

Microsoft Power Tools for Data Analysis #20
Power Query Parameter for Folder Path in Excel and Power BI
Notes from Video:

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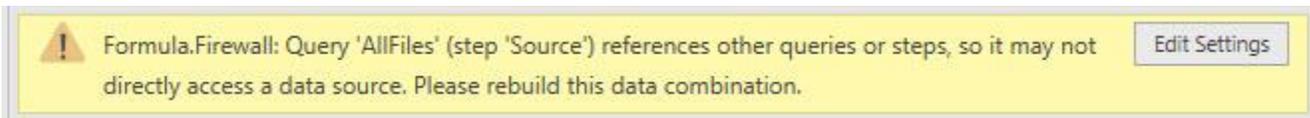
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1) Goal of Video :

- i. Use Variable Folder Path for Query, also known as Parameter Folder Path for Query.
- ii. Because Power Query does not allow a query to point to a second query that contains the Folder Path (we get a Formula.Firewall Error), both in Excel and Power BI, we will have to create a separate query that concatenates the folder path and lists the files, then in a second query we will reference that separate query.

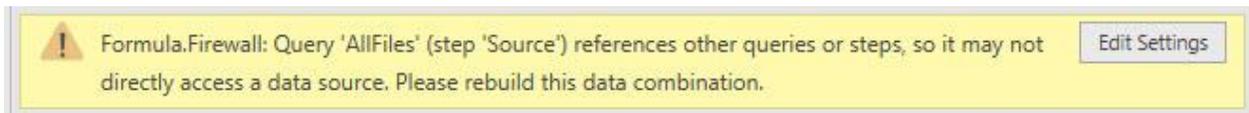
2) Formula.Firewall Error

- i. Formula.Firewall is a defense against accidentally sending data, as part of query folding, to another data source that does not have permission to receive that data, or “unintentionally leaking data between sources”.
- ii. If you try to point a query to a second query that contains the Folder Path, this is the error you will see (Error We See In This Video):

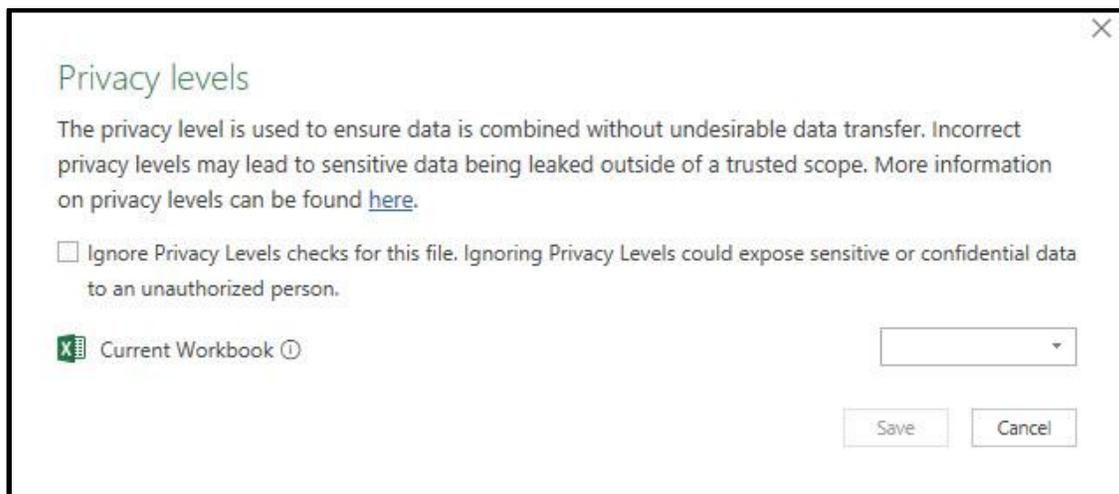


- iii. If there are two data sources with different Privacy Settings (like an SQL data source and an Excel data source), you will get this error (This Happens, But We Do Not See In This Video):

1. Error message in older versions of Power Query:



2. Error message in newer versions of Power Query:



3) Query Folding(Not in Video)

- i. User creates query in Power Query with Applied Steps.
- ii. If the Applied steps can be sent back to the data source for more efficient processing rather than having the Power Query Engine process the query, Power Query is smart enough to send the code necessary back to the data source for more efficient processing, like with SQL Database or OData data sources.

4) Data Source Privacy Levels(Not in Video)

- i. Privacy Levels for a particular Data Source in Power Query determines if data can be sent to somewhere else, like from an Excel Workbook File to an SQL Database as part of a query that uses both data sources.
- ii. Levels:
 1. Public
 - i. Can be sent to any other data source
 2. Organizational
 - i. Data can only be sent to other organizational data sources
 3. Private
 - i. Data can never be sent to another data source
- iii. Change Privacy Levels:
 1. Data Ribbon Tab, Get & Transform group, Get Data, Data Source Settings:
 - i. File, Options and Settings, Data Source Settings, Edit Permissions.
 2. Options for Privacy Levels:
 - i. Data Ribbon Tab, Get & Transform group, Get Data, Query Options:
 - Global, Privacy
 - i. "Always ignore Privacy Levels settings" will get rid of Formula.Firewall Error.
 1. Microsoft help: "by selecting Ignore the Privacy levels and potentially improve performance but could expose sensitive or confidential data to an unauthorized person.
 - ii. "Combine data according to each file's Privacy Level settings".
 1. Microsoft help: "Privacy level settings are used to determine the level of isolation between data sources when combining data."
 - iii. "Always combine data according to your Privacy Level setting each source".
 1. Microsoft help: none.

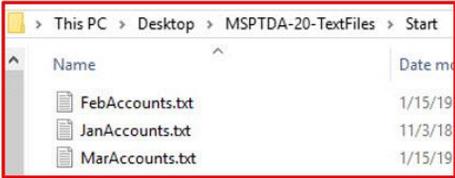
5) Parmenter Query :

- i. Parameter Query = A query that has a variable input
- ii. Parameter synonyms:
 1. Parameter
 2. Variable
 3. Formula Input
 4. Argument

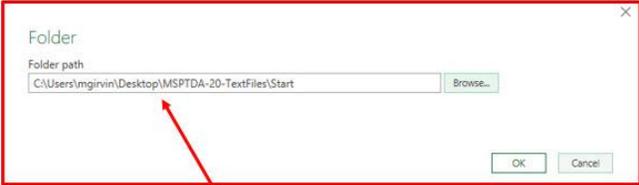
6) Situation in Excel for this Video

Excel:

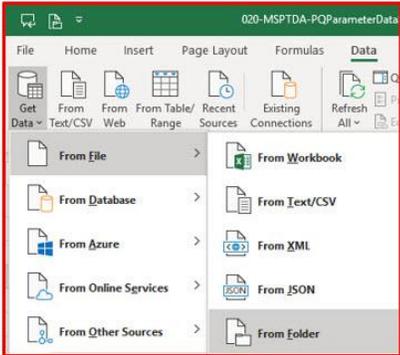
1) We Need to Import Files from Folder, but Folder path will change.



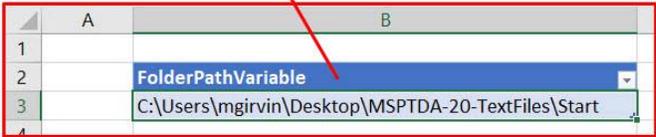
3) We want to tell Power Query where our files are located (Folder Path)



2) We want to use From Folder Option



4) Excel Table in Worksheet contains our Variable or Parameter Folder Path

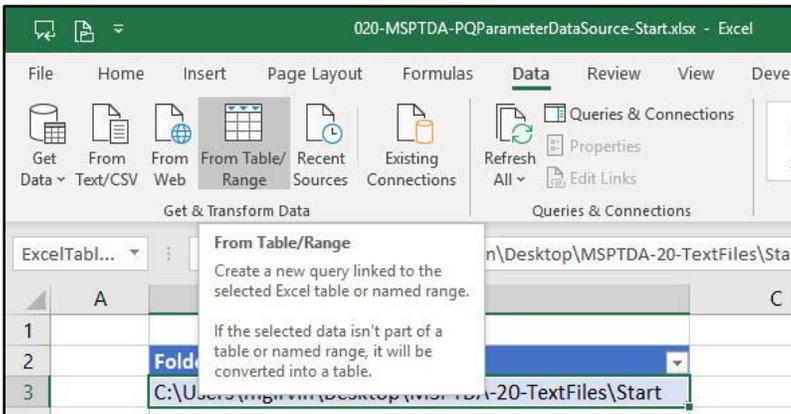


7) Steps to Create Folder Path Parameter in Excel

- i. Open file named “020-MSPTDA-PQParameterDataSource-Start.xlsx”.
- ii. Create a One-Row, One-Column Excel Table in the Excel Worksheet that contains the variable Folder Path, (we will call it an Excel Parameter Table) as seen here:

| | A | B |
|---|---|--|
| 1 | | |
| 2 | | FolderPathVariable |
| 3 | | C:\Users\mgirvin\Desktop\MSPTDA-20-TextFiles\Start |
| 4 | | |

- iii. Use the “From Table” button in the Get & Transform group in the Data Ribbon Tab to import the Excel Parameter table into the Power Query Editor, as seen here:



- iv. Name the query “FolderParameter”.
- v. Delete the “Change Type” step that is automatically created in the Applied Steps list when you import the Excel Parameter Table.

- vi. Using the formula bar, Modify the M Code for the “Source” step in the Applied Steps List, as see below:
 1. As discussed in the video and in MSPTDA Video #9, there are two different Two-Way Lookups in this formula:
 - i. Two-Way Lookup to get Excel Table from Excel Worksheet:

Excel.CurrentWorkbook()[[Name="ExcelTableFolderParameter"]]

- ii. Two-Way Lookup to get Folder Path from first row of imported Excel Table:

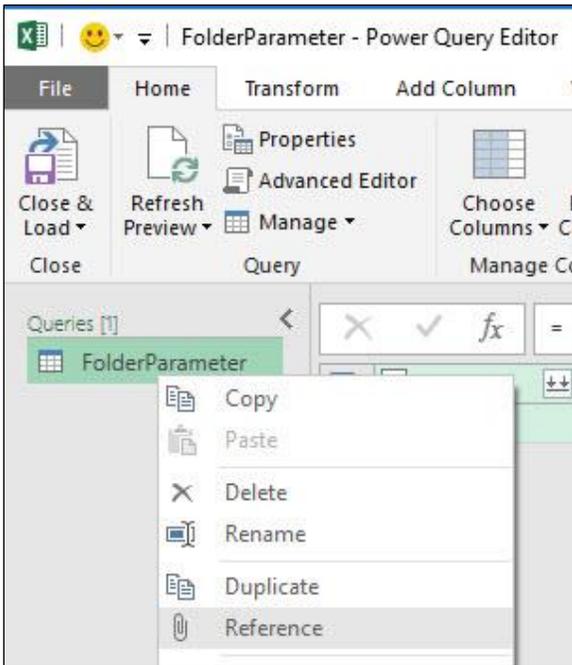
[Content]{0}[FolderPathVariable]

2. The Folder.Files Power Query function takes a Folder Path and retrieves all the files in the specified folder.

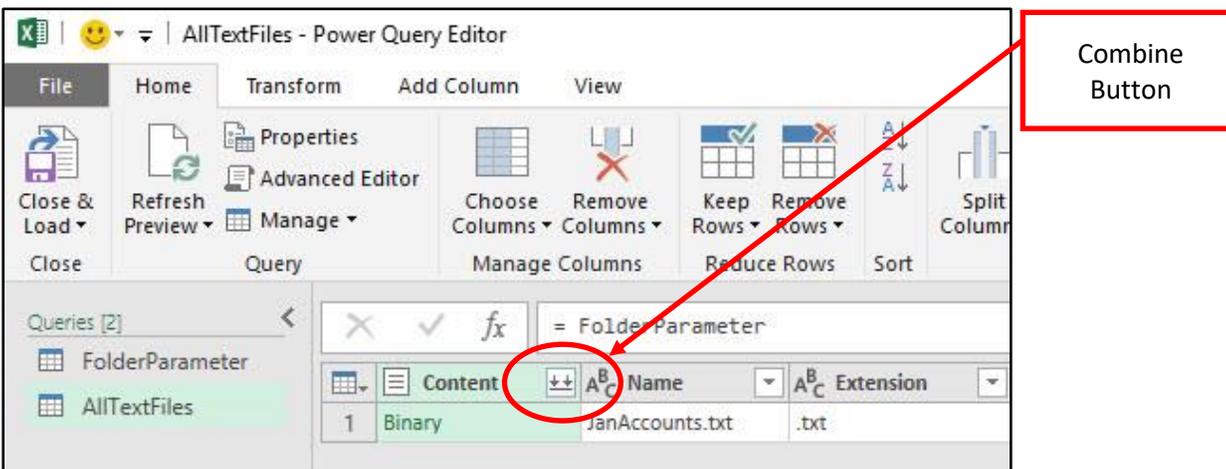
| | | = Folder.Files(Excel.CurrentWorkbook()[[Name="ExcelTableFolderParameter"]][Content]{0}[FolderPathVariable]) | | | | | |
|---|---------|---|-----------|--------------------|---------------------|--------------------|------------|
| | Content | Name | Extension | Date accessed | Date modified | Date created | Attributes |
| 1 | Binary | JanAccounts.txt | .txt | 4/26/19 4:10:54 PM | 11/3/18 10:51:42 AM | 4/25/19 9:20:59 AM | Record |

- vii. Close & Load the “FolderParameter” query as a Connection Only.
- viii. The “FolderParameter” has successfully imported the files in the folder without getting a Formula.Firewall Error. Because this query is not referring to another query with the folder path, we do not get the error.

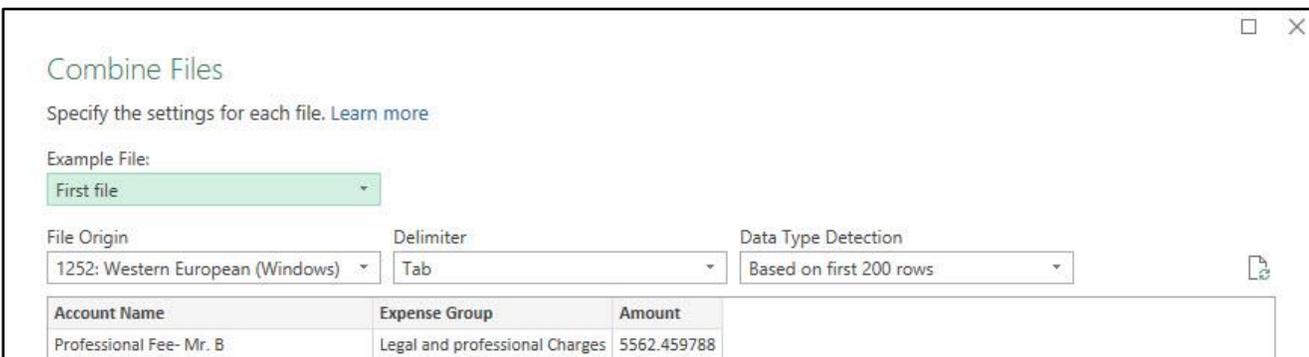
- ix. Open the Power Query window back up. One way to do this is by right-clicking the “FolderParameter” query in the Queries & Connections Pane.
- x. On the left-side of the Power Query Editor, in the Queries Pane, right-click the “FolderParameter” query and point to Reference, as seen here:



- i. Name the query “FolderParameter”.
- ii. Click Combine button at top of Content Column to Append all Text File Data Sets.



- iii. In the next step, make sure the Delimiter is Tab, then click OK.



iv. The Final Table in the Power Query Editor and all the Queries (on the left) and Applied Steps (on the right), are seen here:

The screenshot shows the Power Query Editor window. The main area displays a table with the following data:

| | Source.Name | Account Name | Expense Group | Amount |
|----|-----------------|--|--------------------------------|-------------|
| 1 | JanAccounts.txt | Professional Fee- Mr. B | Legal and professional Charges | 5562.459788 |
| 2 | JanAccounts.txt | Rent - Branch Office 1 | Rentals | 9492.639328 |
| 3 | JanAccounts.txt | Travel - Director | Traveling Expenses | 15000 |
| 4 | JanAccounts.txt | Elec Expenses - Branch Office 2 | Power and Fuel Expenses | 17838.96471 |
| 5 | JanAccounts.txt | Elec Expenses - Branch Office 1 | Power and Fuel Expenses | 25818.79137 |
| 6 | JanAccounts.txt | Travel - Local | Traveling Expenses | 26316.33627 |
| 7 | JanAccounts.txt | Elec Expenses - Head Office | Power and Fuel Expenses | 26482.71906 |
| 8 | JanAccounts.txt | Elec Expenses - Petrol and Diesel expenses | Power and Fuel Expenses | 35456 |
| 9 | JanAccounts.txt | Rent - Head Office | Rentals | 35930.3024 |
| 10 | JanAccounts.txt | Professional Fee- Mr. C | Legal and professional Charges | 49463.95913 |
| 11 | JanAccounts.txt | Sales - Branch Office 1 | Sales | 51180.96398 |
| 12 | JanAccounts.txt | Professional Fee- Mr. A | Legal and professional Charges | 80234.25807 |
| 13 | JanAccounts.txt | Travel - Sales Team | Traveling Expenses | 81713.48797 |
| 14 | JanAccounts.txt | Rent - Branch Office 2 | Rentals | 85212.42125 |
| 15 | JanAccounts.txt | Travel - Foreign | Traveling Expenses | 88462.92647 |
| 16 | JanAccounts.txt | Sales - Branch Office 2 | Sales | 406428.0342 |
| 17 | JanAccounts.txt | Sales - Head Office | Sales | 768500.2395 |

The left-hand pane shows a list of queries, with 'AllTextFiles' selected. The right-hand pane shows the 'Query Settings' for 'AllTextFiles', including the name and a list of applied steps: Filtered Hidden Files1, Invoke Custom Function1, Renamed Columns1, Removed Other Columns1, Expanded Table Column1, and Changed Type.

v. Close & Load the query to the Excel Worksheet.

vi. Import Data dialog box should look like this:

The 'Import Data' dialog box is shown with the following settings:

- Select how you want to view this data in your workbook:
 - Table
 - PivotTable Report
 - PivotChart
 - Only Create Connection
- Where do you want to put the data?
 - Existing worksheet:
 - Table: =TableOutput!\$E\$1
 - New worksheet
- Add this data to the Data Model

Buttons: Properties..., OK, Cancel

vii. Final query output should look like this:

The screenshot shows an Excel spreadsheet with the following data:

| | Source Name | Account Name | Expense Group | Amount |
|----|-----------------|--|-------------------------------|-------------|
| 2 | JanAccounts.txt | Professional Fee- Mr. B | Legal and professional Charge | 5562.459788 |
| 3 | JanAccounts.txt | Rent - Branch Office 1 | Rentals | 9492.639328 |
| 4 | JanAccounts.txt | Travel - Director | Traveling Expenses | 15000 |
| 5 | JanAccounts.txt | Elec Expenses - Branch Office 2 | Power and Fuel Expenses | 17838.96471 |
| 6 | JanAccounts.txt | Elec Expenses - Branch Office 1 | Power and Fuel Expenses | 25818.79137 |
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| 8 | JanAccounts.txt | Elec Expenses - Head Office | Power and Fuel Expenses | 26482.71906 |
| 9 | JanAccounts.txt | Elec Expenses - Petrol and Diesel expenses | Power and Fuel Expenses | 35456 |
| 10 | JanAccounts.txt | Rent - Head Office | Rentals | 35930.3024 |
| 11 | JanAccounts.txt | Professional Fee- Mr. C | Legal and professional Charge | 49463.95913 |
| 12 | JanAccounts.txt | Sales - Branch Office 1 | Sales | 51180.96398 |
| 13 | JanAccounts.txt | Professional Fee- Mr. A | Legal and professional Charge | 80234.25807 |
| 14 | JanAccounts.txt | Travel - Sales Team | Traveling Expenses | 81713.48797 |
| 15 | JanAccounts.txt | Rent - Branch Office 2 | Rentals | 85212.42125 |
| 16 | JanAccounts.txt | Travel - Foreign | Traveling Expenses | 88462.92647 |
| 17 | JanAccounts.txt | Sales - Branch Office 2 | Sales | 406428.0342 |
| 18 | JanAccounts.txt | Sales - Head Office | Sales | 768500.2395 |

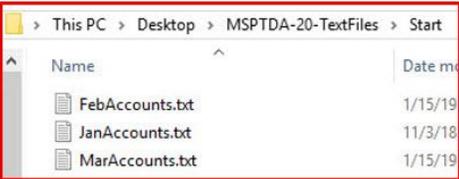
viii. When you change the parameter and use the keyboard to Refresh All in the Excel Workbook, it can look like this:

| | A | B | C | D | E | F | G | H | I |
|----|---|---|---|---|-----------------|--|--------------------------------|-------------|---|
| 1 | | | | | Source.Name | Account Name | Expense Group | Amount | |
| 2 | | FolderPathVariable | | | FebAccounts.txt | Professional Fee- Mr. B | Legal and professional Charges | 24586.2 | |
| 3 | | C:\Users\mgirvin\Desktop\NewLocationsFoprMSPTDA-20_TextFiles\MSPTDA-20-TextFiles\ | | | FebAccounts.txt | Rent - Branch Office 1 | Rentals | 11226.53 | |
| 4 | | | | | FebAccounts.txt | Travel - Director | Traveling Expenses | 14622.14 | |
| 5 | | | | | FebAccounts.txt | Elec Expenses - Branch Office 2 | Power and Fuel Expenses | 14424.87 | |
| 6 | | Changed Folder Path: | | | FebAccounts.txt | Elec Expenses - Branch Office 1 | Power and Fuel Expenses | 16492.73 | |
| 7 | | C:\Users\mgirvin\Desktop\NewLocationsFoprMSPTDA-20_TextFiles\MSPTDA-20-TextFiles\ | | | FebAccounts.txt | Travel - Local | Traveling Expenses | 15308.31 | |
| 8 | | C:\Users\mgirvin\Desktop\MSPTDA-20-TextFiles\Start | | | FebAccounts.txt | Elec Expenses - Head Office | Power and Fuel Expenses | 12558.96 | |
| 9 | | C:\Users\FamilyUse\Desktop\MSPTDA-20-TextFiles\Start | | | FebAccounts.txt | Elec Expenses - Petrol and Diesel expenses | Power and Fuel Expenses | 10802.43 | |
| 10 | | | | | FebAccounts.txt | Rent - Head Office | Rentals | 24619.04 | |
| 11 | | | | | FebAccounts.txt | Professional Fee- Mr. C | Legal and professional Charges | 48759 | |
| 12 | | | | | FebAccounts.txt | Sales - Branch Office 1 | Sales | 18019.45 | |
| 13 | | | | | FebAccounts.txt | Professional Fee- Mr. A | Legal and professional Charges | 25113.99 | |
| 14 | | | | | FebAccounts.txt | Travel - Sales Team | Traveling Expenses | 11549.3 | |
| 15 | | | | | FebAccounts.txt | Rent - Branch Office 2 | Rentals | 22907.84 | |
| 16 | | | | | FebAccounts.txt | Travel - Foreign | Traveling Expenses | 23402.71 | |
| 17 | | | | | FebAccounts.txt | Sales - Branch Office 2 | Sales | 10203.74 | |
| 18 | | | | | FebAccounts.txt | Sales - Head Office | Sales | 21961.17 | |
| 19 | | | | | FebAccounts.txt | Admin - Salary | Admin | 18024.31 | |
| 20 | | | | | FebAccounts.txt | Admin - Office | Admin | 12633.17 | |
| 21 | | | | | JanAccounts.txt | Professional Fee- Mr. B | Legal and professional Charges | 5562.459788 | |
| 22 | | | | | JanAccounts.txt | Rent - Branch Office 1 | Rentals | 9492.639328 | |
| 23 | | | | | JanAccounts.txt | Travel - Director | Traveling Expenses | 15000 | |
| 24 | | | | | JanAccounts.txt | Elec Expenses - Branch Office 2 | Power and Fuel Expenses | 17838.96471 | |
| 25 | | | | | JanAccounts.txt | Elec Expenses - Branch Office 1 | Power and Fuel Expenses | 25818.79137 | |
| 26 | | | | | JanAccounts.txt | Travel - Local | Traveling Expenses | 26316.33627 | |
| 27 | | | | | JanAccounts.txt | Elec Expenses - Head Office | Power and Fuel Expenses | 26482.71906 | |
| 28 | | | | | JanAccounts.txt | Elec Expenses - Petrol and Diesel expenses | Power and Fuel Expenses | 35456 | |
| 29 | | | | | JanAccounts.txt | Rent - Head Office | Rentals | 35930.3024 | |
| 30 | | | | | JanAccounts.txt | Professional Fee- Mr. C | Legal and professional Charges | 49463.95913 | |
| 31 | | | | | JanAccounts.txt | Sales - Branch Office 1 | Sales | 51180.96398 | |
| 32 | | | | | JanAccounts.txt | Professional Fee- Mr. A | Legal and professional Charges | 80234.25807 | |

8) Situation in Power BI Desktop for this Video

Power BI Desktop:

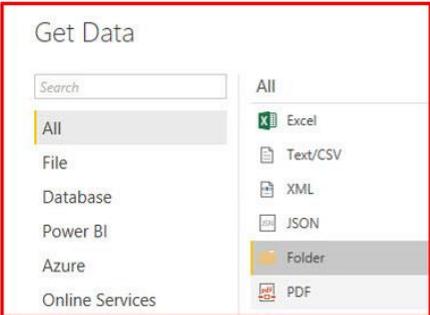
1) We Need to Import Files from Folder, but Folder path will change.



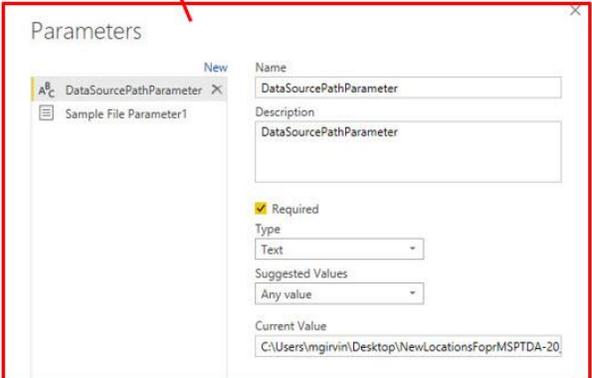
3) We want to tell Power Query where our files are located (Folder Path)



2) We want to use From Folder Option

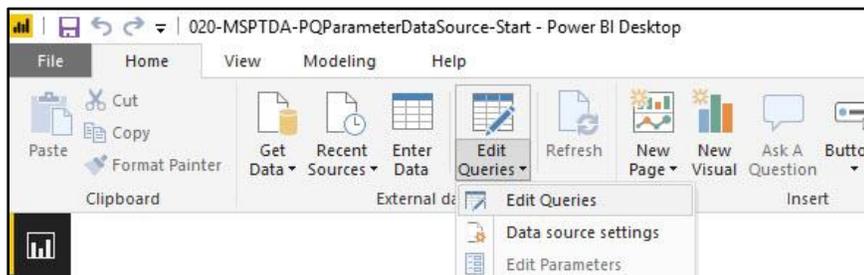


4) Variable or Parameter Folder Path created with Parameter Feature

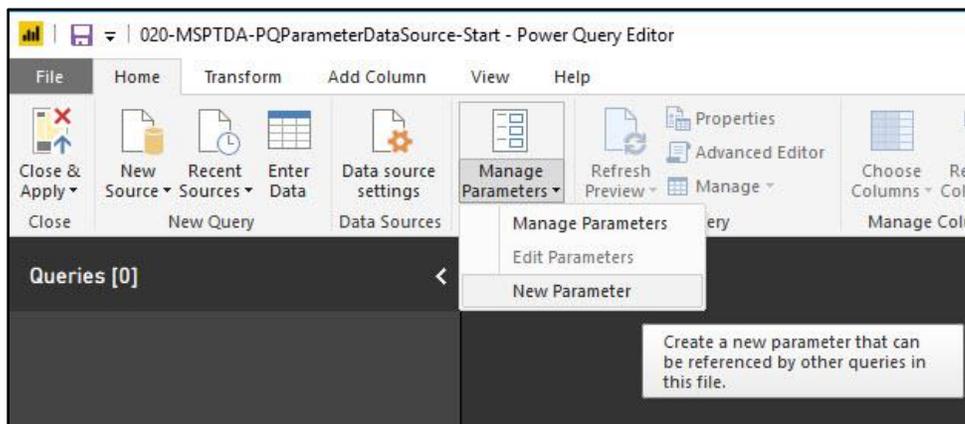


9) Steps to Create Folder Path Parameter in Power BI

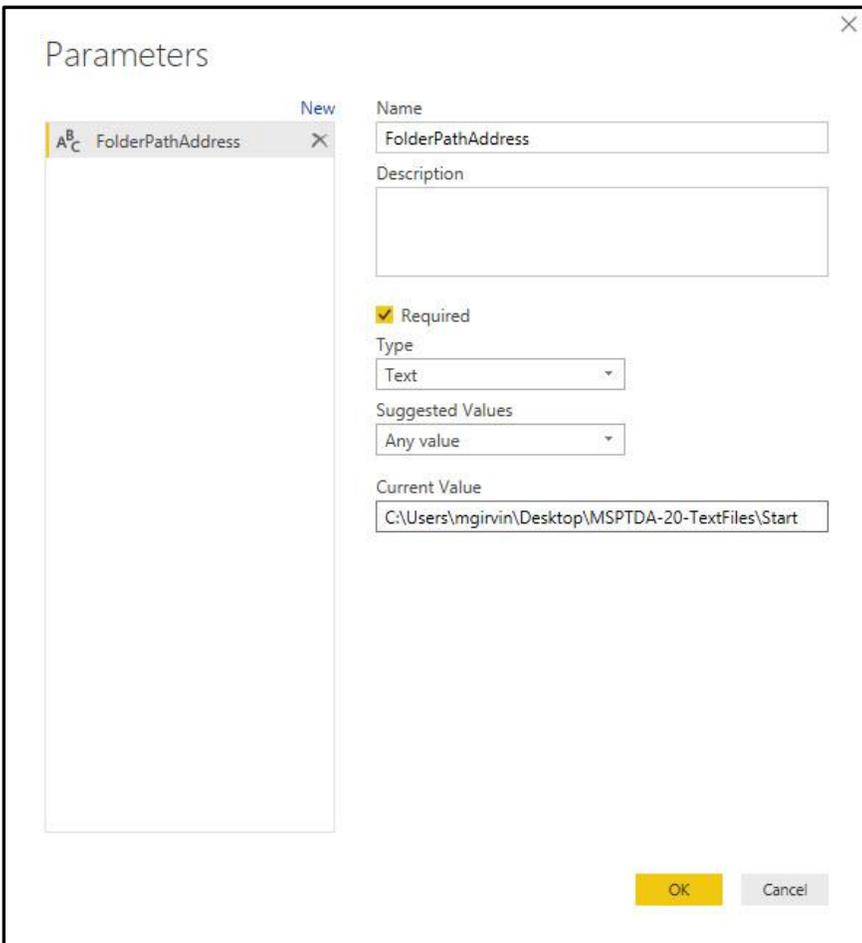
- i. Open the file named "020-MSPTDA-PQParameterDataSource-Start.xlsx".
- ii. In the Power BI Desktop window, in the Home Ribbon Tab, in the External data group, click the Edit Query drop-down, then click on Edit Queries, as seen here:



- iii. In the Power Query window, in the Home Ribbon Tab, in the Parameter group, click the Manage Parameter drop-down, then click on New Parameter, as seen here:

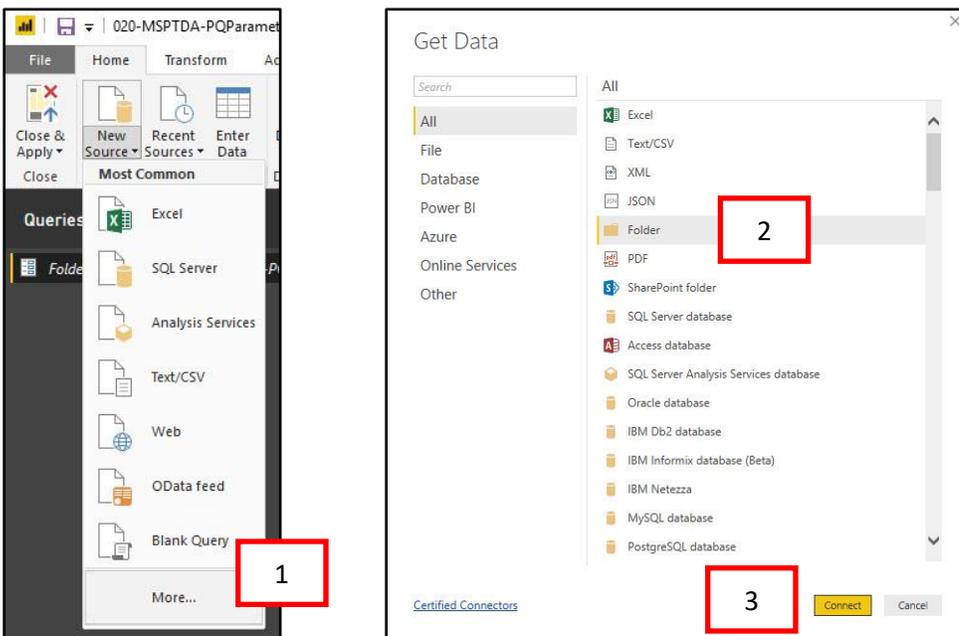


iv. Create your Parameter, then click OK, as seen here:



v. In the Power Query Editor window:

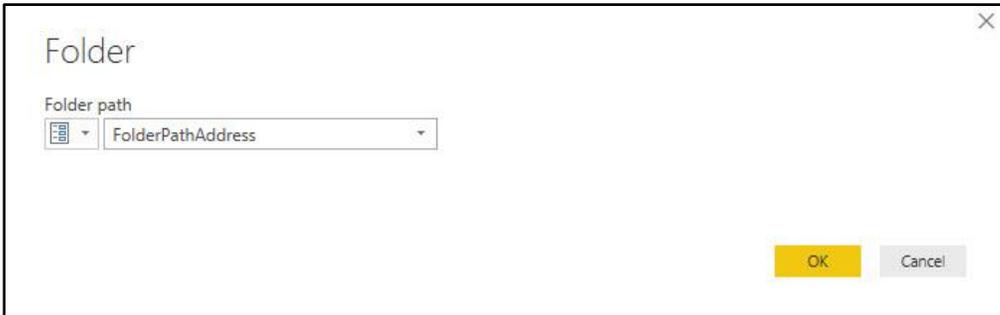
1. in the Home Ribbon Tab, in the Get external data group, click the New Source drop-down, then click on More.
2. Then in the "Get Data" dialog box, click the "From Folder" option.
3. Then click the Connect button, as seen here:



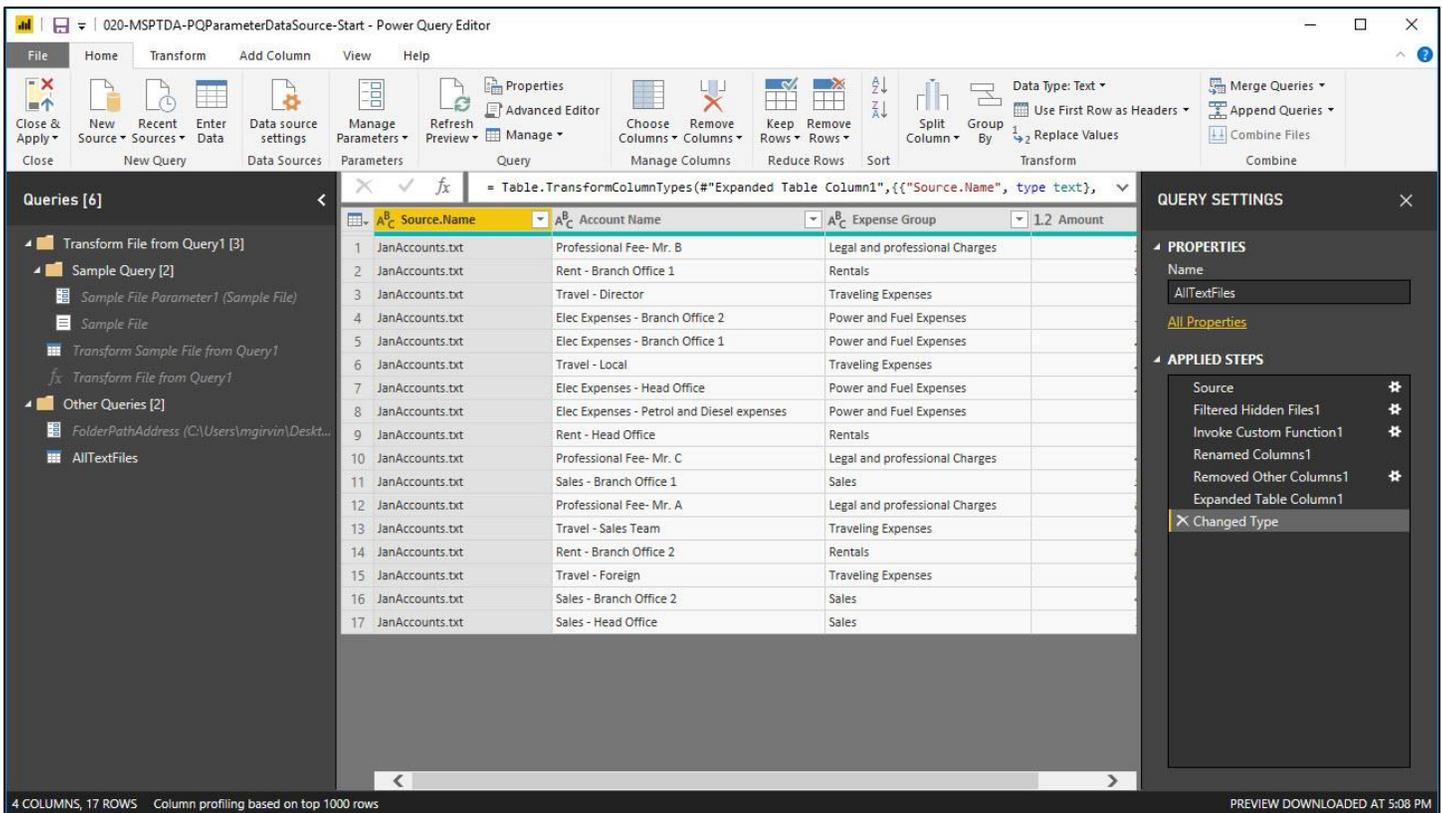
vi. In the Folder Path text box, use the drop-down to select "Parameter", as seen here:



vii. This is what the Folder dialog box looks like before you click OK:



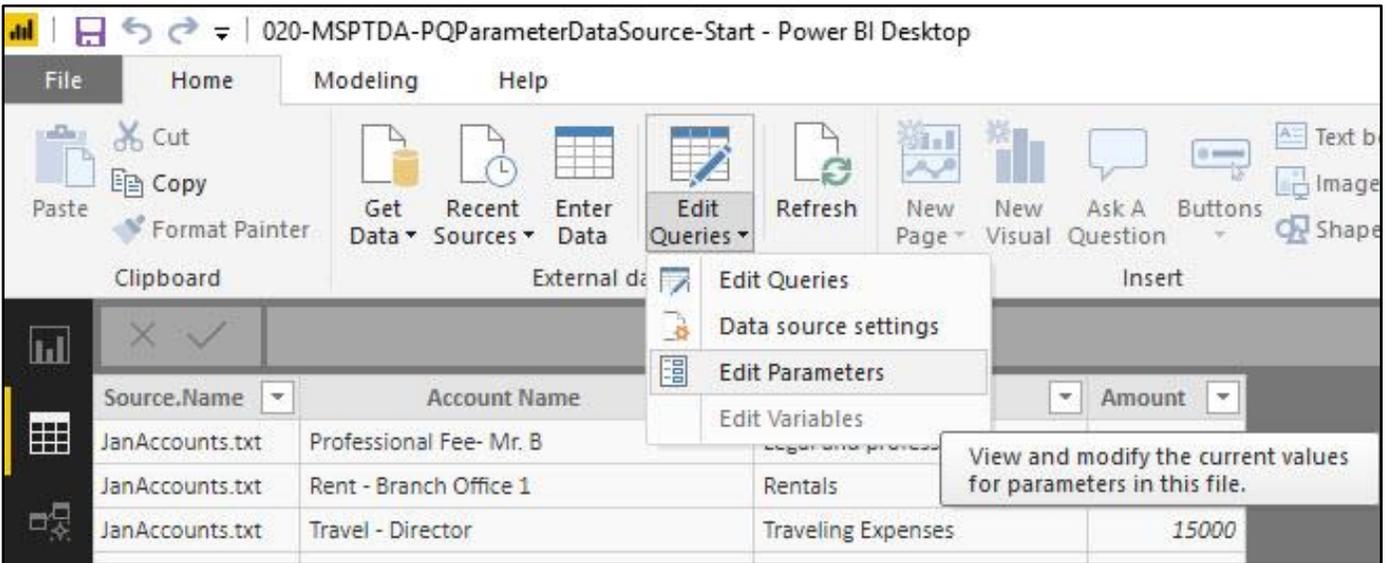
viii. The Appended Proper Data Set, a list of the queries (on the left) and the Applied Steps (on the right), can be seen here:



- ix. Use the Close & Apply button to load the Proper Data Set to the Power BI Desktop Data Model, as seen here:



- x. To change the Folder Path Parameter, in the Home Ribbon Tab, in the External data group, click the Edit Query drop-down, then click on Edit Parameters, as seen here:



- xi. Change the Parameter, then click OK

