – First letter indicates the size. Either S (small) or L (large) – Second letter indicate justification: Either C (centre) or L (left)
- Messages do not need to be listed in order of ID.
- Messages may (but need not) be enclosed in double quotes.
- Double quotes can be used to force leading or trailing spaces.
- The caret (^) character represents a new line (for LCD messages).
- Voter messages not defined in the language file will default to English when displayed.

The following is an example of the language file content for Spanish voter display messages:

2 <tab> Spanish.lang
00<tab> SC <tab> Página ant.
01<tab> SC <tab> Página sig.
02<tab> SC <tab> Más
03<tab> SL <tab> Contienda en blanco
30<tab> SL <tab> Candidato^duplicado
32<tab> SL <tab> Saltado

33<tab> SL<tab> Contienda sin votos
42<tab> SL<tab> Aviso de doble voto
61<tab> SL<tab> Orden inconsistente
62<tab> SL<tab> Sin utilizar
64<tab> SL<tab> “Clasificación ”

1. Save the file using the following format:
   language name.lang Example:
   spanish.lang
2. Save the file to the NAS Common\Resources\MsgStrings folder.

To specify the order in which the languages are presented on the ICP tabulator’s LCD diasplay:

1. On NAS, create a new text file.
2. Open the file and edit it by listing the names of the language files previously created in the order you wish them to appear on the LCD display.
   Example:
   spanish
   mandarin
   french
3. Save the file with the following name: languageOrder.txt.
4. Save the file to the NAS Common\Resources\MsgStrings folder.

3.13 Language Profiles

Defining Language Profiles are imperative to your Election Project because they determine the language in which your ballot content and supporting audio files are generated. Depending on your jurisdictions requirements, you may have to define more than one language profile in order to provide multilingual ballots to your jurisdictions voters. This section contains instructions on how to generate separate ballots for each required language and how to generate multilingual ballots.

Each newly created project in Election Event Designer (EED) contains default English language profile on which all defined precincts are automatically assigned. By default, the audio profile for the English language profile is also created but is not assigned to ballot content. If project requires audio support, the audio ballot content must be assigned.

1. Expand the ‘Localization’ navigation group and select the ‘Language Profile’ activity.
2. Choose the ‘Ballot Content’ option within the ‘Purpose’ drop-down menu.
3. Click ‘Search’.
4. Double click on default English ballot content.

5. The‘English-language profile’ dialog will appear.
6. To assign the audio profile, click on the ‘Add’ button.
7. ‘Language Profile Association’ dialog appears. Click on the ‘Search’ button.
8. Select English audio content from the list. Click ‘Assign and Close’ button.

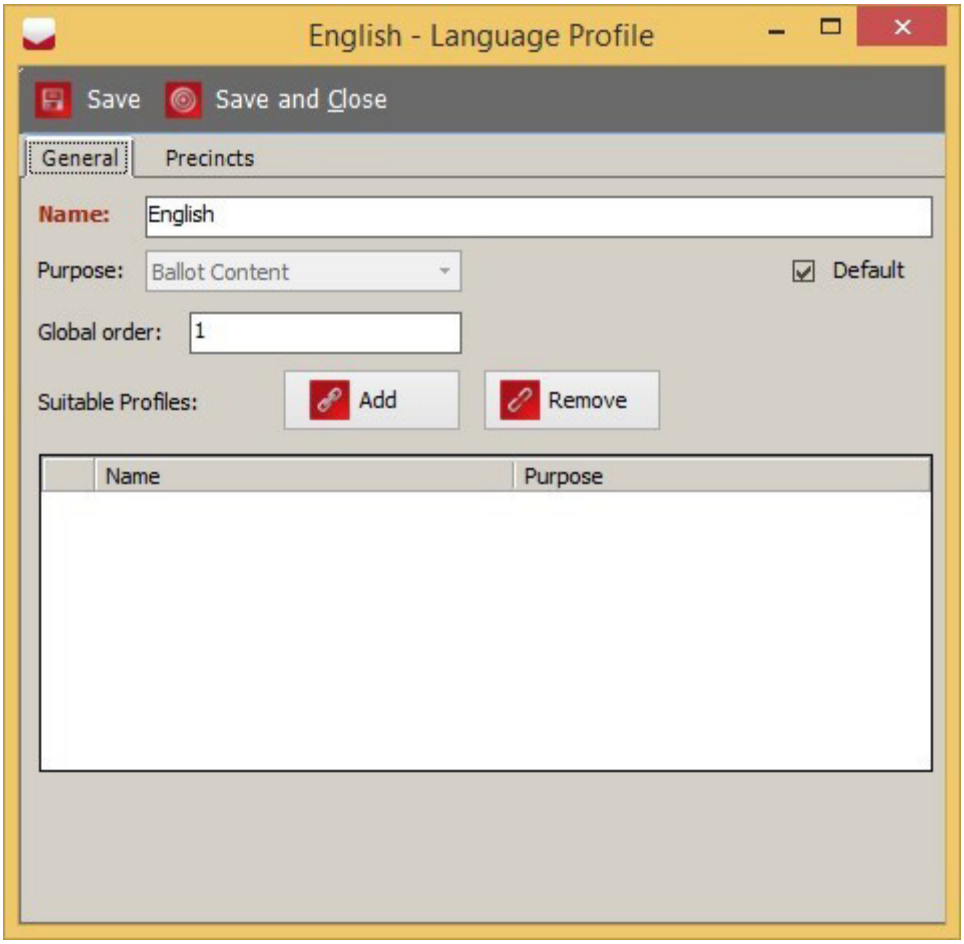

Figure 3-30: Language Profile dialog

9. The assigned audio profile is presented within the 'Language Profile' dialog.

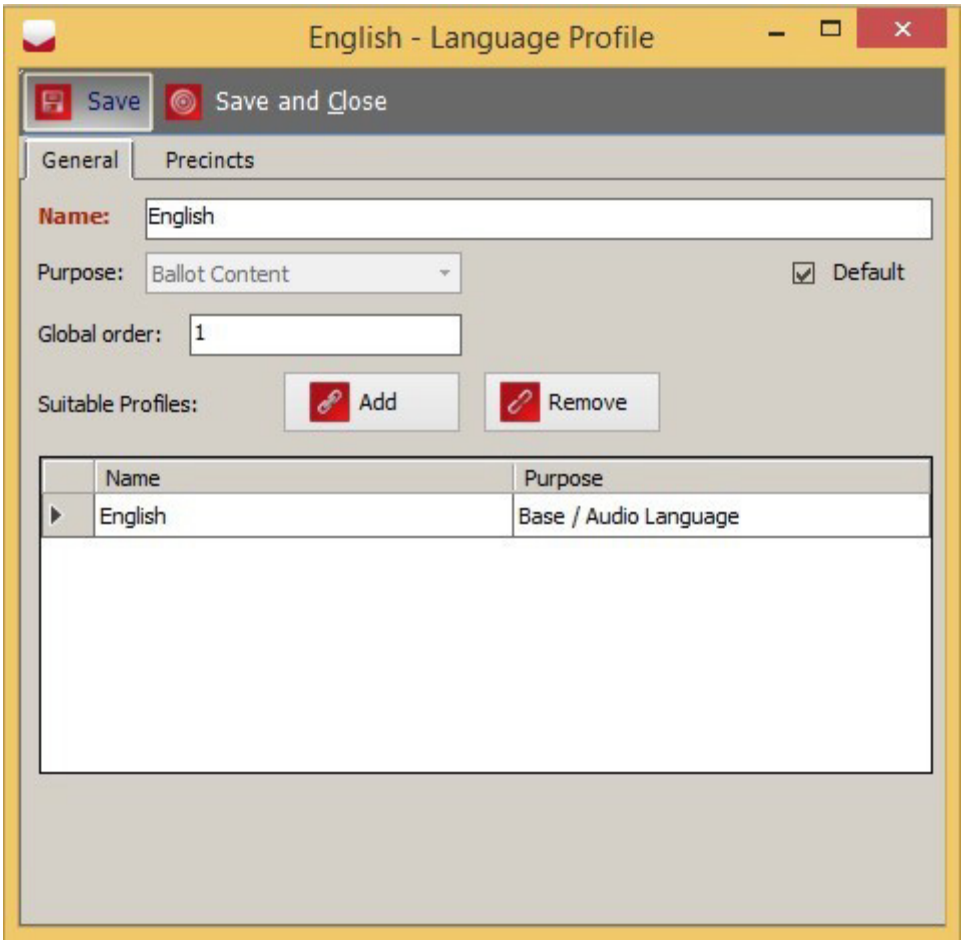

Figure 3-31: Language Profile dialog

If cepstral is selected as option to generate audio files, the following settings should be applied:

1. Expand the 'Localization' navigation group and select the 'Language Profile' activity.
2. Select 'Base/Audio Language' option from 'Purpose' drop-down menu.
3. Click 'Search' button.
4. Double click on default English audio.
5. 'English-language profile' dialog appears.
6. From the drop-down menu choose 'Voice for Audio'. For audio options, see Section 4.6 Generating Audio in EMS .

7. 7. Click ‘Save and Close’.

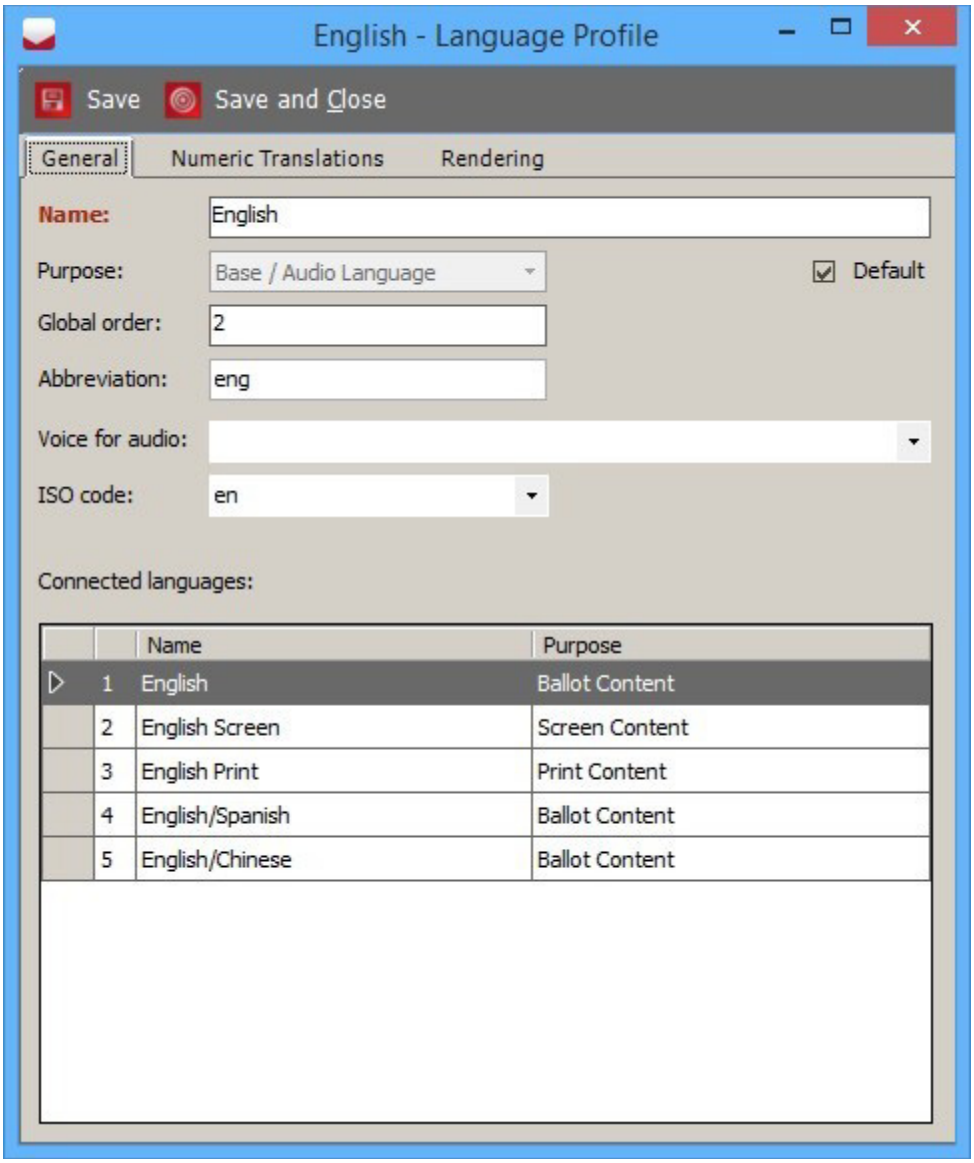

Figure 3-32: English - Language Profile:Base/Audio Language

3.13.1 Creating Additional Language Profile

For jurisdictions where languages in addition to English are required, additional language profiles must be created (for example Spanish, Korean). This produces a separate ballot manifestations for each language profile.

1. Expand the ‘Localization’ navigation group and select the ‘Language Profile’ activity.
2. To create a language profile for ballots, select the ‘Ballot Content’ option from the ‘Purpose’ drop-down menu.
3. Click on the ‘Create New’ button.

4. Type in the ‘Language Name’.
5. To associate a precinct to a language profile, click on the ‘Precinct’ tab and click ‘Connect’.
6. ‘Precinct Association’ dialog appears. Click on the ‘Search’ button to list all precincts.
7. Select your precinct, and click ‘Assign and Close’ button.
8. The list of assigned precincts appears in the ‘Language Profiles’ dialog.

Figure 3-33: Language Profile dialog- Precinct tab

If audio support is required, it is also necessary to create an Audio purpose for the language profile and associate it with Language profile Ballot content:

1. Expand the Localization’ navigation group and select the ‘Language Profile’ activity.
2. Choose the ‘Base/Audio Language’ option from the ‘Purpose’ drop-down menu.
3. Click ‘Create New’.
4. Type in the ‘Language Name’.

5. To assign the ballot content, click 'Add'.
6. 'Language Profile Association' dialog appears. Click on 'Search'.
7. Select additional created ballot content from the list. Click 'Assign and Close'.
8. The assigned ballot content is presented within the 'Language Profile' dialog.
9. From the drop-down menu choose 'Voice for Audio'. For audio options see Section 4.6 Generating Audio in EMS.
10. Click 'Save and Close'.

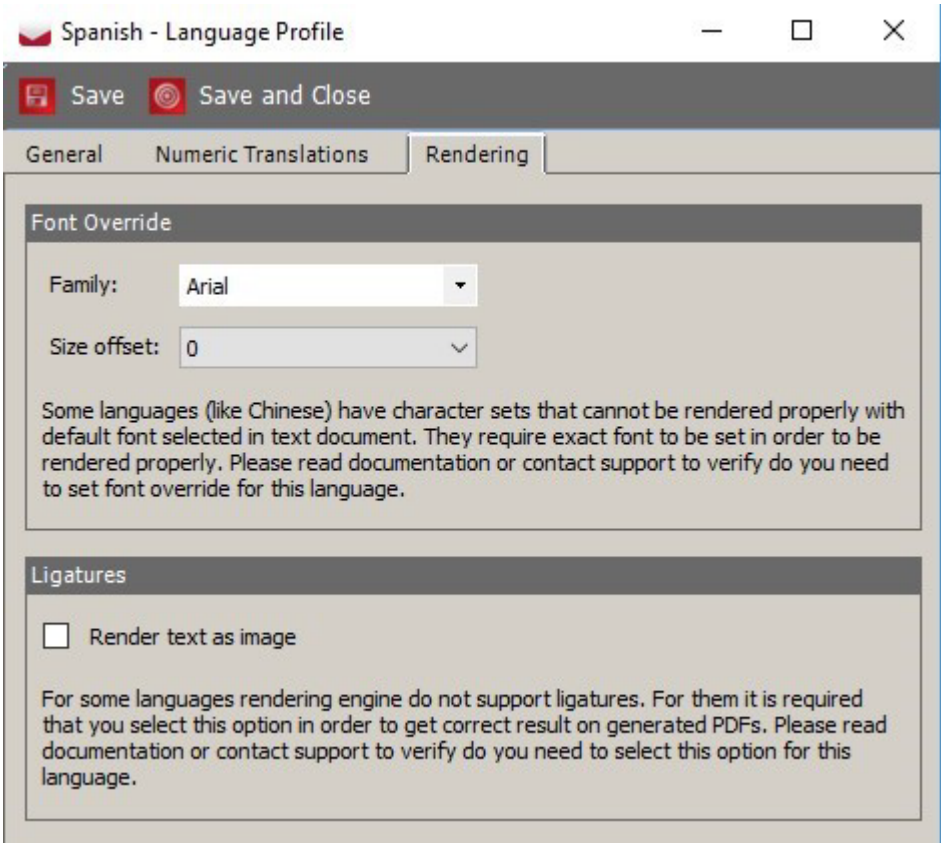

Figure 3-34: Create Language Profile: Base/Audio Language

For base audio languages there is Rendering tab available, see Figure 3-34. There user can set some rendering parameters related to the language:

- Font override:
  - Family - if set it indicates to rendering engine to force selected font when processing keywords for this language. Some languages like Chinese, require specific font to be used to get correct output.
  - Size offset - Rendering engine will use that value in a relative manner to correct size of the overridden font. Available values for this parameter are in range between -5 to 5 with step of 0.5.

- Ligatures:
  - Render text as image - for some languages rendering engine do not support ligatures. For them it is required that you select this option in order to get correct result on generated PDFs. See Appendix G to see if this option is required to be set for language that you are adding.

NOTE: Attached is screenshot related to the text above that should be added into the document.

3.13.2 Creating Multilingual Language Profile

When required, it is possible to produce a multilingual ballot. This ballot contains multiple language text on the single ballot manifestation and audio support for each languages. Because, the voter is presented with only one selected language during an audio session, audio files must generated separately, resulting in set of audio file for each language appearing on the ballot.

1. Open the English or additional language profile for 'Ballot Content' in the context sensitive screen, and change the name of the profile to include the languages you will be supporting.
2. In the figure below, see Figure 3-35, the name has been changed to 'English/ Spanish'.
3. Each Audio language profile must be linked to created 'English/Spanish' ballot content profile.
4. Click 'Add' to open the Language Profile Associations dialog.
5. Click 'Search' to display all available profiles.
6. Select your required languages from the list and click 'Assign and Close'.

7. Click 'Save and Close' on the Language Profile dialog to return to the context sensitive screen.

Figure 3-35: Linking Language Profile: Base/Audio Language

3.13.2.1 Numeric Translations

1. 1. The Numeric Translations tab is used for Base/Audio languages. This tab contains table that should be populated with numeric translations for each language. **Add** and **Remove** can be used for adding and removing new or existing table rows. All cells in table are editable. When you done with table editing, click **Save and Close** to save all changes. The table contains the following columns:
    - Number
    - Translated number
    - Ordinal number

On the General tab, abbreviation should be set for Base/Audio language, because it will be used as argument in RCV keywords for templates. The Numeric

Translations table should be populated for every language that is used in the rank header.

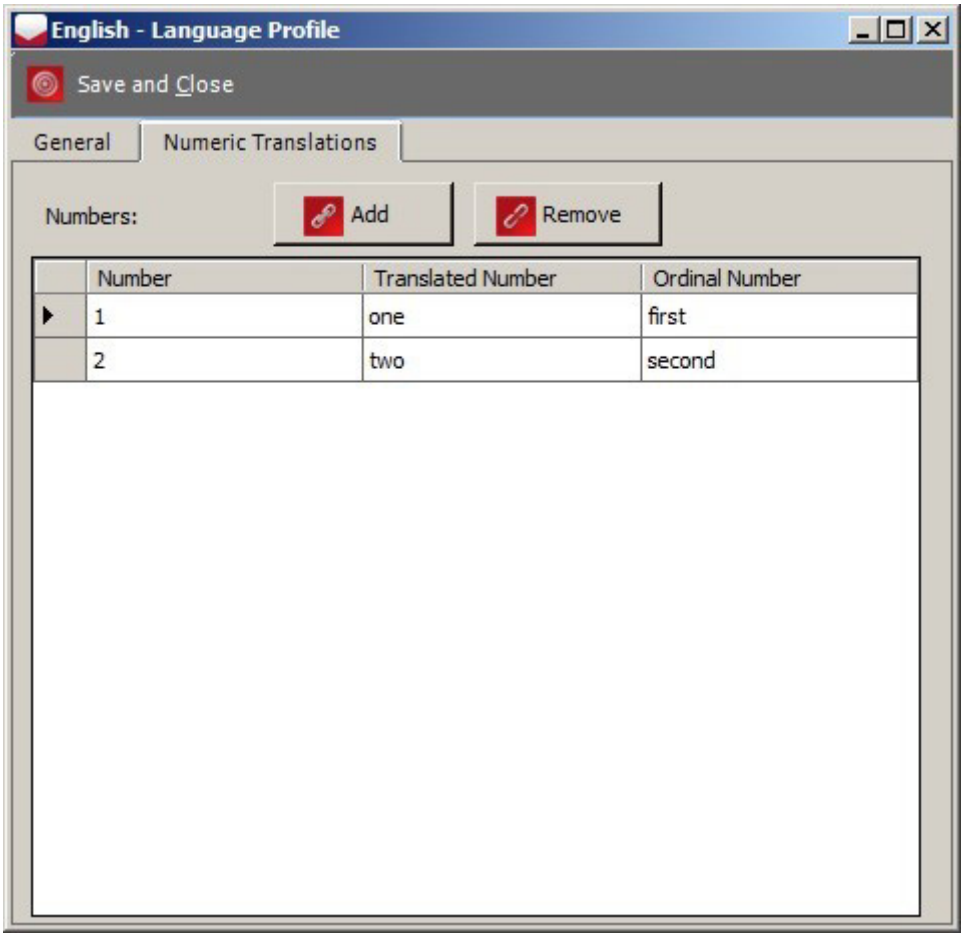

Figure 3-36: Language Profile dialog- Numeric Translations tab

NOTE: If numeric translations table is not populated, please note that RCV keywords in templates will be replaced with empty strings.

3.14 Defining District Types

When a project is created, one top district is created (typically 'County'), and any additional districts must be defined explicitly by the user. Examples of district types area are 'Congressional District', 'Assembly District', and 'Senatorial District'. A hierarchy of district types can also be defined, for example, a district type Ward can be created under the district 'City' to indicate that cities contain wards. To define the types of districts that will be used in your project, perform the following:

1. Select 'Settings' from the toolbar in the home screen, and click on 'District Types'.

2. The District Types dialog appears, seesee Figure 3-37. Note that the top level district type listed in the Divisioning Hierarchy field depends on the type of election you are creating.
3. The Abbreviation field is a optional short field used as Short reference to the District Type.
4. ExternalID is used as reference to code in an external system. The value in this field can be used as an argument in the keyword District by ID where the District Name from a district included on the ballot is be substituted for the keyword in Ballot Heading Templates.

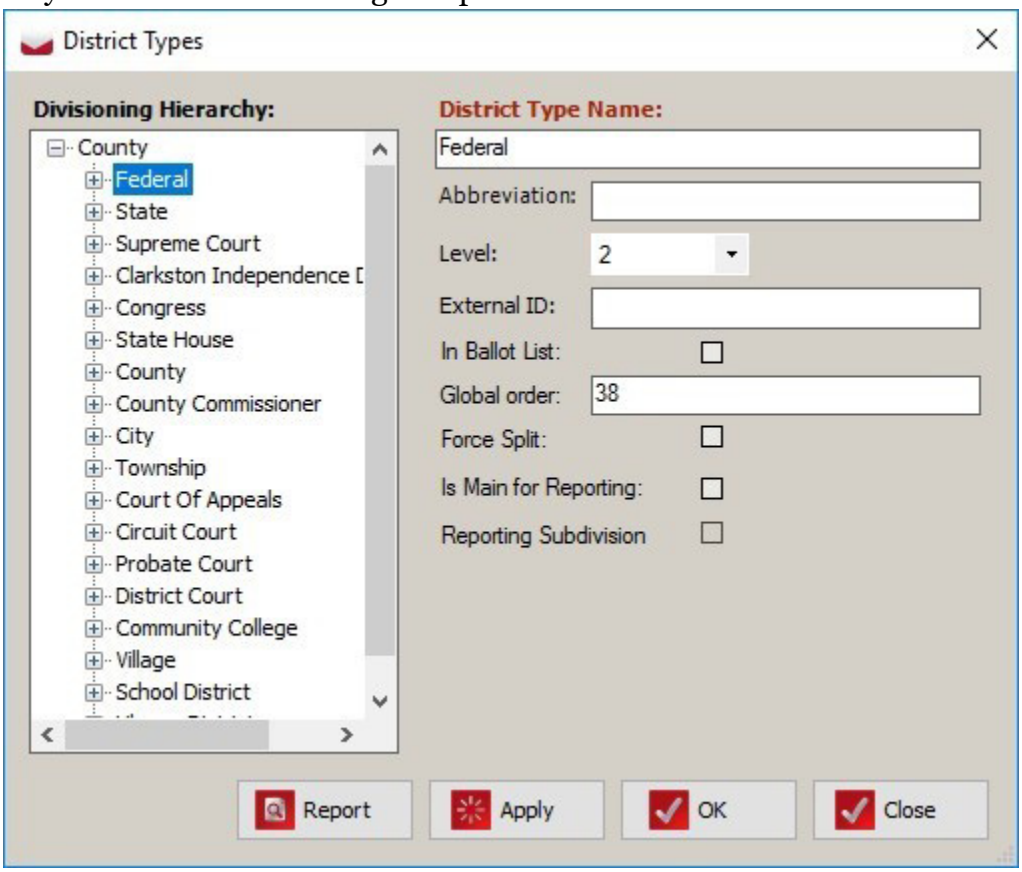

Figure 3-37: District Types

5. In Ballot List: Select this box for districts of this type to be included in the list of districts referenced by the DistrictList keyword available in Ballot Header templates. That keyword places a list of the District Names for the districts in any selected district types. Each district in the string is separated by a -.
6. Is Main for Reporting - if this box is checked, district names of this district type will be included on result tape printed on the tabulator. If tabulator is connected to districts of different type, names will be separated with " "
7. To create an additional district type, right click on the top level district and select 'Create District Type', see Figure 3-38.

8. On the right side of the District Type dialog, enter the desired name of the district and click 'Apply' to save your changes.
9. Repeat the steps above for each district you wish to create. When finished, click 'Close' to return to the home screen.

NOTE: The user is allowed to create new district types and districts in Ready for Election status. With this option, users can create district breakdowns for reports. Any district type created in Ready for Election status will be marked as a reporting district type, any district created within a reporting district type will be marked as a reporting district. Reporting districts are also used to group precinct portion for specific purposes, such as a group of randomly selected precincts that should be audited. If the project is moved from Ready for Election to a previous state, all reporting district types and districts will be deleted.

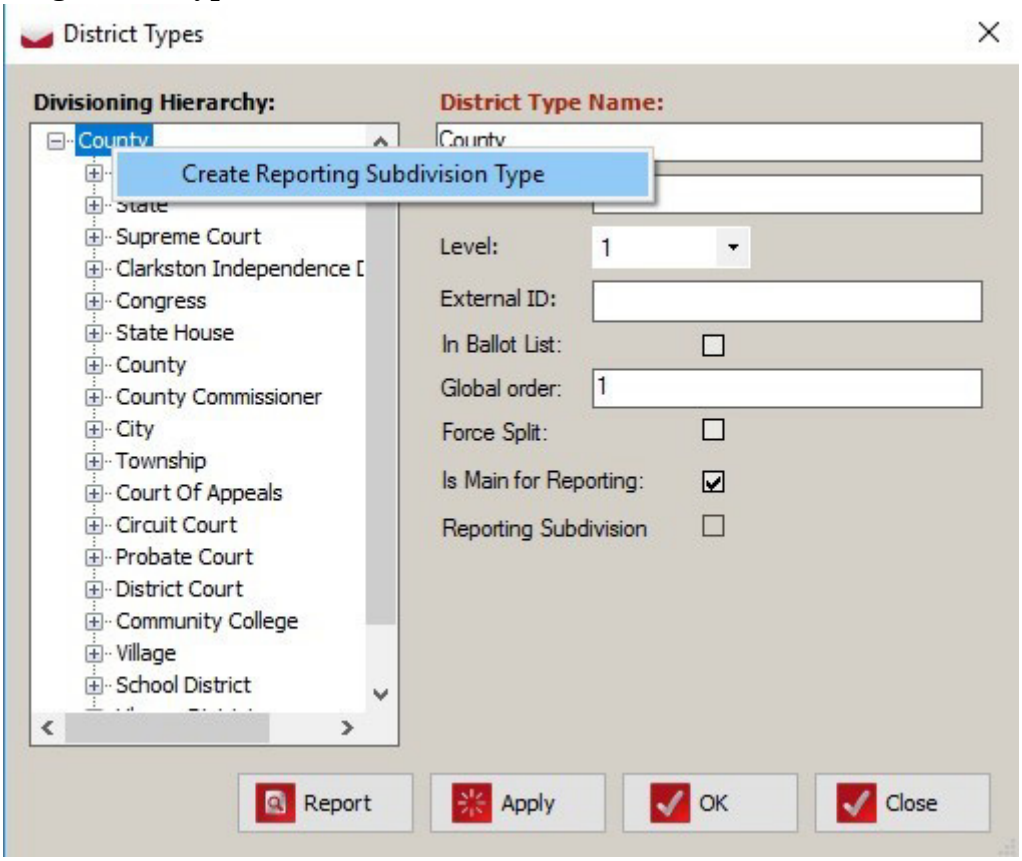

Figure 3-38: Districts Types - Create Reporting

3.15 Defining Districts

Once your District Types have been defined, perform the following to define instances of those districts:

1. Expand the 'Divisioning' navigation group in the Navigation menu and select the 'Districts' item.

2. The ‘Divsioning - Districts’ context sensitive screen appears as seen in Figure 4.39.
3. Click ‘Search’ to display all records that exist. By default, the jurisdiction for this election already exists as the top-level district, see Figure 3-39.

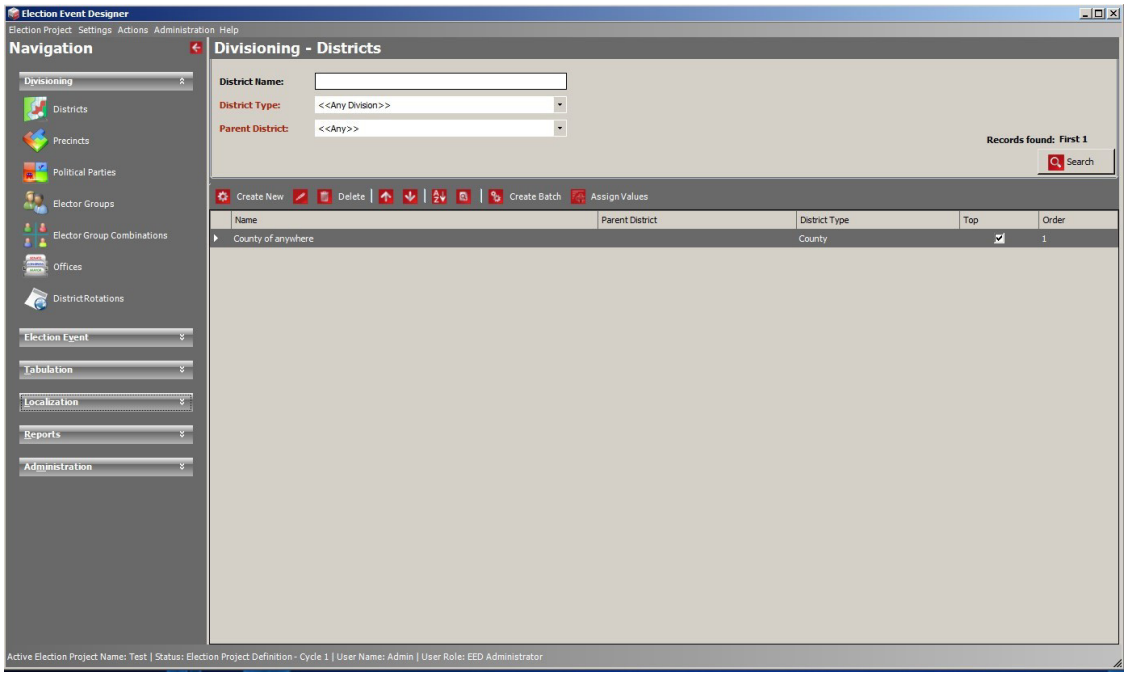

Figure 3-39: Divisioning: Districts

4. In the ‘District Type’ drop-down menu, select the ‘District Type’ you wish to create and the ‘Parent District’ for which your district belongs.
5. Click ‘Create New’.
6. A District dialog appears, see Figure 3-40.
7. Enter the name of your district in the ‘District Name’ field, and click ‘Save and Close’.

8. Repeat this process until all desired districts have been defined.

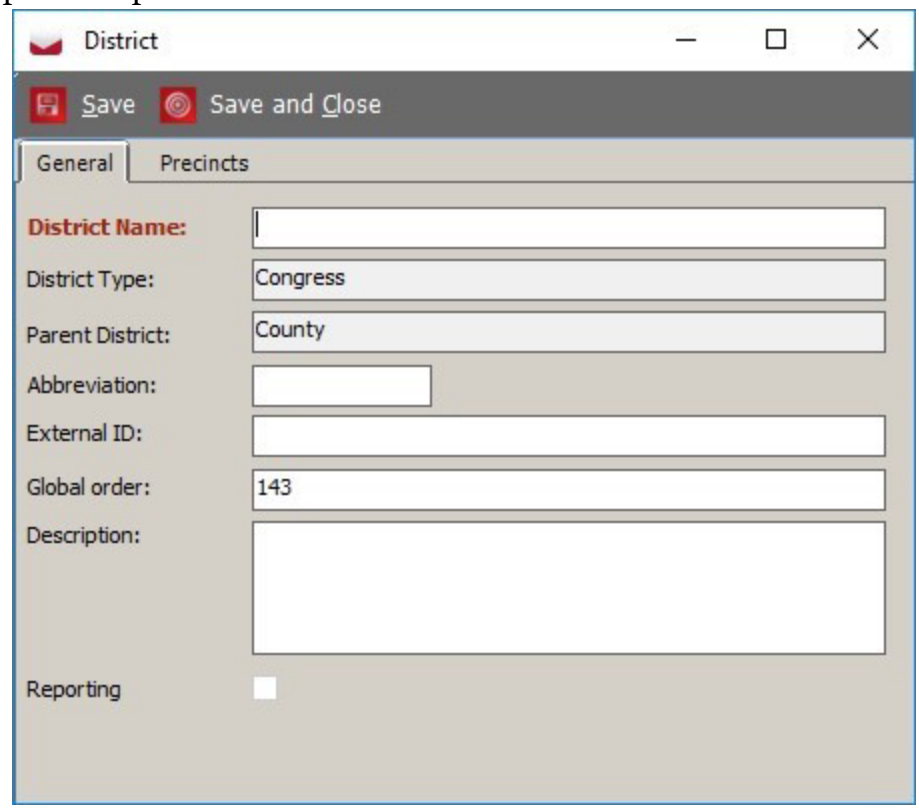

Figure 3-40: District Dialog

3.16 Defining Precincts

To define the precincts that exist within your election, perform the following:

1. Expand the 'Divisioning' navigation group in the Navigation menu and select the 'Precincts' menu item.
2. The 'Divsioning - Precincts' context sensitive screen appears, see Figure 3-41.

3. Click on the ‘Create New’ button to open the ‘Precinct’ dialog.

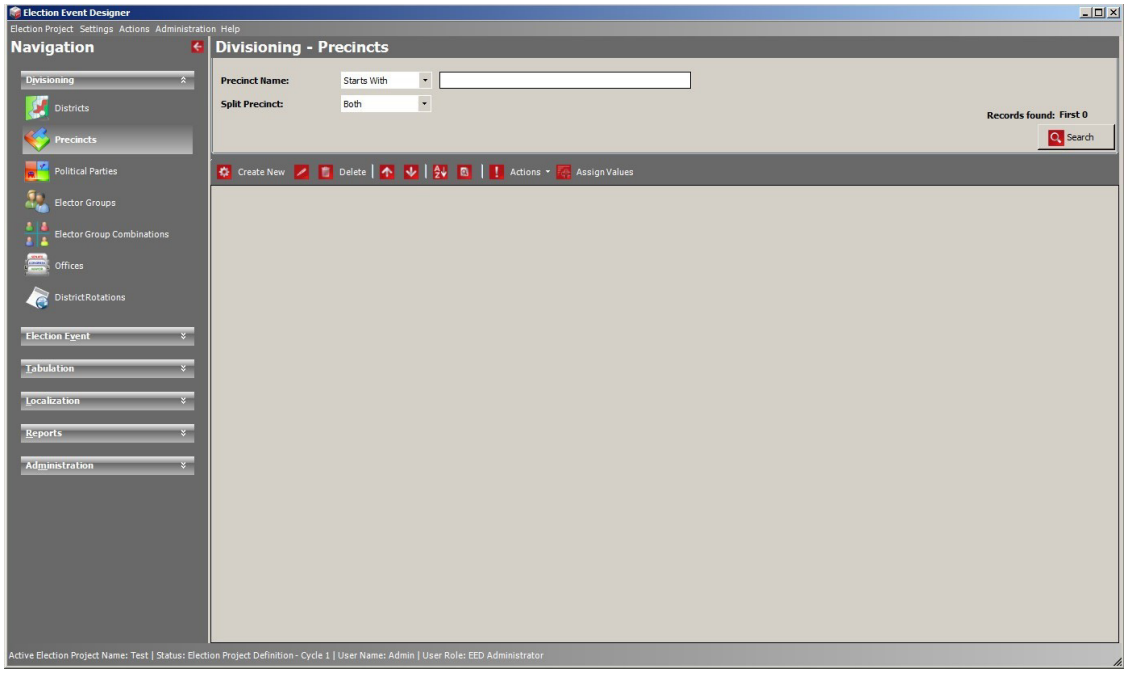

Figure 3-41: Divisioning: Precincts

4. Enter the name of the precinct in the ‘Precinct Name’ field.
5. The ‘Include in X of Y report’ option determines if the Precinct is included in the X of Y and is switched on by default.

6. Once you have named your precinct, connect it to one of the districts that you defined in section 3.15 "*Defining Districts*". To do so, click on the 'Districts' tab within the Precinct dialog.

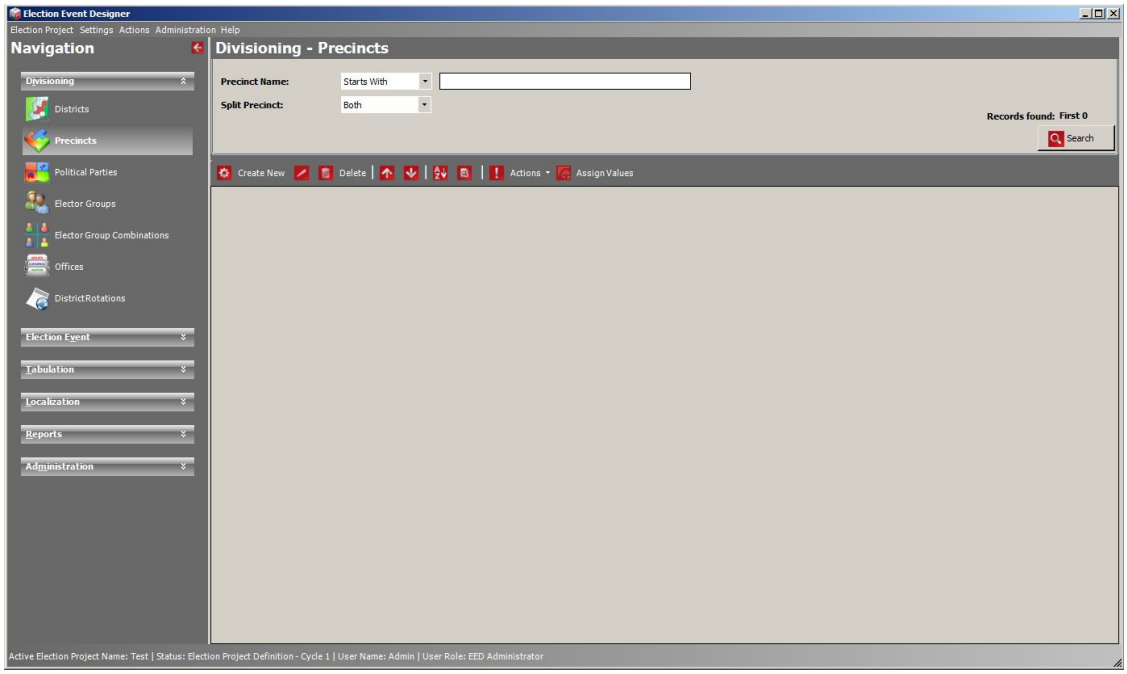

Figure 3-42: Precinct Dialog

7. Click 'Connect' to prompt the 'District Associations' dialog.
8. Click 'Search' to generate the list of districts you defined in section 3.15 "*Defining Districts*".
9. Select the districts that you wish to associate with your precinct. For more than one district, hold down the CTRL key to select multiple districts at once.
10. Click 'Assign and Close'. The assigned district appears in the Precinct dialog.
11. Repeat the steps above for each precinct. Once finished, click 'Save and Close' to return to the Precincts context sensitive screen.
12. To define multiple precincts at once, use the Batch procedure.
13. Click 'Actions' from the toolbar in the main context menu. Click on the 'Create Batch' option.
14. To define how many precincts will be created, set the range number in the From/To text boxes, type in the Prefix/Suffix, and click 'Create'.
15. The system creates a set of precincts.
16. Select the 'Language Profiles' tab. Here you can define a set of languages applicable for this precinct.
17. Click 'Connect'. The 'Language Profiles Association' dialog appears.

18. Type in the language profile name and click ‘Search’. The records matching the search criteria appears. Alternatively, you can click on the Search button without defining the search criteria.
19. A list of all defined records appears. Click ‘Assign and Close’ to assign the selected records and to close the dialog.
20. At this point, you can define a new language profile record.
21. To connect the Ballot Group to the precinct, select the ‘Elector Counts’ tab.
22. Click ‘Add’.
23. The ‘Elector Group Association’ appears.
24. Select a Ballot Group and click ‘OK’. The ‘Elector Count’ dialog appears.

NOTE: Prerequisite for defining Elector Counts is to create Elector Groups. See section 4.18.

25. Type in the number of electors.
26. Return to the ‘General’ tab. Type in the Number of Electors. This number represents the summary of all associated counts of electors per Ballot Group.
27. From the ‘Precincts’ main activity screen, create and associate the tabulator records using the ‘Create Tabulator’ option. To create and associate tabulators to precincts, select the precincts record to which the tabulator is going to be associated. Click ‘Actions’, and ‘Create Tabulators’. The ‘Tabulator Creator’ dialog appears.
28. The ‘Ballots’ tab lists all ballots associated to the precinct after ballots are created.

3.16.1 Defining Split Precincts

If two districts of the same district type are connected to a single precinct, Election Event Designer automatically generates the necessary split precincts.

Some precincts must be manually split. An example of this is when one portion of a precinct is part of a municipality and the remaining part of the precinct falls under the unincorporated area of the county (it does not fall under any municipality). Automatic creation of split precincts cannot detect this situation, and it is necessary to manually create a split, where portion is linked to the municipality, and the other portion is linked simply to the county district.

1. In the Precinct dialog as discussed in Section 4.16, navigate to the ‘Districts’ tab.
2. Click ‘Connect’, and click ‘Search’ in ‘District Associations’ dialog.

3. Select all of the districts that appear, and click ‘Assign and Close’.

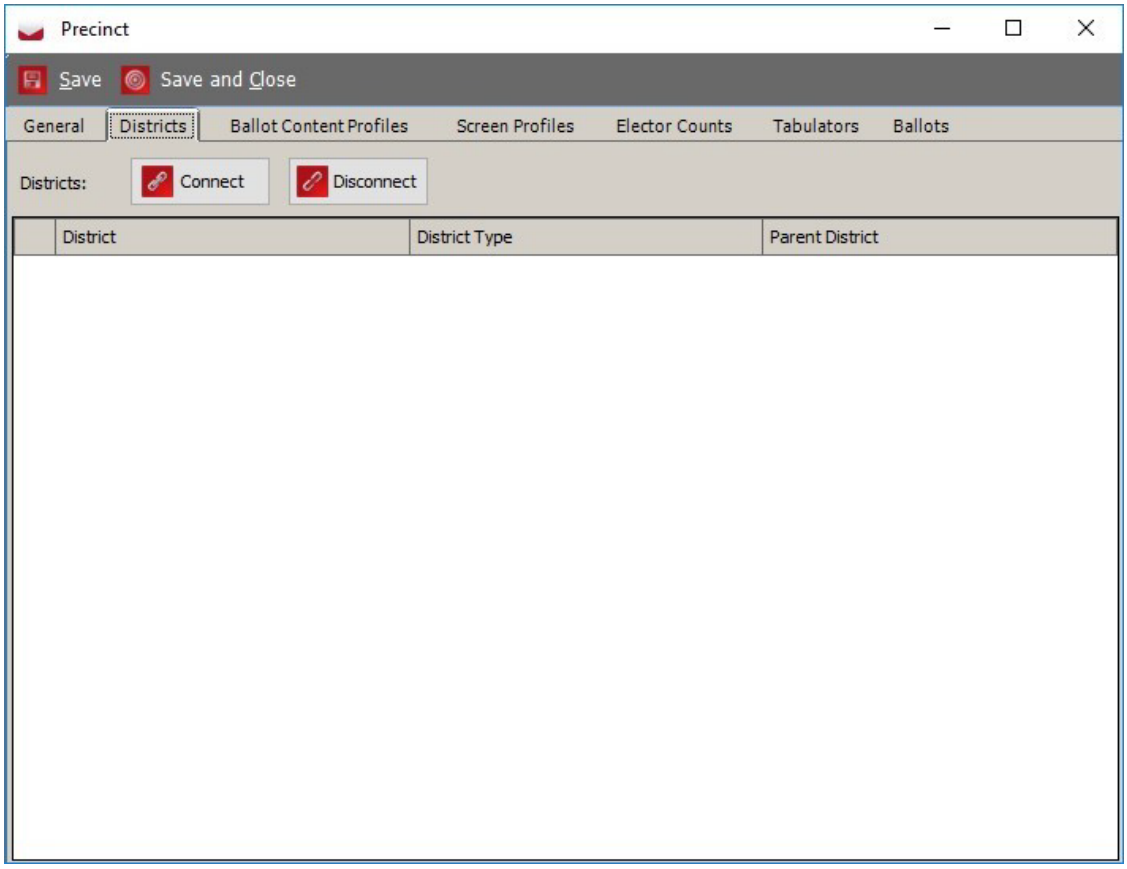

Figure 3-43: Precinct Dialog: Districts Tab

3.16.2 Defining Split Precincts Manually

The election programmer also has the option to define these split precincts manually. To do so, perform the following:

1. Go to Settings, Project Parameters.
2. To enable the ‘Add’ button, select the ‘Project Parameters’ option in the Settings menu on the top toolbar.
3. Select the ‘Create splits manually’ checkbox in the ‘Ballot Options’ tab of the Project Parameters dialog, see Figure 3-44.
4. Click ‘Apply’ and click ‘OK’ to return to the Precinct dialog.

5. Go to the Precinct dialog and double click on the Precinct that needs to be split.

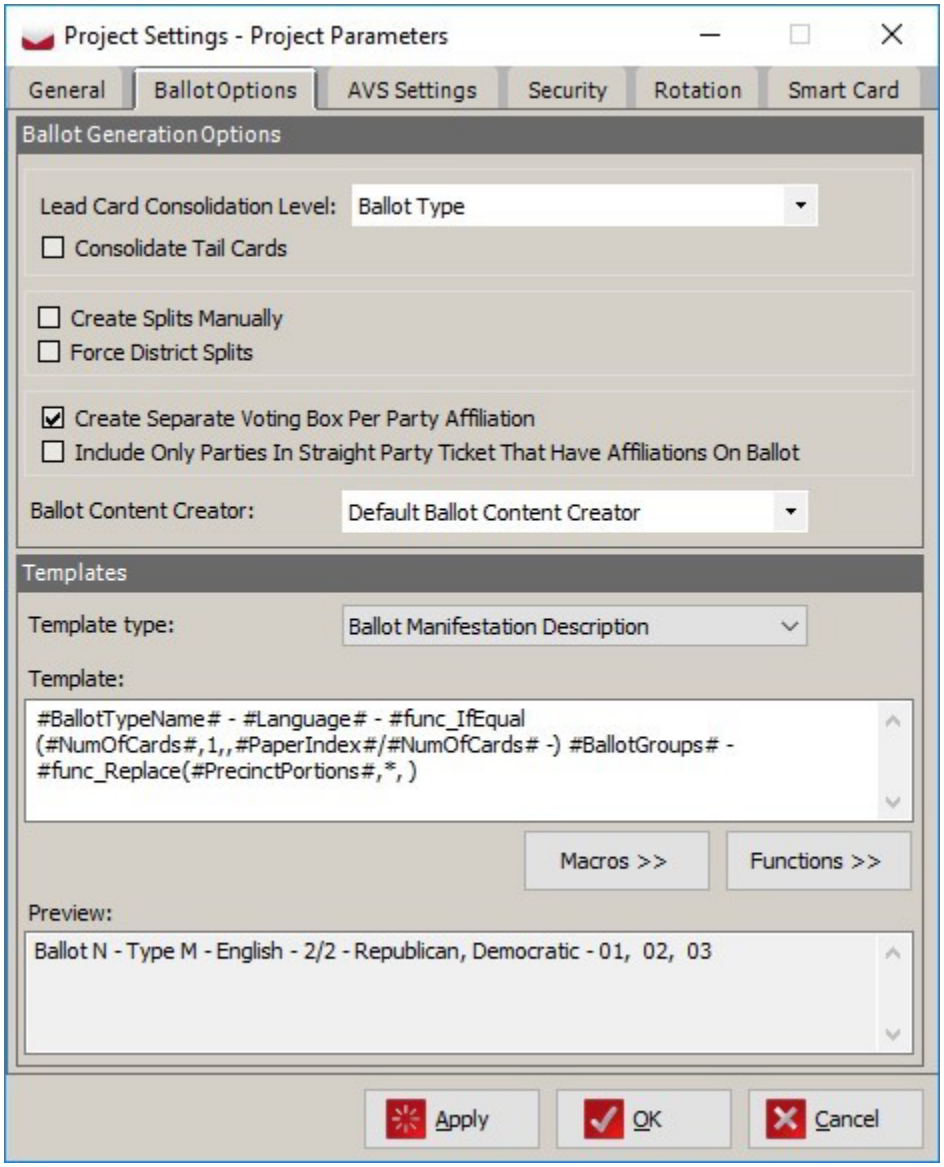

Figure 3-44: Project Parameters: Create Splits Manually

6. Click on the now-enabled 'Add' button. The 'Precinct' dialog appears, see Figure 3-45.
7. Enter the 'Precinct Split Name'.
8. Click on the 'District' tab and click 'Connect' to prompt the 'District Association' dialog.
9. Click 'Search' to generate a list of available districts.
10. Select the desired districts you wish to associate with your precinct. For more than one district, hold down the CTRL key to select multiple districts at once.

11. Click ‘Assign and Close’.
12. On the ‘General’ tab of the Precinct dialog, click ‘Save and Close’.

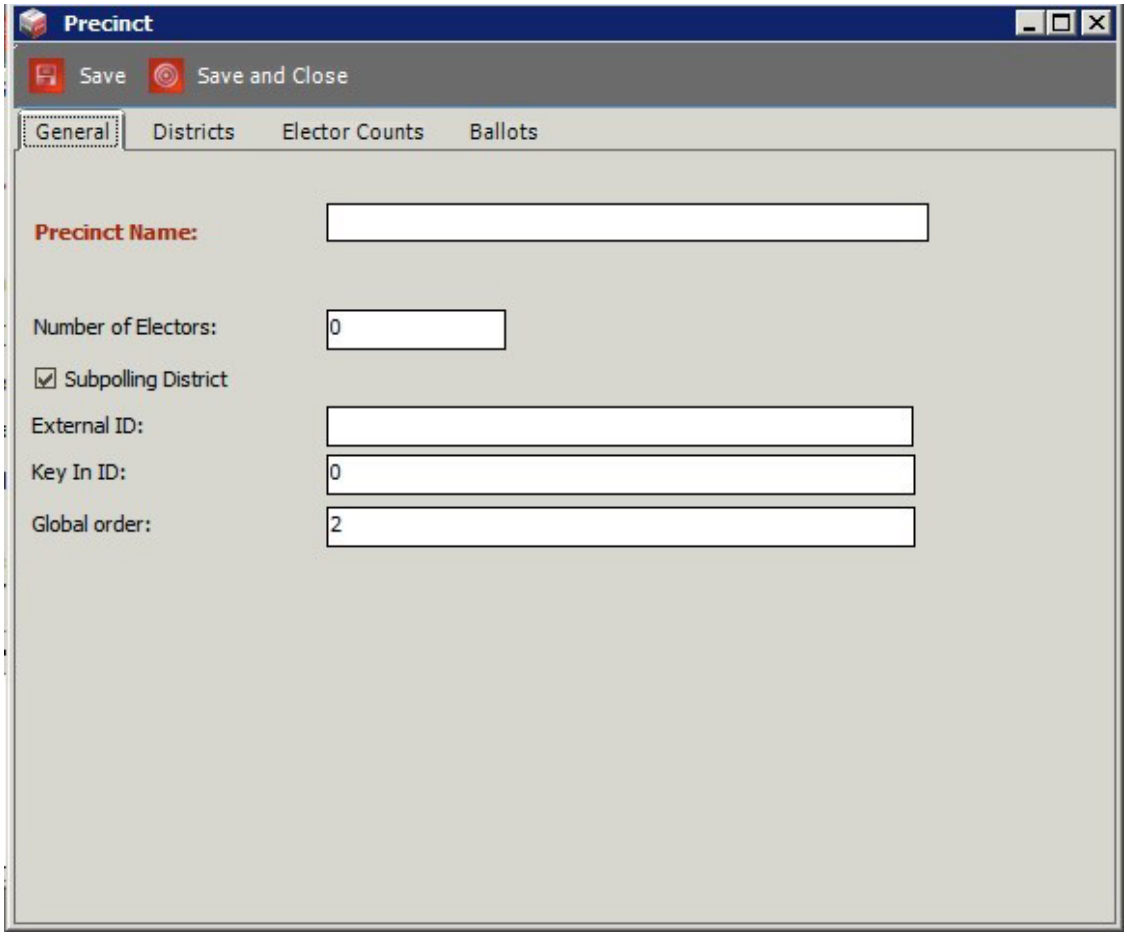

Figure 3-45: Create Splits Manually: Precinct Dialog

13. The manually created split precincts appear in the ‘List of Split Precincts’.

3.17 Defining Political Parties

Political Parties are defined in two ways: general political party definition, and political party definition with audio. This section describes how to define both.

1. Expand the **Divisioning** navigation group, and select the **Political Parties** activity. The Political Parties context sensitive screen appears, see see Figure 3-46.
2. Click **Create New**. The Political Party dialog appears.
3. Within this dialog, type in the political party name and the party’s abbreviation.

4. **Choices** tab allows user to preview the list of candidates with similar political affiliation. Also, it allows user to connect or disconnect candidates. See section 4.21.5.

Figure 3-46: Political Party Dialog

5. **Image Resource** tab allows user to add the political party logo images. All images used in EED are stored as image resources. Each resource has set of images for a different purpose: paper image, screen image, screen image black on white and screen image white on black. Paper image is used for paper ballots generated PDF files. Screen images are used on tabulator devices. Device has three display modes: full color, black content on white background and white content on black background. User has ability to set different images for each display mode. User can attach existing image resource or set images directly. If images are set directly new image resource

with political party name will automatically be created. For more details about image resources, please see the section 5.23.

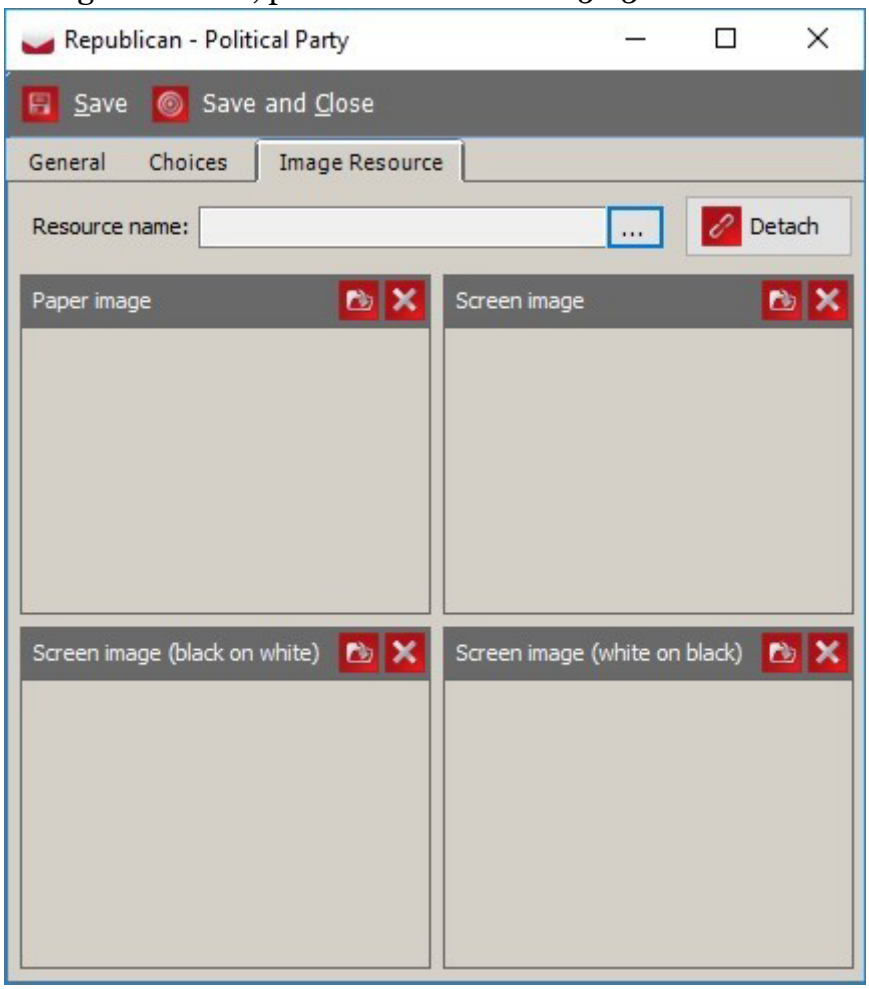

Figure 3-47: Image Resources tab

6. Click Save and Close.
7. Repeat the steps above for each Political Party you wish to add to your Election Project.

3.17.1 Defining Composite Political Parties

If election project contains candidates who are affiliated with two or more parties and **Create Separate Voting Box Per Party Affiliation** option (see 4.7.3.1) is not selected, EED will automatically create composite party for each combination of party affiliations. Required composite parties will be created during the Ballot Content Generation process, which takes place during the transition from the Election Project Definition to the Election Project Styling

phase. Composite parties are used only for displaying candidate multiple party affiliation on ballots and reports.

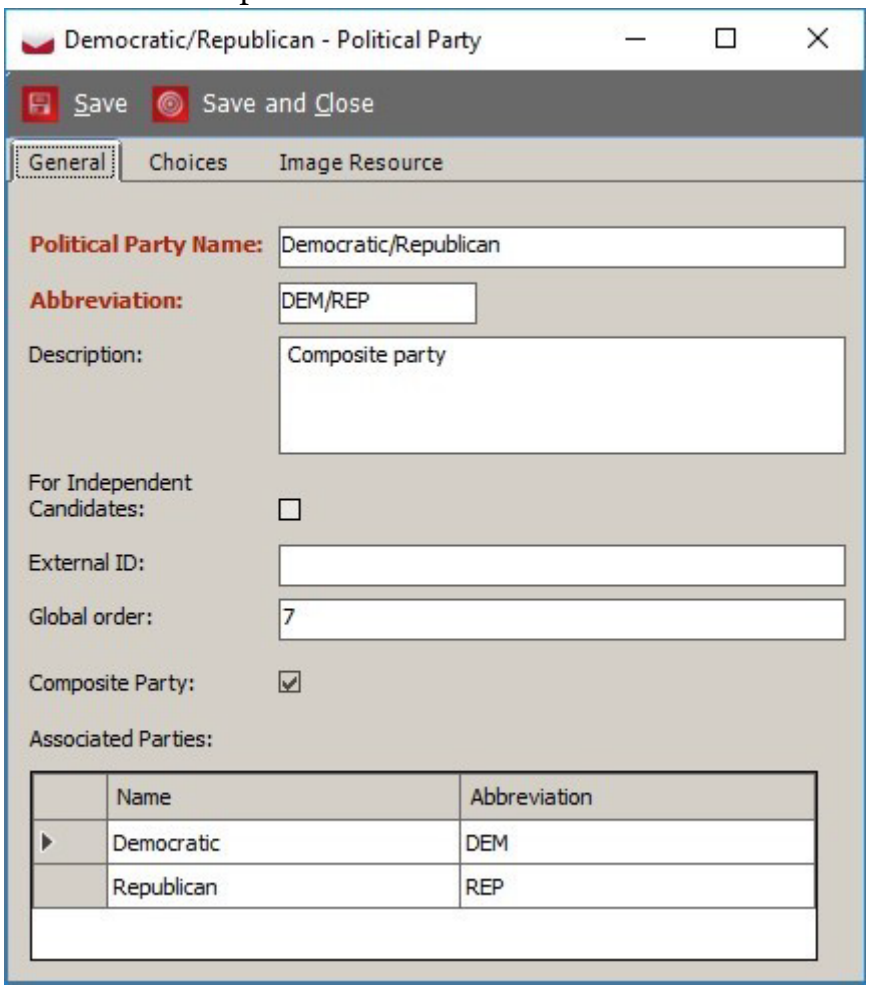

Figure 3-48: Political Party dialog - Composite Party

1. Composite party name is composed of associated parties names separated by a slashes.
2. Composite party abbreviation is composed of associated parties abbreviations separated by a slashes.
3. Associated parties table shows list of associated parties.
4. Choice tab shows candidates who are affiliated with all associated parties.

3.17.2 Defining Political Parties with Audio

For audio options, please see the Translations section 5.16.

3.18 Elector Groups

Elector groups in EMS are used to tag contests to indicate what ballot they should be placed on and what party affiliation a contest has. Elector groups can also track elector counts per precinct.

NOTE: Examples of Elector Groups use are presented in Appendix E ((Use Cases for applying Elector Groups and Ballot Groups).

To define an elector group, perform the following steps:

1. Expand the 'Divisioning' navigation group and select the 'Elector Group' activity.
2. The 'Elector Groups' main screen appears.
3. Click 'Search' to see a list of all defined elector groups. By default, the system has only one elector group called 'Default' which represents a complete electorate for a given jurisdiction.
4. To narrow the search criteria type in the 'Group Name' text field.
5. To create a new elector group, click 'Create New' from the toolbar.

6. The 'New Elector Group dialog' appears, see Figure 3-49.

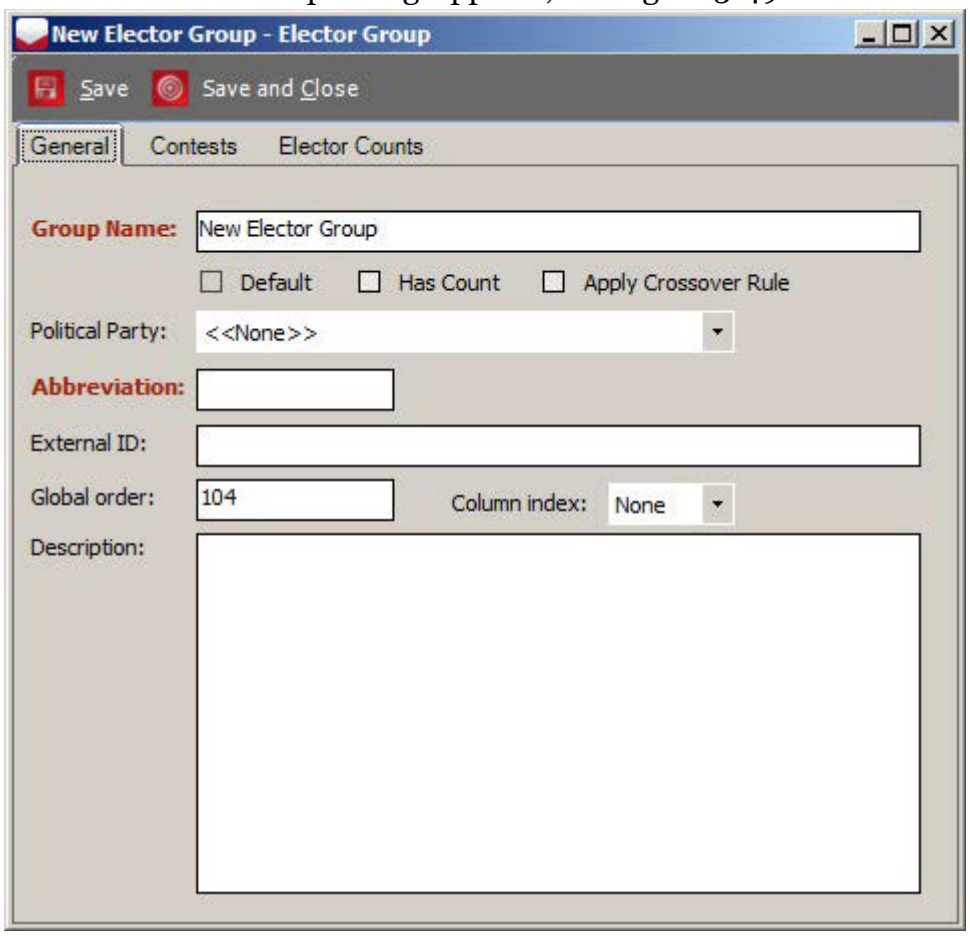

Figure 3-49: Elector Group dialog

7. Type-in the elector group name (i.e. DEMOCRATIC, FEDERAL, ABSENTEE.....).
8. 'Group Name' and 'Abbreviation' are mandatory fields.
9. If you created a Partisan elector group for Primary elections, choose 'Political Party' from the drop-down menu.
10. If you wish to track voter registration for the elector group, select the 'Has Count' checkbox. For example, if you wish to track voter registration data by party in a primary election, create an elector group for each party and ensure that the 'Has Count' box has been selected.
11. If the 'Apply Crossover Rule' checkbox is selected for two or more electoral groups, contests that are linked to these elector groups are subjected to the cross-over rule. Elector that have the 'Apply Crossover Rule' checkbox marked are called cross-over groups. The cross-over rule can be summarized as follows:

- If a voter places a mark in multiple contests, and these contests do not all belong to the same cross-over group, a cross-over situation occurs, and all votes will be invalid within those grouped contests.
- Contests not connected to these elector groups are always evaluated as normal contests, and the above logic does not apply to them.

This behaviour can be used to implement an open primary ballot where the various partisan contests are mutually exclusive per party.

12. The 'Column Index' attribute is used in primary elections. Its purpose is to force contests that belong to the same elector group to be drawn in the same column (but not necessary the same page) on the ballot. For example, in a two party scenario (Democratic and Republican), all contests related to the Democratic Primary are attached to the Democratic elector group, while all contests related to the Republican Primary are attached to the Republican elector group. In this situation, the user can force all Democratic contests to appear in the first column (by setting the column index for the Democratic elector group to 1) and all Republican contests to appear in the second column (by setting the column index for the Republican elector group to 2). For further information about contest positioning forcing column index, see subsection 4.21.4 Contest Positioning.
13. To associate the contest to the elector group select the 'Contests' tab. This option allows you to preview and link the contests. Contest records must be

created before performing the following steps. See section 4.21 for how to create contest records.

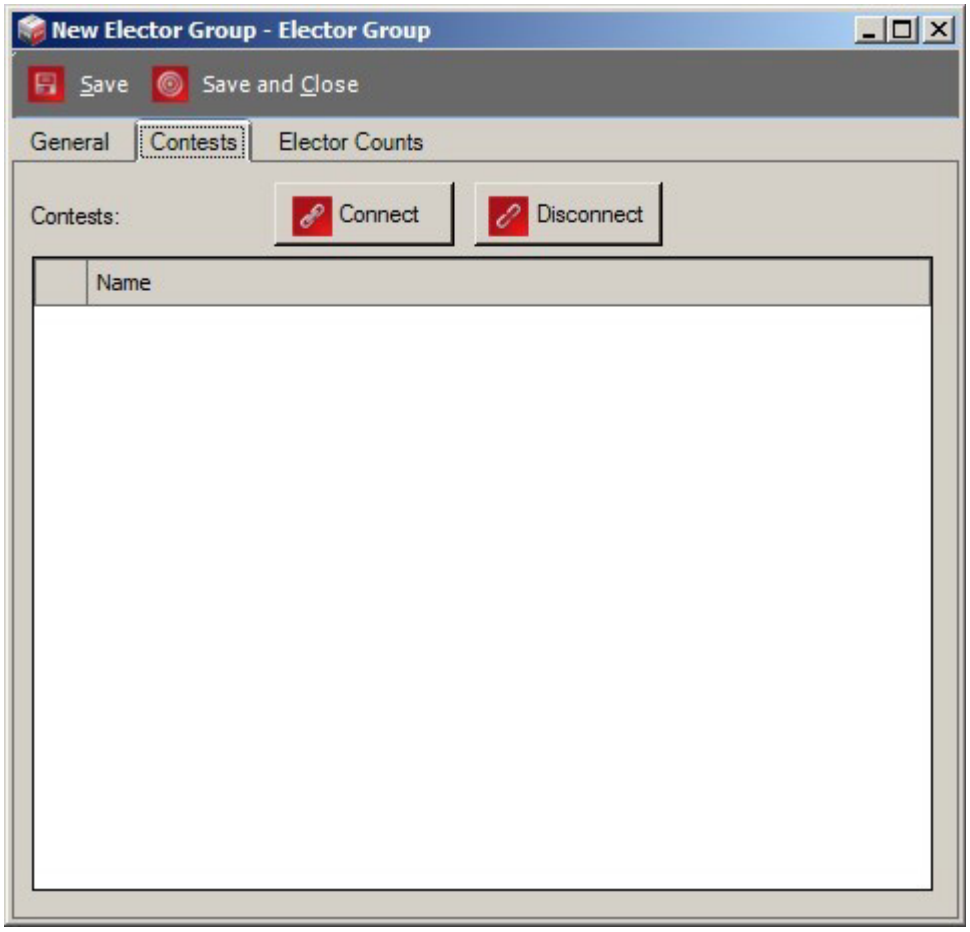

Figure 3-50: Elector Group dialog-Contests tab

14. After you define the contest, return to this step to associate the contest to elector groups. Click on the 'Connect' button.

15. The 'Contest Association dialog' appears, see Figure 3-51.

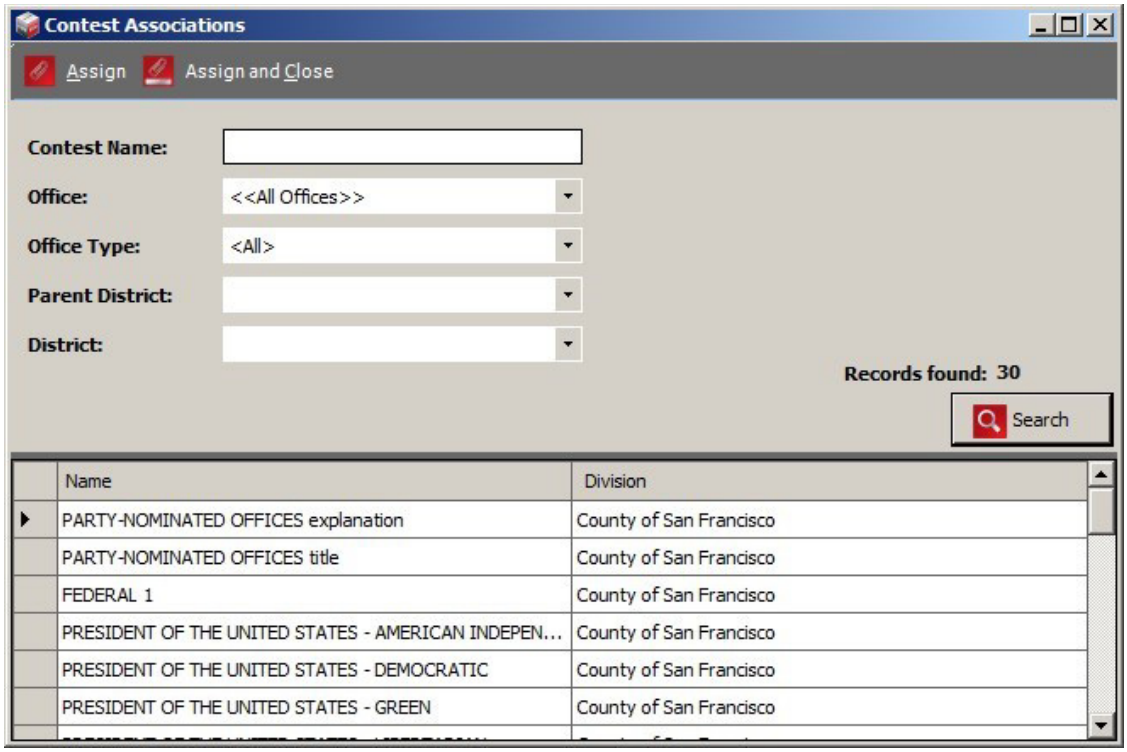

Figure 3-51: Contest Association dialog

16. Click on 'Search' to list all created contests. To narrow the search, type-in the contest name, and select an option from each drop-down menu (Office, Parent District, District). A list of contests matching your search criteria appears.
17. Select the contest record. Click the 'Assign and Close' button.
18. The 'Contest Association dialog' closes.

19. The contest is associated to an elector group.

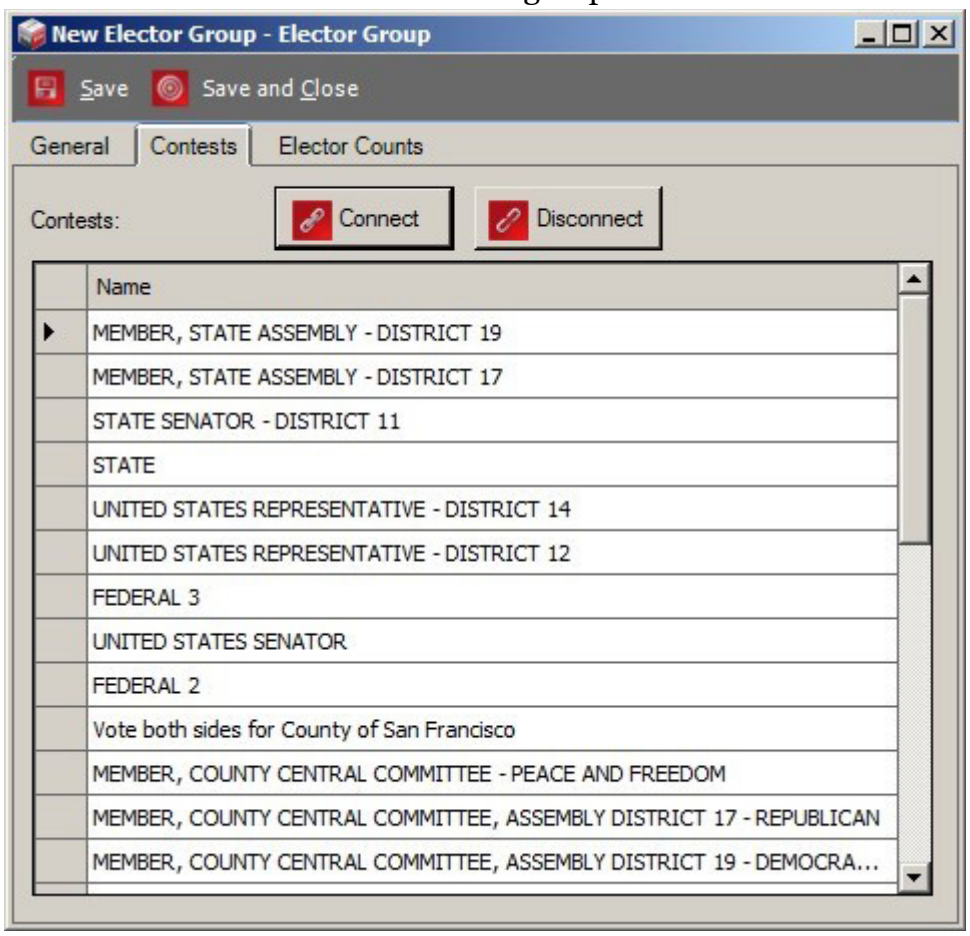

Figure 3-52: Contest tab with associated contests

20. Click on the ‘Elector Counts’ tab.
21. Click the ‘Connect’ button.

22. The ‘Elector Counts Association’ dialog appears.

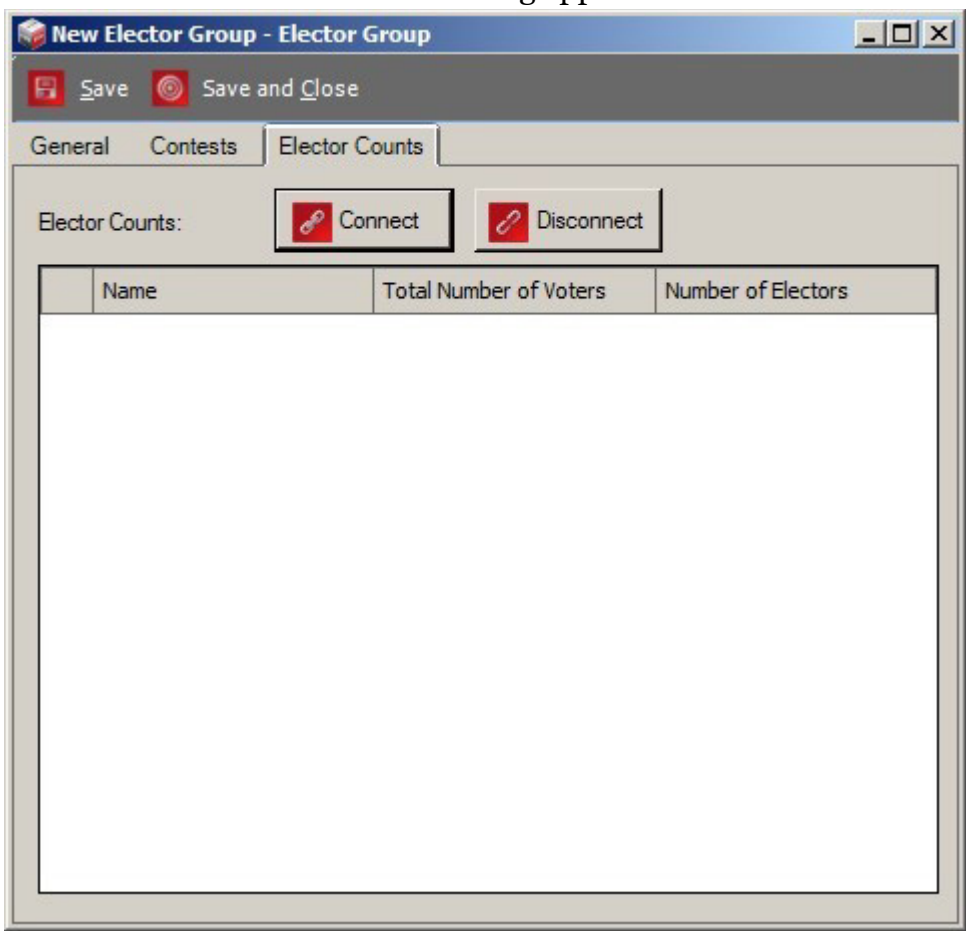

Figure 3-53: Elector Counts tab

23. Click the ‘Search’ button to list precincts.
24. Select one or more precinct records and click ‘Save and Close’.
25. Double click on the associated precinct.
26. The ‘Elector Count ’dialog appears.

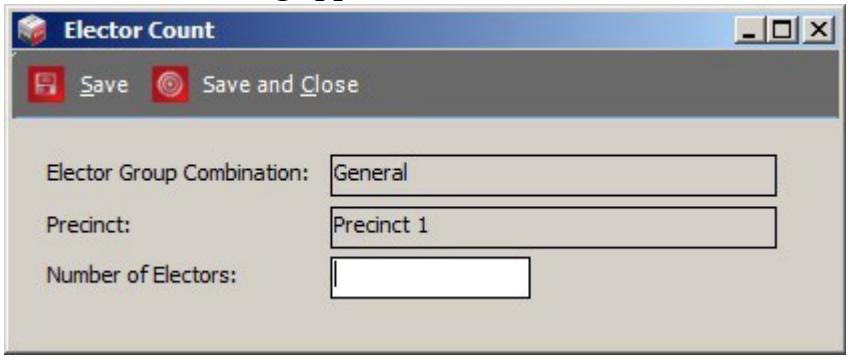

Figure 3-54: Elector Count dialog

27. Enter Number of Electors for elector group.

28. Click ‘Save and Close’.

3.18.1 Elector Groups Batch procedure

To create multiple partisan elector groups at once, use the ‘Batch’ procedure via Political Parties. This option automatically attaches the elector groups to political parties.

1. Go to ‘Political Parties’ main screen.
2. On the toolbar in the main activity screen, click ‘Create Batch’.
3. The following ‘Question’ dialog appears. If you want to continue with the action, click ‘Yes’. Clicking ‘No’ aborts any further action and closes the dialog.
4. If you click on the ‘Yes’ button in the ‘Question’ dialog, before selecting a political party to associate with the elector group, an ‘Error’ message appears. The message informs you that you must select the political party.
5. After selecting a political party or group of parties, click ‘Create Batch’.
6. The ‘Question’ dialog appears (see the steps above). An ‘Information’ message displays the number of elector groups created.
7. The created elector group appears in the elector group column within the political party record.

3.19 Ballot Groups

Ballot Groups allow you to define different types of ballots that appear per precinct and to assign contests to types of ballots regardless of geography (an example is a closed primary election where each party has separate ballots with their own set of contests). Ballot Groups is a way of grouping ballots by themes, such as party, absentee vs. election day or a combination of multiple themes.

NOTE: Examples of Ballot Groups use are presented in Appendix E ((Use Cases for applying Elector Groups and Ballot Groups).

3.19.1 Ballot Groups Properties

To create Ballot Groups, perform the following steps:

1. Expand the ‘Divisioning’ navigation group and click the ‘Ballot Groups’ activity.
2. Click on the ‘Create New’ button from the toolbar.

3. The Ballot Group dialog appears, see Figure 3-55.

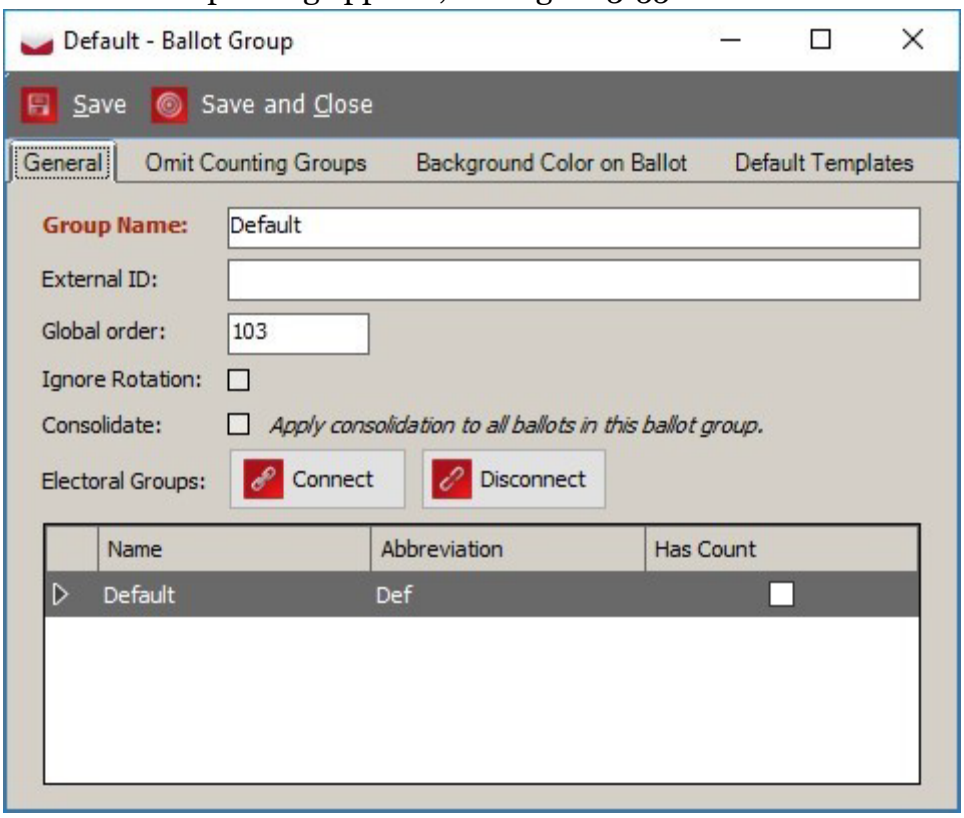

Figure 3-55: Ballot Groups Dialog

4. Type in the 'Group Name'
5. **Ignore rotation** check box allow user to exclude ballot group from project defined rotations.
6. If ballots within this group should be consolidated, click the 'Consolidate' check box.
7. Click the 'Connect' button.
8. The 'Elector Group Association' dialog appears.
9. Click the 'Search' button. The list of elector groups appears.
10. Chose one or more elector groups to create Ballot Group.
11. Click the 'Assign and Close' button.

12. Click the 'Omit Counting Groups' tab.

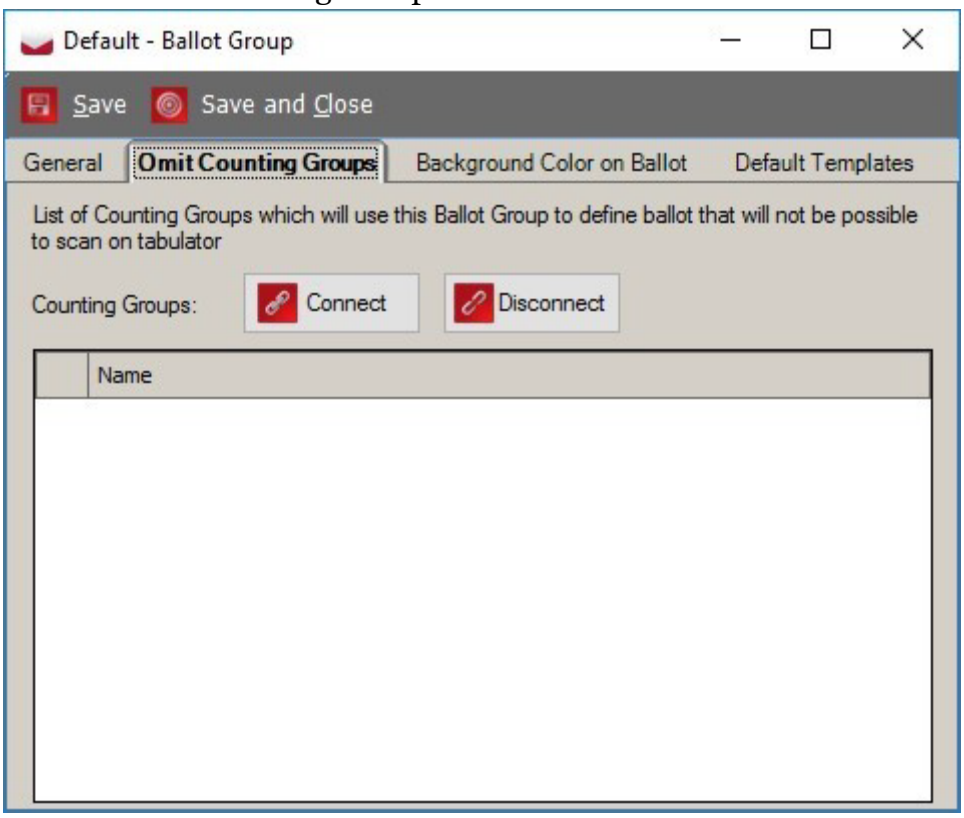

Figure 3-56: Ballot Groups Dialog - Omit Counting Group tab

13. The purpose of this feature is to allow a tabulator to avoid scanning a certain portion of ballots which belong to its assigned polling district. When this feature is used, two tabulators can handle the same polling district, but, for example, they may be configured so that the first tabulator handles only Election Day ballots, and the other handles all other types of ballots (e.g. Absentee, Mail, etc).

Since Election Event Designer EED has the ability to define Counting Groups that group tabulators by some criteria (for example, Absentee group), this mechanism can be used to define which tabulators can skip which types of ballots.

14. Click the 'Default Templates' tab.

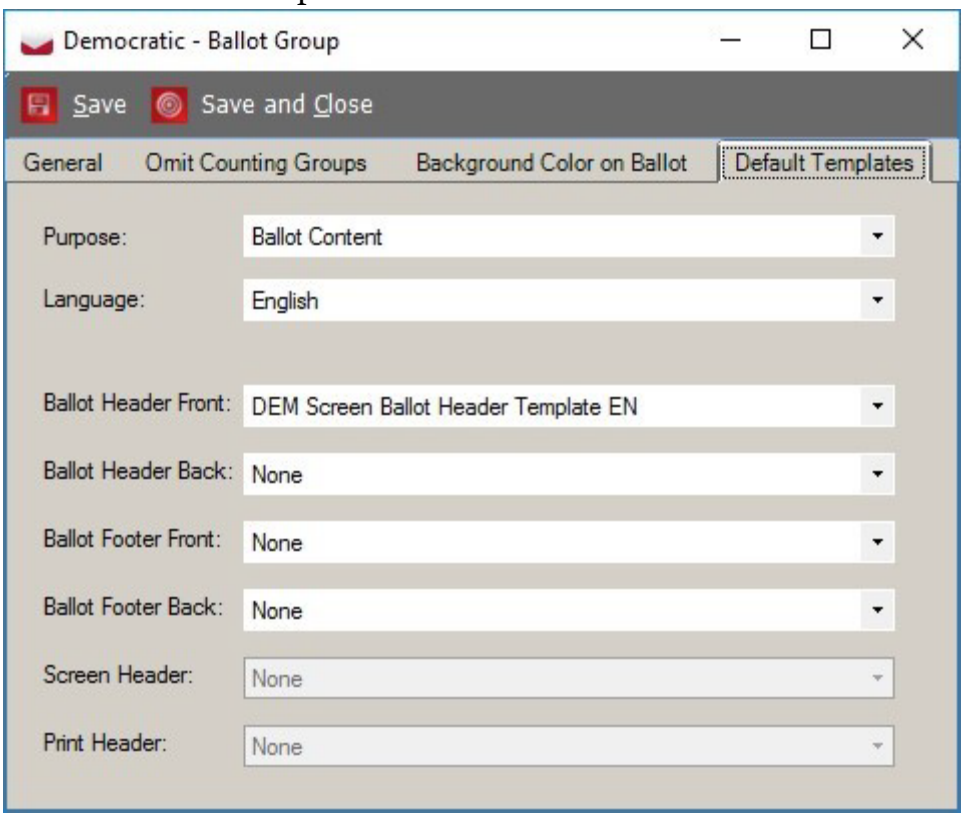

Figure 3-57: Default Templates Dialog

15. The purpose of this feature is to define a Default set of ballot header templates for each Ballot Group per language (for each of the assignments Front Header, Front Footer, Back Header, Back Footer, Print and Screen header) which could be applied when Define Ballot Structure is run each time. On running back to definition status, those links will not be deleted.

NOTE: Linking Default templates is enabled only in Project Definition status.

16. To close the dialog click the 'Save and Close' button.

3.20 Defining Offices

To define the offices that exist within your election, perform the following:

1. Expand the 'Divisioning' navigation group and select the 'Offices' activity. The Offices context sensitive screen appears, see Figure 3-58.

2. To define a new office, click the **Create New** button. The Office dialog appears.

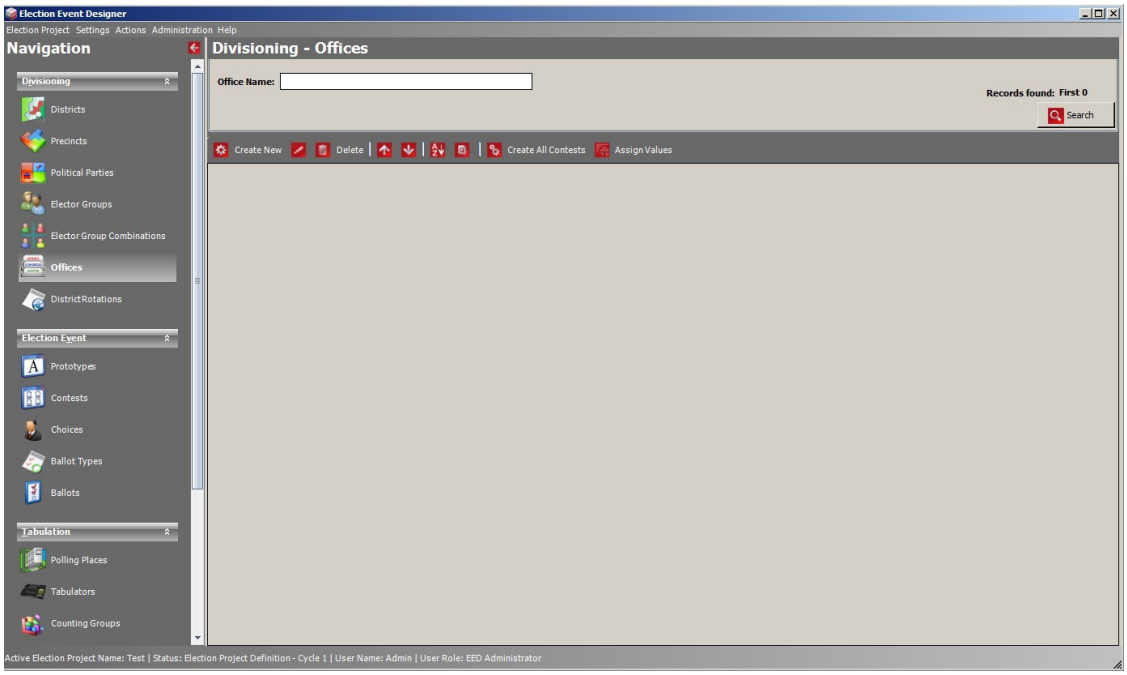

Figure 3-58: Divisioning:Offices

3. Within the Office dialog, write the **Office Name**, **Office Type**, and applicable **District Type** from the drop-down menu. The 'Office Type' drop-down menu includes the following options:

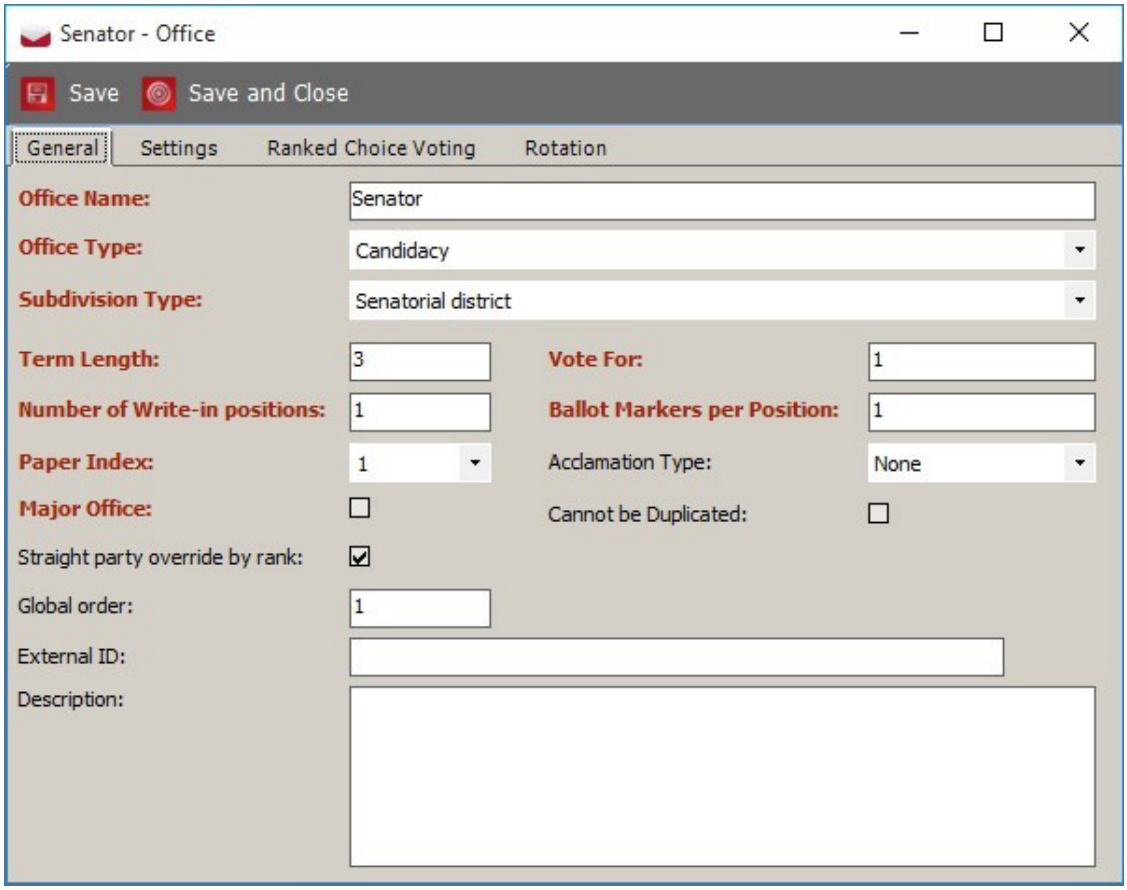

Figure 3-59: Office Dialog

- **Candidacy**: Regular offices with candidates.
- **Measure**: Referendum questions, including amendments.
- **Instructional**: Instructional offices that gather offices on the ballot or present additional instructions to the voter.
- **Off ballot**: Deployed for further control over ballot production. It may be required when different ballots must be created for differing political subdivisions of a certain type despite the fact that ballots do not differ in content between each of the political subdivisions.
- **Straight Party**: allow voters to indirectly mark candidates a affiliated to a certain party a affiliation. **NOTE**: When used in Strict Inclusive mode, allows for defining of Group Voting contests where a vote for a Group will indirectly mark all candidates affiliated to that group.
- **Party preference**: If a project contains partisan contests with the Apply Cross-Over Rule set, voting for the same contest across two Elector

Groups results with an invalid contest when the ballot is cast. With the Party Preference contest, the voter selects their preferred party, and any contests which do not belong to the same Elector Group are ignored when the ballot is cast. Ballots can contain only one Party Preference contest - the system performs appropriate validation activities before creating ballot content.

4. Type in the **Term Length**, **Vote For**, and **Ballot Markers per Position** numbers. This option represents the number of marks on the ballot that are used to define the width or the height for a given office.
5. Select the number for the **Paper Index**. This number defines the office position on the ballot card for multi-card ballots. If the value is set as '1' for all offices, the ballot is laid out on only one sheet of paper.
6. The **Major Office**-Option can be used to designate a group of offices which have been assigned a unique set of tabulation properties. For example, some states require that ballots where Constitution Offices that are under voted must be returned to the voter, while other offices do not have this restriction.Those offices can be distinguished using this flag and the tabulation rules specified in the tabulator configuration.
7. When using the straight party rule **Mixed** in project parameters, and contest connected to a straight party ticket can behave in two different ways when dealing with both implicit and explicit selections in the same contest. This is controlled on the office level using the **Straight party override by rank setting**:
   - If setting is unchecked then the system will exclude implicit selection by rank: An explicit selection will override the implicit selection from the same rank (row). If that implicit selection was already removed, then the rules fall back on the variation where implicit selections are removed from the bottom.
   - If setting is checked then the system will exclude implicit selection from the bottom. An explicit selection will override the implicit selection starting from the last implicitly selected candidate in the same contest.
8. **Can Not Be Duplicated** - This is used to indicate that a contest should not have its results duplicated when resolving provisional vote sessions in the RTR application. For more info about duplication, see section **Duplication of Provisional Votes** in the Democracy Suite® EMS Results Tally & Reporting User Guide. This is only applicable to Provisional mode of Conditional Voting.
9. Acclamation type has three options: **None** (default), **Remove Empty**, and **Remove Acclaimed**. Remove Empty is an option in which the contest does not appear on the ballot when there is no candidate on the contest. If using the Remove Acclaim option, a contest does not appear on a ballot if its number of candidates is either less than or equal to the 'vote for' number.

This is because the candidates are automatically considered elected. In cases where a write-in option exists as part of a contest, this option is rendered as non-effective, as all write-ins are considered as regular candidates.

10. To define office settings, select the 'Settings' tab, and select the desired 'Column Position' on the ballot. Note that Contest is not specified in the desired column if the office order is incorrect.
11. 'Contest Position' allows the user to indicate when an office should begin at the top of a column or page.
    - • For referendum questions or amendments, set column span to 2 or 3. This option enables you to enlarge the contest area only in the right direction. Select one of the presented options.

NOTE: If the column span is set to 2, the office column can be positioned in the first and second column. If the column span is set to 3, the affected office can only be positioned in the first column. The user can set the column span for all office types except for New York State General and Primary ballot styles.

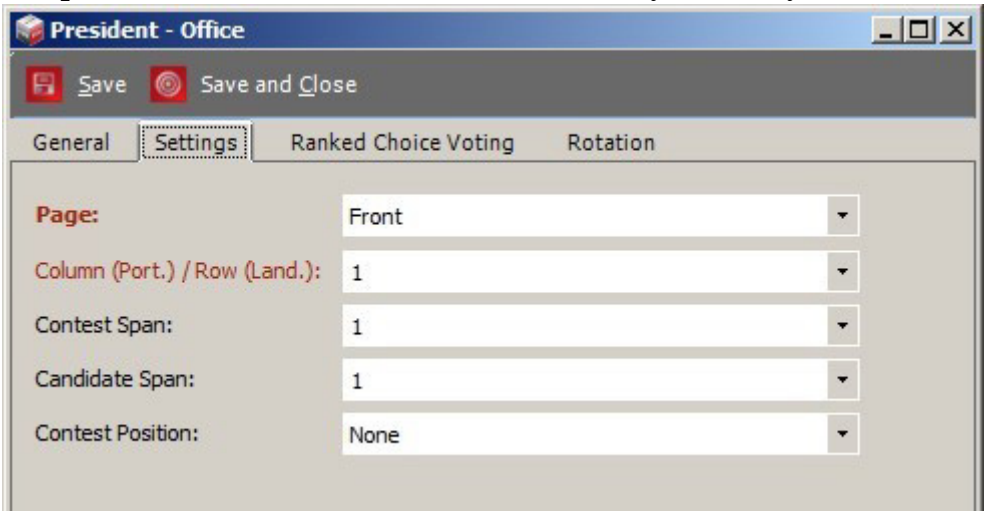

Figure 3-60: Office Dialog- Settings tab

12. To define the 'Ranked Choice Voting' office, perform the following steps:
13. Execute steps as for regular office definition.

NOTE: Select Candidacy for Office type

14. After you have filled in all mandatory fields, click on the 'Ranked Choice Voting' tab.
15. There are two options in the 'Voting System' drop-down menu: FPTP and Preferential. FPTP (First Past The Post) means the candidate(s) with the most votes wins, as opposed to Preferential voting where candidates win if they reach a certain threshold of votes as implemented in a Ranked Choice Voting algorithm.

16. Select the 'Preferential' option from the 'Voting System' drop-down menu, and enter the 'Number of Ranks'.

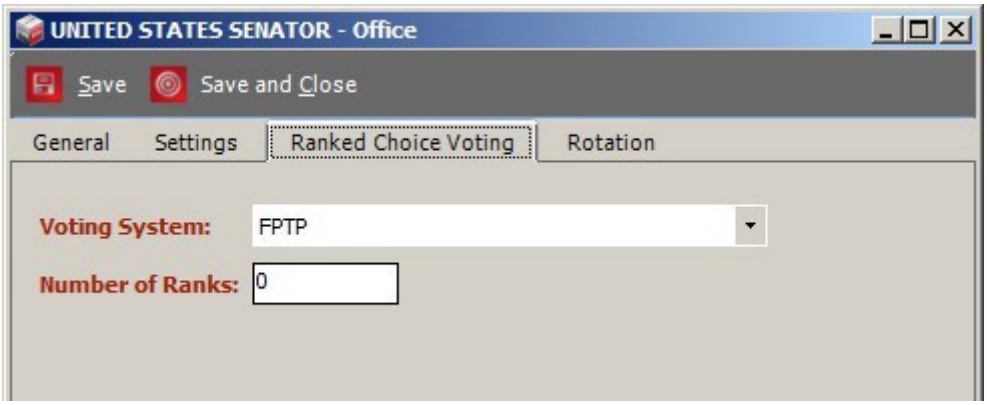

Figure 3-61: Office Dialog- Ranked Choice Voting tab

17. To set rotations, select the 'Rotation' tab. The property enables you to define the set of office rotation rules.
18. Click on the 'Rotation Type' drop-down menu, and select one of the options.
19. Options are: 'General Precinct' where the rotation index is on the precinct level. 'District Rotation' is rotation where a unique rotation index is assigned to precincts within the same district. 'Rotation by Registered Voter' is rotation where index rotation is assigned to precincts according to the number of registered voters.
20. To set the attribute to a rotation, select one of the possible options in the 'Rotation Target' drop-down menu.

To set the rotation direction, select one of the options from the 'Rotation Direction' drop-down menu.

21. If you have chosen the 'District Rotation' value as the 'Rotation Type', 'District Type' field is enabled, and a list of user-defined district types appears.
22. Use 'Predefined District Rotation': Select box to indicate that the definitions where the relationship between contest districts and rotation districts

should be used. These definitions are part of the District Rotations in the Divisioning main menu.

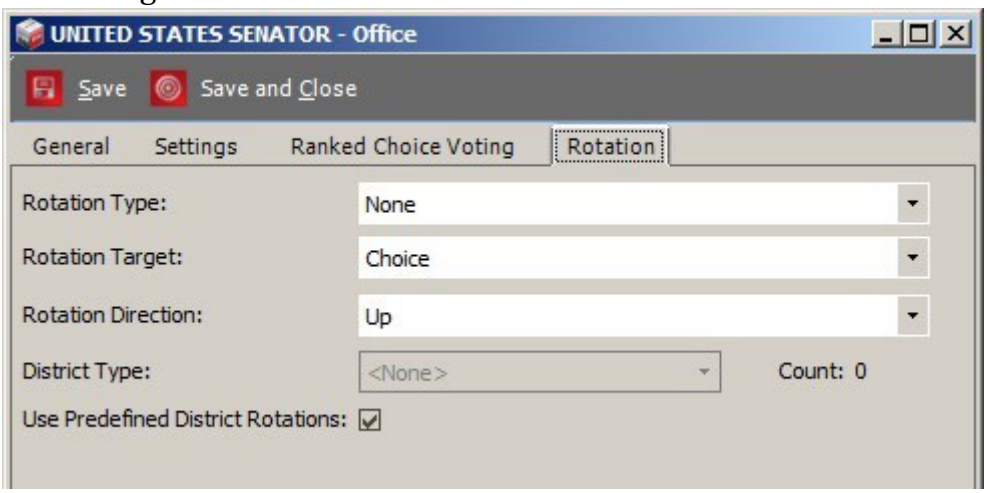

Figure 3-62: Office Dialog- Rotation tab

3.21 Defining Contests

Contest definition can be performed in two ways: via the Offices property, as defined in Section 4.20, or through the 'Contests' context sensitive screen.

3.21.1 Defining Contests Through the Offices Property

To define contests through the 'Offices' context sensitive screen:

1. Navigate to the 'Offices' context sensitive screen by expanding the 'Divisioning' navigation menu item and selecting 'Offices'.
2. Click 'Search' to generate a list of all defined offices.
3. Select all of the defined offices and click the 'Create All Contests' button.
4. Create Contest from Office dialog appears, see Figure 3-63.
5. You are asked if you would like to create all contests for the offices you have selected. If the check box is selected, the system automatically creates separate partisan contests from each office.

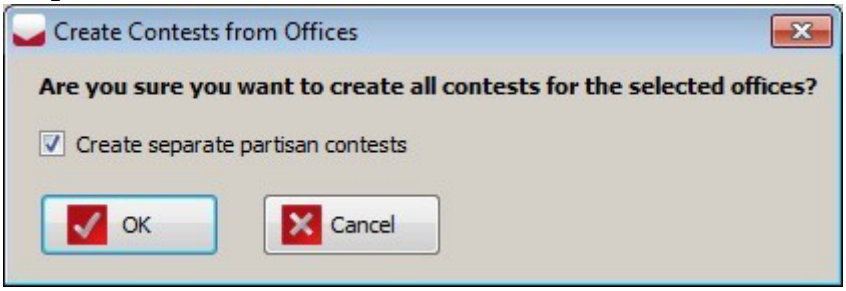

Figure 3-63: Create Contests from Offices dialog

6. Click ‘Yes’ to continue, or ‘No’ to return to the context sensitive screen.
7. If you have selected ‘Yes’, a confirmation dialog appears, see Figure 3-64. This dialog informs you that all contests have been created successfully.
8. Click ‘Close’.

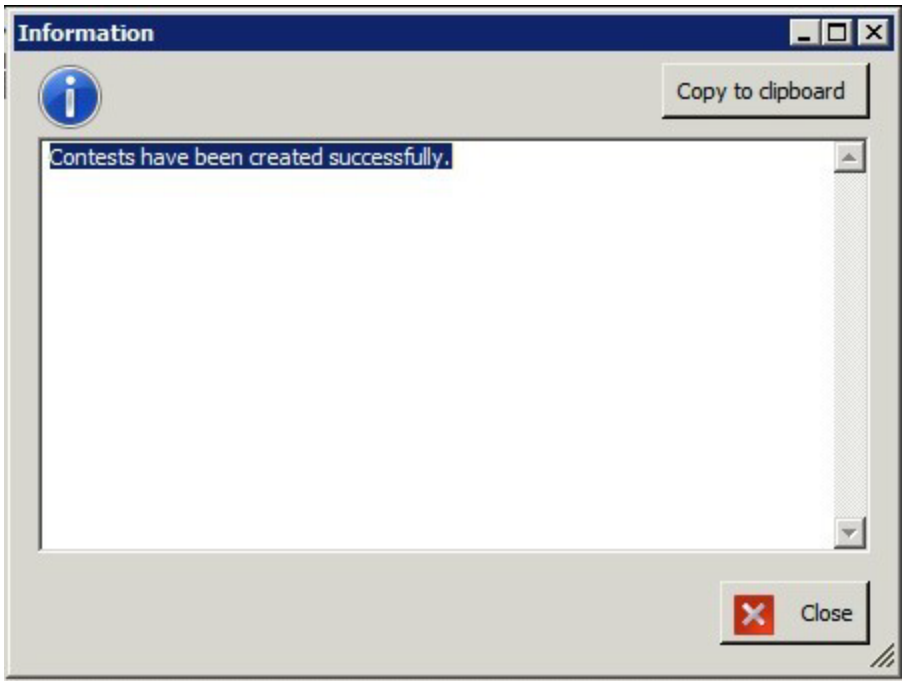

Figure 3-64: Contest Confirmation Dialog

3.21.2 Defining Contests Through the Contest Property

To define contests through the Contests context sensitive screen:

1. Navigate to the Contests context sensitive screen by expanding the ‘Election Event’ navigation menu item and selecting ‘Contests’.
2. From the Office’ drop-down menu, select the office you wish to create contests, see Figure 3-65.
3. Click ‘Create New’.

NOTE: When project is in Election Project Styling, the 'Preview' button in the toolbar generates pdf document for verification of contest format appearance on the ballot.

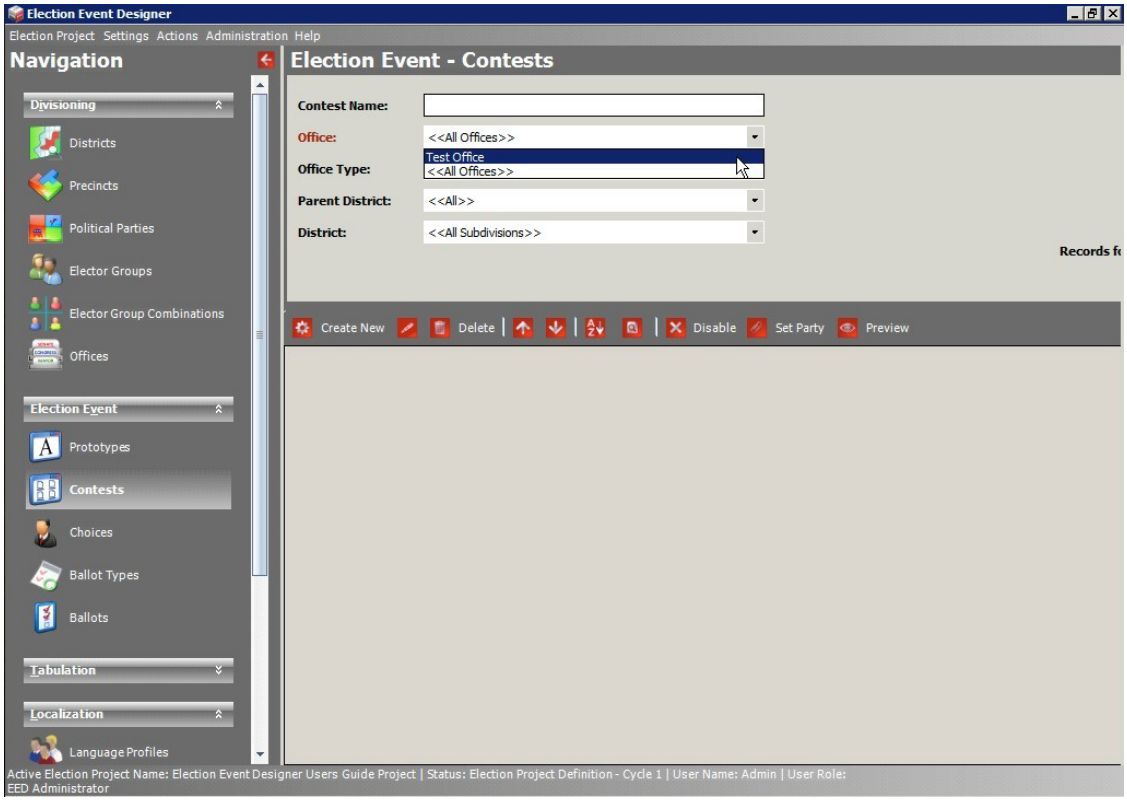

Figure 3-65: Election Event: Contests

4. The 'Contest' dialog appears. Contest editor is divided into three sections: **Common**, **Paper Ballot**, **Screen Ballot**.
   Dividing into sections is necessary because there are settings that are applicable only to paper ballots and there are settings applicable only to screen ballots:
   - **Common** - This section includes all settings which are independent of the type of ballot.
   - **Paper Ballot** - This section contains all settings which are specific for artwork for paper ballots.
   - **Screen Ballot** - This section contains all settings which are specific for ballots displayed on screens (e.g. ImageCast® X)

5. In the General tab, type in the Administrative Title (Contest reporting name) of the contest, and select the appropriate district from the 'District' drop-down menu.

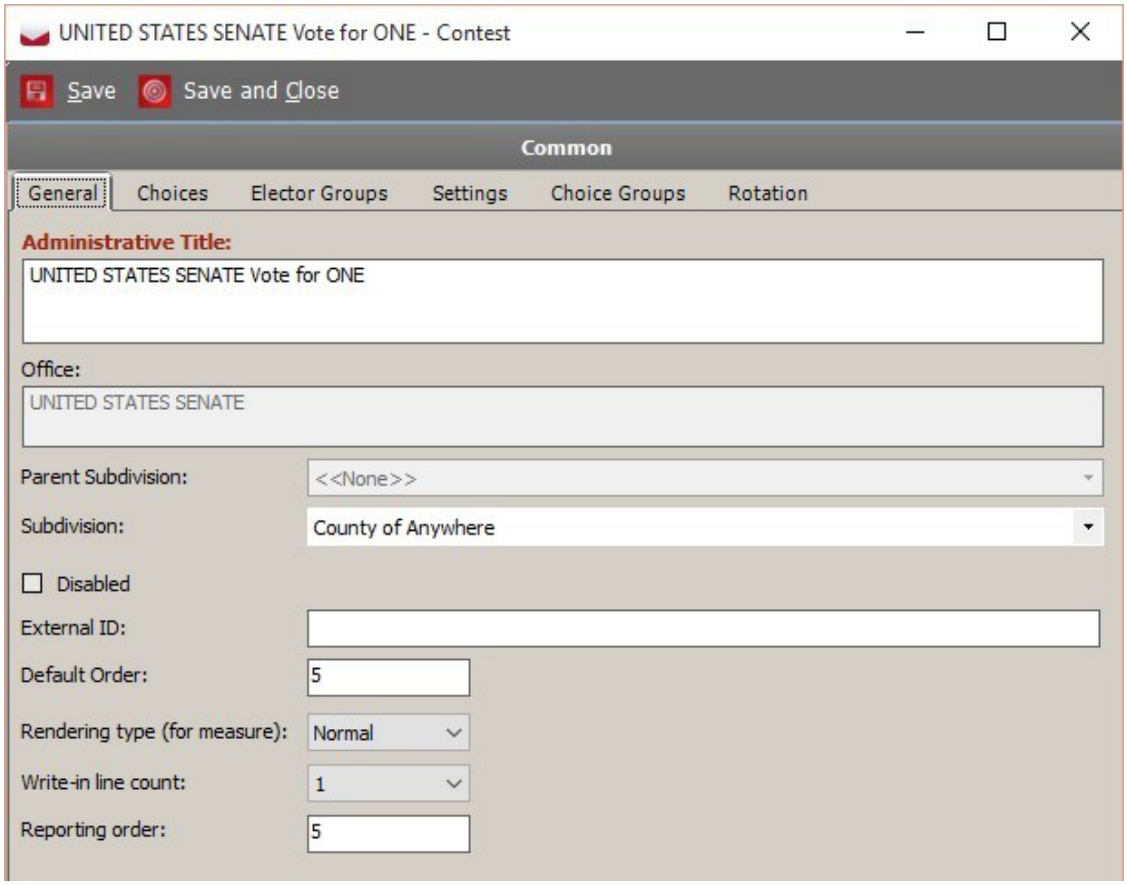

Figure 3-66: Contest Dialog

6. If defining a proposition: Select the Rendering Type from the drop-down menu. This option determines how the contest heading, referendum questions, and choices will be laid out. There are three options: Normal, Reduced, and Cascade.

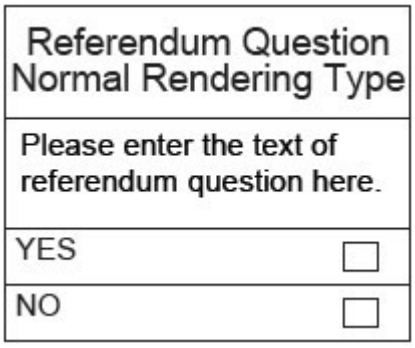

Figure 3-67: Normal rendering type

- 'Normal' rendering type lays out the contest heading, referendum questions, and choices one below the other.

- ‘Reduced’ rendering type displays only referendum title associated with choices in the same text field.

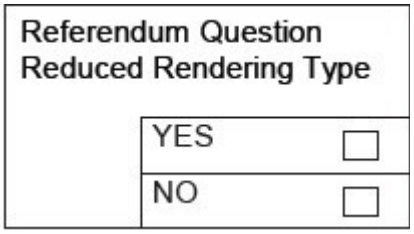

Figure 3-68: Reduced rendering type

- ‘Cascade’ rendering type lays out the contest heading, referendum questions, and choices next to each other.

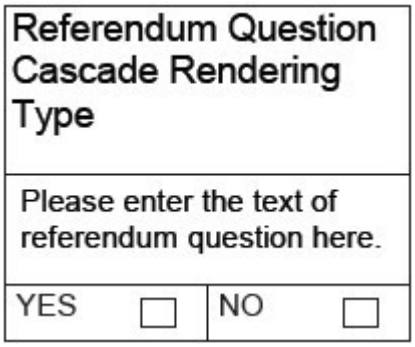

Figure 3-69: Cascade rendering type

7. Next, define the translations for the contest names. These textual units are used later in the Styling phase for paper ballots. See subsection Translations 5.16.
8. When defining amendments and other types of referendum questions/ proposals, the multi-tab contest properties dialog contains the additional ‘Referendum Question’ tab. Use this tab to define the text of the amendment, proposition, or referendum question.
9. Go to the ‘Referendum Question’ tab, in the Question field, enter desired text of referendum question. In addition to format text, RTF control can be used.

10. Once finished, click 'Save and Close' on both the rich text editor and Contest dialog.

Figure 3-70: Contest dialog-Referendum question tab

11. To add a choice to a contest, click on the 'Choices' tab. Click 'Add' and the 'Choice' dialog appears. See section 4.21.5. To use prototypes, see section 4.21.6.
12. To assign elector groups, click on the 'Elector Groups' tab.
13. Click on 'Add'. The 'Elector Groups Associations' dialog appears.
14. Assign the elector group, and click 'Save and Close'.
15. In the 'Settings' tab under **Common** section, see Figure 3-71, you can override the Office-level settings for this particular contest instance. Changes to the 'Vote For' and 'Number of Write-ins' can be set for a

particular contest, and does not affect other contests of the same Office, or the Office itself.

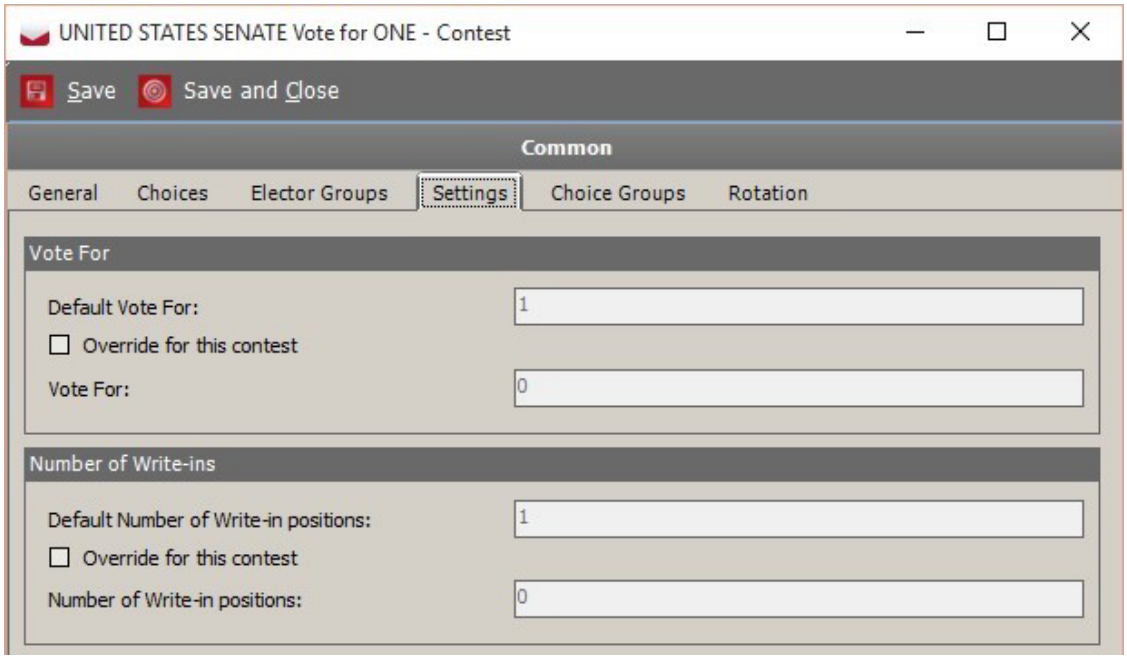

Figure 3-71: Contest: Settings Tab - Common

16. In the 'Settings' tab under **Paper Ballot** section, see Figure 3-72, 'Ballot Markers per Position' can be set for a particular contest, and does not affect other contests of the same Office, or the Office itself. 'Paper Index' overrides paper index for single contest. Set candidate numbers checkbox - this setting

only applies to ”grid -style” ballot layouts. If set, numbers will be displayed next to candidates on the ballot.

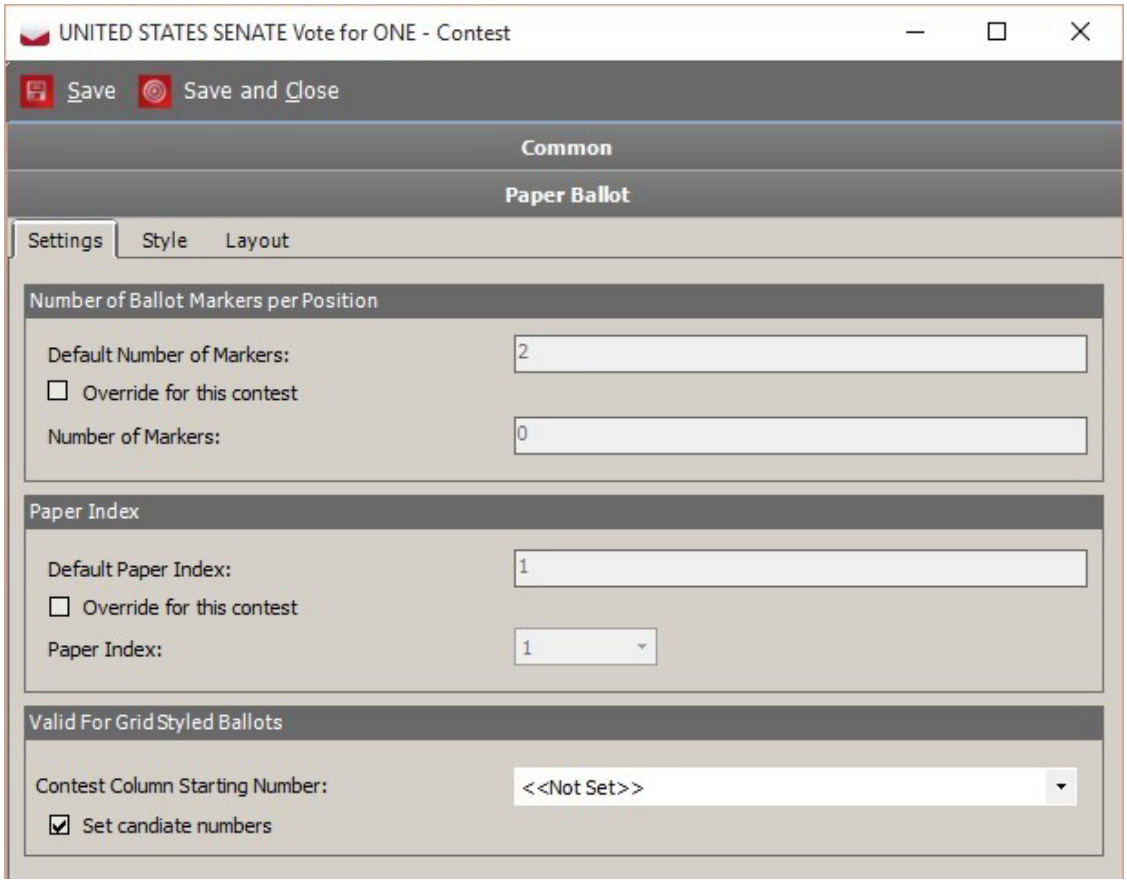

Figure 3-72: Contest: Settings Tab - Paper Ballot

17. In the Screen Ballot-Settings tab, see Figure 3-71, there are three options. **Contest Position**: allows the user to indicate when an office should begin at the top of a column or page. Available options are ”Default”, ”New Screen”, ”Single”, ”New Column”. **Candidate Column span** will change the position of voting box within candidate cell. Candidate cell will span on multiple columns and the voting box will follow. **Contest span** is related to Candidate Column. This value defines how many candidate cells are located side by side in the contest. For Example, if Candidate Column cell is set to 2,

and Contest column span is set to 2 also, contest header will occupy 4 columns with 2 candidates located side by side, each spanning two columns.

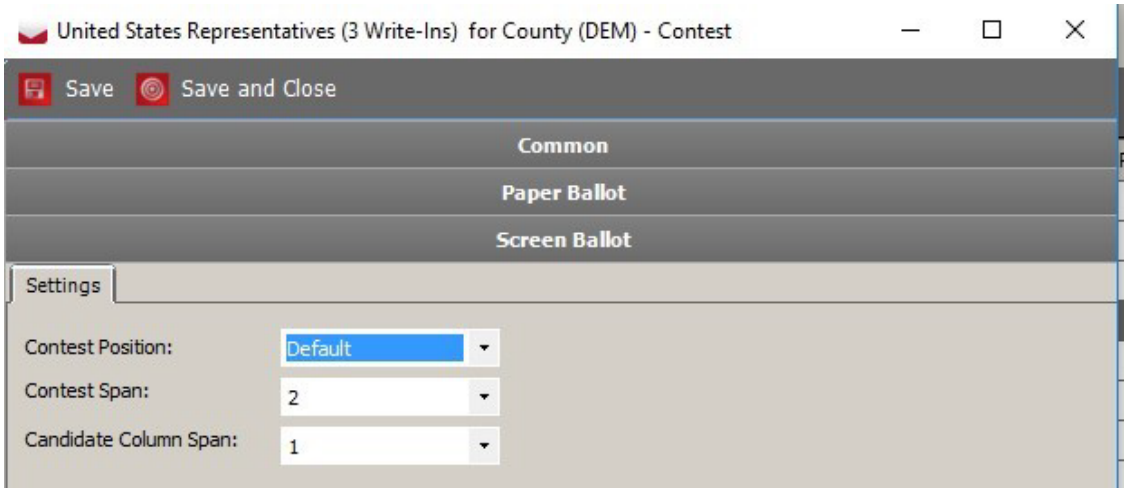

Figure 3-73: Contest: Settings Tab - Screen Ballot

18. The 'Style' tab is used to override global ballot style settings on the level of the contest. In subsection Ballot Style Parameters: Settings tab 4.8.1, you can select cell templates and visual properties that are applied to all ballots in the election project. The Style settings on contest level are the same, but they are applied only on that particular contest.
    For example, you can select candidate cells without images as a default setting (subsection Ballot Style Parameters: Settings tab 4.8.1), and select a cell with a party image for a particular contest.
    Like in subsection Ballot Style Parameters: Settings tab 4.8.1, the options

displayed depend on the contents of the DWF file (which contains the templates for drawing).

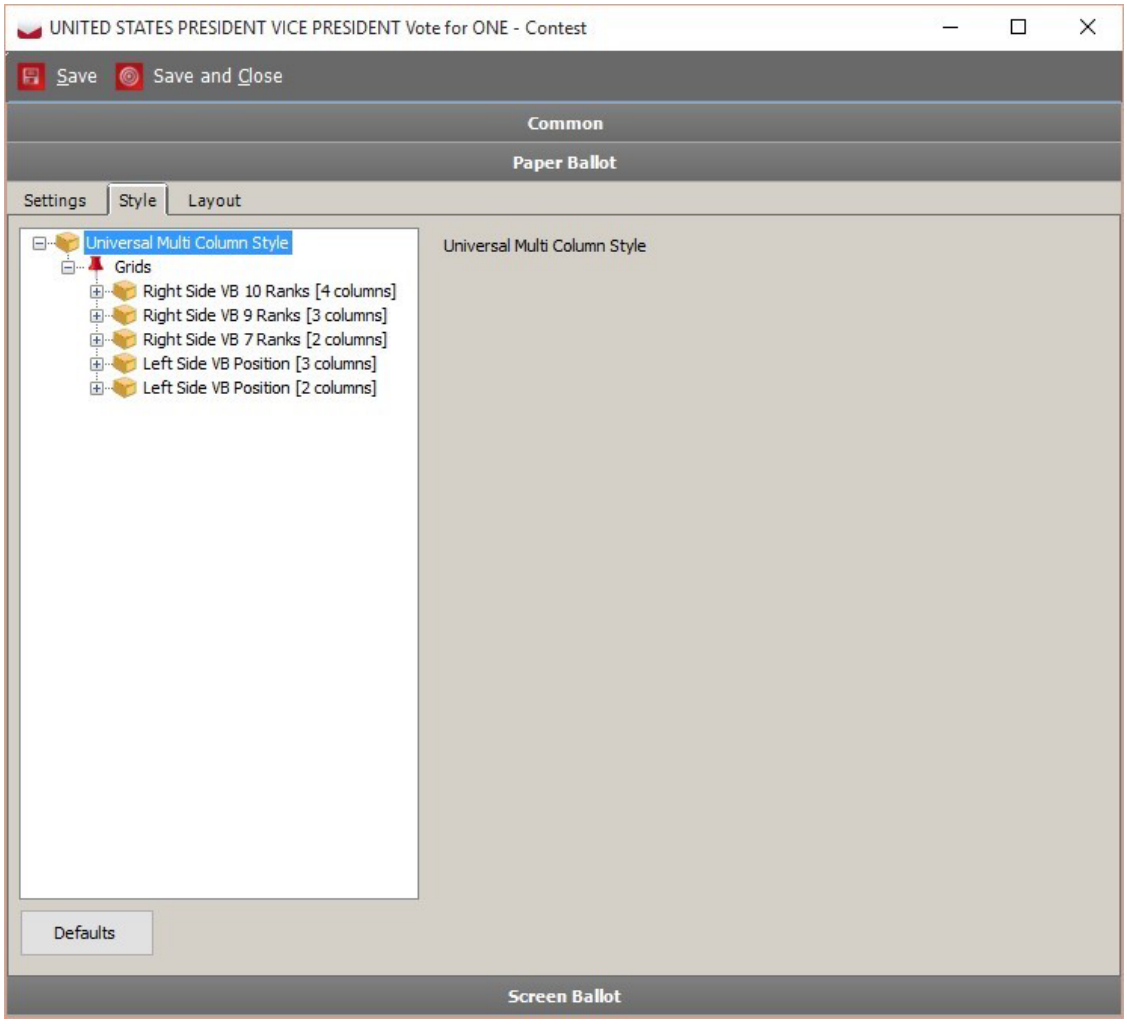

Figure 3-74: Contest dialog - Style tab

19. Similarly in the 'Layout' tab, you can override the column position (index), column span, and the position of the contests as set in the associated office.

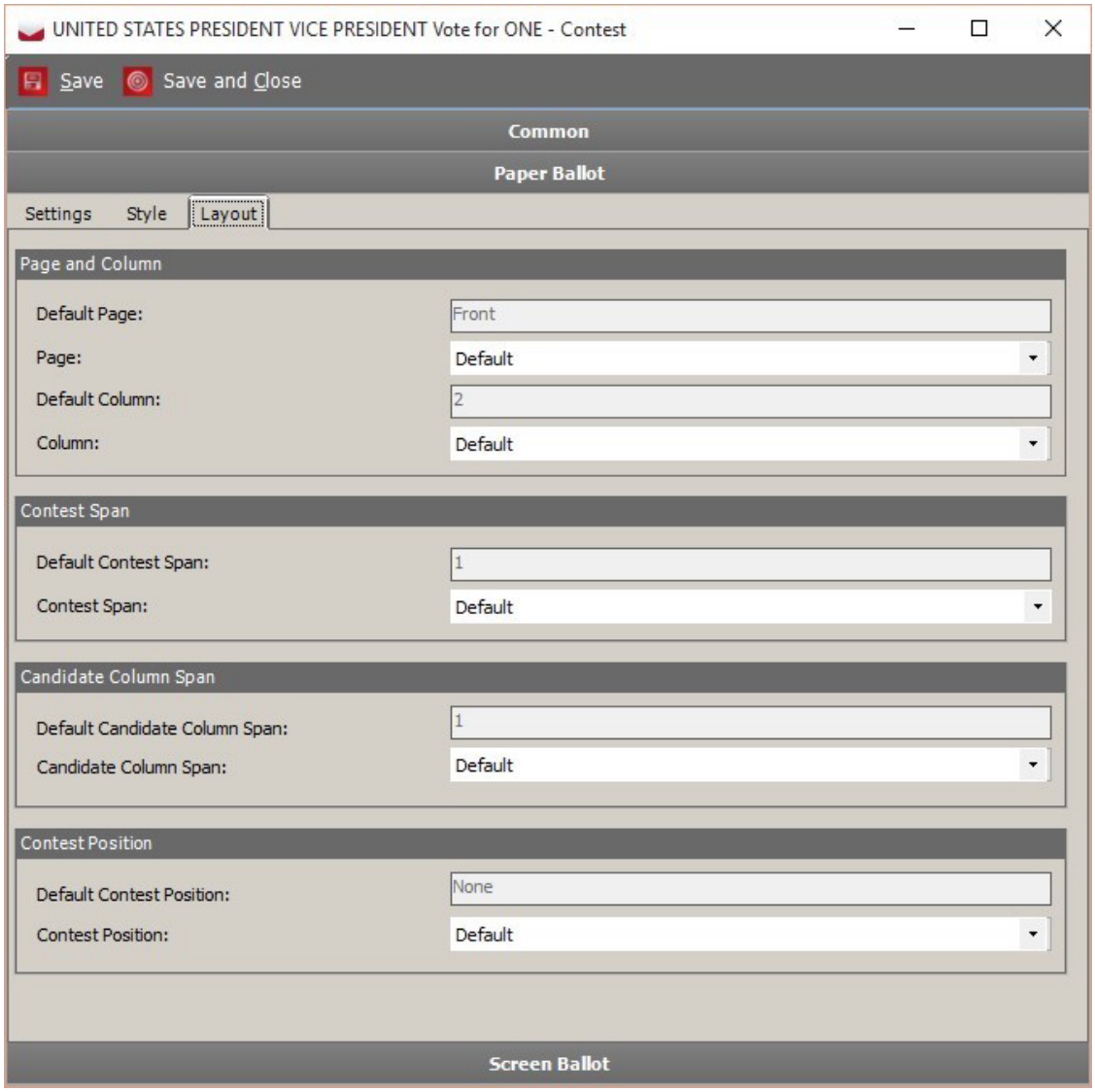

Figure 3-75: Contest: Layout Tab

20. In the 'Choice Groups' tab, you can add the choice group.
21. Choice Groups are used for grouping choices under or below the same title.

22. Click ‘Add’. The ‘Choice Groups’ dialog appears.

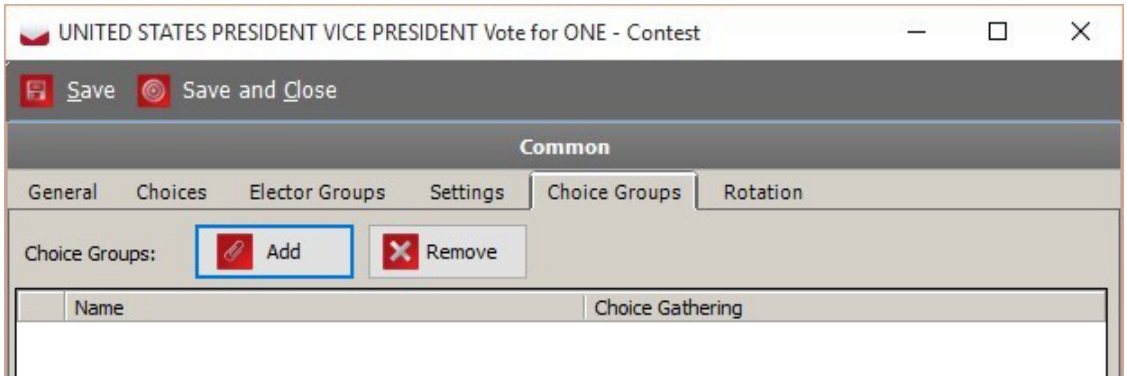

Figure 3-76: Contest: Choice Groups Tab

23. In the ‘Choice Groups’ dialog, type the name of the choice group.
24. The ‘Together in Column’ functionality forces choices in multi column contests to be grouped in the same column.
25. In the ‘Appearance’ drop-down menu, you can select whether the title will appear above or below choices. If you select ‘Never’, the title will not appear.
26. From the ‘Size’ drop-down menu you can set the number of candidate cells within the group.
27. In the ‘Choices’ tab you can use arrows to group choices within a group.
28. Click ‘Save and Close’ to save the changes.

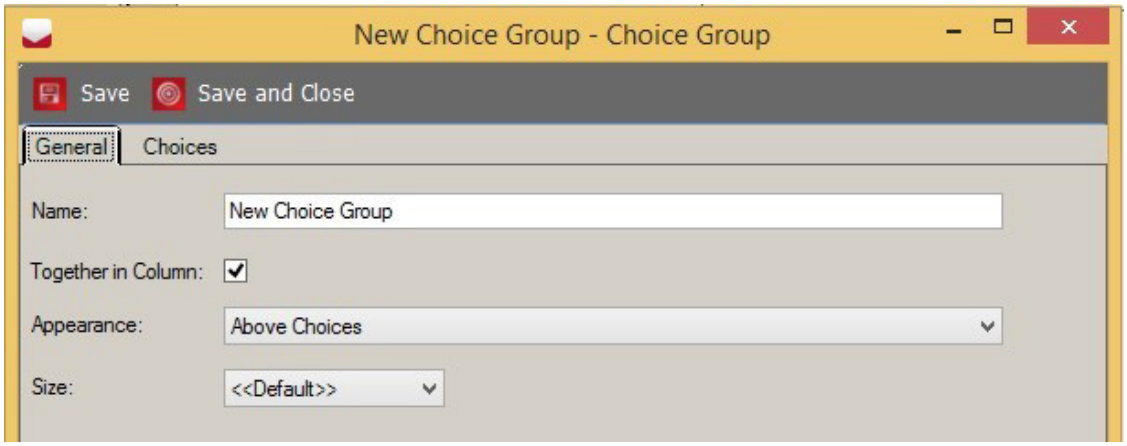

Figure 3-77: New Choice Group dialog

29. Click the ‘Rotation’ tab. The ‘Rotation’ tab holds information about ‘Rotation Type’.
30. The ‘Disable Rotation’ checkbox is used for disabling rotations on the single contests.
31. From the ‘Start Rotation Index’ dropdown menu, you can change the starting rotation index on the contest.

NOTE: 'Start Rotation Index' is ignored when the rotation type is set to 'District Rotation', when the system has predefined, and when 'Use Predefined District Rotation' is selected. 'Start Rotation Index' is still used when rotation type is District Rotation and there are no pre-defined district rotations, or when the checkbox Use Predefined District Rotations is unchecked.

32. 'Deviation Report' field: This is an information only textbox that shows all calculated rotations for a contest. If number of registered voter information is available it also indicates the number of voters who would receive a specific rotation for the current contest

NOTE: After Rotation is configured for Office and/or Contest, user must execute rotation from Menubar Actions - Rotate Contests before Defining Ballots Structure, otherwise Contests do not rotate.

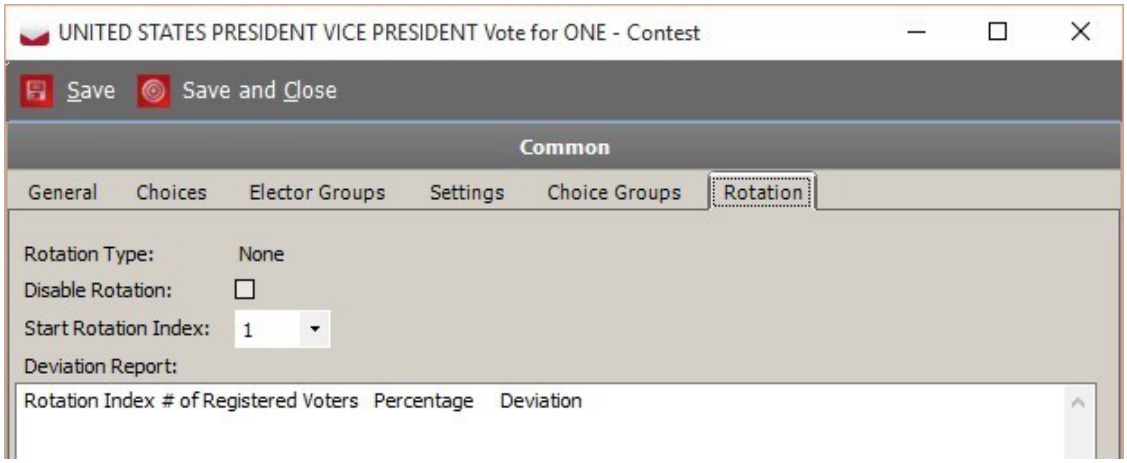

Figure 3-78: Contest dialog - Rotation tab

33. If you select the 'Office Type - Measure and in Rank Choice Voting' tab, in Office dialog select Voting System - Preferential (see section 4.20), Rank Choice Voting tab appears in the Contest dialog.
34. On the 'Ranked Choice Voting' tab, the 'Rank Header Height' placed in the 'Number of Ranks' field represents height of the rank header in vertical markers. Available values are from 0 (rank header will not be visible) to 10 (max header height). Ranking field represents number of rank profilable instances. Rank prolilable instances are created when the project status is

changing from definition to styling. Click on an instance to edit it (field and name are also editable).

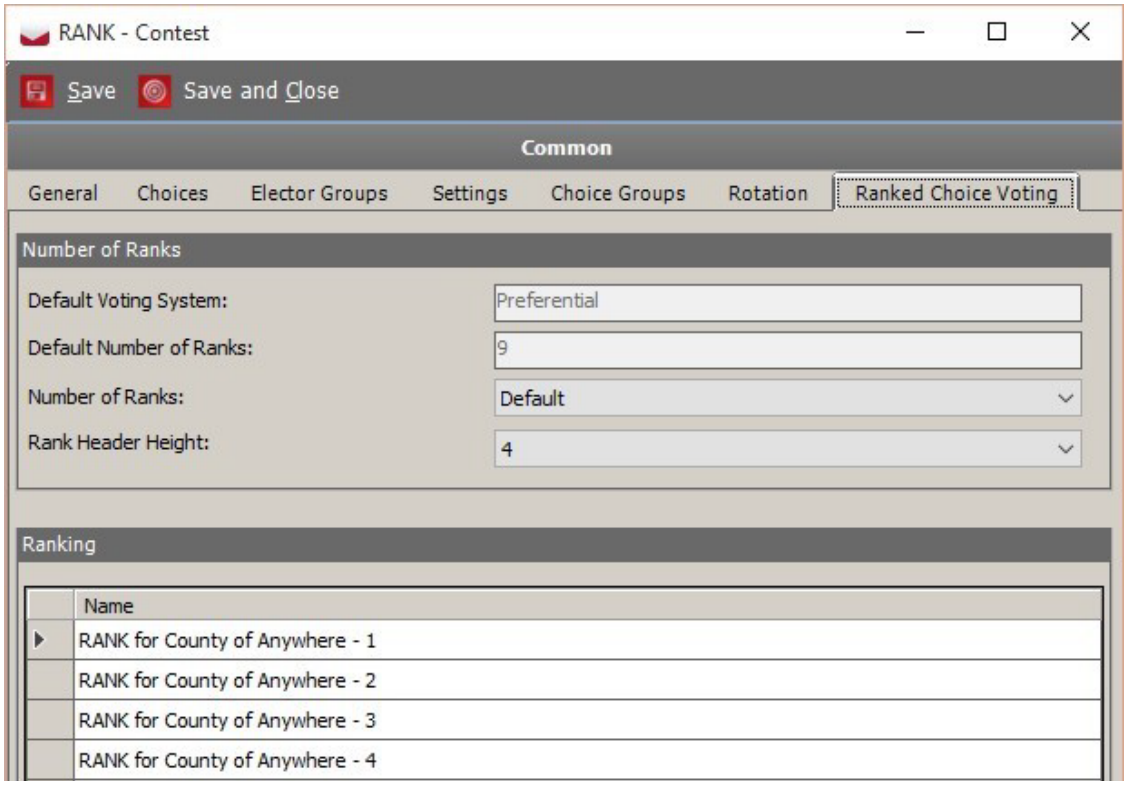

Figure 3-79: Contest dialog - Ranked Choice Voting tab

35. Double-click on an instance and dialog for editing appears. You can edit RTF text for each language and change rank profilable instance name.

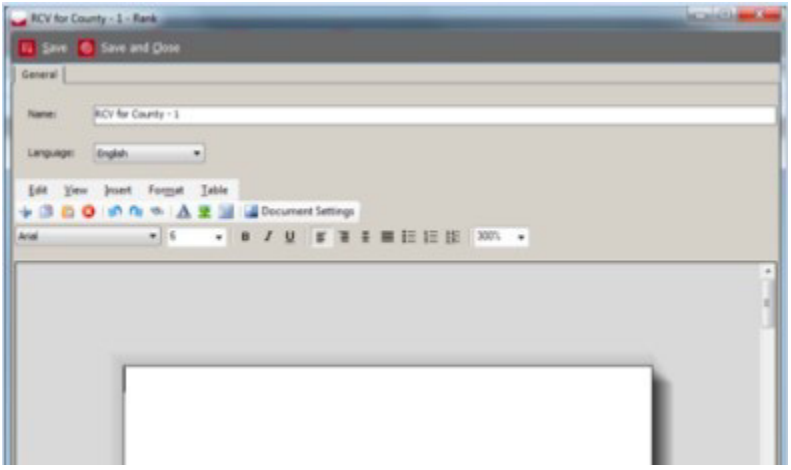

Figure 3-80: Ranking

36. In case that contest is Straight Party type, additional Straight Party tab will be enabled in the Contest dialog. This will allow user to connect contests that are applicable to the Straight party ticket.

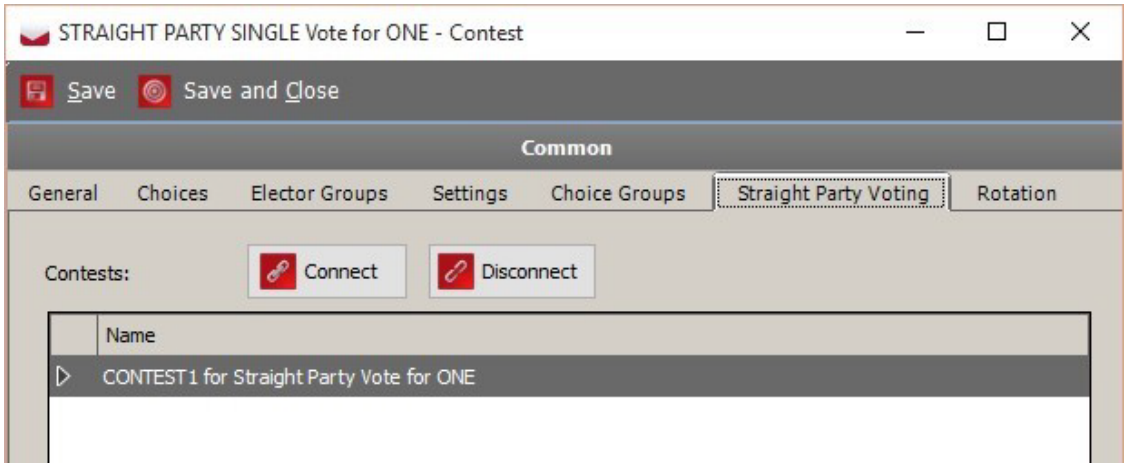

Figure 3-81: Straight Party tab

3.21.3 Defining Contests with Audio

For audio options, see Section 4.6 Generating Audio in EMS.

3.21.4 Contest Positioning

There are two types of contest positioning: Absolute and Relative positioning. Absolute positioning defines position of contest, side and column and Relative positioning defines strictly new side and new column.

Those settings can be defined in both 'Office' and 'Contest' dialogs.

NOTE: For more information proceed to sections 4.20 and 4.21.

Also we can override settings from 'Office' dialog using settings in 'Contest' dialog - 'Layout' tab.

1. Select 'Settings' tab within the 'Office' dialog and select column position from the 'Column Position' drop-down menu.

NOTE: For more information to section 4.20.

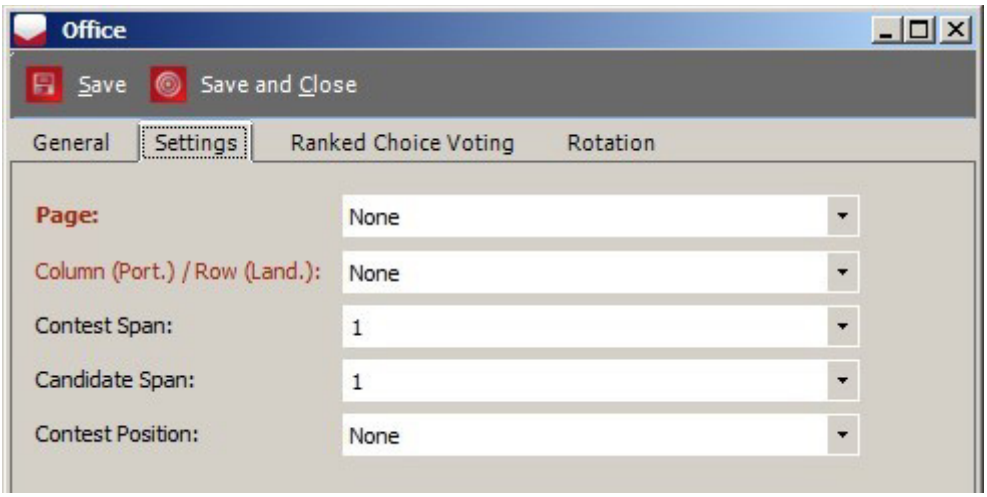

Figure 3-82: Office dialog-Settings tab

2. Additionally, Absolute the position of a contest can be set within the 'Contest' dialog - 'Layout' tab.

3. ‘Override Default Column index’ for a selected contest with a checkbox and select desired position from the ‘Column index’ drop-down menu.

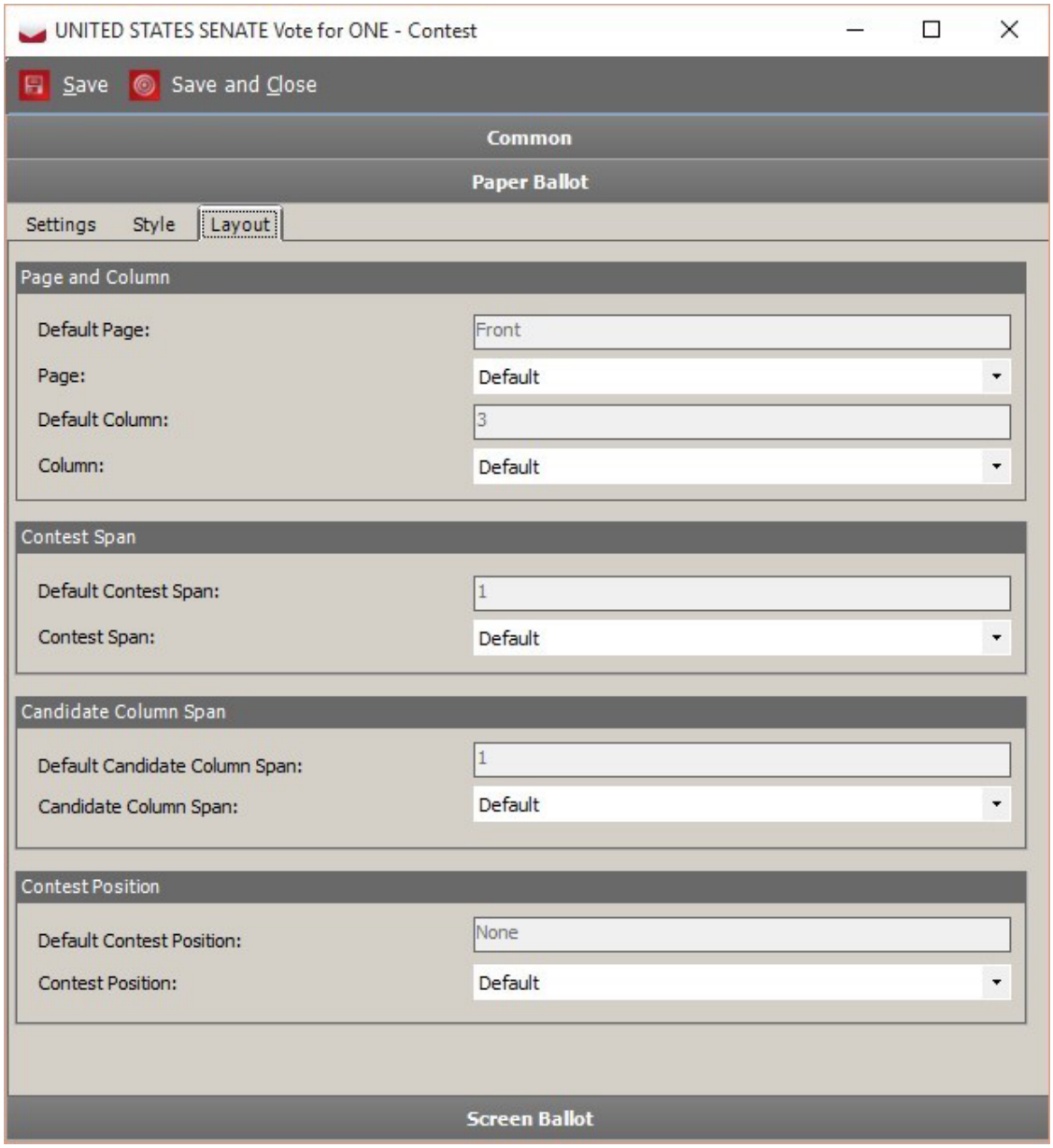

Figure 3-83: Contest dialog-Layout tab

4. You can also define the Relative position of a contest by selecting one of the options from the 'Office' dialog - 'Settings' tab - 'Column Position' drop-down menu: New Column or New Side.

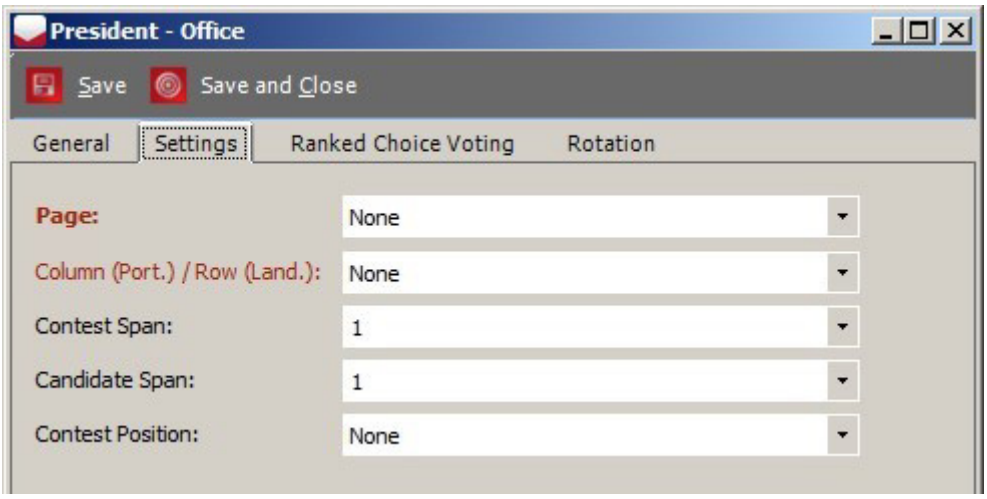

Figure 3-84: Office dialog-Settings tab

5. TheRelative position of a contest can also be defined from the 'Contest' dialog - 'Layout' tab 'Contest Positioning 'drop-down menu.

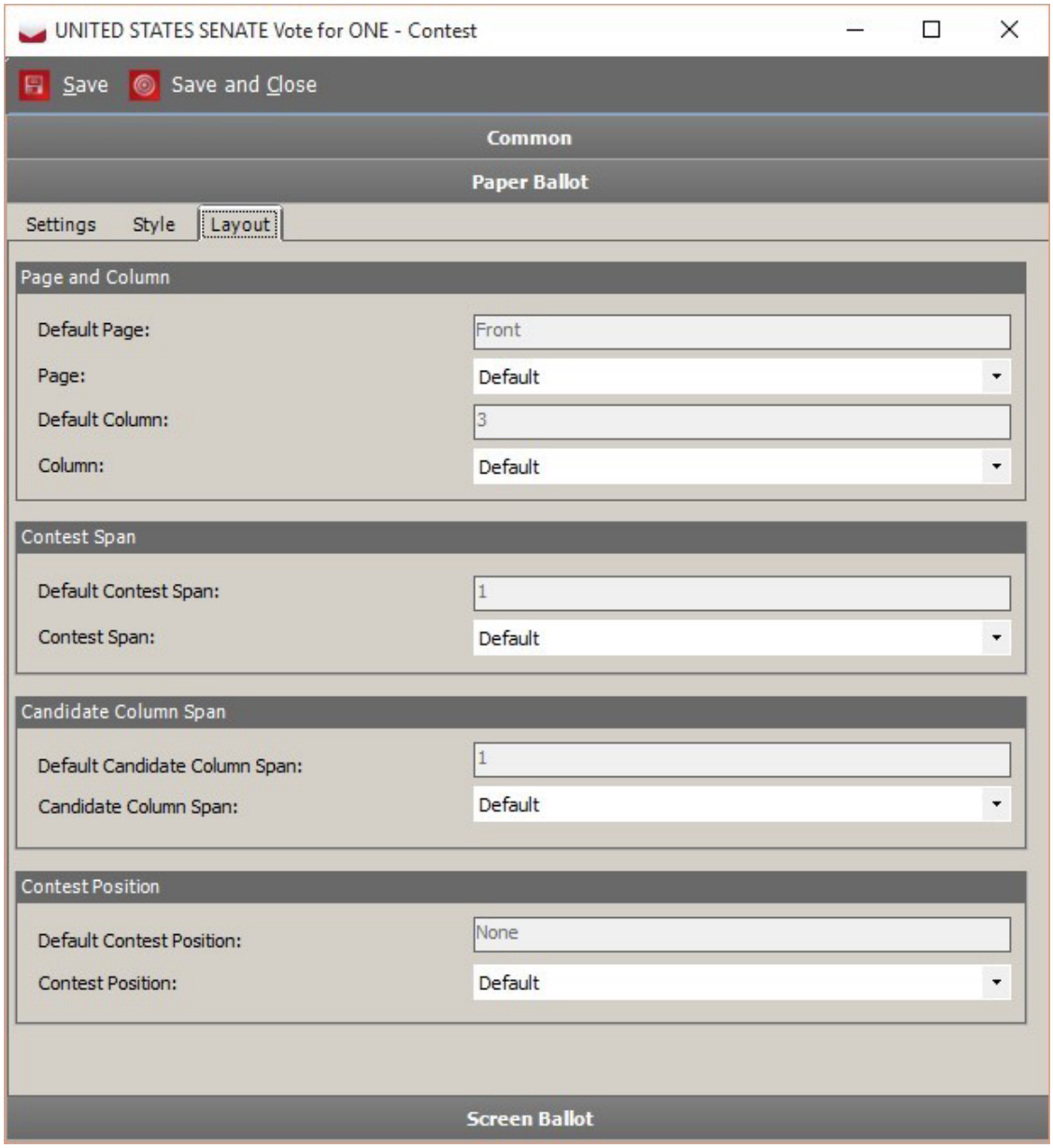

Figure 3-85: Contest dialog-Layout tab

6. Absolute contest position has priority over Relative position. This means that if column position is defined, the rendering system will ignore Relative contest position settings. There will be no warning and contest will be placed according to its Absolute position.

7. For example: If you choose **First Page Second Column** for **Contest A** and **Second Page Second Column** for **Contest D**, the **First Column** on both pages will be empty (see that on this example)

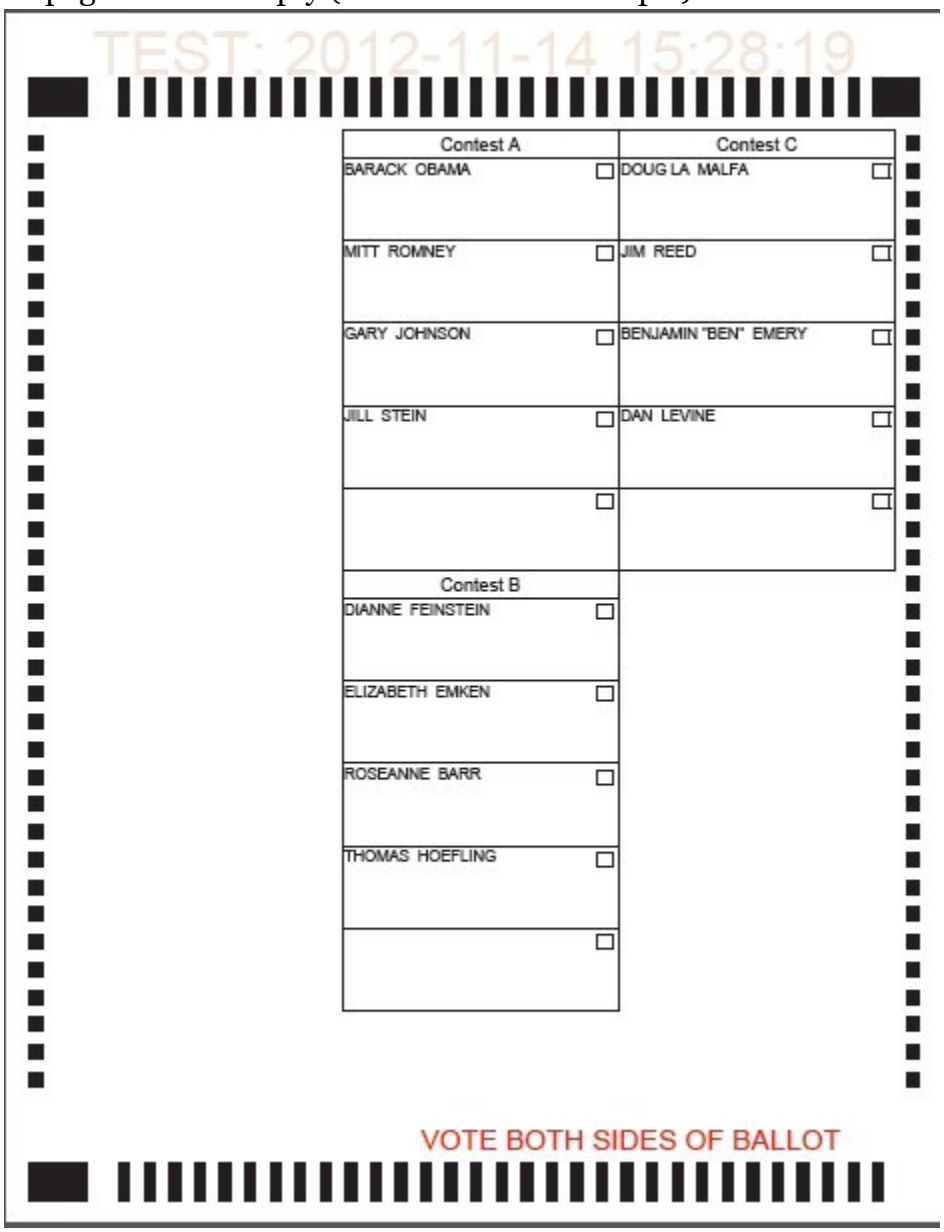

Figure 3-86: Ballot sample-Absolute position - contests A and D

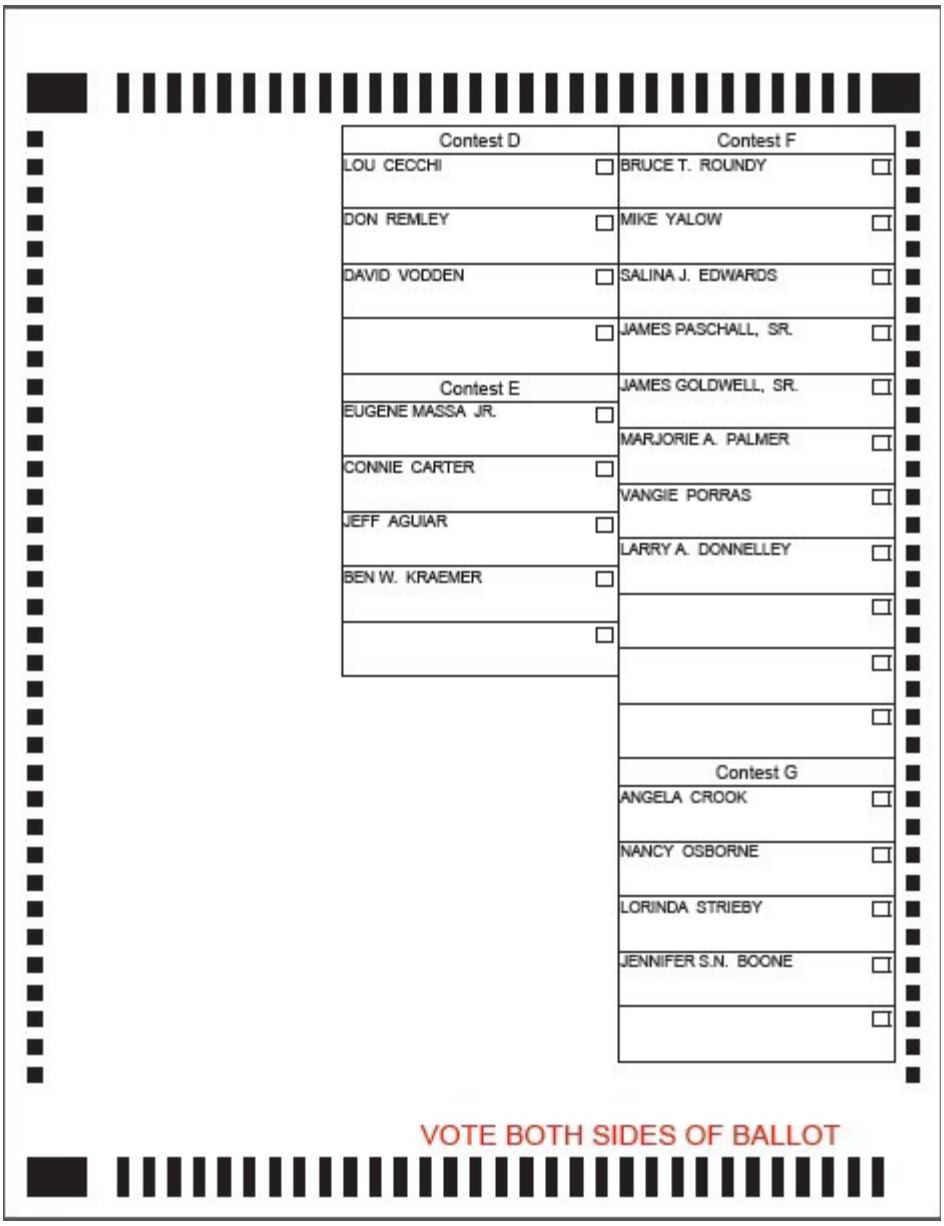

Figure 3-87: Ballot sample-Absolute position - contests A and D

8. If you change **Contest D** position to **First Page First Column**, the selection conflicts defined position of **Contest A** and a warning appears:

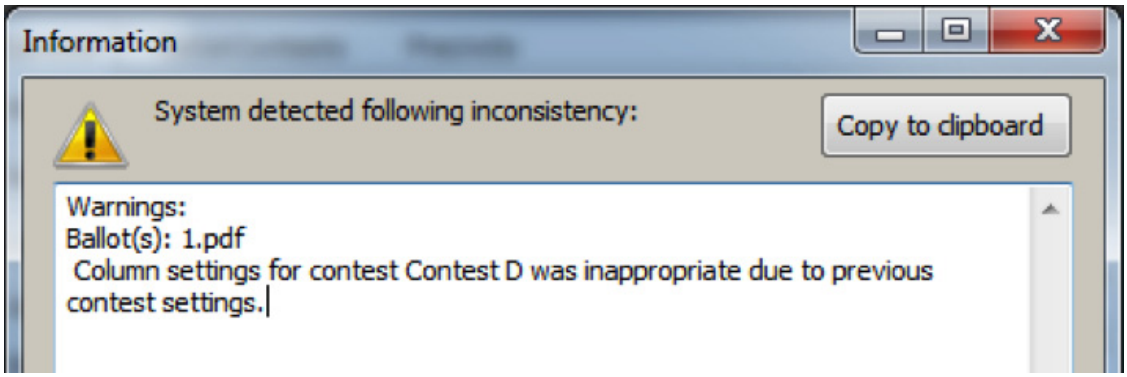

Figure 3-88: Information dialog

9. Click on the **Close** button and **PDF** will open **Contest A** in the **Second Column** on the front page.

10. Other contests follow as global order indicates see the following example.

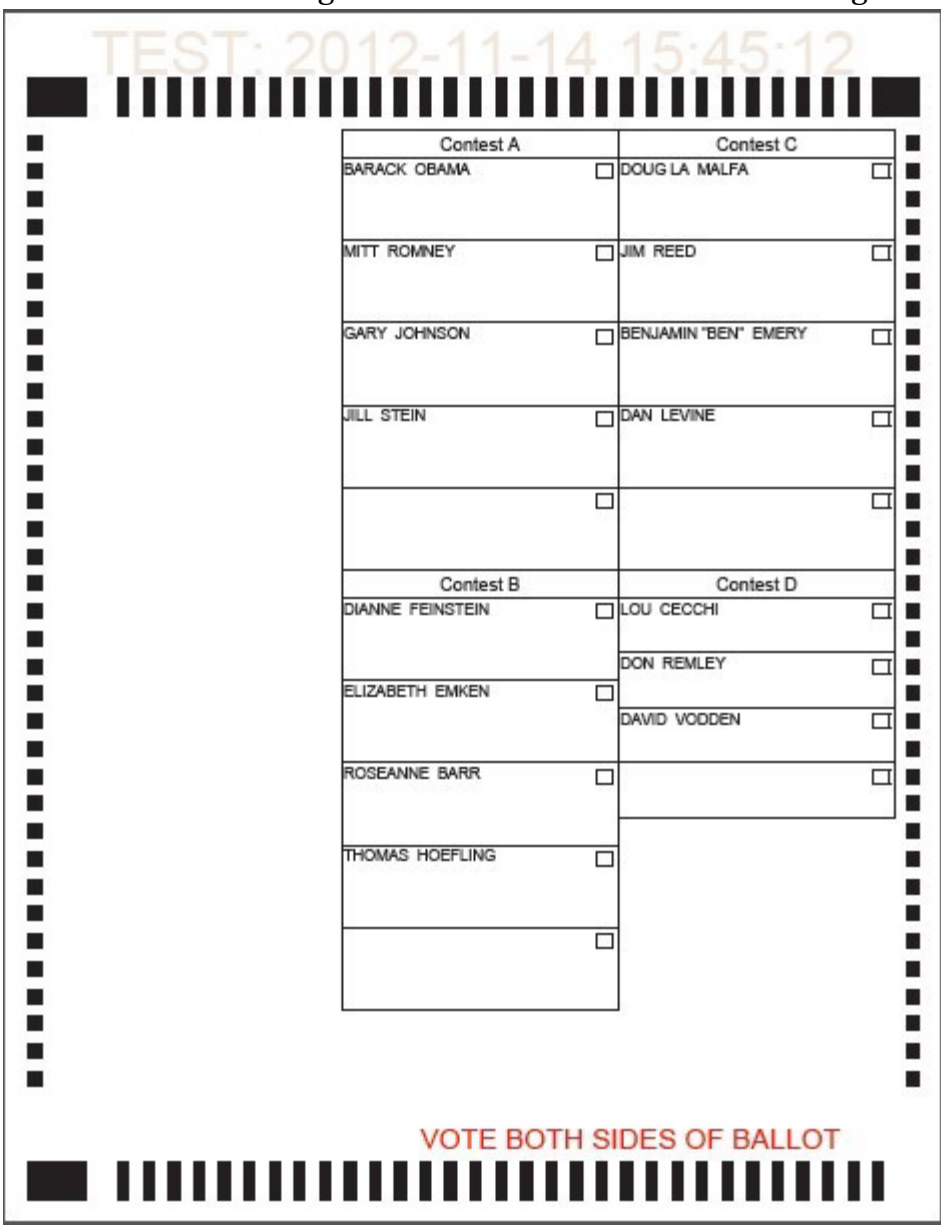

Figure 3-89: Ballot sample- Inappropriate settings for Contest D

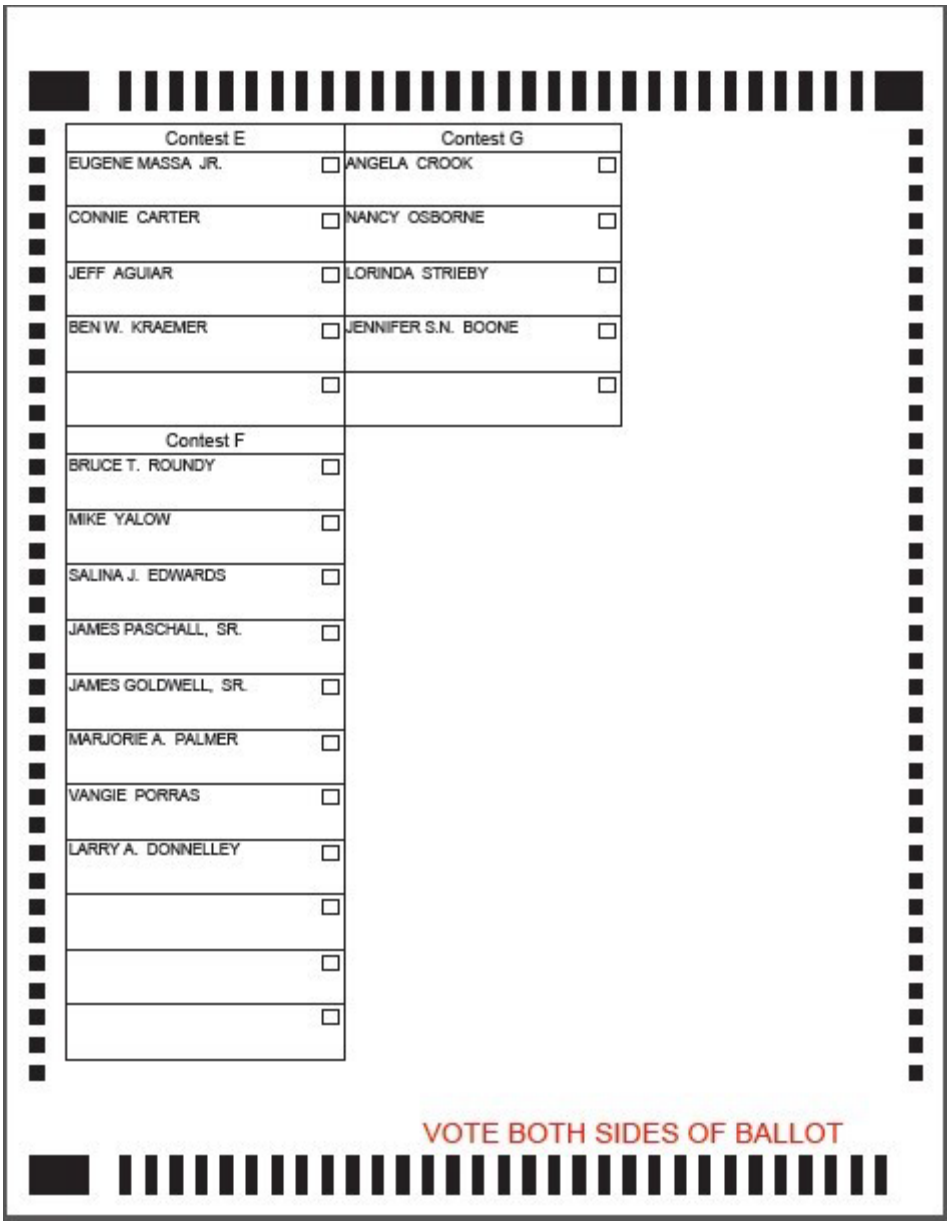

Figure 3-90: Ballot sample- Inappropriate settings for Contest D

11. Not all selected options can be reflected on the ballot. If contest cannot be placed as desired, user will get a warning.

12. This ballot sample shows situation where all contests should be placed in the **First Column** on the front page, but with available Paper Dimensions cannot fit all:

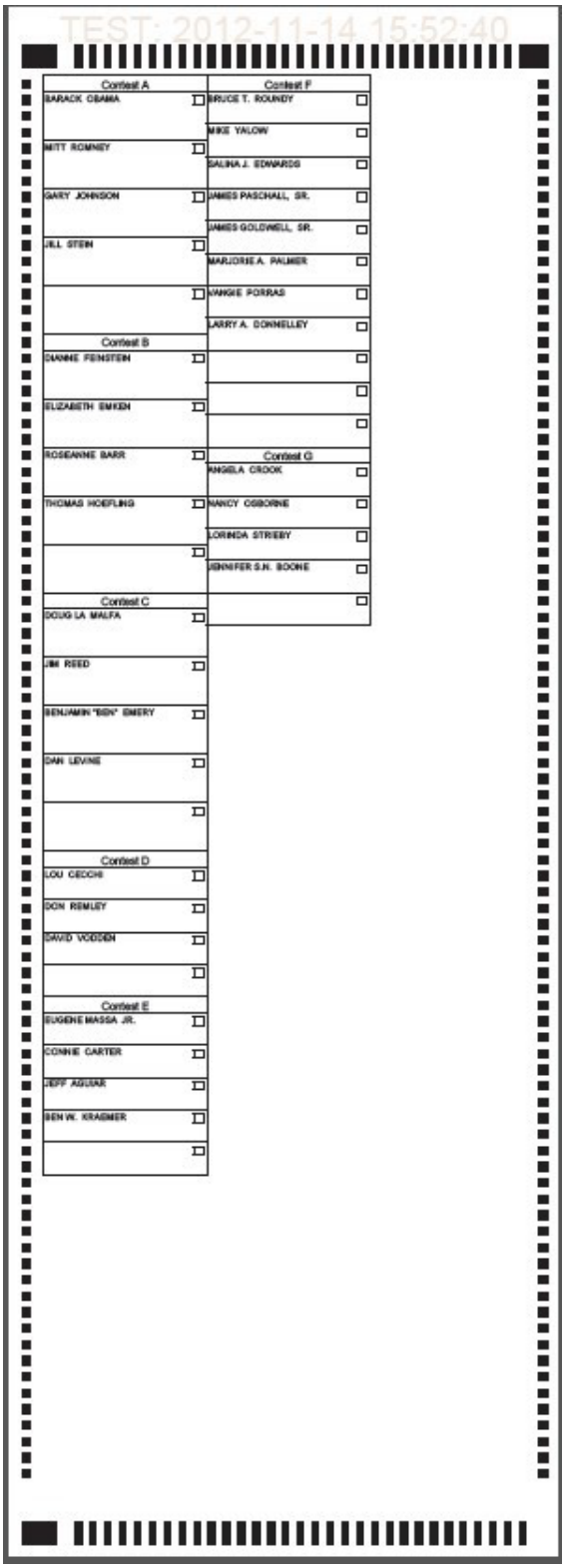

Figure 3-91: Ballot sample- First Page First Column for all contests

13. That is why **Contest F** and **G** go to **Second Column** with appropriate warning:

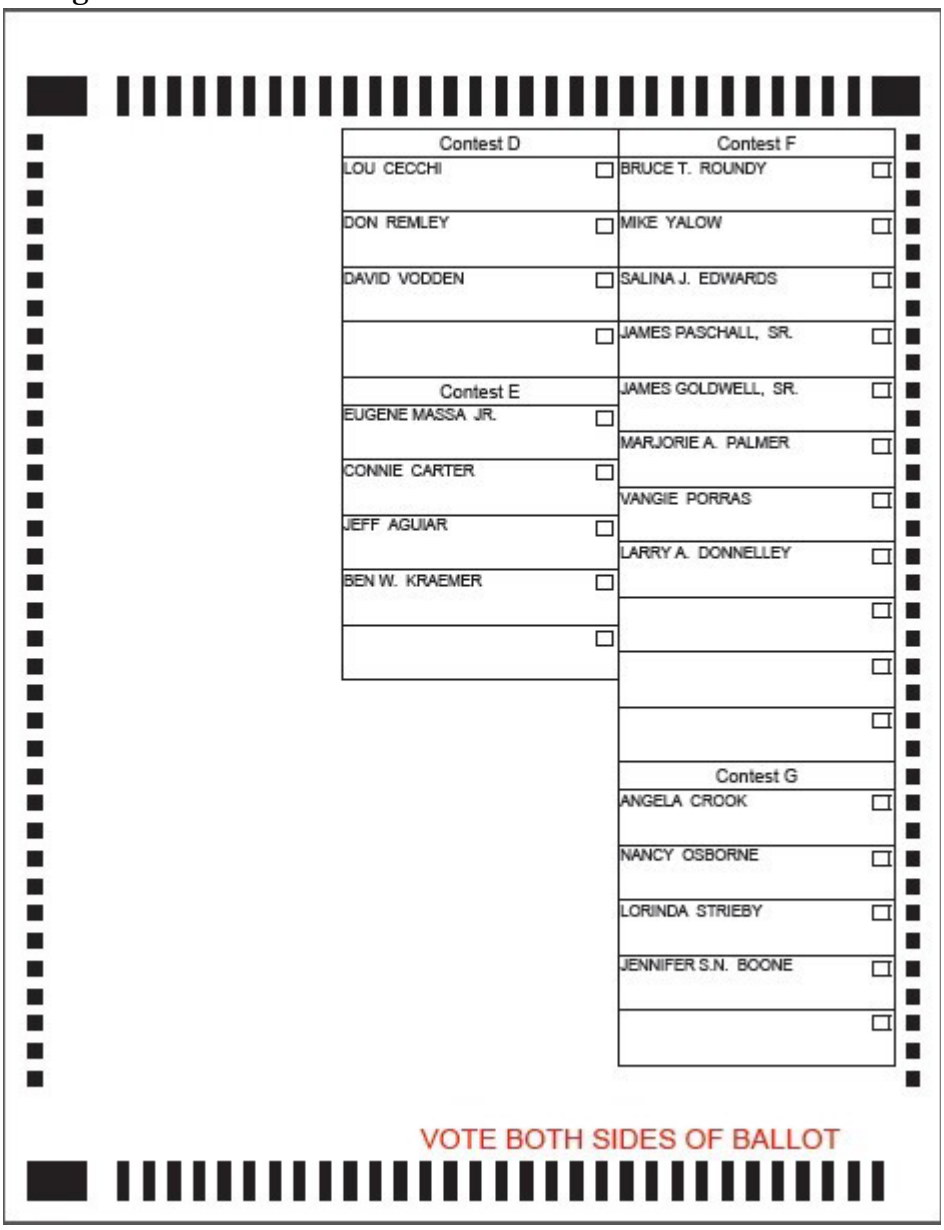

Figure 3-92: Information dialog 2

14. Relative positioning is placement of the contest on the ballot with respect to other contests. If **New Column** is set for certain contest, that contest is placed as first in the **New column**, if possible. The following are examples involve Relative contest positioning.

15. In the first example **Contests B** and **C** have both **New Column** position set. **Contest B** will be first in the **Second Column** and **Contest C** first in the **Third Column** on the front page (see ballot example below):

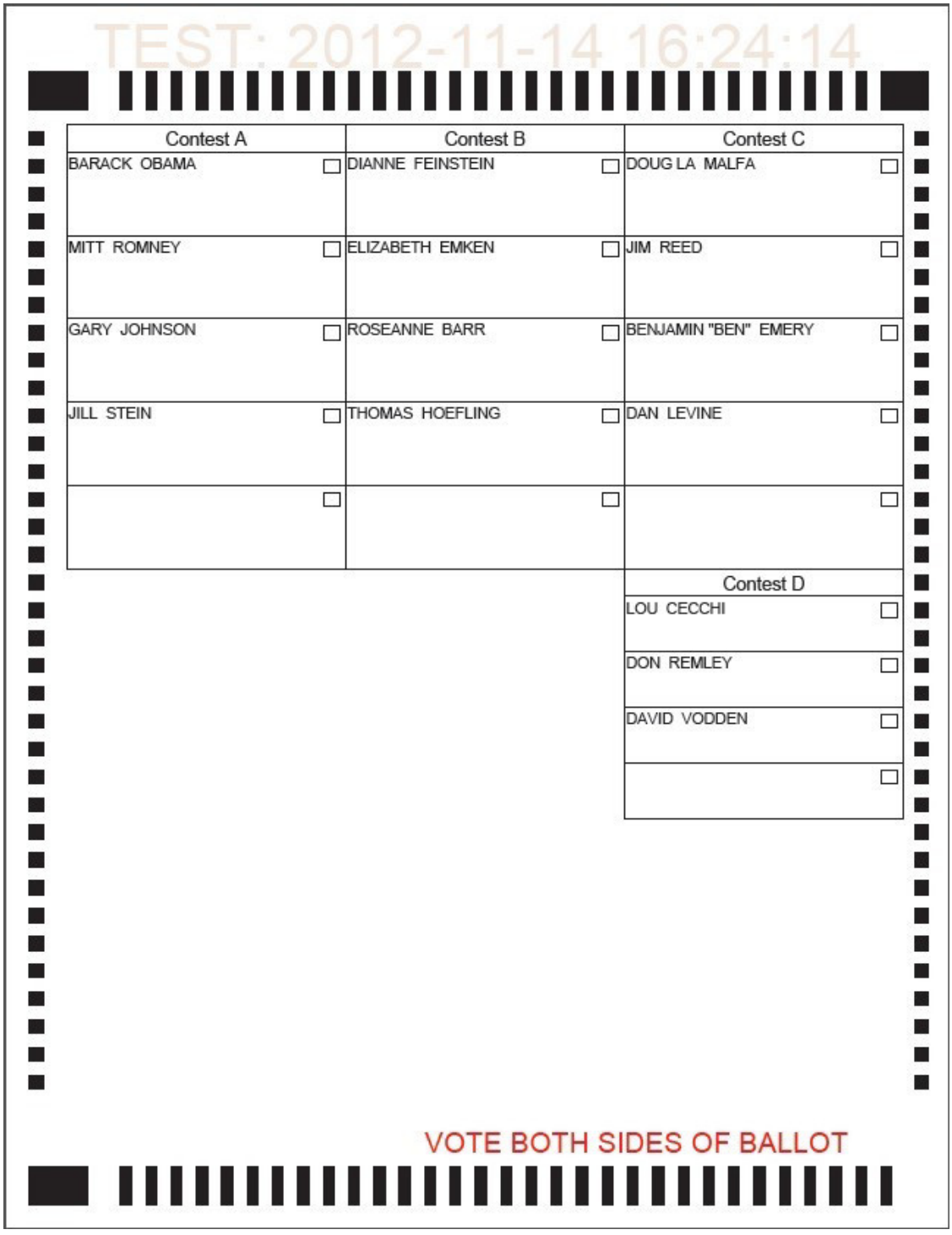

Figure 3-93: Ballot sample-New Column

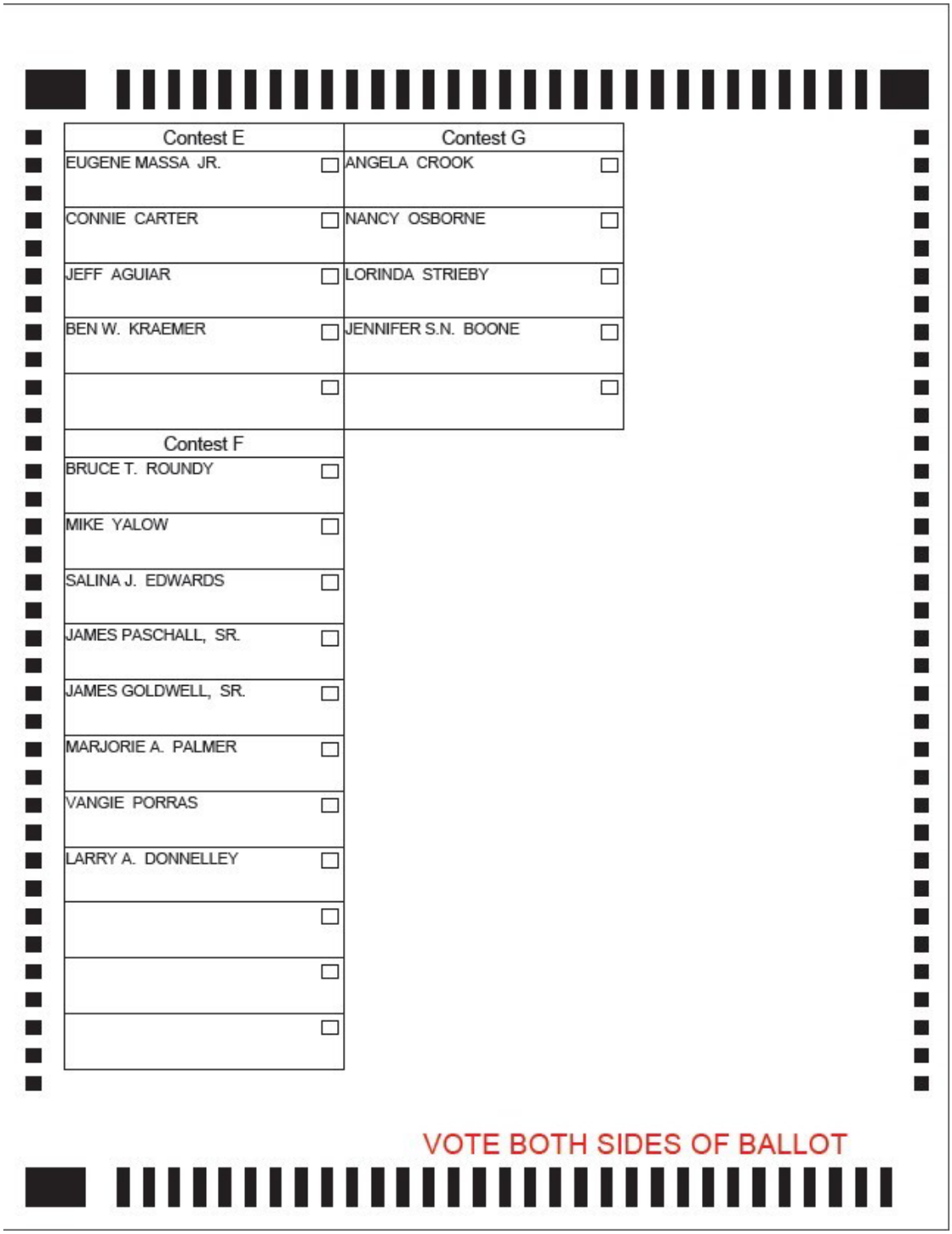

Figure 3-94: Ballot sample-New Column

16. In the next example, **New Side** setting places contest on the new side, if possible.
17. Set **New Column** for **Contest B** and **New Side** for **Contest C**.

18. **Contest D,E,F,G** are rendered on the second side because of the global order. The system will try to accommodate contests using minimum ballot dimensions.

19. The next ballot sample shows **Contest B** in the new column and **Contest C** on the new side:

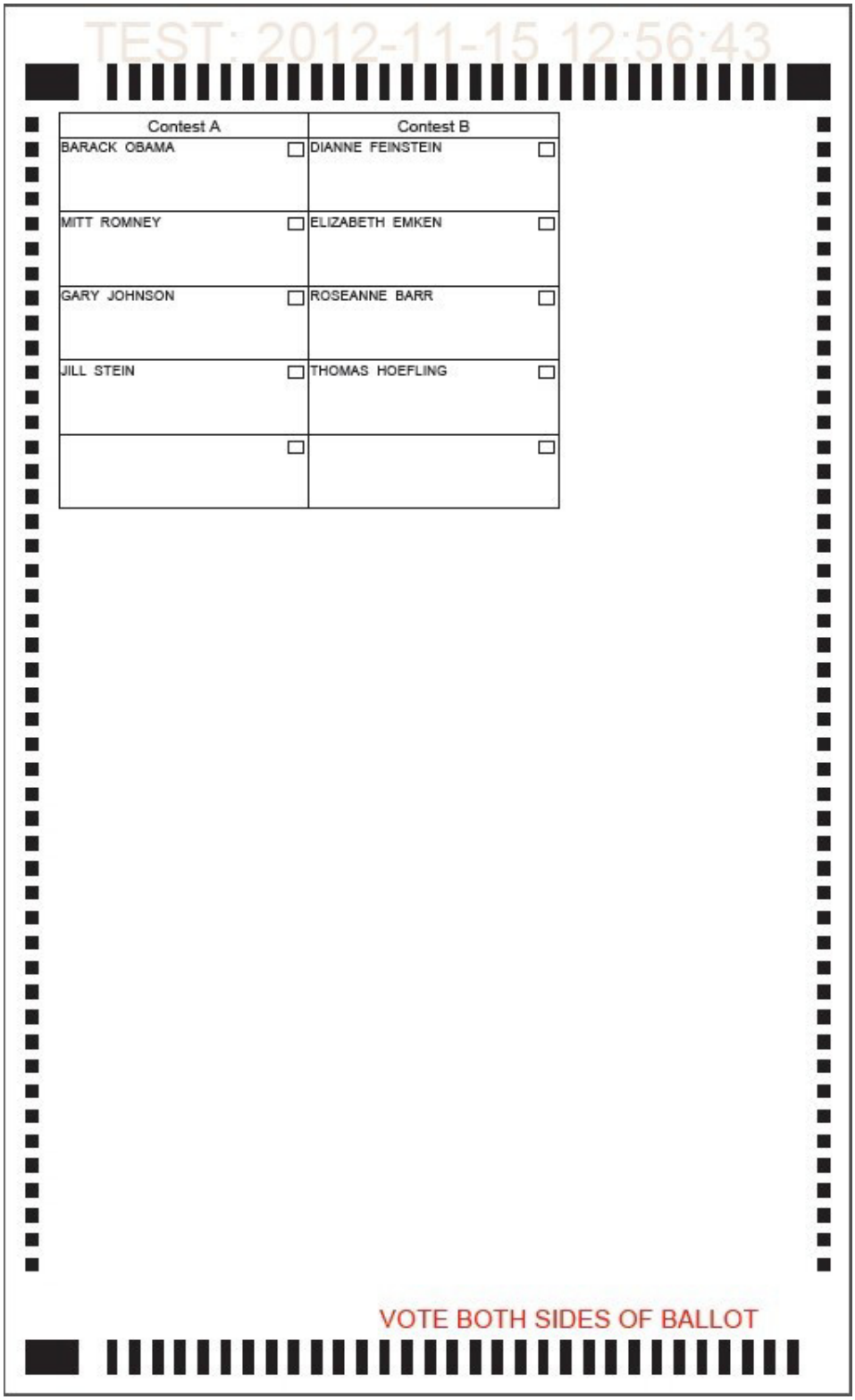

Figure 3-95: Ballot sample-New Side

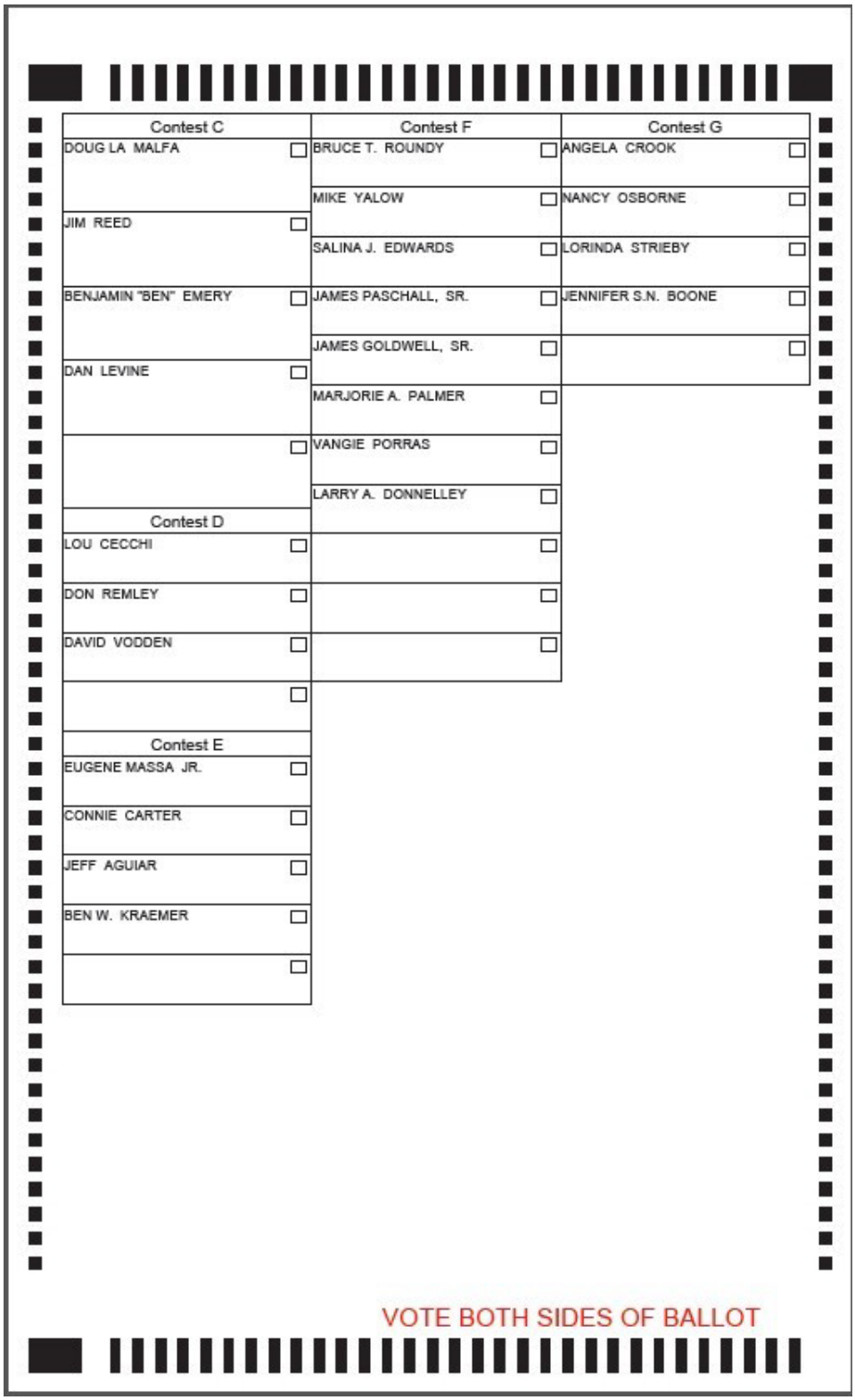

Figure 3-96: Ballot sample-New Side

20. If any of the settings cannot be met for a certain contest, a warning message appears.
21. Add position **New Side** to **Contest D**, in addition to previous settings for **Contests B** and **C**.
22. **Contest C** is first on the back page, therefore **Contest D** cannot be placed on the new side as first.
23. Warning message will appear, see Figure 3-97:

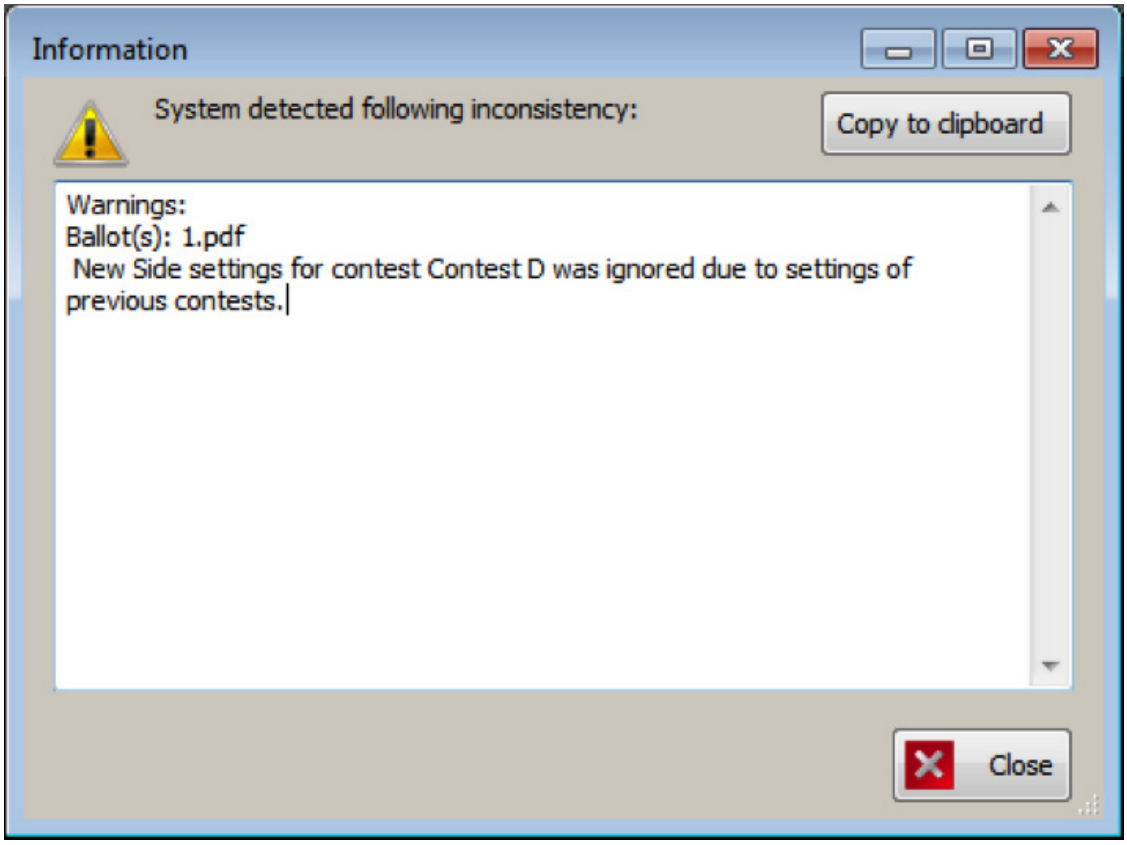

Figure 3-97: Information dialog 3

24. If contest in the last column on the back side has **New Column** defined, the rendering system tries to place contest on desired position by increasing ballot size.
25. We have example and this ballot is **14”** long, unlike other PDFs so far.

26. **Contest G** is successfully placed in the last column.

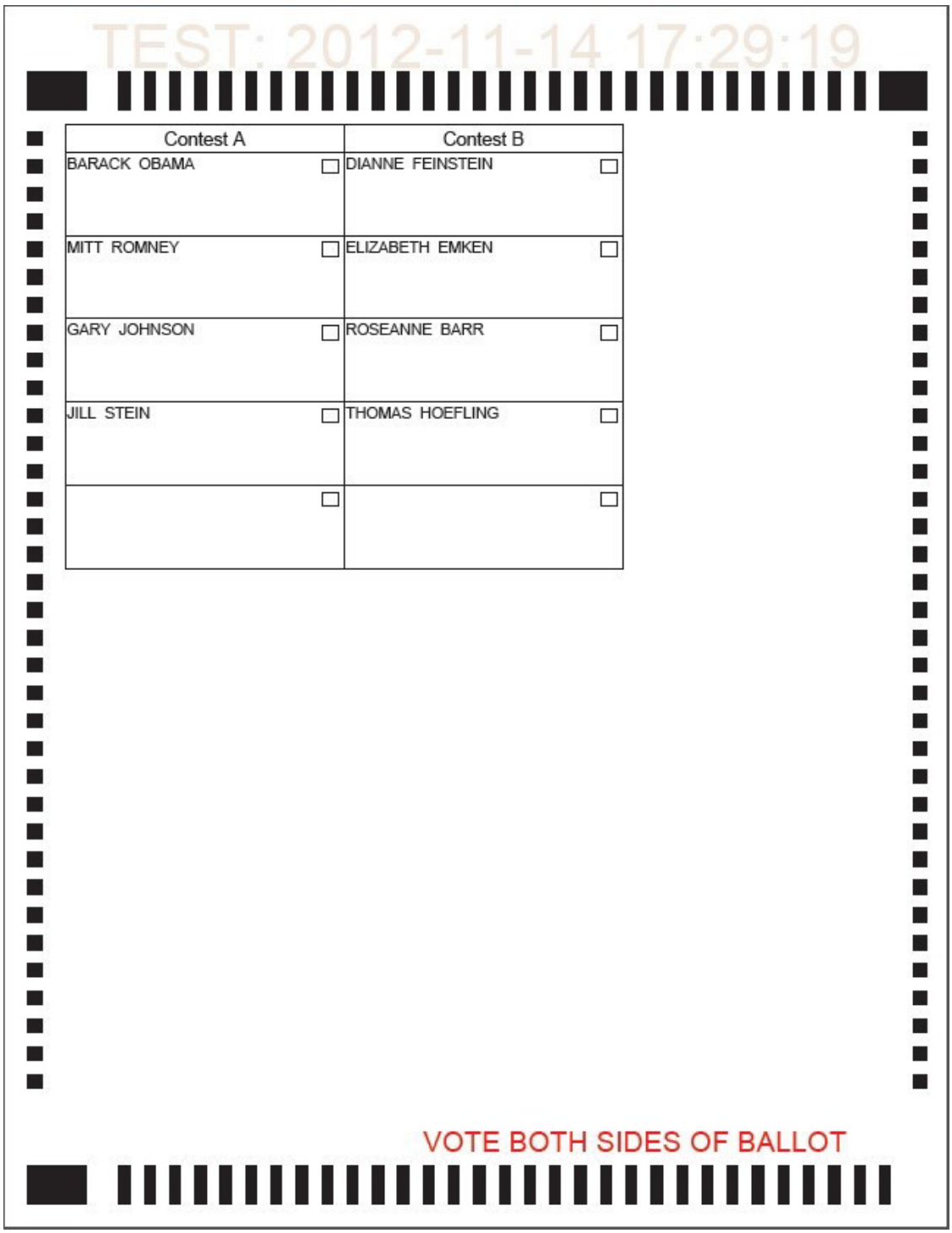

Figure 3-98: Ballot sample- New Column Contest G

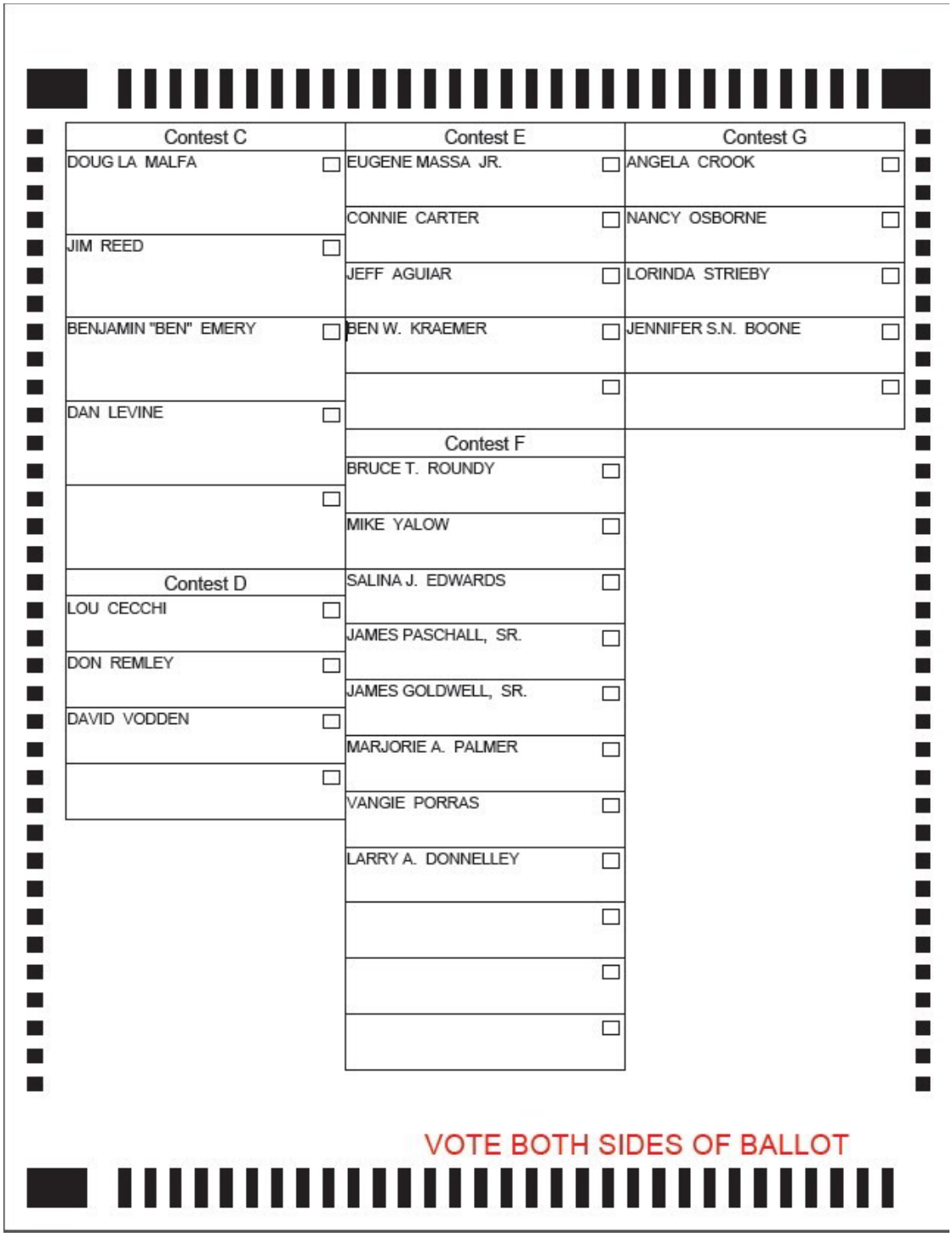

Figure 3-99: Ballot sample- New Column Contest G

3.21.5 Defining Choices

1. To define choices, open a contest and select the 'Choices' tab. To add a new choice, click 'Add'. A Choice dialog appears.
2. Choices can also be entered by going into the Navigation panel/Choices.
3. The Type combo-box contains four options:
   a. Regular - This is the default option when creating a new choice, and it means that the user is creating a standard choice in a given contest in the election.
   b. Qualified Write In - This is usu ally used for candidates who are late to register their nominations for the election these choices do not appear on ballots, but will have their votes counted if entered correctly on the ballot by the voter, provided WriteIn Resolution is performed for the election. For more details about Qualified Write In choices, please refer to subsection (4.18.5.1 Defining Qualified Write In choices).
   c. No Candidate - This option is used when there are no candidates in the contest, or when the number of candidates is less than the vote for number of choices for a given contest.
   d. No Preference - This option is used when the voter is given an option to indicate that they do not wish to vote for any of the available regular choices in the contest.

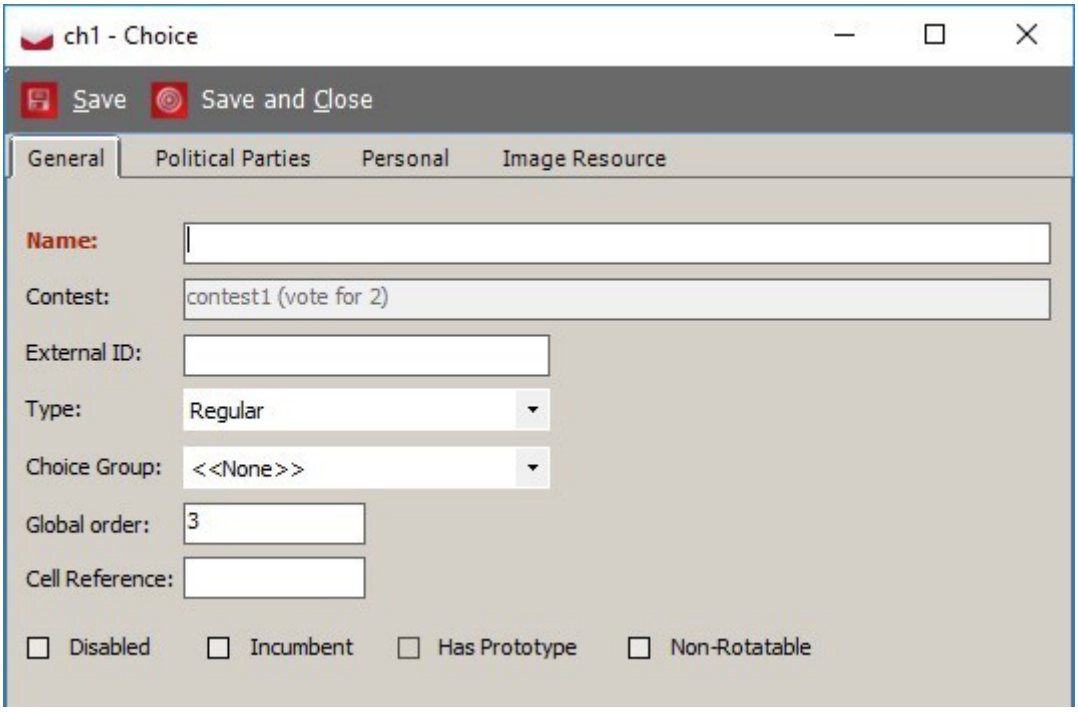

Figure 3-100: Choice dialog

NOTE: The Type combo-box is only enabled during the Election Project Definition and Last Minute Definition phases. During all other phases in the election project, the user can only create new choices as Qualified Write In.

4. In the 'Choice Group' combo box, set the choice group for the given choice by selecting from the drop-down list. This lists all choice groups assigned to the contest that the Choice is linked to. If the given choice does not have to be part of a choice group, select 'None'.

NOTE: The choice has **Disabled** and **Incumbent** options can only selected during the Election Project Definition phase. Use the 'Disabled' option if the choice is not running for the office. Use the 'Incumbent' option if the choice is currently holding the office. The 'Has Prototype' checkbox is is a non-editable information field related to choice prototypes. If you list the choice prototype in the main menu, 'Has Prototype' is selected automatically after you move onto the Ballot Styling project status. If the **Non-Rotatable** option is checked, the choice is not rotated on ballot and is always be positioned immediately above write-in position on the ballot.

NOTE: If a choice is marked "Disabled", it is marked "Withdrawn" on reports printed from ImageCast® X devices.

5. Select the **Political Parties** tab, and connect the choice to a political party(s).
6. Select the **Personal** tab to add a candidate's personal information.
7. **Image Resource** tab allows user to add the choice images. All images used in EED are stored as image resources. Each resource has set of images for a different purpose: paper image, screen image, screen image black on white and screen image white on black. Paper image is used for paper ballots generated PDF files (supported in Puerto Rico ballot styles). Screen images are used on tabulator devices. Device has three display modes: full color, black content on white background and white content on black background. User has ability to set different images for each display mode. User can attach existing image resource or set images directly. If images are set directly new image resource with choice name will automatically be created. For more details about image resources, please see the section 5.23.

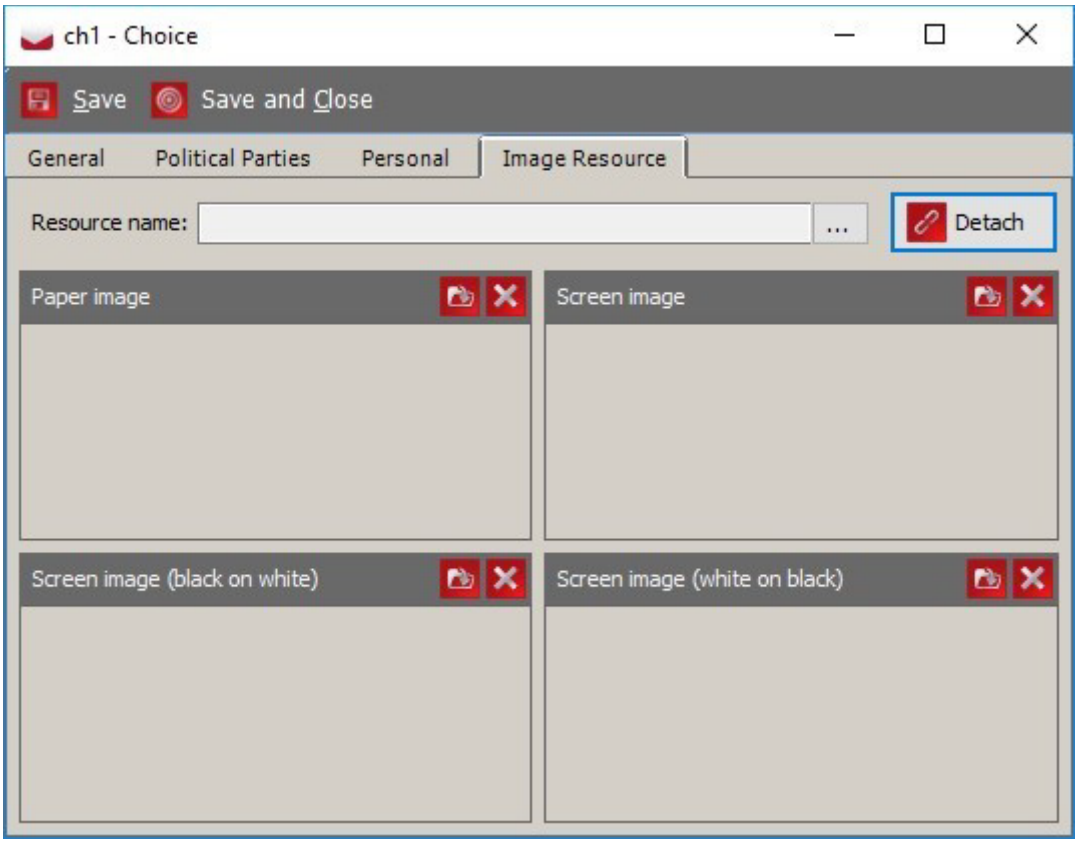

Figure 3-101: Image Resource tab

Click 'Save and Close, and repeat the steps 1-7 until all choices have been created for the contest.

3.21.5.1 Defining Qualified Write In choices

The user can create a Qualified Write in choice in the Choice dialog by selecting the Qualified Write in option in the Type combo-box. The user is able to Create \Delete \Modify Qualified Write In choices in all election project statuses except Closed. Qualified Write In choices can only have general and personal information and audio files associated with them no Political Parties and no Text-Overrides.

Some important characteristics and limitations of Qualified Write In Choices:

- Qualified Write In choices can only exist for contest where the Number of Write-in positions is not set to 0. If this rule is not respected the process of ballot content creation will be blocked by project validation, see Figure 3-102 for error message displayed to user when trying to generate ballot content.

Figure 3-102: Information dialog

- Qualified Write in choices cannot be created for Straight Party and Proposition contests. The Type combo-box in the Choice dialog will not contain an option for Qualified Write-in.
- No choice, of any type, including Qualified Write-in, can be added to Off Ballot and Instructional contests. In case the user attempts to add a choice, an error message will be presented, see Figure 3-103 for error message.

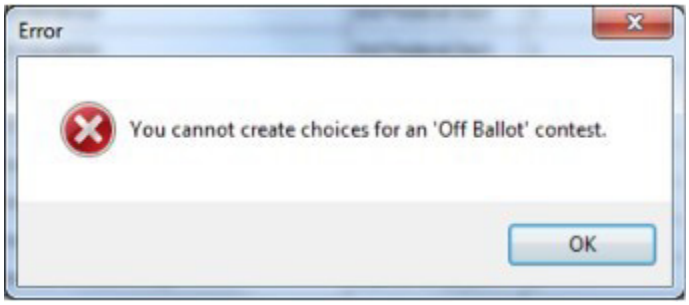

Figure 3-103: Error message dialog

3.21.6 Defining Contest Prototypes

Contest Prototypes are a special set of choices used for Measures, also known as Propositions. You can define a Contest Prototype containing 'Yes' and 'No' choices, and attach it to all proposition contests. This saves time when coding an election and eliminates the need for redundant 'Yes' and 'No' choice definitions for each contest. In this section, however, Contest Prototypes are defined for use in the proposition contest that is defined in the next section. 'Yes' and 'No' can also be defined as regular choices in each contest using the procedures outlined in Section 4.21.5 To define a Contest Prototype:

1. Expand the 'Election Event' option on the Navigation Menu, and select 'Prototypes' to open the Prototypes context sensitive screen.
2. Click 'Create New' to open the 'New Contest Prototype - Contest Prototype' dialog appears, see Figure 3-104.

3. Type the name of the prototype in the 'Name' field.
4. You can also add a 'Description' containing detailed information related to the prototype.
5. Click 'Add' to assign your prototype to various contests. The 'Contest Association' dialog appears. Click 'Search' to generate a list of contests. Select the desired contests you wish to assign your prototype to, and click 'Assign and Close'.

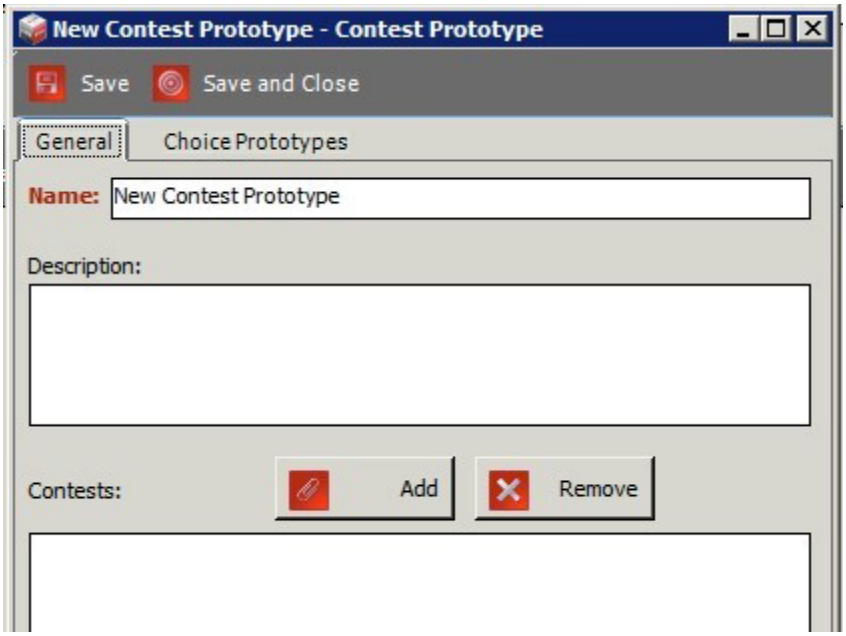

Figure 3-104: New Contest Prototype Dialog

6. Select the 'Choice Prototypes' tab, see Figure 3-105.
7. Click 'Add' to define a new Choice Prototype.
8. A 'New Choice Prototype - Choice Prototype' dialog appears.
9. Type in the name of your choice prototype.
10. To assign the language profiles and audio options, follow the procedures defined in Section Translations 5.16.
11. For audio options, see Section 4.6 Generating Audio in EMS.

12. Once entered, click ‘Save and Close’

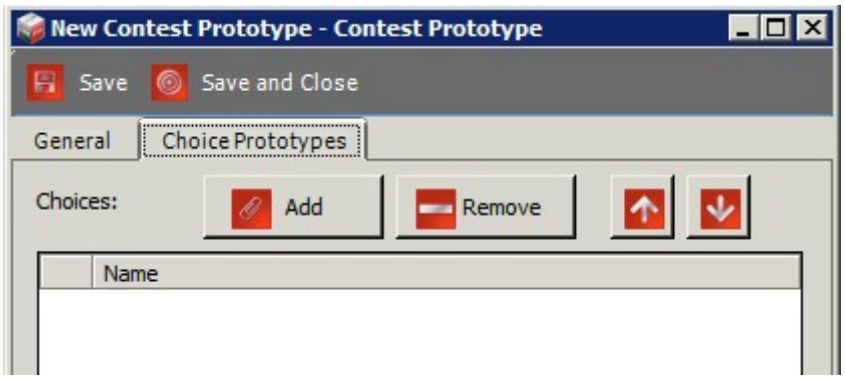

Figure 3-105: New Contest Prototype: Choice Prototypes

3.22 District Rotations

District rotations are used to define a rotation relationship where the district associated with a contest has a rotation calculated based on a rotation area. Each rotation area is assigned a rotation index that starts at 0. When the district rotation is applied, the actual rotation value is calculated based on the number of candidates and the rotation index of the rotation area.

The district rotations are entered manually or imported into the project initial election definition.

3.22.0.1 Import of definition file for district rotations

1. To define district rotations, expand the ‘Divisioning’ navigation group, and select ‘District Rotations’.
2. Click ‘Import’ in order to import the file containing all needed rotation data.
3. The ‘Open’ dialog appears. Navigate to the file you want to import, and click on ‘Open’.
4. After the district rotations are successfully imported, an information dialog appears. Click ‘OK’ to close the dialog.
5. Go to the ‘Actions’ menu, and click ‘Rotate Contests’.

The import format is a simple text file where each row contains values separated by tabs. The first row contains the column titles. Below is an explanation of the column meanings.

Column name	Type	Description
Contest AreaId	String	External id of the district belonging to the contest that undergo rotation.
Rotation AreaId	String	External id of the district overlapping with the contest district for which a different rotation can be defined.
Rotation Index	Integer (Starting from 0)	Unbound rotation index starting from 0. Once

Table 3-1: District Rotations

3.22.0.2 Manual definition of district rotations

1. To define district rotations manually, click 'Create New'.
2. The District Rotation dialog appears.
3. Contest Area ID is the external ID of the district to which the contest belongs. Rotation Area ID is the external ID of the district where the choices are rotated. Rotation Index represents unique order of candidates.

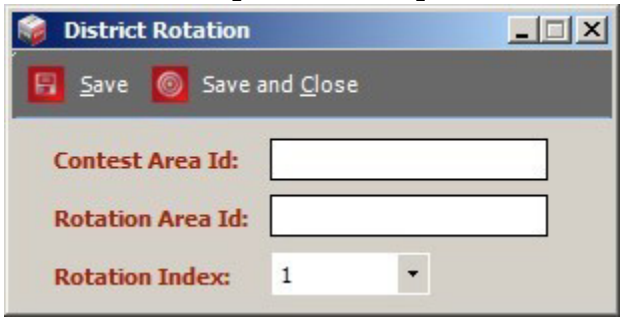

Figure 3-106: District Rotations Dialog

4. Click 'Save and Close' to close the dialog.
5. Then go to the 'Actions' menu and click 'Rotate Contests'.
6. The 'Rotate Contests' information dialog appears. Click 'Continue'.
7. At the end, the Success Information dialog appears.

3.23 Bulk Modification of Election Definition Objects

It is possible to update certain information in the election project by using the Assign Values feature (this is a button in the Toolbar in each of the listed objects

screens) in order to update values for given fields for the following election definition objects:

- Subdivision
- Polling Subdivision
- Office
- Contest
- Choice
- Ballot Type
- Ballot
- Voting Location
- Tabulator

The user can use the Assign Values feature to either export values into a tab-delimited text file for the selected object so they can be edited externally (usually in a spreadsheet application), or to import a tab-delimited text file which contains adjusted values.

NOTE: The import process will perform validation of data being imported back into the project and will provide warnings to the user in case inconsistencies are found in the document.

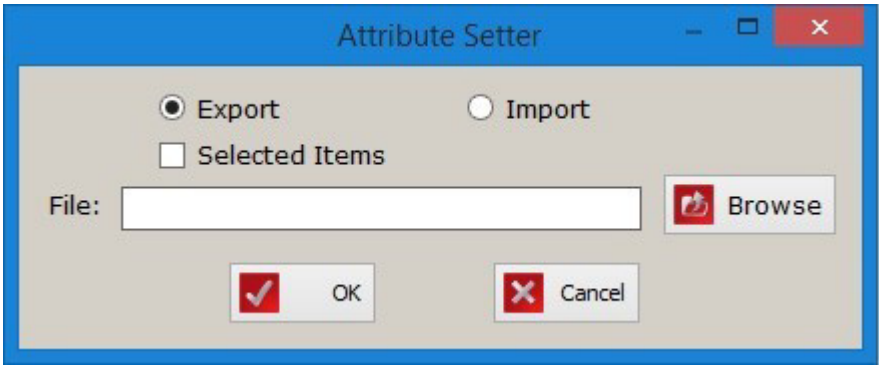

Figure 3-107: Attribute Setter Screen

CHAPTER 4: STYLING AN ELECTION PROJECT

Once you have defined all of the properties needed for the proper generation of your Election Project, you can proceed to the Election Project Styling stage. If you have not defined your election project, return to Chapter 4 before continuing.

4.1 Style Restrictions for Non-Latin Scripts

Specific languages may not support certain specific styling/formatting due to a lack of appropriate fonts. ICE cannot display the for following languages and styles:

- Arabic - Can't display italic, bold, bold italic and bold italic strike underline.
- Armenian - Strike underline displays without an underline.
- Bengali - Can't display bold, bold italic and bold italic strike underline.
- Hindi - Can't display italic, bold italic and bold italic strike underline.
- Korean - Strike underline displays without an underline.
- Persian - Can't display italic, bold, bold italic and bold italic strike underline.
- Punjabi - Can't display italic, bold italic and bold italic strike underline.

4.2 Preparing Ballots for ImageCast® Remote

This section only applies to ballot created for ImageCast® Remote (ICR). If you are not using ICR in your deployment, skip this section.

Before an election project can be imported into ICR, it first must be created and styled in Election Event Designer (EED). For instructions on how to create and style an election project in EED refer to the *Democracy Suite® EMS Election Event Designer User Guide*.

The EED editor is compatible with Rich Text Format (RTF) but has limited support of HTML. Consequently, the EED preview does not reproduce what's displayed on IV pages.

ICR supports the following text styling elements:

- Large text
- Small text
- Italic
- Bold
- Underline
- Form background color

ICR does not support the following on screen view:

- Text color highlighting
- Indentation
- Text background color
- Ordered and unordered list can't be aligned to any other alignment than left aligned

The following is a list of best practices to apply during ballot styling:

- The contest title should consist a simple line of text.
- EED's default font size is 11 points. It is not recommended to use font sizes above 22 pts.

NOTE: Printed QR ballots styling is not supported. All styling elements will be printed on the QR ballot as a plain text.

4.3 Producing Ballot Content

After your Election Project is defined, generate ballots. To produce ballot content perform the following:

1. Click 'Actions' on the top toolbar. Select 'Ballots', and 'Define Ballots Structure'.
2. A dialog appears, which contains general statistics about the definition of your Election Project. See Figure 5.1.
3. Click 'Continue' to begin the process. The system collects data from your definitions, and calculates the ballots that need to be created. This process

can take a significant amount of time depending on the number of precincts, contests, choices, etc.

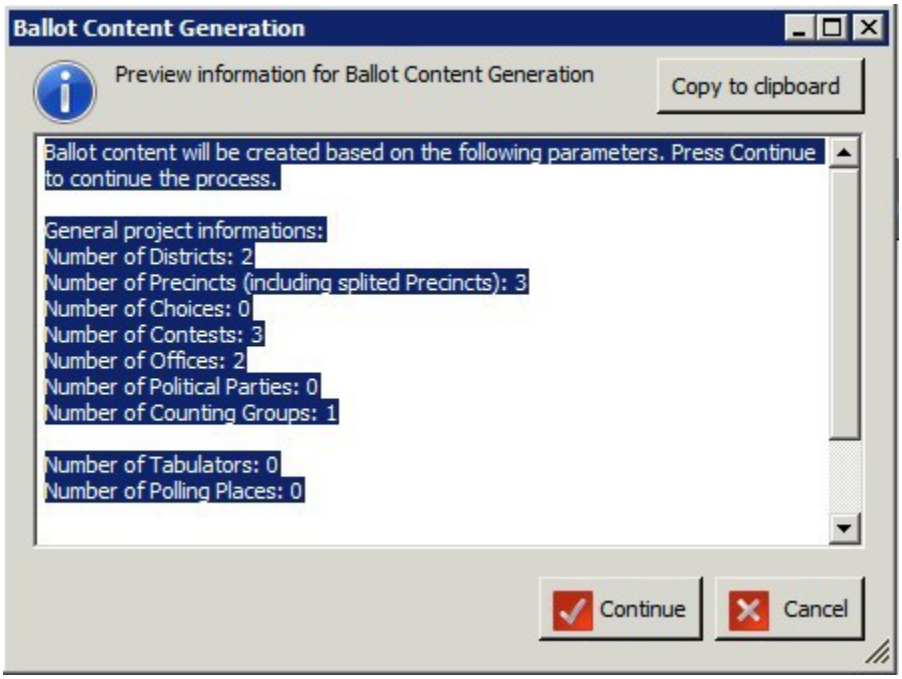

Figure 4-1: Ballot Content Generation Dialog

4. Note that if you have not properly defined your Election Project, an error appears, see Figure 4-2. This dialog lists the components of your Election Project that are inconsistent or improperly defined. Use the list as a reference for addressing the errors that may be preventing your Election Project from generating ballots.

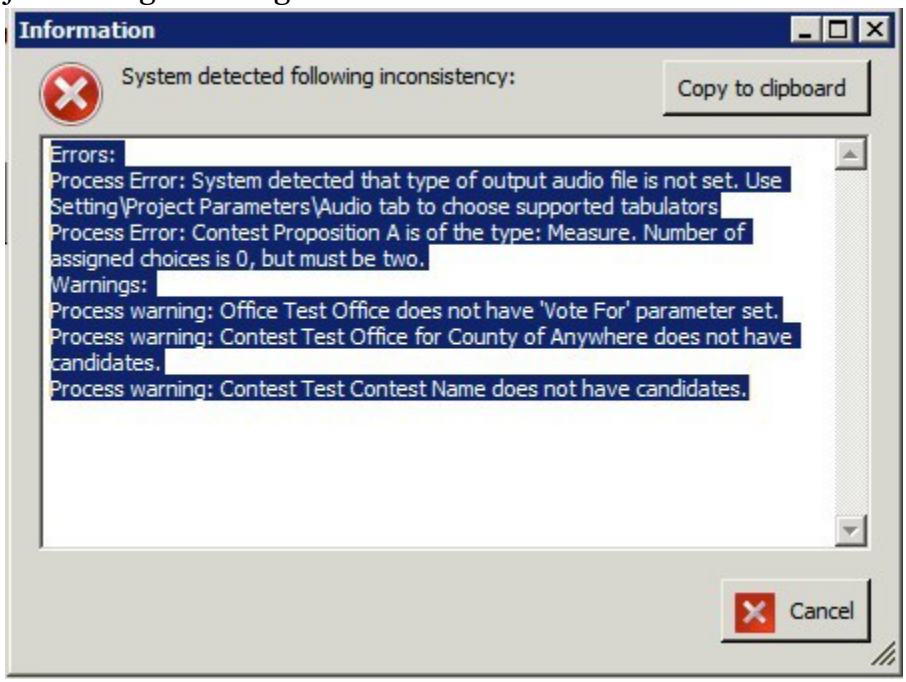

Figure 4-2: Ballot Content Generation Error

5. Note that you may come across a warning, see Figure 4-3, that lists potential errors that could occur once ballots are generated. Click 'Continue' or 'Cancel'.

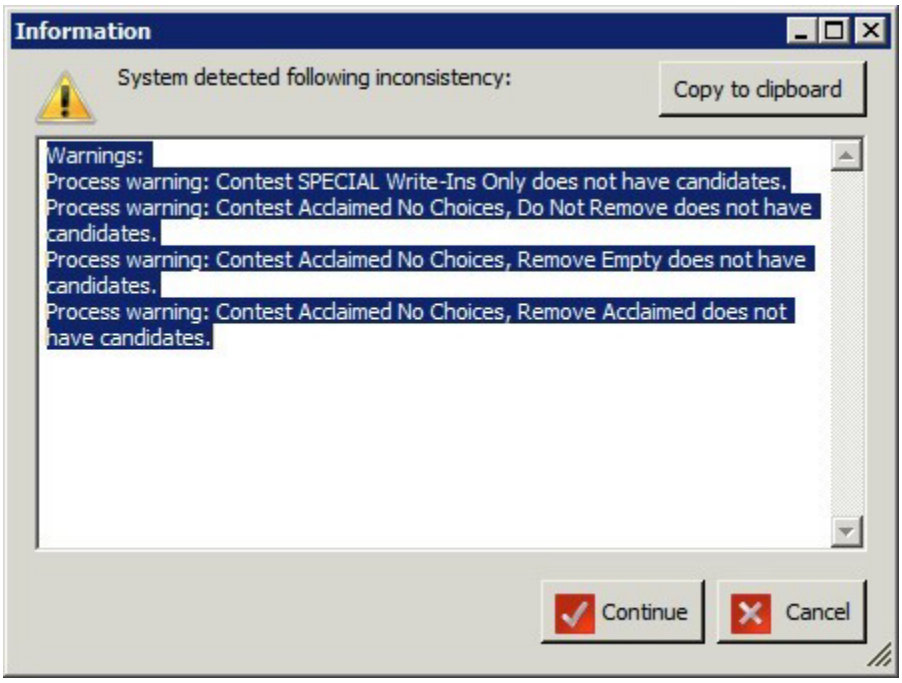

Figure 4-3: Ballot Content Generation Warning

6. Once ballot content has been generated, a confirmation appears as seen in Figure 5.4. Click 'OK' to continue to the Election Project Styling stage.

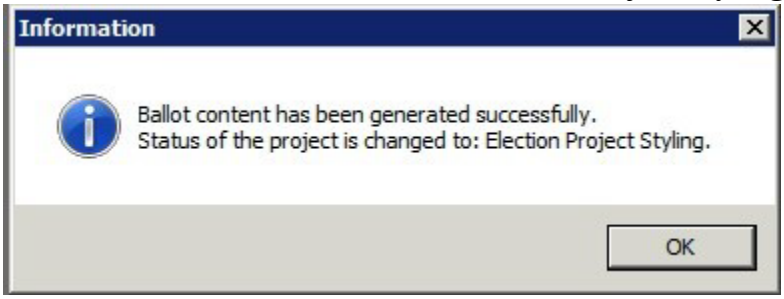

Figure 4-4: Ballots Generated Successfully

Expand 'Election Event' Navigation group, and select the 'Ballot Cards' option to open the Ballot Cards context sensitive screen. Click 'Search' to generate a list of all created ballot manifestations. Double-clicking on each ballot prompts a 'Ballot Manifestation' dialog. Within this dialog you can modify the name of the ballot

PDF, the ‘Key in Id’, which is used to select the ballot for audio voting sessions, and the description of the ballot.

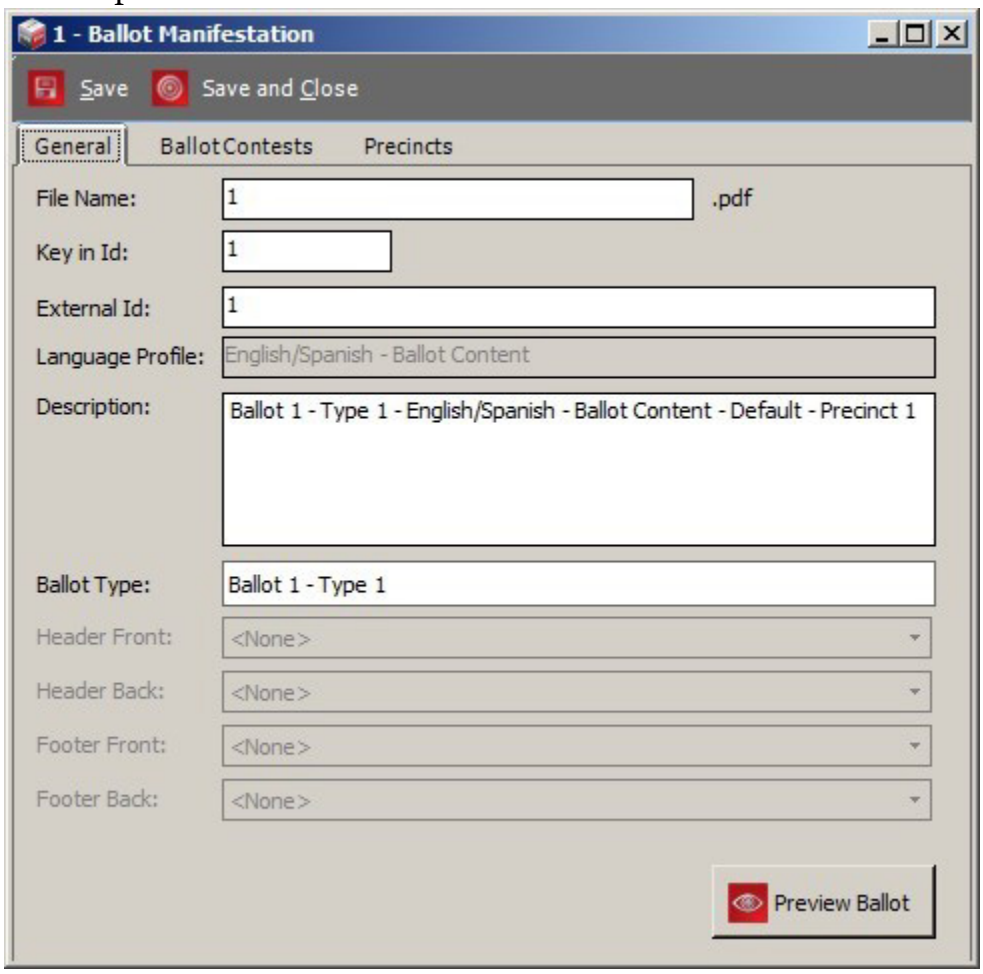

Figure 4-5: Ballot Manifestation Dialog

The ‘Ballot Contests’ tab displays a list of all contests associated with the selected ballot manifestation, and the ‘Precincts’ tab displays the list of precincts associated with the ballot manifestation.

NOTE: The ‘General’ tab also contains a preview button, which allows you to view your ballot. Note that this preview is for proofing purposes only and cannot be scanned on any tabulator.

4.3.1 Screen Ballots

This section refers to ballots that will be displayed on the device (right now only ICX is supported). Screen ballots are directly attached to the ballot types, so name of the screen ballot is actually ballot type name. See see Figure 4-6.

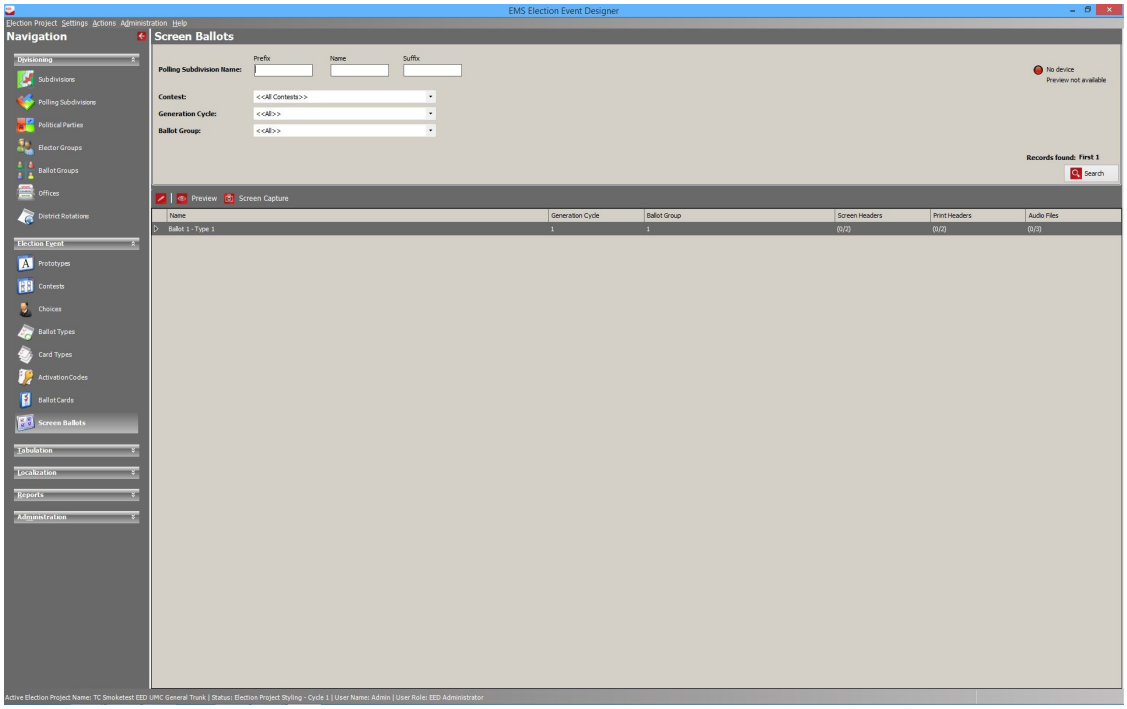

Figure 4-6: Screen Ballots

In the top right corner of the screen there is a connection indicator. It is status of the connection of testing device (for generating preview). If ICX device is connected, signal lamp will display green light and name of the device. When device is connected user is able to generate preview. Preview will be displayed directly on the device. Clicking on the signal lamp, user will open screen that displays more information about connection (EED host IP and port number), see Figure 4-7. These details are necessary for user to connect ICX device to the EED. By clicking on **Close Connections** button, user will disconnect currently connected device on EED.

When device is connected to EED user can perform preview: select screen ballot from list and hit preview in toolbar or double click on screen ballot and hit preview button in opened editor. EED will generate data for preview and send it to ICX device for preview.

If you select more than one screen ballot, application will take different contests from all selected ballots and make preview for that fake universal ballot. So if you select all ballots, you will get the preview for all of the contests in project you can use it for proofing.

When device is connected to EED, user can also screen capture. Screen Capture command takes a screenshot from connected ICX device running in the preview mode. It will capture whatever is displayed currently on the ICX screen and make PNG picture which will be displayed to the user in EED. User can save that picture afterwards on his local system.

Screen ballot preview requires ICX device configuration (MCF settings). If no configuration is defined, defaults will be used. If one configuration is defined it will be used automatically. If more configurations are defined, you will be prompted with dialog to choose desired configuration for preview.

NOTE: Screen ballot preview supports layout confirmation only. Voting rules are not followed in the preview.

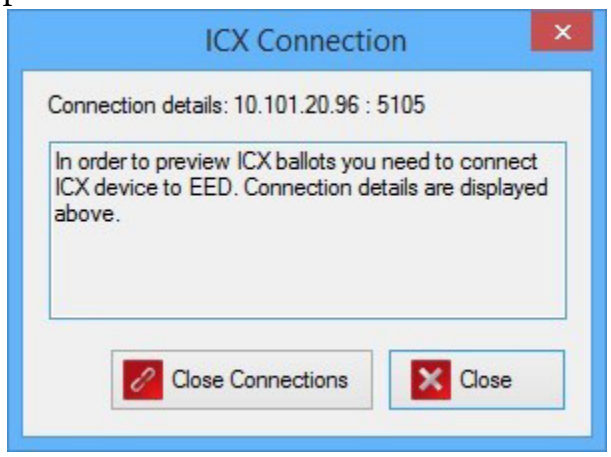

Figure 4-7: Connection Indicator screen

Generate headers option will initiate generation of electronic ballot headers. This is just a shortcut for same functionality that is available in the menu. Generation of headers will generate headers of all screen ballots (there is no option to partially create some headers by selecting part of screen ballots from the list).

Screen ballot editor can be opened double clicking appropriate screen ballot from the list. See figure 5.8 There user can see contests of the screen ballot, polling

subdivisions and activation codes. In general tab of the editor user will see all headers attached to the screen ballot.

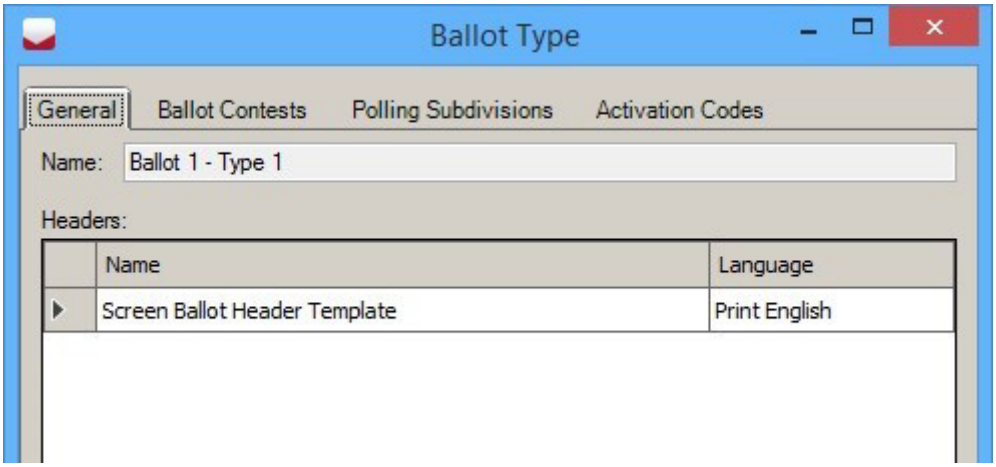

Figure 4-8: Ballot editor

4.3.1.1 Multiple column choices for one contest

When setting up the Election File in EED, the configuration for the contest layout and choices within that contest for the ImageCast X can be modified to display the contests in a multi-column format.

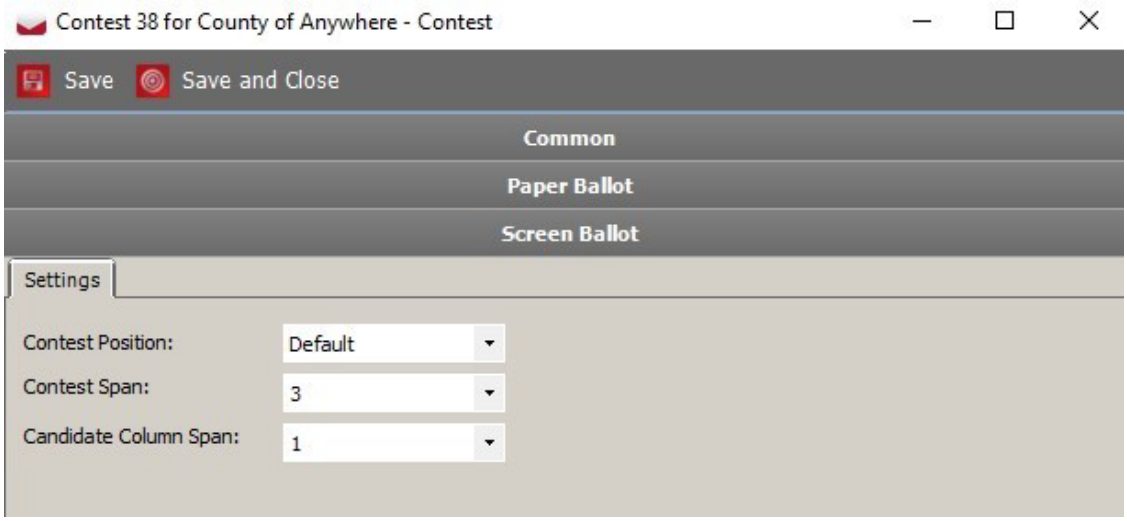

Figure 4-9: Screen Ballot - Settings tab

The setting of the multiple-column format includes the adjustment of the following options:

- **Machine Configuration File:** Number of columns - defines the number of columns the ballot view will consist of. The allowed values are 1 (the entire screen) up to 6 columns.

- **Contest Editor** after clicking on each individual contest, the Screen Ballot tab is made available, and it includes the following options:
  - **Contest Position**
  - **Contest Span:** allows the user to set the contest span (number of candidate columns that the contest will span across).
  - **Candidate Column Span** - allows the user to set the number of columns that candidates will span within a single contest.
- **Contest Position** defines how a given contest will be positioned:
  - **Default:** right where it is meant to be in relation to other contests on the screen.
  - **Single:** alone on the screen
  - **New Column:** in a new column, regardless of whether or not there is room in the column where it should be by default
  - **New Screen:** on a new screen, regardless of whether or not there is room in the column where it should be by default

The **Contest Span** option defines the number of candidate columns previously set in the MCF, that the contest will occupy on the ballot. The available values are 1-6. In case that the Contest Span number is higher than the number of columns set in the MCF, the MCF setting will override it.

The **Candidate Column Span** option defines the number of columns the choices will take up depending on the Contest Span. The available values are 1-6. In case that the Candidate Column Span number is higher than the number set for the Contest Span, the Contest Span will override it.

NOTE: The Contests will be shown top to bottom on the screen always.

NOTE: Please be advised that the Contest and Candidate Column span values from 1-6 allow user to, by combining various values, arrange the contests and choices so that the layout is readable and intuitive. This option is not meant to be

utilized to have 6 columns on a screen since that layout would be difficult to read and aesthetically out of place.

When setting up the Contest and Candidate Column span, please make sure to use the Preview Option in EED.

Contest Span	Candidate Column Span	Description
2	1	The contest will occupy 2 columns on the ballot and the choices will be divided into 2 columns and each choice will occupy 1 column within a given contest - see "Contest 13 for County of Anywhere"
3	2	The contest will occupy 3 columns on the ballot and the choices will be divided into 2 columns and each choice will occupy 2 columns - see "Contest 12 for County of Anywhere"
1	1	The contest will occupy 1 columns on the ballot and the choices will be shown in 1 column and each choice will occupy 1 column - see "Contest Straight Party 4"

Figure 4-10: Contest properties in ICX - see rendering in figure 5.11

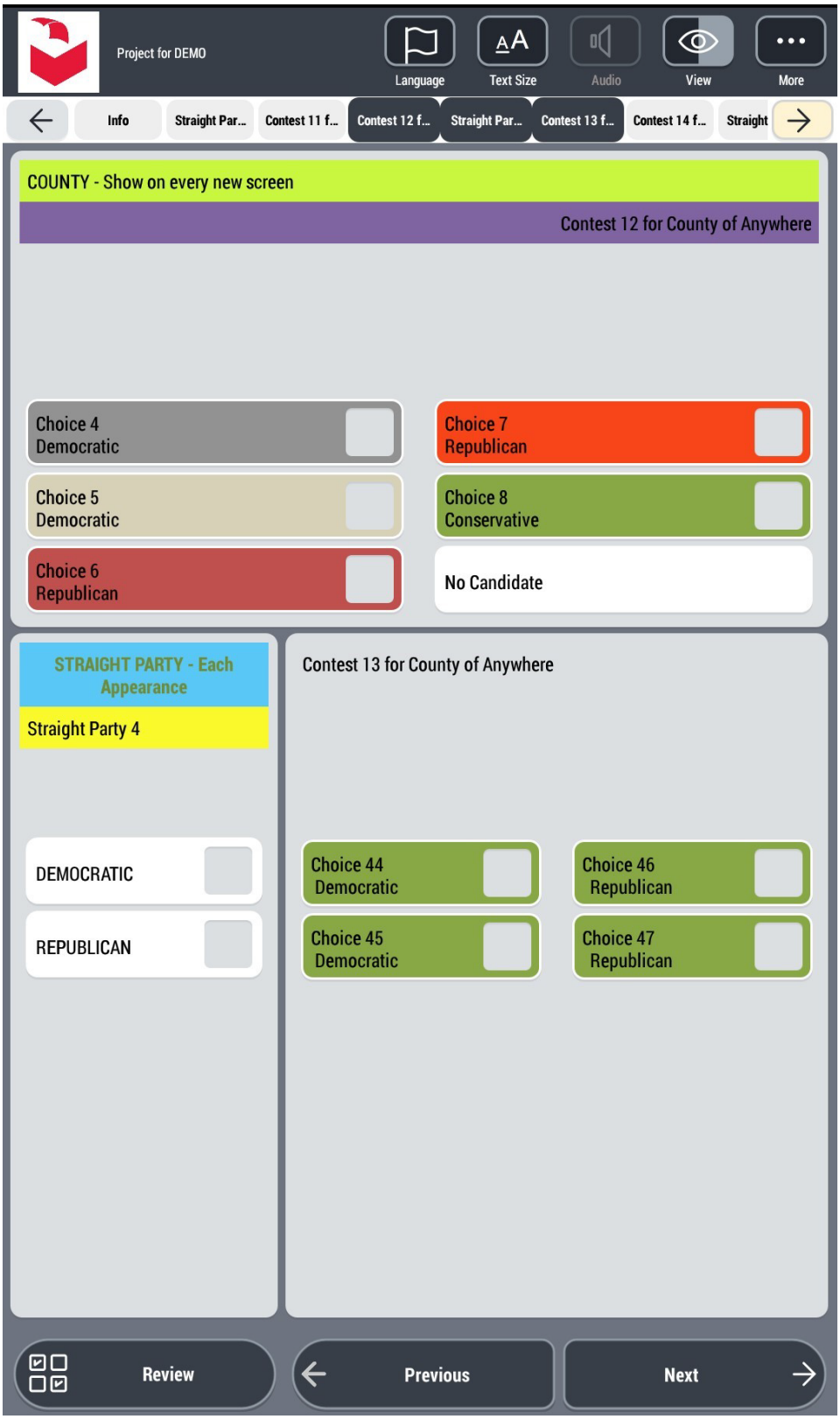

Figure 4-11: Contest rendering in ICX

4.3.2 Ballot Types

This section describes Ballot Types objects, Ballot Contests, and Ballot Cards Models.

'Ballot Types' are a group of contests that appears on the ballot.

1. Expand the 'Election Project' navigation group and select the 'Ballot Types' activity.
2. The 'Ballot Types' main screen appears.
3. Click 'Search' to see a list of all created ballot types.
4. Double-click on one of the ballot type record entries and the 'Ballot Type' dialog appears.

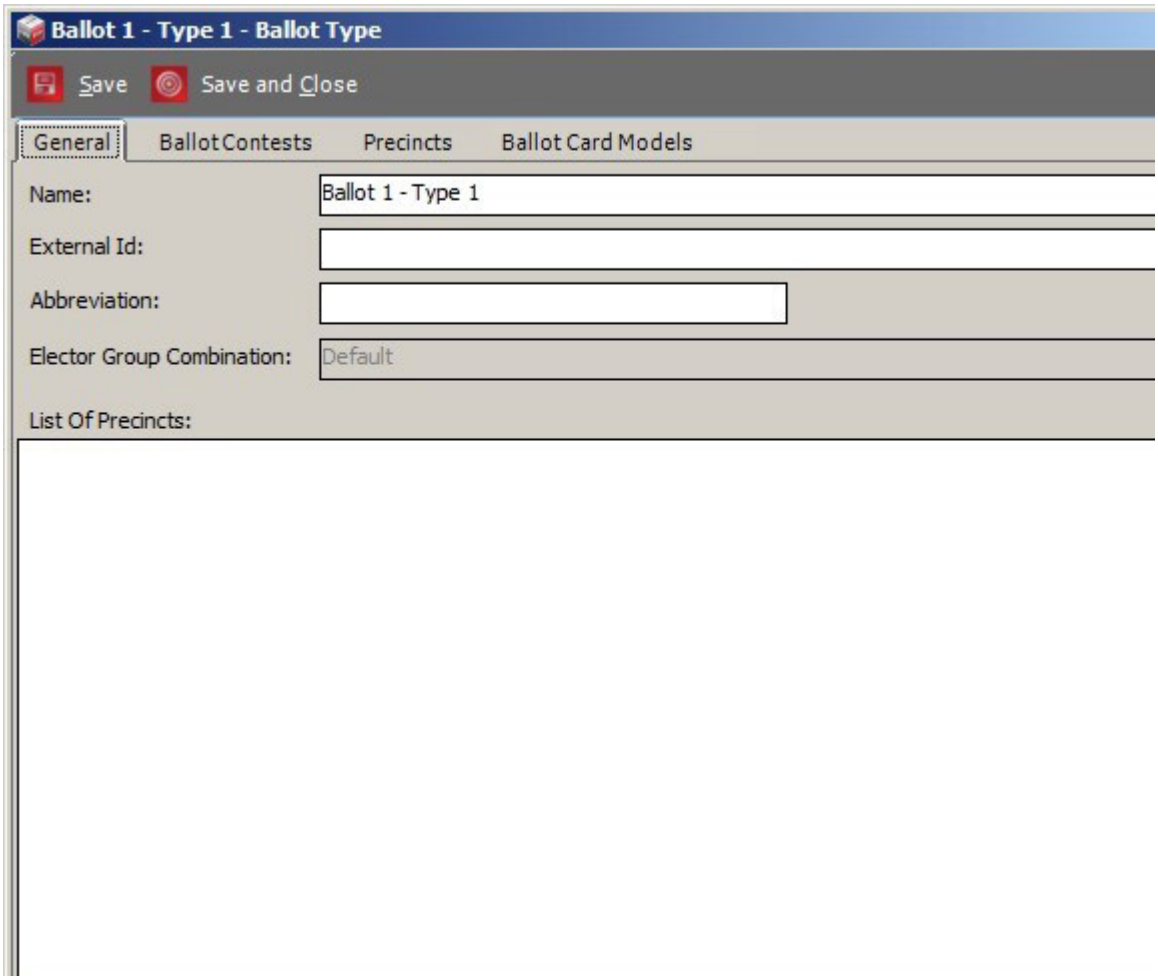

Figure 4-12: Ballot Type dialog

5. In the 'General' tab, the Ballot Groups field is the only option that cannot be edited. All other options presented below are changeable.

6. The 'List of Precincts' field is a user defined list of precincts that can be set and referred to using the Template Keyword (PrecinctList) in Ballot Header Templates.
7. Click on the 'Ballot Contests' tab. A list of all contests associated to this ballot type appears.

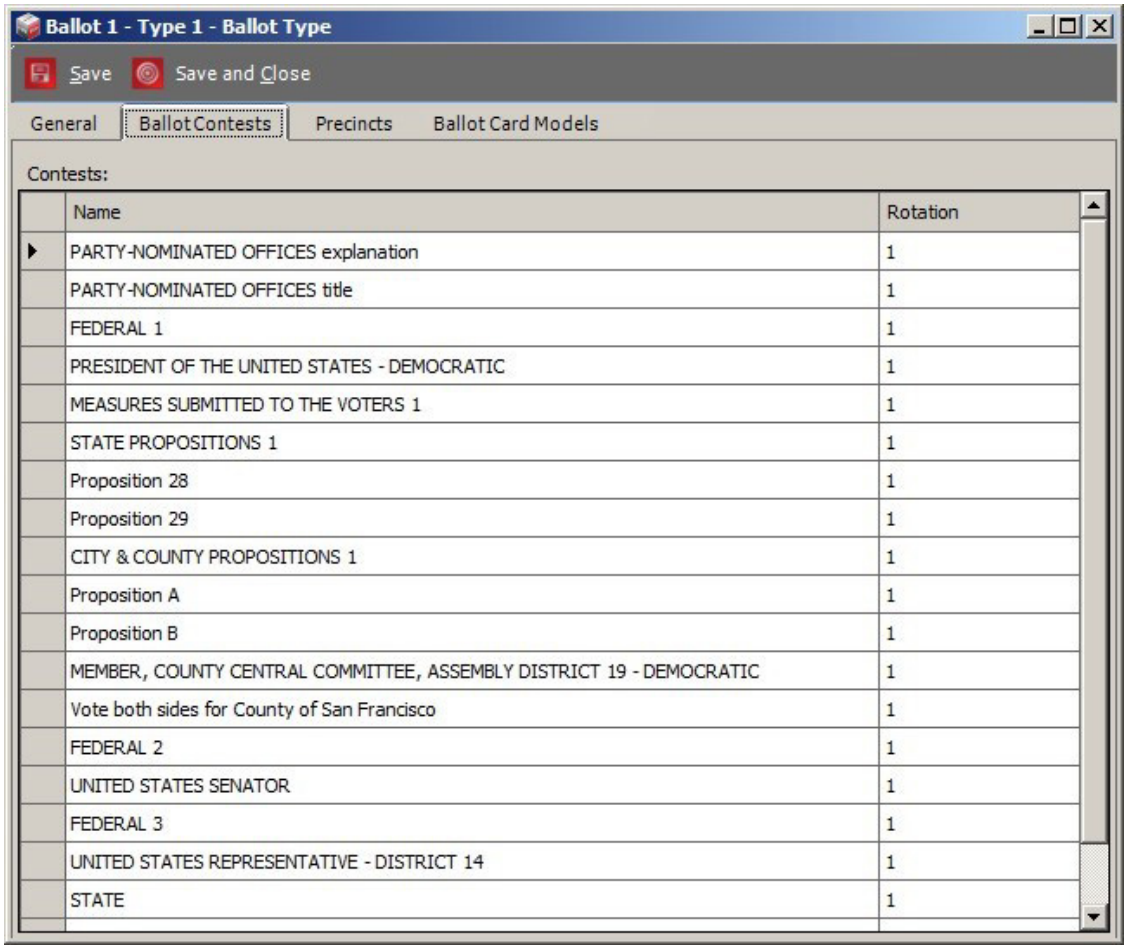

Figure 4-13: Ballot Type dialog-Contest tab

8. Click on the 'Precincts' tab. A list of all precincts associated to this ballot type appears.

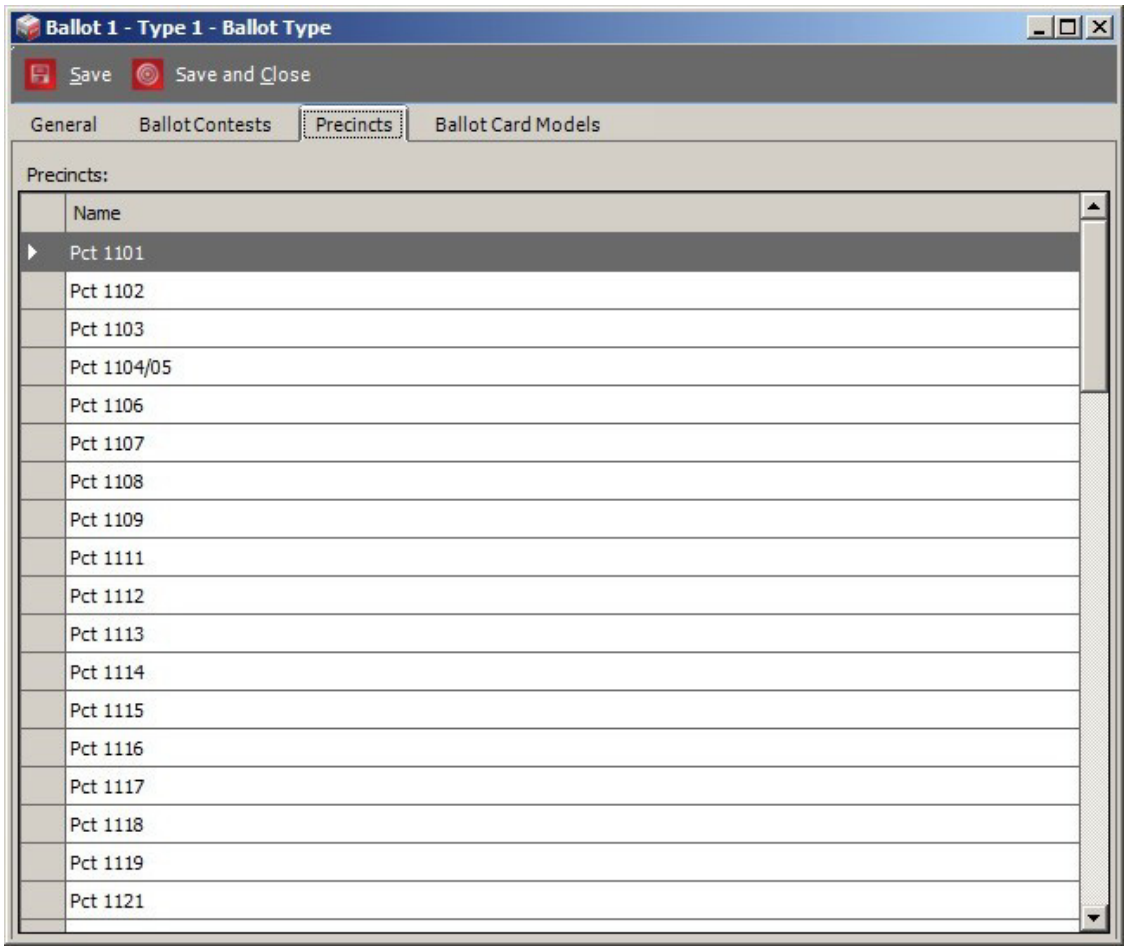

Figure 4-14: Ballot Type dialog-Precincts tab

9. The‘Ballot Cards Models’ tab contains a list of ballot cards. Selecting the Ballot Card Model object on the Cards Models field displays a list of contests that belong to the ballot card model and their rotation number.

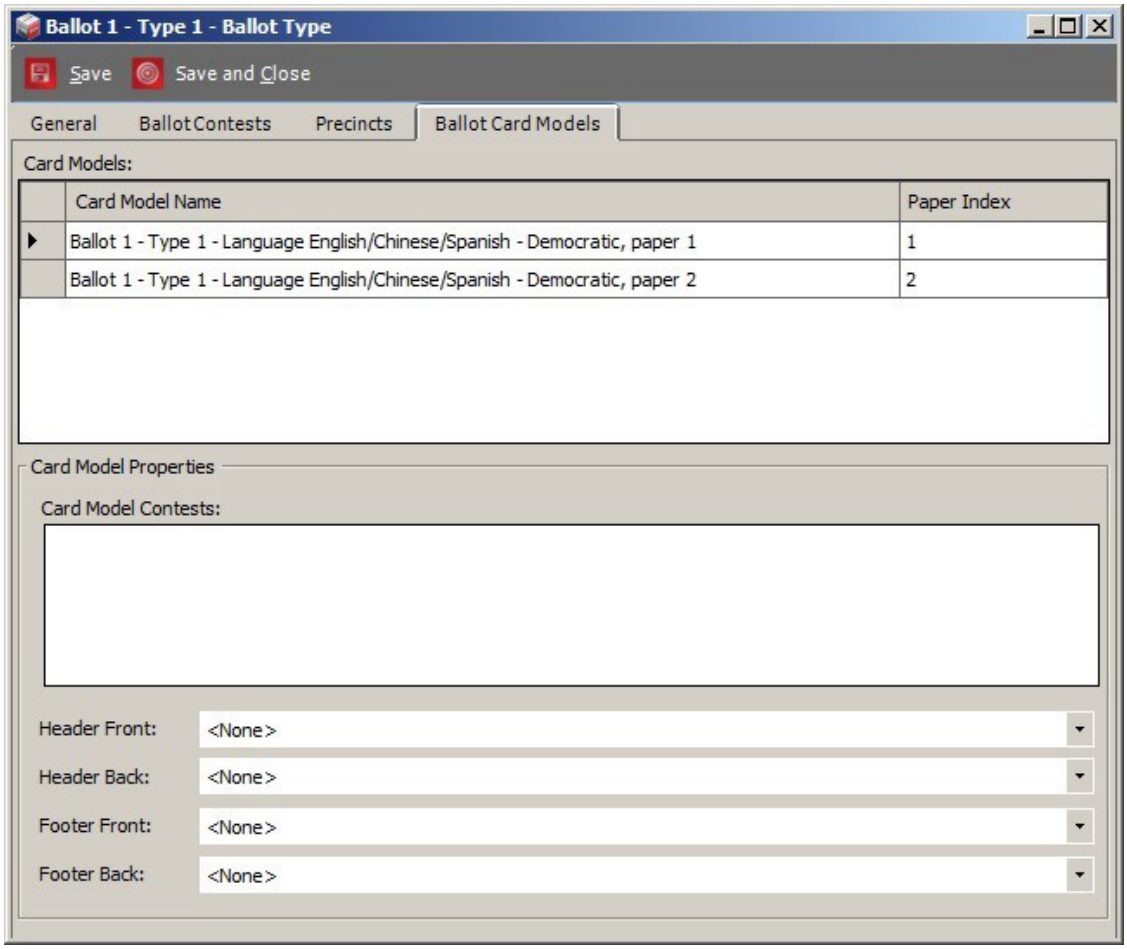

Figure 4-15: Ballot Type dialog-Ballot Cards Models tab

10. Double-click on one of the contests from the list.
11. The ‘Drawing Contest’ dialog appears.
12. To set the paper index, select one of the options from the drop-down menu.

13. After setting the paper index, click 'Save and Close'.

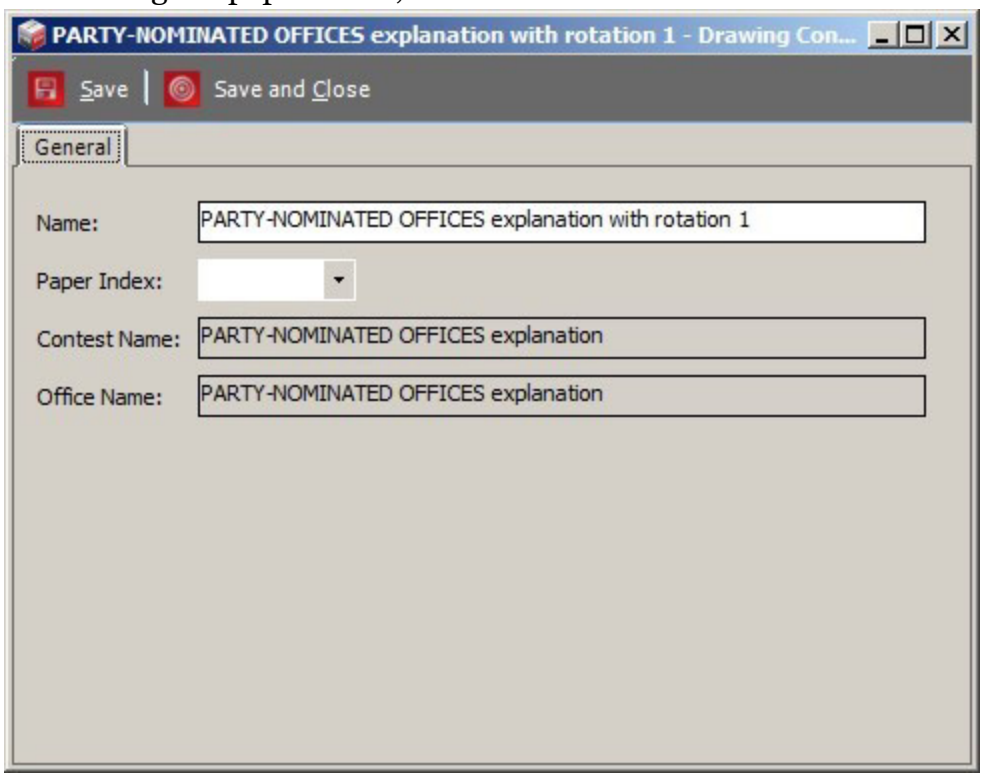

Figure 4-16: Drawing Contests dialog

14. Select 'Ballot Types' objects on the grid, and click 'Recreate Ballots' in the context sensitive screen.
15. The proper number of Drawing Ballot Card objects are created and All Ballot Type objects have a "Cards Updated" column in the grid.
16. A confirmation that the ballots have been recreated successfully appears.

NOTE: If a ballot type is deleted in Styling project status, related ballot manifestations are also deleted. If ballot manifestations for specific ballot types are deleted, recreation of ballot types will not produce recreation of deleted ballot manifestations.

4.4 Managing Card Types

Card types are similar to ballot types in that they represent a collection of rotated contests, but card types take into account the contest paper index. The difference between card type and actual ballot cards is that card type does not take into account language or separation per precinct. Card types have a number of editable attributes that can be used in ballot header keywords. The EED application automatically creates card types during the Ballot Content Generation process, which takes place during the transition from the Election Project Definition phase to the Election Project Styling phase.

Card types and relevant details can be viewed and managed in the Card Types section, accessed from the Election Event menu in the left-hand navigation in the EED application,see Figure 4-17. The screen displays the name, paper index, abbreviation, external id, description and cycle.

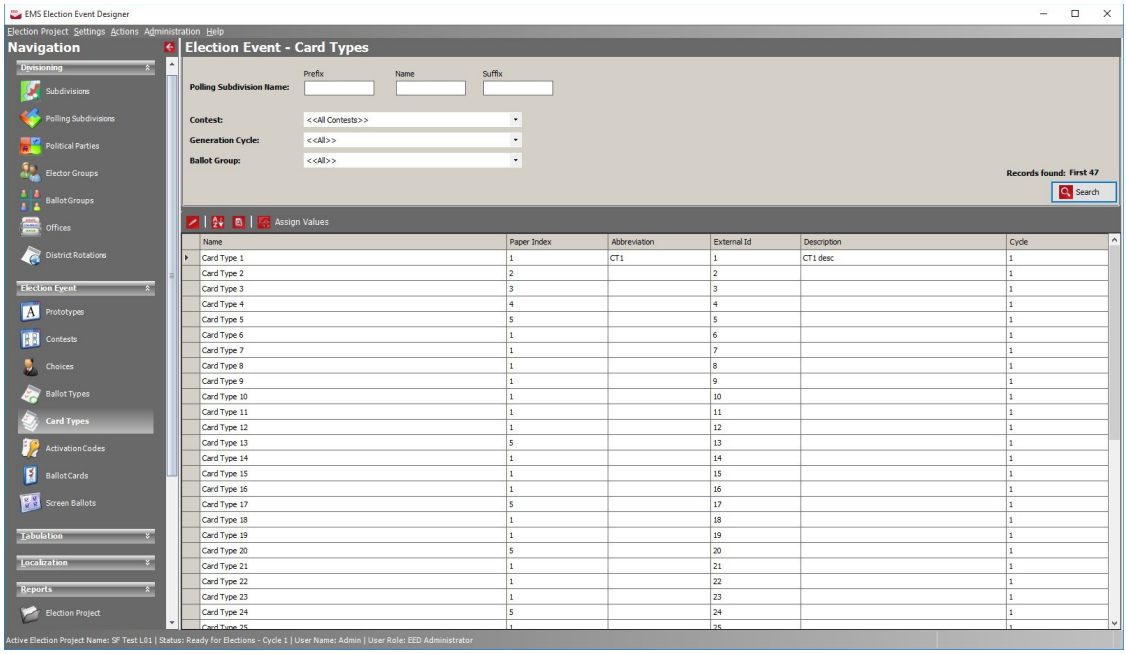

Figure 4-17: Card Types screen

The user can open the card type editor by either selecting it and clicking the Edit icon in the toolbar, or double-clicking the item. The Card Type dialog will appear (see Figure 4-18).

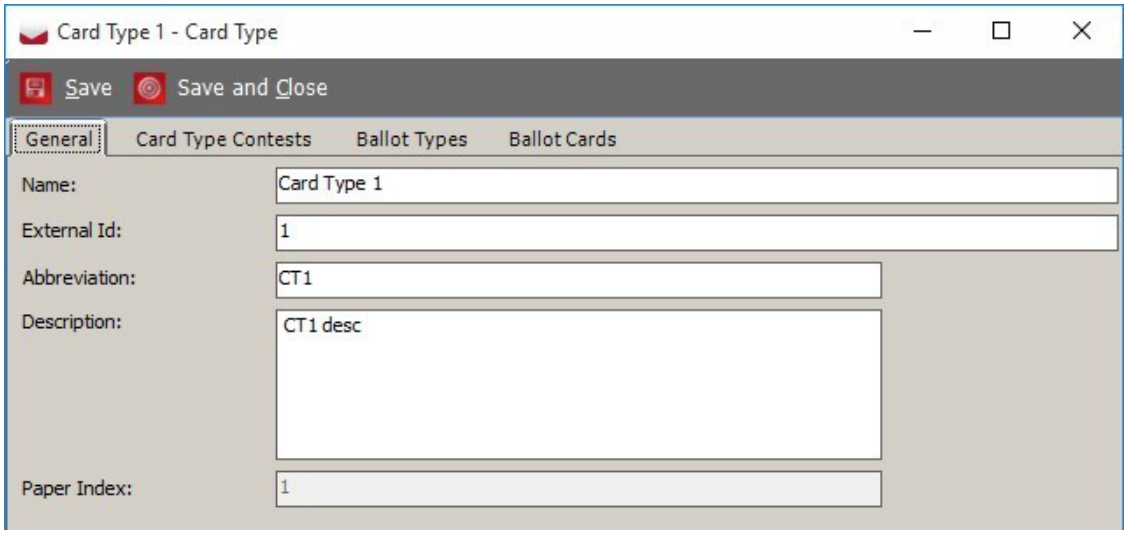

Figure 4-18: Card Types editor - General tab

The user is allowed to edit the Name, External Id, Abbreviation and Description attributes and can press click **Save** or **Save and Close** button to apply the

changes. Card types have a number of associations that cannot be edited, but can be viewed by the user:

- Card Type Contests tab shows the list of contests associated with the card type including rotation information.
- Ballot Types tab shows the list of associated ballot types.
- Ballot Cards tab shows the list of associated ballot cards.

4.5 Managing Voter Activation Codes

Activation codes are used by the system when activating voter sessions at a polling location. In the Democracy Suite system, this is typically done when voting is performed on ImageCast® X terminals, or ImageCast® Evolution tabulators. The EED application generates activation codes during the Ballot Content Generation process, which takes place during the transition from the Election Project Definition phase to the Election Project Styling phase. Codes are generated for any combination of Precinct Portion and Ballot Group in the election project.

Activation Codes and relevant detail can be viewed and managed in the **Activation Codes** section, accessed from the **Election Event** menu in the left-hand navigation of the EED application (see Figure 4-19). The screen displays the code, its description, as well as the associated Polling District, Ballot Type, Ballot Group and Cycle.

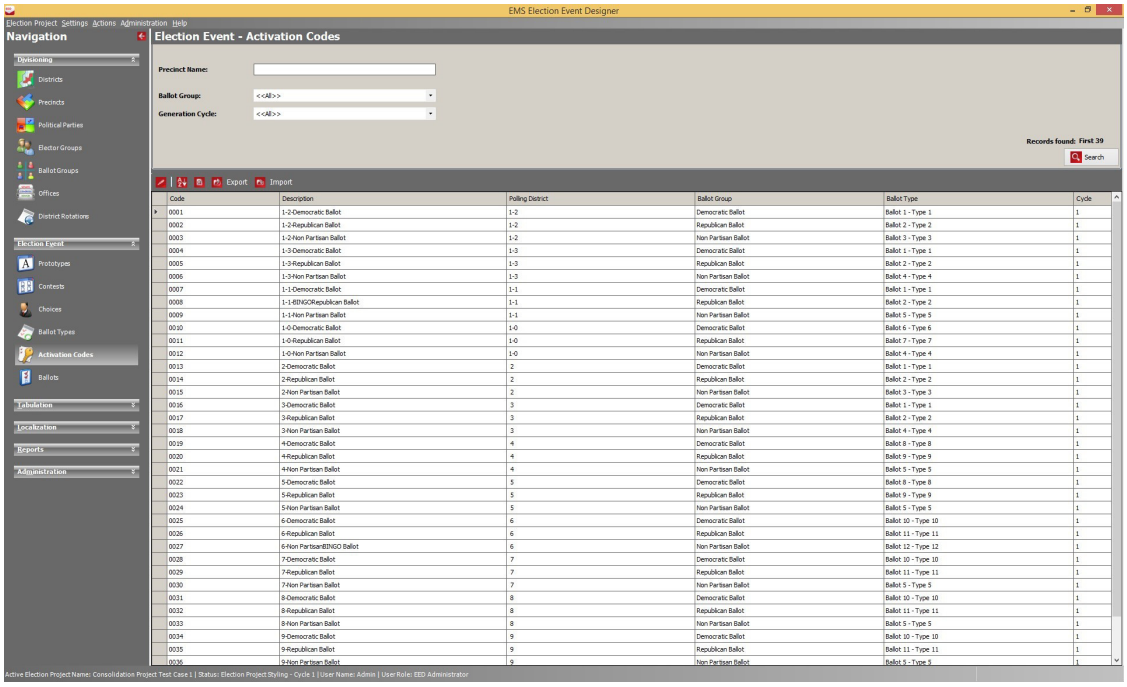

Figure 4-19: Activation Code screen

The user can edit the code and the description for each item in the list by either selecting it and clicking the **Edit** icon in the toolbar, or double-clicking the item. The Activation Code dialog will appear (see Figure 4-20). After ensuring that the new code is unique and the changes are made, click **Save and Close** to apply the changes.

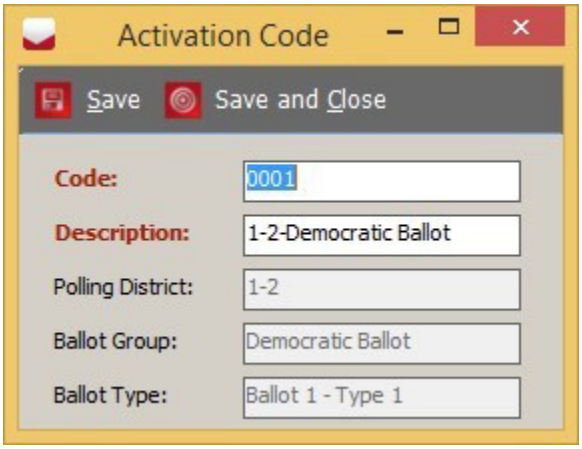

Figure 4-20: Editing Activation Codes

4.5.1 Managing Activation Codes Externally

Activation Codes can also be imported into the election definition using the EMS Election Data Translator (EDT) application, using the Supplemental Content Creator method. The EDT application can also export the codes as part of the definition. For more information, please refer to the **Input File Reference Appendix** in the Democracy Suite® EMS Election Data Translator User Guide. Another method to externally manage the codes is by exporting the data directly from EED into a tab-delimited file format, which allows the user to make changes, and import them back into EED.

To export the Activation Code list, click **Export** in the toolbar of the Activation Codes screen. A dialog prompting the user to save the exported file on the local file system will appear. The list can be opened and edited in any external utility which can manage simple text files, or Excel. After modifications are made (care should be taken to ensure the file format and structure is not affected by the changes), the user can import the codes back into the election project in EED by clicking **Import** in the toolbar of the Activation Codes screen and selecting the location of the saved list. The changes will be reflected when the screen is refreshed by clicking **Search**.

4.6 Defining Ballot Headers/Footers

During the Election Project Styling stage, you can create ballot headers and modify the appearance of contests and choices on the ballot.

To define headers and footers for paper ballots:

1. Expand the 'Localization' Navigation group, and select the 'Templates' option to open the Templates - Headers, Contests and Candidates context sensitive menu.
2. Select 'Ballot Header/Footer Template' from the 'Template Type' drop-down menu and the desired language purpose from the 'Language Purpose' drop-down menu.
3. Click 'Create New' to prompt the 'Ballot Header/Footer Template' dialog, see Figure 4-21.

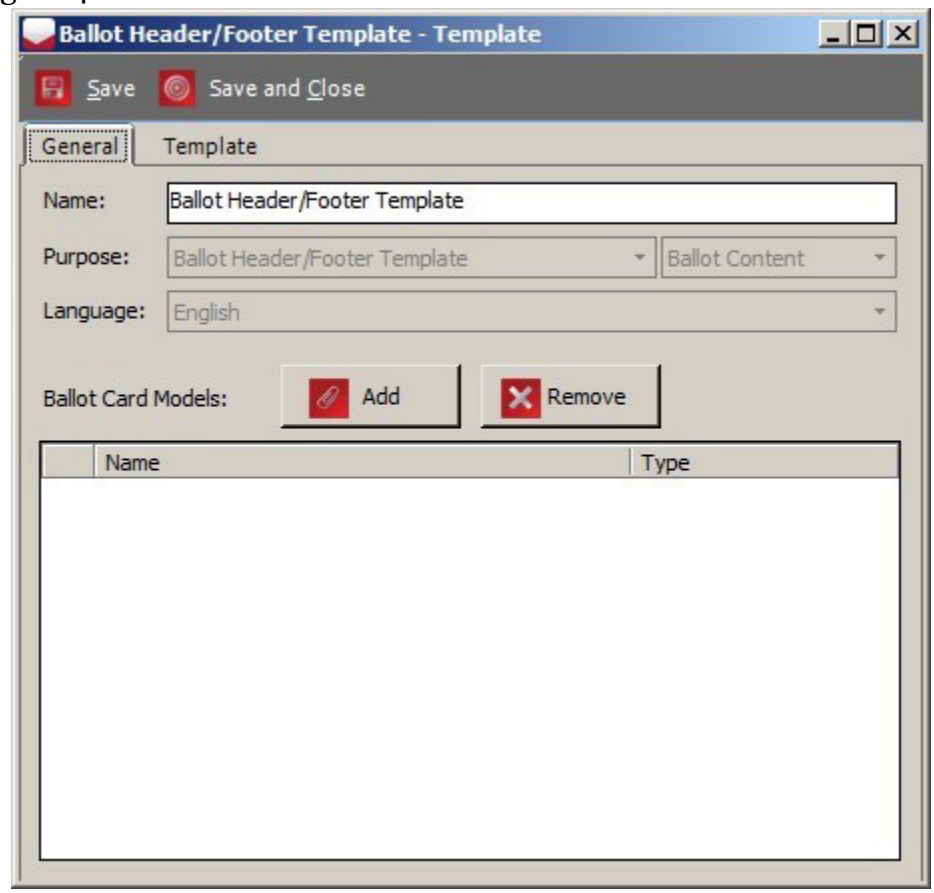

Figure 4-21: Header/Footer Template

4. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
5. Go back to General tab and click the Add button to prompt the Ballot Content Type dialog. Select either Header Front, Header Back, Footer Front or Footer Back from the drop-down menu and click OK.
6. The 'Select Ballot Card Models' dialog appears, see Figure 4-22. Click 'Search' to populate the list of all defined ballot card models.

7. Select the ballot card model(s) for which you wish to define a header/footer, and click 'Assign and Close'. Your selected ballot card model(s) appear in the 'Ballots' field of the Ballot Header/Footer Template dialog.

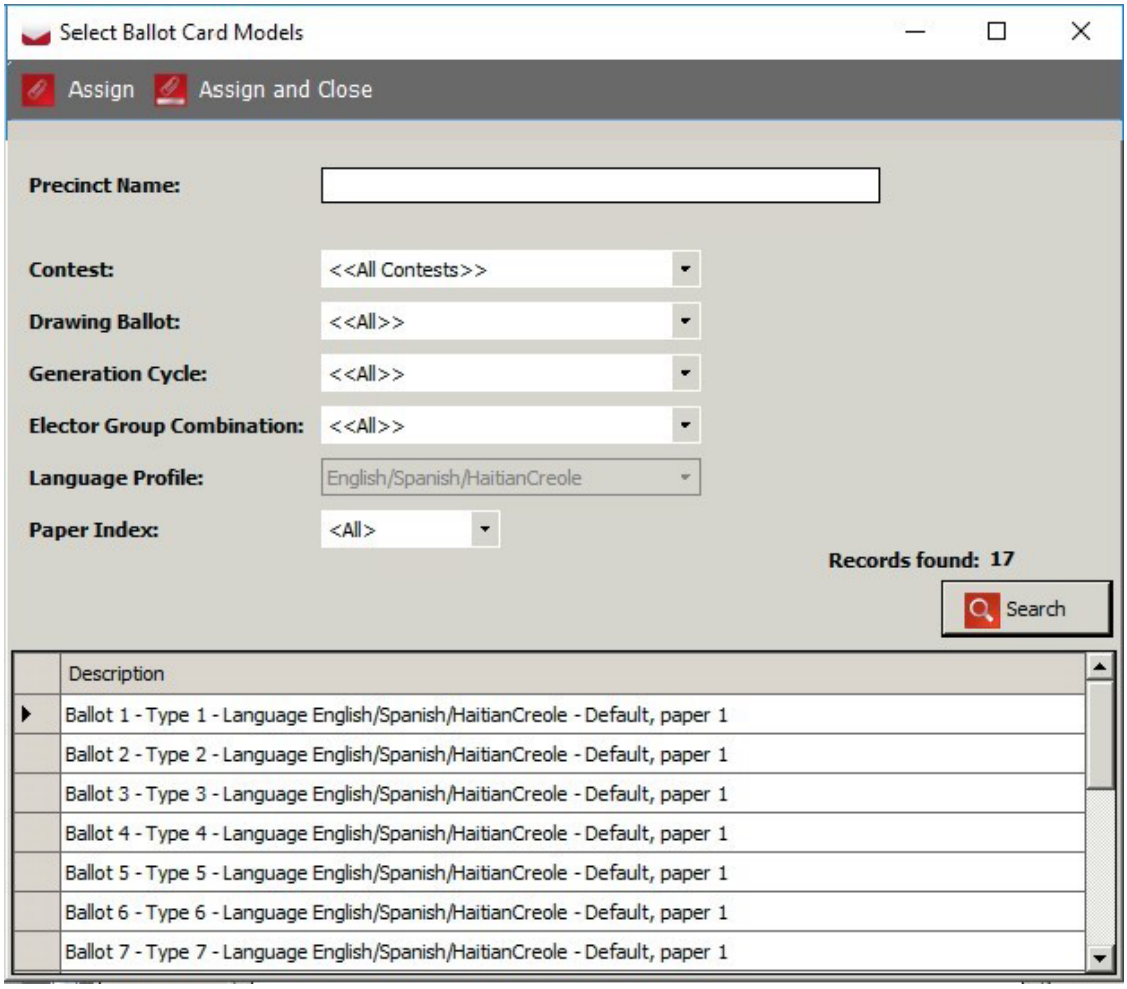

Figure 4-22: Select Ballots Dialog

8. Select the Template tab, see Figure 4-23 , to style your headers and footers, and change the font, size, color, tables, images, and keywords in your text.
9. To change document width and hight go to **File** - **Page Setup**.
10. The 'Keywords' button is described in full detail in the next Section 5.4.1.

11. Repeat each step for each ballot header/footer you wish to create.

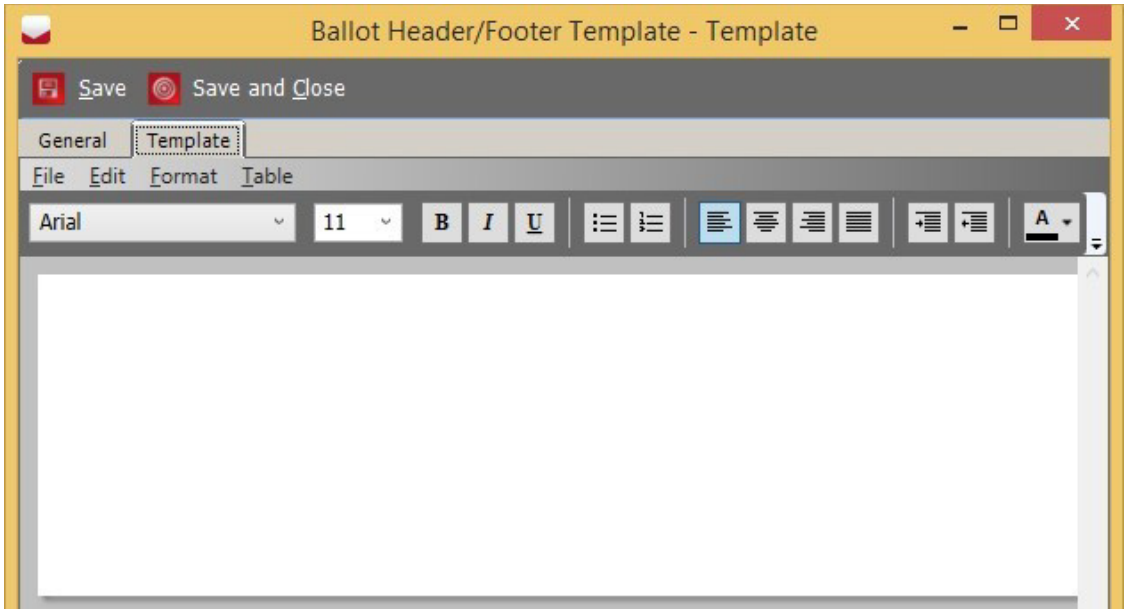

Figure 4-23: Header/Footer Template: Template Tab

4.6.1 Defining Ballot Header/Footer Keywords

The 'Keywords' button, located on the Template tab of the Ballot Header/Footer dialog allows you to define the keywords for your ballot header/footer. This section lists the various keywords available and their purposes.

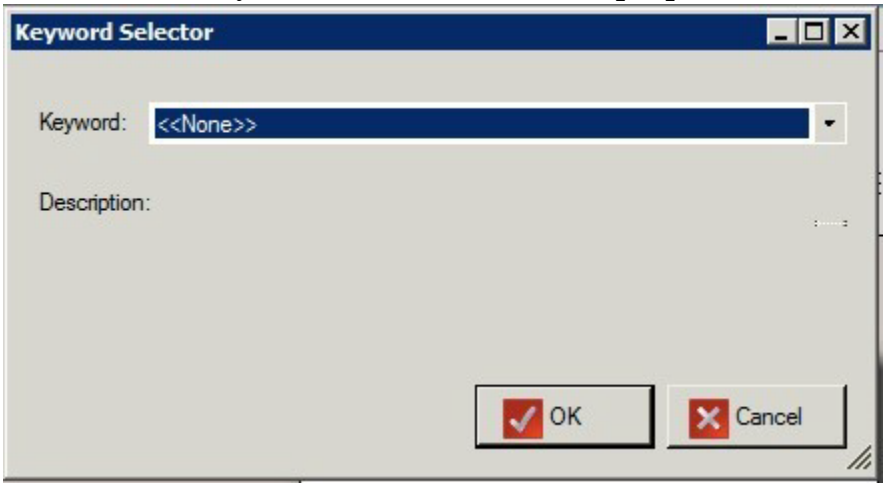

Figure 4-24: Header/Footer Template: Keyword Selector

- **Additional Barcode**: The barcode is formatted as:
  - first 3 digits represent the main precinct id, examples: "001", "123"
  - fourth digit represents split number, examples "0", "1"
  - fifth digit represents paper index, starting from 0

    - last 2 digits represents the external party id (which can be set in EED), examples “00” (no party), “01”, “12”.
- **Area**: Retrieves the name of the area, depending on argument. Argument is district type abbreviation.
- **Area Abb**: Retrieves the abbreviation of the area, depending on argument. Argument is district type abbreviation.
- **Area By Id**: Keyword extract Area type name using Area Type external ID as argument
- **AreaList**: Retrieves list of areas separated by a hyphen that use this ballot type, the list only includes areas in which administrative division is marked as inBallotList.
- **Ballot Description**: Retrieves ballot description.
- **Ballot Group Unit**: Retrieves ballot group units.
- **Ballot Id**: Retrieves ballot key in Id.
- **Ballot LOT**: Identifies the Ballot lot (ballot style).
- **Ballot PDF**:Retrieves ballot PDF name.
- **Ballot Type Abb**: Retrieves abbreviation from Ballot Type object related to current ballot manifestation.
- **Election date**: Extract election date and present in specified format.
- Argument value for date format is mandatory (Example: enter 0 for January 1, 2011) List of argument value for various formats:
    - 0 - Month DD, YYYY (USA) – 1 - MM/DD/YY (USA)
    - 101 - MM/DD/YYYY (USA)
    - 2 - YY.MM.DD (ANSI)
    - 102 - YYYY.MM.DD (ANSI)
- **Election Name**: The Election Name taken from the description column in ElectionEvent table.
- **Election Unit:** Extract textual unit from the election event • **Elector Group Ab**: Retrieves elector group abbreviations.
- **Ballot Groups**: Retrieve Ballot Groups.
- **Electoral Groups**: Retrieve all electoral groups connected to a ballot manifestations (ordered)
- **Jurisdiction Name**: Retrieves the name of the jurisdiction.
- **Language**: Retrieves the language profile for the ballot.
- **Non Party Electoral Groups**: List of electoral groups that are not connected to political party.

- **Non Party Electoral Groups Abb**: List of electoral groups abbreviations that are not connected to political party.
- **Party Ab**: Party abbreviation.
- **Party Name**: Retrieve list of ordered party names connected to a ballot manifestation
- **Precinct List**: Retrieves pollingDistrict list from Ballot Type object related to current ballot manifestation.
- **Precincts**: Formatted list of Precincts (Polling subdivisions) to avoid very long lists.
- **Base Precincts**: Retrieves the base precinct name.
- **Ballot Type**: Retrieves the Ballot Type name.
- **Card Type**: Retrieves the Card Type name.
- **Card Type Id**: Retrieves the Card Type external identifier.
- **Card Type Abb**: Retrieves the Card Type abbreviation.
- **Card Type Description**: Retrieves the Card Type description.
- **District**: Extract district type name
- **District Abb**: Extract district abbreviation
- **District By Id**: Extract district type name
- **District List**: retreieves list of districts

4.6.2 Defining Headers for Electronic Ballots

The steps for defining templates for electronic mobile ballots are similar to regular paper ballots (see section Defining Ballot Headers/Footers 5.6):

1. Choose purpose: Ballot Header/Footer Template
2. Select the desired language purpose
3. Define the template
4. Attach the template to appropriate ballot cards

The only one difference is the Ballot Content Type: Print Headers should be selected from the combo box.

4.6.3 Setting Header Watermark

In order to set watermark for header, please open page setup **File - Page Setup** in template editor and select desired background image. If image is smaller than document, it will be repeated in background to fill all background. If you do not want to repeat image, but to display one image, you will need to adjust image size to match document's size. Image width should be equal to size of the text

document multiplied by 72. Let's say you have ballot header 2 inches high on universal multi column ballot (4 columns) and want to set centered watermark image. You will need to create another image of size 522x144 and place watermark image inside it (centered). When you add that image as background of text document it will not be repeated because it matches document's size and it will have watermark centered. Universal multi column ballot header widths, see Figure 4-25:

Grid Name	Header width (in)	Picture width (px)
Right Side VB 10 ranks [4 columns]	7.25	522
Right Side VB 9 ranks [3 columns]	7.29	525
Right Side VB 7 ranks [2 columns]	7.25	522
Left Side VB Position [3 columns]	7.08	510
Left Side VB Position [2 columns]	6.87	495

Figure 4-25: Universal multi column ballot header widths table

NOTE: On text document you can set default text document size. Application will gather exact text document width from server and you can do calculation of header width manually.

4.7 Defining Contest Headers

To define contest headers:

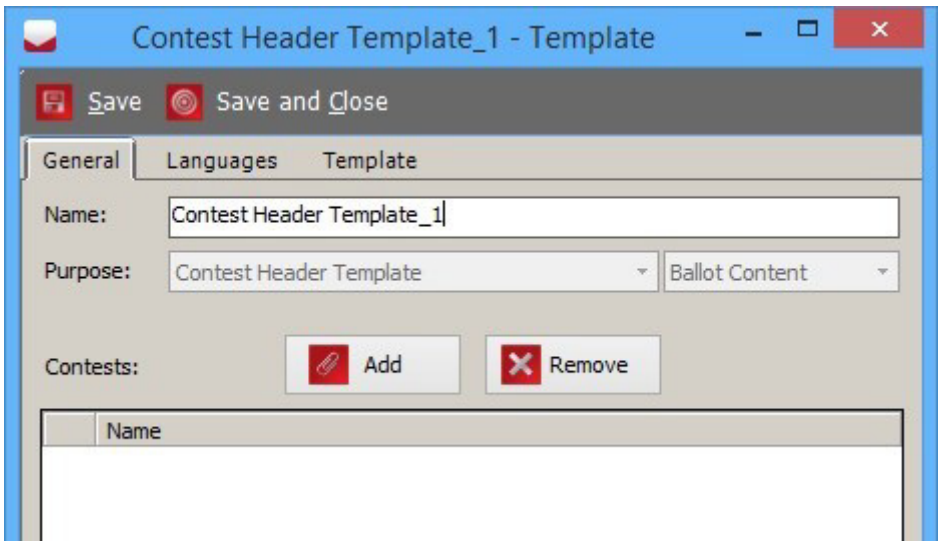

Figure 4-26: Contest Header Template Dialog

1. Expand the 'Localization' Navigation group and select the 'Templates' option to open the 'Templates - Headers, Contests and Candidates' context sensitive menu.
2. Select Contest Header Template from the Template Type drop-down menu and select the desired language profile purpose from the Language Purpose drop-down menu.

3. Click 'Create New' to prompt the 'Contest Header Template' dialog, see Figure 4-26. Here you can set the name of the template and attach the template to contests. Various templates can be defined for contests of different types or with different properties.
4. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
5. Go back to General tab and click Add to prompt the Select Contests dialog. Click Search to display the available contests. Select the desired contests from the list, and click Assign and Close.

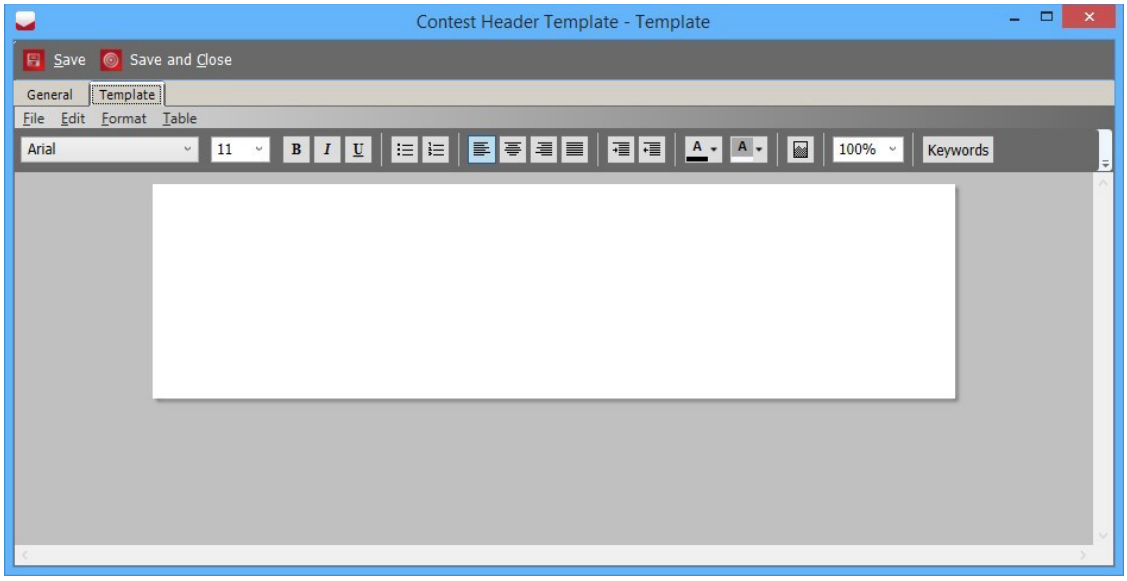

Figure 4-27: Contest Header Template: Template Tab

6. Similar to the Ballot Header/Footer Template tab, the Contest Header Template tab operates as an RTF editor. Adjust the window and zoom level to work comfortably with the document. This template mainly consists of keywords and the words 'Vote For' in the desired languages of your Election Project.
7. Once you have added your keywords and required translations, you can then style and format the text. Ensure the font sizes are set so that they fit in the width of the ballot column.
8. When designing the contest or ballot header do not use a dark colored font on a dark colored background. This causes issues when adjudicating the ballots. Always use a light color font.
9. Once finished, click 'Save and Close', and repeat the previous steps for each Contest Header required.

4.7.1 Defining Contest Header Keywords

The 'Keywords' button, located on the Template tab of the Contest Header dialog, allows you to define the keywords for your contest header. This section lists the various keywords available and their purposes.

- **Contest name:** Retrieves the name of the contest.
- **Unit:** Extracts unit of the contest.
- **Max Rank**: #Max Rank# keyword gives the maximum rank number position as cardinal number.

  NOTE: Numeric Translation table for selected Language Profile must be populated to avoid keyword replacement with empty string. Arguments are the same as arguments for the previous keyword:

  - Language Profile Abbreviation E.g. ENG, FR, SP, etc.
  - U Translated number will be replaced with word in uppercase letters, – L Translated number will be replaced with word in lowercase letters.

Attributes should be concatenated with dash character (-). After the keyword import, the full example with arguments should appear as seen below:

- #Max Rank#ENG-U, this will represent maximum rank in English, in uppercase letters, or
- #Max Rank#SP-L, this will represent maximum rank in Spanish, in lowercase letters, or
- #Max Rank#FR-L, this will represent maximum rank in French, in lowercase letters, etc.

- **Pause:** Pause break. Argument defines break length. Example: 4s represents four seconds, 3000ms means 3 thousand milliseconds.
- **V:** VE defines the end of the text to be pronounced by defined voice.
- **Vote for**: #Vote For# keyword gives the number of voting positions of available positions for contest. If numeric translation for the number exists then numeric translation will be used. Otherwise, keyword will be replaced with numeric value. Arguments that are available are:
  - Language Profile Abbreviation E.g. ENG, FR, SP, etc.
  - U Translated number will be replaced with word in uppercase letters, – L Translated number will be replaced with word in lowercase letters.

Attributes should be concatenated with dash character (-). After keyword import, full example with arguments should look like:

- #Vote For#ENG-U, this will replace #Vote For# keyword, if numeric translation exists, with cardinal number in English, in uppercase letters, or

  - #Vote For#SP-L, in Spanish, in lowercase letters, or
  - #Vote For#FR-L, in French, in lowercase letters, etc.
- **VS**: VS defines the start of the text to be pronounced by defined voice.

4.7.2 Defining Contest Header with Audio Keywords

If you wish to define contest templates containing speech, perform the following steps:

1. Create a new contest template.
2. The procedure to follow for creating contests is the same as defined in the section above. The only exception is that you need to set the borders of the text that the speech synthesis tool will take into consideration when it creates the audio (see section Generation Audio in EMS 4.6).

4.7.3 Defining Contest Headers for ImageCast® X Tabulators

The Contest Header Template for ImageCast® X tabulators must be assigned to either screen content language or print content language. If it is assigned to screen content language, then it will be used in the tabulator screen. For print content language, it will be used when electronic mobile ballot is printed or data displayed on VVPAT.

The template is automatically adjusted to be applied for the specified tabulator types. A table with three cells is defined, see Figure 4-28:

1. The top cell is middle aligned
2. The bottom left cell is left aligned

3. The bottom right cell is right aligned

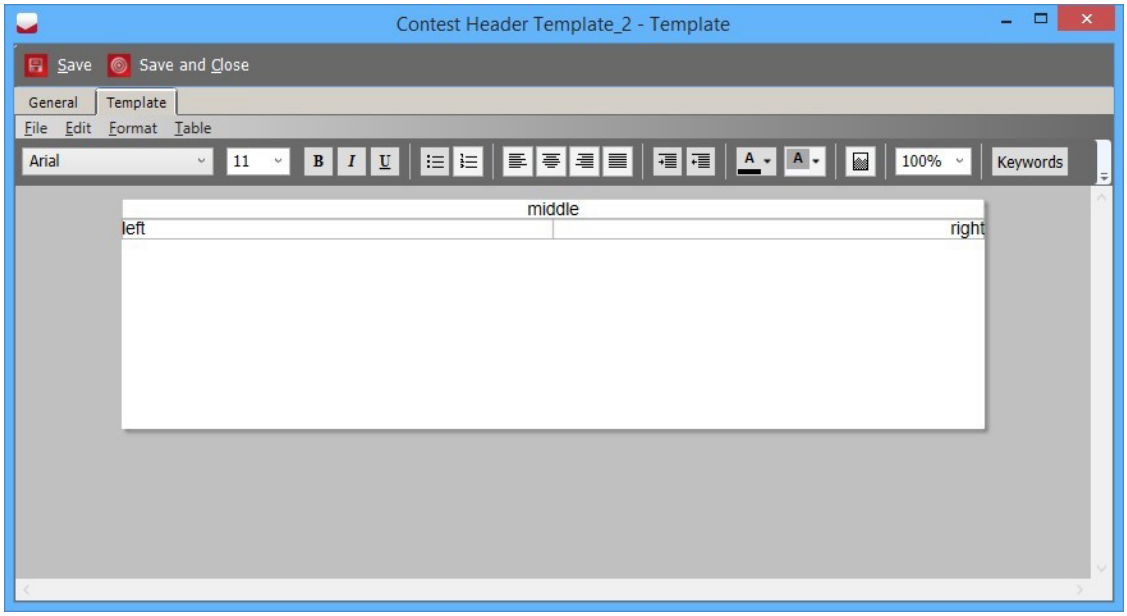

Figure 4-28: ICX Contest Header Template

The user cannot change the table layout and alignment. Any features that are not supported for the specified tabulator are disabled in the text editor. The purpose of this approach is to provide the tabulators with three separate texts with different alignment. The receiving tabulators will use the appropriate unit of text as needed for the way the ballot is to be laid out and displayed to the voter. For example, if the user wants to have right aligned text in the cell they will only need to define text in the bottom-right cell of table in the template. The user can also combine the cells so that if text is defined in all three cells, the same layout will be applied on the ballot presented to the voter. Cells that don't have any text defined will not be mapped into the layout for the ImageCast® X tabulators.

NOTE: Font selection for screen content language is enabled but it is used only in EED to display text correctly. For example if text that supports ligatures is entered in text editor, it may not be displayed correctly unless user selects appropriate font. However ICX device will handle text displaying correctly with its embedded font and it cannot use fonts from Windows OS.

4.8 Defining Choice Templates

Choice templates work in a similar way to Contest Header templates. They are attached to contests and contain keywords that reference the textual unit fields you created while defining your choices.

To define choice templates:

1. Expand the Localization Navigation group, and click on Templates. From the Template Type combo box, select Choice Template. From the Language Purpose combo box select your desired language profile purpose.
2. Click 'Create New'. The Choice Template dialog appears as seen in Figure 5.29.
3. In the Choice Template dialog, set the name of the template, and attach the template to languages and contests.

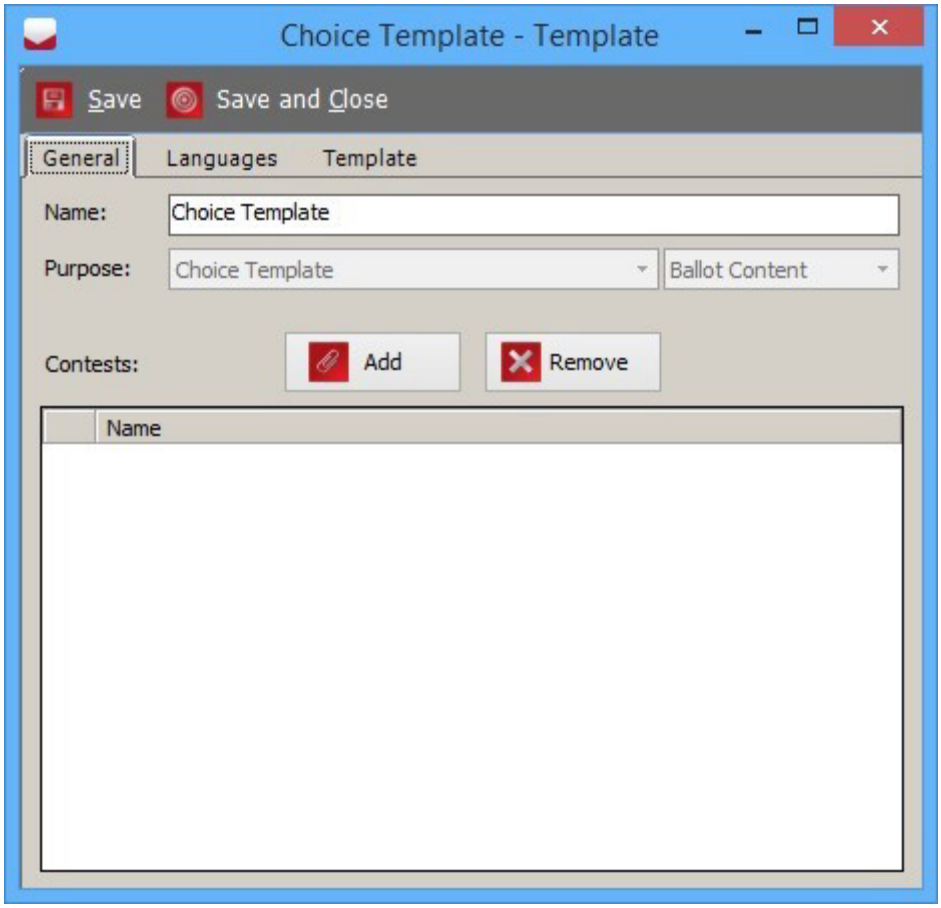

Figure 4-29: Choice Template Dialog

4. From General tab click Add to open the Select Contests dialog, and click Search to display the available contests, see Figure 4-30.

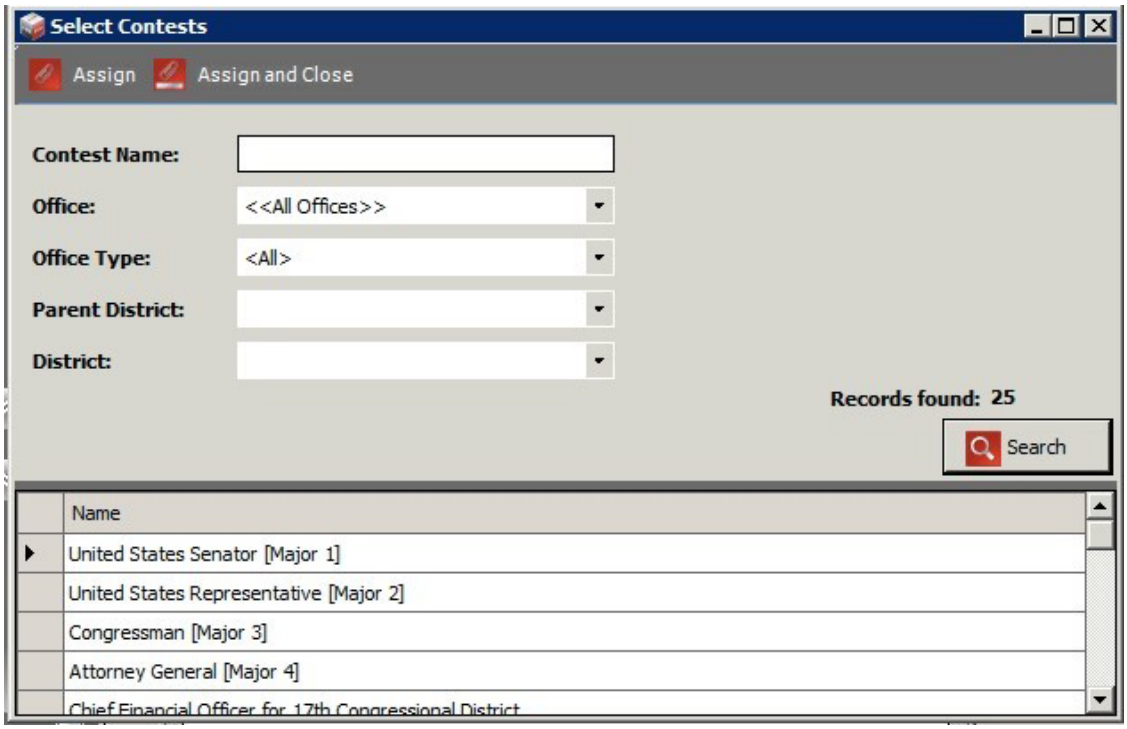

Figure 4-30: Choice Template: Select Contests

5. Select the desired contests from the list, and click 'Assign and Close'.
6. Select the 'Template' tab. Adjust the window and zoom level to work comfortably with the document. This template consists only of keywords. Type in the desired keywords, as listed in Section 5.6.1. Style your text as desired, and click 'Save and Close'. Type in the keywords, and style your text as desired. Click 'Save and Close' once finished.
7. Repeat the previous steps for each Choice template you wish to define

4.8.1 Defining Choice Template Keywords

The 'Keywords' button, located on the Template tab of the Choice Template dialog, allows you to define the keywords for your Choice template. This section lists the various keywords available and their purposes.

- **Choice name**: Retrieves the name of the choice.
- **Choice party**: Retrieves the string from political party of that choice on the proper language.
- **Cross-Over Group**: Retrieves the cross-over group from political party of that choice.
- **Order**: Order of candidate within the contest.

- **Party Abbrev**: Retrieves the abbreviation from political party of that choice.
- **Party Unit**: Extracts textual unit from the political party. If the choice has more than one party, the value will be $Multiple Parties$. If the choice does not have any party, the value will be $No Party$. Arguments can be shaped in the following way: Unit order number (e.g. 1,2…) - unit will be pulled from political party for the same language profile which is connected to the template.
  Language abbreviation and order number (LANG ABB-OrdNumber) for example En-1, SPA-2 etc.
- **Pause**: Pause break. Argument defines break length. Example: 4s represents four seconds, 3000ms represents 3 thousand milliseconds.
- **Single Choice Party**: Retrieves the text defined for the political party assigned to the given choice. Used to automatically insert the text of the political party assigned to choice into choice RTF text. Usage of this keyword adds the following text into RTF text: #Single Choice Party#. Text: #Single Choice Party# will be replaced with the text defined for the political party assigned to the given choice.
- **Unit**: Extracts unit of the choice.
- **UPPERCASE**: Extracts textual unit of the choice in uppercase.
- **VE**: VE defines the end of the text to be pronounced by defined voice.
- **VS**: VS defines the start of the text to be pronounced by defined voice.

4.8.2 Defining Choice Templates with Audio Keywords

If you want to define choice templates that the text-to-speech converter will use to synthesize audio files, perform the following steps:

1. Create a new contest template.
2. The procedure for choice creation is the same as defined in Section 5.6. However, you will have to set the borders of the text that the speech synthesis tool will take into consideration when converting the audio (see section Generation Audio in EMS 4.6).

4.8.3 Defining Templates for Write-Ins

Write-in positions on the ballot can also be laid out in several different ways. The user can choose from the following available templates:

1. Write-in cell with no line
2. Write-in cell with line below write-in text

3. Write-in cell with line above write-in text
4. Write-in cell with two lines (each below write-in text)
5. Write-in cell with two lines (each above write-in text)

4.9 Defining Write-In Choices with Multiple Lines

In order to render ballots which contain contests with multiple write-in lines in a single write-in cell (for example, for running mate contests such as President and Vice President), the user needs to select the appropriate cell template for the contest and to set the write-in line count i.e. how many lines are required in the write-in cell.

Write-in line count must be set to 2 for the two line write-in template. If it is set to 1, the contest will not be rendered properly. Value of 3 is reserved for possible template that will have 3 lines. For regular write-in (one line) template, this setting is ignored, see see Figure 4-31.

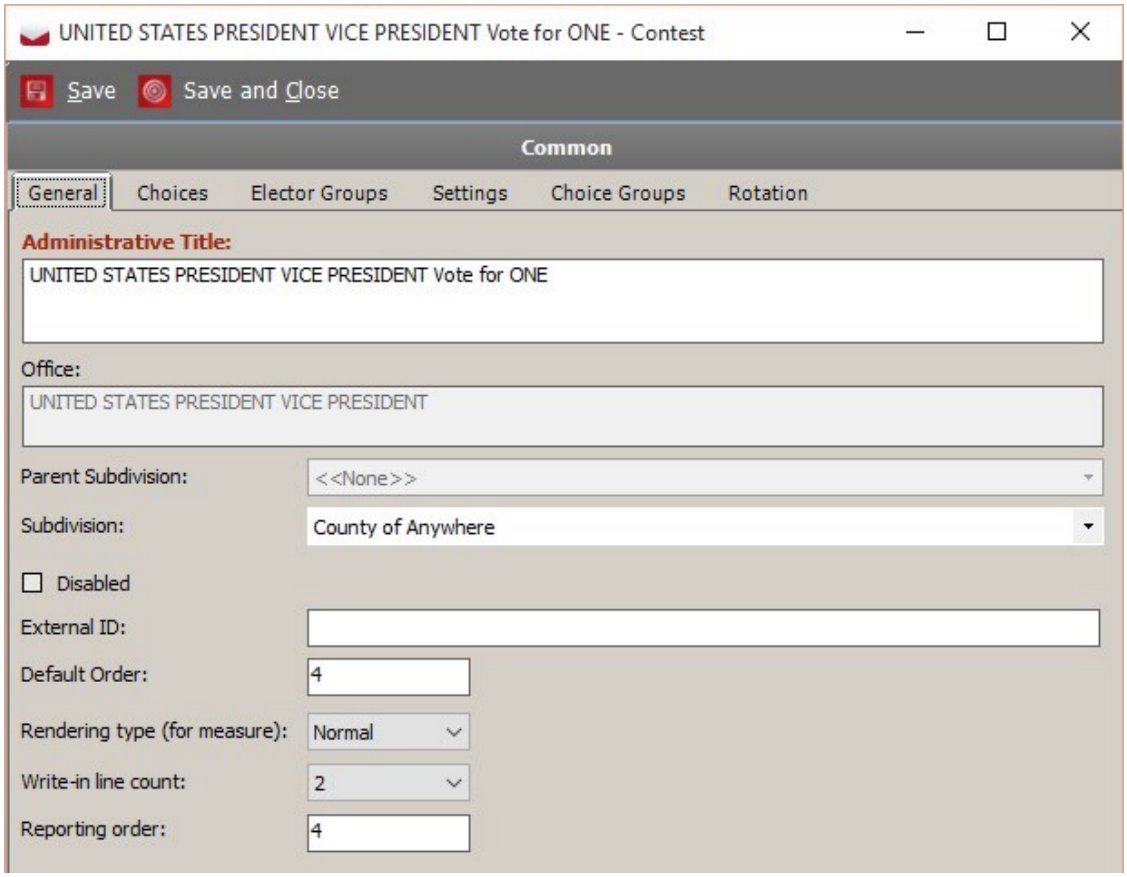

Figure 4-31: Write-in line count attribute of contest editor

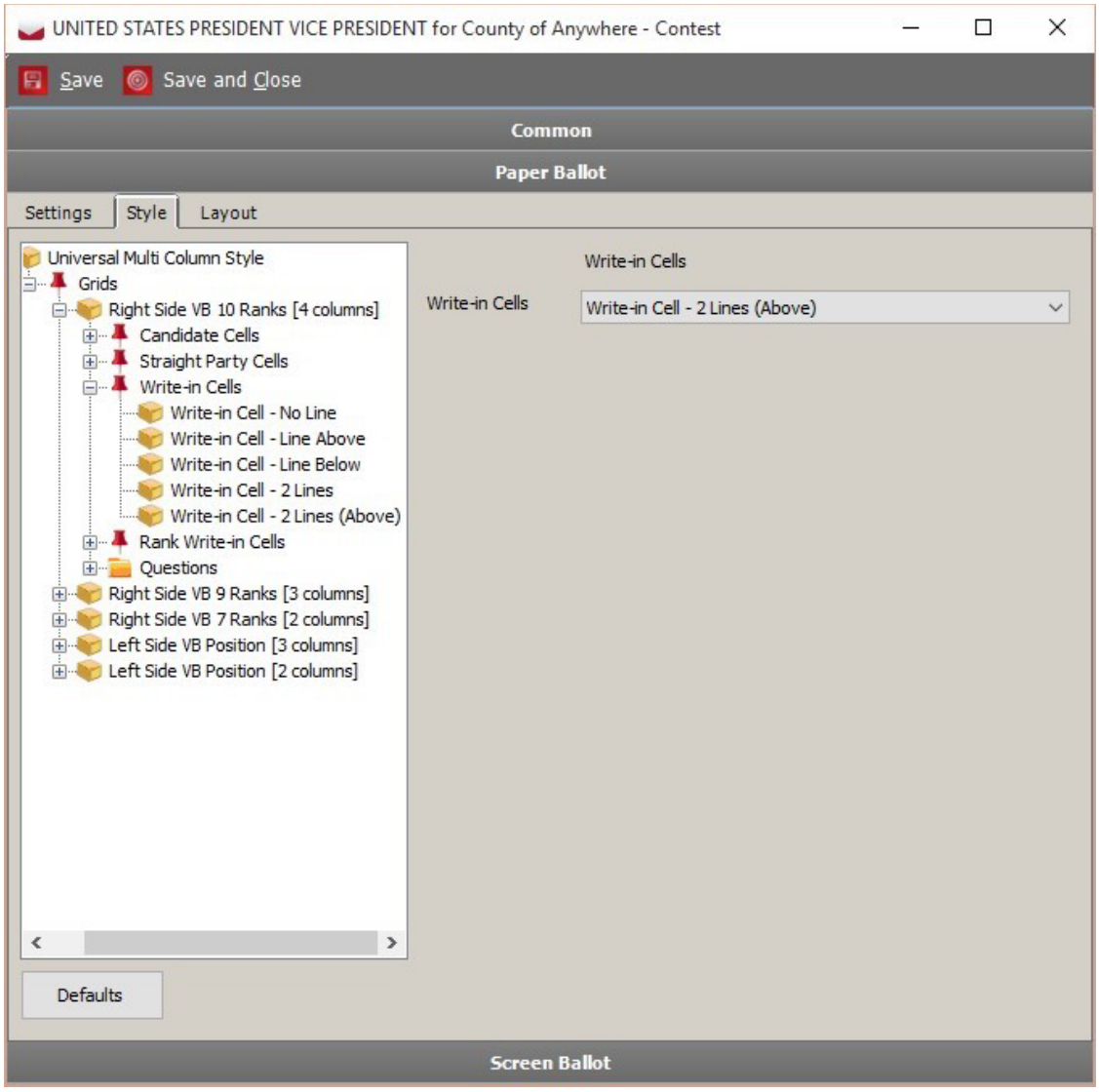

Figure 4-32: Selected two line write-in template

Figure 4-33: Template for multiple write-in choice

Figure 4-34: Rendered two-line write-in

By default, the server will use the same write-in text to render on both write-in lines. In order to specify distinct text for each of the lines, the user needs to define custom text for the write-in choice and to use a the #WriteIn Line Separator# keyword as a line delimiter.

4.9.1 Defining Choice Group Templates

To define Choice Group Templates:

1. Expand group, and click on Templates. From the Template Type combo box, select Choice Group Template. In the Language Purpose combo box, select your desired language profile purpose.
2. Click 'Create New'. The Choice Template dialog appears, see Figure 4-35.
3. Within the Choice Group Template dialog, set the name of the template, and attach the template to languages and contests.

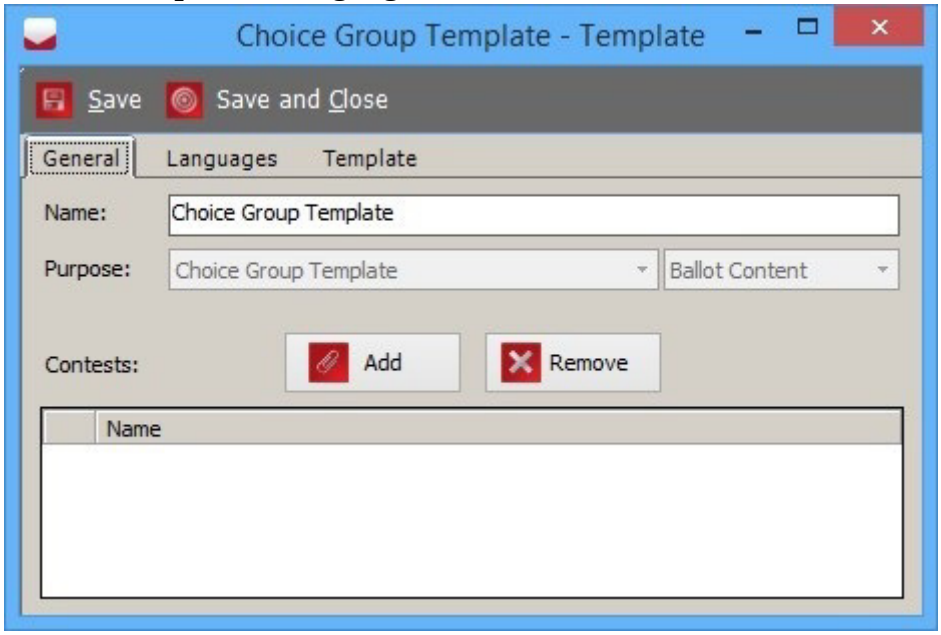

Figure 4-35: Choice Group Template Dialog

4. From General tab click Add to open the Select Contests dialog, and click Search to display the available contests, see Figure 4-36.
5. Select the desired contests from the list and click 'Assign and Close'.

6. Select the 'Template' tab. Adjust the window and zoom level to work comfortably with the document. Type in the desired keywords, as listed in Section 5.8.1. Style your text as desired, and click 'Save and Close'.
7. Repeat the previous steps for each Choice template you wish to define.

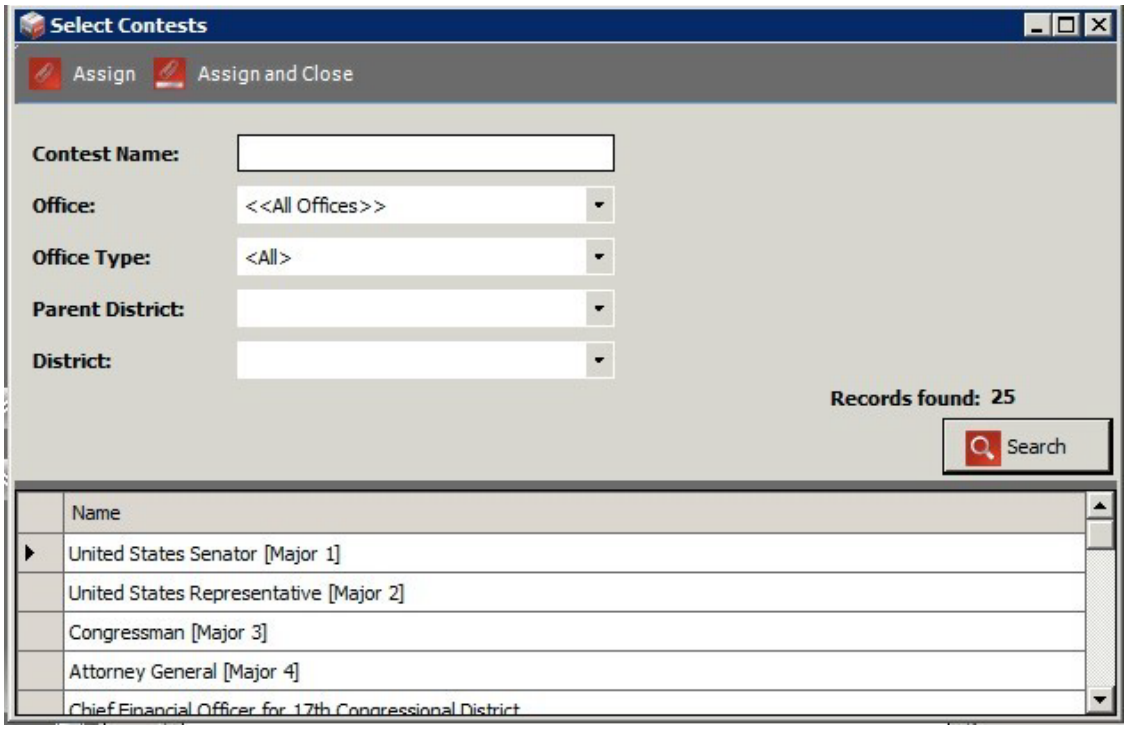

Figure 4-36: Choice Group Template: Select Contests

4.9.2 Defining Choice Group Template Keywords

The 'Keywords' button, located on the Template tab of the Choice Template dialog, allows you to define the keywords for your Choice template. This section lists the various keywords available to you, and their purposes.

- **Unit**: Extracts unit of the choice group.
- **VE**: VE defines the end of the text to be pronounced by defined voice.
- **VS**: VS defines the start of the text to be pronounced by defined voice.

4.10 Defining Contest Headings Template

To define Contest Heading Templates:

1. Expand group, and click on Templates. From the Template Type combo box, select Contest Heading Template. From the Language Purposecombo box, select your desired language profile purpose.
2. Click 'Create New to prompt the 'Contest Heading Template dialog. Here you can set the name of the template and attach the template to contests.

3. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
4. From General tab click Add to prompt the Select Lines dialog.
5. Click Search to display the available lines
6. Select the desired line from the list and click 'Assign and Close.'
7. To create contest headings, see section 5.14 Creating Content Headings.

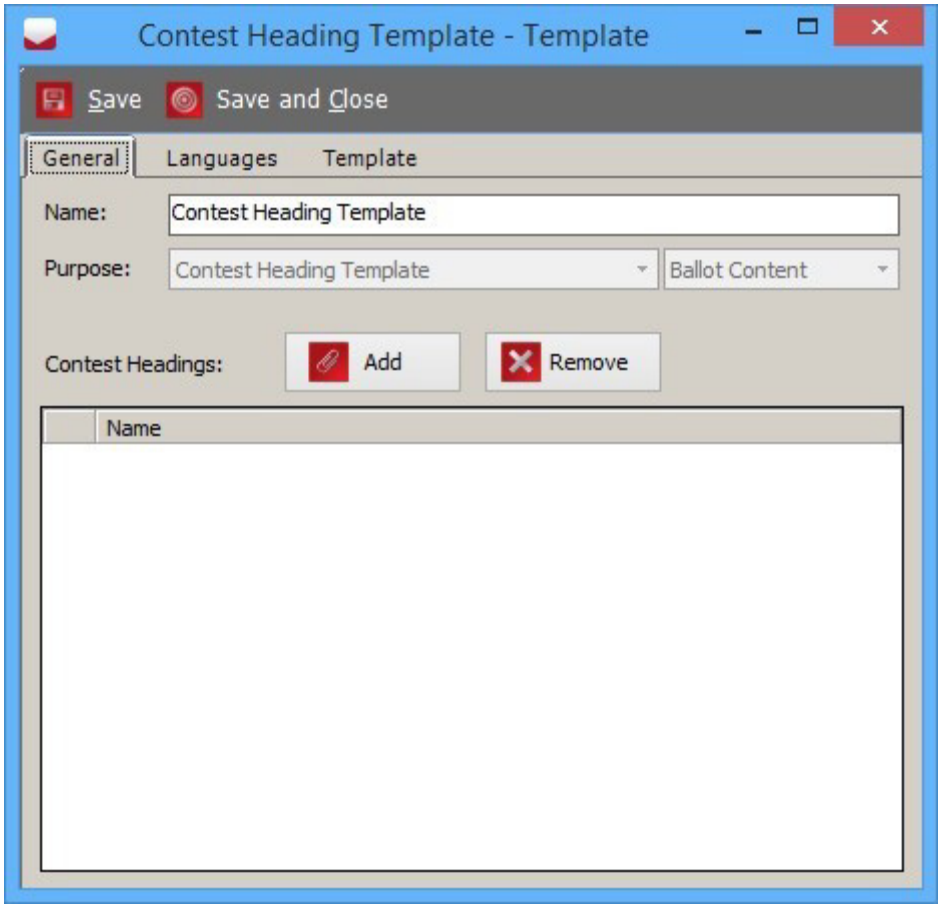

Figure 4-37: New Contest Heading Template Dialog

8. Select the Template tab. Adjust the window and zoom level to work comfortably with the document. Type in the desired keywords. Style your text as desired, and click Save and Close.
9. Repeat the previous steps for each Contest Heading template you wish to define.

4.10.1 Defining Contest Heading Template Keywords

The 'Keywords' button, located on the Template tab of the Contest Heading dialog, allows you to define the keywords for your contest heading. This section lists the various keywords and their purposes.

- **Pause**: Pause break. Argument defines break length. Example: 4s means four seconds, 3000ms means 3 thousand milliseconds.
- **Unit**: Extracts unit of the choice group.
- **VE**: VE defines the end of the text to be pronounced by defined voice.
- **VS**: VS defines the start of the text to be pronounced by defined voice.

4.11 Defining Political Party Template

To define Political Party Templates:

1. Expand group, and click on Templates. From the Template Type combo box, select Political Party Template. From the Language Purpose combo box, select your desired language profile purpose.
2. Click 'Create New' to prompt the 'Political Party Template' dialog. Here you can set the name of the template and attach the template to contests.
3. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
4. From General tab click Add to prompt the Select Parties dialog.
5. Click 'Search' to display the available political parties.
6. Select the desired political party from the list and click 'Assign and Close'.

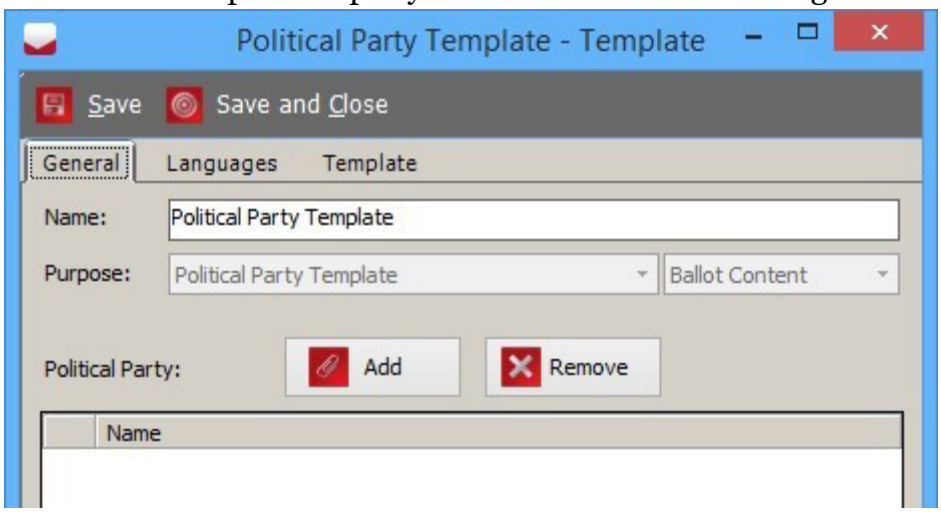

Figure 4-38: New Political Party Template Dialog

7. Select the 'Template' tab. Adjust the window and zoom level to work comfortably with the document. Type in the desired keywords. Style your text as desired, and click Save and Close.
8. Repeat the previous steps for each Political Party template you wish to define.

4.11.1 Defining Political Party Template Keywords

The 'Keywords' button, located on the Template tab of the Political Party Template dialog, allows you to define the keywords for your Political Party template. This section lists the various keywords available to you, and their purposes.

- **Pause**: Pause break. Argument defines break length. Example: 4s means four seconds, 3000ms means 3 thousand milliseconds.
- **Unit**: Extracts textual unit from the object. Arguments can be shaped in the following way:
  - Unit order number (e.g. 1, 2 ...) - unit will be pulled from the object for the same language profile, which is connected to the template.
  - Language abbreviation and order number (LANG ABB-OrdNumber), for example EN-1, SPA2 etc. Unit order number (e.g. 1, 2 ...) - unit will be pulled from the object for the same language. 1, 2 ...) - unit will be pulled from the object for the same language
- **VE**: VE defines the end of the text to be pronounced by defined voice.
- **VS**: VS defines the start of the text to be pronounced by defined voice.

4.12 Defining Rank Number Template

To define Rank Number Templates:

1. Expand group, and click on Templates. From the Template Type combo box, select Rank Number Template. From the Language Purpose combo box, select your desired language profile purpose.
2. Click 'Create New to prompt the 'Rank Number Template dialog. Here you can set the name of the template and attach the template to contests.
3. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
4. From General tab click Add to prompt the Select Contests dialog.
5. Click Search to display the available contests.
6. Select the desired contest from the list and click 'Assign and Close.
7. Select the Template tab. Adjust the window and zoom level to work comfortably with the document. Type in the desired keywords. Style your text as desired, and click Save and Close.

8. Repeat the previous steps for each Rank Number template you wish to define.

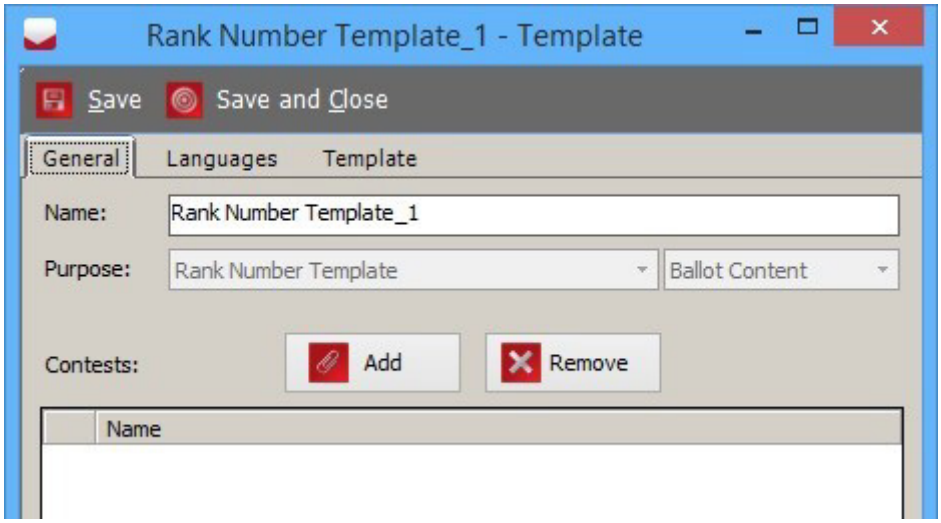

Figure 4-39: New Rank Number Template Dialog

4.12.1 Defining Rank Number Template Keywords

The 'Keywords' button, located on the Template tab of the Rank Number Template dialog, allows you to define the keywords for your Rank Number template. This section lists the various keywords available to you, and their purposes.

- **Rank**: Retrieves the translated rank number position as ordinal number. Note that Numeric table for selected Language Profile must be populated to avoid replacement with empty string.

Argument (optional) is index of the base language. This argument is only used when keyword is used in the multi-language ballot content template (like English/ Spanish).

Examples:

#Rank# (Languages:English, Spanish): It will extract translated rank of English language when rendered on English ballot and translated rank of Spanish language when rendered on Spanish ballot.

#Rank#1 (Languages:English/Chinese, Spanish/Chinese): It will extract translated rank of English language when rendered on English/Chinese ballot and translated rank of Spanish language when rendered on Spanish/Chinese ballot.

#Rank#2 (Languages: English/Chinese, Spanish/Chinese): It will extract translated rank of Chinese language when rendered on English/Chinese ballot and also translated rank of Chinese language when rendered on Spanish/Chinese ballot.

4.12.2 Ranked Choice Contests

Settings for ranked choice contests can be set in the Rank Choice Voting tab of **Contest** editor., see Figure 4-40.

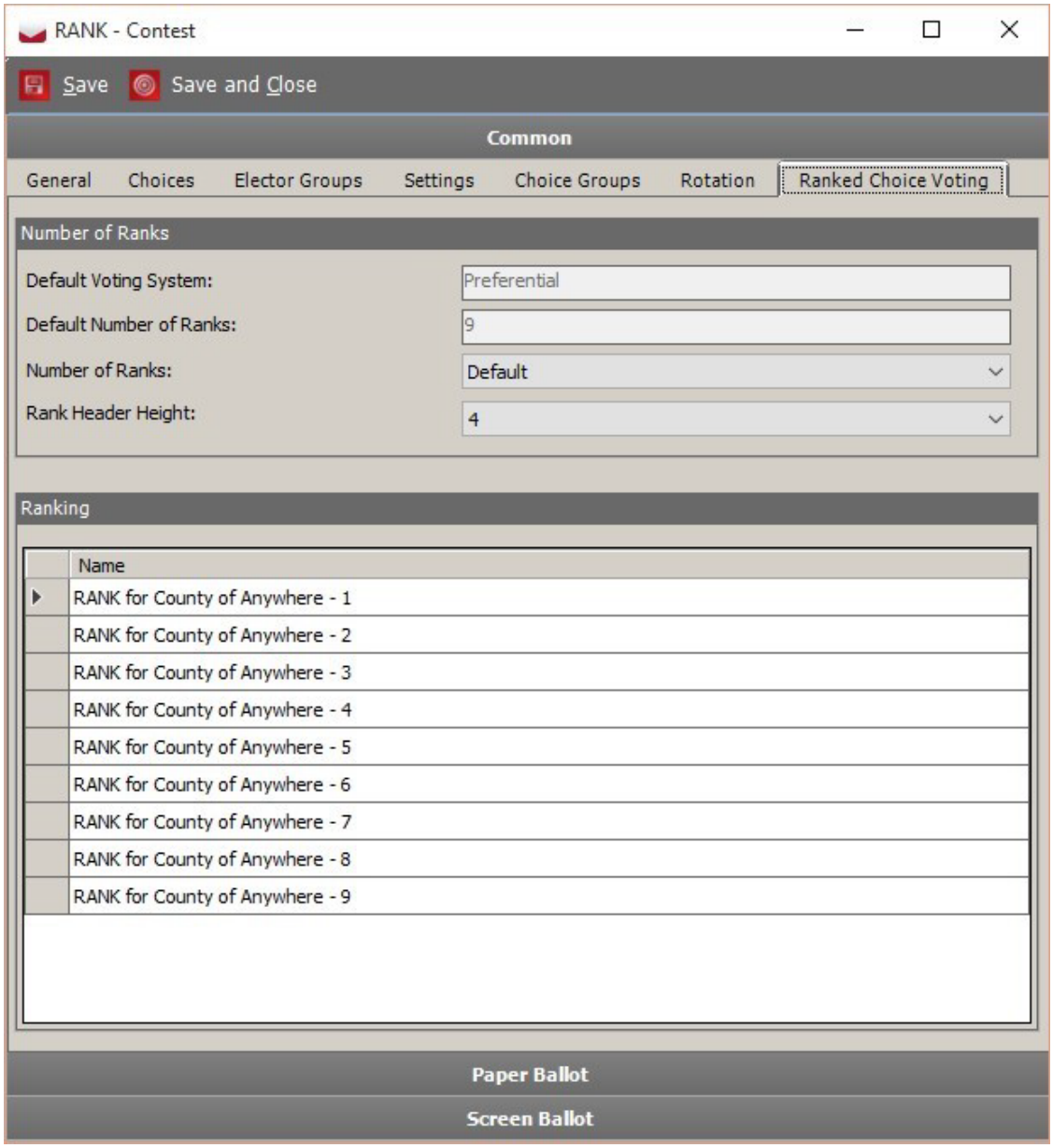

Figure 4-40: Ranked Choice Voting tab

4.12.2.1 Overriding the Number of Ranks in a Ranked Choice Contest

The number of ranks can be overridden for a given contest by choosing a value from the Number of Ranks combo box. By default, the value for is taken from the setting for the Office that the contest is linked to. The number of ranks in a contest

can only be overridden in the Election Project Definition status. If the number of candidates in a contest is less than the specified number of ranks, a warning message will be displayed to the user.

4.12.2.2 Defining Headers for Ranked Choice Contests

The height of header for ranks on the ballot can be set by selecting a value from the **Rank Header Height** combo box. The height is defined in the number of vertical markers on the ballot. For each column in a ranked choice contest, a separate object is defined - in the Ranking list, all ranking columns are listed. Double-clicking on any of them will open a text editor where the user can specify the custom text for the selected rank header.

There are three ways for rank headers to be rendered:

- **Object name** text for rank header will be same as name of object for ranking column (for example Rank Choice Office 10).
- **RTF text** custom text defined for rank header (double click on rank column as described above).
- **Units** & **Templates** text will be set according to template.

In general, the header for the rank contest is controlled in the Translations section 5.16 of the application. Choose the appropriate rank choice contest and select **RCV** option, see Figure 4-41.

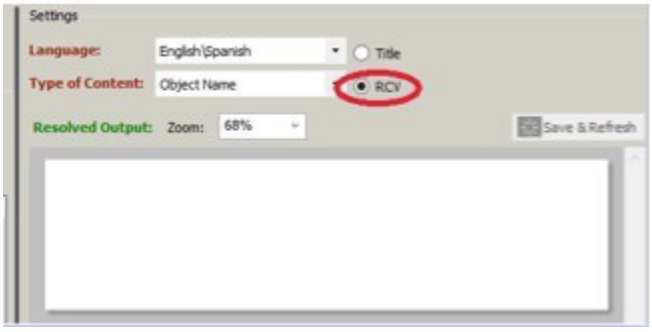

Figure 4-41: RCV option

In order to set a template for the rank header, the user needs to create a **Rank Number Template** type template, and attach it to the ranked choice contest. The rank template has a keyword named #**Rank** to help user to define the template the keyword retrieves the translated rank number position as an ordinal number. To use this keyword, the user must first define the numeric translations table (which is defined per language profile).

- Go to Language Profiles and choose the appropriate profile from the list Double click on it, and a window where numeric translations can be set will be opened.
- #**Rank**# keyword will retrieve values from the Ordinal Number column.

There is also a keyword in the Contest Header template named #**Max Rank**, which retrieves the translated maximum rank number position as a cardinal number (from the **Translated Number** column in Numeric Translations). It can be used for composing the text of the rank choice contest header template.

Figure 4-42: Language Profiles - Numeric Translations tab

4.13 Defining Screen/Print Ballots Template

During the Election Project Styling stage, you can create Screen and Print ballot headers and modify the appearance of contests and choices on the ballot. To define ballot headers for screen and paper ballots:

1. Expand the 'Localization' Navigation group, and select the 'Templates' option to open the Templates - Headers, Contests and Candidates context sensitive menu.
2. Select Screen/Print Ballot Header Template from the Template Type drop-down menu and the desired language profile purpose from the Language Purpose drop-down menu, Language profile must be of Screen or Print Content purpose.
3. Click 'Create New' to prompt the ' Screen/Print Ballot Header Template ' dialog, see Figure 4-43.
4. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).

5. From General tab click the Add button. The Select Ballots dialog appears, see Figure 4-43. Click Search to populate the list of all defined ballots.

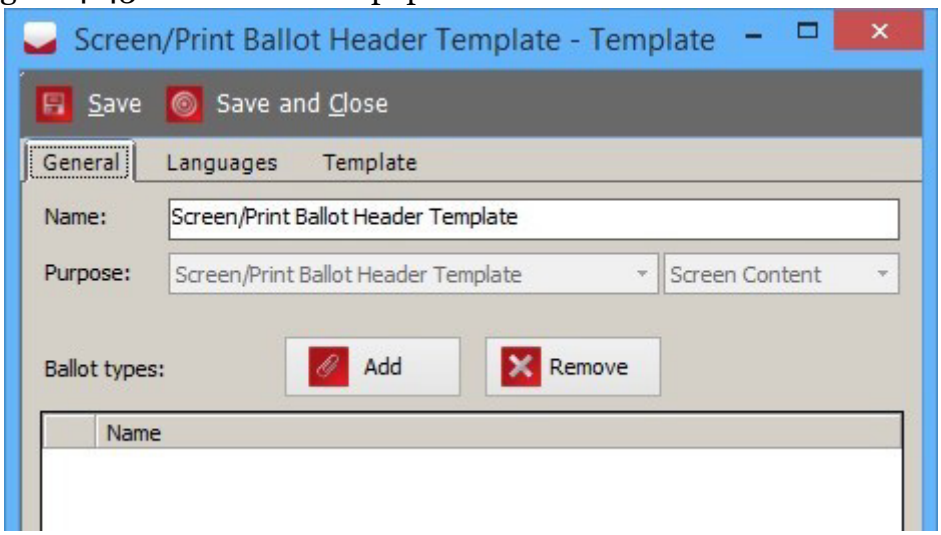

Figure 4-43: Screen/Print Ballot Header Template screen

6. Select the ballot(s) for which you wish to define a screen/print ballot header, and click 'Assign and Close'.
7. Your selected ballot(s) appear in the 'Ballots' field of the Screen/Print Ballot Header Template dialog.

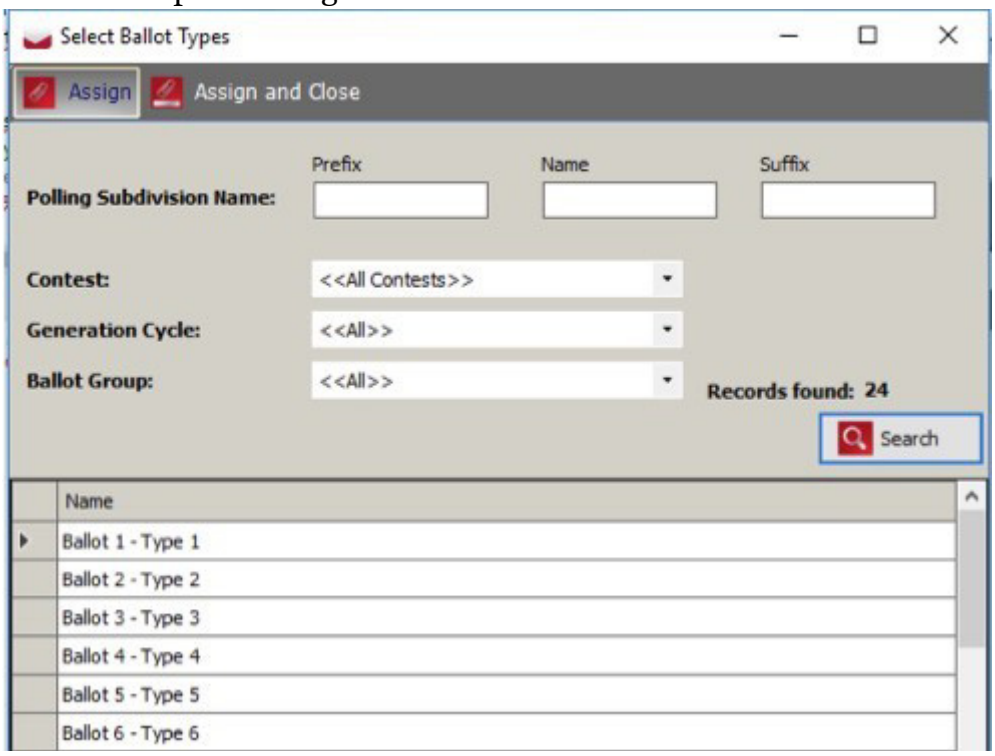

Figure 4-44: Select ballots screen

8. Select the Template tab,see Figure 4-45, or for Screen purpose, see Figure 4-46 for Print purpose, to style your headers and footers, and change the font, size, color, tables, images, and keywords in your text.
9. To change document width and height go to File - Page Setup.
10. The 'Keywords' button is described in full detail in the subsection Defining Screen/Print Ballots Keywords 5.13.1.
11. Repeat each step for each ballot screen/print ballot header template you wish to create.

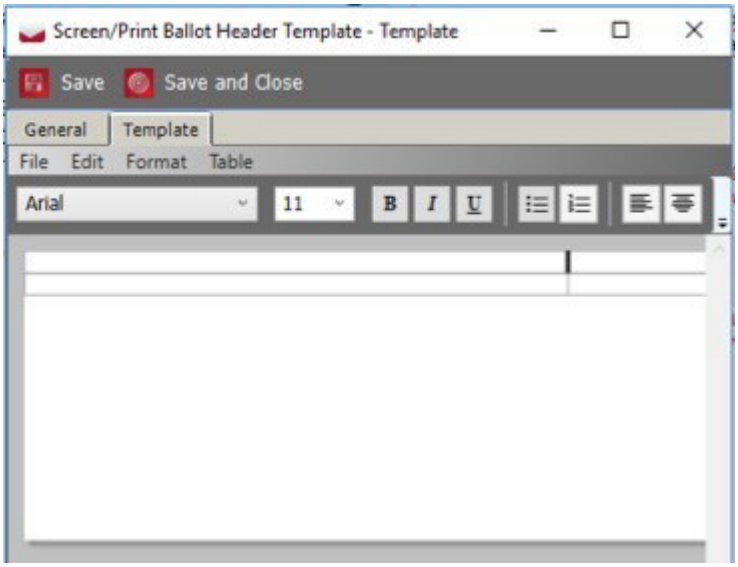

Figure 4-45: Screen purpose Screen/Print Ballot Header Template: Template Tab

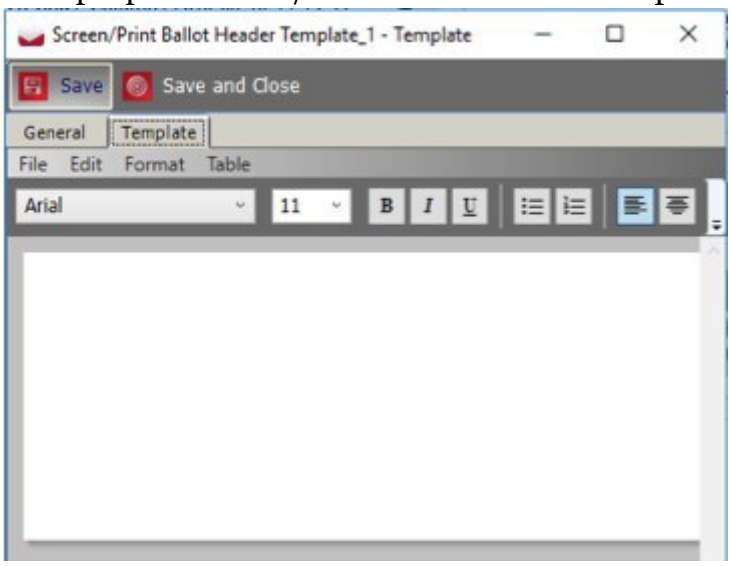

Figure 4-46: Print purpose Screen/Print Ballot Header Template: Template Tab

4.13.1 Defining Screen/Print Ballots Keywords

The 'Keywords' button, located on the Template tab of the Screen/Print Ballots dialog allows you to define the keywords for your Screen/Print Ballots. This section lists the various keywords available and their purposes.

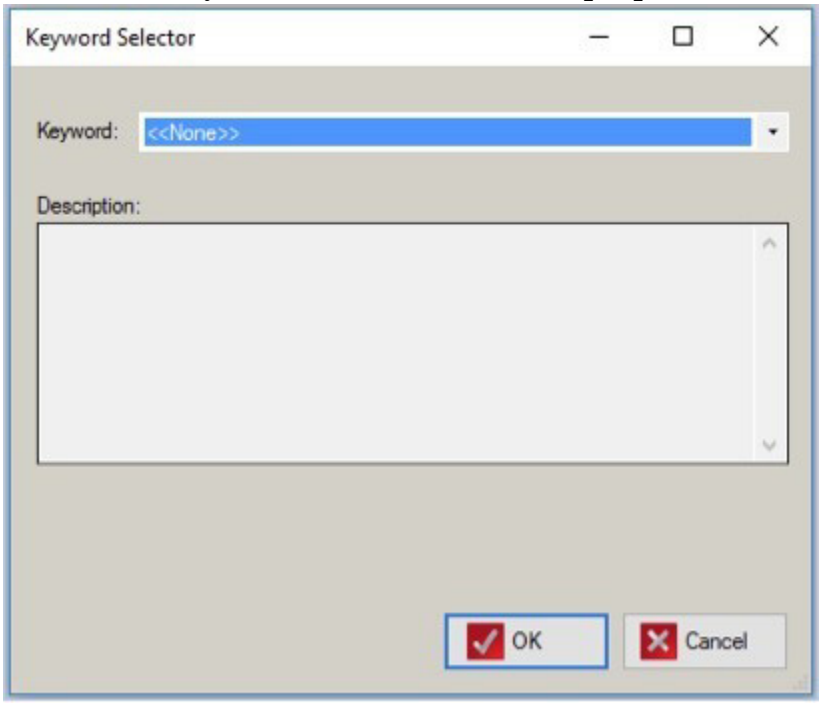

Figure 4-47: Keyword Selector screen

- **Area**: Retrieves the name of the area, depending on argument. Argument is district type abbreviation.
- **Area Abb**: Retrieves the abbreviation of the area, depending on argument. Argument is district type abbreviation.
- **Area By Id**: Keyword extract Area type name using Area Type external ID as argument
- **AreaList**: Retrieves list of areas separated by a hyphen that use this ballot type, the list only includes areas in which administrative division is marked as inBallotList.
- **Ballot Groups**: Retrieve Ballot Groups.
- **Ballot Type Abb**: Retrieves abbreviation from Ballot Type object related to current ballot manifestation.
- **Ballot Type Id**: Retrieves ballot key in Id.
- **Ballot Group Unit**: Extracts textual units from the ballot group
- **District**: Extract district type name
- **District Abb**: Extract district abbreviation

- **District By Id**: Extract district type name
- **District List**: Retrieves list of distrcits
- **Election date**: Extract election date and present in specified format.
- Argument value for date format is mandatory (Example: enter 0 for January 1, 2011) List of argument value for various formats:
  - 0 - Month DD, YYYY (USA) – 1 - MM/DD/YY (USA)
  - 101 - MM/DD/YYYY (USA)
  - 2 - YY.MM.DD (ANSI)
  - 102 - YYYY.MM.DD (ANSI)
- **Election Name**: The Election Name taken from the description column in ElectionEvent table.
- **Election Unit**: extracts textual unit from the election event
- **Jurisdiction Name**: Retrieves the name of the jurisdiction.
- **Party Abb**: Party abbreviation.
- **Party Name**: Retrieve list of ordered party names connected to a ballot manifestation
- **Precinct List**: Retrieves pollingDistrict list from Ballot Type object related to current ballot manifestation.
- **Precincts**: Formatted list of Precincts (Polling subdivisions) to avoid very long lists.
- **Ballot Type**: Retrieves the Ballot Type name.

4.14 Defining Contest Review Title Template

During the Election Project Styling stage, you can create contest review title and modify the appearance of contests review title on the screen ballot. To define contest review title for screen ballots:

1. Expand the Localization Navigation group, and click on Templates. From the Template Type combo box, select Contest Review Title Template. From the Language Purpose combo box, select your desired language profile purpose.
2. Click Create New to prompt the Contest Review Title Template. Here you can set the name of the template and attach the template to contests.
3. Open languages tab and attach as many languages as you want to this template (click add to add new language and select desired language from the list).
4. From General tab click Add to prompt the Select Contests dialog.

5. Click Search to display the available contests.

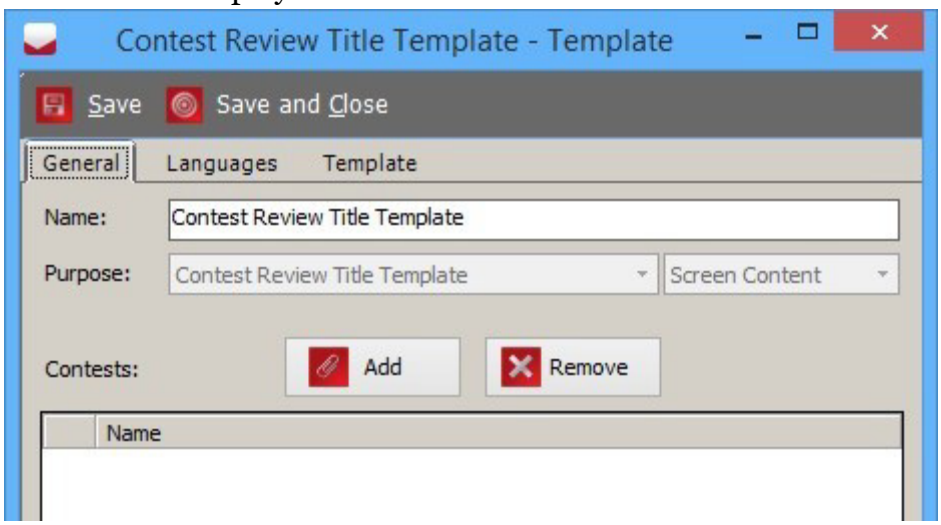

Figure 4-48: Keyword Selector screen

6. Select the desired contest from the list and click Assign and Close.

4.15 Creating Contest Headings

Contest Headings allow you to group multiple contests under a general title called a contest heading. To use Contest Headings in your Election Project, perform the following:

1. Expandthe 'Localization' Navigation menu and select the 'Contest Headings' activity. The Localization - Contest Headings context sensitive screen appears.
2. To create a new Contest Heading, click 'Create New'. A 'New Contest Heading' dialog appears, see Figure 4-49. Type in the Contest Heading Name and select one of the following options from first drop-down menu:
   - **Both**: Enables both Paper and Screen appearance
   - **Paper**: Enables Paper appearance, disables Screen appearance
   - **Screen**: Enables Screen appearance, disables Paper appearance

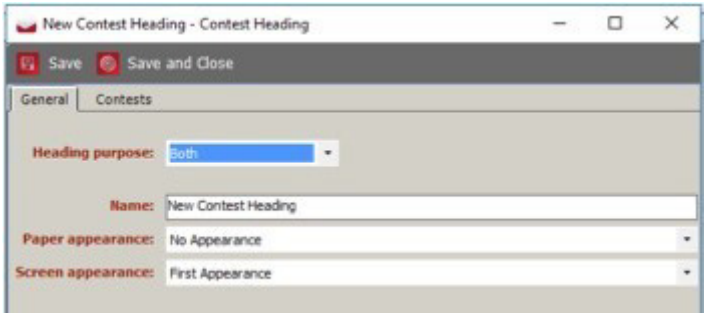

Figure 4-49: New Contest Heading Dialog

Paper appearance drop-down menu list contains following choices:

- **First Appearance**: The Contest Heading appears for the first con- test.
- **First Appearance and each new column**: The Contest Heading appears for the first contest, and if it breaks to the next column, it appears on each new column.
- **First Appearance and each new sheet**: The Contest Heading appears for the first contest, and if it breaks across pages, it appears on each new page.
- **First Appearance and each new card**: The Contest Heading appears for the first contest and if it breaks across cards, it appears on each new card.
- **No Appearance**: The Heading Contest does not appear.
- **Each Appearance**: The Heading Contest appears for all contests associated with it.

Screen appearance drop-down list contains following choices:

- **First Appearance**: The Contest Heading appears for the first contest.
- **Each Appearance**: The Heading Contest appears for all contests associated with it.

3. To associate contests to a contest heading, select the 'Contests' tab on the New Contest Heading dialog, and click 'Add'.
4. The 'Contest Associations' dialog appears. Click 'Search' to populate the list of available contests and select from that list the contests you wish to group under the newly-created Contest Heading.
5. Click 'Assign and Close' to close the Contest Association dialog, and click 'Save and Close' on the New Contest Heading dialog.
6. Repeat these steps for each Contest Heading you wish to create.

4.16 Defining Cards from Contests

It is possible to define which card a contest always has to appear on, as across different Ballot Types in multi-card scenarios, the size and order of contests may cause certain contests to sometimes appear on the lead card, and sometimes on another card.

1. In the **Election Event** - **Contests** section, click **Search** to list all the contests. Apply any filters that are necessary

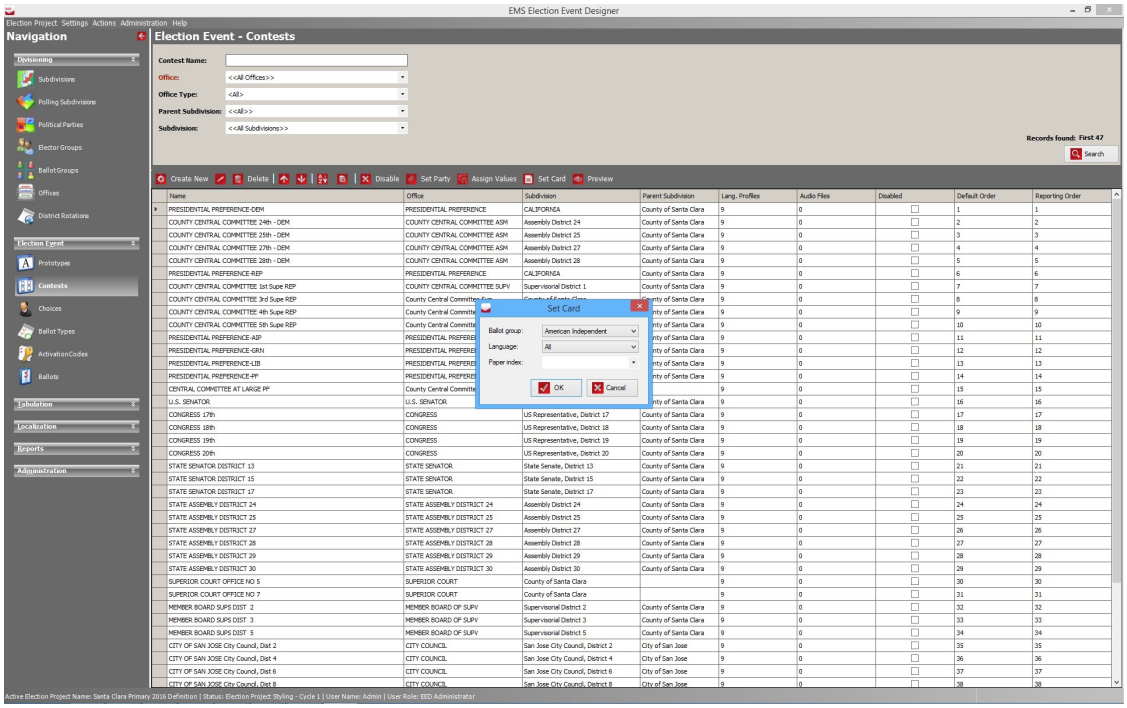

Figure 4-50: Set Card dialog

2. Select the contest you wish to assign to a card, and click **Set Card**. A Set Card dialog will appear.
3. Select the **Ballot Group**, the **Language** (optional typically use the All option) and the **Paper Index** for the contest to be assigned to. The Paper Index number actually related to the card for each ballot. Click **OK** to apply the changes.
4. The above step will cause the related ballots to lose synchronization with the election definition, so the user will have to regenerate ballot content (**Actions** - **Ballots** - **Define Ballot Structure**).

4.17 Translations

The **Translations** section of Election Event Designer allows the user to define and maintain various language presentations of a single element in the election definition, see Figure 4-51. The following election entities are supported:

- Choices
- Contest
- Political Party
- Contest heading
- Choice Group

- Ballot Group
- Elector Group
- Election Event
- Line (Grid ballot styles only)

The interface is split into two sections:

- Search
- Edit

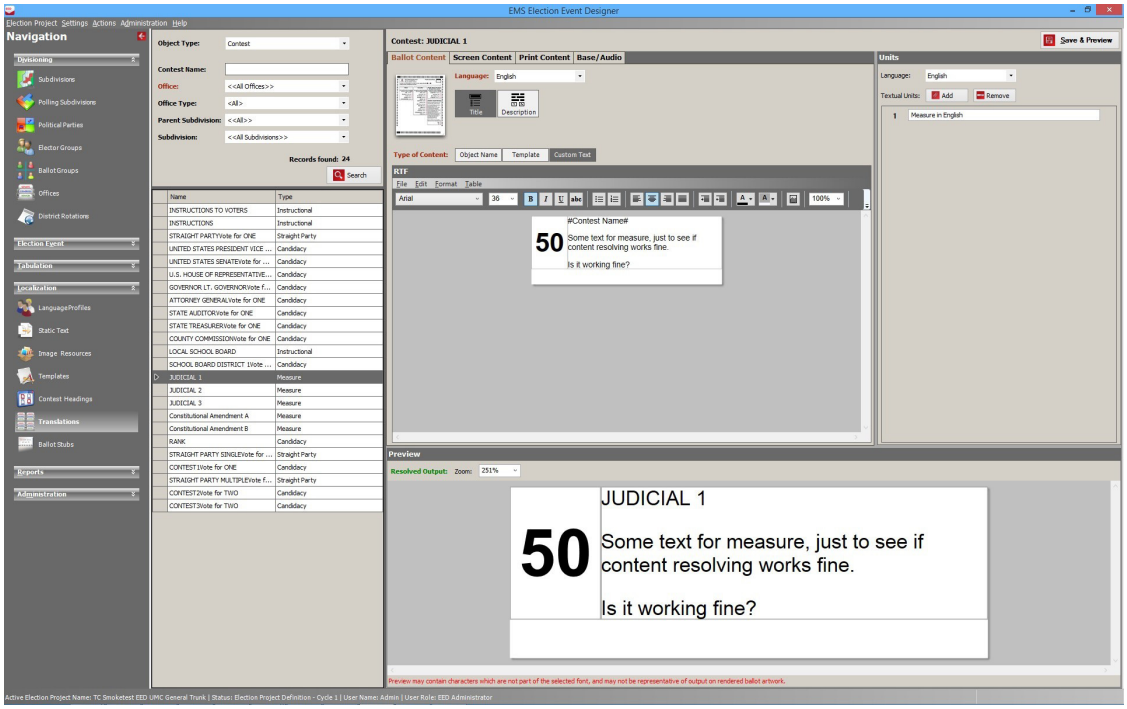

Figure 4-51: Translations main screen Search screen

The search screen contains a combo box which contains a list of all the supported election elements (Object Type). By changing the selected element, the search filter automatically adjusts to include appropriate fields. After choosing desired

values in the filter (or leaving as default) and pressing **Search**, the system will present a list of all values that satisfy the filter criteria.

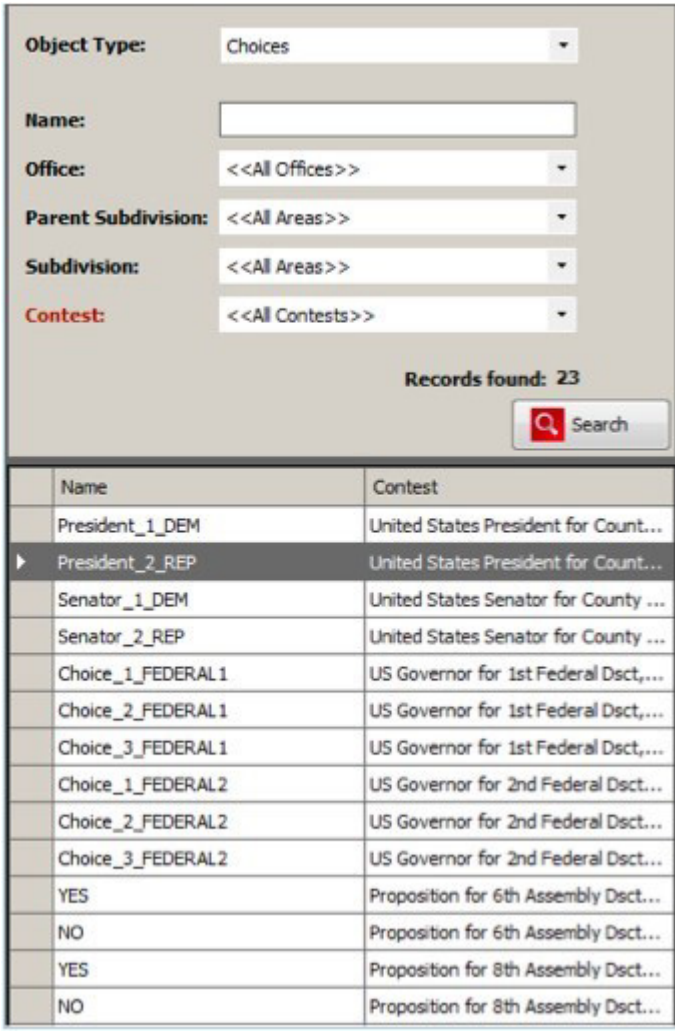

Figure 4-52: Search screen

The user can select one or more elements from the results list. What the user selects may limit the available information and modifications for the selected set of elements in the edit part of the screen. In case of a single selection, all available element data will be presented, which the user will be able to modify. In case of multiple selections, only identical values of selected elements will be presented. Controls that contain values that are not identical in content will be empty.

Consider the following example:

- The user selects 3 contests.
- Assume that:
  - All 3 contests have same custom text: Contest #id# but,
  - All three contests have a different Type Of Content value.

The result will be:

In the **Custom Text** section, the text will be Contest #id#. If the user changes the text and saves it, the change will be applied to all 3 selected contests.

The selection of content type will be empty since values for all three contests are different. But, if the user selects one of the available content types saves the changes, the new value will be applied to all selected contests.

Figure 4-53: Search screen

Edit screen

In this screen the user can review and modify language-related settings for the selected object(s). Most objects in the election definition can have textual and audio representations which can differ, so the user is allowed to define different text for the ballot and for audio file. Hence, the user is presented with four representations of the language:

- Ballot Content
- Base/Audio Language
- Screen Content
- Print Content

  NOTE: For Ballot Group only Units field will be enabled.

At the top of screen is tab strip with the following list of tabs:

- Ballot Content
- Screen Content
- Print Content
- Base/Audio

The user chooses what type of representation they would like to add/modify for the selected object(s).

Settings screen In the **Settings** screen the user can define the working language and the content type, and also preview the result. For Base/Audio

language, the user can also work with audio for the selected language (Play, Stop, Upload, Download and Generate).

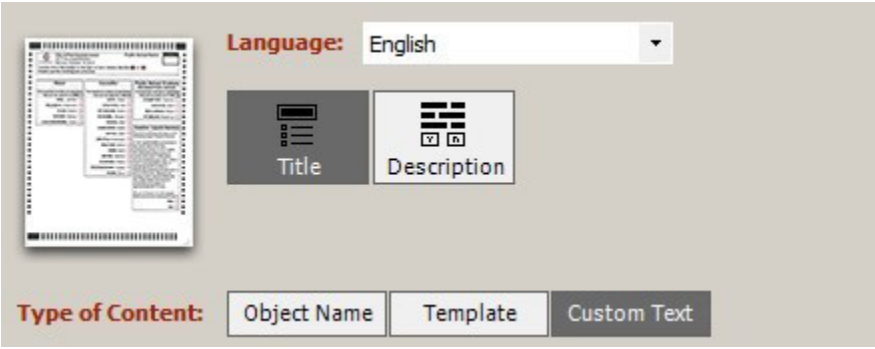

Figure 4-54: Settings screen

- **Language combo box**: contains all available languages for the selected content type (Ballot Content, Screen Content, Print Content or Base/Audio). When a language is selected, all other controls will be populated with previously defined content (if it exists already) or with default values.
- Type of Content: This defines what content will be used for representation:
  - **Object name**: plain object name will be used (e.g. contest name)
  - **Templates**: text defined in template will be used
  - **Custom text**: text from custom text control will be used
  - **Ballot Text for Base/Audio language**: use text as defined for appropriate Ballot content language
  - **Static Text**: This applies for write-ins only. User defined static text will be used.
- If currently active object is contest, there are additional toggle buttons that define the type of content that currently is edited. Options are:
  - Title
  - Description (if the contest is measure)
  - Review tile (used only on ICX tabulators)
  - Rank header (if the contest is rank choice voting) • Save & Refresh button saves changes and refreshes the preview
- Audio language controls:
  - **Play:** allows the user to play the existing audio file for the specified language
  - **Stop:** allows user to stop the audio playback
  - **Upload:** allows user to upload a .wav audio file for the specified language
  - **Download:** allows user to download the audio file and save it.

- **Generate:** allows the user to generate audio file, using the Cepstral 3rd party tool according to the settings (language, Content type).

Depending on current selection of content type, different panel will be displayed for editing.

- When object name is selected user can see only underlying object name.

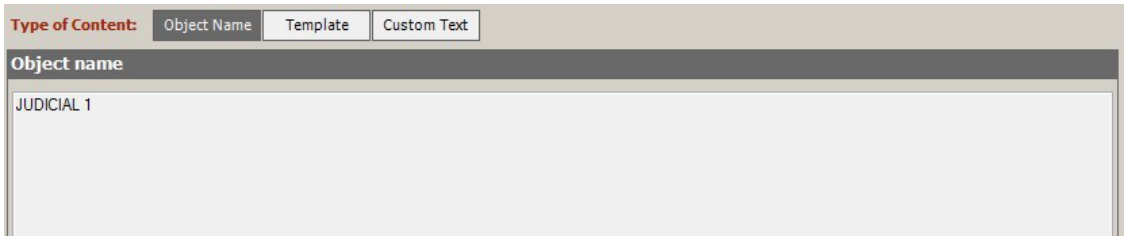

Figure 4-55: Object Name Panel

- When template is selected user will see list of templates. User can choose one of existing templates (just select it in the list). If template doesnt exist user can create a new one. When new one is created it will be automatically considered as selected one.

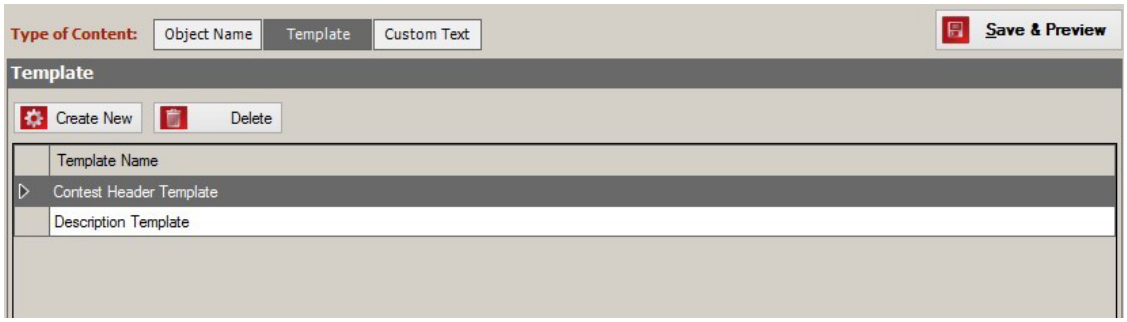

Figure 4-56: Translation Panel

- When custom text is selected user will see text editor where he/she can type custom text that will be used as output (resolved) text.

NOTE: When using custom text you can also use keywords inside the text. When screen content language is selected, not all options for editing are enabled. See section 5.16.1 Screen Content Translations for more information.

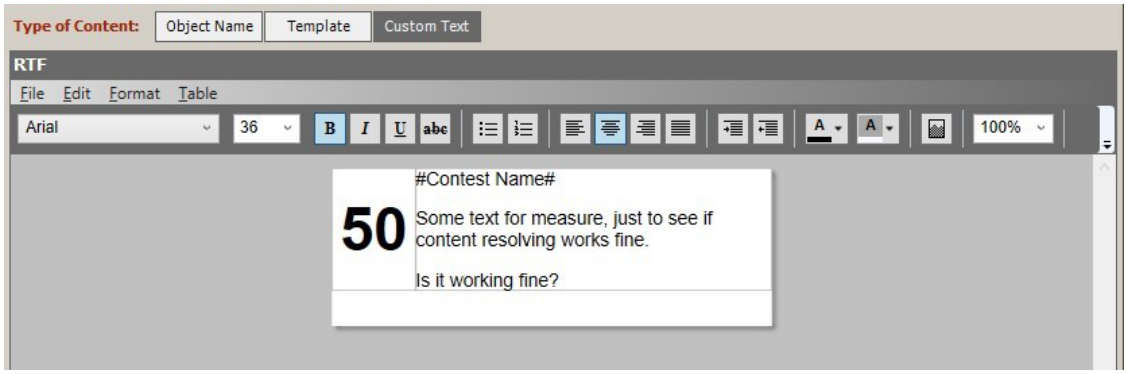

Figure 4-57: Custom Text

Units screen On the right side of the translations screen there is a Units panel. It displays units attached to the base language. Units are used in templates or custom text. They are used as building blocks for resulting output text. Language combo box displays list of all base/audio languages. User needs to choose current language that will be used for editing units. When user changes language in settings screen of the translation panel, same language will be automatically selected for units. User however may want to see units for some other base language. For example, for ballot content language that refers to multiple base languages (like English/Spanish) user will be able to use units from both English and Spanish in the template.

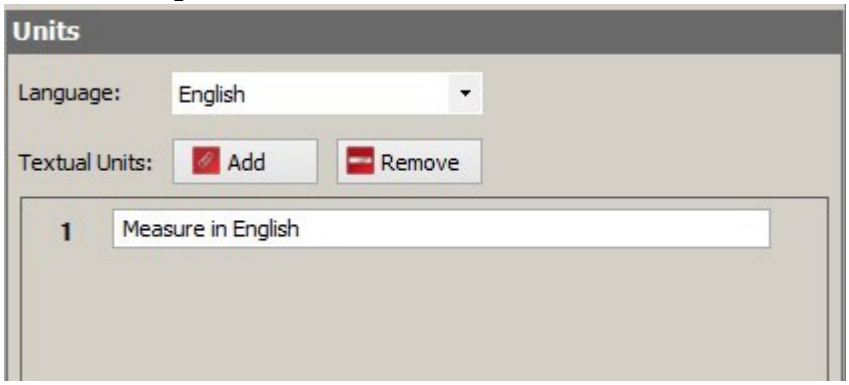

Figure 4-58: Units screen

Preview screen On the bottom of the translations there is preview panel. When user hits **Save & Preview** button there will be displayed resolved/final text that will be used.

NOTE: User must hit save in order to see preview of the content.

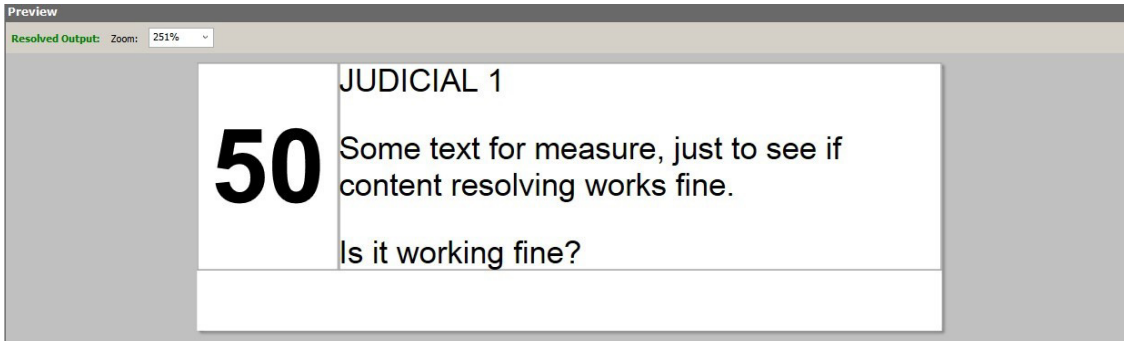

Figure 4-59: Preview screen

Workflow Suggestions

1. All controls store the content of the selected object(s) when changing languages. This means that user can work on one language, change to another and save the work when finished. Before that, the content is held in memory, but is not saved to the database. If content is changed and the user tries to select another object, the user can abort selection changes and save system will show a warning to the user, see Figure 4-60.
2. For multiple selections, saving will affect all selected objects. So the user can select all contents and set the template. After saving, all contests will be linked to specified template.

3. If the user selects a template, the Type of content combo will automatically change its selected value to Units & Templates. If user selects None, the system will use the RTF text if it exists, or the Object Name.

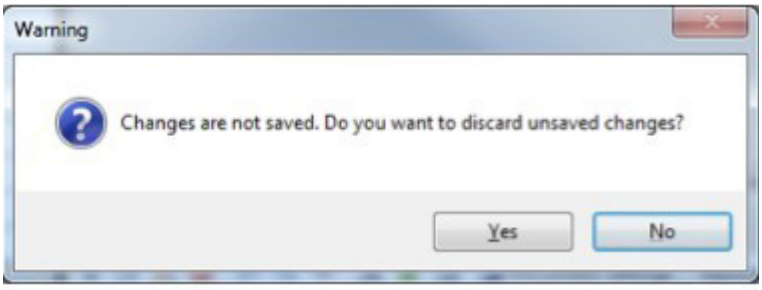

Figure 4-60: The user can abort selection changes and save content on continue

NOTE: While generating the Election files, there are two stages of validating the data. If the Screen and print ballot headers are present, it's validated at the beginning of the process. If the Screen and Print ballot headers are not present, the user will be presented with an error message and process stops.

If the following is not present: Screen and Print content for choice, contest (header, description, review title), political party, contest heading, choice group, ballot group, elector group, election event; a warning message displays at the end of creating the election files.

4.17.1 Screen content translations

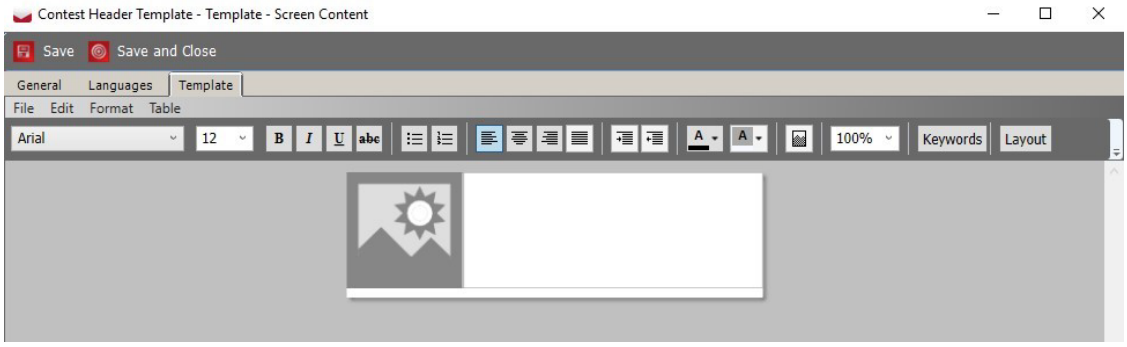

Figure 4-61: Contest Header Template screen

Screen content text documents have applied layouts. There is a default layout used for new documents, but the user can choose a different layout: click **Layout** in the toolbar, see Figure 4-61.

Figure 4-62: Templates

If the selected layout contains an image, the user needs to define how that image will be obtained, see Figure 4-62:

- Right click on image and open properties.
- Set data binding: click on the button and choose source. Depending on underlying object user will be able to choose between choice image, party image or direct link to image resource.

The user cannot change the table layout and delete images. Any features that are not supported for the specified tabulator are disabled in the text editor.

NOTE: Font selection for screen content language is enabled but it is used only in EED to display text correctly. For example if text that supports ligatures is entered in text editor, it may not be displayed correctly unless user selects appropriate font. However ICX device will handle text displaying correctly with its embedded font and it cannot use fonts from Windows OS.

For referendum question text (description), there is one more text document layout: **Custom Layout**. Custom layout enables full text capabilities (tables,

images, custom numbering lists etc.) and user can create more complex text for referendum questions, see Figure 4-63.

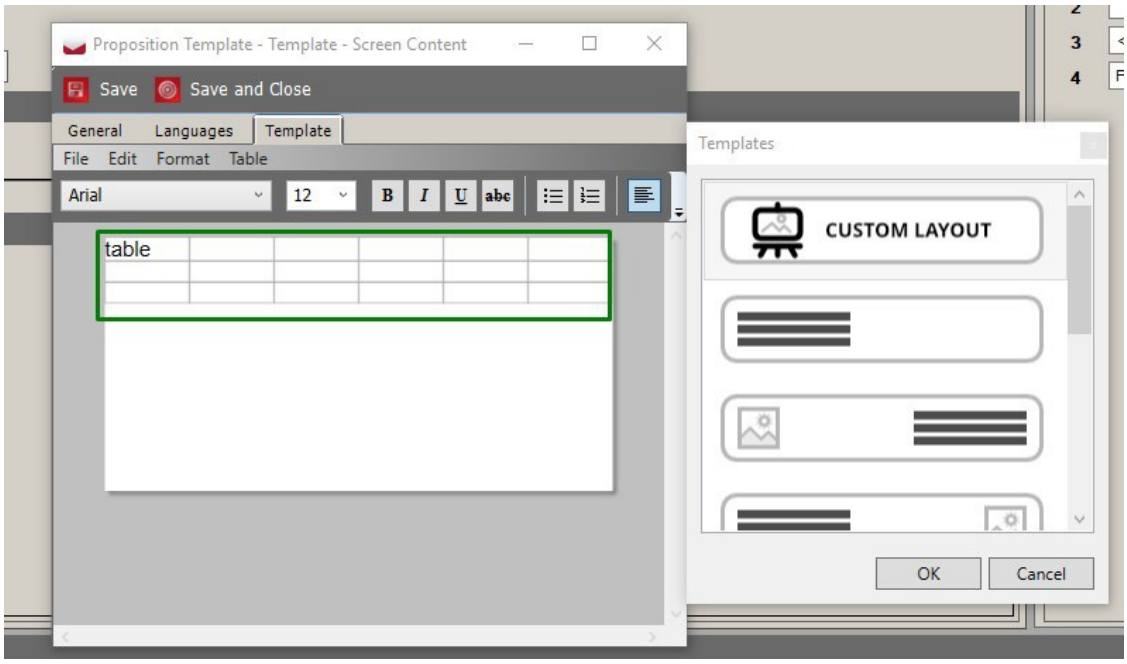

Figure 4-63: Custom Layout

4.18 Ballot Stubs

Ballot stubs have many uses, but are typically used to include additional information to the voter or election officials, especially when there is a lack of space available on the ballot itself. If a voter took time off of work to vote, the stubs can also serve as a proof to their employer that the voter casted a ballot on election day.

Ballot stubs are appended to the shorter edge of the ballot, so they are printed at the top/bottom of a portrait ballot or at the left/right of a landscape ballot. Stubs are torn off the ballot before it is scanned, so the tabulators do not expect this feature to show up when a ballot is inserted. Perforation guidelines are included to assist with the separation of the stub(s) from the ballot.

1. Expand the ‘Localization’ Navigation menu, and click on the ‘Ballot Stubs’ activity to open the Ballot Stubs context sensitive screen.
2. Choose the Language and click the ‘Create New’ button.The ‘Ballot Stub Settings’ dialog appears.

3. The General tab contains a Name field and Appearance drop-down menu which allows the user to select where the stub will be appended (Top or Bottom).

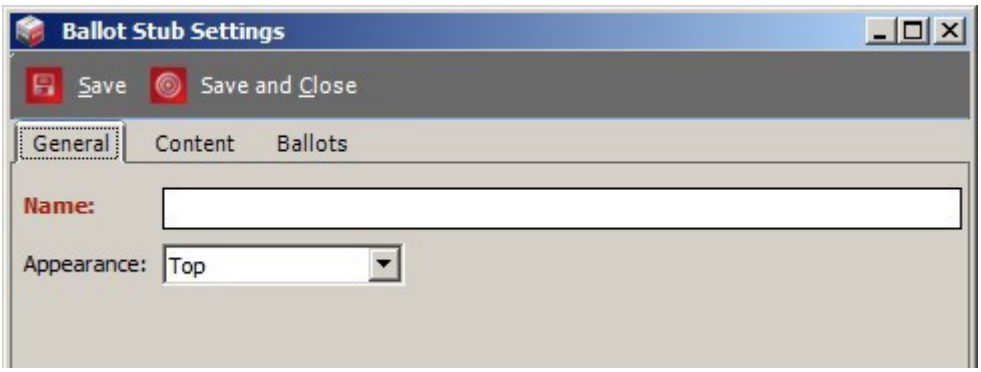

Figure 4-64: Ballot Stub Settings - General tab

4. The Ballot stub Content tab is defined similarly to a ballot header, which means that the content is defined per language. The stub contains RTF which is rendered. RTF is defined in the second tab of the ballot dialog Content. The same set of keywords is supported for stubs as for ballot headers.
5. From the **Edit** menu, user can choose **Insert Object**. This gives the user an option to add a sequence number place holder into the ballot stub. The place holder will be displayed as an object inside the editor, but it will not be rendered on the ballot. As a result, the ballot will not have anything rendered for the sequence number, but it will write coordinates to the database for the sequence number position. Therefore, MBP can write on the place sequence numbers as needed.

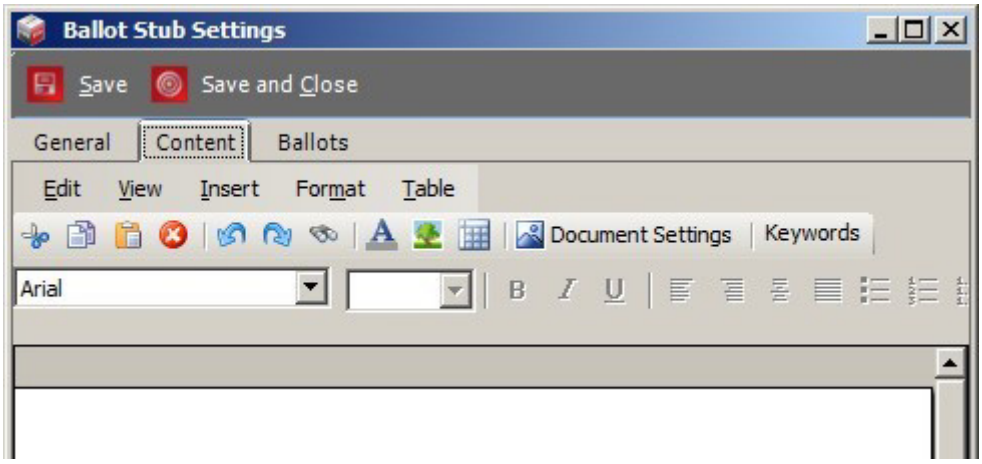

Figure 4-65: Ballot Stub Settings - Content tab

6. In order for the ballot to be displayed, it must be linked with the appropriate ballot cards, similar to a ballot header. This is performed in the Ballots tab.

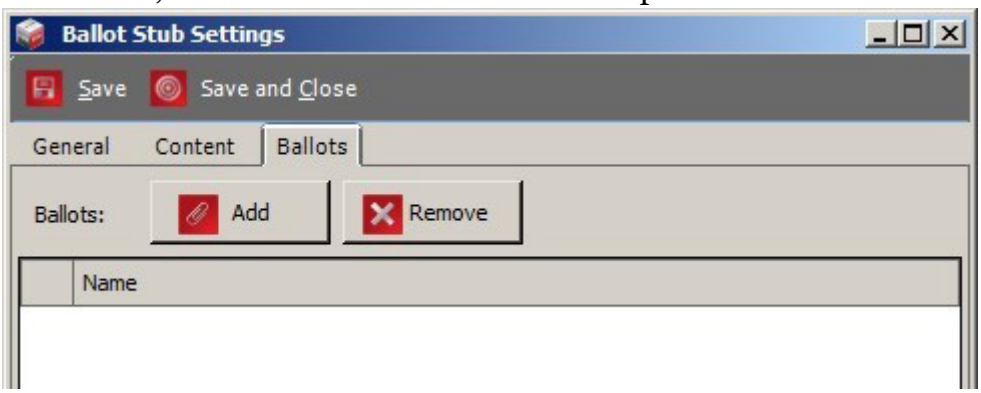

Figure 4-66: Ballot Stub Settings - Ballots tab

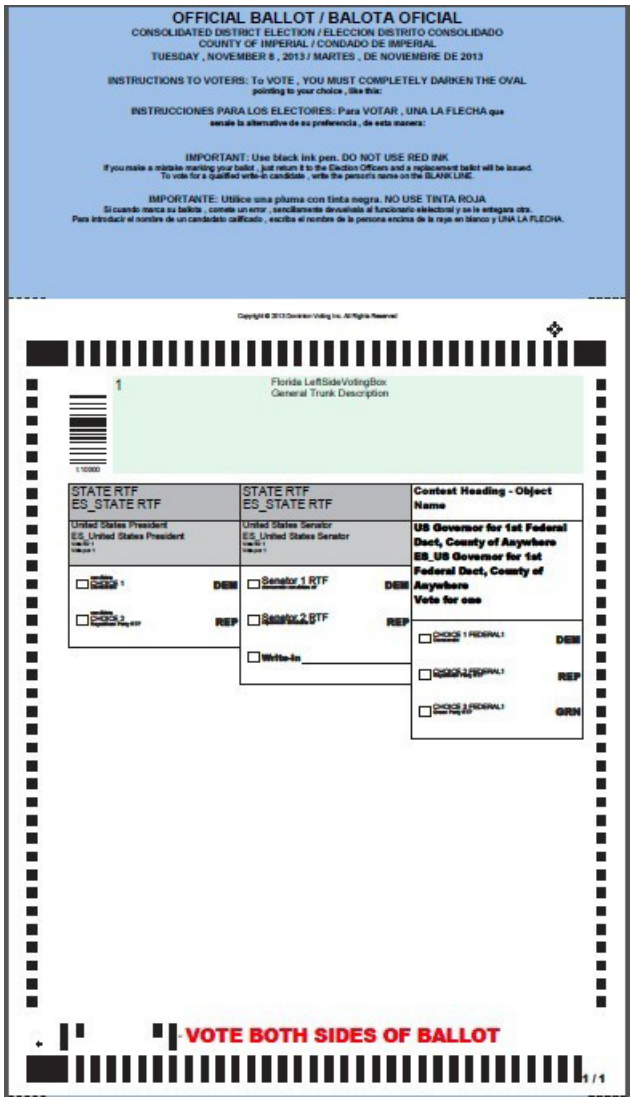

Figure 4-67: Ballot Stubs sample ballot

4.18.1 Setting Stub Watermark

In order to set watermark for ballot stub, open page setup **File - Page Setup** in content editor tab and select desired background image. If image is smaller than document it will be repeated in background to fill all background.

4.19 Exporting Electoral Counts

The Export Electoral Counts functionality is used when you wish to change numerous numbers of electors per precinct. This is accomplished by exporting all of the voters, changing the number of voters in Excel, and importing the data.

To export electoral counts:

1. Click on the 'Election Project' menu, and select 'Export'. Click on the 'Electoral Counts' option. The application begins exporting the electoral counts automatically.
2. Once finished, you are informed where the file has been stored on the EMS NAS, see Figure 4-68.

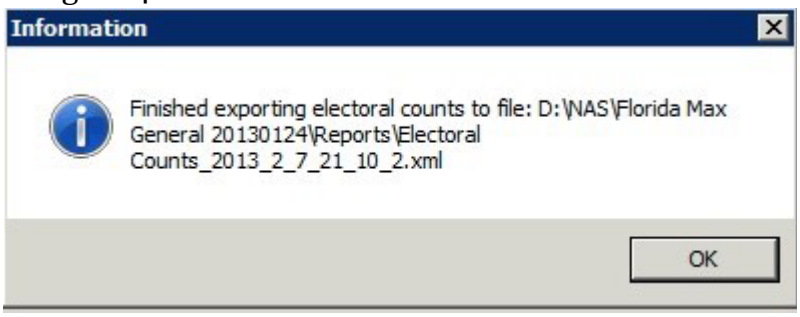

Figure 4-68: Successful Export of Electoral Counts

3. To preview the XML file, open the 'Document Management' repository, and find the file on the 'Reports' subdirectory.
4. Save the file locally, and open it using Microsoft Excel. Add your changes in the 'Count' column and save.
5. Once complete, you can import the changes as described in Section 5.19

4.20 Importing Electoral Counts

Prior to importing electoral counts into Election Event Designer, export them and change the electoral count values, as described in the section above.

To import the elector project:

1. Expand the 'Election Project' menu on the top toolbar. Click the 'Import' option and select 'Electoral Counts'.
2. Navigate to the updated XML file and click 'Open'.

3. The system notifies you once the import has finished. You can preview the number of electoral counts within the 'Precinct' property.

4.21 Importing Dynamic Audio Files

Importing dynamic audio files follows a similar process as exporting Audio Studio definition files. Note that this step is optional. If you do not import dynamic audio files, and you are using Cepstral voice synthesis software, Cepstral voices will be generated in lieu.

To import audio files:

1. Select the 'Election Project' menu item on the top toolbar and click on the 'Import' item. Select 'Dynamic Audio Files'. An Import Audio Files dialog appears, see Figure 4-69.
2. Click 'Browse' to navigate to the compressed audio package provided by the EMS Audio Studio client application.
3. Select the type of report you wish to generate from the 'Import report transformation Name' drop-down list.
4. Select Audio Import report format. All available formats are listed in Import report format drop-down list. Audio Import report which shows imported audio files and errors will be created during import process. It can be found in a Localization Report Group.

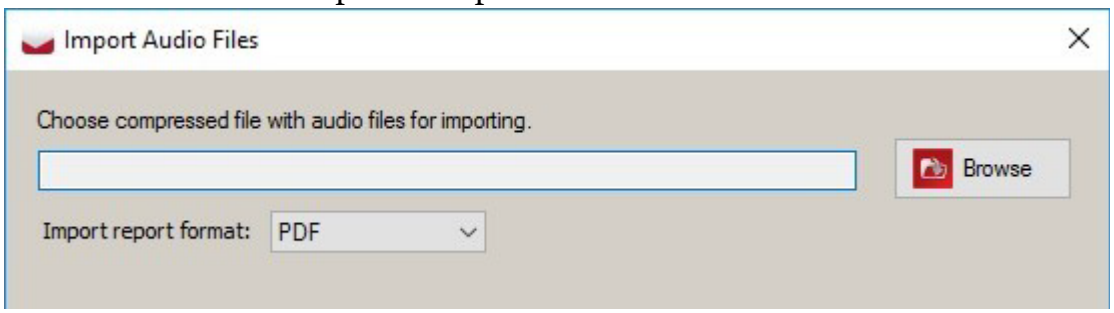

Figure 4-69: Import Audio Files Dialog

4.22 Generating Proofing Ballots

The proofing ballot options enables you to determine the validity of the ballot content and layout before the official ballots are generated. This allows you to preview the content of the ballot and make changes if necessary. Using this option, you can save the ballots on your local drive.

To create Proofing Ballots:

1. Click 'Actions' on the top toolbar. Select 'Ballots', and click 'Create Proofing Ballots'.

2. A dialog which contains general statistics about the your Election Project appears, see Figure 4-70.
3. Click 'Continue' to begin the process. The system collects data from your definitions, and calculates the ballots that need to be created. This process can take a significant amount of time depending on the number of precincts, contests, choices, etc.
4. Once proofing ballots have been created, a confirmation dialog appears stating that the action is complete. Click 'OK' to confirm.

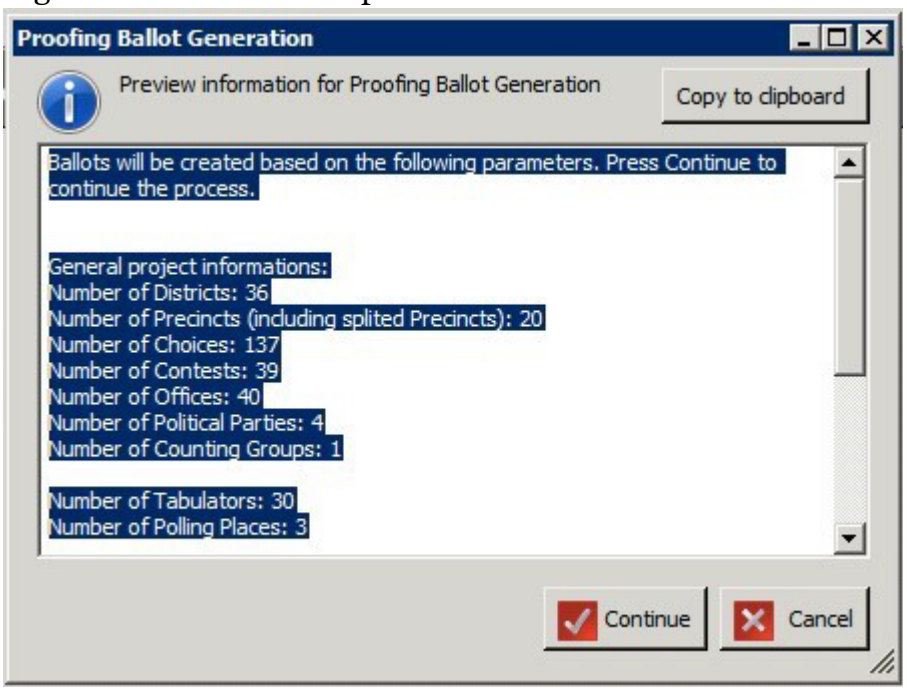

Figure 4-70: Proofing Ballots Generation Dialog

5. This process creates a set of PDF and PNG ballots on the EMS NAS server. Download the proofing ballots from this location if you wish to print them for proofing:
   a. The Documentation Management dialog appears.
   b. Select the EMS NAS as one Target folder, and select your local file storage location as the other Target folder.
   c. Navigate to the proofed ballots, select the 'Ballots' folder, and select the'Proofing' folder.
   d. The list of proofed ballots appears in PDF and PNG file format.
   e. Drag and drop the desired files in your local storage location.

4.22.1 Defining Text for Proofing Ballots

Text which appears on proofing ballots is controlled from the Proofing Text section of the **Ballot Style Parameters** window, see Figure 4-71.

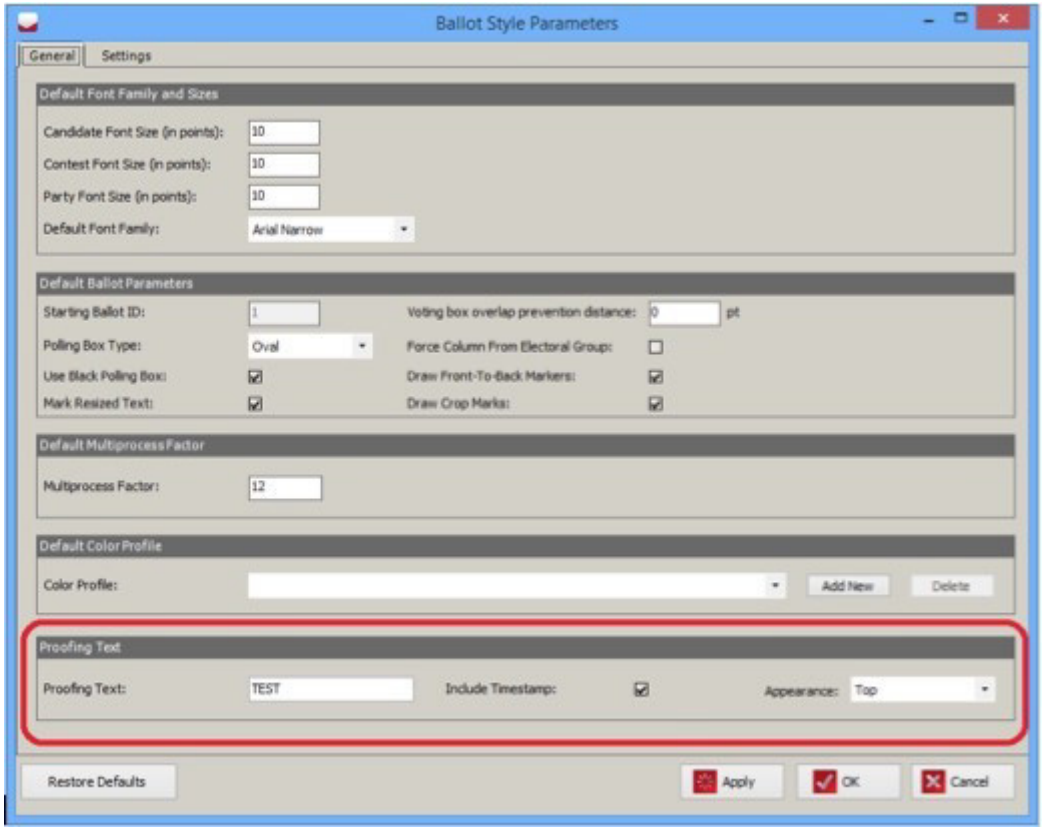

Figure 4-71: Ballot Style Parameters

The user can modify the appearance of proofing text:

- Define the text which will be displayed, for example TEST, DEMO, etc. in the **Proofing Text** field.
- If the **Include Timestamp** checkbox is checked, the timestamp will be printed next to the specified proofing text.
- The **Appearance** combo box can be used to specify how the text will be presented on the proofing ballot:
  - **Top** text will be printed at the top of the ballot.
  - **Diagonal** text will be printed diagonally across the ballot content.

4.23 Static Text

You can customize the text style on your ballot during the Election Styling stage through the static text function. To do so:

1. Expand the 'Localization' navigation group, and select the 'Static Text' activity.
2. Select the English option within the 'Language Profile' drop-down menu and one of the presented options from the 'Type' drop-down menu. Click on the 'Create New'on the toolbar.

NOTE: The 'Static Text' property specific for 'Universal Multi Column Ballot Style' can be seen in the 'Static Text Type'. The 'Type' drop-down menu contains 'Write-In' (see the NOTE bellow), 'DRO Box Title', 'Text for Marking the Ballot on Both Sides', and 'No Candidate'.

3. The 'Language and Content Style' dialog appears. Click on the paper area. In the 'Rich Text Editor' tab, you can change the font type and size, bold/ italicize/underline the text, align the text, and change the text color.
4. Type in the text.

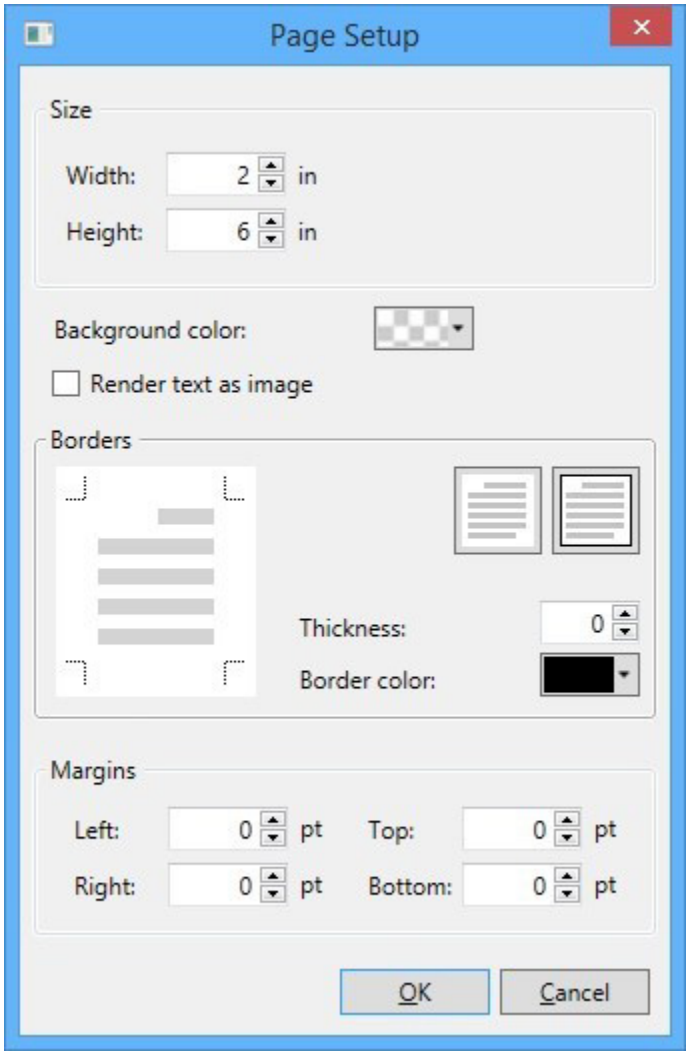

Figure 4-72: Page Setup screen

5. Click 'Document Settings' to change the available size of the static text cell. These parameters apply to the cell on the ballot where the static text is located. By default, the document width (cell width) has a value of two inches. The document height (cell height) is predefined to six inches. You can change the margins of the static text cell by changing the values in the left, right, top, and bottom margins. Double arrows throughout this dialog indicate that you can incline or decline the field value.
6. To change the background color, click 'Change'.
7. If you are typing languages which are not fully supported by the renderer (for example, Bengali, Hindi, etc), click the **Render text as image** option. This allows for the text to be correctly rendered on the ballot, as it is in the text editor, but there are side-effects: Text cannot be selected in the resulting PDF as it is actually an image. It is also not recommended to user the PDF X-1a standard (see Ballot Style section) in conjunction with this option because the rendered image of text requires transparency to be displayed properly.
8. Select the color from the 'Color' spectrum dialog, and click 'OK'.
9. To apply the changes added within the 'Document Settings' dialog, click 'OK'.
10. Once complete, click 'Save and Close'.

NOTE: When writing text for the Write-In choice, please ensure that the text doesn't fill in the entire horizontal space - make sure some empty space remains to the right of the text. If you're writing the text in multiple languages, have each language on a separate line. See examples below:

Incorrectly formatted Write-In Cell with voting target on the left of the text

Figure 4-73: Example of Incorrect formatting

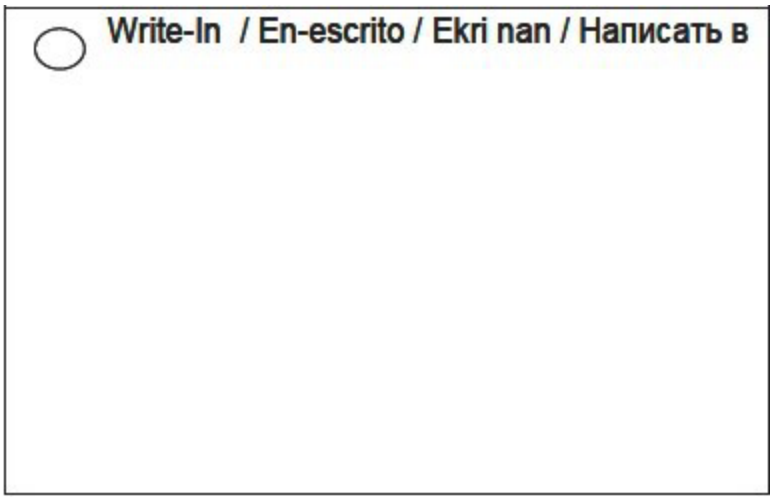

Figure 4-74: Example of Incorrect formatting

Incorrectly formatted Write-In Cell with voting target on the right of the text

Figure 4-75: Example of Incorrect formatting

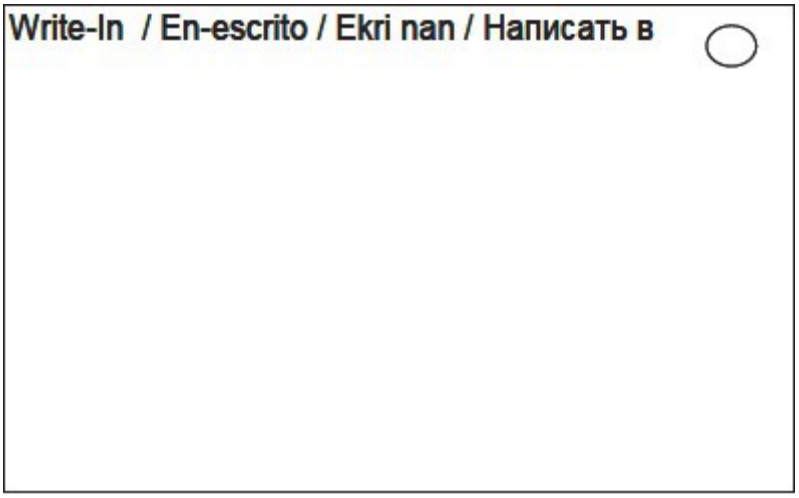

Figure 4-76: Example of Incorrect formatting

Correctly formatted Write-In Cell with voting target on the left of the text

Figure 4-77: Example of Correct formatting

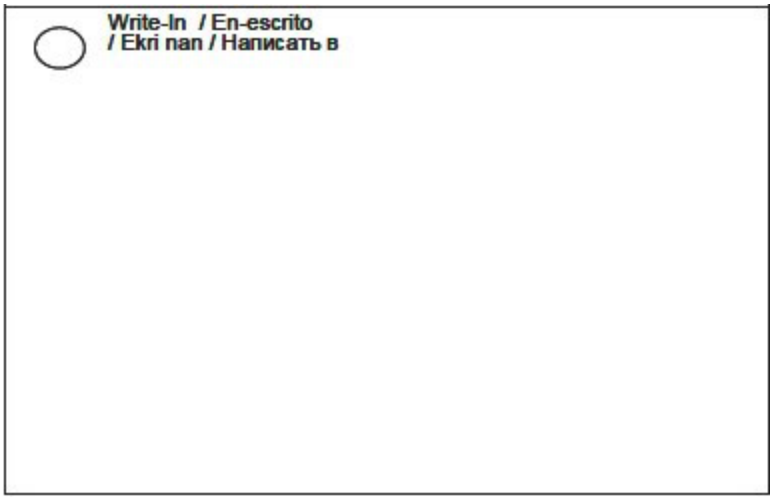

Figure 4-78: Example of Correct formatting

Correctly formatted Write-In Cell with voting target on the right of the text

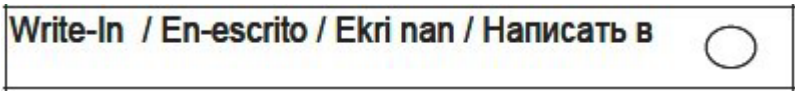

Figure 4-79: Example of Correct formatting

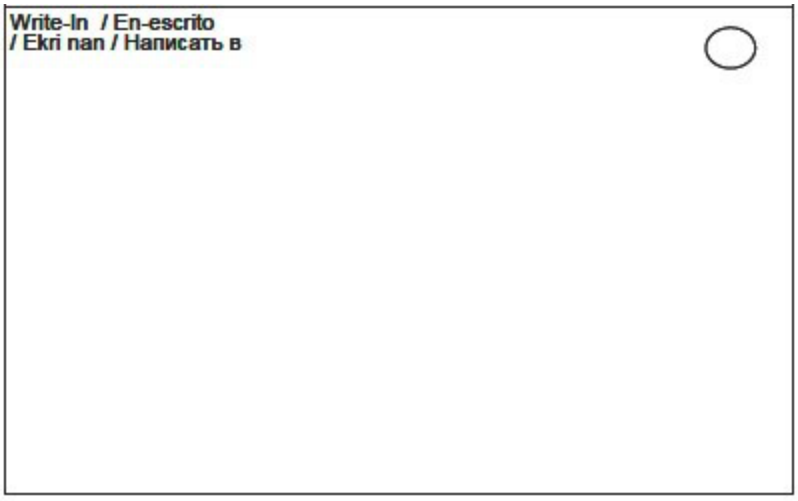

Figure 4-80: Example of Correct formatting

4.24 Image Resources

All images used in EED are stored as image resources. Each resource has its own unique name and set of images for a different purpose: paper image, screen image, screen image black on white and screen image white on black. Paper image is used for paper ballots generated PDF files. Screen images are used on tabulator devices. Device has three display modes: full color, black content on white background and white content on black background. User has ability to set different images for each display mode.

To define image resources perform the following:

1. Expand the **Localization** navigation menu and select the **Image Resources**.
2. Click **Create New**. The Image Resource dialog appears, see Figure 4-81.

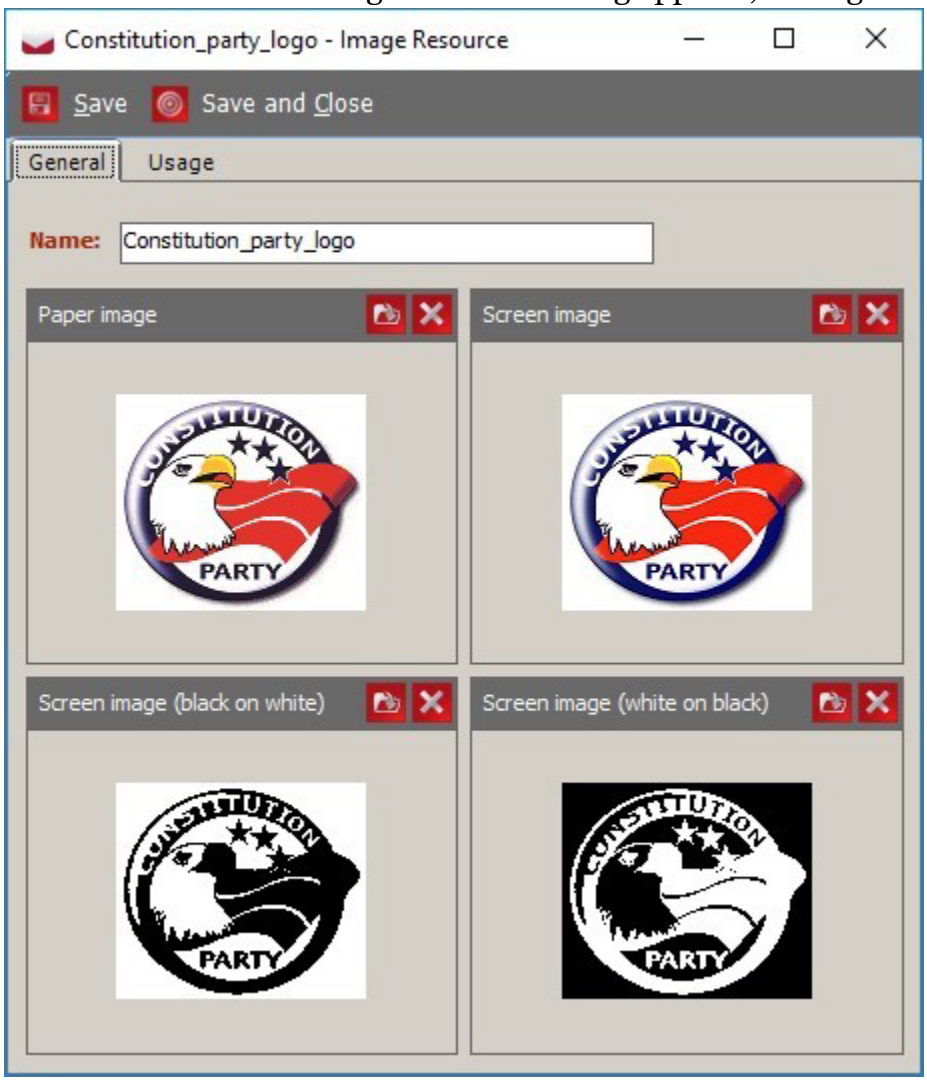

Figure 4-81: Image Resources dialog

3. Type-in the image resource name.
4. Set images: Each image has **Add/Change** and **Clear** buttons in top tight corner. Browse to images you wish to add by clicking on **Add/Change** button. When setting paper image and screen images are not set, you can choose to reuse selected image for other purposes (screen, screen black on white and screen white on black). Paper image will automatically be converted to CMYK color space used on ballot. When setting screen image and screen B/W and screen W/B images are not set, you can choose to reuse selected image for black on white and white on black purpose. You can also use drag-and-drop to reuse images. If black-white screen images are not chosen directly (by browsing) they will automatically be converted to black-white color space. Otherwise, it is assumed that user already prepared images in proper format
5. On the **Usage** tab you can connect image resource to political parties and choices.

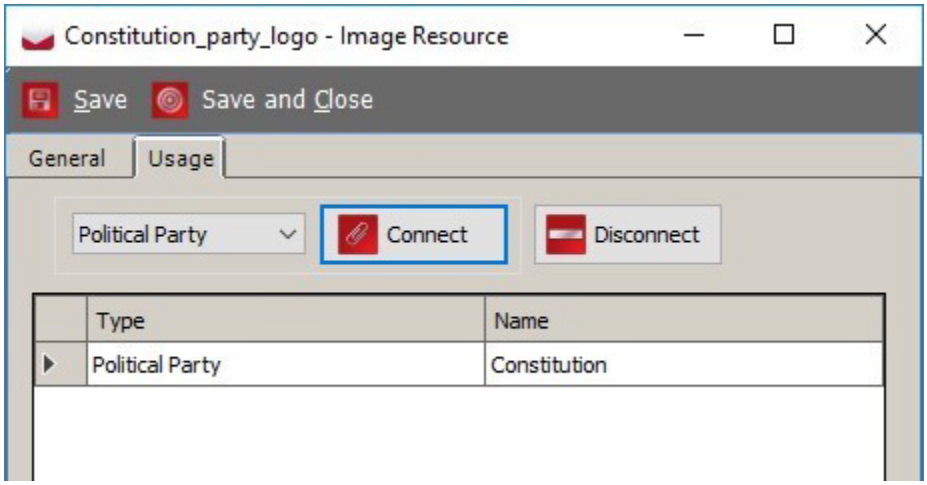

Figure 4-82: Image Resource dialog Usage tab

6. Image resource can be attached or created in political party and choice dialog. (Image resource tab) If you set images directly (not attach existing image resource), new image resource will automatically be created.

Existing image resources can be filtered by name or by usage (used for party, used for choice or not connected directly to any object (party or choice). In the top right corner of image resources screen there is a small preview displayed: it displays all images of selected image resource.

Furthermore, image resources can be shown in details, paper image, screen image, screen B/W image and screen W/B image view.

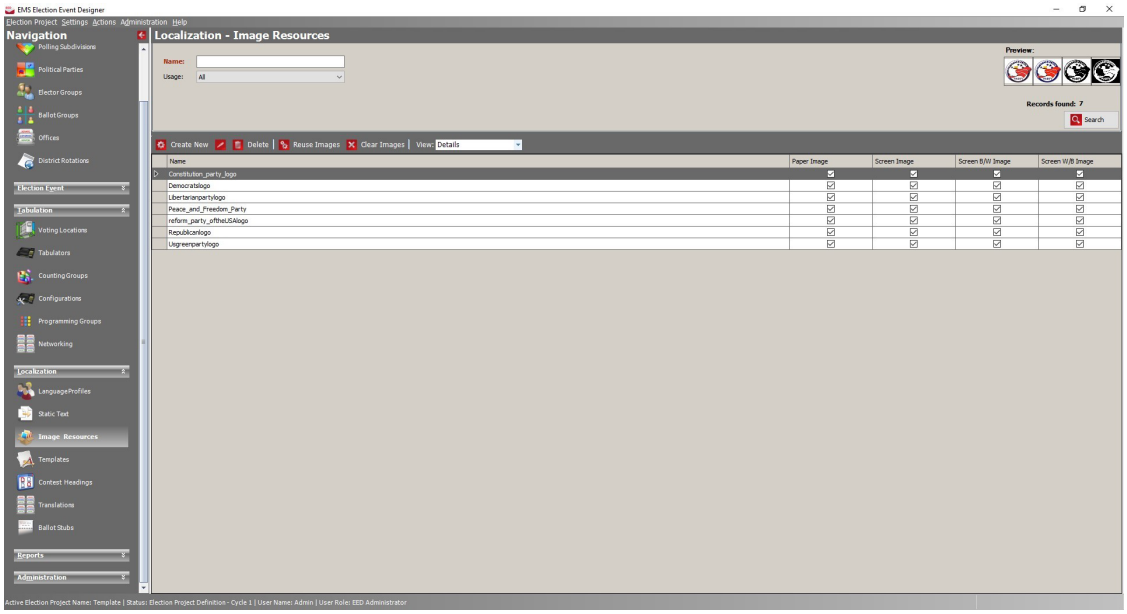

Figure 4-83: Image Resource screen You can reuse and clear images in selected image resources:

- **Reuse images** option, see Figure 4-84: When this option is selected, Reuse images dialog appears. You can set which image type to reuse - source (paper or screen) and target images (all types except type selected as source). Selected target images will be set in proper format (CMYK (for paper), B/W, and W/B)

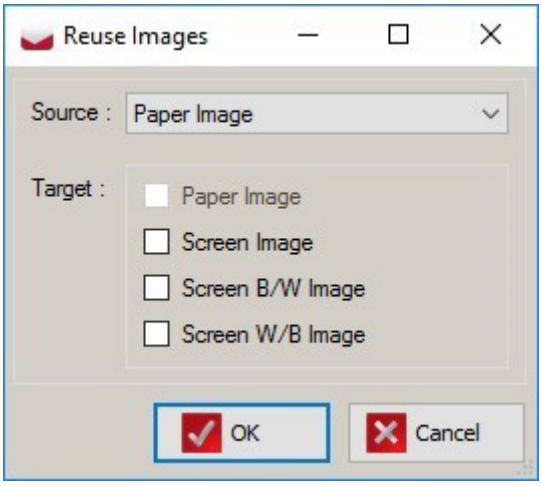

Figure 4-84: Reuse Image dialog

- **Clear Images** option, see Figure 4-85: When this option is selected, Clear images dialog appears. You can set which types of images you want to clear. Selected images will be cleared.

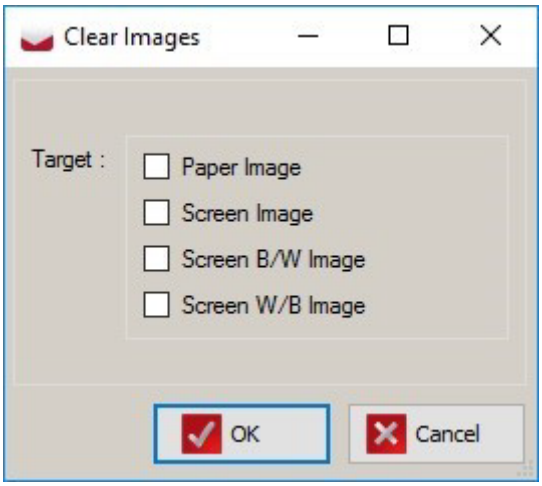

Figure 4-85: Clear Images dialog

CHAPTER 5: GENERATING BALLOTS FOR YOUR ELECTION PROJECT

Once you have styled all of the properties needed for the proper generation of your ballots for your Election Project, proceed to the Ballots Generated stage. If you have not yet styled your ballots, return to Chapter 5 before continuing with this chapter.

5.1 Generating Official Ballots

Once you are satisfied with the appearance and content of the ballots, you can proceed with the creation of the official ballot artwork and other elements such as audio files.

To generate official ballots:

1. Click Actions in the top menu. Click Create Ballots and Audio Files.
2. The Create Ballots and Audio Files screen appears, see Figure 5-1, which contains available options for advancing into the next project phase, as well as general statistics and information about the project in its current state. The user can choose to create the following:Artwork for Paper Ballots This option is used for creating print-ready artwork for official paper ballots.
    - Print Headers: The headers are printed on the electronic ballots when the voter generates the ballot as part of completing their voting session. However, to speed up the process, headers are prepared in advance for each possible ballot manifestation. Headers for electronic mobile ballots are not created automatically. The creation of headers must be initiated by the user, and this can be performed only in Election Project Styling and Ballots Generated project phases.
    - Full Face AVS Ballots (PNG) This option can only be selected if Artwork for Paper Ballots has already been created, or is selected. This allows the user to create the necessary files for devices where electronic ballots can be displayed to the voter in the Full Face AVS mode (see Project Parameters 4.7). If there are tabulator types that support this mode of AVS, this option is still available in case PNG files are required
    - Audio Files This option is used for generating audio for all necessary election event objects. This audio is used for playback on the various voting devices where Accessible Voting Session modes are supported.
        - The user has the ability to specify which **Languages** the audio should be generated for.
        - The user has the ability to **Overwrite existing audio files**, in case they already exist.

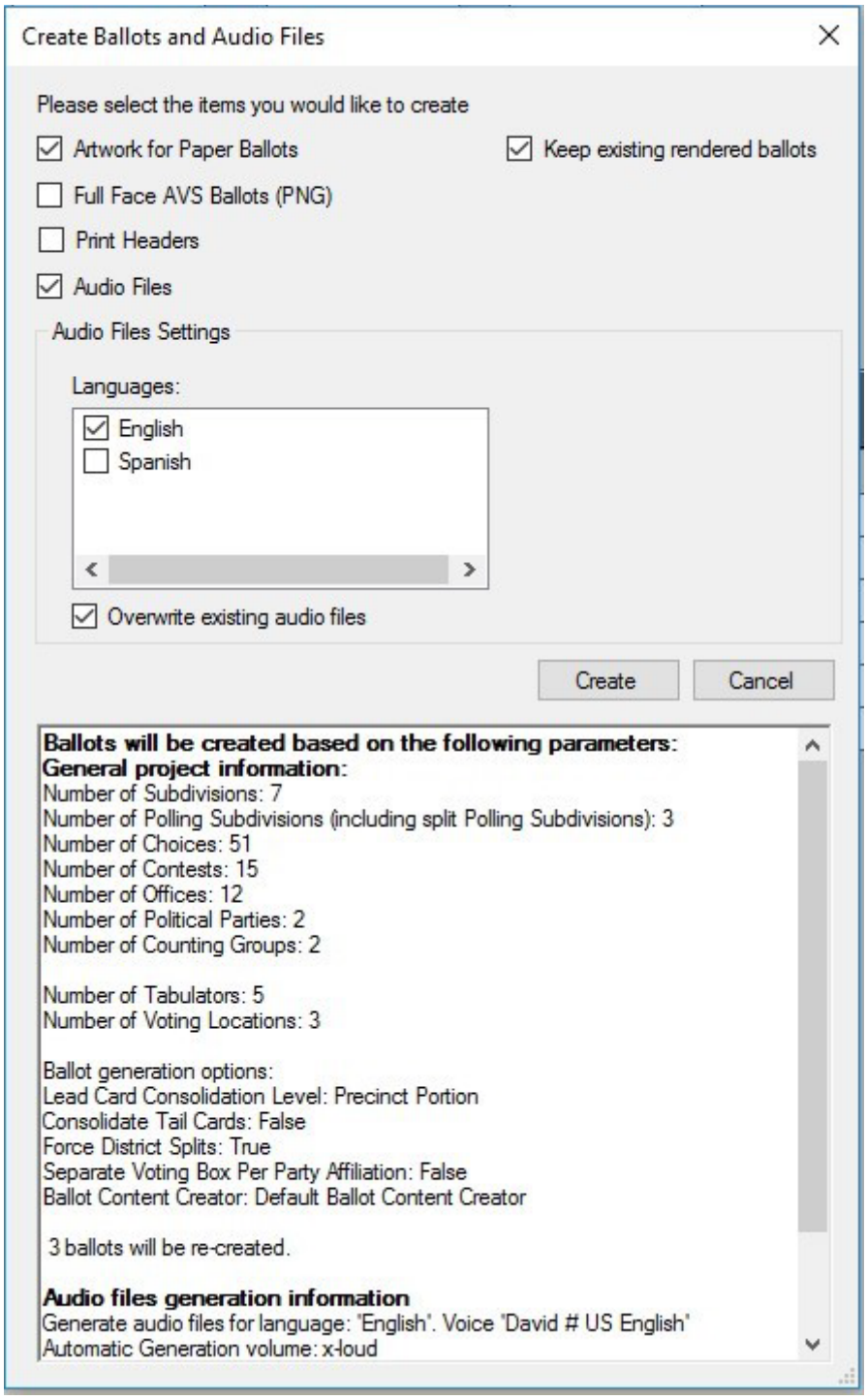

Figure 5-1: Create Ballots and Audio Files screen

3. Click **Create** to begin the process. The system will collect data from your definitions and calculate the ballots that need to be created. This process can take a significant amount of time depending on the number of precincts, contests, choices, etc.

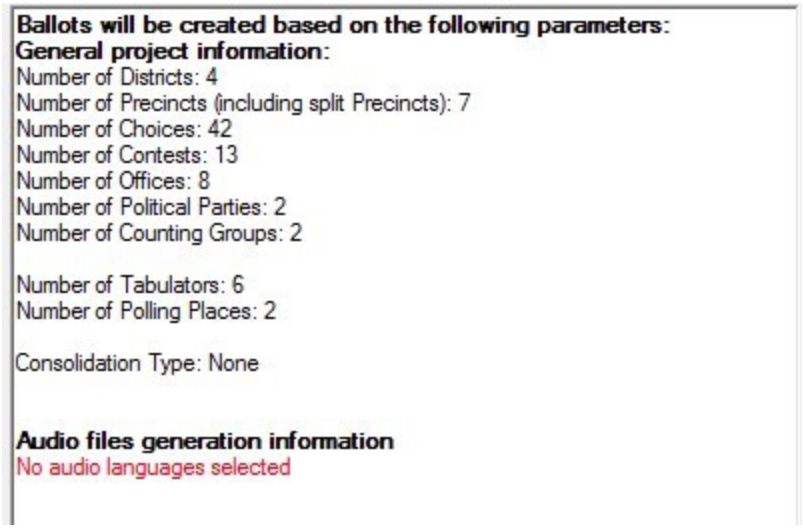

Figure 5-2: Errors Preventing Creation Screen

4. Note that if you have not properly defined and styled your Election Project, an error will appear, see Figure 5-2. This screen will list the components of your Election Project that are inconsistent or improperly defined. Use the list as a reference for addressing the errors that may be causing your Election Project from generating ballots.
5. Note that you may come across a warning,see Figure 5-3 that lists potential errors that could occur once ballots are generated. Click **Close.**

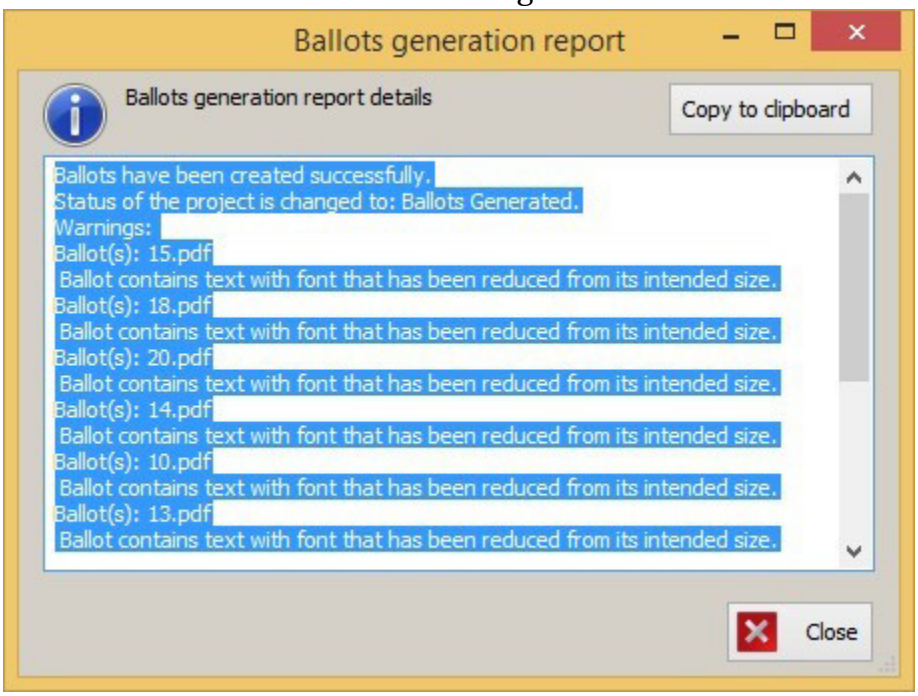

Figure 5-3: Warnings of possible errors during creation Screen

6. Once ballot content has been generated successfully, without any warnings,

you will receive a confirmation dialog, see Figure 5-4. Click **Close** to continue. Your Election Project will now enter the Ballots Generated stage.

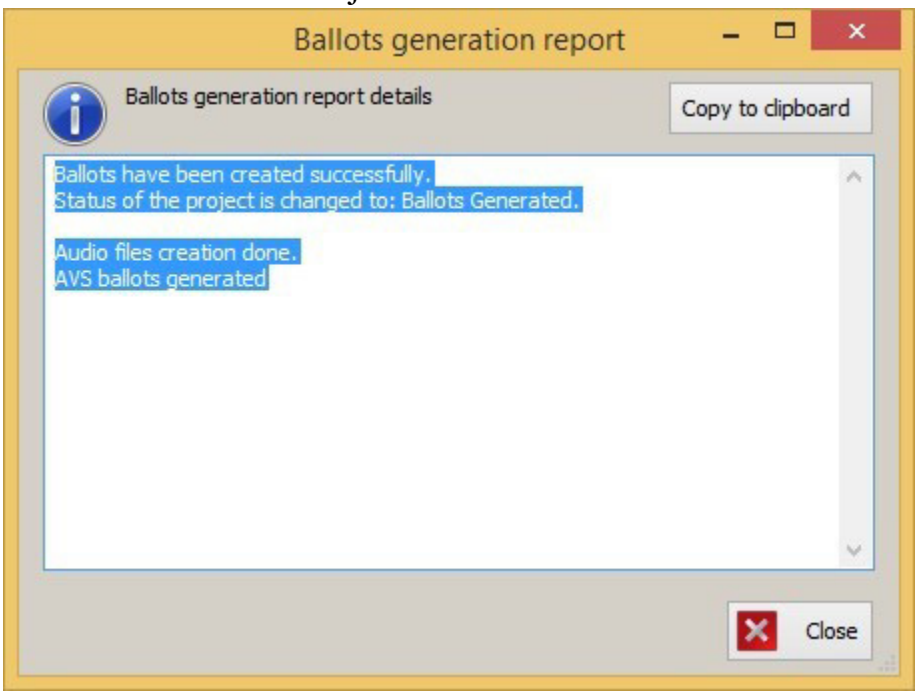

Figure 5-4: Information Screen

NOTE: The ballot generation process will also produce a calibration sheet for printers, to assist with the set-up of printing equipment.

5.1.1 Generating a subset of Ballots

It is possible to generate artwork for a subset of all available ballots, instead of generating them all. For example, this may be useful when a certain portion of all ballots are ready for printing, in order to expedite the process, and not wait for all ballots to be finalized frequent cases where this may occur are certain translations for multilingual ballots not being ready, or candidate lists for certain contests not being finalized and are pending legal action.

1. In the Election Project Styling phase, in the **Election Events - Ballot Cards** section, click **Search** to list all ballots. You can apply any of the available filters to narrow down the search as appropriate to your needs. The user can also filter ballots which have or havent been synchronized and/or rendered.
2. Select one or more ballots from the list that you wish to generate artwork for, and click **Generate**. The ballot rendering process will be performed only for the selected ballots.
3. This process can be repeated as necessary for any of the ballots, but it is recommended only to be used when a change has occurred which affects a ballot, in order to avoid re-generating all ballots. Typically, the user in

charge of the election project will be keeping track of which ballots are ready to have their artwork generated.

4. When ballots are not synchronized it means that they some changes have happened which are not in harmony with the election definition e.g. a contest has been moved, a candidate removed, etc. In order for this to be rectified, the user must once again generate ballot content by opening the **Actions** menu, the **Ballots** sub-menu and clicking **Define Ballot Structure**. This will ensure that all defined ballots are once again synchronized. Only after that can ballot artwork be generated.

NOTE: Please note that performing partial generation of ballots does not advance project status to Ballots Generated.

5.1.2 Generating Fold-lines for Vote-by-Mail Ballots

If the election project contains ballots for voting by mail, the user may want to draw fold-lines on the artwork produced in the ballot generation process. The fold-lines act as guides for the folding of paper ballots, in order for them to fit in the designated envelopes.

The user can instruct the application to draw fold lines for any or all of the ballots generated.

1. Select **Ballots** from the left-hand menu.
2. Select one or more ballots where grid lines should be drawn. If no selections are made, the following action will be applied to all ballots in the project.
3. Click **Draw Folding Lines** in the toolbar.
4. The Folding Lines Parameters screen appears, see Figure 5-5.

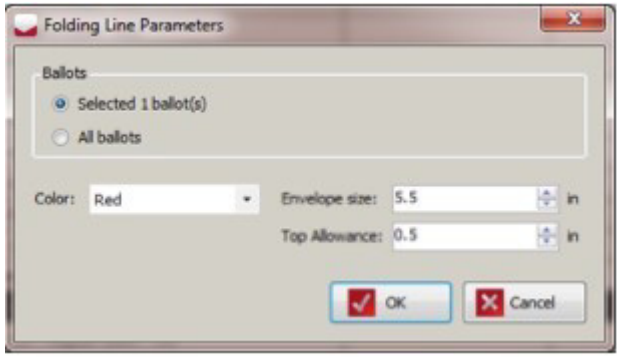

Figure 5-5: Folding Line Parameters Screen

5. In the dialog, confirm whether fold lines should be drawn only for the selected ballots, or for all ballots in the project.
6. The user can also select which color the lines should be drawn in (Black, Red, Magenta, Grey), the size of the envelope (in inches) and the top allowance (also in inches). The selected envelope size will govern the maximum distance betweentwo folds on the ballot, minus the tolerance

(indicated by Top Allowance, to ensure the folded ballot is a fraction smaller than the envelope to allow for an easy fit into the envelope and to allow for the envelope to be opened easier without tearing the ballot. For example, if an envelope is 5.5”, and the top allowance is 0.5”, the the panel size resulting from the folding process will not be greater than 5”.

7. Click **OK**. The process for drawing lines will be initiated
8. 8. When the process is completed, ballots with fold lines will be saved on NAS in a subfolder of the Official Ballots folder titled Folding Lines. Figure 6.6 shows an example of a ballot with fold lines.

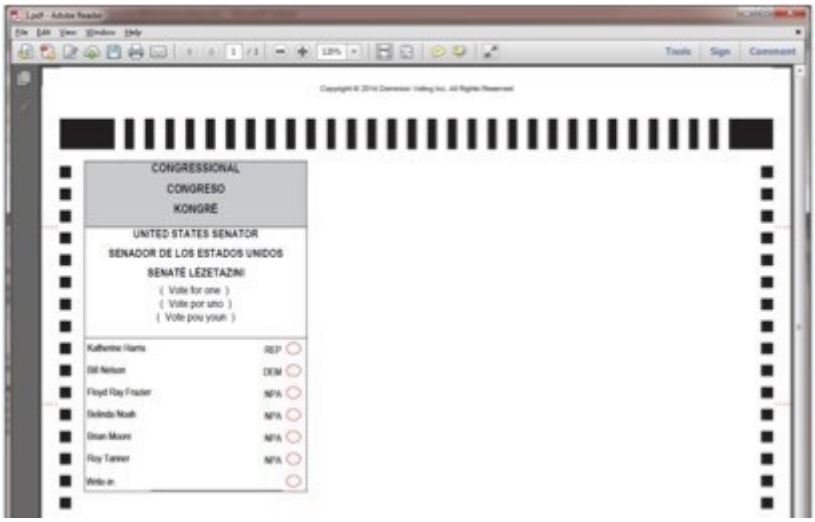

Figure 5-6: Example of a ballot with red fold lines

5.2 Configuration for Electronic Mobile Ballots

Projects that contain the following types of tabulators configuration related to electronic mobile ballots:

- Internet Voting (used as UOCAVA tabulator)
- ImageCast X (configured to produce electronic mobile ballots)

Configuration

To edit configuration related to Electronic Mobile Ballots, you can select the following items: Expand the **Settings** menu and click the **Electronic Ballot Parameters**.

This will open the Electronic Ballot Parameters screen showing all parameters related to electronic ballots, (see Figure 5-7).

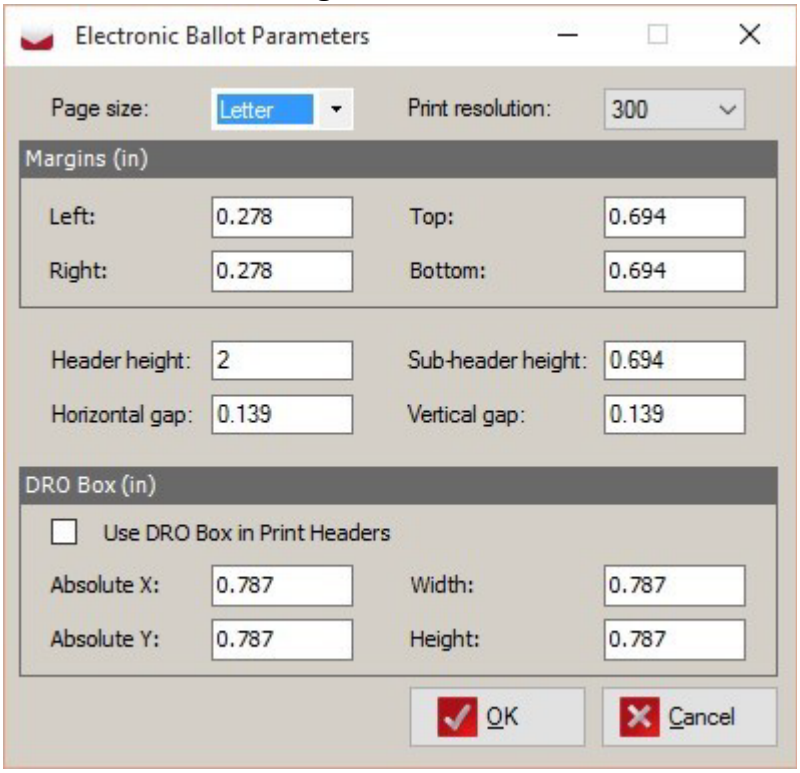

Figure 5-7: Electronic Ballot Parameters Screen

The following options are available in the screen:

- **Page size**: this controls the size of the electronic mobile ballot. Available sizes are A4, Letter and Legal.
- **Print Resolution**: this defines the printing resolution in DPI when printing the electronic mobile ballot.
- **Margins**: a separate margin for left, top, right and bottom side of the ballot can be defined in inches.
- **Layout parameters**:
  - **Header height**: the maximum height of the header to be rendered by EMS.
  - **Sub-header height**: below the pre-rendered EMS header there is an optional sub-header that can be used to show additional information on the electronic mobile ballot that is not included in the header itself.

- **Horizontal/vertical gap**: the electronic mobile ballot contains QR codes (two-dimensional barcodes). If multiple QR codes are used they are arranged in columns and rows. Each row is separated by a vertical gap and each column is separated by a horizontal gap. Both are defined in inches.

- **DRO box parameters:**
  - **Use DRO Box in Print Headers**: checkbox that indicates whether DRO box is used in the Print Headers. This area will be populated with a signature of the Returning Officer and is required for the ballot to be scanned.
  - **Absolute X**: the absolute x-position of the top left corner of the DRO box in inches.
  - **Absolute Y**: the absolute Y-position of the top left corner of the DRO box in inches.
  - **Width**: the width of the DRO box in inches.
  - **Height**: the height of the DRO box in inches.

5.3 Exporting Audio Studio Definition Files

The Audio Studio definition file is an XML file that is used to interface information between Election Event Designer and EMS Audio Studio. It collects all required data related to your Election Project that needs to be converted into audio format.

To export the Audio Studio definition file:

1. Expand the **Election Project** menu on the top toolbar. Navigate to the **Export** submenu and click on the **Audio Studio Definition File,** see Figure 5-8.

Figure 5-8: Audio Studio Export Screen

2. The Export Audio Studio definition file produces compressed package containing xml files that are later used for configuring the project in AS. This file contains information about the type of audio file, its presence in the project, and text representation.
3. Audio file for some languages, does not necessary have text presentation on the ballot, instead text for the default language is presented.
4. The Export Audio Studio Definition File and Existing Audio Files creates a package that contains the XML file and existing audio files from the project. This allows you to play and review already generated audio files and change and record new files.
5. Click **Browse** to select the folder where you want to store the audio library package and click **OK**.
6. During the export process, a progress bar appears showing the status of the export. Once complete, a confirmation that the Audio Library has finished appears. The confirmation appears behind the EED screen.
7. The folder containing the compressed Audio Library package opens. Click **OK** to close the dialog. The folder containing the export package appears.
8. During the export process, a progress bar will appear showing the status of the export. Once complete, you will receive confirmation that the Audio Library export has finished. The confirmation will appear behind the Election Event Designer (EED) screen.
9. The folder containing the compressed Audio Library package will open. Click the **OK** button to close the dialog. The folder containing the export package will appear.

5.4 Defining Counting Groups

Counting Groups are used to sort ballots from different groups of voters in EMS Results Tally & Reporting. These can include early voters, absentee voters, and election day voters. Counting Groups are attached to tabulators and each tabulator can only be part of one Counting Group. The 'Election Day' Counting Group exists by default.

To define Counting Groups:

1. Expand the **Tabulation** Navigation menu item, and click on the **Counting Groups** option. The Tabulation Counting Groups context sensitive screen appears.
2. Click **Search** to see the existing 'Election Day' Counting Group.
3. Click **Create New**. The Counting Group screen appears as seen in Figure 6.9.
4. Type the name of your desired Counting Group, and click **Save**.

5. **Include in X of Y report** check box allows you to exclude all tabulators in a counting group from the X of Y calculation.
6. Click **Connect** to connect the exciting tabulator and to the counting group to open the Tabulator Association screen.

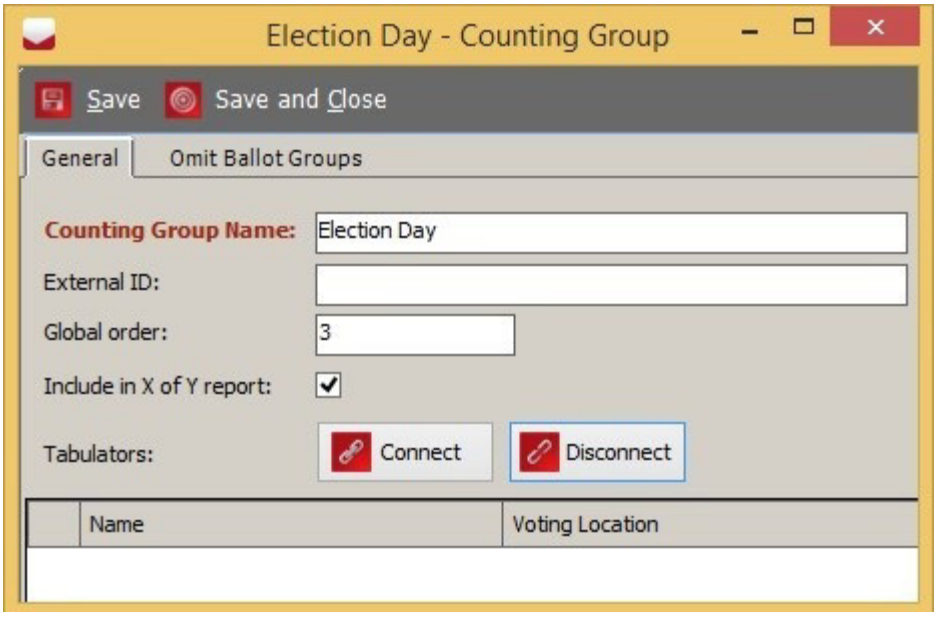

Figure 5-9: Counting Group Dialog - General tab

7. Click **Search** to populate the list of tabulators. Select the tabulators you wish to assign to the counting group, and click **Assign and Close**.
8. These tabulators appear in the **Counting Group** screen. Click **Save and Close**.
9. The new Counting Group appears in the list of defined Counting Groups in the context sensitive screen. You may need to click **Search** to update this list.

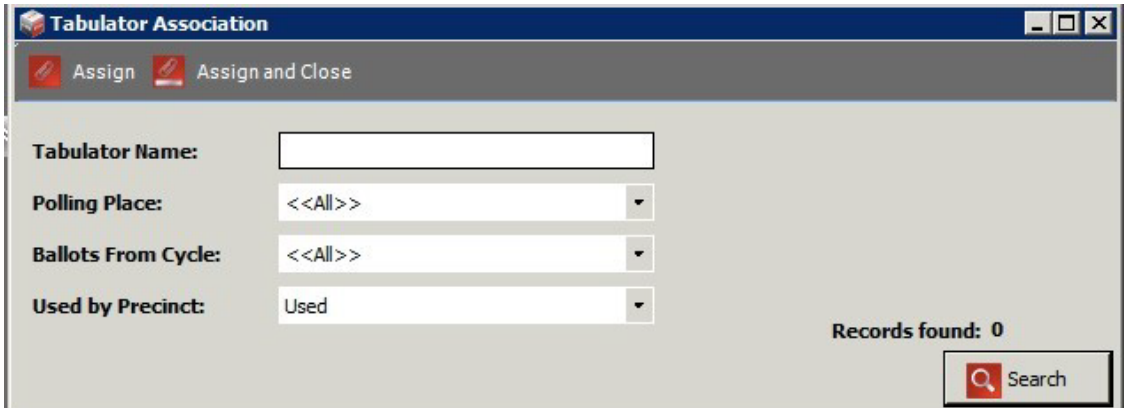

Figure 5-10: Tabulator Association Screen

10. In the **Omit Ballot Groups** tab (see Figure 5-11), the user can define which ballot groups should be excluded for tabulators assigned to this counting

group. For example the Election Day counting group can be configured to omit the mailin/absentee ballot groups so that these ballots cannot be accidentally scanned on tabulators belonging to the Election Day counting group.

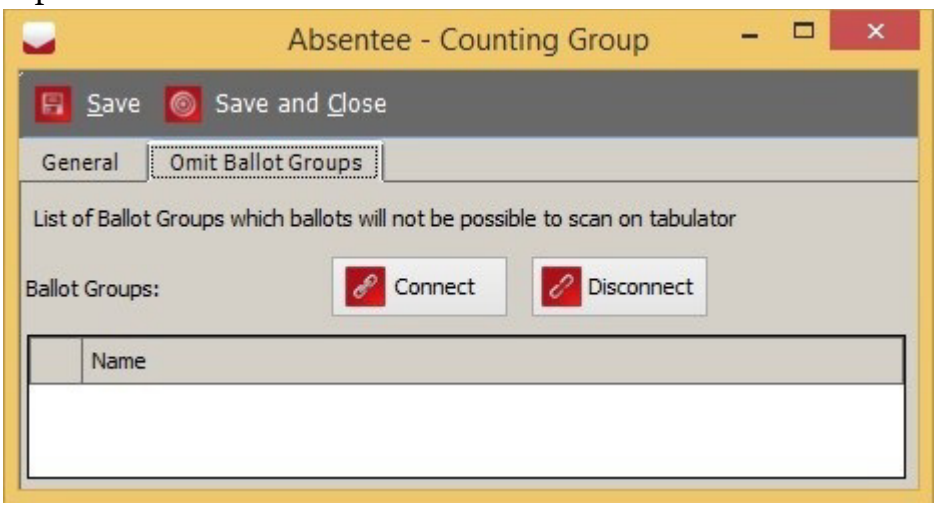

Figure 5-11: Counting Group Screen - Omit Ballot Gropus

11. To add a ballot group to the Omit list press the **Connect** button. This will open a dialog that allows selection of ballot groups (see Figure 5-12).
12. Click **Search** to populate the list of ballot groups. Select the ballot groups you wish to assign to the counting group, and click **Assign and Close**.
13. These ballot groups will appear in the **Omit Ballot Groups** tab.

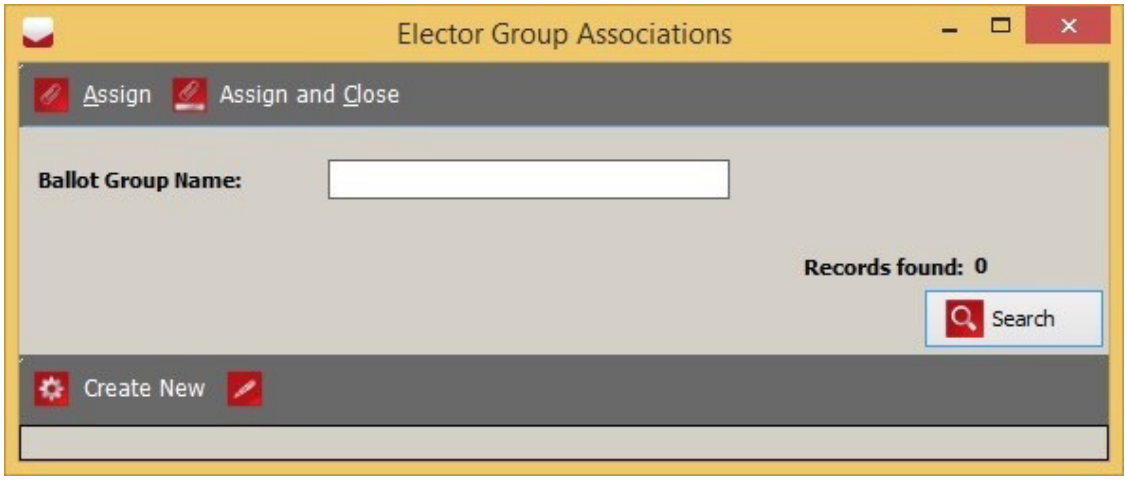

Figure 5-12: Counting Group Association Screen

14. Repeat the previous steps for each Counting Group you wish to define.

5.5 Defining Tabulators

To define the tabulators to be used in your Election Project:

1. Expand the **Tabulation** Navigation menu, and click on the **Tabulators** activity to open the Tabulation - Tabulators context sensitive screen.
2. Click **Create New** to define a new tabulator. The Tabulator screen appears, see Figure 5-13.

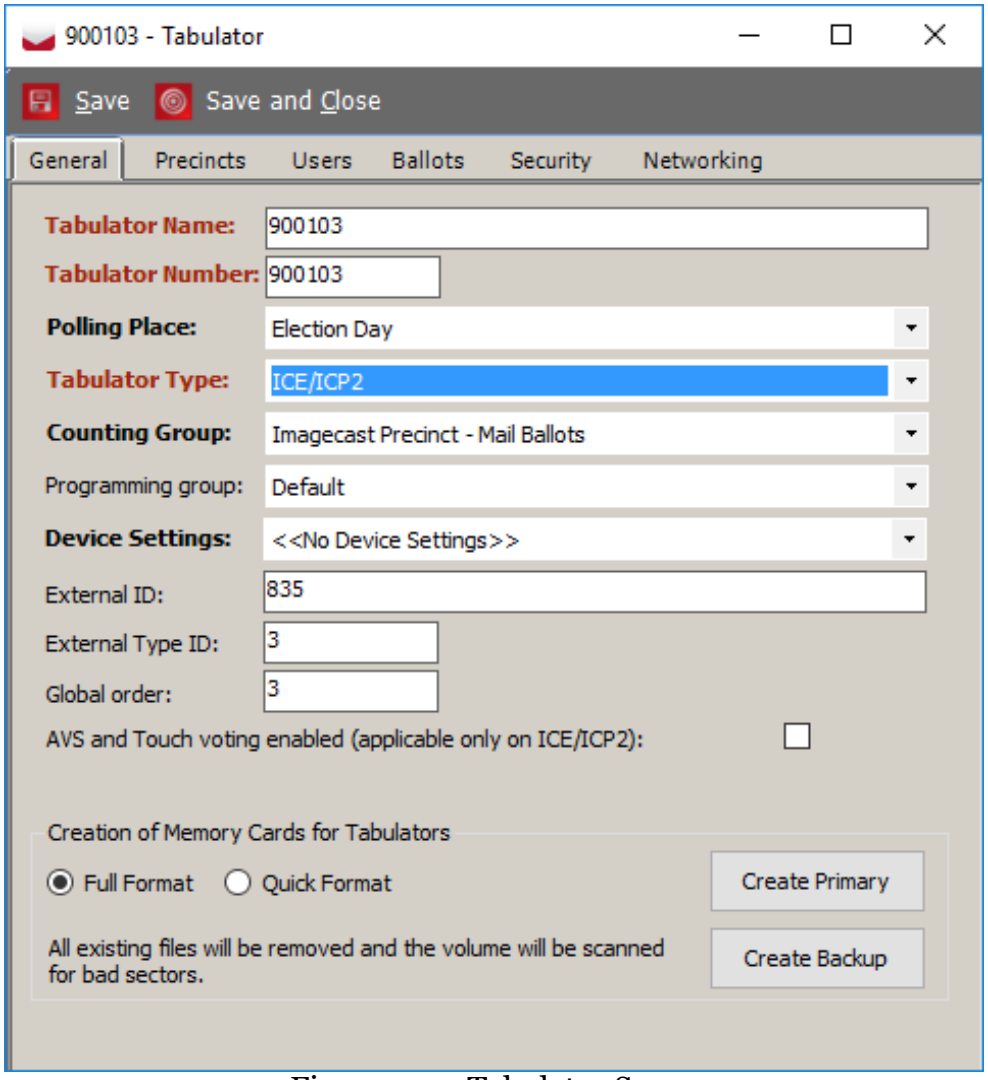

Figure 5-13: Tabulator Screen

3. Type in the 'Tabulator Name'. The 'Tabulator Number' is present, but can be changed if you prefer.
4. From the combo box, select which polling place you want to assign the tabulator to (the predefined counting group value is Election Day,but the list depends on the number of created counting group records). See section 6.7.
5. Select the type of Democracy Suite R tabulator from the **Tabulator Type** dropdown menu, and, if required, the 'Counting Group' as defined in Section 6.4. You can choose from the following tabulator types:
   - ImageCast® Central

- ImageCast® X
- ImageCast® Evolution / ImageCast®Precinct 2
- ImageCast® Precinct
- Internet Voting
- Interactive Voice Response
- Depending on your localization setting CF200

6. Select your **Device Settings**. If the settings are missing, go to section 4.10 and 6.8.
7. See appendix D for explanations for External ID and Global Order.
8. AVS and Touch Voting enabled this setting is only applicable tor ImageCast Evolution tabulators and allows the user to specify if the tabulator that is currently selected or being created should support Accessible Voting Sessions or Touch Voting.
9. To associate your tabulator to a precinct, click on the **Precincts** tab, see Figure 5-14, and click **Connect**.
10. The Tabulated Precincts screen appears. Click **Search** to populate the list of available precincts. Select the desired precincts you wish to associate your tabulator to, and click **Assign and Close**.
11. If tabulator needs to be connected to all precincts you can select **Vote Anywhere** check box. If you set vote anywhere flag then there is no need to assign tabulator to each precinct since it will be automatically selected, so connect and disconnect buttons will be disabled.

12. The precincts are now listed in the Precincts field of the Tabulator dialog. Click **Assign and Close**.

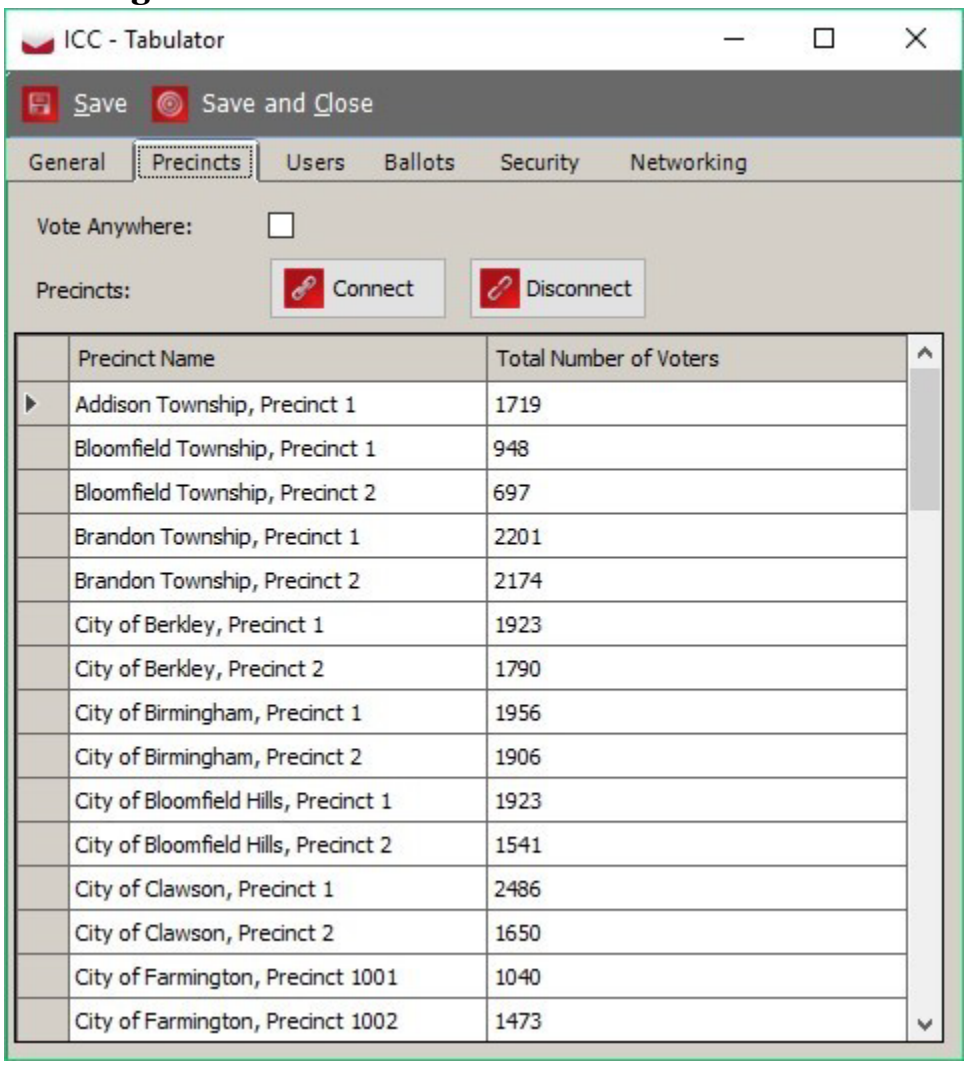

Figure 5-14: Tabulator: Precincts Tab

5.6 Defining Tabulators in Batches

To create multiple instances of the same Democracy Suite R tabulator:

1. On the Tabulation - Tabulators context sensitive screen, click **Create Batch**, see Figure 5-15.
2. Similar to Section 6.5, select the type of tabulators you are creating from the **Tabulator Type** drop-down menu.
3. If required, select a counting group.
4. Select your device settings.
5. In the range fields, enter the number of tabulators this batch creates.

6. Enter the tabulators' prefix in the 'Prefix' field.
7. Check **Vote Anywhere** check box if you want to connect tabulator to each precinct.
8. Click **Create**.
9. Repeat the previous steps for each batch of tabulators you wish to create.

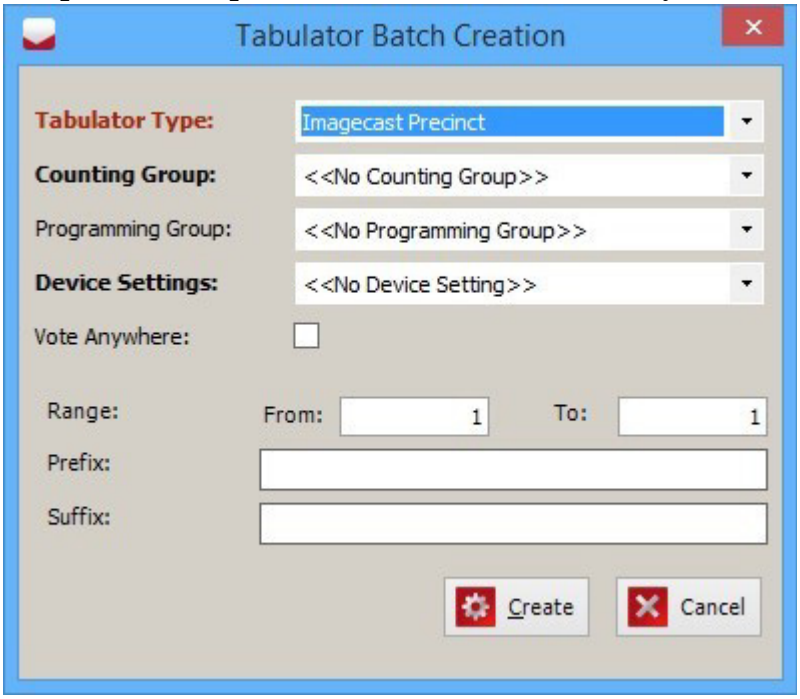

Figure 5-15: Tabulator Batch Creation Screen

5.7 Defining Polling Places

This section describes how to create a voting location. Note that this option can be performed during all election project statuses except for the 'Ready for Elections' status.

To define the locations where your Election Project's voting will be held:

1. Expand the **Tabulation** Navigation menu and select the **Polling Places** activity.
2. The Polling Places context sensitive screen appears.

3. Click **Create** New. The Polling Place screen appears, see Figure 5-16.

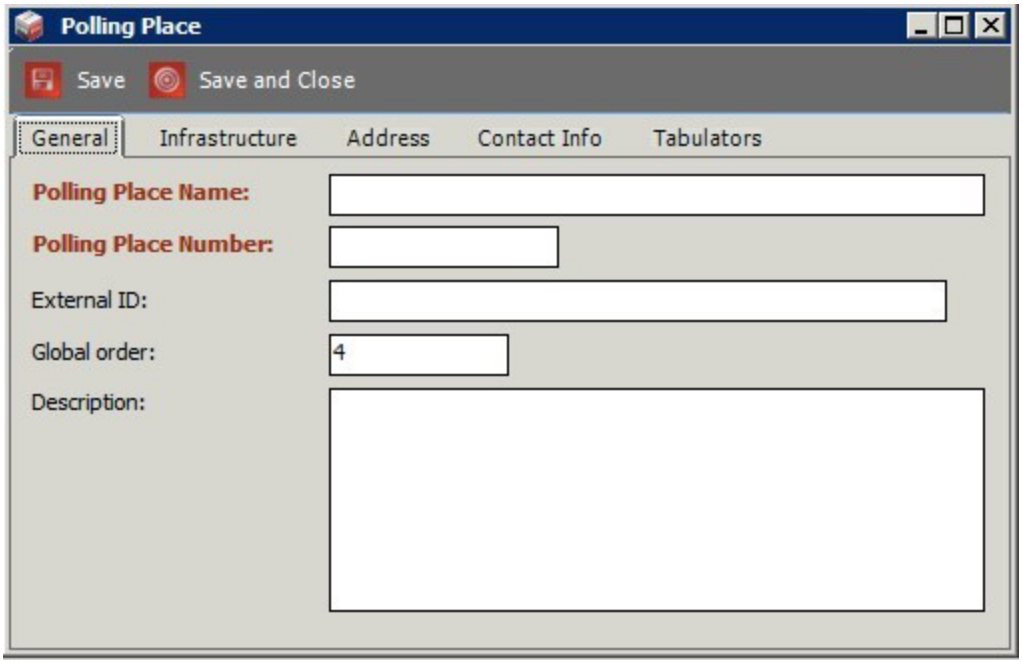

Figure 5-16: Polling Place Screen

4. Add a 'Polling Place Name' and 'Polling Place Number'. If desired, add a description of the polling place.
5. **Infrastructure** tab and enter information related to the services and facilities available at the polling place.

NOTE: This information is optional but useful when planning the election event. It does not influence the definition of the election event business rules. It can help election organizations to effectively manage voting locations and to fulfill the set of voting location attributes.

Enter the 'Number of Phone Lines' available at the location, as well as the Internet Accessibility situation. If the Internet Access option is selected, the Internet Access Type drop-down menu is available

.

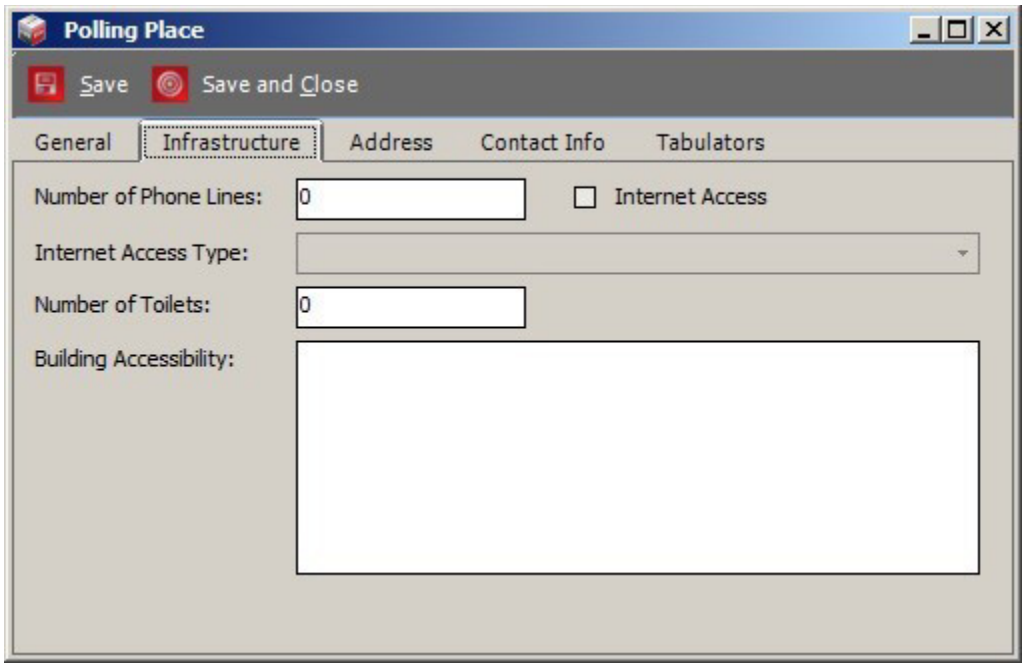

Figure 5-17: Polling Place Screen-Infrastructure tab

6. To select an **Internet Access Type**, click on the arrow opposite the field name. When the drop-down menu appears, select an option (pre-defined values are analog, high-speed, wireless, and none). Click on the arrow again to return to the previous position.
7. Enter the appropriate 'Number of Toilets' and 'Building Accessibility' information. This information can be important for those who have disabilities. If this information is unknown, skip this step.
8. **Address** tab. Enter 'Address' information as well as geo-location information. This information is optional but can be useful when planning an election event.

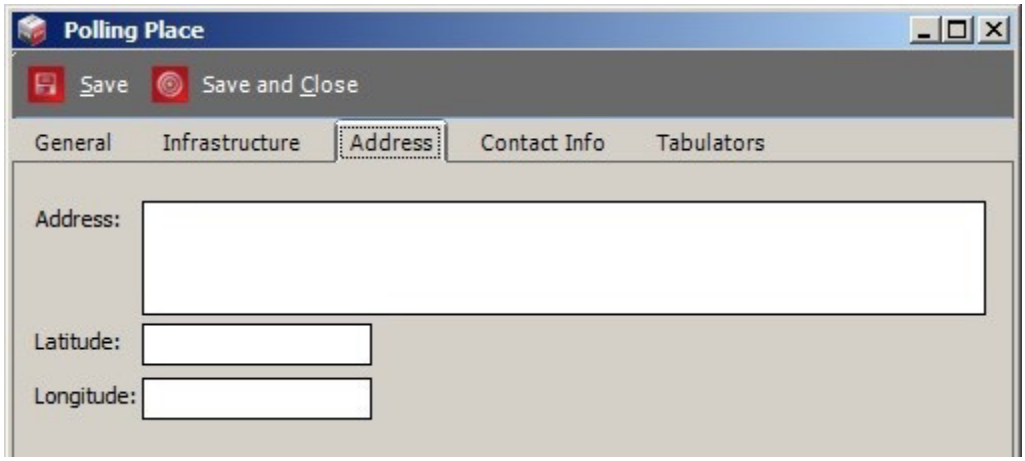

Figure 5-18: Polling Place Screen - Address tab

9. Select the **Contact Info** tab. This information is also optional. However, Election organizations can use this information as part of the overall definition of the election event in order to manage a variety of logistics operations.
10. To add contact information, click **Connect**.
11. The Polling Location Contact Info tab screen appears. You can search existing contacts or create a new one for the polling place.
12. Click **Create New** to create one or more people responsible for the polling place. The New Contact Info screen appears.

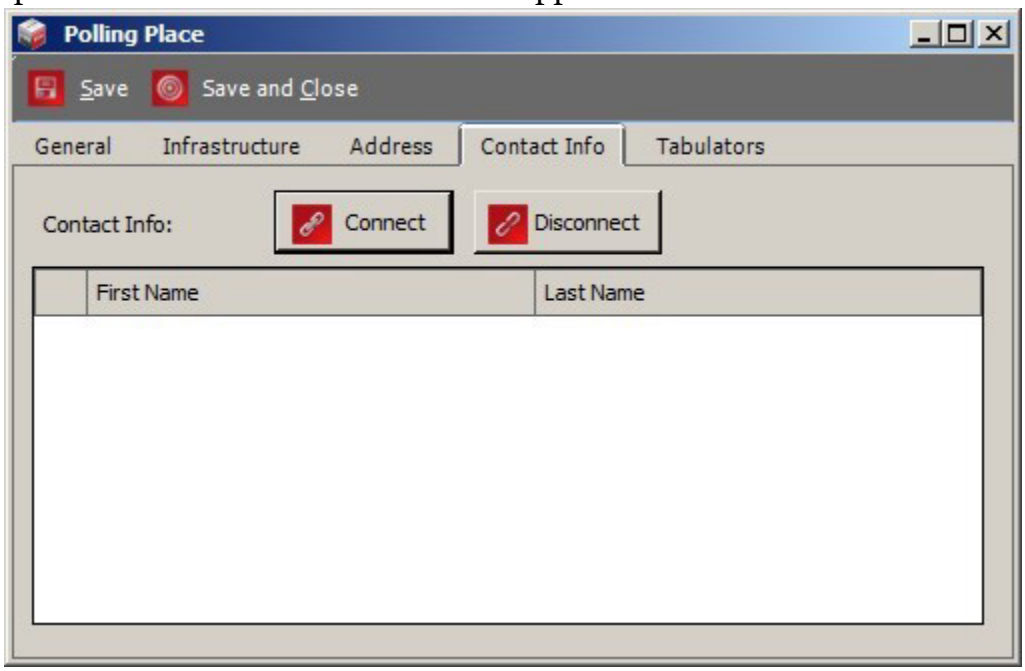

Figure 5-19: Polling Place Screen - Contact Info tab

13. Type in the contact information data. When finished, click **Save and Close** to return to the Polling Place Contact Info screen.
14. You now have the option to search by Last Name. Type in a search value, and click 'Search'. Your new contact appears in the list of defined contacts.
15. Select the contact that you wish to associate with the polling place.
16. Click **Assign and Close**.
17. The Polling Place screen has updated contact information. Click **Save and Close**.
18. **Tabulators** tab. Click **Connect** to assign tabulators to the polling place. The Tabulator Association screen appears.
19. To preview all tabulator records that have been created, click **Search**.
20. Select the appropriate record and click **Assign and Close**.

21. To narrow your selections, type in the 'Tabulator Name', select the 'Polling Place' and 'Generation Cycle', and select whether the 'Polling Districts' is 'Used' or 'Not Used'. Click **Save and Close** to save all tabulator properties.
22. The selected tabulator is assigned to the polling place and appears in the grid.
23. Once finished, click **Save and Close**.

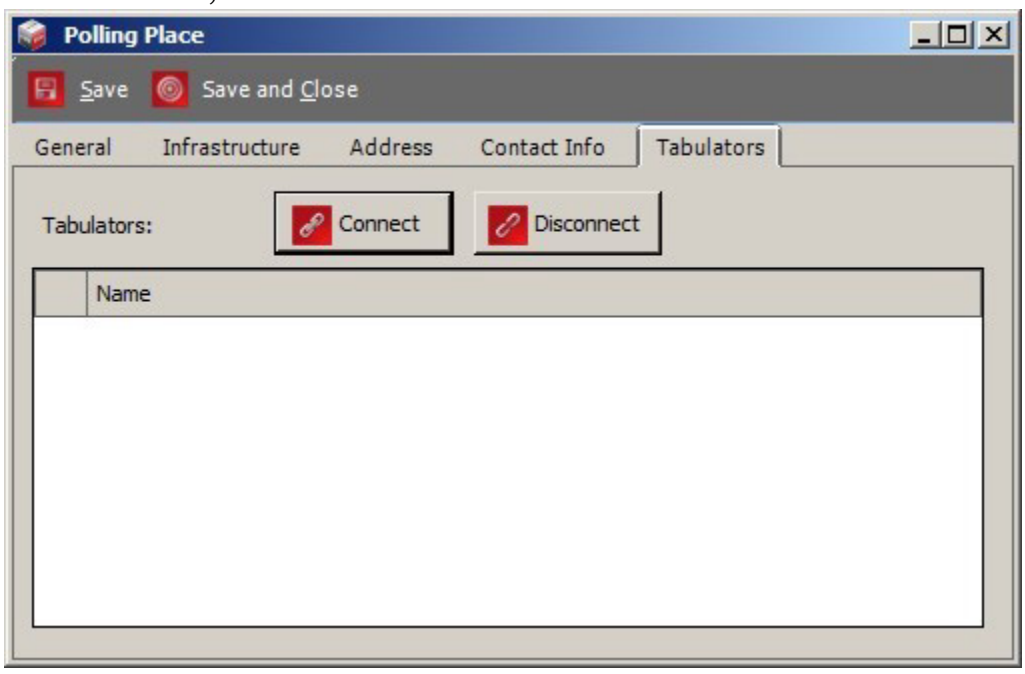

Figure 5-20: Polling Place Screen - Tabulators tab

When creating Polling Places in Election Event Designer (EED), Polling Place numbers must be defined sequentially. For example, when creating five polling places, they must be assigned numbers 1 to 5. The value for a polling place number must not exceed 9 digits (999999999). In the Polling Places screen, the optional fields External Id, Global Order, and Description are useful when planning operational election event logistics.

5.8 Configurations

Each tabulator requires a configuration file that defines the behaviour of the machine in various different situations.

The configuration file is different for each tabulator type, and in a typical election project there may be multiple configurations for the same tabulator type. Some properties in the configuration are read only, while some are editable. Every tabulator must have a configuration file.

1. Expand the **Tabulation** navigation group activity, and click on the **Configurations** activity.

2. Select 'Tabulator Type' and then navigate to the baseline device configuration file from the **Etalon** combo box.
3. Click **Create New** on the activity toolbar. Depending on the imported DCF, MBD or MCF file, the options presented in the Etalon drop-down menu may differ.
4. The Device Configuration screen appears.
5. On the **General** tab, type in the name of the configuration instance you want to create based on the selected baseline (Etalon) file. This is the only editable field within the tab. Click **Save and Close**.

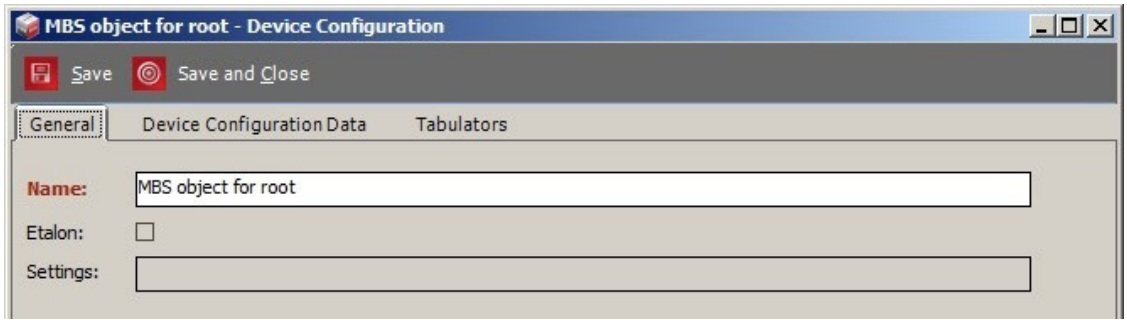

Figure 5-21: Device Configuration Screen - General tab

6. Select the **Device Configuration Data** tab, and perform the desired configuration changes. You can expand the root structure tree and select the file section you want to modify. Not all fields are editable.

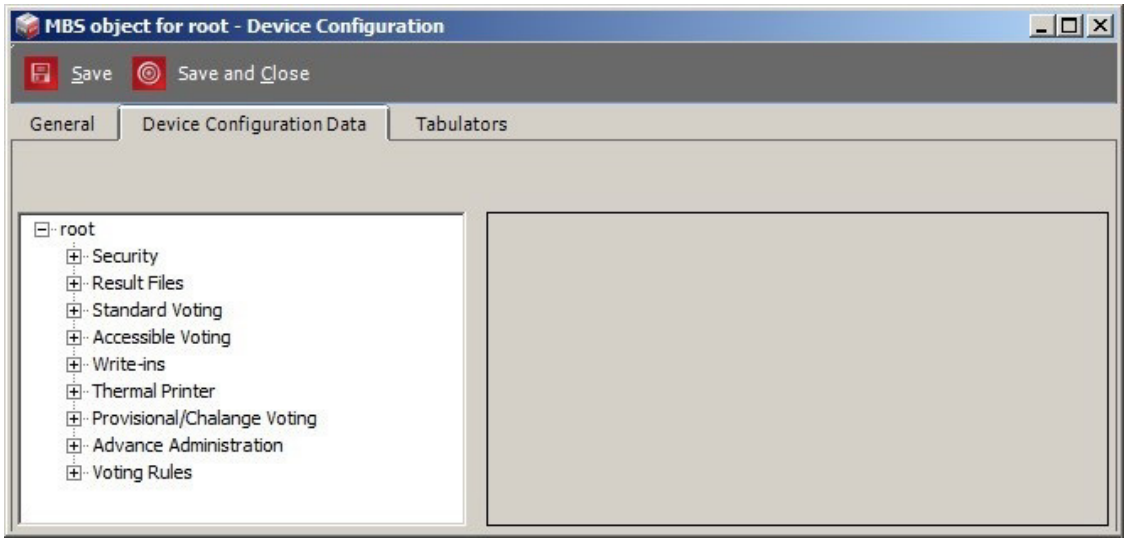

Figure 5-22: Device Configuration dialog- Device Configuration Data tab

7. Select the **Tabulators** tab, and click **Connect** to assign tabulators. The Tabulator Association screen appears.
8. To preview all tabulator records that have been created, click **Search**.

9. Select the appropriate record, and click **Assign and Close**.

5.9 Programming Groups

Programming Groups are used to group election files into separate subfolders and tabulator folders on the NAS server, so that files can be distributed separately if needed. Each programming group has its own subfolder named according to its programming group. This contains election files for connected tabulators. In addition to that, Programming Groups can be used to link Internet Voting tabulators to ImageCast® Central tabulators for the purpose of handling the same UOCAVA ballots as generated by absentee voters. This is achieved by using Programming Groups to assign the same HMAC security key to both tabulator types. For more details, see subsection 6.9.2 Programming Groups with a single Security Key for all Tabulators.

5.9.1 Programming Groups Properties

To define programming groups, perform the following steps:

1. Expand the **Tabulation** navigation group activity, and click on the **Programming Groups** option.
2. Click **Create New** located on the toolbar to open the Programming Group screen, see Figure 5-23.

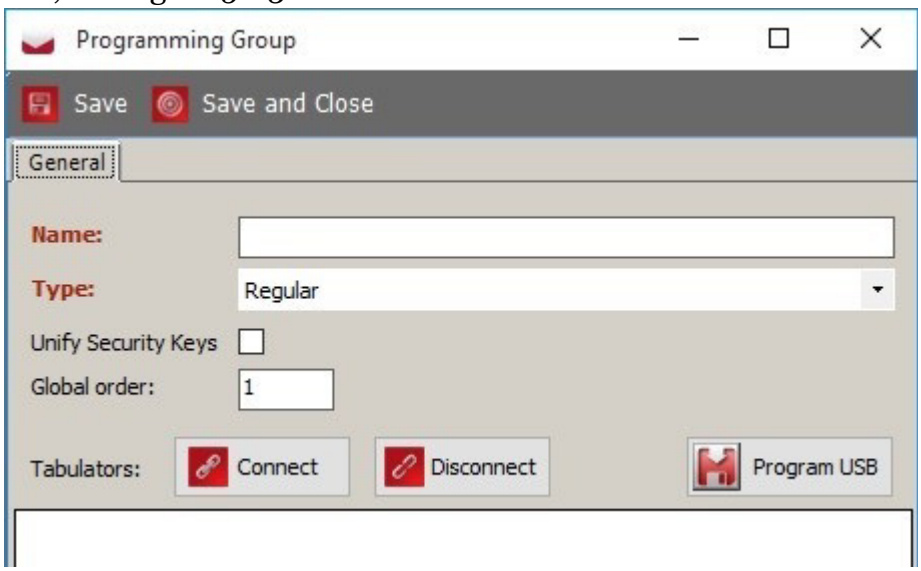

Figure 5-23: The Programming Group Screen

3. Type in the 'Programming Group' name.
4. Select one of the two available values from the Type drop down box:
   - Regular: this is the default value and will only result in creating separate sub folder for this programming group containing the tabulator election files for that tabulator.

- Election File: programming groups of this type will create a single election file containing definitions for all tabulators contained within the programming group.

5. Select whether security keys should be unified, see section 6.9.2.
6. Click **Connect** to associate tabulators to the programming group.
7. The Tabulator Association screen appears.

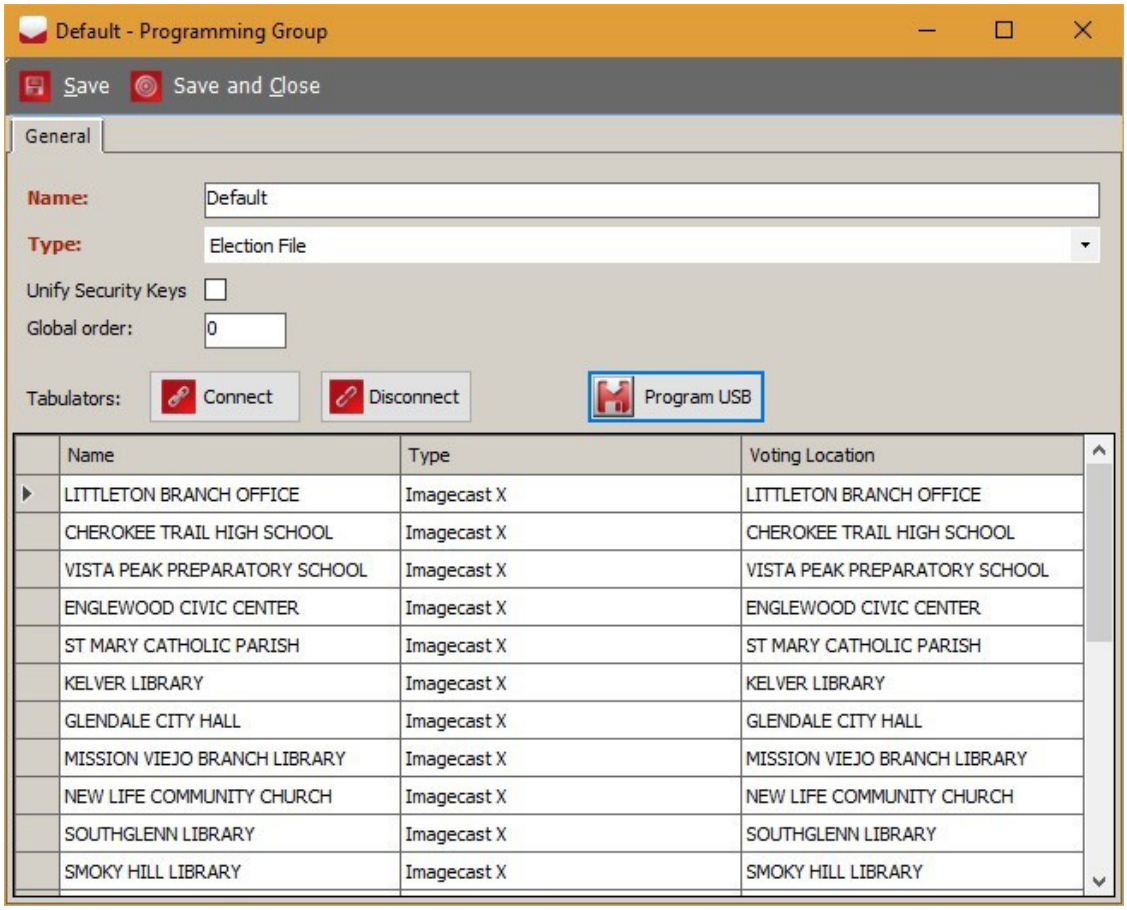

Figure 5-24: The Tabulator Association Screen

8. Click **Search**. The list of tabulators appears. Select one or more tabulator record(s), and click **Assign and Close**.
9. The associated tabulator is presented in the dialog window. Click **Save and Close**.

5.9.2 Programming Groups with a single Security Key for all Tabulators

In an absentee scenario, such as UOCAVA voting, an absentee voter will make choices and generate an electronic ballot via Internet Voting. The ballot, containing the choices made by the voter (encoded in a 2D barcode) is then mailed

back to a central counting location and scanned with other absentee ballots on an ImageCast® Central tabulator.

In this situation we have two different tabulator types handling what is traditionally the task of a single tabulator. Therefore, for security purposes, we need to ensure that the ImageCast® Central tabulator that scans all the incoming absentee ballots is allowed to scan ballots from a different source tabulator. The Internet Voting tabulator serves the UOCAVA ballot to absentee voters. Therefore, it is important that once the ballot is generated, it is digitally signed with an HMAC security key that allows a specific central tabulator (or tabulators) to scan the ballot.

Programming Groups allow this by providing the user with the ability to "unify the Security Key for assigned tabulator". In other words, if the user selects the option to unify the keys, all tabulators assigned to the Programming Group will have the same HMAC key.

NOTE: It is also possible to assign the same HMAC security key to all tabulators in your project. Refer to Section 4.7 Project Parameters for the global setting "Unify Tabulator Security Keys".

NOTE: In addition to above, if the Election File Programming Group Type is selected, the keys for all tabulators contained in the programming group will automatically be unified.

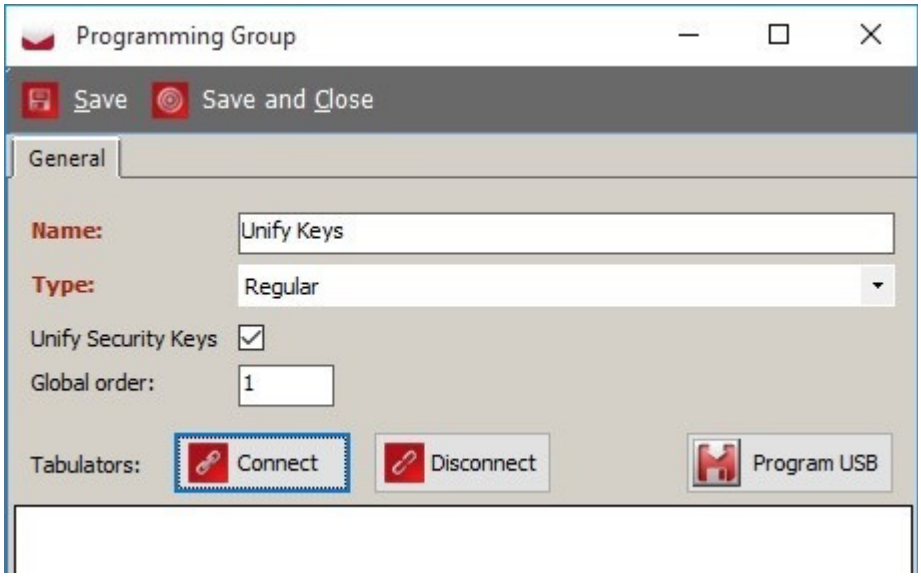

Figure 5-25: Programming Group screen

5.9.3 Program USB flash drive for Election File programming group

Once election files have been created and the project is in Ready for Election the EED user can program a USB flash drive containing the programming group election file by performing the following steps:

1. For a programming group of type Election File the user can click the **Program USB** button.
2. The system will present a dialog asking the user to insert a USB flash drive, see Figure 5-26.

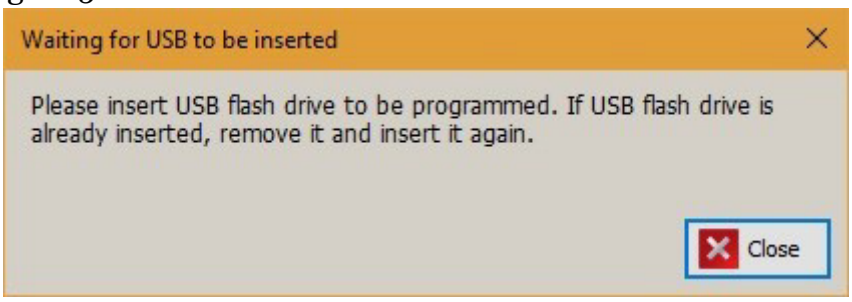

Figure 5-26: Waiting for USB to be inserted screen

3. Once inserted EED will copy the data file to the USB stick and inform the user that the data is finished copying, see Figure 5-27.

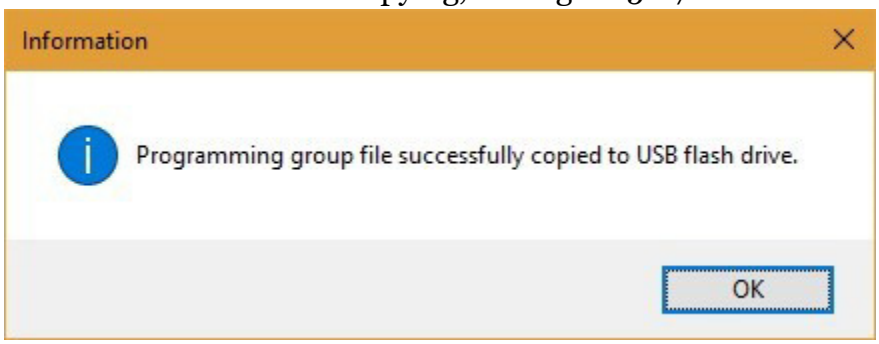

Figure 5-27: Information screen

4. The action can be repeated for any Election File programming groups.

Chapter 6: Preparing an Election Project for an Election

Once you have generated your ballots and defined the tabulators and locations with which your Election Project will be used, proceed to the Ready For Elections stage. If you have not generated your ballots and defined the tabulators and locations, return to chapter 6 before continuing.

6.1 Creating Election Files

Once your tabulators and polling locations have been defined, begin to create your election files. These files are loaded onto the tabulators in order to ensure that they read your Election Project correctly.

To create election files perform the following steps:

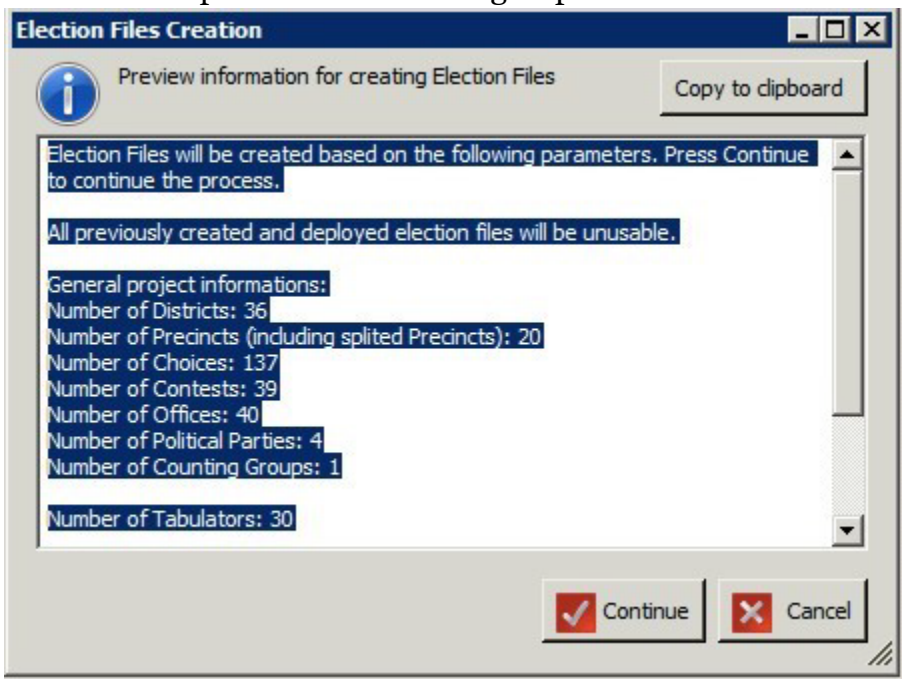

Figure 6-1: Election Files Creation Screen

1. Click the **Actions** menu from the top toolbar, open **Tabulation** sub menu and select **Create Election Files**. An Election Files Creation screen appears, see Figure 6-1.
2. Click **Continue** to begin creating your election files.
3. You may receive a warning message indicating that there are inconsistencies in your Election Project. Click **Continue** to continue generating your election files.

4. Once the Election Files have been created successfully, you will receive notification that the Election Project has moved into the Ready For Elections stage, see Figure 6-2.

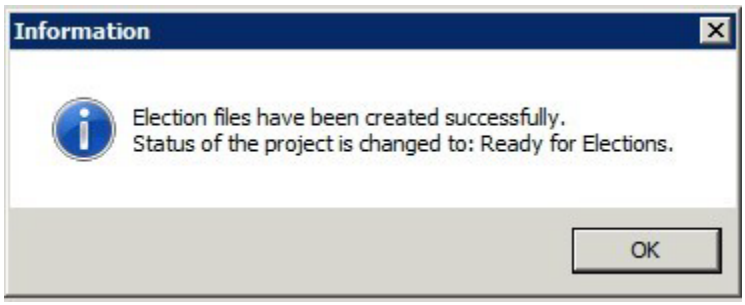

Figure 6-2: Information Screen

In case the election project contains any of the following tabulators, the process of creating election files also allows for additional resources to be made available as part of a single package for each of the following tabulators:

- Internet Voting
- Interactive Voice Response
- ImageCast® X

The following resources are now part of a single archived file (also containing the election definition for the tabulator), produced by the election file creation process:

- **Electronic Mobile Ballot (EMB) Header files**: these are PDF files for each ballot manifestation handled by a tabulator to be printed as part of an electronic mobile ballot.
- **EMB parameter file**: this xml file contains information related to the electronic mobile ballot (i.e. Page size, margins). These parameters are contained in the Electronic Ballot Parameters screen, see Figure 6-3.
- **Qualified write-ins text file**: this file contains the qualified write-in choice names.

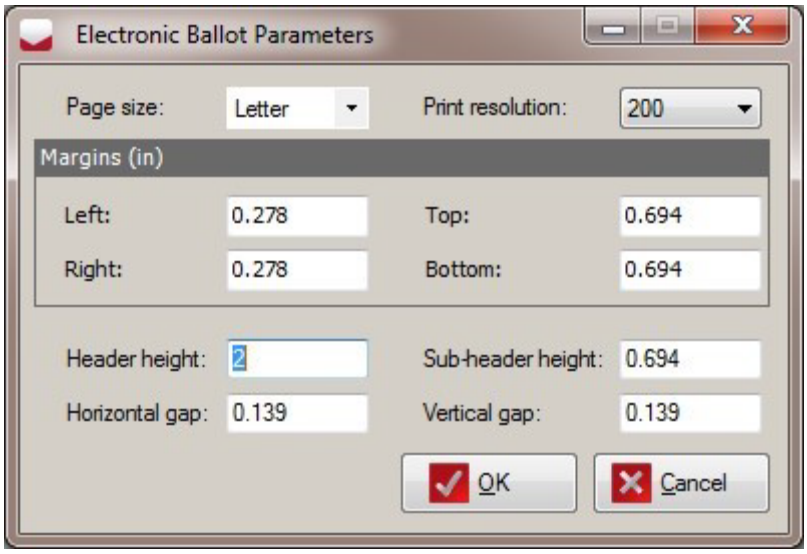

Figure 6-3: Electronic Ballot Parameters Screen

All of these files including the election database are now packed into a single archived file, which is then signed, encrypted, and placed on the NAS.

6.2 Programming Memory Cards and Security Keys and Cards

The ImageCast® ballot counting devices perform operations based on a set of election files that have been produced by Election Event Designer, as created in Section 7.1. These election files have to be copied to Compact Flash memory cards. Each ImageCast® device requires two memory cards for successful operation.

In addition to memory cards, you must also program iButton Security Keys. These keys are used for the authentication and authorization of the tabulator by administrative users. These keys hold the cryptographic key parameters that prevent your Election Project from being tampered with.

6.2.1 Programming Memory Cards

Prior to programming your memory cards, ensure that you have a USB Compact Flash card reader connected to your EMS workstation and two Compact Flash memory cards. Dismiss any autorun dialogs that may appear once you connect your Compact Flash card reader into your EMS workstation.

To program your memory cards perform the following steps:

1. Expand the **Tabulation** Navigation menu and select the **Tabulators** activity. Click **Search** on the Tabulation - Tabulator context sensitive screen to populate a list of all available tabulators. Note that each tabulator on this list will need to have memory cards programmed for it.
2. Double-click on a tabulator to open the Tabulator screen as seen in Figure 7.4.
3. Click the **Create Primary** button on the bottom of the screen.
4. The Waiting for primary CF card screen appears. Insert compact flash card into the reader, see Figure 6-4.

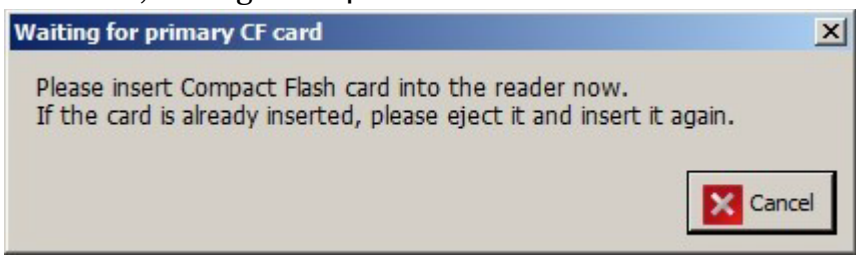

Figure 6-4: Waiting for primary CF card Screen

5. After initialization is complete, you will be notified with a Information screen, see Figure 6-5. Click **OK** to confirm, and remove the card from the Compact Flash card reader. Be sure to label it. There is no need to remove it safely from the drive as you would a USB stick.

Figure 6-5: Information Screen

6. After creating the Primary memory card, you will create a blank backup memory card. Click **Create Backup** on the Tabulator screen.
7. The Please Insert back up CF card screen appears. Insert compact Flash card in to the reader.

8. After initialization is complete, you will be notified with a Information screen, see Figure 6-6. Click **OK** to confirm, and remove the card from the Compact Flash card reader.

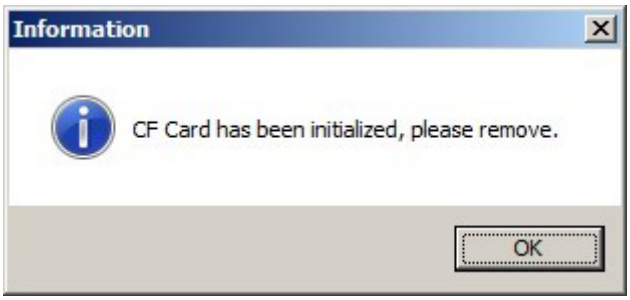

Figure 6-6: Information Screen

9. Repeat each step for every tabulator requiring memory cards.

6.2.2 Programming Security Keys and Cards

6.2.2.1 Programming iButton Security keys

Prior to programming your iButton Security Keys, ensure that you have a iButton Security Key reader connected to your EMS workstation and the necessary amount of iButton Security Keys. Dismiss any autorun dialogs that may appear once you connect your iButton Security Key reader into your EMS workstation.

To program your iButton Security Keys:

1. Expand the **Tabulation** Navigation menu and select the **Tabulators** activity. Click **Search** on the Tabulation - Tabulators context sensitive screen to populate a list of all available tabulators. Note that each tabulator on this list will need to have memory cards programmed for it.
2. Double-click on a tabulator to open the Tabulator screen.
3. Insert the iButton into programmer. Click on the **Users** tab and select the Admin user from the list of available users.
4. A screen appears asking you to insert an iButton Security Key into the reader. Click **OK**.
5. You will receive confirmation that the iButton Security Key has been programmed successfully. Click **OK**.
6. Repeat these steps for each iButton Security Key you need to program.

NOTE: Before regenerating election files, make sure that **Regenerate Security elements before generating election files** check box is checked.

NOTE: In case a security key is compromised, the correct procedure is to regenerate election files for all affected tabulators, then regenerate their security keys. The machines must then be programmed with the regenerated election files.

If affected tabulators are part of a programming group, the above procedure must be applied to all tabulators in the programming group.

6.2.2.2 Programming Smart Cards

Prior to programming your smart card, ensure that you have a smart card reader connected to your EMS workstation and the necessary amount of Smart Cards. In addition to that the appropriate smart card driver must be installed (this should come with your qualified smart card reader device), and the **Smart Card Helper Service** must also be installed in the Democracy Suite EMS System Installation and Configuration Procedure document. Ensure you have opened your election project in EED as a user with an Administrator or Tech Advisor role. The following steps describe how to program Tech Advisor and Poll Worker smart cards:

6.2.2.3 Programming Tech Advisor Smart Cards

1. Ensure you have opened your election project in EED as a user with an Administrator or Tech Advisor role.
2. Go to Settings - Project Parameters Smart Card tab, see Figure 6-7.
3. In the **Tech Advisor Smart Card** section, type in the Service URL for the Election Device Management application. This is typically in the following format.
   ```
   [COMPUTER NAME]/[EDM VIRTUAL
   DIRECTORY NAME]
   For example, this may be:
   EMSSERVER/edmadmin
   ```

To find out the exact URL that needs to be typed in:

- For the [COMPUTER NAME], please type in the name or the IP address of the computer which is running as the EMS Server in your configuration.
- For the [EDM VIRTUAL DIRECTORY NAME], please refer to the Installing EDM section of the **Installation and configuration of Election Device Management application** chapter in the EMS System Installation and Configuration Procedure document. The installation steps show that the virtual directory is by default named Edmadmin Please ensure that the virtual directory is named exactly this way (ignore casing).

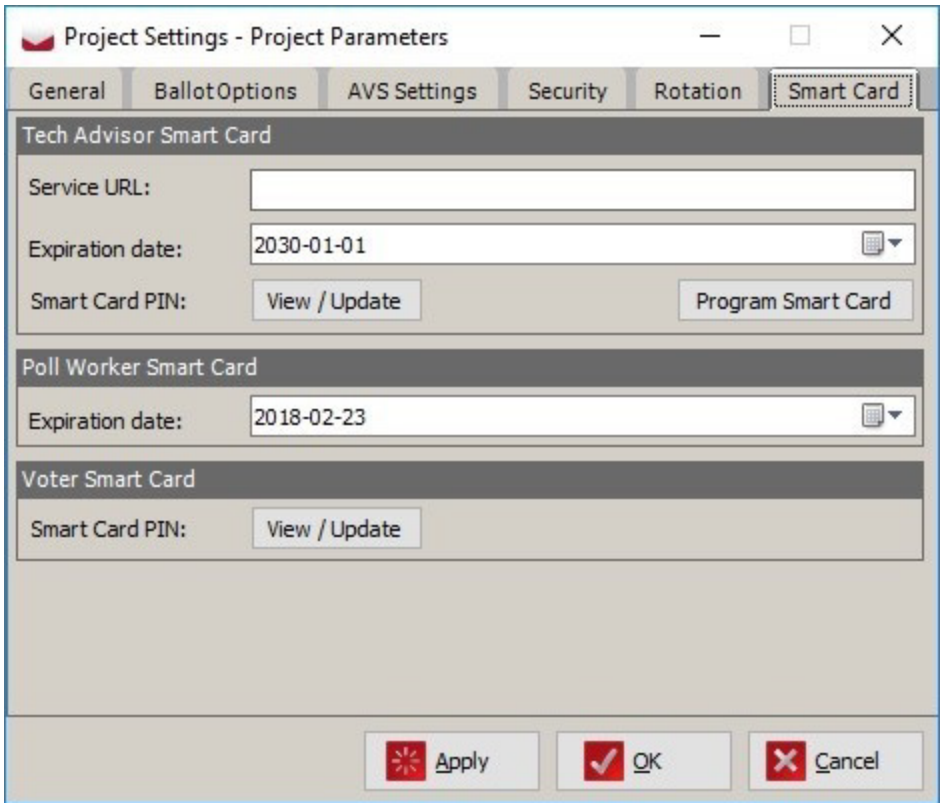

Figure 6-7: Project Parameters - Smart Card tab screen

4. Click **View / Update** for the Smart Card PIN field dialog appears, see Figure 6-8.
5. In the **User Password** field, enter the password used for opening the election project, and click **Verify**.
6. In the **Pin** field, enter the pin for the Tech Advisor Smart Card you wish to program, and click **Update Pin**. **Please Note**: The Pin can only contain numerals, and must be at least 4 digits and at most 8 digits.
7. Click **Close**.

Figure 6-8: Smart Card Pin screen

8. Back in the **Smart Card** tab of the Project Parameters dialog, click **Program Smart Card**, insert the card in the reader, and follow the prompts.

6.2.2.4 Voter Smart Cards Configuration

1. Go to Settings - Project Parameters Smart Card tab, see Figure 6-9
2. In the Poll Worker Smart Card section, set Expiration date.
3. In the Voter Smart Card section, click View / Update for the Smart Card PIN field dialog appears, see Figure 6-10.

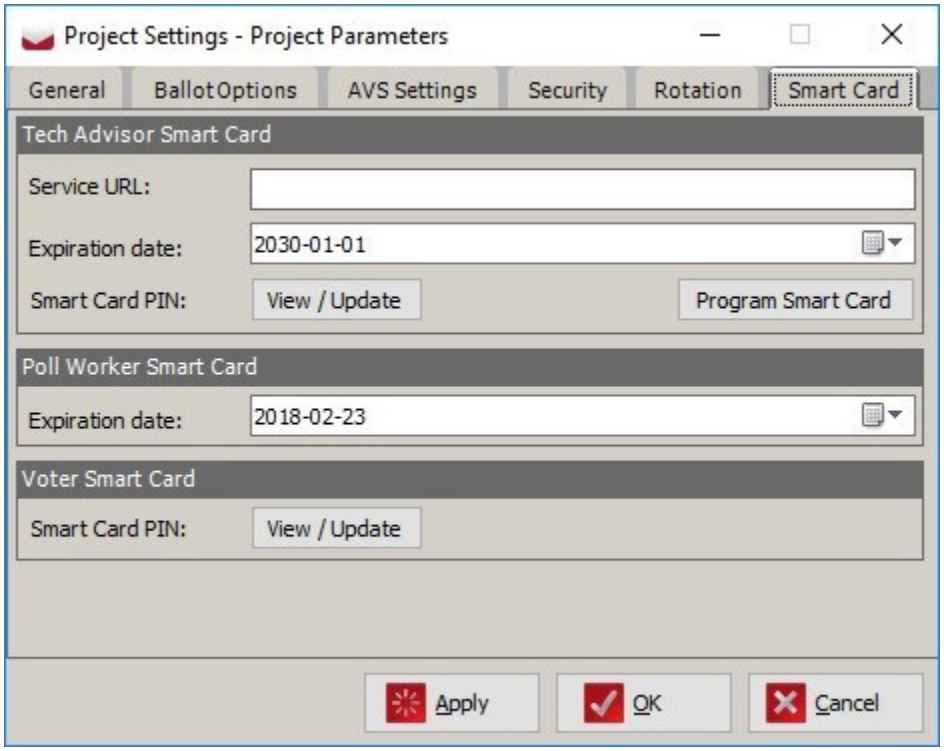

Figure 6-9: Project Parameters - Smart Card tab screen

4. In the **User Password** field, enter the password used for opening the election project, and click **Verify**.
5. In the **Pin** field, enter the smart card PIN and click **Update Pin**. **Please Note**: The Pin can only contain numerals, and must be at least 4 digits and at most 8 digits.
6. Click **Close**, and close the Project Parameters dialog.

Figure 6-10: Smart Card Pin screen

7. Expand the **Tabulation** Navigation menu and select the Tabulators activity. Click **Search** on the Tabulation - Tabulators context sensitive screen to populate a list of all available tabulators.
8. Double-click on a tabulator to open the Tabulator screen.
9. Click on the **Users** tab and select the **Admin** user from the list of available users.
10. Click **Program Smart Card**.
11. A screen appears asking you to insert a Smart Card into the reader. Insert the Smart Card and click **OK**.
12. You will receive confirmation that the Smart Card has been programmed successfully or error message if programming failed. Click **OK**.
13. Repeat these steps for each Smart Card you need to program.

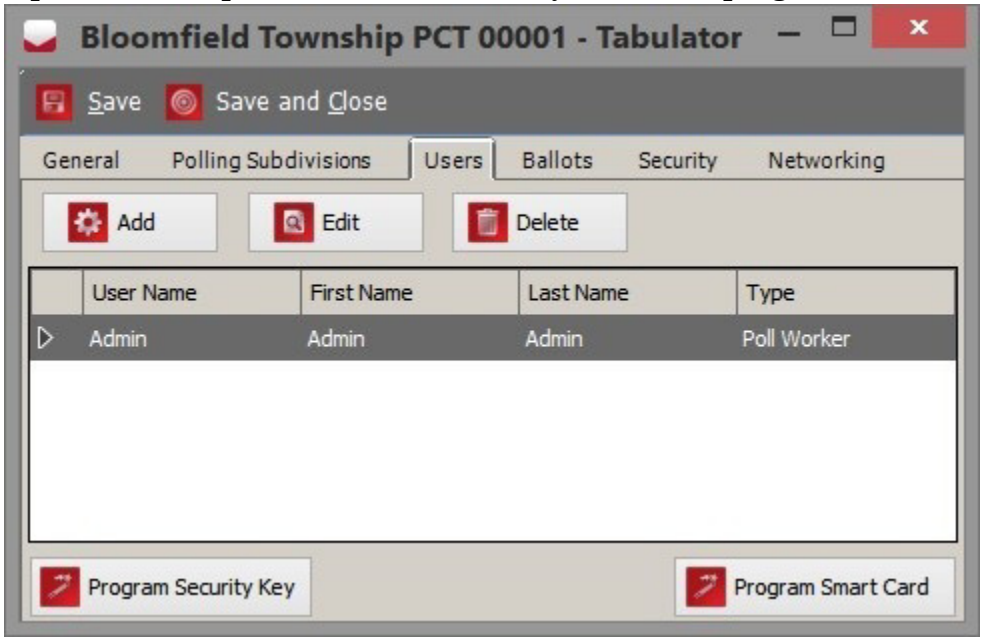

Figure 6-11: Program Smart Card screen

6.3 Creating Memory Card and iButton Security Token Labels

In order to prevent programmed Memory Cards and iButton Security Tokens from being placed in the wrong tabulator, labels should be are created for each Memory Card and iButton.

To create Memory Card and iButton Security Token labels:

1. Click on the **Create Labels** button in the 'Tabulation - Tabulators' context sensitive screen. The Label Creation screen appears, see Figure 6-12.
2. Within this dialog, you can select the information that will be printed on the Memory Card (Tabulator) labels, and iButton labels. Note that the first time the dialog is opened, default options will be presented.
3. Once you have chosen the parameters that will appear on your labels, click **OK**.

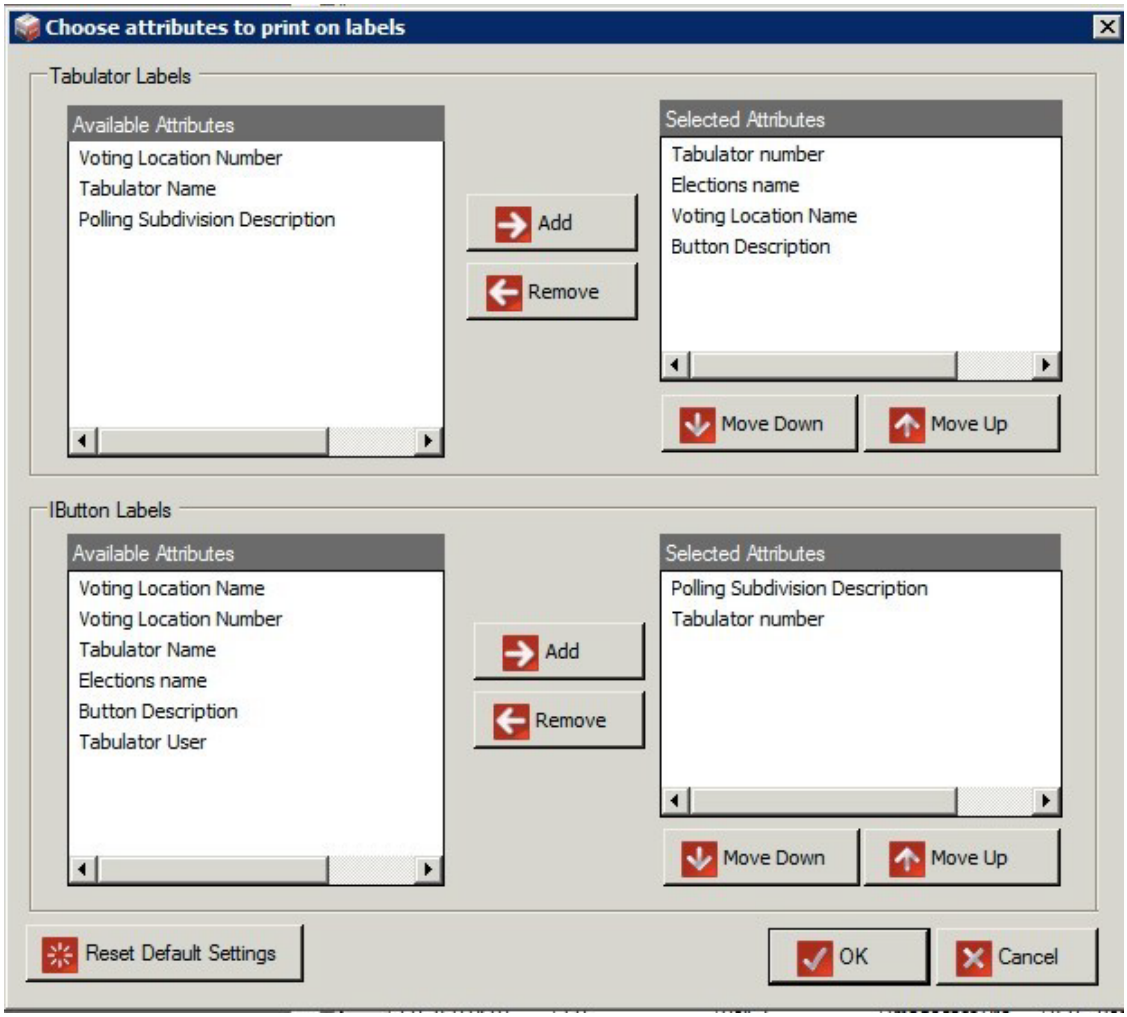

Figure 6-12: Label Creation Screen

4. A Label Creation Editor appears, see Figure 6-13. Within this editor you can change the size, style, and placement of your text.
5. Once complete, click **File** and **Print** to print your labels.

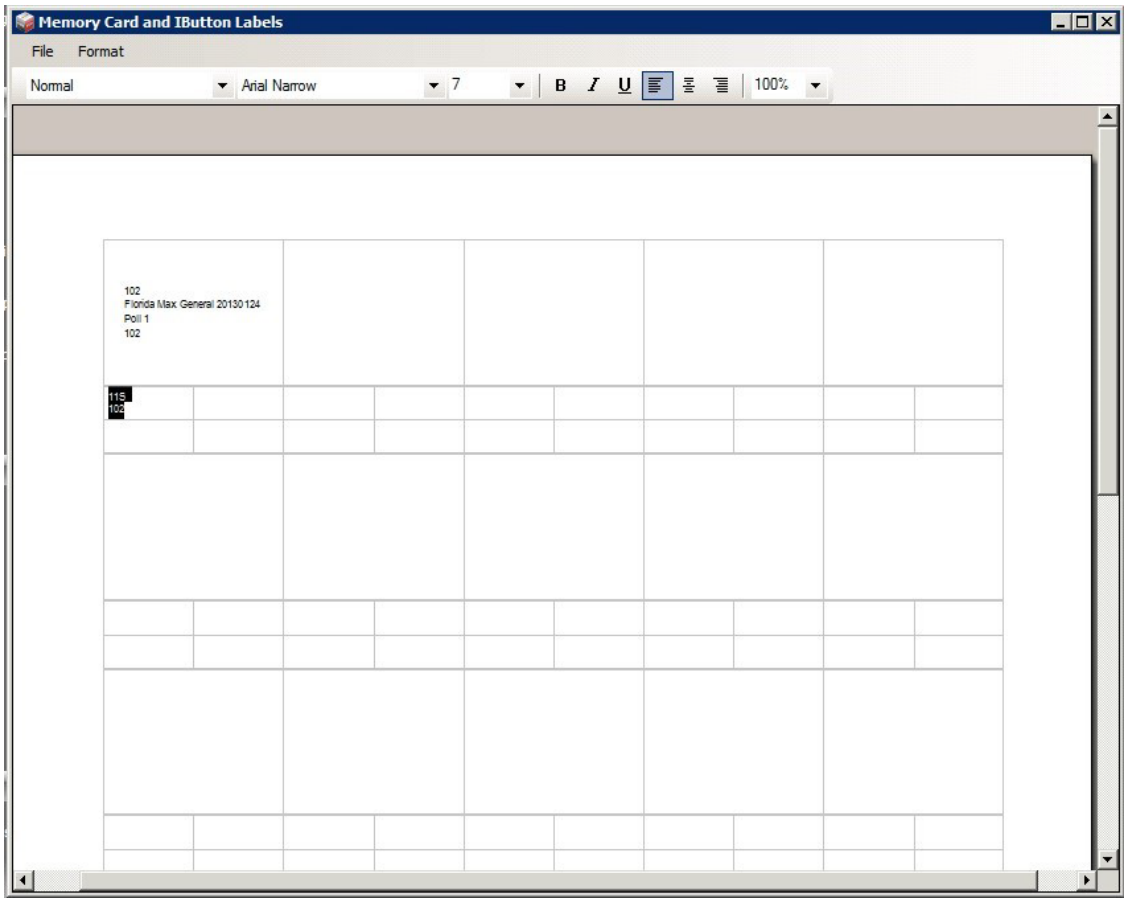

Figure 6-13: Label Creation Editor Screen

6.4 Exporting Qualified Write-ins List

In some cases, certain candidates register to have their votes counted via the write-in method, and that list may only be finalized after election files have been generated and distributed to the appropriate tabulators.

As such, when necessary, lists of qualified write-in candidates (per tabulator) are generated separately from election files. The ability to export Qualified Write-ins only exists in the Ready for Election phase. The data is exported into tab-delimited text files, which are encrypted and saved on the NAS.

To export an up-to-date list of Qualified Write-in candidates, follow these steps:

1. Ensure your election project is in the Ready for Election state. Also ensure that your project's Qualified Write-in choices are defined if no choices are defined, there will be no data to export.

2. Open the **Tabulators** menu in your election project, and click **Search** to display all the tabulators.
3. Select the tabulators you wish to export the list of qualified write-ins for from the list.
4. Click **Export Qualified Write-ins** in the action toolbar.
    - The action will create a tab-delimited file for each selected tabulator. This file will contain the Contest ID, the Qualified Write-in ID and Name for each entry.
    - The produced files will be encrypted.
    - The files will be saved on NAS at the following location:
    - NAS\<Election Project Name>\Election Files\<Tabulator Name>
    - The name of the exported file, corresponds to the time and date of the export:
      QualifiedWriteins YYYY MM DD hh mm ss.txt
5. After a successful export, a message box will appear indicating the qualified writeins that have been exported, see Figure 6-14.

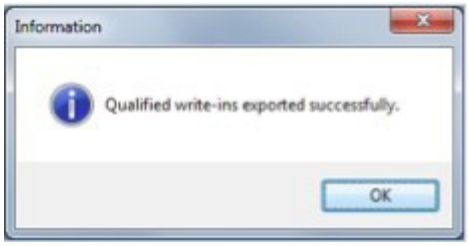

Figure 6-14: Information of successful export of Qualified Write-ins Screen

6.5 Exporting Encryption Keys for ImageCast® X, Interactive Voice Response and Internet Voting Tabulators

This feature allows the user to securely provide the tabulator encryption key from the EMS system to any of the following types of tabulators:

- ImageCast® X
- Interactive Voice Response
- Internet Voting

The EMS system exports the key into an encrypted file, while the above tabulators import a key exchange file, decrypt the data and load the tabulator key. The encryption method is symmetric, and a userdefined password is created for the tabulator password encryption (see Figure 6-15).

Figure 6-15: Set the password for encryption tabulator key Screen

The encryption key files are generated per tabulator, and they are generated separately from the rest of tabulator data. The data is exported into an encrypted file with the ".key" file extension. The ability to export these files exists only when the election project is in the Ready for Election project phase.

To export encryption key(s), follow these steps:

1. Ensure your election project is in the Ready for Election state.
2. Open the **Tabulators** menu in your election project, and click **Search** to display all the tabulators.
3. Select the tabulators for which encryption keys are to be exported.
4. Click **Export Encryption Key** in the action toolbar.
5. Enter a password and confirm password (see Figure 6-15).
   The password must satisfy the following rules:
   - Consist of at least 8 characters.
   - Contain at least one special character.
   - Contain at least one numeric character.
   - Contain at least one upper case character.
6. Click **Continue** and select the directory where the information should be exported (see Figure 6-16) and click **OK**.

7. The export process will initiate.

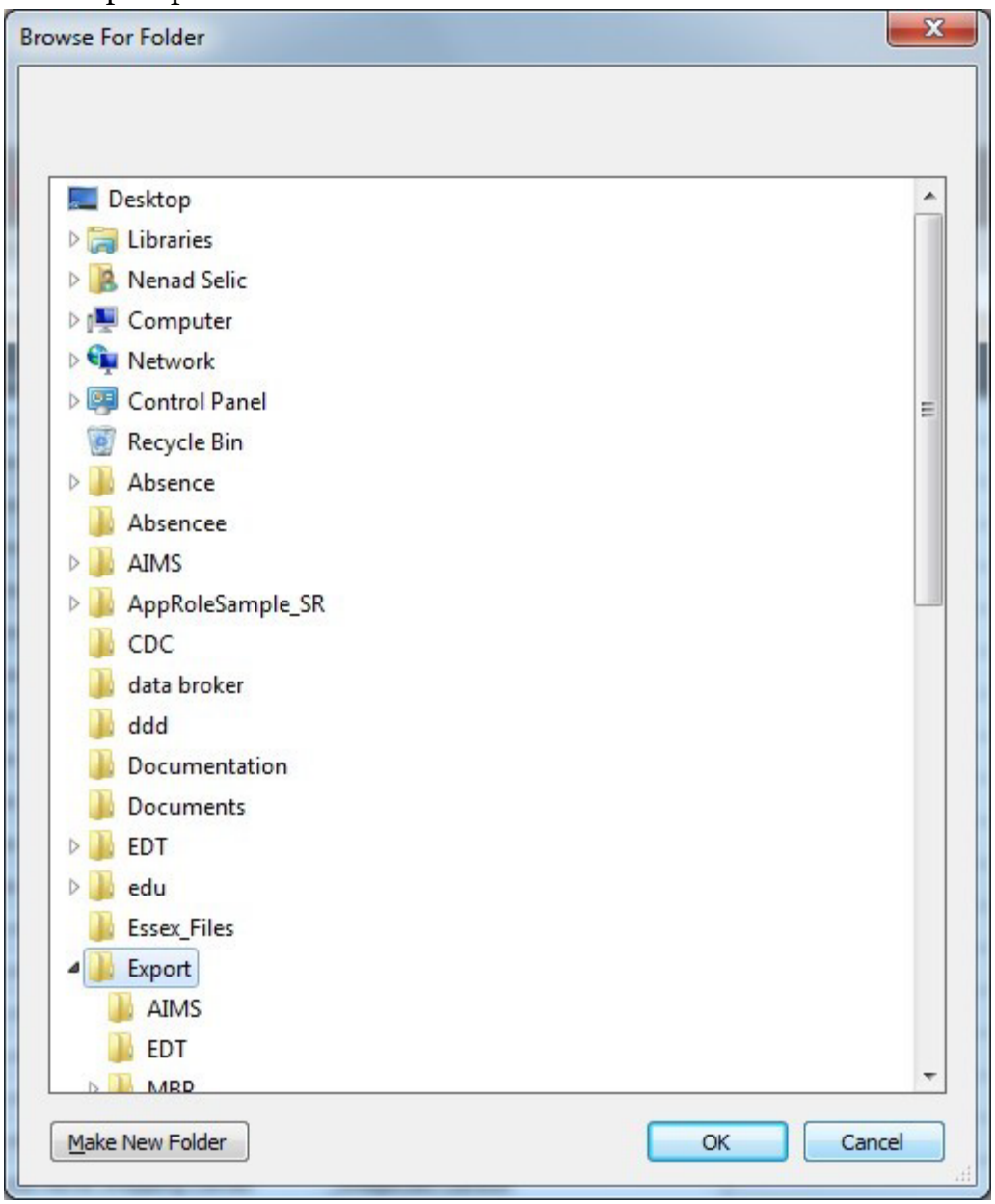

Figure 6-16: Browse for folder Screen

8. After a successful export, a Windows Explorer screen appears, showing the directory containing the exported encryption key files. (see Figure 6-17).

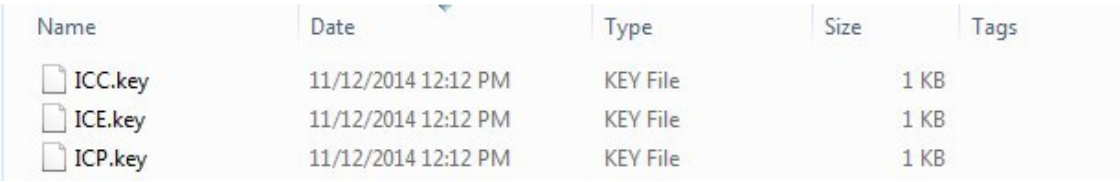

Figure 6-17: Directory with exported encryption key files

6.6 Export EDM Package

This feature allows an election official to export all data necessary for external applications to be able to program election files for tabulators.

The user can export an EDM package from the Tabulator screen in the EED. From the toolbar, select one of two options, one is to create an EDM package for all the currently selected tabulators by pressing the **Export package for EDM** button. Additionally the user can create an EDM package for all tabulators in the project by pressing **Export package for EDM for all tabulators** button, see Figure 6-18.

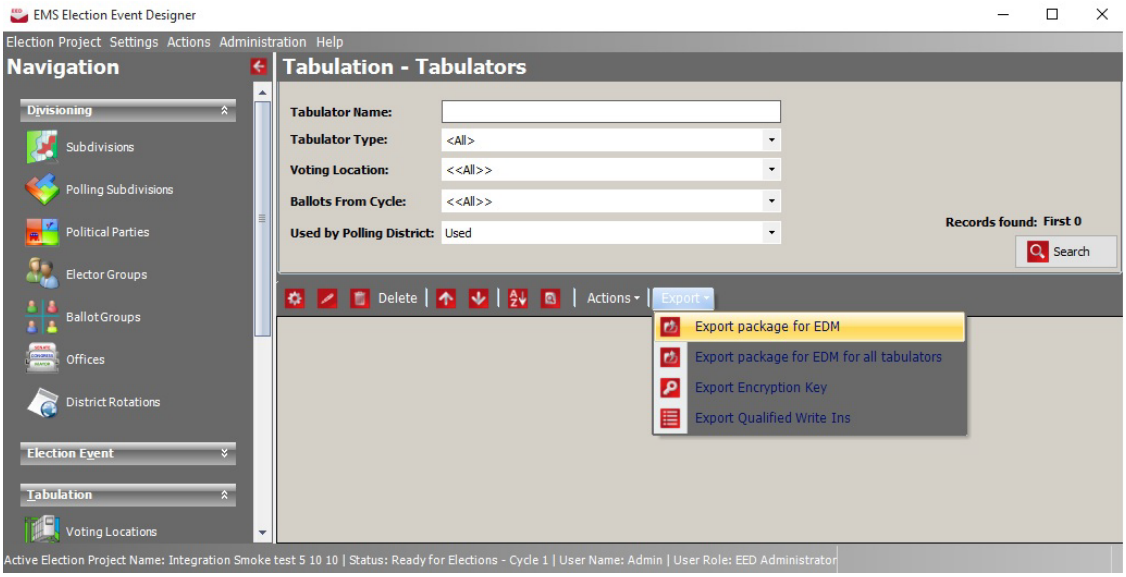

Figure 6-18: Export Package for EDM

The ability to export these files exists only when the election project is in the *Ready for Election* project phase. Please perform the following steps:

1. Once the user select creation of EDM package, a Question dialog will appear that asks the user to provide a password. The password must satisfy the following rules:

- Consists of at least 8 characters
- Contains at least one special character
- Contains at least one numeric character
- Contains at least one upper case character

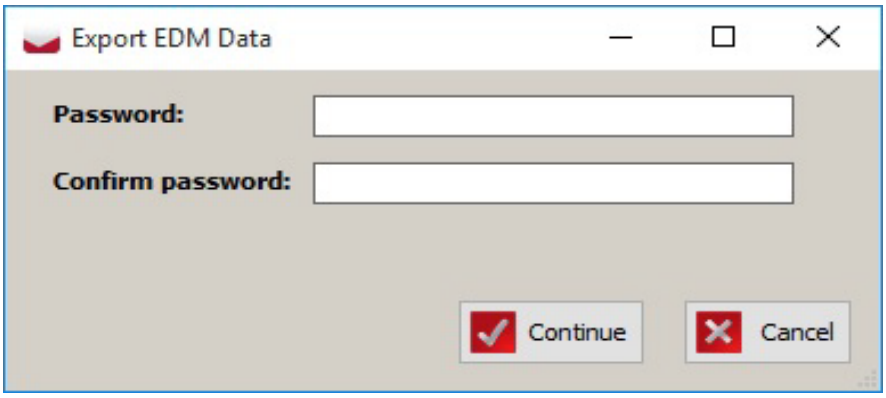

Figure 6-19: Export EDM Data screen

2. The system will ask for confirmation whether to continue creation of the EDM package, see Figure 6-20. If the user confirms, the system will start producing the EDM package.

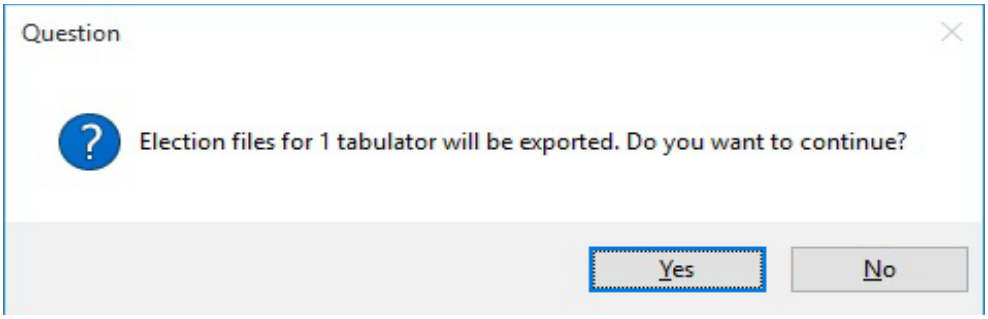

Figure 6-20: Question

3. Once finished, the EED will inform the user that EDM package was exported successfully, see Figure 6-21.

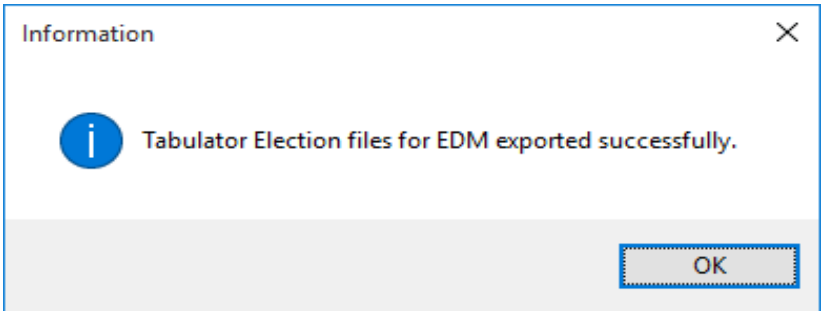

Figure 6-21: Information

4. The election official can find the files in the NAS project folder in the “EDMExport” subfolder.

6.7 Exporting Election Files for Election Programming Station

To use the Election Programming Station (EPS) for programming multiple memory cards at once, you must export the tabulator election files from the Election Event Designer. This export is only allowed in the Ready for Election state. To export the election files for EPS, perform the following steps:

1. Expand the **Tabulation** navigation menu, and click **Tabulators** to open the Tabulation Tabulators context sensitive screen.
2. Click Election Project - Export - EPS Export.
3. A screen appears asking if you wish to export election files for all tabulators. Click Yes to begin the process (Clicking No returns the user to the home screen).

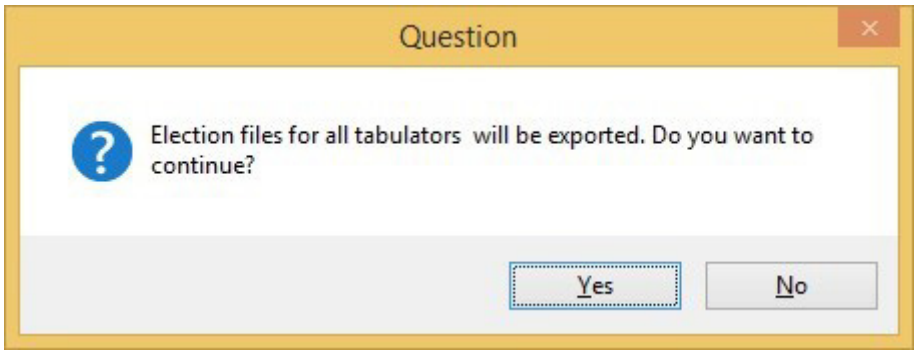

Figure 6-22: Question Screen

4. A progress bar will be displayed while the election files are being exported. When the process is complete, a confirmation that the export is completed will appear. Click **OK** to continue.

Figure 6-23: Information Screen

5. After the export finishes successfully, election files for all tabulators are saved in the Tabulator folder located in the Election Project folder on NAS.

This folder should be used as a source for programming memory cards using the Election Programming Station.

6.8 Generating Precinct Batch Cards

ICC scanner can use precinct batch cards to identify the precinct in which the ballots were scanned. Each batch of ballots from the same precinct needs to start with one card that has the QR code which informs the ICC about the precinct. That starting batch card is called **Precinct batch card**.

Precinct batch cards can be generated from the EED:

Click **Actions** -> **Tabulation**-> **Create Precinct Batch Cards**.

It will generate batch cards for all existing precincts in project and store them on **$NAS\{Project Name}\Precinct Batch Cards.**

Chapter 7: Operations Support

For any technical support issues related to the Dominion Democracy Suite system, please contact the Dominion Voting Systems helpline at 1-866-564-VOTE (8683) or contact our head office directly at:

Dominion Voting Systems

Email: help@dominionvoting.com

Website: http://www.dominionvoting.com

APPENDIX A: ADDITIONAL ADMINISTRATIVE ACTIVITIES

A.1 Text Editor Layers

Textual documents can be divided into layers. For certain situations, it's easier to create textual content using layers rather than using tables to create a text document layout.

For example, to create a ballot header with a text in the top left corner and an image (logo, signature etc.) in the bottom right corner, create the first layer with the text aligned left and the second layer with text aligned right with the bottom alignment of layer page.

Without layers we would need to create one table with two rows: first row would contain text left aligned and second row would contain image right aligned. Also we would need to add "extra" space to the first row in order to "push" second row at the bottom of the document.

The **Layers** panel is initially not visible, see Figure A-1. To open it: from the **View** menu of the text document choose **Layers**. Note that layers are only supported for ballot content.

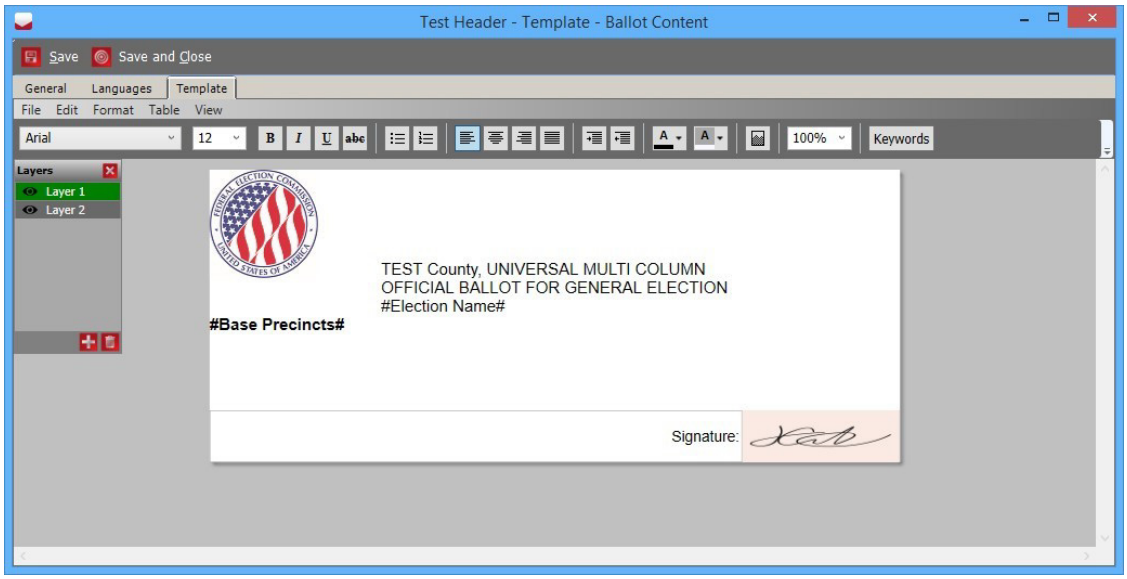

Figure A-1: Template - Layers

On the Layer's panel you can create new layers, delete existing layers, select active layers or hide layers. Hiding layers is only used for managing texts (to assist in creating documents). Layers will be rendered on the ballot regardless if it's hidden in the text editor or not. To exclude layers from rendering, they need to be delete.

To add content to layers: select an active layer in the layers panel. Now any action can be performed on the text document just like with the single layered document. Layers are independent text documents shown on the top of each other in the form of stacks. Note that the document size and background color are applied to all layers, so there cannot be layers with different sizes or background colors.

NOTE: The content of layers can overlap. For rendering the engine it is completely acceptable that the content of layers can overlap and no warning message will display. To ensure no overlapping exists, you will need to ensure it by yourself.

A.2 Importing the Reports Package

Importing the report package is not necessary if you have not upgraded to the new report package on the EMS NAS server. This option can be used to preview the report details.

To import the reports packages into your Election Project, perform the following steps:

1. Select the Election Project menu from the top toolbar, select **Import**, and click on **Reports**. The Import Reports screen containing reports and XML transformations appears.
2. Select the report you wish to import. If you click on the **Select All** button, all presented reports will be selected. If you click on the **Deselect All** button, all presented reports will be deselected. To see the details of the presented reports, select the report file and click on the **Details** button. The generic name window will open. It presents the type and details of the imported package. You can scroll up and down the list to read all details.
3. Click **Import**. An screen appears once the report(s) have been successfully imported. Click **OK** to close.
4. Click **Close** to close the Import Reports screen.
5. You can check to ensure that the report/transformation has been successfully imported by going to the appropriate report group in the B.7 Basic Report Group section.

A.3 Exporting the Mobile Ballot Production Definition Files

To use the Mobile Ballot Production application, you must export the definition file from Election Event Designer, and import it into Mobile Ballot Production.

NOTE: If a project is created in one of the previous versions, make sure that the transformations are updated. Please see section A.9 Updating the EMS Database.

The Mobile Ballot Production Definition File is only allowed during the 'Ballots Generated' and 'Ready for Elections' stages. This file contains all the necessary information for the Mobile Ballot Production to properly function. This option can only be used with Mobile Ballot Production.

To export the Mobile Ballot Production Definition File, perform the following steps:

1. Expand **Election Project** menu on the top toolbar, select **Export**, and click on the **Mobile Ballot Production Definition File** option.
2. The Browse for Folder screen appears. Select the folder in which you want to save the Mobile Ballot Production Definition XML export file, and click **OK**.
3. A progress bar will track the progress of the Mobile Ballot Production Definition File export.
4. After the export finishes successfully, the Mobile Ballot Production Definition file for the given election project is saved as an XML file under the following format:
   <PROJECTNAME>_<DATE>_<TIME>_mbp.xml
   A message will appear stating that the export has completed successfully. Click **OK**.
5. The file is saved on the mapped location and the folder where the file is saved will open.
6. This file can be imported into the 'Mobile Ballot Production' application.

A.4 Exporting Project Data

To export a project data file, perform the following steps:

1. Expand the **Election Project** menu on the top toolbar, and click **Export**. Select **Project Data**.
2. The Project Data screen appears.
3. Click **Browse** and navigate to the package for defining export.
4. Choose the **Target folder path** where export file will be saved.
5. Define Result file name.

6. Click **Create**.
7. After the export is finished, you will be informed that requested export is created successfully.
8. Click on the **OK** button.
9. The chosen target folder path with requested export will appear.

A.5 Create the Project Package

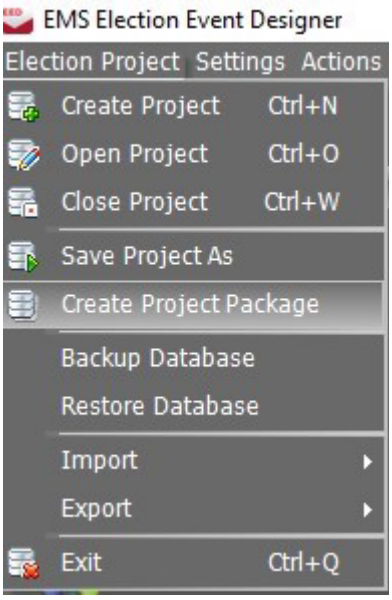

Figure A-2: Create Project Package menu

1. Click the Election Project menu, and select the **Create Project Package** menu item, see Figure A-2.

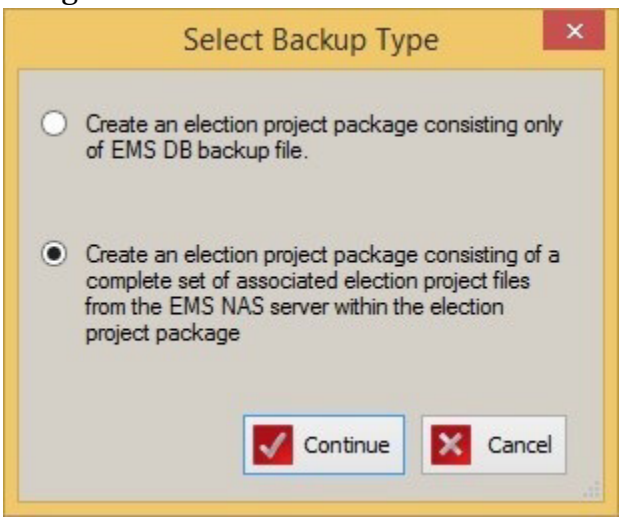

Figure A-3: Select Backup Type

2. The Select Backup Type dialog appears, see Figure A-3. Select either of the following options, depending on your requirements and click **Continue**.
   - Project Package contains the database backup file only (Partial backup)
   - Project Package contains the database as well as the full set of related resources (Full backup)
3. When the process has completed, a message will be displayed to the user, see Figure A-4. The project package will be saved at the following location on the NAS:
   D:\NAS\[NAME OF ELECTION PROJECT]\Project Package

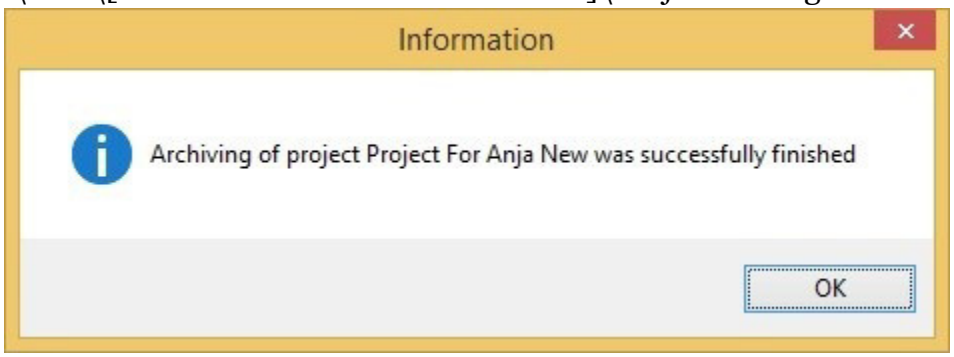

Figure A-4: Information screen

A.6 Restoring the EMS Election Project from the Project Package

To restore an EMS election project from the project pacakge:

1. Expand the **Administration** menu and click on the **Restore Project Package** sub-option.
2. Restore Election Project Package screen appears.
3. There are two options of restoring project: **Local Path on the Server** and **Local Path on the Client**.
4. In order to speed up the process of restoring a project package on the 'Standard configuration of EMS', the user must first save the project package in the **TEMP** folder on Application Server as defined in the 'Application Server Manager'. The user should select the **Local path on the Server** option and click **Browse**.
5. Server browser dialog will appear and will show the content of **TEMP** folder.

6. Select project package you want to restore and click on the **OK** button.

   NOTE: It is possible to restore a project package on Standard Configuration of EMS saved locally on the client, but this process will last much longer and will not run optimally.

Following the steps below:

7. If we work on 'Express Configuration of EMS', use 'Local path on Client' option and browse for the project file anywhere on the computer.
8. After you select the package file, you will be able to see such package content as the project's name, date, creation date, and election event type.

   NOTE: If the election project does not exist on the target EMS installation, you will be presented with the text that project does not exist on the EMS Database server. If you wish to continue, click 'OK'.

NOTE: If you want to backup the first existing project, please close the dialog, open the destination project and perform the backup

9. Click on the **OK** to continue.
10. To initiate the restore process, click the **Restore** button.
11. After the restore process has successfully completed, click **OK**.
12. Open the election project.

    NOTE: If you restore your election project package on an EMS workstation with a hard drive sector size that differs from the workstation that the project was created on, you will receive an Operation Cancellation error if you attempt to create a backup of your project. In order to circumvent this error, delete the old backup file (.bak) from the \NAS\<PROJECT NAME>\DB\Backup folder.

A.7 Backup Database

The purpose of this feature is to fully back up of the election project database. All database backups of the given election project database will be stored in a single backup file. The path of this file is:
`<NAS PATH >\<PROJECT FILE NAME >\DB Backups.`

When restoring the project database, the user can choose which database backup to use for the restoring (For more details see the section A.8 Restore Database below).

The difference between this feature and the **Create Project Package** (see section A.5) is that in case of the **Backup Database**, the only file that is created \changed is the database backup file. This backup does not include project files stored on the NAS (ballot artifacts, result files etc.).

To create the backup of the election project database you must do the following steps:

1. Click on the **Election Project** menu and select the **Backup Database** item, see Figure A-5.

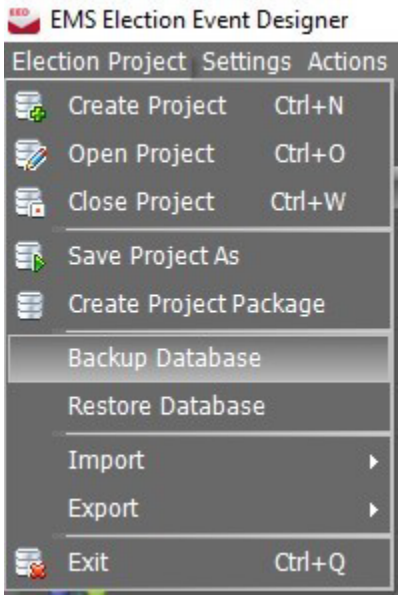

Figure A-5: Create Backup Database

2. The Backup Database form will appear, see Figure A-6. This form allows the user to:
   - Enter the backup description. (**NOTE**: This field is not mandatory, but it is suggested to enter a short backup description text to easily find the desired backup when restoring).
   - Define whether to delete all previous backups (option: Delete all previous
3. Click **Continue**.

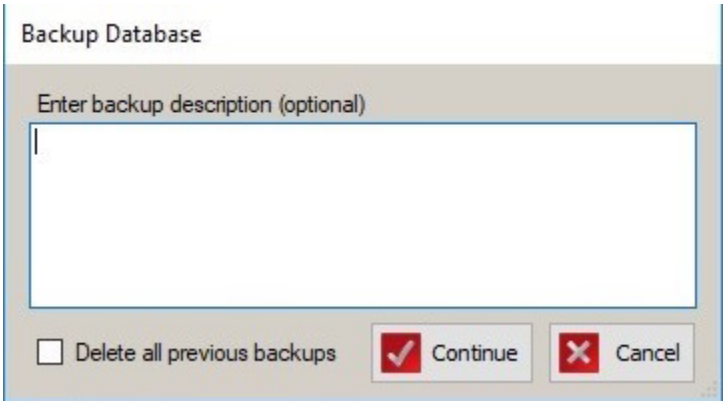

Figure A-6: Backup Database Form

4. An Information pop-up widow appears when the database backup action is completed. The election project database backup file will be saved in the NAS folder at the following location:
<NAS root folder >\<Election Project Name >\<DB Backups>

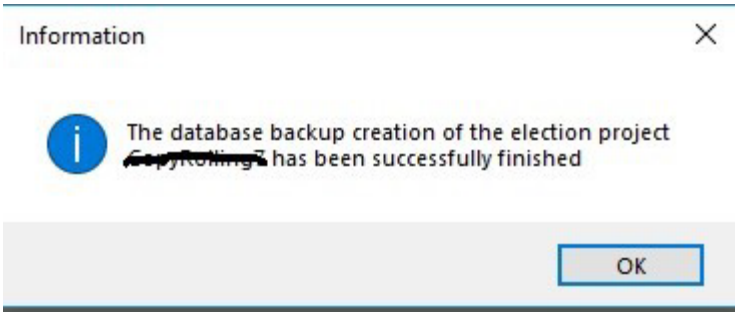

Figure A-7: Information

A.8 Restore Database

The purpose of this feature is to restore the election project database from the backup made by the **Backup Database** feature described in the previous section. All database backups of the given election project database are stored in one backup file. The path of this file is:
<NAS PATH >\<PROJECT FILE NAME >\DB Backups.

The user can choose which backup to use for the restore process.

To restore the election project database, follow the steps below:

1. Click Election Project menu and select the Restore Database option, see Figure A-8.

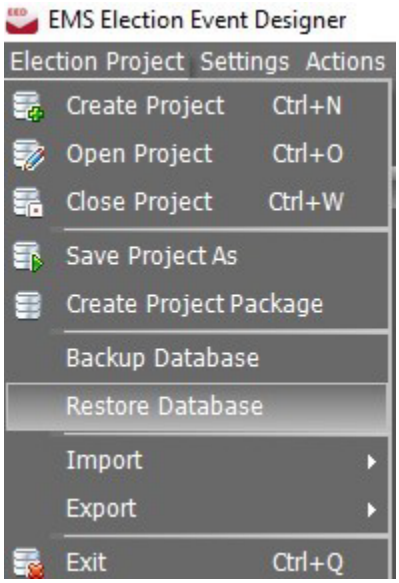

Figure A-8: Restore Database

2. The Restore Database form appears, see Figure A-9. This form contains:

- The table with the list of all database backups included in the full database backup file for the given election project.
- The Election project status after restore drop-down list. This list contains the list of election statuses which depends on the current election project status and the selected backup election project status. After the election project database is restored from the selected backup, the election project status will be automatically set to the status selected in the Election project status after restore drop-down list. Some additional actions will be executed during that automatic election project status transition (i.e. results deletion, ballot files deletion etc.). Which additional actions will be executed depends on the selected election project status in the dropdown list.
- • The text field containing the detailed list of the above mentioned additional actions. This text field is placed below the Election project status after restore drop-down list.

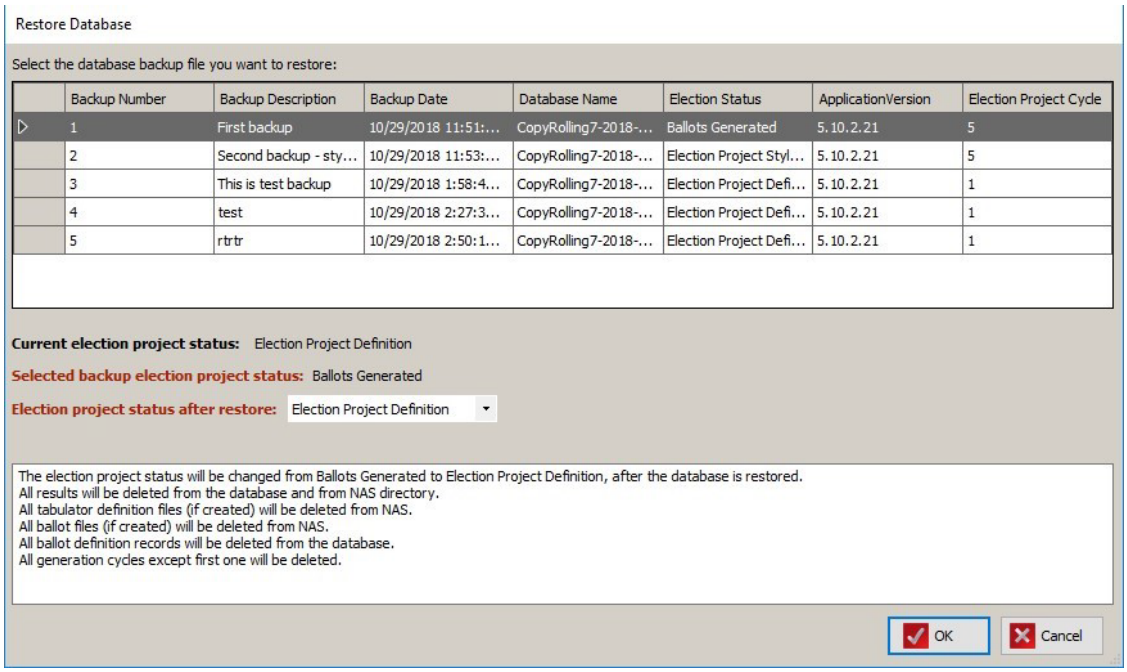

Figure A-9: Restore Database Form

NOTE: If the election project status selected in the Election project status after restore drop-down list is equal to the status of the selected backup than this text field will be an empty (the election status will remain the same after the database restore and there is no need to perform any additional actions).

3. The Restore election project database form will appear.

4. Click **Restore** to start restoring the database, see Figure A-10.

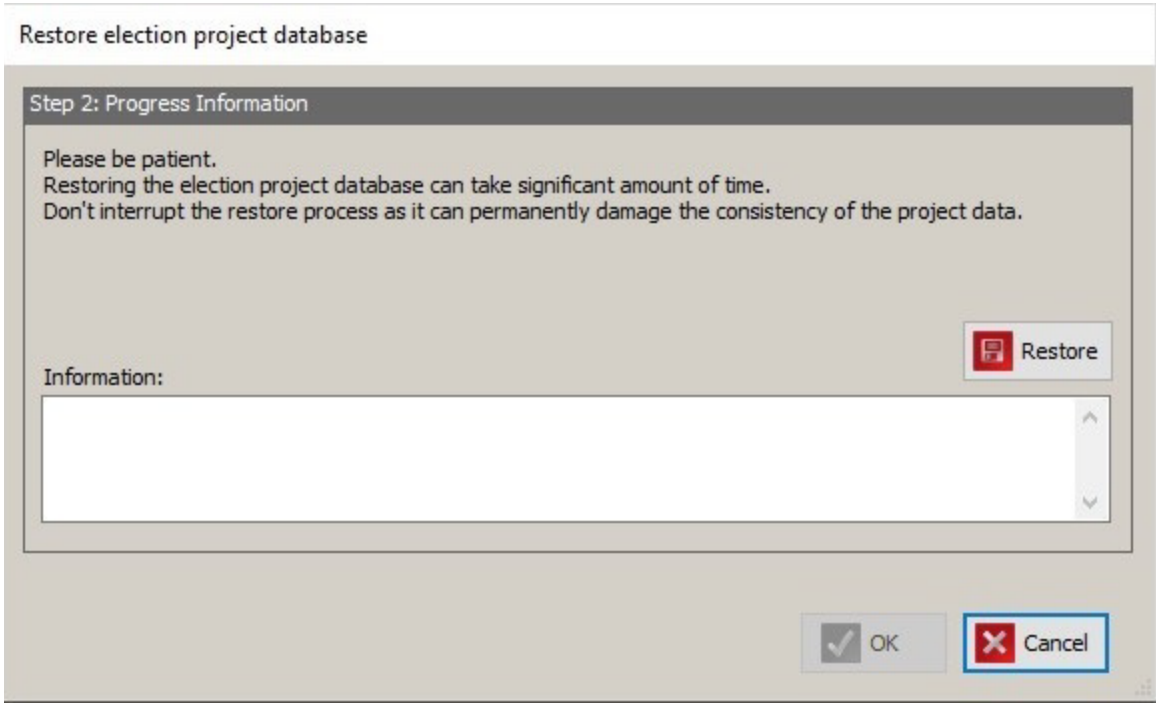

Figure A-10: Restore Election Project Database

5. After the restore database process finishes, click **OK**, see Figure A-11.

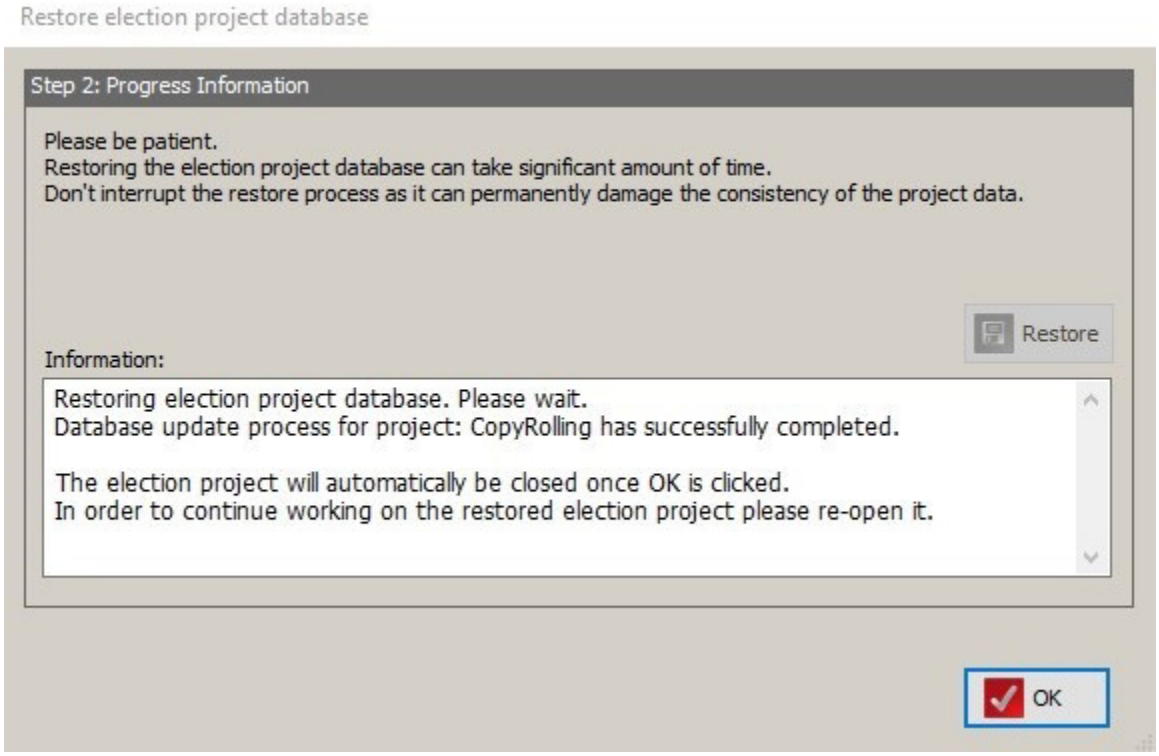

Figure A-11: Restore Election Project Database Finished

6. The election project will be automatically closed. To continue working on the restored election project you have to re-open it.

A.9 Updating the EMS Database

To update the EMS Database, perform the following steps

1. Expand the **Administration** menu, the **System Settings** submenu, and click the **Update EMS Database** option.
2. The Update EMS Database screen appears (see Figure A-12). This dialog also presents you with the following options:
   - Updating reports and transformations to their latest versions (enabled by default).
   - Updating permissions (disabled by default). This option is enabled only in case the project was opened by the 'Techadvisor' user.

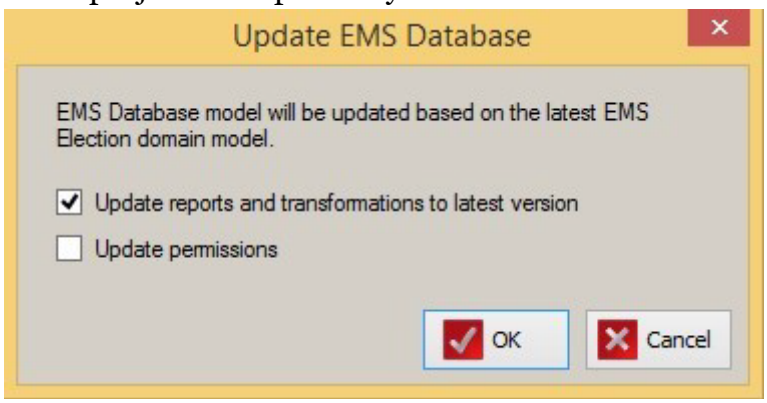

Figure A-12: Update EMS Database Dialog

3. Check/uncheck the desired options to specify how the EMS database should be updated. Click **OK**.
4. A progress bar appears. Please note that updating an EMS Database can take a significant amount of time. If permissions are being updated, another progress bar will appear.

5. After this process is done, the Information screen appears confirming that the database was updated successfully, see Figure A-13.

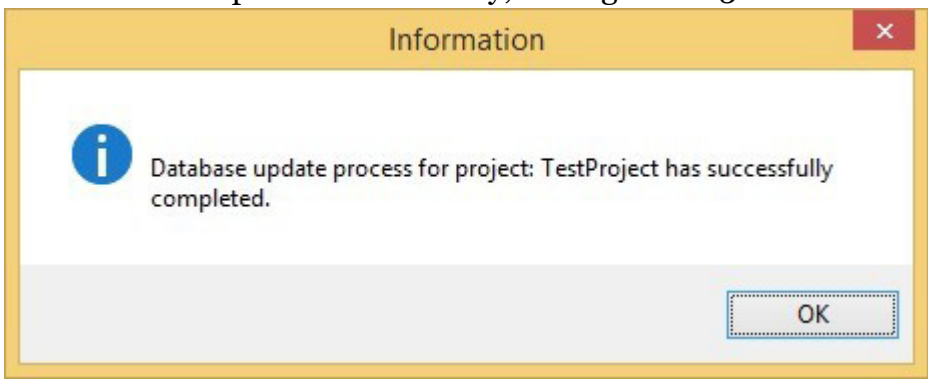

Figure A-13: Database Update Complete

NOTE: In case project permissions were being updated, the project will be automatically closed at the end of the update process. A dialog will appear to inform the user, see Figure A-14.

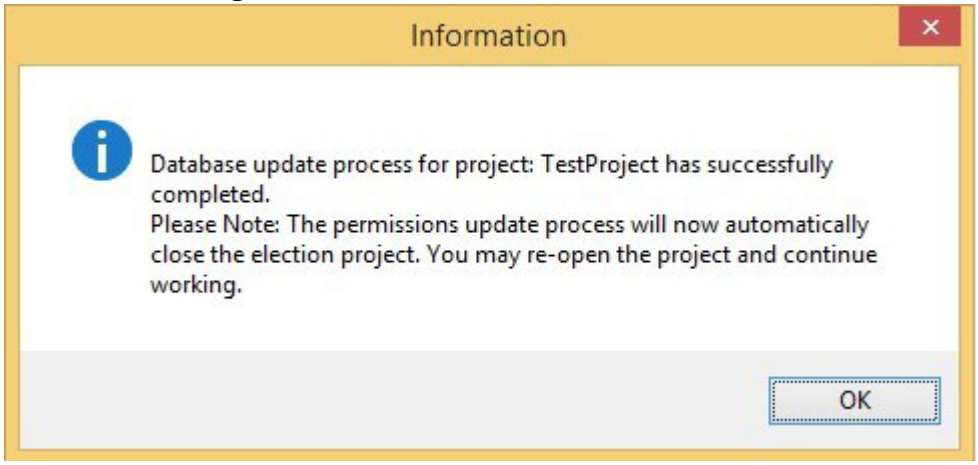

Figure A-14: Permissions Updated - Closing Election Project

6. Click **OK**.

NOTE: The process of updating a project to a new version of EMS (EED) also requires the user to re-import of Template keyword file. Older versions of Template keyword files, previously imported into the project, might not be compatible with the newer versions of EMS. To import the .tco file refer to the section 4.11 Importing the Template Keywords File (TCO).

A.10 Handling Obsolete Projects

After the EMS database update has completed, the updated project can be marked as obsolete. It may happen when the project has a very old version, at the moment

of the update, and when the user tries to open that project a message displays to inform the user of the project's obsolescence. Please see the image below:

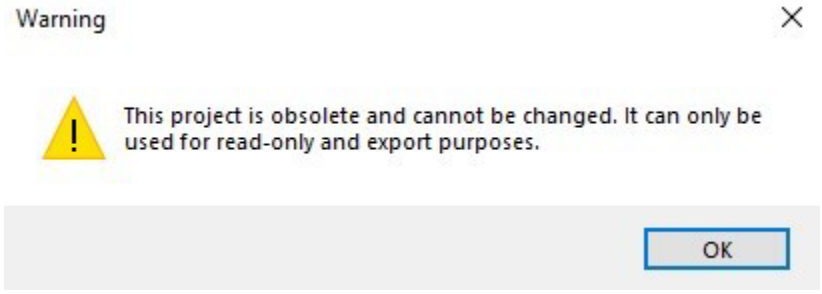

Figure A-15: Warning message

Information about project status can be found at the Election event properties dialog, please see section 4.5. An obsolete project is a read-only project to which no changes can be done. This project can be used for exporting in EDT.

If the user tries to add or change any entity the user will receive an appropriate message, see Figure A-16:

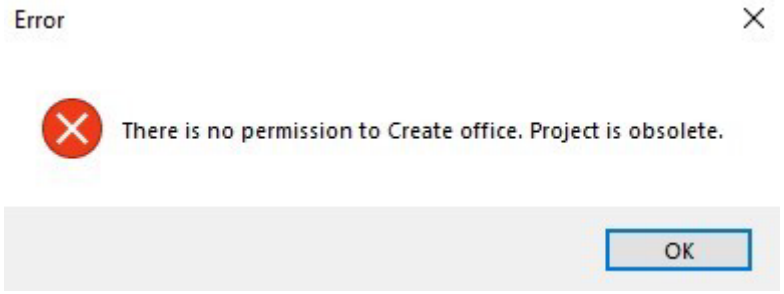

Figure A-16: Error message

A.11 Changing Scanning Configuration

To change the default settings for scanning parameters, perform the following steps. Note that you must be logged on as a Technical Advisor to do so:

1. Click on the Administration menu, System Settings submenu, and click on the Scanning Configuration option.
2. The Scanning Parameter Settings appears.
3. This functionality is related to the scanning resolution used when scanning ballots using tabulators and scanners from the Democracy Suite R ImageCast R product family. Each tab contains a number of fields:
   - **Threshold Low**: The lower threshold of mark detection on the ballot in the percentage of marked pixels.
   - **Threshold High**: The upper threshold of mark detection on the ballot in the percentage of marked pixels.
   - **Normal DPI**: The average dots per inch.

- **DPI X**: The horizontal scanning resolution from the point of view of the scanner.
- **DPI Y**: The vertical scanning resolution from the point of view of the scanner.
- **Writein Threshold Low**: This is the lower threshold percentage for write-in areas.
- **Writein Threshold High**: This is the higher threshold percentage for write-in areas.
- **Signature Box Threshold**: This is the threshold percentage for Signature boxes (DROboxes), DRO boxes only have one threshold value, since they cannot have ambiguous marks.
- **Signature Box Margin**: This value makes sure that a margin is included when scanning the DRO-box (or signature box). This margin is calculated in 1/100ths of points (1/7200 of an inch).

NOTE: The DPI settings influence the conversion of ballot coordinates from inches to pixels, which are the type of coordinates used by the scanner.

NOTE: The CF200 tab only has the Signature Box threshold, since CF200 cannot handle write-ins.

NOTE: The scanning parameters should only be changed by an advisory of the Dominion Voting Systems engineering group. When creating a new project, these settings will be set at their default values. The default values represent the calibrated values. Settings should be left at the default values unless the Dominion Voting Systems engineering group recommend otherwise. The fields accept values between zero and one thousand. Entered changes will not revert to the default values. If you are using red ovals, new threshold values must be set.

A.12 Upgrade Reports

When a user creates a new election project, a set of Default Transformations files are created on the EMS NAS server. However, a new set of reports and transformations can be provided by the EMS team if necessary, in which case the default reports must be upgraded. After the reports are upgraded, they need to be imported into the election project.

To upgrade the reports, perform the following steps:

1. Select the Administration menu, System Settings submenu, and select the Upgrade Reports item.
2. The Select Package(s) screen appears. Navigate to the package folder.
3. Select the compressed/zipped package file that needs to be imported and click on the **Open** button.

4. After the transformation package has successfully upgraded, an information dialog will appear on the screen. Click on the **OK** button to close the dialog.

NOTE: Be sure to import the report and transformations package into the election project after it has been upgraded.

To ensure that the new report(s) are upgraded successfully, open the Document Manager viewer. Go to the 'NAS' folder, 'Common' subfolder, and 'Reports Package'.

A.13 Importing Security Files

Your tabulator(s) will require keyGen and keyExchange security files if the election project uses Mode 2 or Mode 3 security paradigms, respectively. These files are loaded onto the exchange card(s) used to program your tabulator(s) and are typically retrieved from the EMS NAS server.

To import your security files, perform the following steps. You must be logged in as a Technical Advisor to perform this operation:

1. Expand the Administration Menu, System Settings submenu and click on the Security Files option.
2. Navigate to the security files that have been provided by the Dominion Voting Systems administrator. Click **OK**.
3. After the files have been successfully imported, a screen appears confirming that the files have been imported. Click **OK**.

A.14 Upgrading Template Keywords

Upgrade Template Keywords option uploads a new version of .tco file in the static directory. To upgrade template keywords, perform the following steps:

1. Expand the Administration, System Settings submenu and and select Upgrade Template Keywords.
2. The Select Package(s)' screen appears. Navigate to the package folder.
3. Select the compressed/zipped package file to be imported and click on **Open**.
4. After the package has successfully upgraded, an information dialog appears on the screen. Click **OK** to close the screen.

A.15 Upgrade ICE Configuration Files

Election Management System (EMS) store several static, configuration files on NAS\Common folder. If some of that files should be changed (upgraded) or

added, this mechanism allows user to upload file defined by Dominion, that will update files on NAS\Common folder.

To upgrade ICE Configuration Files:

1. User receives ICE update package file from Dominion. File is in form of compressed archive.
2. Expand the **Administration** menu , select **System Settings** option.
3. Click **Upgrade ICE Configuration Files**.
4. Select ICE update package files dialog appears where user should select received ICE updated package file.
5. Click **Open**.
6. System will use data from selected file to update NAS\Common folder.

A.16 Obtain Grid Information

To obtain grid information:

1. Expand the **Administration** menu, select **System Settings** option.
2. Click Obtain Grid information.
3. Progress bar appears with number of steps equal possible number of grids (N) within the ballot style. Possible grids are visible on Ballot Style screen, Settings tab.
4. Progress should go from 1/N to N/N.
5. When finished, Save File screen appears. Proposed name should be equal to the Ballot Style object name and its identifier. Ballot Style object name is visible on Ballot Style screen, Settings tab (as root node). File format should be .zip and user should not change it (otherwise will not be able to extract it).

Post condition: Archive should contain empty ballots filled with boxes for each grid, each possible variable size of paper, each combination of voting box colour (black or red) and voting box shape (rectangle or oval). Line thickness should be equal to the thickness set in the Settings tab of Ballot Style dialog, see section 4.8.1. Each Grid directory should contain textual files for grid itself (list.txt together with its signature list.sha). File should contain:

- Distances of Start, Side and End marker center from page edges and its widths and heights
- Dimensions of horizontal markers (horizontal from machines point of view), their distance and distance of first horizontal center to start.
- Dimensions of vertical markers (vertical from machines point of view), their distance and distance of first vertical marker center to start.

- Voting box dimensions (width and height are from machines point of view) Each grid should have one textual file containing number of voting marks in horizontal and vertical direction (from the machines point of view).

A.17 Validating the Current State of the Election Project

To check on the state of your Election Project:

1. Expand the Action menu, and click Validate Current State.
2. A screen appears with summary information about the existing entities within your project. Click **Continue** to proceed, or **Cancel** to cancel the process.
3. A screen appears in the event that errors or warnings are detected. Click **Close** to confirm. If there are no errors/warnings, you receive confirmation that the validation completed without any issue.

A.18 Setting Security Parameters on a Tabulator Level

If your election project has multiple tabulators, or you added new tabulators during the 'Ready for Elections' stage, security parameters may be set on a tabulator level.

To set the type of cryptography for the additional tabulator(s), perform the following steps:

1. Open the Tabulator Properties screen and select the **Security** option.
2. Click Prepare Exchange Card.
3. The Warning message appears. Insert the exchange card and click OK.

A.19 Networking

1. Click Create New.
2. The Result Transfer Settings screen appears, see Figure A-17. It is used for configuring parameters. such as ISP and File transfer server. 3. Enter 'Name' and 'Global Order'.
3. Select one of the Communication Protocol types from the drop-down menu: 'FTP' or 'TCP/IP'.
4. 'Retry Control' defines number of connecting attempts to service provider.
5. 'Retry Interval' defines interval between two connecting attempts.

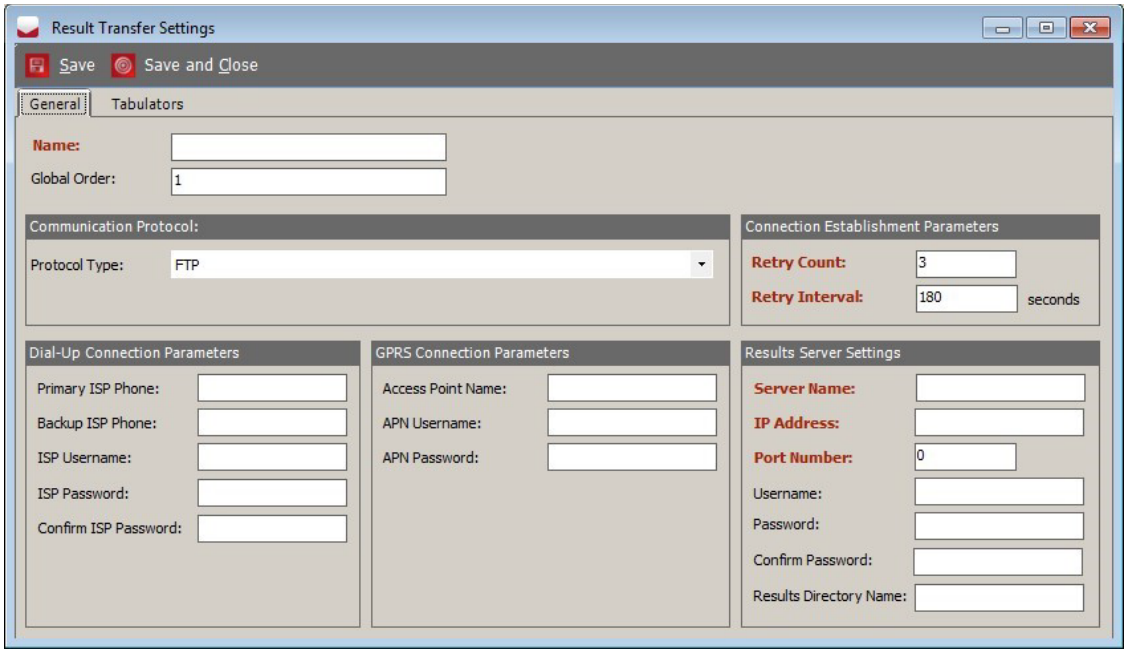

Figure A-17: Result Transfer Settings dialog

6. 'Under 'Dial-up Connection parameters' type the 'ISP Username and 'ISP Password' given to you by your service provider.
7. Type in the information provided by your service provider under the 'GPRS Connection' section.
8. In 'Results Server Settings' enter the 'Server Name', 'IP Address', 'Port Number', username, password, and results directory name.
9. To associate it to tabulators click **Tabulators** and click **Connect**.
10. When done, click **Save and Close**.

A.20 Modifying Localizations when ICX device is used

To modify the Localization files, please follow the steps bellow:

1. Place the project package (.zip and .sha file) on the local/server, where EED is installed.
2. Open EED application.
3. From the top toolbar choose the option **Administration - Restore EMS Database** and restore the .zip file of the project package.
4. Click Browse.

5. The file browser window displays. (For more information on restoring the EMS database, see section A.6).
6. Select the project and click **Open**. The blank fields are now populated.
7. Click **OK**. A Step 2 window displays.
8. Click OK. A Step 3 window displays.
9. Click **Restore**. A status bar displays.
10. From top toolbar select the option **Election Project** and click **Open Project** and select your project.
11. A Login window displays. Enter the details.
12. Click **OK**.
13. Go to **\NAS \Common \Resources \ImageCast X \localizations** and open JSON file using Notepad ++ or any similar editor, edit the necessary changes and save the file, see images bellow.

NOTE: Do not change key, just values in JSON file

For example on how to change text on the button "Cast your ballot" to "Print your ballot", see images below. You only change the value on the right side of the colon (:) - "Cast your ballot", The key ("confirm dialog cast ballot yes":) stays the same.

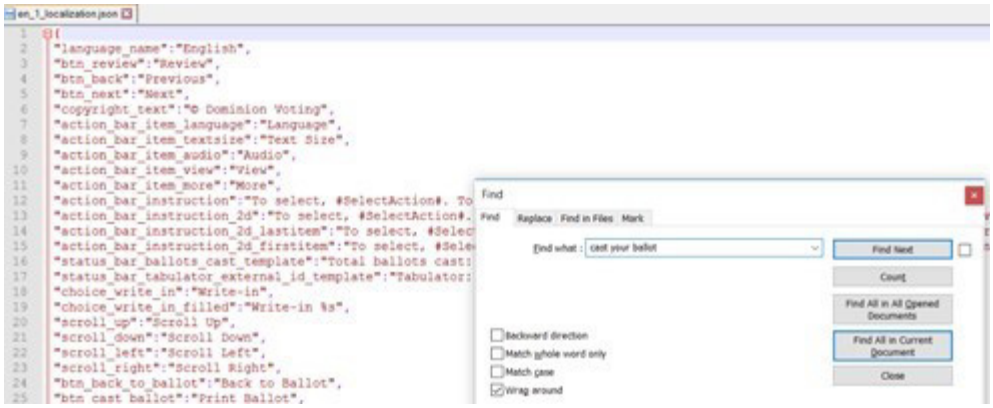

Figure A-18: Searching the Value

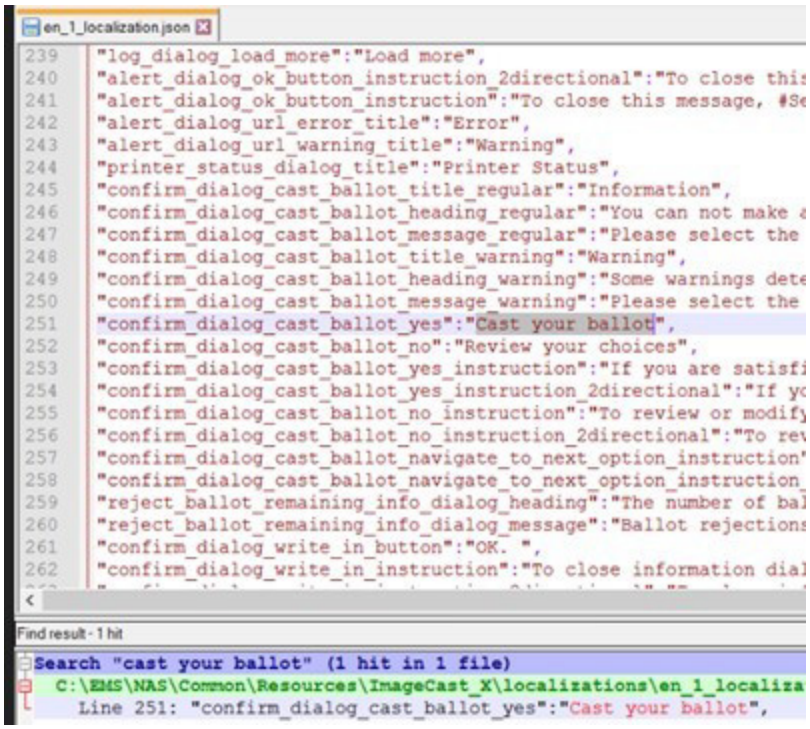

Figure A-19: Before Changing the Value

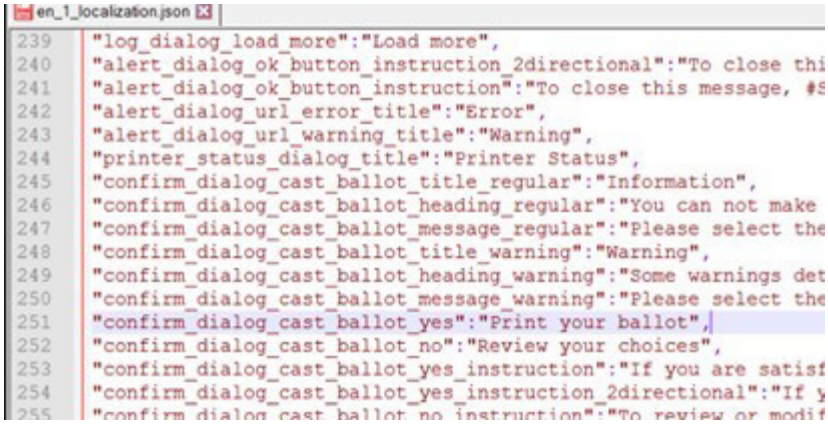

Figure A-20: After Changing the Value

14. From EED's top toolbar, select **Settings** - **Election Event Properties**, see Figure A-21.

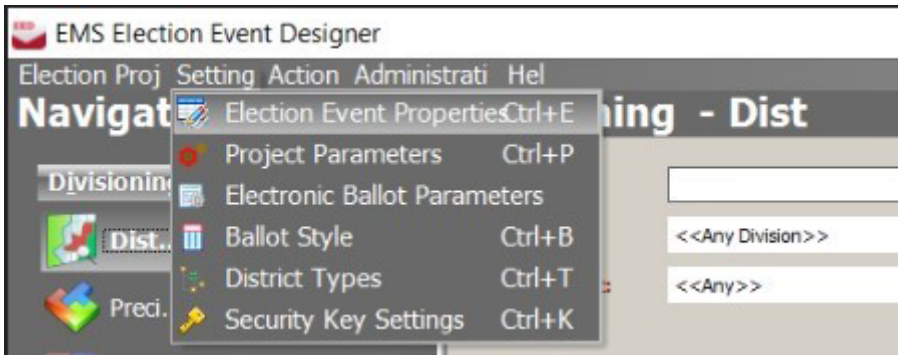

Figure A-21: Election Event Properties

15. From the modal window, for the Election Project Status, choose the option Ballots Generated from the drop-down menu.
16. Click **Apply**.
17. Click **Continue**. The project will return in the previous phase. (The project has changed the status to Ready For Elections, see Figure A-22.

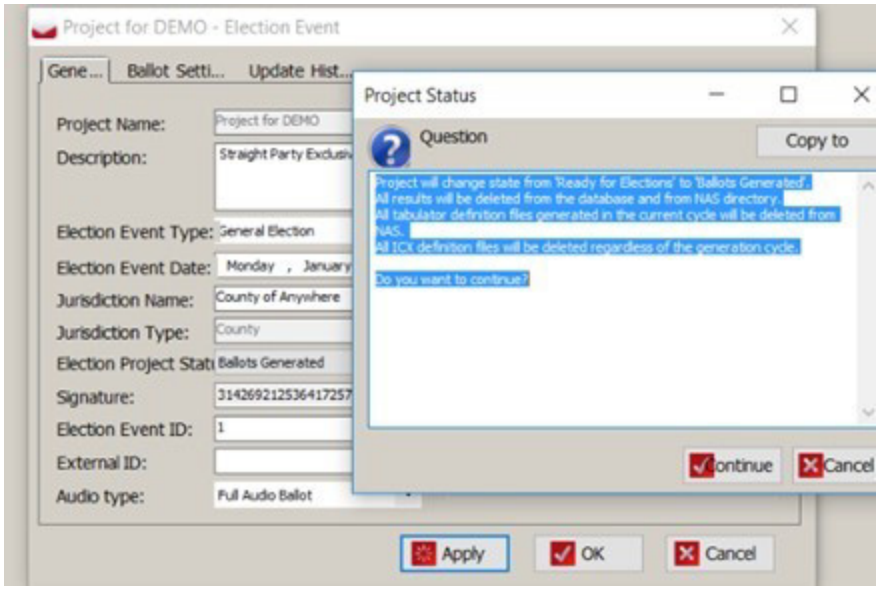

Figure A-22: Project Status

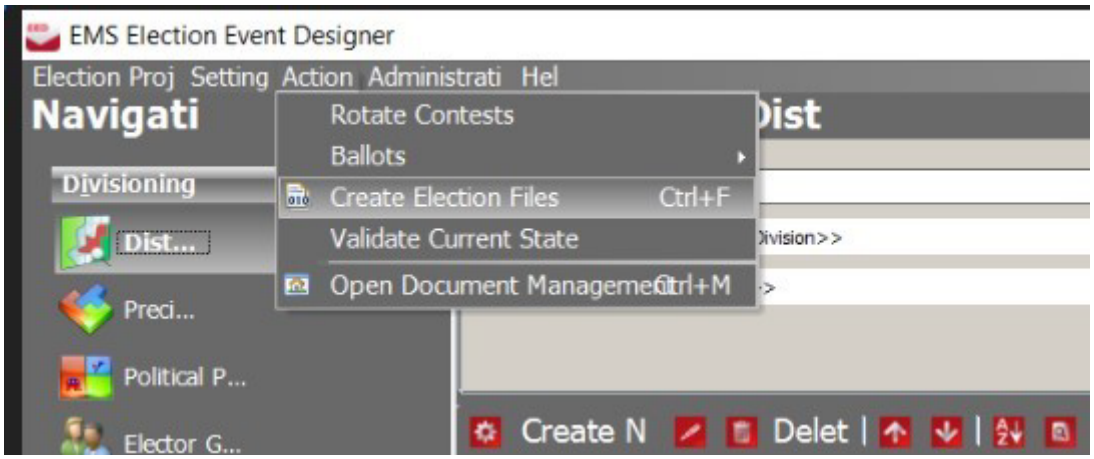

Figure A-23: Create Election Files

18. From the top toolbar select **Action** and choose the option **Create Election Files**, see Figure A-23.
19. The Create Election Files window displays.
20. Click **OK**.
21. A status bar displays. Click **OK**.
22. The project has changed the status to Ready For Elections.

Once this is completed, the **.dat** file will have been updated with the new localizations. The election file **(.dat)** is placed on the following location: **\NAS \Project for DEMO \ElectionFiles \EPSData \<programming group folder>**

APPENDIX B: REPORTING

Reports are divided into Divisioning, Election Event, Tabulation, Localization and Administration sections. Additional reports based on XSL transformations which are imported into the election project can be found in the Basic Report group section B.7.

B.1 Creating Reports

Reports placed in Divisioning, Election Event, Tabulation, Localization and Administration sections can be created in the following way:

The **Report Name** drop-down menu contains a list of available reports for the selected **Reports Group**.

1. Select report and click **Create New**. The Report editor screen appears.
2. In the Report editor screen, set the report parameters. Beside the parameters which are common for all reports, report editor screen may contain additional parameters for selected report.
3. Click **Create** and choose to only Preview, Export or Save created report on the NAS repository, see Figure B-1.
4. Reports saved on NAS repository can be viewed, deleted or exported.

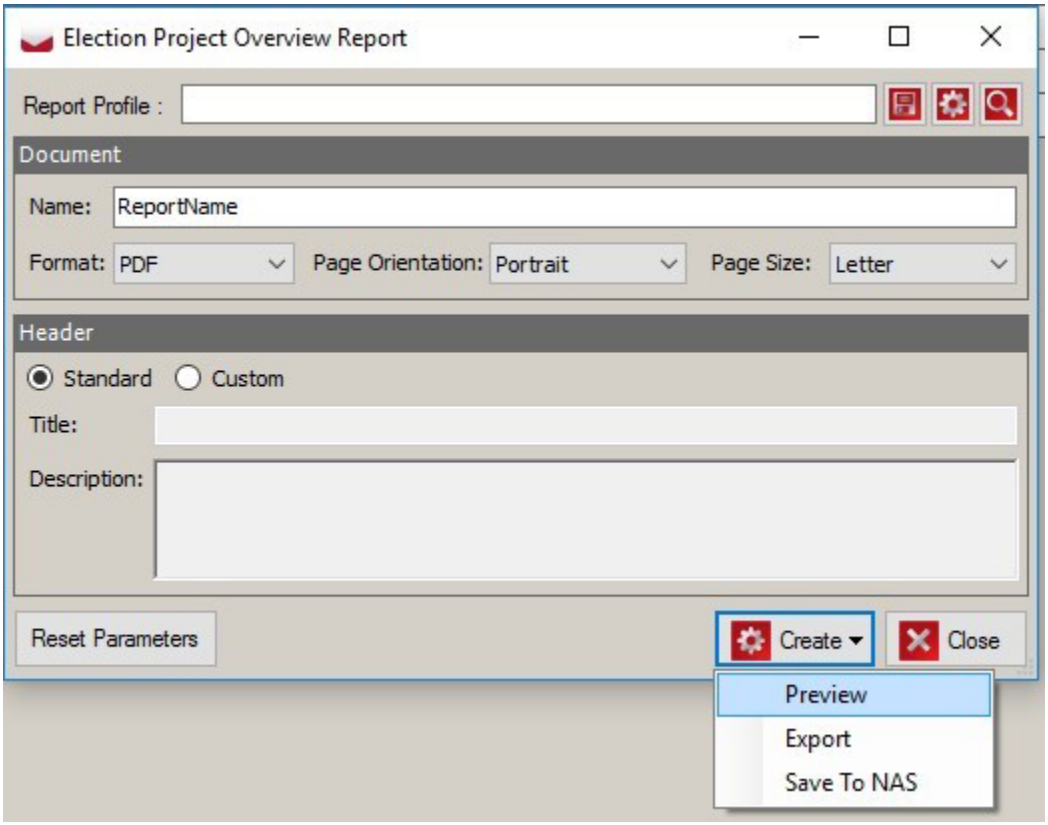

Figure B-1: Creating Report

B.1.1 Common Report Parameters

The following parameters are common for all reports:

1. **Document name**: User can set report file name. Timestamp will be appended.
2. **Document format**: Report can be created in pdf, excel or word format.
3. **Page Orientation and Size**: Use can set pdf page size and orientation.
4. **Header**: Report header contains the title and description. Standard header has the report name as the title and the description includes the election project description, the election event type, the election event date and the jurisdiction name. Users can customize header text (title and description) by selecting **Custom** option.

B.1.2 Report Profiles

To save the report parameters settings:

- For each report, create a report profile.
- To save the changes in the current profile, click **Save**.

Figure B-2: Report Profile

- To view the existing report profiles, click **Browse**. The Report profiles screen appears, see Figure B-3.

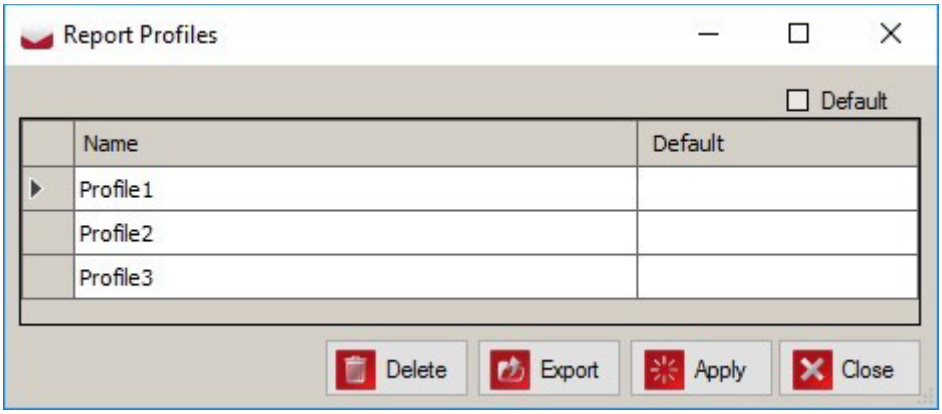

Figure B-3: Report Profiles Screen

- To mark report profile as default, select and check the **Default** check box. The Default report profile will automatically be applied when report editor screen is opened.
- To apply report profile select it and click **Apply**.
- To delete report profile(s) click **Delete**.

- To export report profile(s) click **Export**. This saves the selected the report profile(s) as a separate XML file(s) that can be imported into another election project.

B.1.2.1 Import Report Profile

To import Report Profile, perfom the following steps:

1. Select Election Project\Import\Report Profile option in the Main Menu.
2. Navigate to report profile xml file
3. The Import Report Profile screen appears, see Figure B-4. Before clicking **Import**, you can change report parameters.
4. Click **Import**. Once complete, the Import Finished screen displays.
5. Click **Close** to exit the Import Report Profile screen.

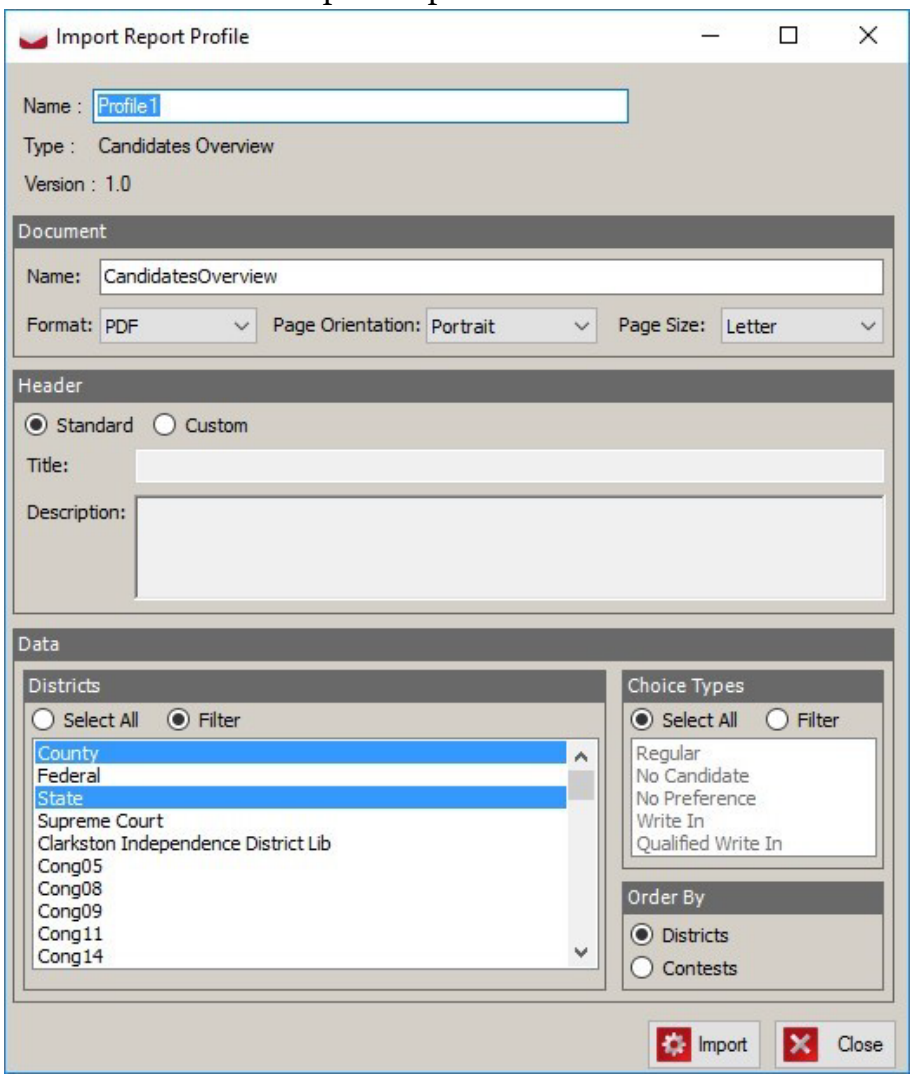

Figure B-4: Import Report Profile Screen

B.2 Divisioning Report Group

B.2.1 District Types

This report shows all district type properties and associated districts. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in the report.

B.2.2 Districts

This report shows all district properties and associated precincts. In addition to common report parameters:

1. User can choose between multi-column or tabular layouts. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in the report.

B.2.3 Precincts

This report shows all precincts properties and associated districts and portions. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.2.4 Precincts Profile

This report shows precincts, portions and the relationship from portions to districts of the varying types. Precinct and portions are shown vertically, if a precinct has explicit portions, it will not be listed. District types are pivoted horizontally (one column per district type). In addition to common report parameters:

1. User can choose which district types to exclude from reports.
    - User can exclude jurisdiction wide district types by clicking on **Jurisdiction Wide**.
    - User can exclude ”none-running” district types (none of districts are linked to contests) by clicking **Without Contest**.

2. User can choose to use district type abbreviations instead of names in reports (by default it is checked). If the abbreviations are not set, the report will show the name.
3. User can choose to use district abbreviations instead of names in report (by default it is checked). If the abbreviations are not set, the report will show the name.

B.2.5 Political Parties

This report shows political parties. In addition to common report parameters user can choose which data to include in report.

B.2.6 Elector Groups

This report shows all elector groups and associated contests. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in a multi column display. In tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.2.7 Elector Counts

This report shows precincts /portions and number of eligible voters per elector group and total number of eligible voters. Precinct and portions are shown vertically, if a precinct has explicit portions it is not listed.

B.2.8 Ballot Groups

This report shows ballot groups. In addition to common report parameters, user can choose which data to include in report.

B.2.9 Offices

This report shows offices. In addition to common report parameters user can choose which data to include in report.

B.2.10 District rotations

This report shows district rotations.

B.3 Election Event Report Group

B.3.1 Contests

This report shows all contests and associated choices. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.3.2 Contests Position On Ballot

This report shows all contests position on a ballot. In addition to common report parameters, user can filter ballot cards to be included in report by ballot content language.

B.3.3 Candidates Overview

This report shows all candidates voting options per contests. Report shows per contest some basic attributes (name, district, district type, vote for, disabled flag) and the list of choice presences. These are choices with party affiliations and are split according to jurisdictional rules, and write-ins that are separated per position. Attributes shown per choice are: name, party affiliation (using abbreviation) and disabled flag. In addition to common report parameters:

1. User can choose which districts to include in report.
2. User can filter candidates by type.
3. User can choose to order contest by district order or contest order.

B.3.4 Contests Precinct Rotation

This report shows contests rotation and assigned precincts.

B.3.5 Choices

This report shows choices. In addition to common report parameters user can choose which data to include in a report.

B.3.6 Ballot Types

This report shows all ballot types and associated ballot cards, contests and precincts. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in a multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.3.7 Card Types

This report shows all card types and associated ballot types, ballot cards and contests. In addition to common report parameters:

1. User can choose between multi-column or tabular layout By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.3.8 Ballot Cards

This report shows all ballot cards and associated contests and precincts . In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.3.9 Ballot Cards Distribution

This report shows ballot cards per ballot type, per ballot type and precinct or per ballot type and precinct portion. In addition to common report parameters:

1. User can choose to show ballot cards per ballot type, per ballot type and precinct or per ballot type and precinct portion.
2. Depending on selection user can choose which data to include in the report.

B.3.10 Ballot Type Troubleshooting

If election officials want to inspect how contests are presented in a voting session on an actual tabulator, the user could do this by starting a voting session for every possible ballot type in the system, and inspect every contest. Ideally an election official would want to inspect all contests just once, since the presentation of a contest will be the same on all ballot types it appears on. To minimize the amount

of voting sessions an election official would have to start to cover all contests the ballot style trouble shooting report will figure out the smallest list of ballot types that cover all contests. The report will start with the largest ballot type containing the most contests, and then subsequently list the second largest ballot type in terms of contests not yet covered by the previous ballot types. The contests listed per ballot type do not represent the full list of contests for a given ballot type, but will only include contests not yet covered by previously listed ballot types. The list of ballot types will continue until all contests are covered. Each ballot type will include an activation code that can be used to start a session for that ballot type.

In addition to common report parameters:

1. User can choose ballot group, so only ballot types within a specific ballot group are included in report.
2. User can choose whether the rotation should be considered or not. If the option is selected, each contest will have all its rotations listed at least once. If the option is not selected, the rotations are ignored and each contest will be listed only once in the report.

B.3.11 Activation Codes

This report shows activation codes In addition to common report parameters, user can choose which data to include in report.

B.3.12 Election Project Overview

This report shows election event properties and numbers of District Types, Districts, Precincts, Precinct portions, Political parties, Elector Groups, Ballot Groups, Offices, Language profiles (broken down per purpose), Contests (broken down per type),Choices (broken down per type), Ballot Types, Card Types,

Ballot Cards, Counting Groups, Polling locations, Tabulators (broken down per type), Tabulator Users.

B.4 Tabulation Report Group

B.4.1 Polling Locations

This report shows polling locations and associated tabulators. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.4.2 Tabulators

This report shows tabulators and associated precincts. In addition to common report parameters:

1. 1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.
3. 3. User can group tabulators by Polling Location, Counting Group, Programming Group or Precinct.

B.4.3 Counting Groups

This report shows counting groups and list of associated tabulators. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.4.4 Programming Groups

This report shows programming groups and associated tabulators.

B.5 Localization Report Group

B.5.1 Language Profiles

This report shows language profiles and list of associated precincts. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.5.2 Contest Headings

This report shows contest headings and list of associated contests. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.

2. User can choose which data to include in report.

B.5.3 Ballot Text

This report shows ballot text for Election Event, Political Parties, Elector Groups, Contest Headings, Contests, Choices, Choice Groups, Ballot Cars Headers/ Footers, Screen/Print Ballot Headers. In addition to common report parameters:

1. User can choose which ballot elements to include in report.
2. User can choose which language profiles to include in report.

B.5.4 Audio Studio File Names

To import audio files, they have to be named in a specific convention. **Audio Studio File Names** report will give us the specification: Entity audio file name, name and text in order to be imported in the audio studio. This report shows included Election Event, Political Parties, Elector Groups, Contest Headings, Contests, Choices, Choice Groups, Screen/Print Ballot Headers. In addition to common report parameters:

1. User can choose which entities to include in the report.
2. User can choose which audio languages to include in the report.

B.5.5 Audio Import

This report is created automatically during the import of dynamic audio files package and it cannot be created on demand. Audio Import report shows all imported audio files and errors.

B.6 Administration Report Group

B.6.1 Application Users

This report shows application users. In addition to common report parameters:

1. User can choose between multi-column or tabular layout. By default, properties are presented vertically in multi column display. In the tabular display, the properties are presented horizontally.
2. User can choose which data to include in report.

B.6.2 Application Roles

This report shows application roles and their permissions.

B.6.3 Audit Log

From the moment the election project has been created, each action is recorded. The Audit Log is a centralized report that presents the time and date of any action that was performed by each user that was created and defined in Election Event Designer. In addition to common report parameters:

1. User can choose which users to include in the report.
2. User can choose the time period.

Signature Report

Signature report includes information whether all files on NAS Common repository are signed correctly.

B.7 Basic Report Group

Additional reports based on XSL transformations which are imported into the election project can be found in the Basic reports section. Basic reports are divided into Election Project, Divisioning, Election Event, Tabulation and System Report groups. The procedure for creating reports is the same for all. To create a report, perform the following steps:

1. Select the option from the **Report Name** drop-down menu. The drop-down menu contains a list of available reports for the selected Report Group.
2. Select the **Transformation Name**. You can choose between one of the presented options.
3. Click **Create Report**.
4. The creation of the report will take a few seconds. While the system collects all of the data needed to create the report, the progress bar appears. The report viewer will open upon completion.
5. Each report spreadsheet contains the election project and report name.

XML files can be converted into HTML or Excel by applying a chosen report transformation:

1. Select the XML report from the list of created reports.
2. Choose the **Transformation Name** option from the drop-down menu.
3. Click **Apply** to apply the chosen transformed report.

Created reports can be viewed, deleted and exported.

APPENDIX C: COMMON ACTIONS WITHIN ELECTION EVENT DESIGNER

The following tables outline the actions performed within the EMS Election Event Designer client application. Typically, these actions will appear in the context sensitive screen, or in dialogs throughout the application. Note that some of these actions have prerequisites, and thus cannot be performed prior to executing other actions.

	Create New	Click on the **Create New** button to create a new object in the database. This action is available in all context sensitive screens apart from Divisioning - Ballot groups and Election Event - Ballots. Note that in the reports section this button is called **Create Report.**
	Open/ Edit	After setting the filtering options (if any), select an object from the list and click on the **Edit** button to open and edit the object. The object can also be opened for editing by double-clicking on the record from the list. This action is available in the following context sensitive screens: Divisioning, Election Event, Tabulation, Localization and Administration.
	Delete	Select an object from the list and click on the Delete button to delete the object. This action is available in all screens except for the Administration - Application User main screen.
	Move Up	Select an object from the list and click on the **Move Up** button to move the object up on the list. This action is available in the Divisioning - Districts, Divisioning- EDs, Divisioning - Political Parties, Divisioning - Of- fices, Divisioning - Line, Election Event - Choices, and Localization - Headings screens. Objects can be re-ordered using the **Move Up** button only if sorting is not applied first.
	Move Down	Select an object from the list and click on the **Move Down** button to move the object down on the list. This action is available in the Divisioning - Districts, Divisioning - EDs, Divisioning - Political Parties, Divisioning - Offices, Division- ing - Line, Election Event - Choices, and Localization - Headings screens. Objects can be re-ordered using the **Move Down** button only if sorting is not applied first.

Table C-1: Common Actions: Context Sensitive Screen

	Sort	First, click **Search** to list all objects, and then click the **Sort** button to display the Advanced Sorting dialog window. It contains a list of Available Attributes that can be used to sort objects. Select the attribute(s) that you wish to sort by from the list, and click **Add**. The selected attributes will be added to the Selected Attributes list. You can rearrange the order of Selected Attributes to sort by with the use of the **Move Up** and **Move Down** buttons. Click **OK** to apply advanced sorting, or **Cancel** to exit the dialog. This action is available in every screen with the exception of the Election Event - Prototypes, Localization - Static Text, Localization - Templates, and Report Groups main screens.
	Print Preview	Click **Search** to display all available records. Next, click on the **Print Preview** button to display the Choose Columns dialog window. Select the columns you want on the report by checking the boxes next to them and then click on Continue. In the Print Dialog window, click **Print** and the report preview window will appear. Click on the **Print** icon to print the report. If a printer is connected, the report will be printed. Click **Close** to close the report window. This action is available in all screens except Divisioning - Ballot Groups, Election Event - Properties, Localization - Templates, and Report Groups main screens.
	Print Data	Click on the **Print Data** button to open the user's data in the Notepad application. From here you can use the print option. This action is available on the Application User dialog window in the Administration - Application User context sensitive screen.
	Create Batch	Click on the **Create Batch** button to create a batch of objects. This will display the Batch Creation dialog window that will differ depending on the context in which it is opened. This action is available in the Divisioning - District, Divisioning - EDs, Divisioning - Political Parties, Tabulation - Polling Places, and Tabulation - Tabulators context sensitive screens.
	Search	Click **Search** to display the records. Alternatively, select the criteria available to narrow down the search results. The criteria available for selection will differ depending on the context sensitive screen or dialog window in which the action is performed.

Table C-1: Common Actions: Context Sensitive Screen

	Create All Contests	Click on the **Create All Contests** button to create contests for selected offices. This action is available in the Divisioning - Offices screen.
	Generate Election Files	Click on the **Generate Election Files** button to generate elections files. This action is available in the Tabulation - Tabulators screen.
	Save	Click **Save** to save the changes made to the object. This action saves changes made to the object but does not close the active object dialog.
	Save and Close	Click **Save and Close** to save changes introduced to the object. This action saves the changes introduced to the object and closes the active object dialog.
	Connect	Click **Connect** to display a dialog window that lists objects available to connect to your project. This action is used in tandem with the **Search and Assign** or **Assign and Close** actions. Click **Search** to display available objects, select/highlight the object from the list and click **Assign** to connect/ associate the selected object(s) to the primary object. This action connects or associates the primary object to the other object or set of objects. For example, connect the Precinct to the Tabulator.
	Disconnect	Select the object(s) you wish to disconnect from the project, and click **Disconnect**. This action disconnects previously connected object(s).
	Add	Click **Add** to add an object to the primary object. Similar to the Connect action, this action allows users to add an object to other sets of objects.

Table C-1: Common Actions: Context Sensitive Screen

	Remove	Click **Remove** to remove object(s) from either the list of objects or the database
	Add/ Change Audio	Select the desired language profile and click **Add/Change Audio** to browse for, and upload, the audio file.
	Play Audio	Select the language profile on the object by double-clicking on it and click the **Play Audio** button to play the audio file.
	Save Audio to Disk	Click **Save Audio to Disk** to select the file destination and save the audio file on the local disk drive.
	Apply	Click **Apply** to save the changes made to the object. This action commits the set of entered changes but does not close the dialog. Use this action with the **OK** action.
	OK	Click **OK** to save the changes made to the object and close the object dialog window.

Table C-1: Common Actions: Context Sensitive Screen

APPENDIX D: SPECIFIC ACTIONS WITHIN ELECTION EVENT DESIGNER

	Disable	Click on the **Disable** button to disable an object. This action is applicable to Contest and Choice objects only. To **Enable** a disabled object, open the object and uncheck the box next to the **Disabled** label. The object can be disabled during any election project stage with the exception of the Election Project Styling stage. An object can be enabled in the Election Project Definition or Last Minute Definition stages.
	Generate PIN	Click on the **Generate PIN** button to generate or re-generate the Application PIN. This action is available on the Application User dialog window in the **Administration - Application User** context sensitive screen.
	Print Confirmation	Click on the **Print Confirmation** button to produce a confirmation containing the Democracy Suite ® Election Management System Computer Awareness and Data Security Compliance Statement in Microsoft Word. Print the statement and hand it out to the users. This option is only available if the user's status is "initial." This action is available on the Application User dialog window in the **Administration - Application User** context sensitive screen.
	Recreate	Click on the **Recreate** button to recreate Ballot Groups after introducing changes to Elector Groups. This action will delete the existing combinations and recreate them again. This action is available in the **Divisioning - Ballot Groups** context sensitive screen.
	Export	Click on the **Export** button to export the Digital Certification File for an Election Project. This action will open the Save As dialog window that will allow you to browse the local directories and select the location where you want to save the file. This action is available in **Settings - Election Event Properties**.

Table D-1: Specific Actions: Context Sensitive Screens and Dialog Windows

N/A	External ID	This option enables a view of the record ID imported into Election Event Designer from another system. Type in the ID number. This action is available in the **District Types**, **Election Event Properties**, **Divisioning - Districts**, **Divisioning - Precinct (EDs)**, **Divisioning - Political Parties**, **Divisioning - Elector Groups**, **Divisioning - Ballot Groups**, **Divisioning - Offices**, **Election Event - Contests**, **Election Event - Choices**, **Election Event - Ballot Types**, **Election Event - Ballots**, **Tabulation - Tabulators**, **Tabulation - Polling Places** and **Tabulation - Counting Groups** context sensitive screens.
N/A	Global Order	Global Order that can be defined by the user and defines order of all appearances of objects. That order will be used during ballot generation, reporting and other activities to define order of usages of those objects. For instance, changes of order of contest will affect list of contest on ballot. Order of candidates will affect candidate list in contest on ballot etc. This action is available in the **District Types**, **Divisioning - Districts**, **Divisioning - Precinct (EDs)**, **Divisioning - Political Parties**, **Divisioning - Elector Groups**, **Divisioning - Ballot Groups**, **Divisioning - Offices**, **Election Event Contests**, **Election Event - Choices**, **Tabulation - Tabulators**, **Tabulation - Polling Places**, **Tabulation - Counting Groups**, **Tabulation Programming Group**, **Tabulation - Networking** context sensitive screens
	Assign Values	This option allows you to change values within the system that have been generated by default. In doing so, you can manually change bulk amounts of values. This action is available on dialog windows in the Election Event Ballot Cards, Ballot Types, Card Types, Tabulation - Polling Places, Tabulation - Tabulators. Target field for Ballot contains: Description, File Name, Key in ID; For Polling Places: Polling Place Name and Polling Place Number; For Tabulators: Tabulator Name and Tabulator Number.

Table D-1: Specific Actions: Context Sensitive Screens and Dialog Windows

	Import	Click on the **Import** button to import the file needed for district rotations. This action will open the Open dialog window that will allow you to browse for the file you want to import. This action is available in **Divisioning - District Rotations**.
	Recreate Ballots	Click on the **Recreate Ballots** button to get consistent states of election data. This action is available in the **Election Event - Ballot Types** screen.
	Set Party	Click on the **Set Party** button to set the party for candidates. This action is available in **Election Event - Contests**.

Table D-1: Specific Actions: Context Sensitive Screens and Dialog Windows

APPENDIX E: USE CASES FOR APPLYING ELECTOR GROUPS AND BALLOT GROUPS

E.1 General Elections

The following example demonstrates the default behaviour in Election Event Designer (EED) regarding electoral groups and combinations when the user does not require different ballot types per precinct. This use-case matches a simple general election.

The intended outcome from this example is the following:

- To create a single ballot type with two contests: 'Senator X' and 'Proposal X'.

Not included in this example are:

- Federal, Absentee or other types of ballots.
- Rotations.

The user must perform the following steps:

1. **Create a New Project**: this will automatically create the default Electoral Group and Ballot Groups, both called 'Default'. No further electoral group related configuration is required by the user.
2. **Define Contests**: create two new contests 'Senator X' and 'Proposition X'. The system will automatically assign the 'Default' electoral group to both.
3. **Create Ballot Content**: select Actions on the top toolbar, select Ballots and then select Define Ballots Structure option from menu.

As a result of this configuration we should get one ballot type for the 'Default' ballot group containing both contests.

1. Ballot type 1 - EGC: 'Default', Contests: 'Senator X', 'Proposition X'.

E.2 General Elections with Federal and Absentee ballots

This example demonstrates a general election where there are different ballot types per precinct. In this example, we have the following contests:

- 'Senator X': federal level contest.
- 'Governor X': state level contest.
- 'County Commissioner X': county level contest

The intended outcome is to produce three different ballot types:

- **Official ballot**: includes all federal, state and county level contests ('Senator X', 'Governor X', 'County Commissioner X').
- **Absentee ballot**: includes all federal and state level contests, but excludes the county level contests ('Senator X', 'Governor X').
- **Federal Absentee ballot**: includes the federal level contest only ('Senator X').

Not included in this example are:

- Since this is a general election there are no separate ballot types per political party.
- Rotations.

The user must perform the following steps:

1. Define Elector Groups:
   - Rename the 'Default' group to 'County contests' for reasons of clarity.
   - Create a new group 'Federal contests'.
   - Create a new group 'State contests'.
2. Define Ballot Groups:
   - Rename the 'Default' combination to 'Official ballots' for reasons of clarity, add three new groups: 'County contests', 'Federal contests' and 'State contests' to the combination.
   - Create a new group 'Absentee ballot' and add the following groups: 'Federal contests' and
   - 'State contests'.
   - Create a new group 'Federal Absentee ballot' and add the group 'Federal contests'.
3. Create Contests:
   - Create contest 'Senator X' and attach to 'Federal contests' elector group.
   - Create contest 'Governor X' and attach to 'State contests' elector group.
   - Create contest 'County Commissioner X' and attach to 'County contests' elector group.
4. Creation of Districts, Precincts, Political Parties, Candidates: will not be explained in this example.
5. Create Ballot Content: select Actions on the top toolbar, select Ballots and then select Define Ballots Structure option from menu.

As a result we should have three ballot types:

1. Ballot type 1 - EGC: 'Official ballots', Contests: 'Senator X', 'Governor X', 'County Commissioner X'.
2. Ballot type 2 - EGC: 'Absentee ballot', Contests: 'Senator X', 'Governor X'.
3. Ballot type 3 - EGC: 'Federal Absentee ballot', Contests: 'Senator X'.

E.3 Closed Primary

The following example demonstrates how to configure a closed primary where ballot types are separated per political party and also include a non-partisan ballot type. Our example has two offices:

- **Senator**: represents a partisan office on a county level will have separate contests per political party (Democratic and Republican).
- **Proposal**: represents a non-partisan contest - single contest ('Proposition X'), will be on each ballot.

The intended outcome is to produce three different ballot types

- Ballot 1: Senator Democratic, and Proposition X (Democratic ballot).
- Ballot 2: Senator Republican, and Proposition X (Republican ballot).
- Ballot 3: 'Proposition X' (Non-Partisan ballot).

Not included in this example are:

- Absentee, Federal or other type of ballots.
- Rotations.
- We will not track number of voters per political party.

The user must perform the following steps:

1. **Define Political Parties**: we have to define two political parties: 'Democratic' and 'Republican'.
2. **Define Electoral Groups**: besides the existing 'Default' group (which was created automatically when project was created), we have to do the following:
    - Create electoral group 'Democratic group' and set for the Political Party: 'Democratic'.
    - Create electoral group 'Republican group' and set for the Political Party: 'Republican'.
    - Rename 'Default' electoral group to 'All' for reasons of clarity.
3. **Define Offices**: create two offices:
    - 'Senator' on the county level, Office Type: Candidacy.
    - 'Proposition' on the county level, Office Type: Measure.

4. **Define Contests**: create three contests:
    - Name: ‘Senator Dem’, Office: ‘Senator’, Electoral Groups: when new contest is created, system automatically adds default electoral group ‘All’. We do not need this group here and it should be removed. Then add ‘Democratic group’.
    - Name: ‘Senator Rep’, Office: ‘Senator’, Elector Groups: when new contest is created, system automatically adds default electoral group ‘All’. We do not need this group here and it should be removed. Then add ‘Republican group’.
    - Name: ‘Proposition X’, Office: ‘Proposition’, Electoral Group: leave ‘All’.
5. Creation of Districts, Precincts, Candidates: will not be explained in this example.
6. Define Ballot groups:
    - Rename ‘Default’ combination, to ‘Non-Partisan ballot’ for reasons of clarity. It has attached electoral group ‘All’ by default.
    - Create group: ‘Democratic ballot’, it should contain following electoral groups: ‘Democratic group’ and ‘All’.
    - Create group: ‘Republican ballot’, it should contain following electoral groups: ‘Republican group’ and ‘All’.
7. Create ballot content: select Actionson the top toolbar, select Ballots and then select Define Ballots Structure option from menu.

As the result of this configuration we should get three ballot types:

1. Ballot type 1 - EGC: ‘Democratic ballot’, Contests: ‘Senator Dem’, ‘Proposition X’.
2. Ballot type 2 - EGC: ‘Republican ballot’, Contests: ‘Senator Rep’, ‘Proposition X’.
3. Ballot type 3 - EGC: ‘Non-Partisan ballot’, Contests: ‘Proposition X’.

E.4 Closed Primary with Federal and Absentee ballots

In the example below we define a closed primary that include several ballot types per party. Our example will have the following offices:

- **Senator**: represents a partisan office on a federal level.
- **Governor**: represents a partisan office on a state level.
- **County Commissioner**: represents a partisan office on a county level.
- **Proposal**: represents a non-partisan contest.

The first three offices will be partisan and will have separate contests per political party (Democratic and Republican party). Proposal office will have only one contest which will be on every ballot.

Furthermore, we will have the following distinction between ballots:

- **Official**: include all federal, state and county level contests.
- **Absentee**: include all federal, state level contests, but exclude the county level contests.
- **Federal Absentee ballots**: only allowed to vote on senator office and proposal. In other words these ballots only include the federal level contests.

The intended outcome is to produce seven different ballot types:

- **Democratic Official**: with the Democratic contest for Senator, Governor, County Commissioner and a non-partisan contest for Proposal.
- **Democratic Absentee**: with the Democratic contest for Senator, Governor and a non-partisan contest for Proposal.
- **Democratic Federal Absentee**: with the Democratic contest for Senator and a non-partisan contest for Proposal.
- **Republican Official**: with the Republican contest for Senator, Governor, County Commissioner and a non-partisan contest for Proposal.
- **Republican Absentee**: with the Republican contest for Senator, Governor and a non-partisan contest for Proposal.
- **Republican Federal Absentee**: with the Republican contest for Senator and a non-partisan contest for Proposal.
- **Non-Partisan**: only contains the proposal contest.

Not included in this example are:

- Rotations.
- We will not track number of voters per political party.

The user must perform the following steps:

1. **Define Political Parties**: We have to define two political parties: ‘Democratic’ and ‘Republican’.
2. Define Electoral Groups:
    - Create electoral group ‘Democratic contests’ and set for the Political Party: ‘Democratic’.
    - Create electoral group ‘Republican contests’ and set for the Political Party: ‘Republican’.
    - Create new group ‘Federal contests’.

- Create new group ‘State contests’.
- Rename ‘Default’ electoral group to ‘Non-Partisan contests’ for reasons of clarity.

3. Define Ballot Groups:
   - Rename ‘Default’ combination to ‘Official Non-Partisan ballot’ for reasons of clarity.
   - Create group ‘Official Democratic ballot’ and add following elector groups: ‘Democratic contests’, ‘Federal contests’, ‘State contests’, ‘County contests’ and ‘Non-Partisan contests’.
   - Create group ‘Official Republican ballot’ and add following elector groups: ‘Republican contests’, ‘Federal contests’, ‘State contests’, ‘County contests’ and ‘Non-Partisan contests’.
   - Create group ‘Democratic Absentee ballot’ and add following elector groups: ‘Democratic contests’, ‘Federal contests’, ‘State contests’ and ‘Non-Partisan contests’.
   - Create group ‘Republican Absentee ballot’ and add following elector groups: ‘Republican contests’, ‘Federal contests’, ‘State contests’ and ‘Non-Partisan contests’.
   - Create group ‘Democratic Federal Absentee ballot’ and add following elector groups: ‘Democratic contests’, ‘Federal contests’ and ‘Non-Partisan contests’.
   - Create group ‘Republican Federal Absentee ballot’ and add following elector groups: ‘Republican contests’, ‘Federal contests’ and ‘Non-Partisan contests’.
4. **Define Offices**: Create four offices:
   - ‘Senator’ on the county level, Office Type: Candidacy.
   - ‘Governor’ on the county level, Office Type: Candidacy.
   - ‘County Commissioner’ on the county level, Office Type: Candidacy.
   - ‘Proposition’ on the county level, Office Type: Measure.
5. **Define Contests**: Create seven contests:
   - ‘Senator Dem X’, elector groups: ‘Democratic contests’ and ‘Federal contests’.
   - ‘Senator Rep X’, elector groups: ‘Republican contests’ and ‘Federal contests’.
   - ‘Governor Dem X’, elector groups: ‘Democratic contests’ and ‘State contests’.
   - ‘Governor Rep X’, elector groups: ‘Republican contests’ and ‘State contests’.

- ‘County Commissioner Dem X’, elector groups: ‘Democratic contests’ and ‘County contests’.
- ‘County Commissioner Rep X’, elector groups: ‘Republican contests’ and ‘County contests’.
- ‘Proposal X’, elector groups: ‘Non-Partisan contests’.

6. Creation of Districts, Precincts, Candidates: will not be explained in this example.
7. Create Ballot Content: select Actions on the top toolbar, select Ballots and then select Define Ballots Structure option from menu.

As the result of this configuration we should get seven ballot types:

- Ballot type 1 - EGC: ‘Official Non-Partisan ballot’, Contests: ‘Proposal X’.
- Ballot type 2 - EGC: ‘Official Democratic ballot’, Contests: ‘Senator Dem X’, ‘Governor Dem X’, ‘County Commissioner Dem X’, ‘Proposal X’.
- Ballot type 3 - EGC: ‘Official Republican ballot’, Contests: ‘Senator Rep X’, ‘Governor Rep X’, ‘County Commissioner Rep X’, ‘Proposal X’.
- Ballot type 4 - EGC: ‘Democratic Absentee ballot’, Contests: ‘Senator Dem X’, ‘Governor Dem X’, ‘Proposal X’.
- Ballot type 5 - EGC: ‘Republican Absentee ballot’, Contests: ‘Senator Rep X’, ‘Governor Rep X’, ‘Proposal X’.
- Ballot type 6 - EGC: ‘Democratic Federal Absentee ballot’, Contests: , ‘Senator Dem X’, ‘Proposal X’.
- Ballot type 7 - EGC: ‘Republican Federal Absentee ballot’, Contests: ‘Senator Rep X’, ‘Proposal X’.

E.5 Open Primary

In the example below we define an open primary where a single ballot type is created containing both partisan and non-partisan contests.

- Office A: partisan office that will have one Democratic contest and one Republican contest associated.
- Office B: partisan office that will have one Democratic contest and one Republican contest associated
- Office C: non-partisan office that will have one contest.

To create this ballot type we could simply follow the example where all contests are assigned to the ‘Default’ electoral group and will all be placed on the ‘Default’ ballot type. But if we want to enable the tabulator to detect cross-over voting on the ballots the user will have to configure electoral groups and combinations in the manner described in the example.

The intended outcome is to produce one ballot type, containing all defined contests. When this ballot is cast on the tabulator it should not allow the voter to cross-over between parties on a single cast ballot. This means that all votes for partisan contests should fall within a single political party, if this is not the case any votes for partisan contests would be invalid. Votes cast for non-partisan contests are not affected by this rule.

Not included in this example are:

- There are no rotations.
- We will not track number of voters per political party.

The user must perform the following steps:

1. **Create Project**: make sure to set the election type to 'Open Primary' during project creation.
2. **Define Political Parties**: we have to define two political parties: 'Democratic' and 'Republican'.
3. **Define Electoral Groups**:
    - Create electoral group 'Democratic contests' and set for the Political Party: 'Democratic'. Make sure that the checkbox 'Apply Cross-over Rule' is checked.
    - Create electoral group 'Republican contests' and set for the Political Party: 'Republican'. Make sure that the checkbox 'Apply Cross-over Rule' is checked.
    - Rename 'Default' electoral group to 'Non-partisan contests' for reasons of clarity. The 'Apply Cross-over Rule' checkbox should remain unchecked.

In an open primary each of the parties that will have their own partisan section on the ballot will be assigned the order in which their partisan sections are presented on the ballot. There are two fields the EED user must set to ensure the correct order for the elector groups that have **Apply Crossover Rule** checkbox set:

- Column index must be configured to indicate the column in which column the party should appear.
- The Global order must be set to follow the order of the partisan section, this is important to have the parties appear in the right order on the ICX party selection screen.

4. Define Ballot Groups:
    - Assign all electoral groups to the 'Default' ballot group.
5. **Define Offices**: Create three offices:
    - **Office A** on the county level, Office Type: Candidacy • **Office B** on the county level, Office Type: Candidacy

- **Office C** on the county level, Office Type: Candidacy

6. **Define Contests**: Create five contests:
   - **Office A-Dem**, elector groups: 'Democratic contests'.
   - **Office A-Rep**, elector groups: 'Republic contests'.
   - **Office B-Dem**, elector groups: 'Democratic contests'.
   - **Office B-Rep**, elector groups: 'Republic contests'.
   - **Office C**, electoral groups: 'Non-partisan contests'.
7. Creation of Districts, Precincts, Candidates: will not be explained in this example.
8. Create Ballot Content: select Actions - Ballots - Define Ballots Structure option from menu.
9. As the result of this configuration we should get one ballot type:
   - Ballot type 1 EGC: 'Default', Contests: Office A-Dem, Office A-Rep, Office B-Dem, Office B-Rep, Office C.

E.6 Open Primary with Federal-only ballots

In the example below we define an open primary with cross-over rule applied, that has two types of ballots Regular (includes all contests) and Federal (which only includes the federal contests). Our example will have the following offices:

- United States Senator: represents a partisan office on a federal level
- County Commissioner: represents a partisan office on a local level
- Council Member at large: represents a non-partisan office at a local level

The first two offices will be partisan and will have separate contests per political party (Democratic and Republican party). Council Member at large will have only one contest. Since it is an open primary partisan contests from every party will appear on every ballot, but the federal ballot will not include the local contests (partisan or non-partisan).

The user must perform the following steps:

1. **Define Political Parties**: we have to define two political parties Democratic and Republican
2. Define Electoral Groups:
   a. Create Democratic electoral group and mark Apply Crossover Rule. Link to the Democratic party
   b. Create Republican electoral group and mark Apply Crossover Rule. Link to the Republican party.

c. Rename Default electoral group to Non-Partisan for reasons of clarity. Note: do not mark Apply Crossover Rule

d. Create Non-Federal electoral group. Note: do not mark Apply Crossover rule.

In an open primary each of the parties that will have their own partisan section on the ballot will be assigned the order in which their partisan sections are presented on the ballot. There are two fields the EED user must set to ensure the correct order for the elector groups that have **Apply Crossover Rule** checkbox set:

- Column index must be configured to indicate the column in which column the party should appear.
- The Global order must be set to follow the order of the partisan section, this is important to have the parties appear in the right order on the ICX party selection screen.

3. Define Ballot Groups
   a. Use Default combination and add all electoral groups. This combination will represent ballot with all the contests.
   b. Create group Federal and add all electoral groups except the Non-Federal electoral group.
4. **Define offices** - create three offices:
   a. United States Senator on state level
   b. County Commissioner on county level
   c. Council Member at large on city level
5. Define contests:
   a. Senator Dem, elector groups: Democratic.
   b. Senator Rep, elector groups: Republican.
   c. County Commissioner Dem, elector groups: Democratic, Non-Federal
   d. County Commissioner Rep, elector groups: Republican, Non-Federal
   e. Council Member at large, elector groups Non-Partisan, Non-Federal
6. Creation of Districts, Precincts, Candidates: will not be explained in this example.
7. Create Ballot Content: select Actions on the top toolbar, select Ballots and then select Define Ballots Structure option from menu.

As the result of this configuration we should get two ballot types:

- Ballot type 1 - EGC: All, Contests: Senator Dem, Senator Rep, County Commissioner Dem, County Commissioner Rep, Council Member at large.
- Ballot type 2 EGC: Federal, Contests: Senator Dem, Senator Rep.

E.7 Decline to State Primary

In the example below we define a modified closed primary called 'Decline to state'. This is a modified closed primary system where an elector comes to a polling location and is allowed to decline to state the party that the voter would like to choose for. Some parties allow voting for these persons although they would typically provide a subset of the normal party ballot. If a party allows this then for this party we would have two separate ballot types: one regular including all partisan contests for that party and one decline to state version which typically offers a smaller set of contests. Both ballot types would still include all non-partisan contests. If a party chooses not to allow 'Decline to state', only a single ballot type for that party would be needed.

There will be two partisan offices 'Senator' and 'County Commissioner' and one non-partisan office 'Proposition X'. In the example the Democratic party allows Decline to state voters, but the Republican party does not.

The intended outcome is to produce four different ballot types:

- **Democratic Regular**: with the Democratic contest for Senator, County Commissioner and a non-partisan contest for Proposal.
- **Democratic DTS**: with the Democratic contest for Senator and a non-partisan contest for Proposal.
- **Republican Regular**: with the Republican contest for Senator, County Commissioner and a non-partisan contest for Proposal.
- **Non-Partisan**: only contains the proposal contest.

Not included in this example are:

- Rotations.
- We will not track number of voters per political party.

The user must perform the following steps:

1. **Define Political Parties**: We have to define two political parties: 'Democratic' and 'Republican'.
2. Define Electoral Groups:
    - Create electoral group 'Democratic contests' and set for the Political Party: 'Democratic'.
    - Create electoral group 'Republican contests' and set for the Political Party: 'Republican'.
    - Create new group 'Regular only contests'. This group is created for contests that should appear on the Regular ballots only.
    - Rename 'Default' electoral group to 'Non-Partisan contests' for reasons of clarity.

3. Define Ballot Groups:
    - Rename ‘Default’ combination to ‘Non-Partisan ballot’ for reasons of clarity.
    - Create group ‘Democratic Regular ballot’ and add following elector groups: ‘Democratic contests’, ‘Regular only contests’ and ‘Non-Partisan contests’.
    - Create group‘Democratic DTS ballot’ and add following elector groups: ‘Democratic contests’ and ‘Non-Partisan contests’. By not including the ‘Regular only contests’ group, those contests will not appear on this ballot type.
    - Create group ‘Republican ballot’ and add following elector groups: ‘Republican contests’ and ‘Non-Partisan contests’. The user does not need to add ‘Regular only contests’ group since there is no DTS ballot for the Republican party.
4. **Define Offices**: Create three offices:
    - ‘Senator’ on the county level, Office Type: Candidacy.
    - ‘County Commissioner’ on the county level, Office Type: Candidacy.
    - ‘Proposition’ on the county level, Office Type: Measure.
5. **Define Contests**: Create seven contests:
    - ‘Senator Dem X’, elector groups: ‘Democratic contests’.
    - ‘Senator Rep X’, elector groups: ‘Republican contests’.
    - ‘County Commissioner Dem X’, elector groups: ‘Democratic contests’ and ‘Regular only contests’.
    - ‘County Commissioner Rep X’, elector groups: ‘Republican contests’.
    - ‘Proposal X’, elector groups: ‘Non-Partisan contests’.
6. **Creation of Districts, Precincts, Candidates**: will not be explained in this example.
7. **Create Ballot Content**: select Actions, select Ballots and then select Define Ballots Structure option from menu.

As the result of this configuration we should get four ballot types:

1. Ballot type 1 - EGC: ‘Non-Partisan ballot’, Contests: ‘Proposal X’.
2. Ballot type 2 - EGC: ‘Democratic Regular ballot’, Contests: ‘Senator Dem X’, ‘County Commissioner Dem X’, ‘Proposal X’.
3. Ballot type 3 - EGC: ‘Democratic DTS ballot’, Contests: ‘Senator Dem X’, ‘Proposal X’.
4. Ballot type 4 - EGC: ‘Republican ballot’, Contests: ‘Senator Rep X’, ‘County Commissioner Rep X’, ‘Proposal X’.

APPENDIX F: RENDERING TEXT WITH LIGATURES

Certain languages are scripted with ligatures put very simply, each character changes appearance depending on its position in the word, and the adjacent characters. Examples of such languages are Arabic, Bengali and Hindi, amongst others. To ensure such text is correctly displayed on the ballots, special steps must be performed in EED. The Election Event Designer currently has implicit support for text with Arabic ligatures. If you intend on rendering a language with other ligatures such as Bengali or Hindi, you need to properly setup the text document to have the ligatured rendered as images instead of text, to ensure correct appearance. To achieve this, when styling ballot content:

1. Open text document page setup (File - Page setup), see Figure F-1.
2. Select the Render text as image option.

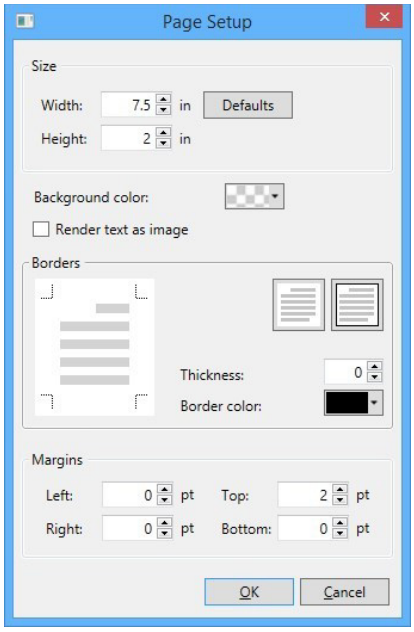

Figure F-1: Page Setup screen

Please note that the above steps must be performed manually for each text document which will contain ligatures not supported by EED, even when the document contains a mixture of languages where at least one contains ligatures. Text rendered as image may not appear as smooth as regular text on printed documents. To fix this appearance issue, you can turn off (deselect) the forcing of the PDF X1-a standard from Ballot Style Settings (see Figure F-2). Please note that if you choose to do this, the rendered paper ballot PDF will contain a mixture of RGB and CMYK color spaces, which is not optimal and not preferred by the printers.

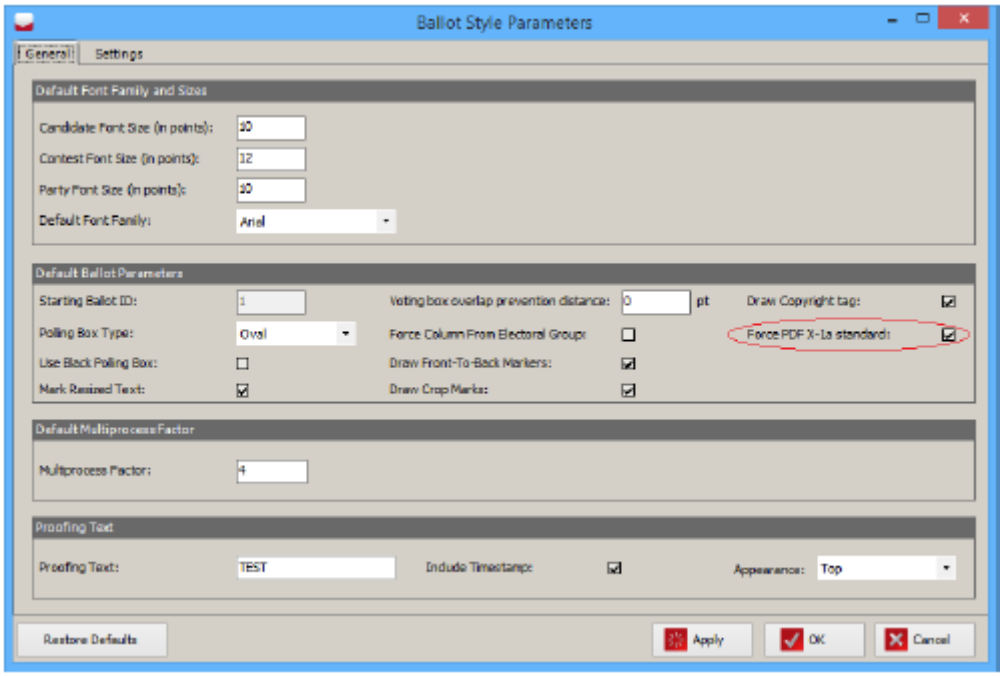

Figure F-2: Ballot Style Parameters screen

APPENDIX G: LANGUAGES AND PREFERRED FONTS

Following table, see Figure G-1, shows list of recommended fonts that could be used for different languages. Third column displays whether **Render text as image** option should be set in text document properties in order to get appropriate result on PDF.

Language	Fonts	Render text as Image	Word wrap supported
English	In general all fonts used for latin languages are acceptable	No	Yes
Spanish	In general all fonts used for latin languages are acceptable	No	Yes
Tagalog	In general all fonts used for latin languages are acceptable	No	Yes
Khmer	Any font that can handle Khmer language because text is rendered as image. Tested with: Khmer UI.	Yes	Yes
Korean	Malgun Gothic Gulim	No	Yes
Vietnamese	In general all unicode fonts used for latin languages are acceptable. Tested with: Arial, Verdana, Calibri	No	Yes
Hindi	Any font that can handle Hindi language because text is rendered as image. Tested with: Mangal, Arial Unicode MS.	Yes	Yes
Japanese	Microsoft JhengHei, MS Mincho	No	No
Filipino	In general all fonts used for latin languages are acceptable	No	Yes
Chinese	PMingLiU MingLiU SimSun	No	No
Bengali	Vrinda	Yes	Yes
Punjabi	Raavi	Yes	Yes

Figure G-1: Supported fonts table

NOTE: For Khmer and Thai languages place manually space characters between words to help renderer identify words.

G.1 Word Wrap

Paragraph properties have **word wrap** check box. By default it is checked and it indicates to text renderer to break text line by words (doesn't split words into more lines). In some cases, for example for Chinese language, user may want to change this behaviour. If user unchecks this property on paragraph then all text lines in paragraph will be broken on character level: rendering engine will fill text line with as much as possible characters not taking into account any words. See table G-1

NOTE: Turning off word wrap may cause unexpected behavior for languages that have special ligatures (like Hindi, Bengali, Arabic etc.).

APPENDIX H: AUTOMATICALLY ADJUST TEXT DOCUMENT SIZE

Default text document size is obtained from server depending on object it relates to. For example text document for ballot header will have different size than document for choice template. This initial (default) size is just guideline for user to have idea how big text will be on the ballot. In moment of rendering, document size still can be changed: for example user defines contest header template and connects it to contests with different column span.

If users doesn't like proposed size he/she can change it: open **File** menu item of text document and choose **Page Setup**, see Figure H-1. User can set desired width or height or use button **Defaults** to obtain default size from server.

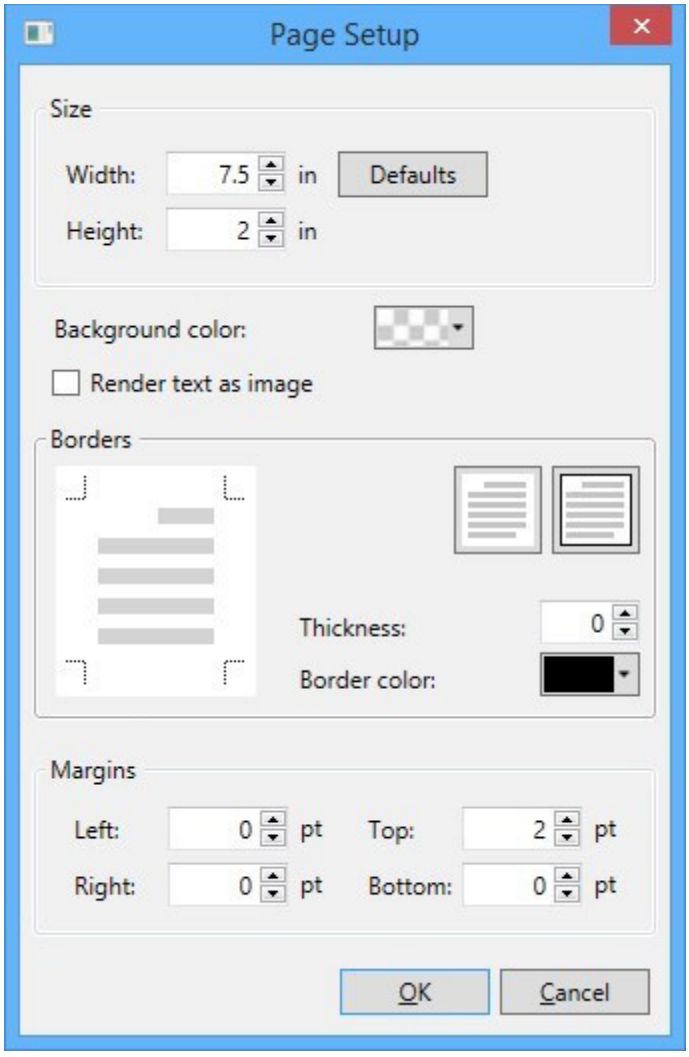

Figure H-1: Page Setup screen

NOTE: For some objects (choice, choice group, contest header and contest heading) when using defaults option, application will require from user to enter values for span. Horizontal span is actually number of columns that text will occupy and vertical span is number of vertical markers that document will occupy, see Figure H-2.

Figure H-2: Span screen

APPENDIX I: USING BALLOT ARTWORKS CREATED OUTSIDE OF EMS

Ballot artworks (paper and full face for ICX) can be externally created and designed by third party. These ballot artworks need to be based on our ballot grids and specifications and election project definition. Synergy Mapping Module is application used for connecting ballot artworks created outside of EMS with target election project. Through Synergy Mapping Module all required mapping data can be defined and imported together with ballot artworks to election project. Since ballots are based on election project definition importing is only allowed when election project is in Ballot Styling stage. Importing ballot artworks from Synergy Mapping Module leads election project to the Ballot Generated stage. Depending on the import setup additional, artifacts for paper ballot artworks such as PNGs and PCLs will also be generated during import process. Imported ballot artworks can be viewed in **Election Events** - **Ballots** option.

I.1 Screen Full face ballots for ICX tabulators

ICX tabulators can be configured to present on screen content defined in the Translations section 5.16 or non-EED designed full face ballot artworks (PNGs) imported to election project through Synergy Mapping Module. These type of ballots are assigned to language profiles created with the screen content purpose. After import full face ballots for ICX are shown in the **Election Events** - **Ballots** option, see Figure I-1. You can apply any of the available filters to narrow down the search for full face ballots. Furthermore, there is content filter which can be used for presenting only screen full face or only paper ballots.

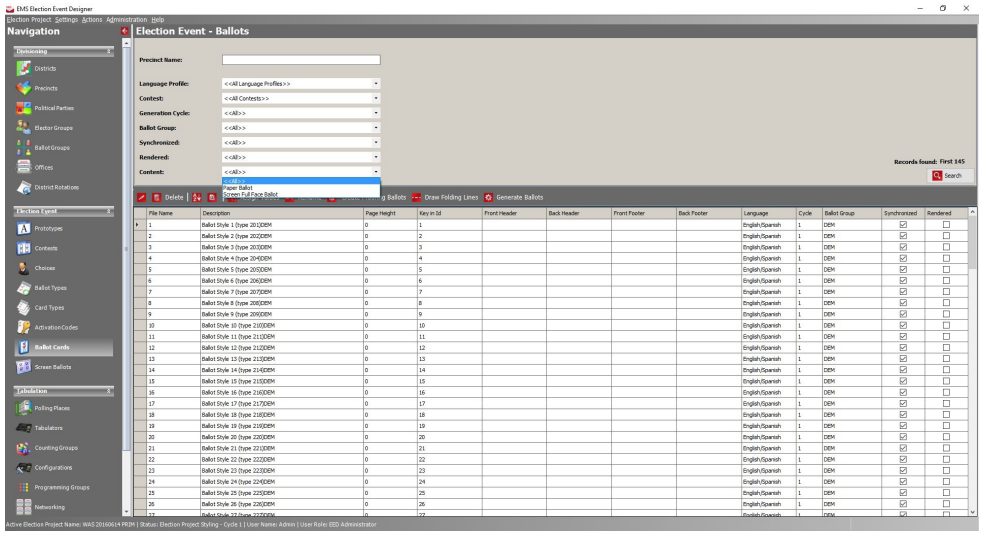

Figure I-1: Election Event - Ballots - Screen Full Face Ballot option

NOTE: The preview button in the ballot editor will be disabled when full face ballot is opened.

APPENDIX J: ICP VOTER MESSAGE IDS

The following table lists the message IDs and the associated messages to be used when creating an ICP voter display message file in a desired language. The messages in the new language will override the default English messages when displayed on the ICP tabulator's LCD screen.

Message ID	English Displayed Voter Message
1	Prev page
2	Next page
3	More
4	Blank contest
5	Under-vote warning
6	Over-vote
8	Valid ballot
13	Warning! ^**********^ Blank ballot detected. Please use the proper marking pen and fill in the targets completely. ^^ To return and correct the ballot press 'Return'. ^^ To cast the ballot as-is press 'Cast'.
14	Warning! ^**********^ Blank ballot detected. Please use the proper marking pen and fill in the targets completely.
16	Warning! ^**********^ Invalid ballot detected. Please ensure you received the correct ballot.
18	Warning! ^**********^ Paper inserted was misread and could not be verified as a valid ballot. Please verify ballot and refeed.
22	Warning! ^**********^ DRO initials not found. Please see poll worker for assistance.
23	Multiple sheets detected.^^Please ensure only one unfolded ballot is inserted at a time.
24	Do you really want to cast your ballot 'as is'? ^^ Press 'Cast' button to cast your ballot. ^^ Press 'Return' button to return your ballot.
25	Warning! ^**********^ One or more ambiguous marks were detected on the ballot. Please use the proper marking pen and fill in the targets completely. ^For additional details press the 'More' button.

Table J-1: ICP Voter Message IDs

Message ID	English Displayed Voter Message
26	You filled in too many ovals in this many contests:
27	These votes will not count
31	Duplicate candidate
32	Over-voted
33	Skipped
34	Un-voted Contest
35	You filled in too few ovals in this many contests:
36	You filled in too few ovals in
38	contest(s) have ambiguous marks
39	Ambiguous contest(s):
40	You filled in more than one oval for a candidate in at least one contest. ^^ While your candidate preference is clear it is not clear which party you prefer. If you do not change your ballot your vote will count for the candidate but only under the party you selected listed first on the ballot.
41	To change your ballot to reflect your party preference press 'Return' and ask for a new ballot. ^^ To ignore this message and cast your ballot as is press 'Cast'.
43	Double-vote warning
44	You filled in too many ovals in
45	more contest(s)
46	You chose
47	You are allowed
48	Warning! ^**********^ The poll matrix has been filled in incorrectly. ^ Please see poll worker for assistance.
49	Warning! ^**********^ Blank poll matrix detected. ^ Please see poll worker for assistance.
52	Cross-vote
53	Over-vote

Table J-1: ICP Voter Message IDs (Continued)

Message ID	English Displayed Voter Message
54	Under-vote
55	Rank Choice problem
56	Double-vote
57	At any time you may take your ballot to correct the issues.
58	Press 'Return' to get your ballot back and make changes. Press 'Cast' to cast your ballot 'as is'.
59	For additional details press the 'More' button.
60	An 'Over-vote' means that at least one contest has too many votes. If you cast your ballot 'as is' the votes you made in the affected contests will NOT be counted.
61	An 'Under-vote' means that at least one contest has too few votes. If you cast your ballot 'as is' the votes you made in the affected contests will still count but some voting opportunities may be missed.
62	Inconsistent order
63	Unused
65	Rank
66	Rank Choice problems were detected in this many contests:
67	If a ballot is cast with multiple votes in a rank no votes will be counted for that rank. ^^ For other errors the votes will still count but some voting opportunities may be missed.
68	Two or more candidates are voted with the same rank
69	One or more candidates are ranked both above and below another candidate
70	Skipped ranks
71	One or more candidates have more than One rank
72	Un-voted contest
73	Unused ranks
74	Rank Choice problems were detected in
75	Voting warning

Table J-1: ICP Voter Message IDs (Continued)

Message ID	English Displayed Voter Message
76	Un-voted partisan contests
77	Cross-voted
78	Un-voted
79	A 'Cross-vote' means that you voted in contests for more than one political party. ^^ If you cast your ballot 'as is' the votes you made in the contests for those parties will NOT be counted.
80	The following parties are cross-voted:
81	'Un-voted partisan contests' means that no votes were found in contests for any political party. ^^ If you cast your ballot 'as is' your votes will still count but some voting opportunities may be missed.
82	You are allowed to vote in contests for ONE of the following political parties:
83	Voting issues were found:
84	Use the 'Prev page' and 'Next page' buttons to move between screens.
85	Write-In Precedence Rule applied
86	'Unvoted Partisan Contests' means that no votes were found in contests for the following selected political party:
87	If you cast your ballot 'as is' your votes will still count but some voting opportunities may be missed.
88	To change languages press the middle button.I
89	No Party Votes Applied
90	The 'No Party Votes Applied' issue means that the votes implicitly made from the choice of party have all been overridden with explicit marks in another party. Ensure that at least one choice from chosen party is not overridden. If cast 'as is' the ballot will be void.
91	Protestada issue detected. ^ Party Chooser or all but the Party Chooser have been over-voted. ^ If cast none of the votes will be counted.^^To return and correct the ballot press 'Return'. ^^ To cast the ballot as-is press 'Cast'.
92	Protestada issue detected. ^ Party Chooser or all but the Party Chooser have been over-voted. ^^ Please correct the issue.

Table J-1: ICP Voter Message IDs (Continued)

APPENDIX K: SETTING UP DATABASE COMMAND TIMEOUT

Any longer database operations, such as deleting old data in the database when moving forward from styling to the ballots generated, require a certain amount of time to be executed. The execution time depends on the scale of data and computer that it's running on an SQL server. The application has a default timeout for database operations, but for longer operations it may not be sufficient. If the default timeout is not sufficient to complete larger operation, users can change it.

There are two configuration files on the application's server side that hold information regarding the default timeout:

- Web.config (located in application server root directory)
- DVS.DemocracySuite.GenerationService.exe.config (located in the bin directory of the application server)

In both configuration files, the timeout is defined with the **CommandTimeout** key in the *appSettings* section. The value of the timeout is in seconds. For example, to set timeout to 1 hour, you can set the value for the command timeout in the configuration file to 3600 (seconds).

NOTE: The configuration files are used by different parts of the system, so some operations will use the value from *Web.config*, while others will take the value from another configuration file. If there is an issue with the database operation timeout, you can change both the configuration files and increase the command timeout property (you can set same value for both files).

REVISION HISTORY

Rev.	Date	Author	Summary
6	05-03-2019	blair.beauchesne	Removed chapter 2 “Installing Election Event Designer”
5	04-17-2019	tijana.todorovic	Resolving discrepancies for 5.11-CO
4	04-02-2019	blair.beauchesne	Added section 5.1 “Style Restrictions for Non-Latin Scripts”.
3	04-02-2019	tijana.todorovic	Added note at the end of the section Translations 5.16.
2	03-22-2019	tijana.todorovic	Added new section 7.6 Export EDM Package and updated section A.3 Exporting the Mobile Ballot Production Definition Files.
1	02-26-2019	lori.lake	Branched for 5.11

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