

PTS Automated Reporting (AR) Upload Program



User Manual

Ver.1.0.1

December 2017

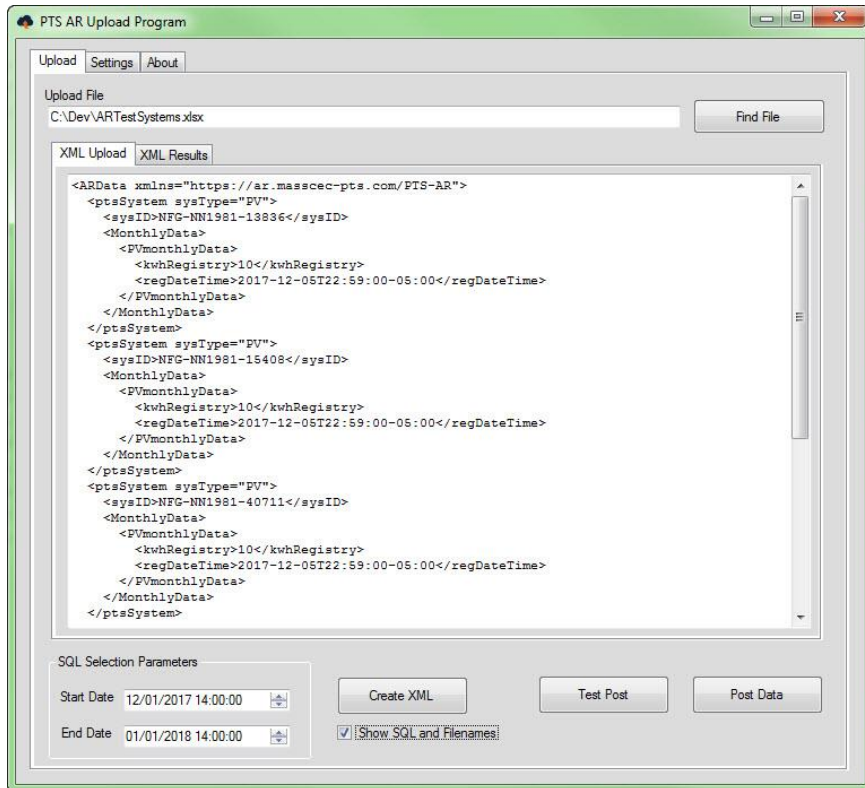
PTS AR Upload Program – Overview

The PTS Automated Reporting (AR) Upload Program is a Windows desktop program designed to facilitate the monthly loading of energy production data via the PTS AR web service. The AR web service accepts data in XML format only. In addition to the well formed PTS AR data, header information must be added for user authentication, and the proper submission type must be requested.

The PTS AR Upload Program provides a method to easily review, edit, and submit existing XML files. In addition, the program is able to create a new XML data stream from a user's data, either from a database or from an Excel spreadsheet. The program has been designed to expose the data connection and querying mechanisms to facilitate the direct use of a remote data source and offer the most flexibility in querying it. The program utilizes replaceable tokens in the command strings of the connection and querying steps. File paths and data options are stored in the program to be used for each month's PTS data reporting.

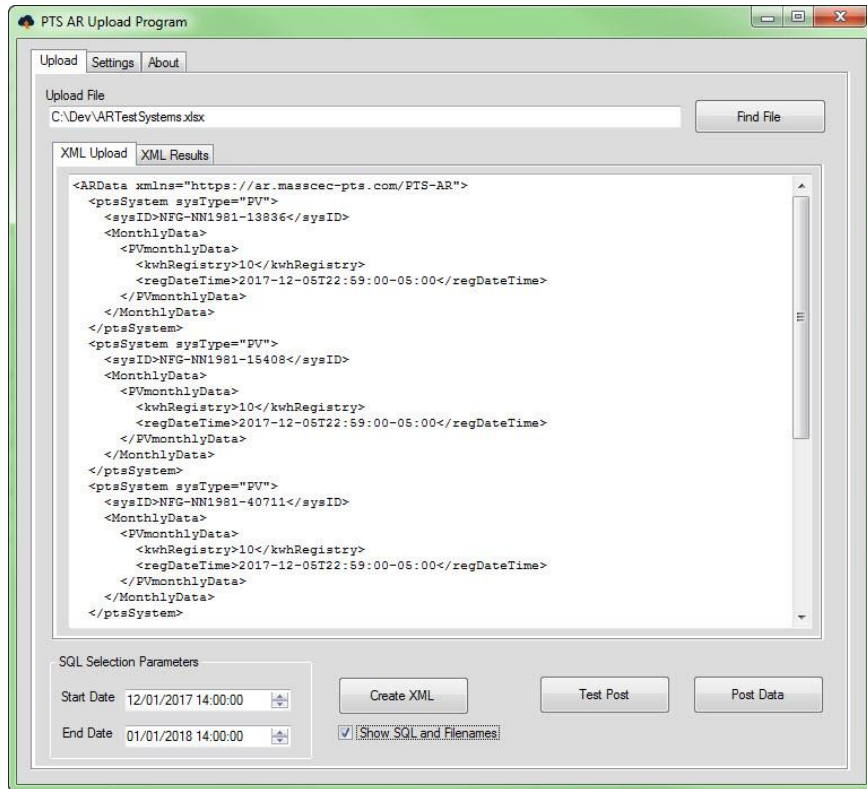
The source code for this program is provided for those needing further customization.

Upload Tab



- The **Upload** tab allows the user to find and load existing data files: XML, or Excel spreadsheet. The **Find File** button launches a standard Windows file location pop-up box.
- If the user maintains a data repository of PTS system energy production data in either a database or in an Excel spreadsheet, the **Create XML** button generates PTS AR XML data from that repository. Entries in the **Settings** tab specify how the database or spreadsheet is connected and queried.
- The XML that is loaded or created is displayed in the large center window on the **XML Upload** tab. It can be edited and then submitted with either the **Test Post** or **Post Data** buttons, which trigger functions that submit the XML stream to the PTS AR web service for evaluation against the XML format definition, the authentication, and the data correctness. The results of the evaluation can be seen in the window on the **XML Results** tab.
- **Test Post** (TESTPOST) submits the XML for evaluation (checking) of data formatting and submission requirements only. **Data is not saved to PTS.**
- **Post Data** (POSTDATA) commits the data to the PTS database after performing the same checks as the **Test Post** process.

Upload Tab (cont.)



- The results of the submitted XML are displayed in the large window for the user to review on the **XML Results** tab. The submitted XML remains on the **XML Upload** tab for review, modification, and resubmission. If the option is selected (on the **Settings** tab) to "Save Results to a file in Upload Path", the results of a TESTPOST or POSTDATA submission will be written to a standard-named file in the default file path.
- The **SQL Selection Parameters** are date fields which will be applied when querying your data source, if the SQL in the **Data Retrieval SQL Statement (Settings tab)** is written to use them. One or both of the date fields may be used. There is no logical checking between the dates, nor is there an implied correlation to the PTS AR reporting window. These fields represent the most likely data selection method when using this program on a monthly basis. These dates are accessible to the **Data Retrieval SQL Statement** as the tokens %Start% and %End%. They are usable by both Excel and SQL Server data sources. The dates are in mm/dd/yyyy format, and the times are in 24 hour format (must be complete).
- The **Show SQL and Filenames** check box is an aid for debugging the use of the tokens. When selected, the Connection string and the SQL statement used by the program will be displayed in pop-up boxes.

Settings Tab

The screenshot shows the 'Settings' tab of the 'PTS AR Upload Program'. The window has three tabs: 'Upload', 'Settings' (selected), and 'About'. The 'Settings' tab contains the following fields and controls:

- Data Source:** Two radio buttons, 'SQL Server' (selected) and 'Excel'. A note states: 'For Excel input use token "%XLFile%" in the place of the workbook file path. For either Data Source use tokens "%UserID%" and "%UserPass%" for user credentials in the connection string.'
- Data Retrieval Connection String:** A large text area for entering the connection string.
- Data Retrieval SQL Statement:** A large text area for entering the SQL statement. A note above it says: 'To insert the selection dates from the Upload tab use the tokens "%Start%" and "%End%".'
- PTS Production Reporter:** A section with two input fields: 'User Name' and 'Password'.
- Data Source ID (To access the Data Source):** A section with two input fields: 'User ID' and 'Password'.
- Default Upload File Path:** A text field with a 'Set Path' button next to it.
- Save Results to a File in Upload Path:** A checkbox. If checked, a note says: '(File named "ARUploadResults_yyyyymmdd_hhmmss_TEST(or POST)")'. There is a 'Save' button next to it.

- The **Settings** tab is used to set up the semi-static elements of how a user provides data to this program.
- The **Data Source** radio buttons offer the selection of either **SQL Server** or **Excel** to be the source of the data that will be submitted to PTS AR.
- The **Data Retrieval Connection String** is used to specify the technical settings used to connect to your data source (see examples in this document and in <https://www.connectionstrings.com/> for additional connection formats). The tokens %UserID% and/or %UserPass% may be used to provide connection credentials.
- For **Excel** file input use, the token %XLFile% may be used for the spreadsheet file when it is specified each month in the **Upload File** field of the **Upload** tab.
- The **Data Retrieval SQL statement** is the SQL statement used to query the data source and return the data that is used to generate the upload data in XML format. If the specification of dates is required in the SQL Statement, the dates entered in the **Upload** tab can be substituted by using the tokens %Start% and %End%. PTS submission must conform in name and order with the PTS AR XML schema.

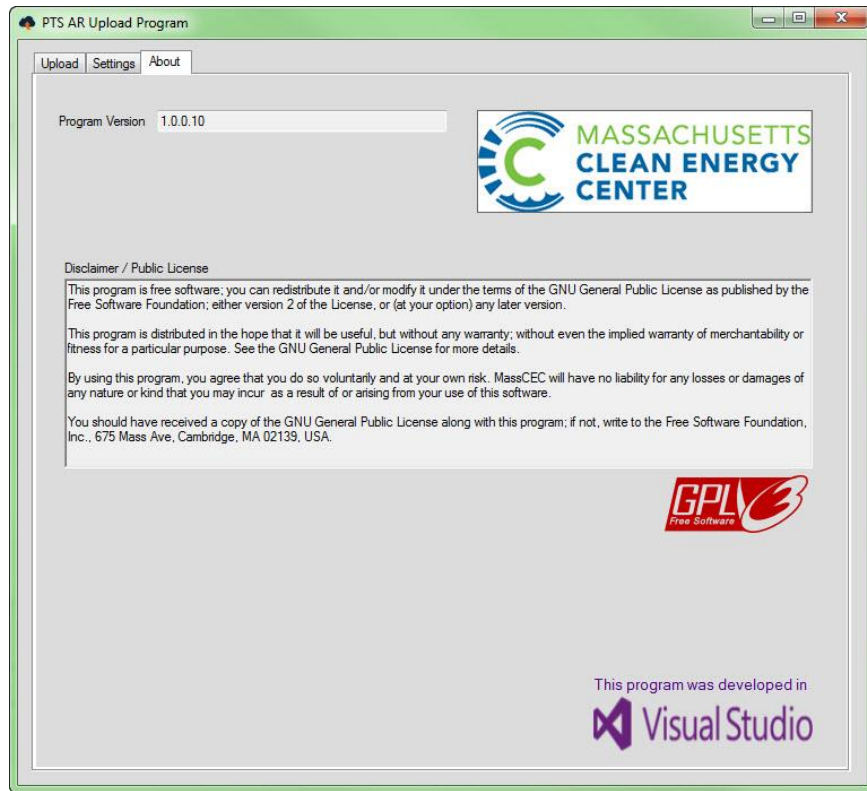
Settings Tab (cont.)

The screenshot shows the 'Settings' tab of the 'PTS AR Upload Program'. It features several input fields and buttons for configuring data retrieval and file upload settings.

- Data Source:** Radio buttons for 'SQL Server' (selected) and 'Excel'. A note states: 'For Excel input use token ""XLFile%" in the place of the workbook file path. For either Data Source use tokens ""UserID%" and ""UserPass%" for user credentials in the connection string.'
- Data Retrieval Connection String:** A large text area for entering the connection string.
- Data Retrieval SQL Statement:** A large text area for entering the SQL statement. A note above it says: 'To insert the selection dates from the Upload tab use the tokens ""Start%" and ""End%".'
- PTS Production Reporter:** Fields for 'User Name' and 'Password'.
- Data Source ID (To access the Data Source):** Fields for 'User ID' and 'Password'.
- Default Upload File Path:** A text field with a 'Set Path' button next to it.
- Save Results to a File in Upload Path:** A checkbox. If checked, a note specifies: '(File named "ARUploadResults_yyyymmdd_hhmmss_TEST(or POST)")'. A 'Save' button is located below this section.

- The **PTS Production Reporter** data is the **Username** and **Password** the Production Reporter uses to log into the PTS system. They must be specified to submit the XML to the AR web service.
- The **Data Source ID** is for the **User ID** and **Password** credentials used to access the data at the user's site. They correspond to the tokens `%UserID%` and `%UserPass%` for connection string construction. Neither field is required.
- The **Default Upload File Path** is the location where XML files will be stored for loading pre-existing XML files. The **Set Path** button launches a standard Windows Folder location pop-up window. In addition, if the user selects the *"Save Results to a File in Upload Path"* option, the results of a TESTPOST or POSTDATA submission will be written to a file in this default file path.
 - The submission results files will be named *"ARUploadResults_yyyymmdd_hhmmss_"*. The date and time correspond to when the file was created, followed by the word "TEST" or "POST", depending on the type of submission (TESTPOST or POSTDATA).
- The **Save** button saves all of the settings in configuration variables in the program.

About Tab



- The **About** tab displays static information about the PTS AR Upload Program.
- The **Program Version** number will be useful when debugging issues, should they arise. It is generated automatically each time the program is released.
- The **Disclaimer / Public License** box contains industry standard text describing the understood licensing of the software that is being provided as a service to our customers.
- **Pictures** – Clicking the picture will launch the corresponding website for the organization.

Excel Data Source Example

	A	B	C	D	E
1	SystemID	SystemType	MeterValue	MeterDate	Uploaded
2	NFG-NN1981-13836	PV	10	2017-12-05T23:59:00-04:00	N
3	NFG-NN1981-15408	PV	10	2017-12-05T23:59:00-04:00	N
4	NFG-NN1981-40711	PV	10	2017-12-05T23:59:00-04:00	N
5	NFG-NN1981-40712	PV	10	2017-12-05T23:59:00-04:00	N
6	NFG-NN1981-40713	PV	10	2017-12-05T23:59:00-04:00	N
7	NFG-NN1981-13836	PV	9	2017-11-05T23:59:00-04:00	Y
8	NFG-NN1981-15408	PV	9	2017-11-05T23:59:00-04:00	Y
9	NFG-NN1981-40711	PV	9	2017-11-05T23:59:00-04:00	Y
10	NFG-NN1981-40712	PV	9	2017-11-05T23:59:00-04:00	Y
11	NFG-NN1981-40713	PV	9	2017-11-05T23:59:00-04:00	Y

Settings Tab – Excel Data Source

For an Excel Data Source:

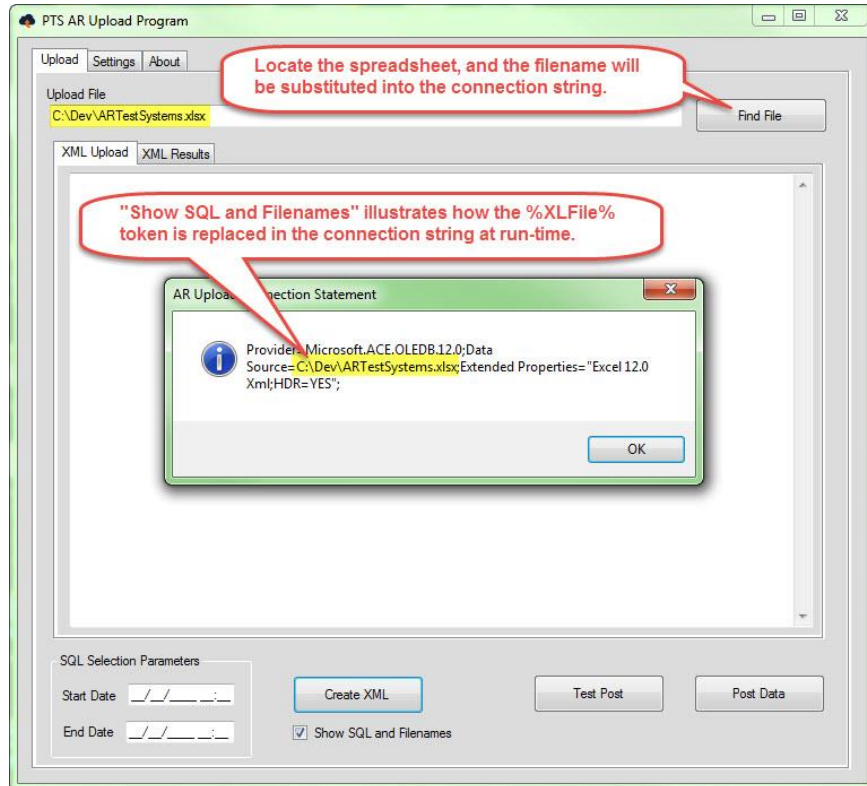
1. Select **Excel** as the **Data Source**.
2. In the **Data Retrieval Connection String** box, enter a **connection string** appropriate to the version of Excel that you are using.
 - Where the name of the spreadsheet file should be used in the **connection string**, insert the token **%XLFile%** instead.
 - If the spreadsheet is secure with a password, where the password should be used in the **connection string**, insert the token **%UserPass%** instead.
3. Enter a **SQL statement** that will extract the data needed and rename the columns to those required by PTS AR.
4. Enter the **User Name** and **Password** used to report PTS system data in the **PTS Production Reporter** fields.
5. Enter the **User ID** and/or **Password** used to secure the spreadsheet in the **Data Source ID** fields.
6. If all of the data source spreadsheet files are to reside in the same folder path, that path can be saved by specifying it in the **Default Upload File Path**.

The screenshot shows the 'Settings' tab of the 'PTS AR Upload Program'. The 'Data Source' section has 'Excel' selected. The 'Data Retrieval Connection String' box contains the text: 'Provider=Microsoft.ACE.OLEDB.12.0;Data Source=%XLFile%;Extended Properties="Excel 12.0 Xml;HDR=YES";'. A red callout points to this string with the text: 'Connection string for an excel spreadsheet. With %XLFile% token where the filename will be.' The 'Data Retrieval SQL Statement' box contains a SQL query: 'select SystemId as 'Sysid', System Type as 'sysType', MeterValue as 'kwhRegistry', MeterDate as 'regDate' from [Sheet1\$] where Uploaded = 'N''. A red callout points to this query with the text: 'SQL statement renames columns to PTS variable names, and queries a column for what should be included.' The 'PTS Production Reporter' section has fields for 'User Name' (filled with 'fmcgowan') and 'Password' (filled with '*****'). The 'Data Source ID' section has fields for 'User ID' and 'Password'. The 'Default Upload File Path' section has a text box filled with 'C:\Dev' and a 'Set Path' button. At the bottom, there is a checkbox 'Save Results to a File in Upload Path' which is checked, with a note '(File named "ARUploadResults_yyyyymmdd_hhmmss_TEST(or POST) "')' and a 'Save' button.

Upload Tab – Excel Data Source

Upload from Excel Data Source Process:

1. Locate the Excel spreadsheet that contains the PTS data using the **Find File** button.
2. If the data selection query requires a date range, enter one or both of the date parameters.
3. Click the **Create XML** button.
4. The data selected from the spreadsheet will appear in the **XML Upload** tab (display window) in XML format, and is ready for submission to PTS AR.
5. The XML may be edited at this point.
6. Clicking the **Test Post** or **Post Data** buttons will execute the specific PTS AR function.
7. If the selection was made to "Save Results to a File in Upload Path", the results of a TESTPOST or POSTDATA submission will be written to a file as well as appear in the display window of the **XML Results** tab.



SQL Server Data Source Example

Results		Messages						
	pk_System	SystemID	System Type					
1	1	NFG-NN1981-13836	PV					

	pk_PrData	fk_system	kwhRegistry	regDateTime	kwhAcOutput	avgTempInF	avgWindSpeedInMPH	avgIrradiance
1	1	1	10.105	2017-07-05 23:59:00.000	2.1	66	15	44
2	2	1	10.2	2017-08-05 23:59:00.000	1.9	62	9	38
3	3	1	10.9	2017-09-05 23:59:00.000	1.954	61	5	39
4	4	1	11	2017-10-05 23:59:00.000	2.02	60	1	35
5	5	1	99	2017-11-05 23:59:00.000	1.788	64	0	44

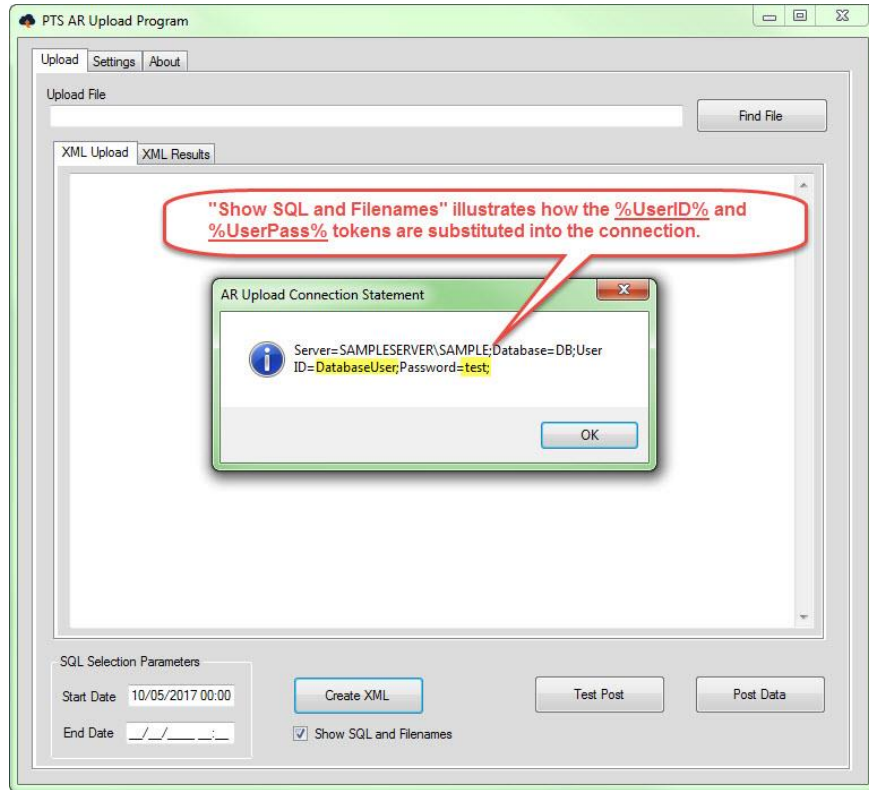
Settings Tab – SQL Server Data Source

For a SQL Server Data Source:

1. Select SQL Server as the **Data Source**.
2. In the **Data Retrieval Connection String** box, enter a **connection string** appropriate to the version of SQL Server you are using.
 - Where the user credentials to connect to the database should be used in the **connection string**, insert the tokens **%UserID%** and **%UserPass%** instead.
3. Enter a **SQL statement** that will extract the data needed and rename the columns to those required by PTS AR.
4. Enter the **Username** and **Password** used to report PTS system data in the **PTS Production Reporter** fields.
5. Enter the **User ID** and/or **Password** used for the database login in the **Data Source ID** fields.
6. If the submission results files are to be stored, the default path can be saved by specifying it in the **Default Upload File Path**.
 - To have the submission results files stored, also select the checkbox next to the label "Save Results to a File in Upload Path".

The screenshot shows the 'Settings' tab of the 'PTS AR Upload Program'. The 'Data Source' section has 'SQL Server' selected. The 'Data Retrieval Connection String' field contains 'Server=SAMPLESERVER\SAMPLE;Database=DB;User ID=%UserID%;Password=%UserPass%;'. A red callout bubble points to this field with the text: 'Connection string for a SQL/Server database. With %UserID% and %UserPass% tokens for credential substitution.' The 'Data Retrieval SQL Statement' field contains a SQL query: 'Select SystemID, SystemType, kWhRegistry, regDate Time from tblProduction pd inner join tblPVSystem sy on pk_System = fk_system where regDate Time >= %Start%'. A red callout bubble points to the '%Start%' token with the text: 'SQL Statement uses the %Start% token in the date evaluation clause.' The 'PTS Production Reporter' section has 'User Name' set to 'fmcgowan' and 'Password' masked. The 'Data Source ID (To access the Data Source)' section has 'User ID' set to 'DatabaseUser' and 'Password' masked. The 'Default Upload File Path' is 'C:\Dev\AR Data', with a 'Set Path' button. A checkbox 'Save Results to a File in Upload Path' is checked, with a note '(File named "ARUploadResults_yyyyymmdd_hhmmss_TEST(or POST)")' and a 'Save' button.

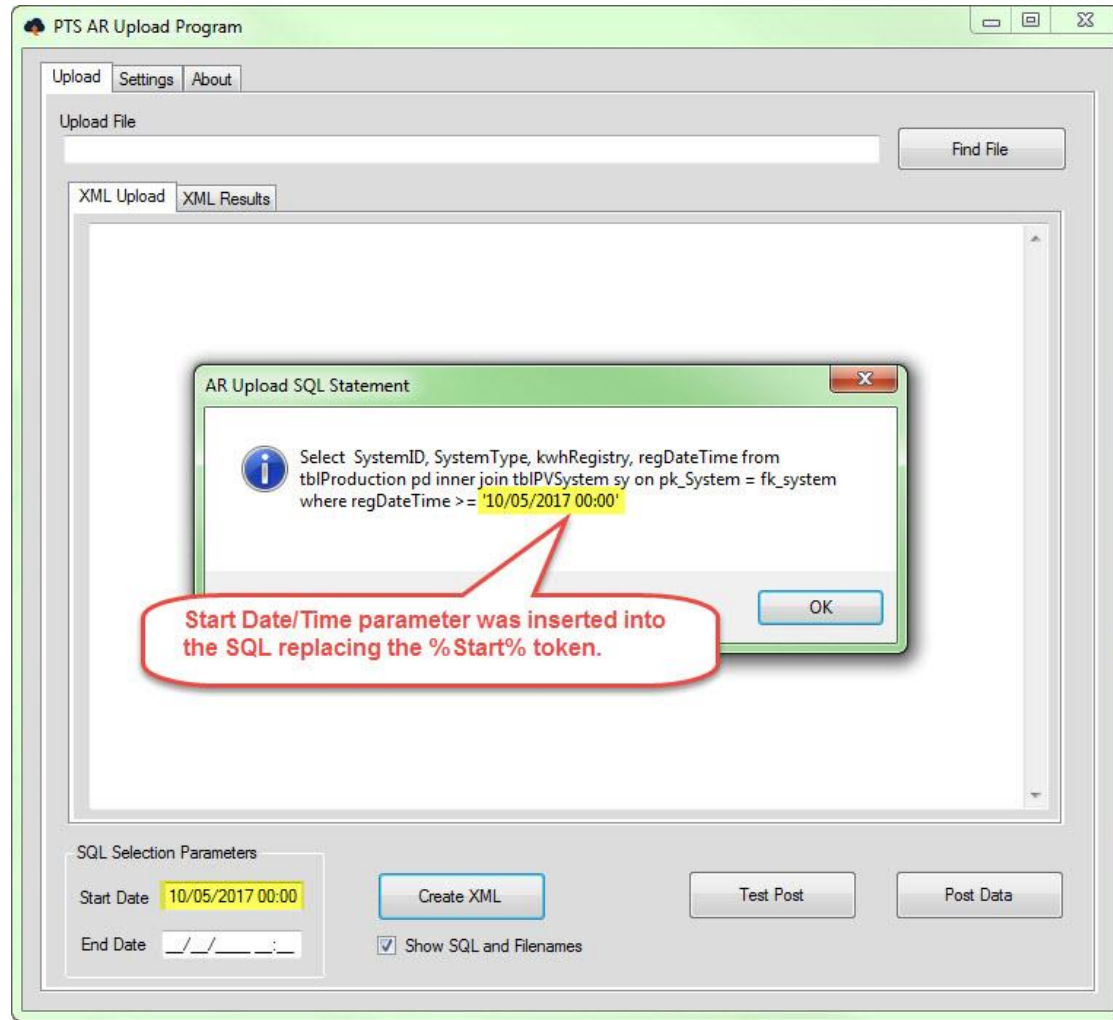
Upload Tab – SQL Server Data Source



Upload from a SQL Server Data Source Process:

1. If the data selection query requires a date range, enter one or both of the date parameters.
2. Click the **Create XML** button.
3. The data selected from the database will appear in the **XML Upload** tab (display window) in XML format, and is ready for submission to PTS AR.
4. The XML may be edited at this point.
5. Clicking the **Test Post** or **Post Data** buttons will execute the specific PTS AR function.
6. If the selection was made to *"Save Results to a File in Upload Path"*, the results of a TESTPOST or POSTDATA submission will be written to a file as well as appear in the display window of the **XML Results** tab.

Upload Tab – Date Substitution Example



Technical Addendum

1. Connection Statements

- SQL Server (2014)
 - Server=SampleServer\SampleInstance;Database=SampleDatabase;UserId=myUsername;Password=myPassword
- Excel (2013)
 - Provider=Microsoft.ACE.OLEDB.12.0;Data Source=C:\myFolder\mySpreadsheet.xlsx;Extended Properties="Excel 12.0 Xml;HDR=YES";
- Access (2013)
 - Provider=Microsoft.ACE.OLEDB.12.0;Data Source=C:\myFolder\myAccessFile.accdb;Persist Security Info=False;
- Help for additional data sources, special case arguments, and other product versions
 - <https://www.connectionstrings.com/>

2. SQL Statements

- SQL is standard data retrieval language. There are many good tutorials available on the web:
 - <http://beginner-sql-tutorial.com/sql>
 - <https://www.w3schools.com/sql>

Technical Addendum (cont.)

3. Visual Studio project

The source code for the PTS AR Upload program has been included with this package, should your organization need to modify or enhance the capabilities of this product.

- The Visual Studio project is accessible with Microsoft VS 2013 (or later)
- All code is in Visual Basic
- All operational code resides in the frmMain.vb form file

Note: Should the functioning of the AR web service change (MassCEC will advise customers if this happens), this program may need to be replaced from the PTS website. If your organization has modified the program, you will need to update your code, recompile, test and redeploy your modified version.