

CCS317252

## Navigating Fabrication BIM Content with Power BI

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### Learning Objectives

- Introduction to Power BI, where it was derived from, and how to navigate.
- Understand how data is imported and manipulated from multiple sources.
- Building relationships between datasets.
- How to import visuals and which ones are best for certain datasets.
- Uploading dashboards to the web for sharing.
- Learn how to create more Power BI dashboards to help understand your organizations data.
- Common Errors and which ones to avoid.
- Tips and Tricks

### Description

The easy way to visually audit your fabrication database without opening a single file. This class will be an introduction to Microsoft Power BI and how it can be used for fabrication content managers. Power BI is a business intelligence software that can aggregate and visualize data from hundreds of different sources and formats to let creators view and share their content like never before. By the end of this class, you'll understand the steps that you need to create a live, interactive, and shareable dashboard to make your content auditing more efficient at your workplace.

### Speaker Bio

Tyler Phillips started out as a Project Engineer that became an Estimator out of curiosity for information. He now handles Data and Bi Development at Bruner Corporation to help streamline processes across the construction life cycle. He became early adopter of Power BI after realizing its capabilities; if leveraged correctly, would drastically improve the outdated and repetitive workflows specific to the construction business model. His experience using multiple different estimating, ERP, design, and coordination software's has fueled the deep dive into creating solutions that further improve the data navigation experience for all users. Education: Construction Systems Management | The Ohio State University

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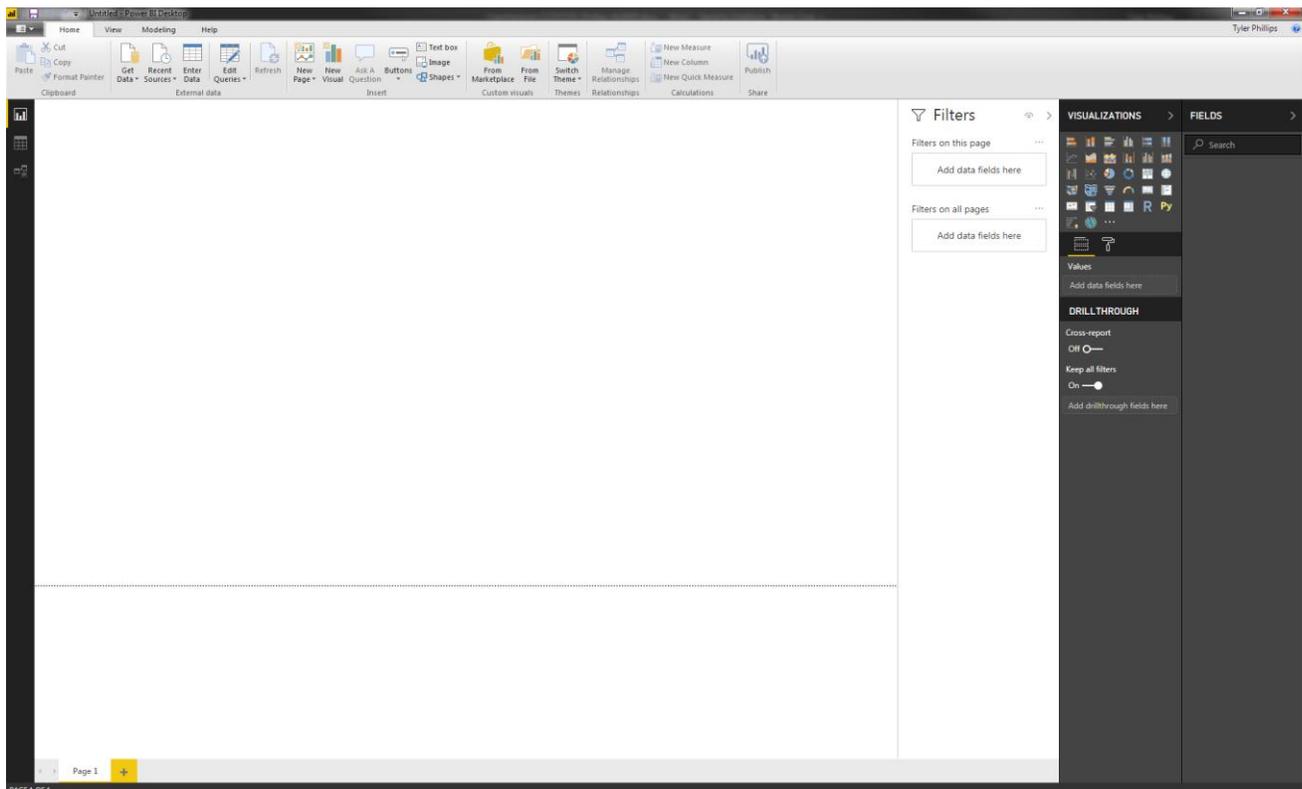
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## Introduction to Power BI

Power BI is a data analysis tool that can report and collect information from multiple different data sources. It is simple and user friendly enough that business analysts and power users can work it and get benefits from it. On the other hand, it is a powerful multi-threaded data modeling software that can be used for complex mash up scenarios at the enterprise level.

### Power BI: Core Components

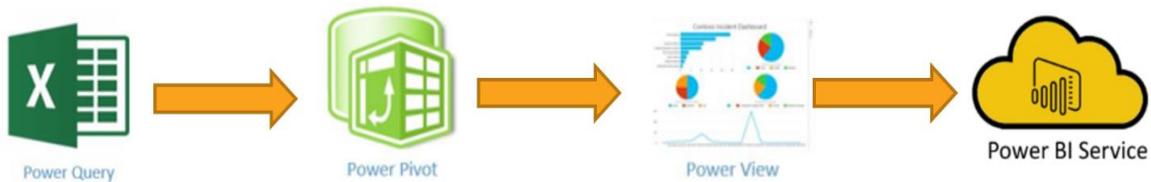
The Power BI package features 3 environments where data is analyzed. Power BI Desktop, Power BI Service, and Power BI Mobile. Power BI Desktop is the front and center program that is responsible for dashboard creation and data extraction. Power BI Service is the online portion of Power BI desktop where dashboards are uploaded and shared. Power BI Mobile is the namesake mobile version of your dashboard as a downloadable app. Layouts for mobile are created in Power BI Desktop. In summary, consider Power BI Service and Mobile as companions to Desktop program.

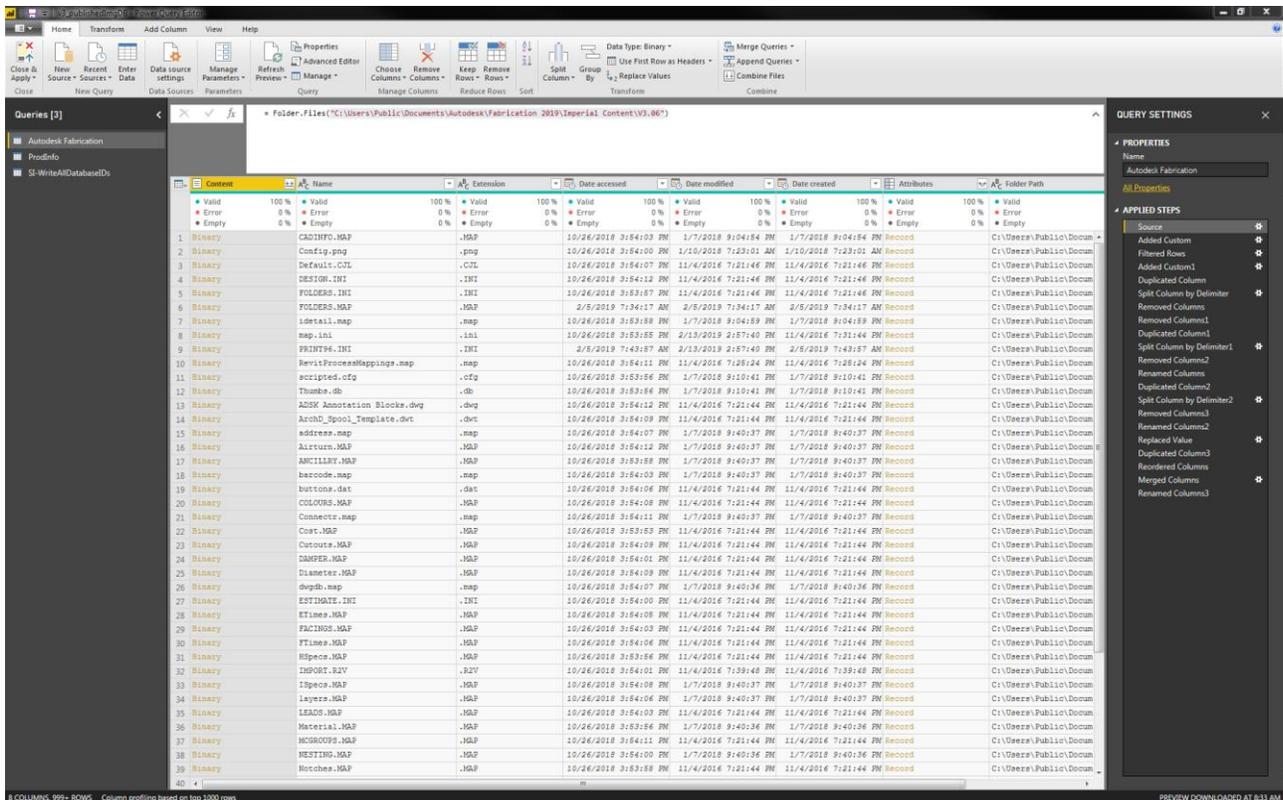


POWER BI DESKTOP.

The Power BI desktop environment is made up of 5 core components. These were originally released in Excel as the “Power Add-Ins”. All can be used individually but, when used together can achieve a robust and insightful data model that produces results. We will be focusing on 3 of these components (in bold) that deliver our fabrication content dashboard. These 3 along with the other two are in Power BI desktop. After our dashboard is created, we will upload it online to Power BI service which is an online companion to Power BI Desktop.

- **Power Query: Data mash up and transformation tool.**
- **Power Pivot: Data modeling tool where relationships are stored.**
- **Power View: Data visualization tool.**
- Power Map: 3D geospatial data visualization tool.
- Power Q&A: Natural language question.
  
- *Power BI Service: Online module where dashboards can be uploaded, shared, and have refresh schedules set.*
- *Power BI Mobile: Mobile version that is designed within Power BI desktop.*



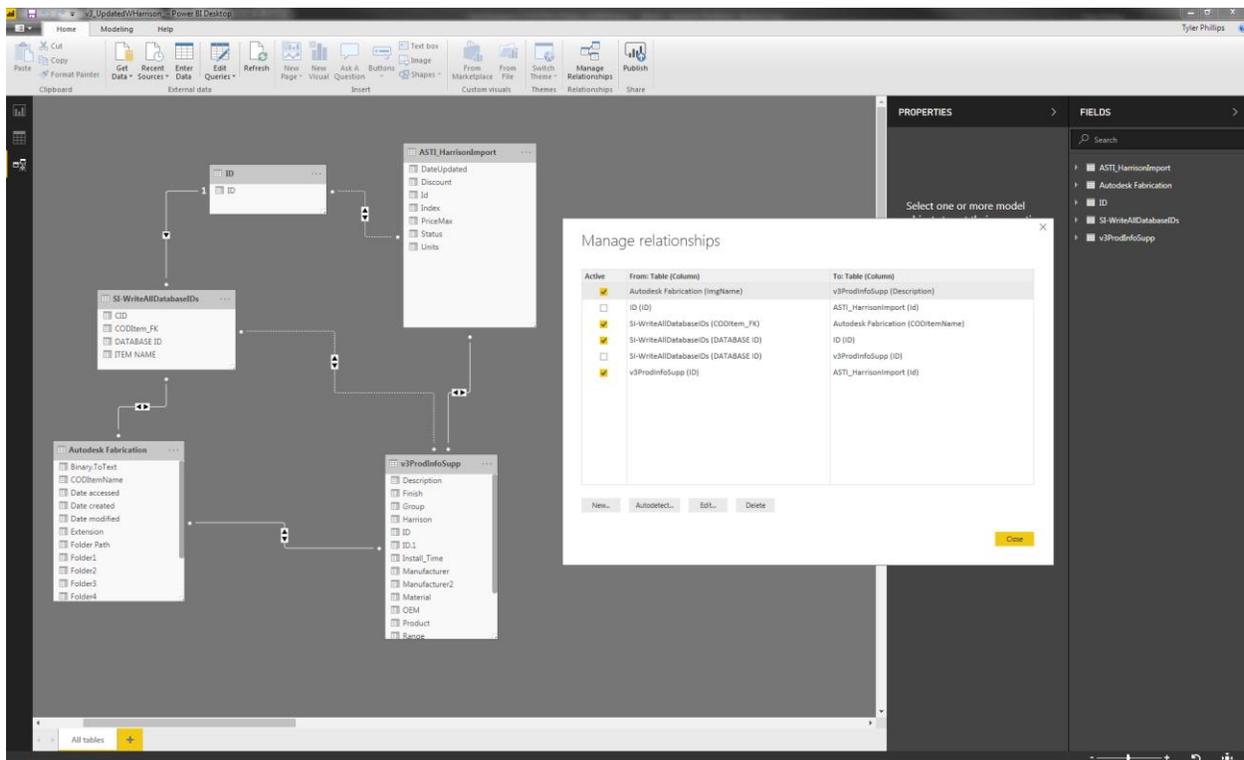


POWER QUERY IN POWER BI DESKTOP.

## Power Query

Power Query is the data transformation module that is responsible for extracting, transforming, and loading data in what is called the ETL process. It is found in the “Get Data” portion of the ribbon in Power BI Desktop and Excel. The only difference between Power Query in both environments is that the Excel version is limited to roughly 40 data connectors. The Power BI Desktop version can connect to roughly 140 different data sources from the GUI. However, Power Query in Excel is still useful to preprocess smaller data mashups before being imported into Power BI Desktop.

- **Extract Data:** Read, Collect, and import data from one or multiple sources
- **Transform Data:** Transform data via M Language query functions like Duplicate, Split, Merge, Pivot and Calculate
- **Load Data:** Send transformations to Power Pivot (Data Model)

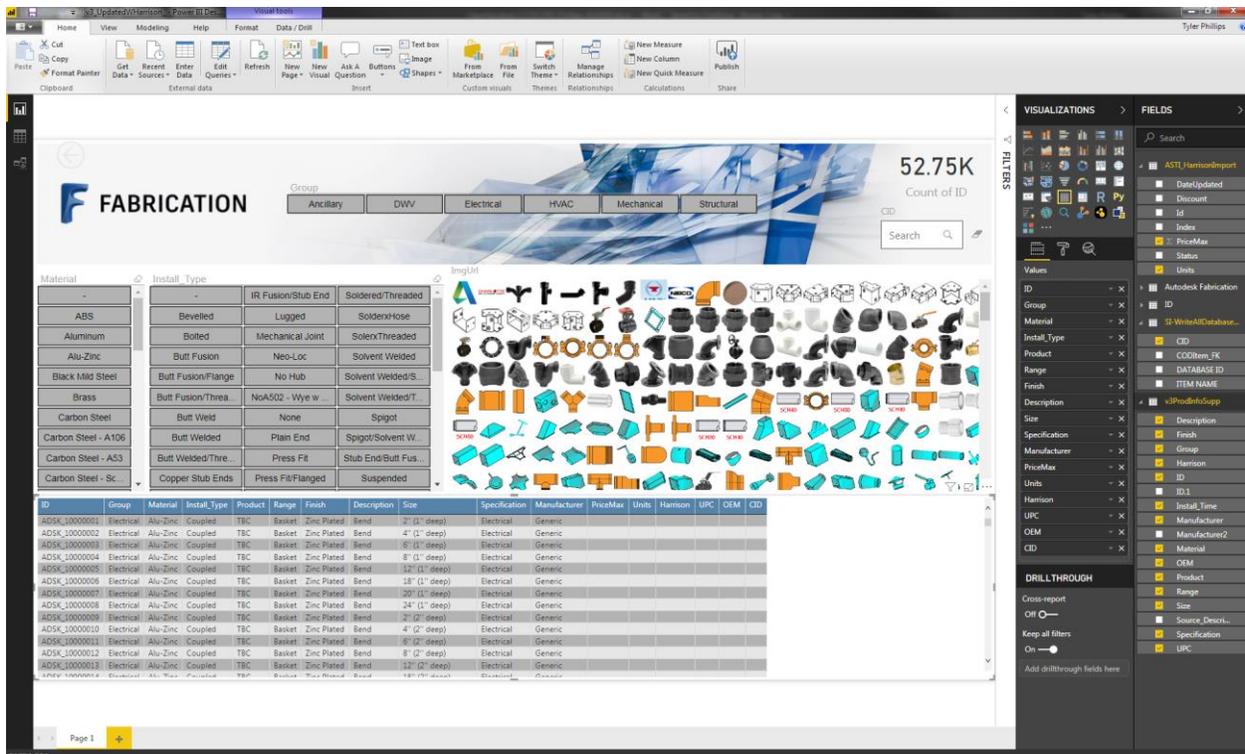


*POWER PIVOT (DATA MODEL) IN POWER BI DESKTOP*

## Power Pivot

Power Pivot is the next step in our process where we begin to build relationships, schemas, and create calculated measures for KPI's and insights. This was originally introduced and is still visible as the Data Model in Excel. However, the Power BI desktop version is much more capable, and you will eliminate confusion by just sticking to using the Power BI version to model your data.

- **Analyze Data:** Map relationships between queries and tables
- **Calculate Data:** Group and summarize data based on relationships then generate measures and KPI's for insights.
- **Organize Data:** Generate filters for Parameters and what if scenarios for Power View Visuals

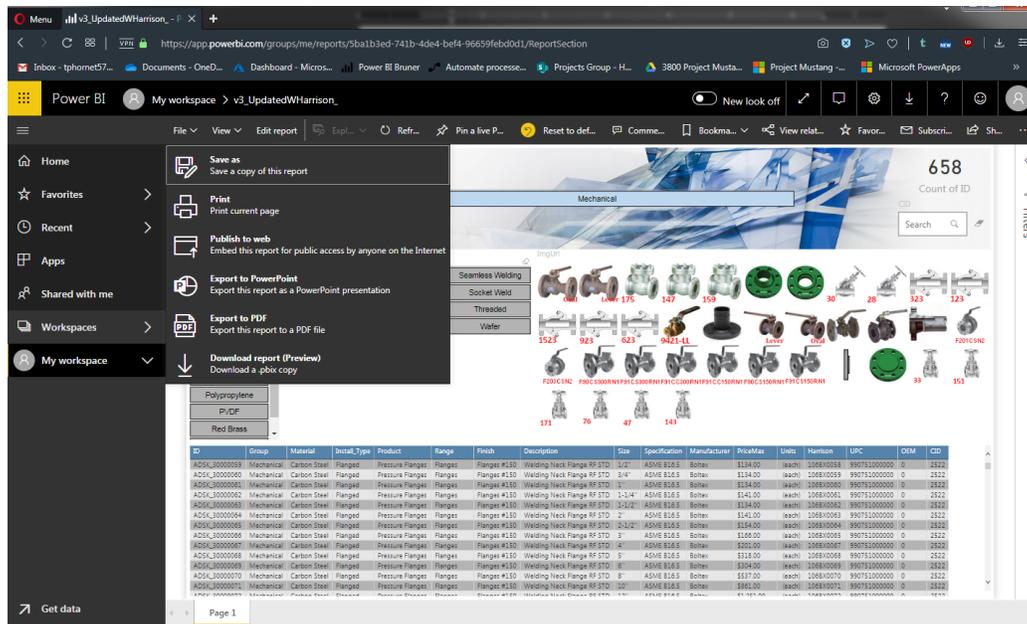


POWER VIEW (POWER BI DESKTOP MAIN PAGE)

## Power View

Power View is the main module that handles the visualization aspect of our data. It is fully dynamic and when set up correctly is a game changer for data exploration. The process goes by selecting the visual, adding fields from our data to it, then formatting how it sorts that info to get us the most insight. In my opinion, this portion is the most impressive as it has over 200 custom visualizations to choose from along with full customization of backgrounds and themes.

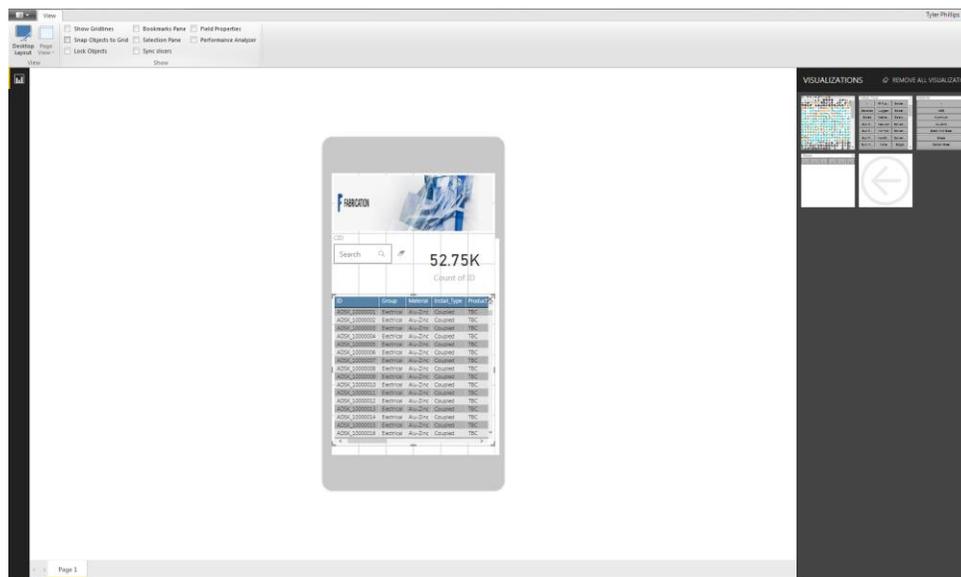
- **Visualize Data:** Process data model to determine best reflective visuals for our reports
- **Explore Data:** Navigate the model using report slicers and filters to find actionable insights
- **Understand & Distribute Data:** Develop efficient reports for repeated scenarios for sharing.



POWER BI SERVICE

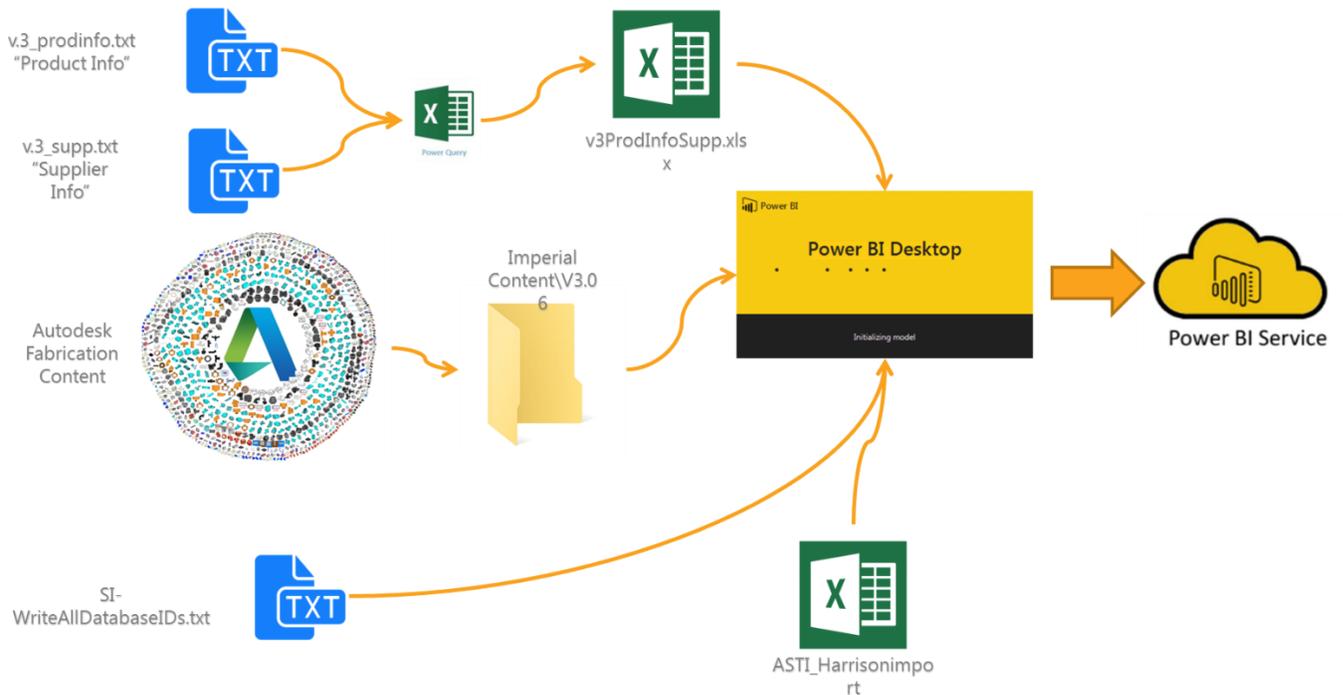
## Power BI Service and Mobile

These additional modules are companions to Power BI desktop and offer additional solutions to help distribute information to your team. Power BI Service where we upload our dashboards, it is here that we administrate refresh schedules, generate web links, and QR codes for dashboards. Power BI mobile is a two-part module where layout design occurs in Power BI desktop and viewing is through the Power BI mobile app.



POWER BI MOBILE (LOCATED UNDER VIEW TAB IN POWER BI DESKTOP)

## Fabrication Content Dashboard: Step by Step Guide



The Fabrication Content Dashboard is built up of 3 root data sources.

1. Production Information: Stored as product info and supplier info in the product information editor. The process is to copy and paste the info as two text files. We will combine these two files with Power Query in Excel to create a master product information table in Excel to be exported to Power Bi later.
2. The second source is our main database folder where we will be extracting the images associated with our .itm files to help us visualize our content.
3. The third is the result of Darren Young’s library script. Specifically, the one that generates the Database ID’s for each .itm in our content.

## Step 1: Product Information Data

Create a “Master” table in Excel that combines both our Product and Supplier Info from the Product information editor. Using the Database Id as a link between the two files. The join type will be a left-outer type

- Open the product information editor, copy and paste the contents into your text editor and save as v.3\_proinfo.txt (you can name the file whatever you like on your own database)
- Repeat the above step with the supplier info portion

The screenshot displays a software interface with a table of product information on the left and a file explorer window on the right.

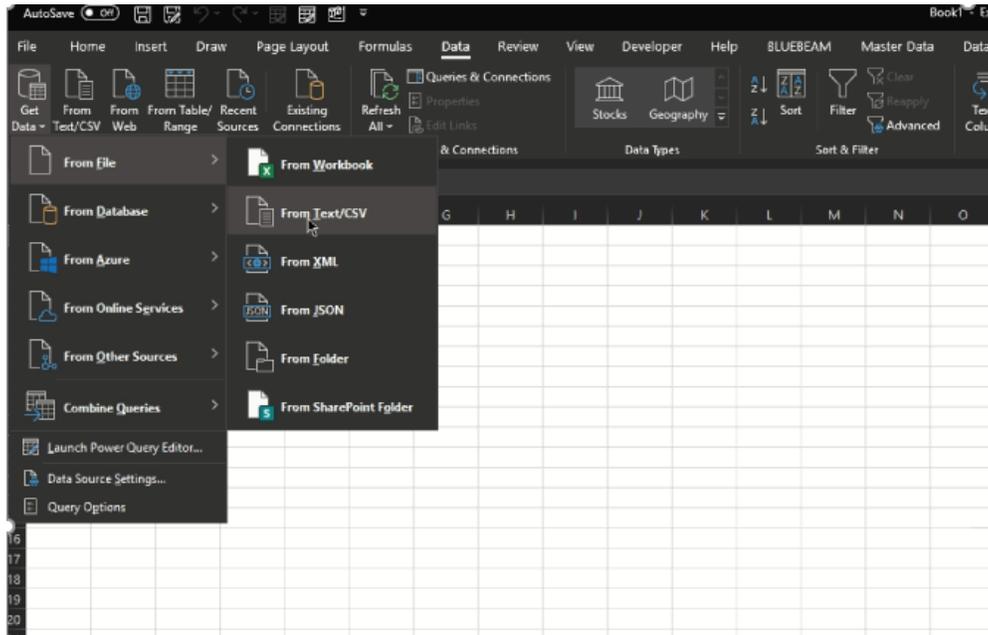
**Table Data (Left Panel):**

ID	Group	Manufacturer	Product	Description	Size	Material	Specification	Install Type	Source
DSK_1000001	Electrical	Generic	TBC	Bend	2" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000002	Electrical	Generic	TBC	Bend	4" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000003	Electrical	Generic	TBC	Bend	6" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000004	Electrical	Generic	TBC	Bend	8" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000005	Electrical	Generic	TBC	Bend	12" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000006	Electrical	Generic	TBC	Bend	18" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000007	Electrical	Generic	TBC	Bend	20" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000008	Electrical	Generic	TBC	Bend	24" (1' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000009	Electrical	Generic	TBC	Bend	2" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000010	Electrical	Generic	TBC	Bend	4" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000011	Electrical	Generic	TBC	Bend	6" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000012	Electrical	Generic	TBC	Bend	8" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000013	Electrical	Generic	TBC	Bend	12" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000014	Electrical	Generic	TBC	Bend	18" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000015	Electrical	Generic	TBC	Bend	20" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000016	Electrical	Generic	TBC	Bend	24" (2' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000017	Electrical	Generic	TBC	Bend	2" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000018	Electrical	Generic	TBC	Bend	4" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000019	Electrical	Generic	TBC	Bend	6" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000020	Electrical	Generic	TBC	Bend	8" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000021	Electrical	Generic	TBC	Bend	12" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000022	Electrical	Generic	TBC	Bend	18" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000023	Electrical	Generic	TBC	Bend	20" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000024	Electrical	Generic	TBC	Bend	24" (4' deep)	Alu-Zinc	Electrical Coupled	Bend	
DSK_1000025	Electrical	Generic	TBC	Cross	2" off 2" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000026	Electrical	Generic	TBC	Cross	2" off 4" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000027	Electrical	Generic	TBC	Cross	2" off 6" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000028	Electrical	Generic	TBC	Cross	2" off 8" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000029	Electrical	Generic	TBC	Cross	2" off 12" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000030	Electrical	Generic	TBC	Cross	2" off 18" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000031	Electrical	Generic	TBC	Cross	2" off 20" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000032	Electrical	Generic	TBC	Cross	2" off 24" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000033	Electrical	Generic	TBC	Cross	4" off 4" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000034	Electrical	Generic	TBC	Cross	4" off 6" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000035	Electrical	Generic	TBC	Cross	4" off 8" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000036	Electrical	Generic	TBC	Cross	4" off 12" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000037	Electrical	Generic	TBC	Cross	4" off 18" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000038	Electrical	Generic	TBC	Cross	4" off 20" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000039	Electrical	Generic	TBC	Cross	4" off 24" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000040	Electrical	Generic	TBC	Cross	8" off 4" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000041	Electrical	Generic	TBC	Cross	8" off 6" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000042	Electrical	Generic	TBC	Cross	8" off 8" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000043	Electrical	Generic	TBC	Cross	8" off 12" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000044	Electrical	Generic	TBC	Cross	8" off 18" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000045	Electrical	Generic	TBC	Cross	8" off 20" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000046	Electrical	Generic	TBC	Cross	8" off 24" (1' deep)	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000047	Electrical	Generic	TBC	Cross	8" off 12" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000048	Electrical	Generic	TBC	Cross	8" off 18" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000049	Electrical	Generic	TBC	Cross	12" off 12" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000050	Electrical	Generic	TBC	Cross	12" off 18" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000051	Electrical	Generic	TBC	Cross	12" off 20" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000052	Electrical	Generic	TBC	Cross	12" off 24" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000053	Electrical	Generic	TBC	Cross	18" off 18" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000054	Electrical	Generic	TBC	Cross	18" off 12" (1' d.	Alu-Zinc	Electrical Coupled	Cross	
DSK_1000055	Electrical	Generic	TBC	Cross	18" off 18" (1' d.	Alu-Zinc	Electrical Coupled	Cross	

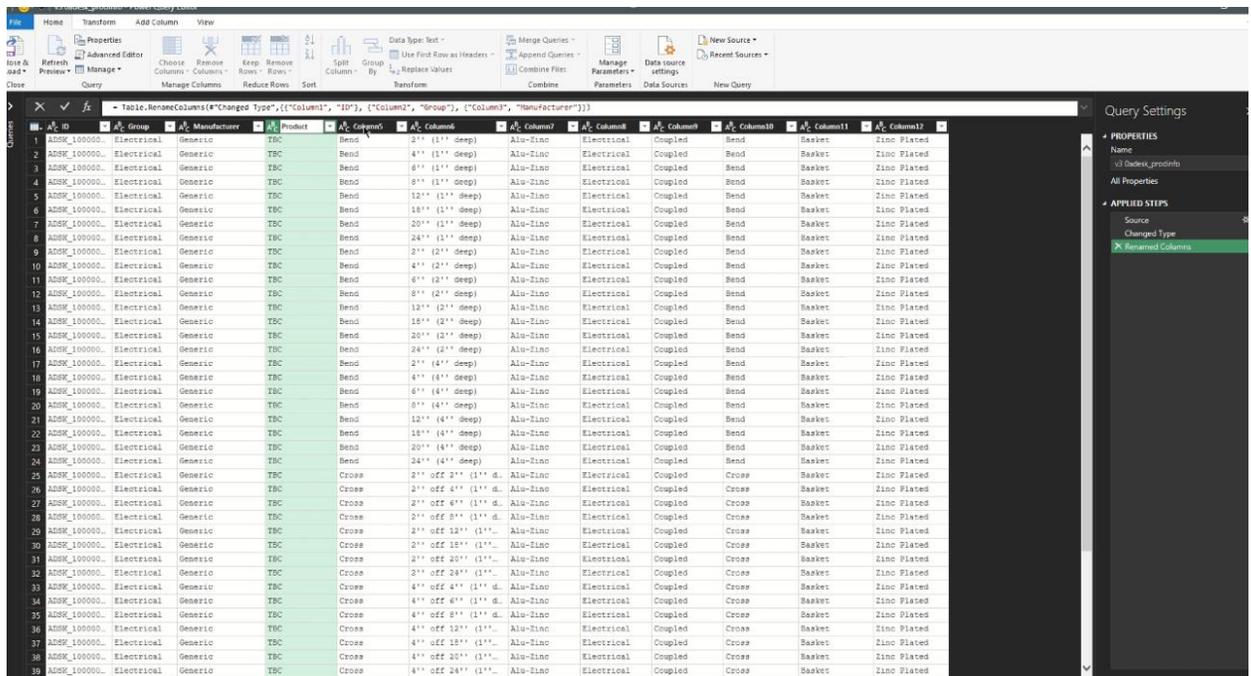
**File Explorer (Right Panel):**

The file explorer shows a folder named "v3\_odesk\_proinfo" containing a file named "v3\_odesk\_proinfo.txt". The file name field shows "Untitled.txt" and the save type is set to "Plain Text (\*.txt;\*.gltignore)".

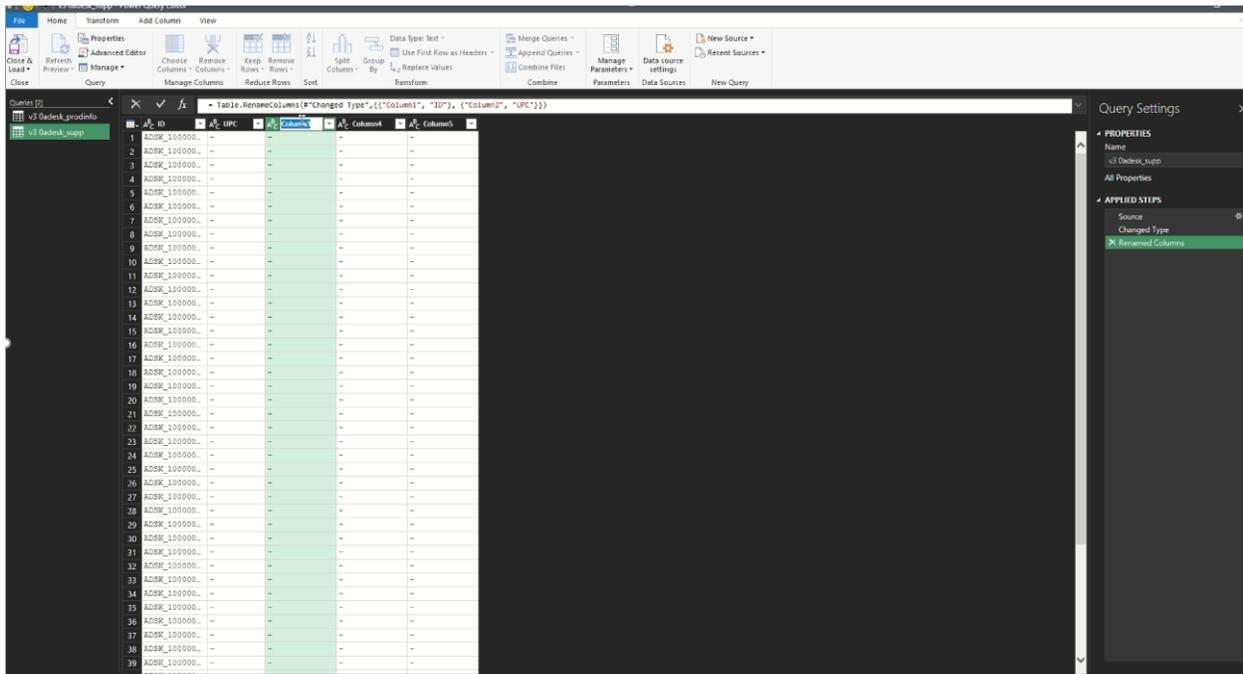
- Open an Excel Workbook and navigate to the Data tab on the ribbon. Click “Get Data” from Text/CSV



- Navigate to the first of the two .txt files we created and select import. This will open the Power Query module and import the data from the file.

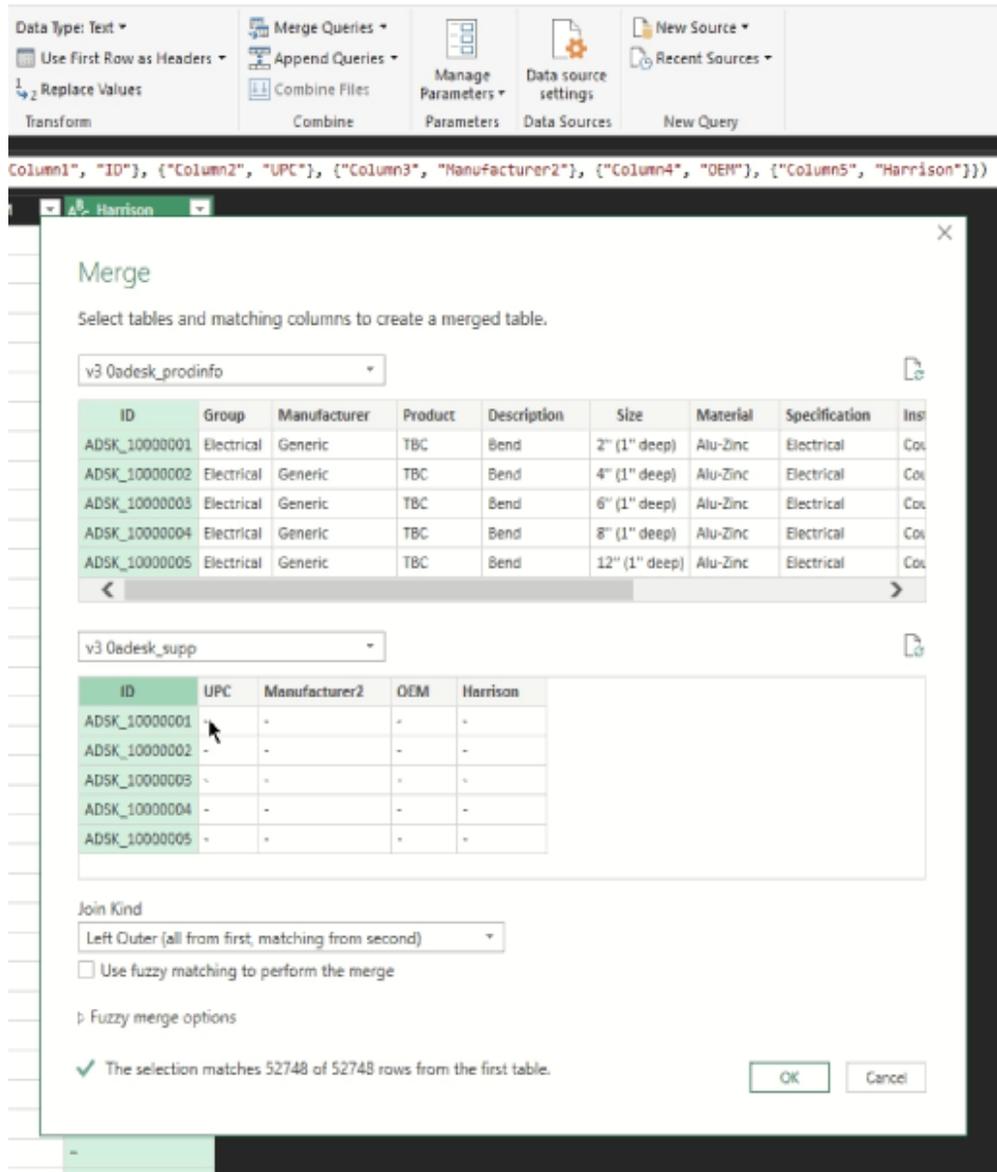


- Repeat the same process and import the other .txt file. Your module should look like this.



- Go through and re-name the columns so they match the product information editor. This can be done by right clicking on a column heading and selecting “rename columns” or by left clicking the title and pressing F2.

- Navigate to the Merge Queries on the ribbon, select “Merge as New”. You will be prompted with a window where we will join the two files as one based on Database Id
- Hold down CTRL and select Both Id Columns. Then select the “Left Outer” join kind. It will then give us the number of matches which should be identical indicating that all rows match. Click OK.



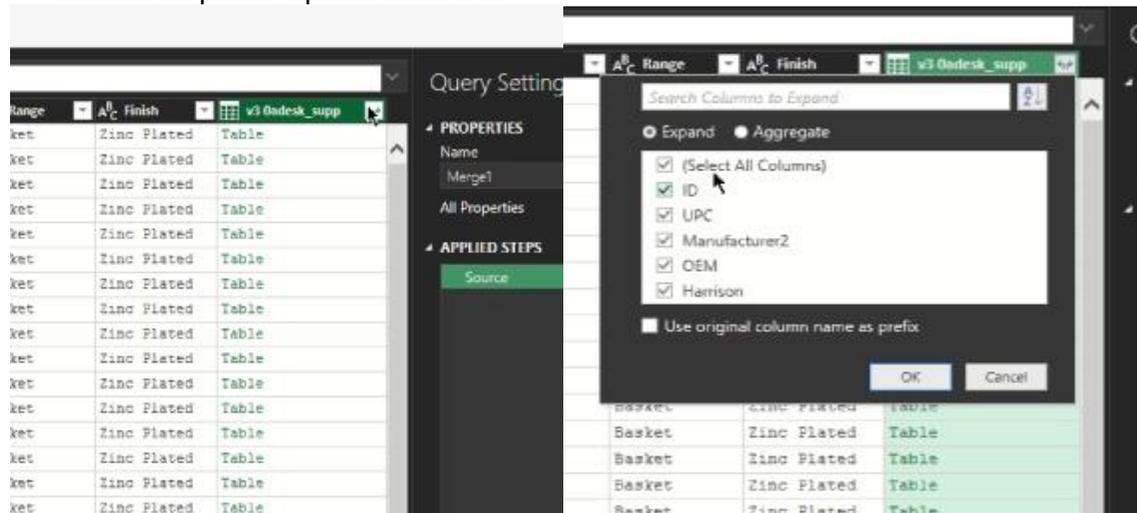
The screenshot shows the Power BI Merge dialog box. The first table selected is 'v3 Oadesk\_proinfo' and the second is 'v3 Oadesk\_supp'. The join kind is set to 'Left Outer (all from first, matching from second)'. A status message at the bottom indicates that the selection matches 52748 of 52748 rows from the first table.

ID	Group	Manufacturer	Product	Description	Size	Material	Specification	Ins
ADSK_10000001	Electrical	Generic	TBC	Bend	2" (1" deep)	Alu-Zinc	Electrical	Coc
ADSK_10000002	Electrical	Generic	TBC	Bend	4" (1" deep)	Alu-Zinc	Electrical	Coc
ADSK_10000003	Electrical	Generic	TBC	Bend	6" (1" deep)	Alu-Zinc	Electrical	Coc
ADSK_10000004	Electrical	Generic	TBC	Bend	8" (1" deep)	Alu-Zinc	Electrical	Coc
ADSK_10000005	Electrical	Generic	TBC	Bend	12" (1" deep)	Alu-Zinc	Electrical	Coc

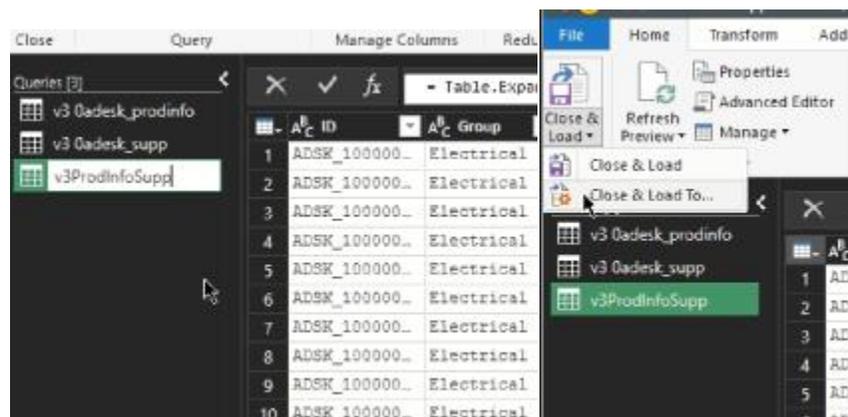
  

ID	UPC	Manufacturer2	OEM	Harrison
ADSK_10000001	-	-	-	-
ADSK_10000002	-	-	-	-
ADSK_10000003	-	-	-	-
ADSK_10000004	-	-	-	-
ADSK_10000005	-	-	-	-

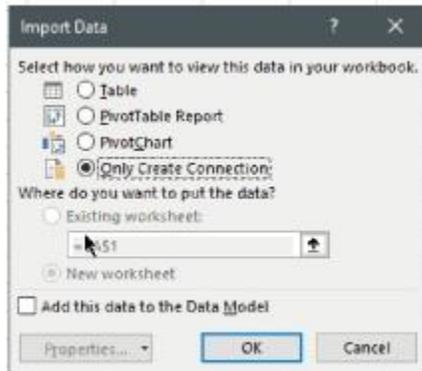
- Power Query now gives us a merged table. Navigate to the far right column and click the expand button. Make sure all columns are selected and uncheck the “use original column as prefix” option. Click OK.



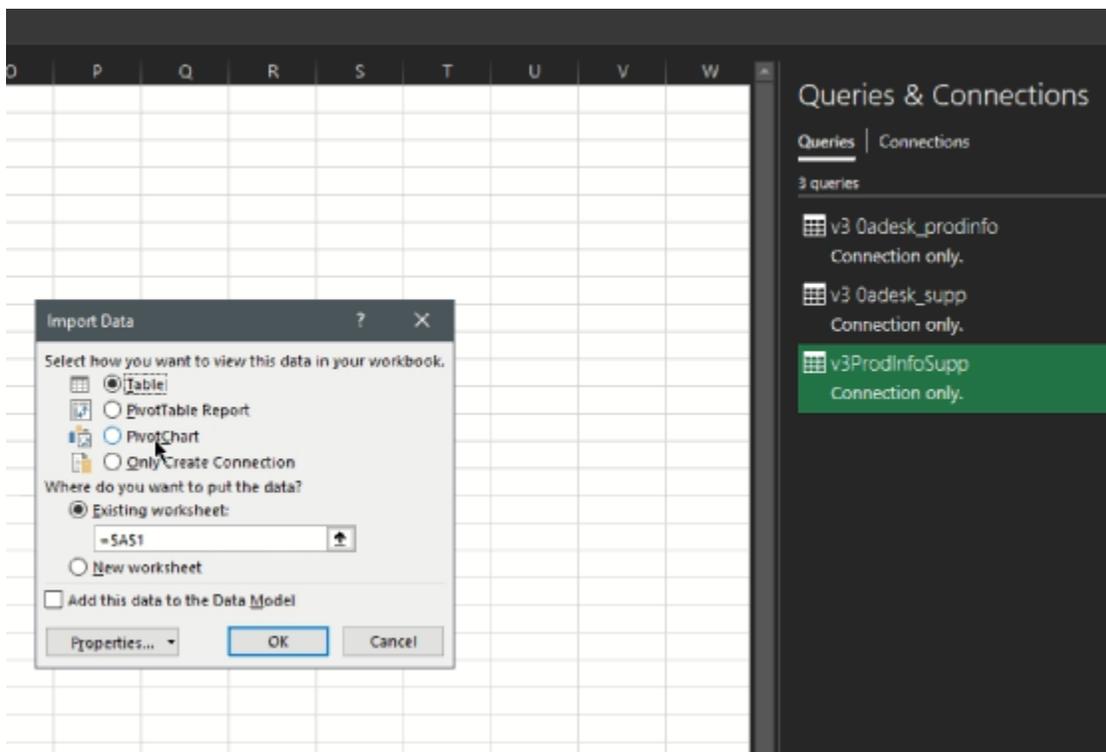
- Navigate to the left side under queries and re-name the table as v3ProdInfoSupp (or whichever you like). This will be the name of the table when we import it into Power Bi desktop.
- Select the “Close & Load” dropdown and click the option with the orange gear titled “Close and Load To”. This creates a connection and allows us to decide which tables will populate in the workbook. The other option with the floppy disk option loads all of our queries as tables and can slow down performance. It’s good practice to seldom use this option.



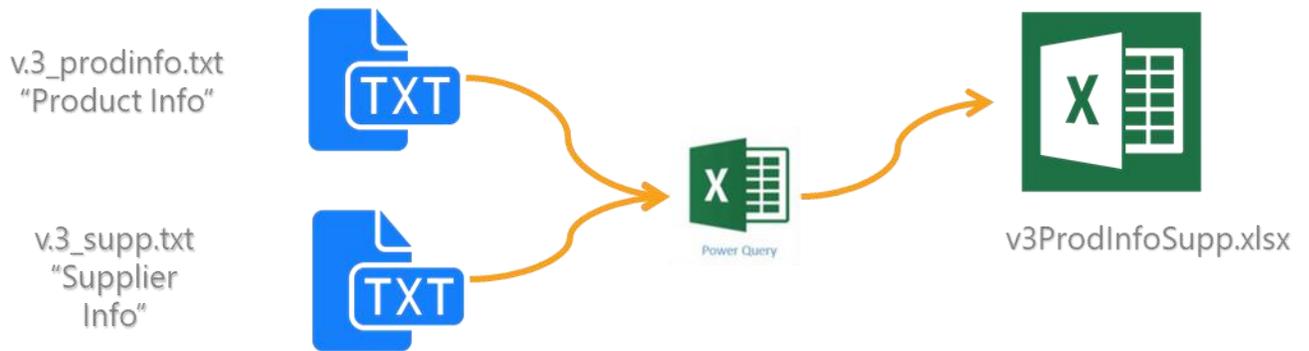
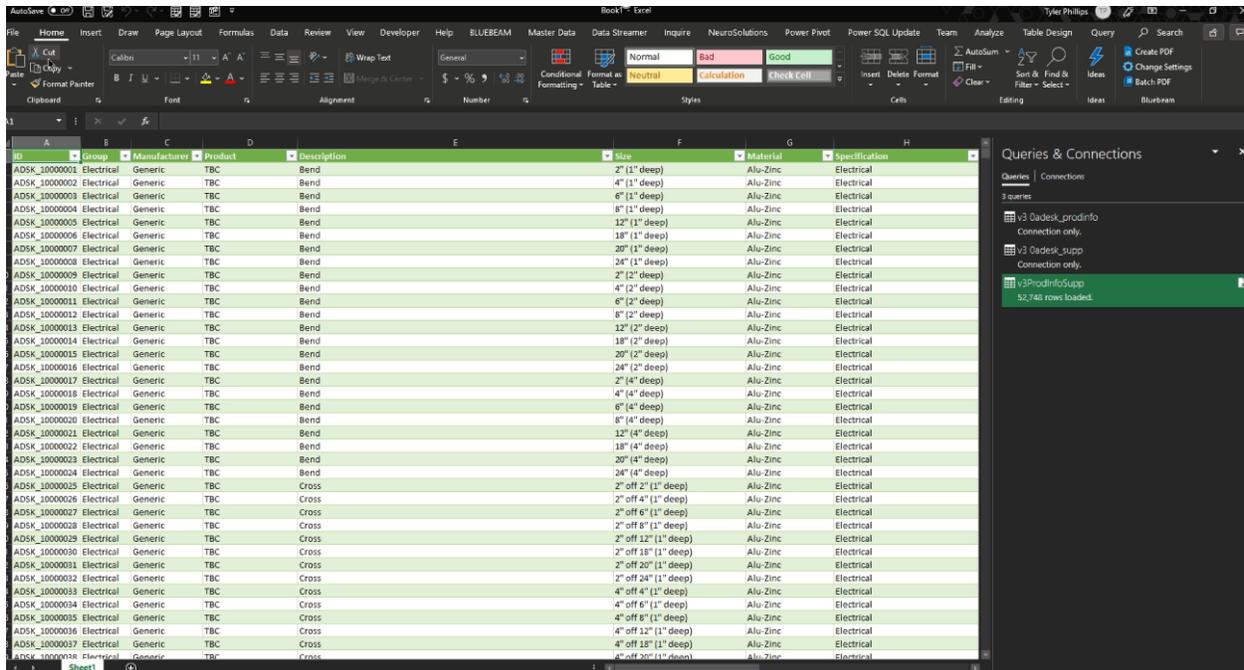
- The Power Query module will now close and prompt us with the “Import Data” window. Select “Only Create Connection” and uncheck the “Add to the Data Model” box. Click OK



- Now the “Queries and Connections” Pane will open to the right. Right click on our merged table “v3ProdInfoSupp” and select “Load to”. This will bring our Import Data window up again. This time we will select the “Table” option and check the “Existing Worksheet” bubble. Click OK.



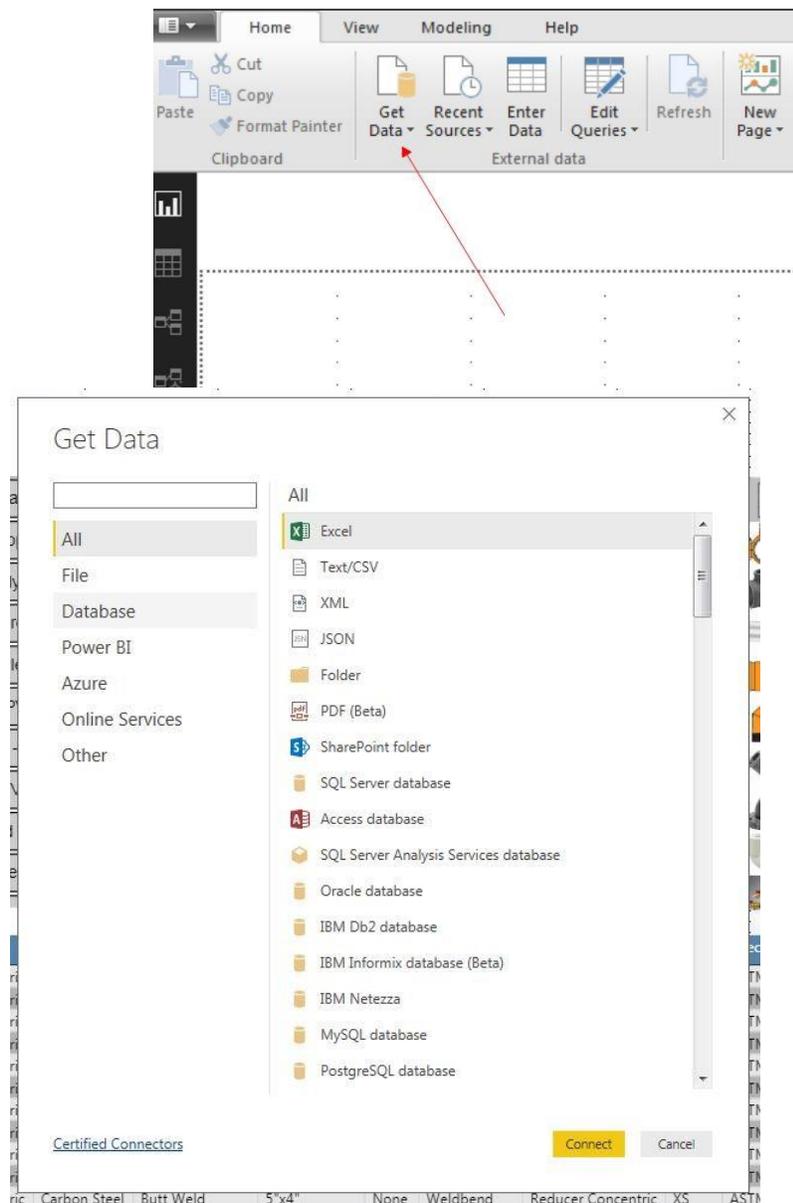
- Our table will now populate to the workbook and will be saved as an object. This will automatically update and adjust for additional rows and columns each time we save the text files from our Product Information Editor. This step is now completed after we save the workbook.



## Step 2: Import images from our Database folder in Power BI Desktop

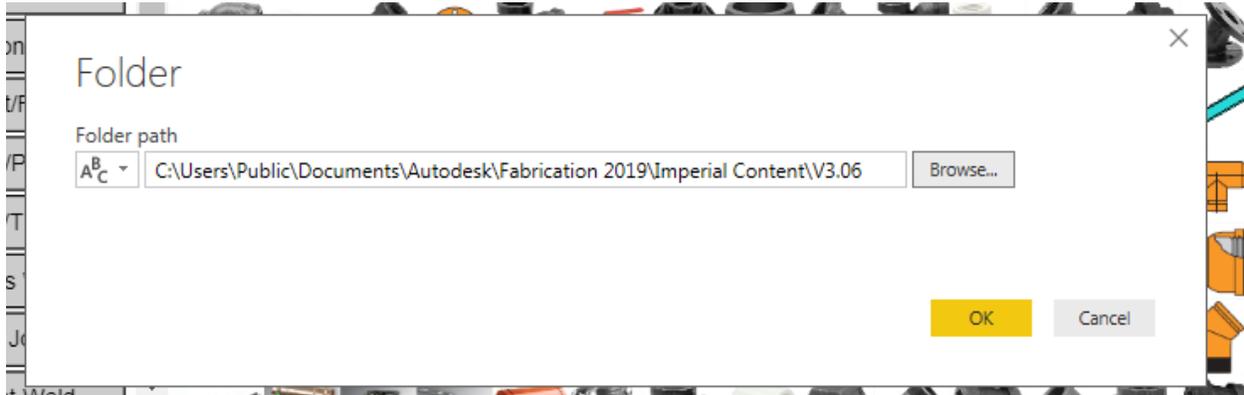
In this step we will be working in Power BI desktop to extract data from our Fabrication Database folder. Because each .itm has an image associated with it using the name, we can build the relationships to our other data sets. The images will be converted from binary to jpegs, then url's with the M Language to give us our tiles at the end that we can sort our data with.

- Open Power BI desktop and navigate to the “Get Data” drop down in the ribbon. You will be prompted with all the data sources that the Power BI can connect to. Select the Folder option and click connect.

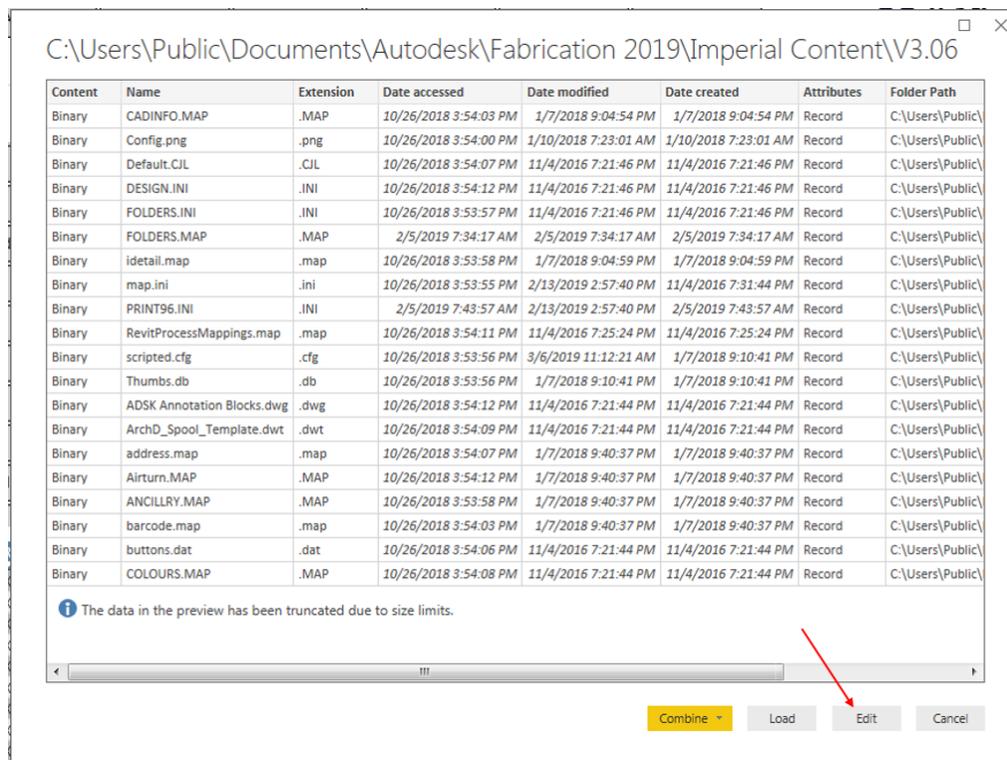


- Enter or browse to the path to your "Autodesk Fabrication" folder with your database and items in your system files. For this example, we are going to use the default imperial database that comes with the software which is usually located here:

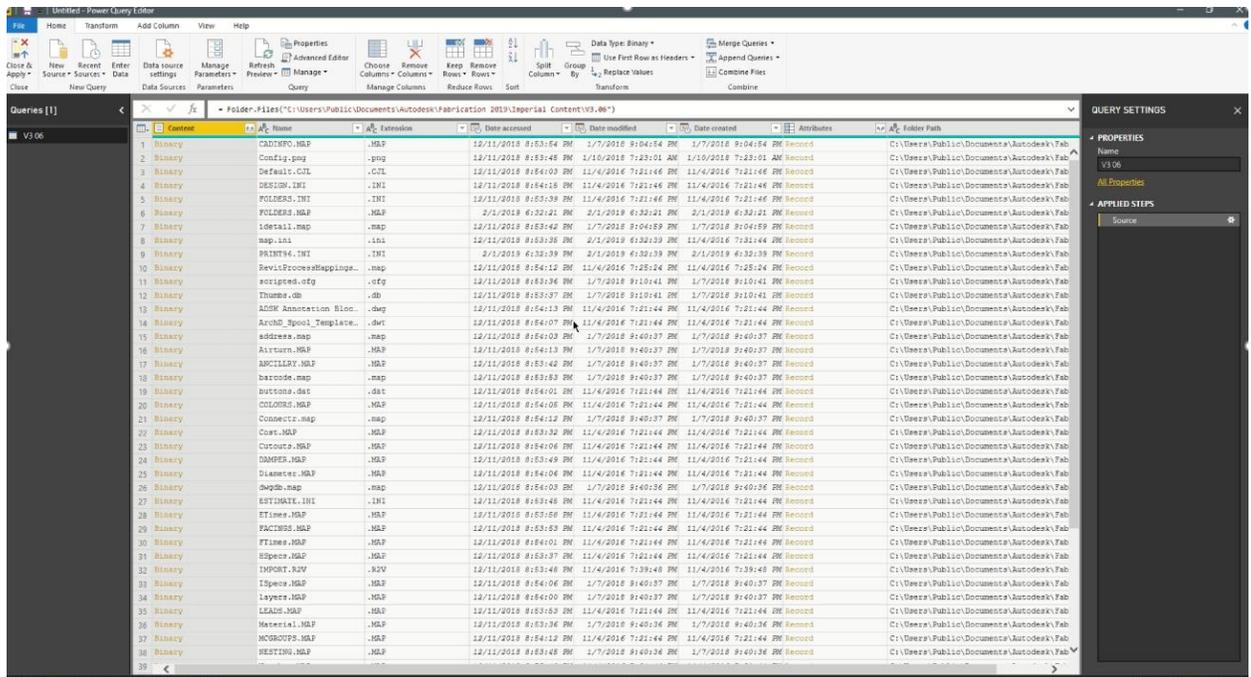
"C:\Users\Public\Documents\Autodesk\Fabrication 2019\Imperial Content\V3.06".  
Then click OK.



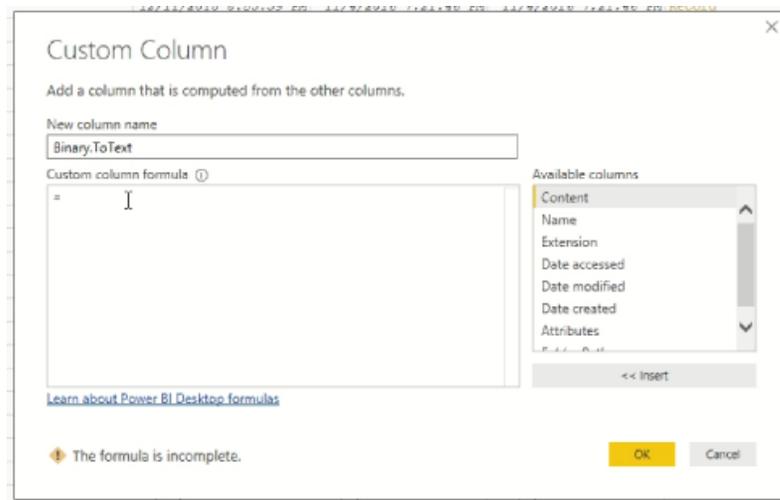
- Next you will be prompted with the data load window asking if you want to edit the content with 4 selections in the bottom right. Select "Edit" since we will be using the folder for images that need conversion.



- After you click "edit" Power BI desktop opens its version of Power Query module. It has the same look as Power Query in Excel. However, the Power BI desktop version is more robust and has additional features that we will become apparent as we continue through the guide. We now have a list of every file in the selected folder populated in the module.

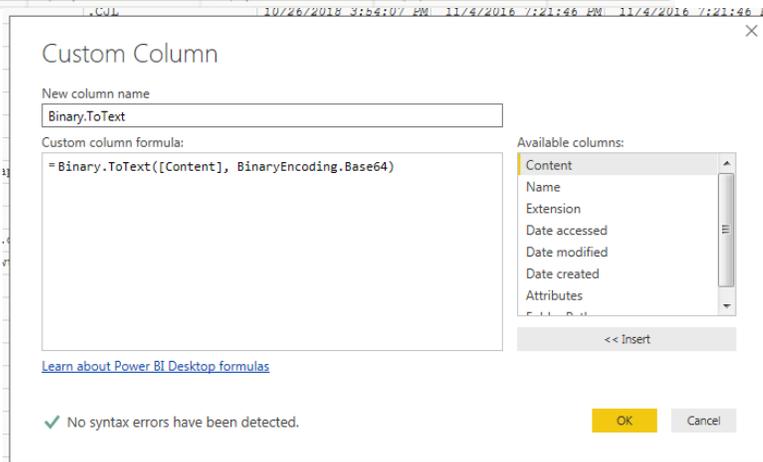
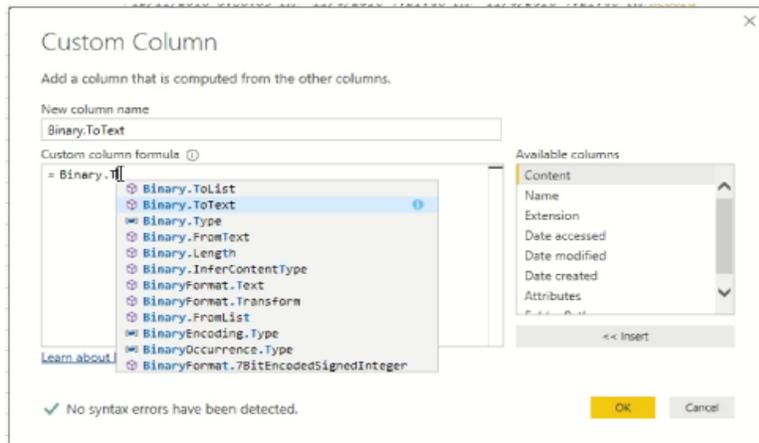


- The next step is to convert our “Content” column from binary to text. We will add a custom column with an M Language formula to convert the information. To do this, navigate to the “Add column” tab and select “Custom Column”. The window that appears is where we will enter the formula and name the column.



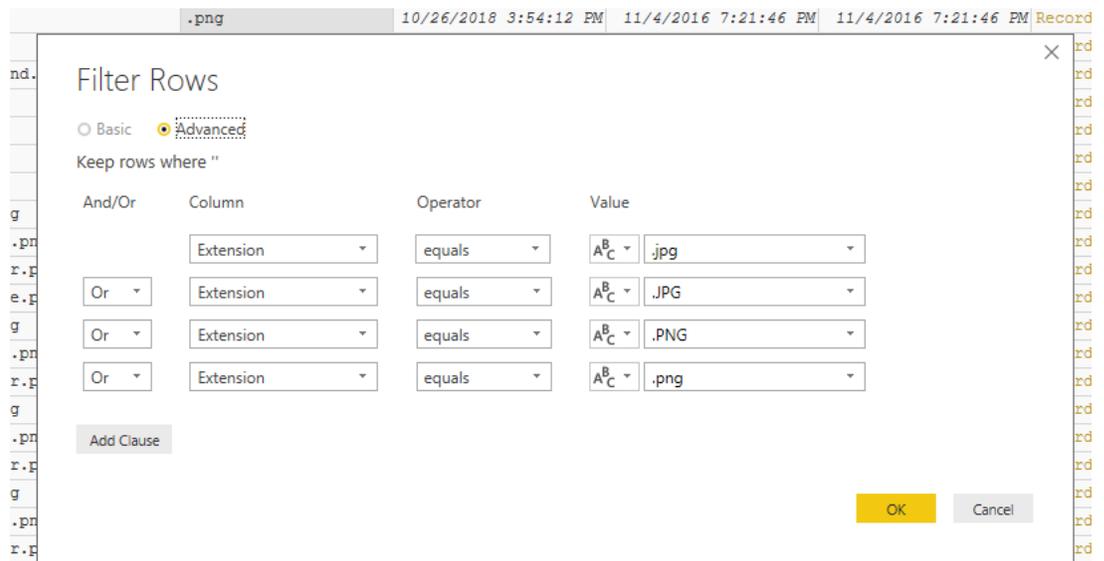
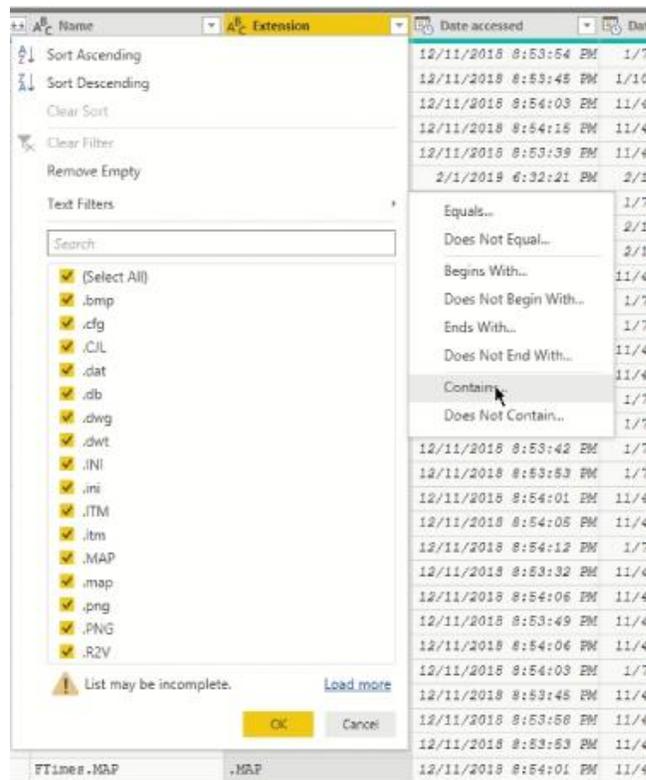
- The window is comprised of 3 portions. Column Name, Column Formula, and available columns. When we enter our M Language formula, we will receive hints from a feature called intellisense. This makes the formula writing process much more intuitive than having to remember the specific rules. The syntax is broken down into 3 parts.
- Binary.ToText(**binary** as nullable binary, optional **encoding** as nullable number) as nullable text

- `Binary.ToText ([Content], BinaryEncoding.Base64)`
- *Binary.ToText* : Function that calls Binary content
- *[Content]*: Our content column
- *BinaryEncoding.Base64*: Converts to text and encodes it in Base64 format

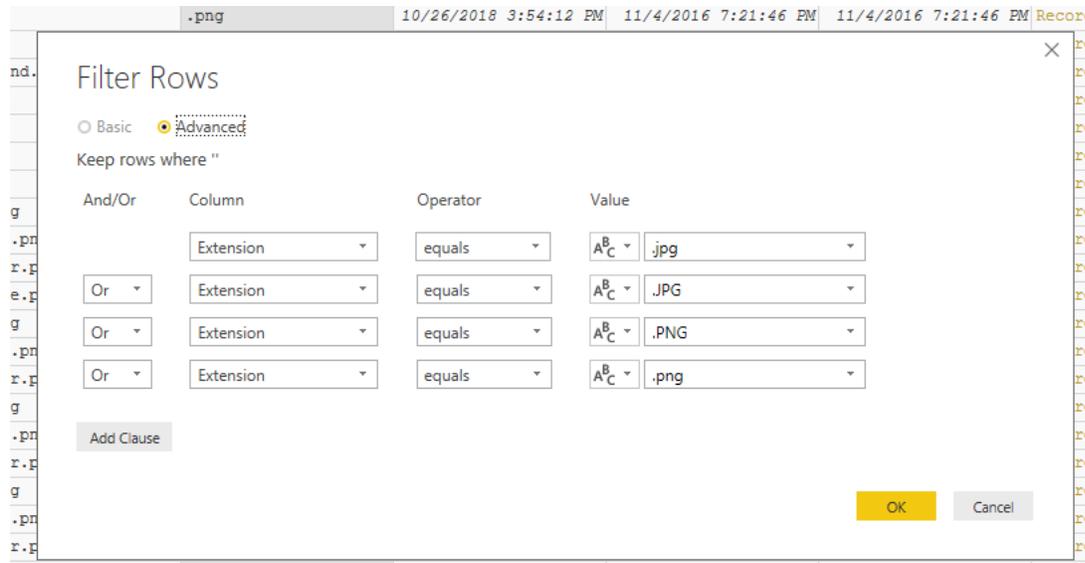


- After entering the M Language formula. Click OK

- We only need this set for the image files, so we need to filter out the other file types and keep the PNG's and JPG's. We can filter for these files by navigating to the "Extension" column. Then opening the Text filters dropdown to select the "Contains" operator. This will bring up the "Filter Rows" window.



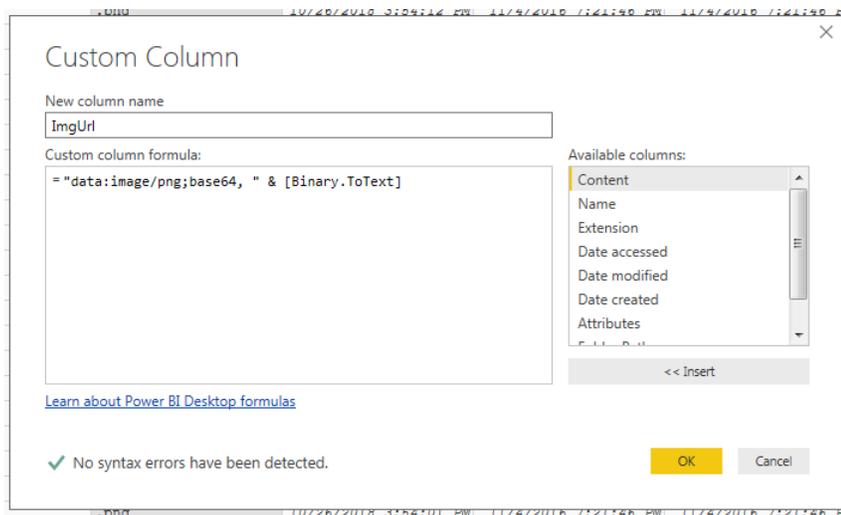
- In this window select the “Advanced” button. In the Column dropdowns, select “Extension”. Then select “Equals” in the operator fields. Next, we fill in all the file extensions that will be kept. This process is essentially a GUI version of an “IF” statement from Excel. Click OK.



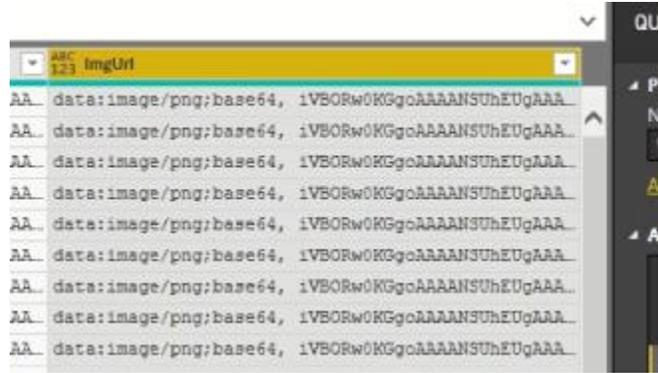
- Next, we repeat the custom column process adding a column with text values that will be appended onto the Binary.ToText column. This will finalize our binary to text conversion into a readable value for the visual to use on the dashboard.

**= "data:image/png;base64, " & [Binary.ToText]**

Text to be added ^                      Column to append to ^



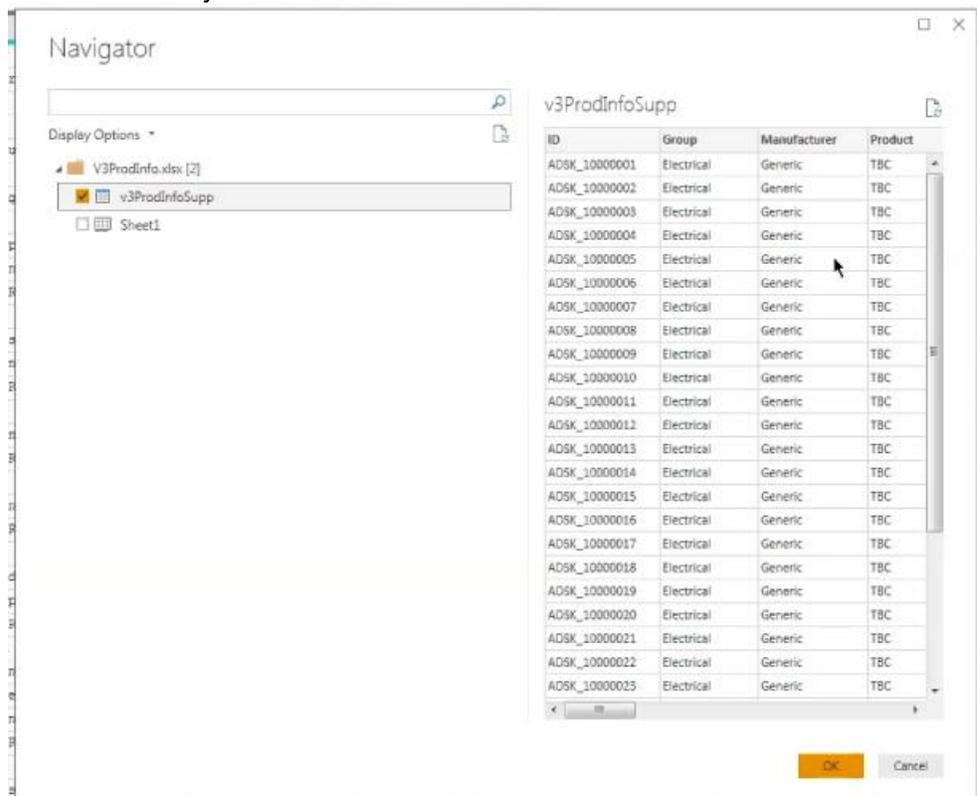
- Once this is completed you should have a column that looks like this:



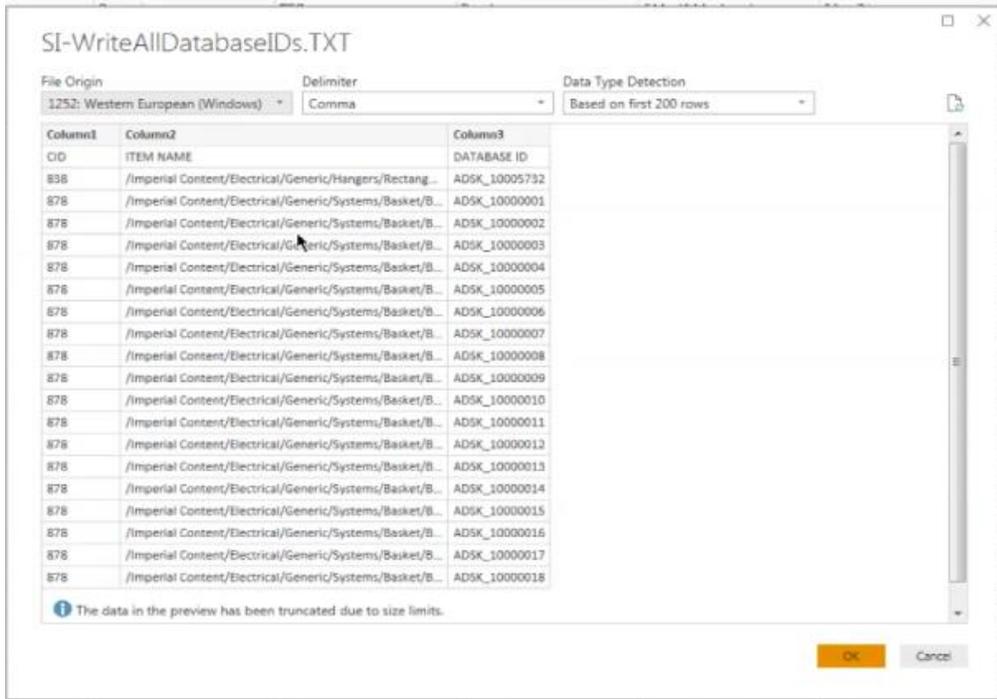
### Step 3: Import Product Information and COD Script Data

In this step we will import the table “v3ProdInfoSupp” from our Excel file we created in step one along with the .txt file that is created when you run the COD script in Fabrication. Ours is called “SI-WriteAllDatabaseIDs.txt”

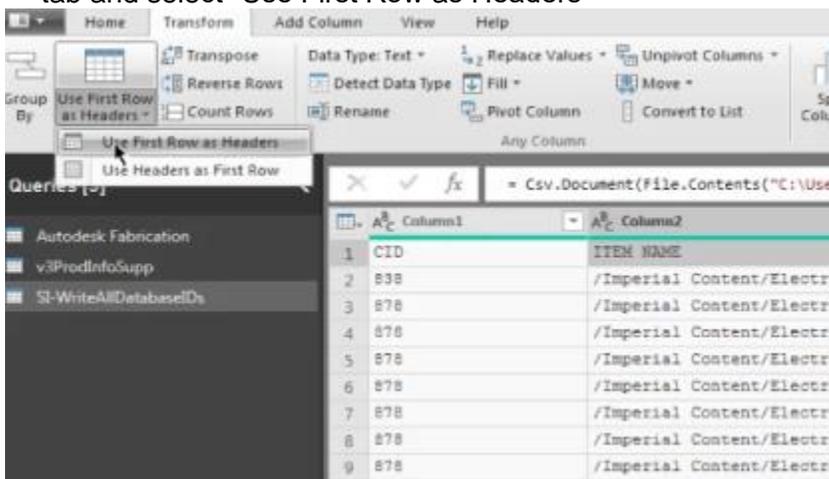
- To import our Excel file. Navigate to the “New Source” ribbon and select Excel. Navigate to where you saved the Excel file and select, then click open. You will be prompted with the Navigator window. Notice how it shows our table “v3ProdInfoSupp” and the sheet. This means our table is recognized as a separate object and Power Query will adjust for extra columns and rows automatically. Select this table and click “OK”.



- Now that we have our Product Information, we will repeat the step and import our “SI-WriteAllDatabaseIDs.txt” File. Select, “New source” and Click “OK” in the Preview pane.



- Next, we need to promote our first row to headers. To do this, we navigate to the “Transform” tab and select “Use First Row as Headers”

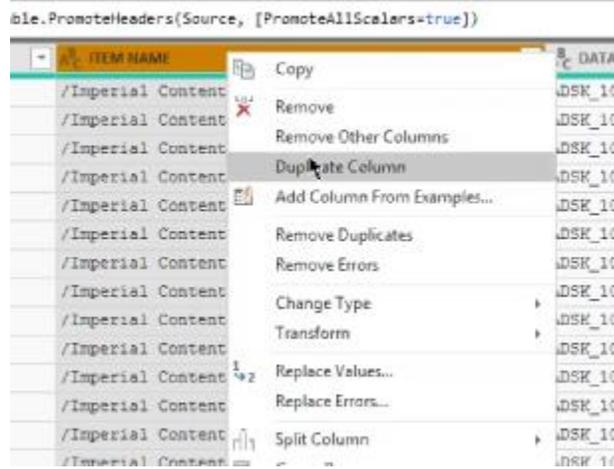


- Once completed we should have 3 queries populated in the left panel. In the next step we will be modifying these queries to build relationships between them.

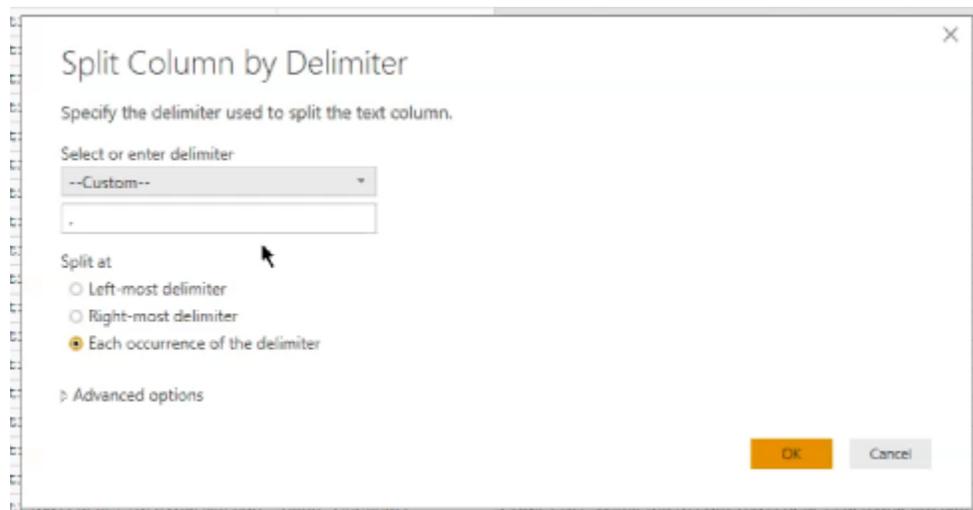
## Step 4: Create a Foreign Key in our SI-WriteAllDatabaseID's table

In this step we will be using the "Item Name" Column in our SI-WriteAllDatabaseID's table. This will be modified to create a foreign key that will be used as a link between our Images in the database along with our product information. We will do this by removing the ".itm" extension at the end of the column using a combination of functions.

- From the Power Query Module select the "SI-WriteAllDatabaseIDs" query. Right click and duplicate the "Item Name" column.



- Navigate to the newly created column "ITEM NAME - Copy", right click and select "Split Column by Delimiter". You will be prompted with a pane that appears as follows:



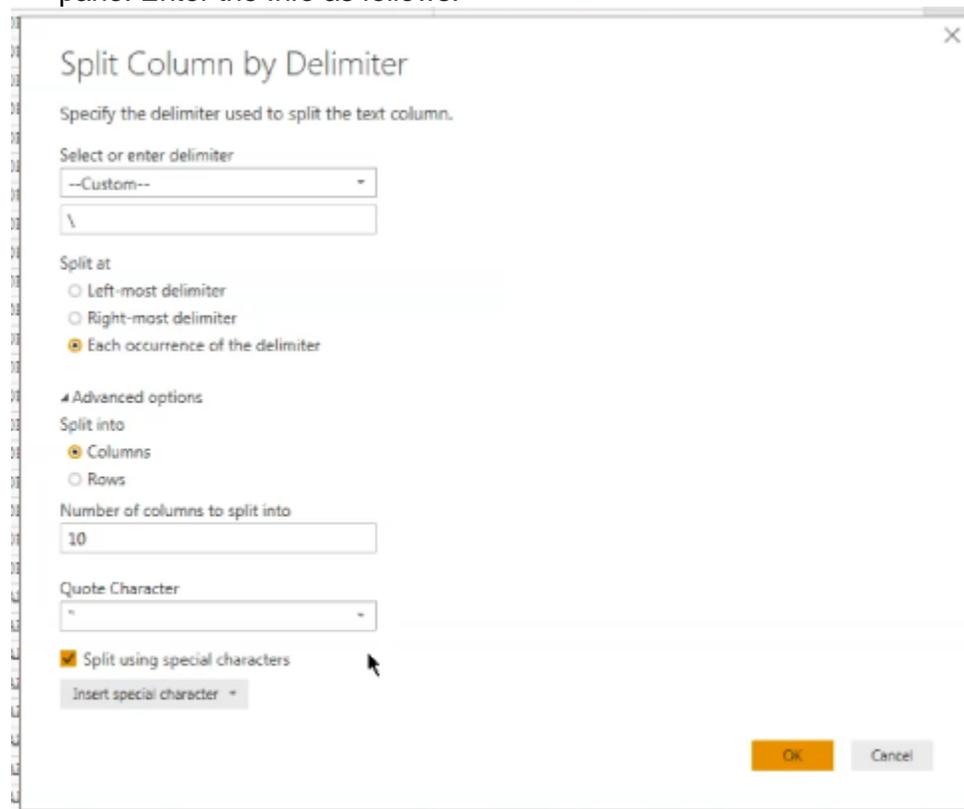
- Select "Custom" for Delimiter type and enter a period "." For the delimiter value. This will split out the ".itm" filetype extension from the column as a new column "ITEM NAME - Copy.2", delete this column. And re-name "ITEM NAME - Copy.1" to "CODItem\_FK". Our result should look like this:

	ITEM NAME	DATABASE ID	CODItem_FK
1	/Imperial Content/Electrical/Generics/Hangers/Rec...	ADSK_10005732	/Imperial Content/Electrical/Generics/Hangers/R...
2	/Imperial Content/Electrical/Generics/Systems/Bas...	ADSK_10000001	/Imperial Content/Electrical/Generics/Systems/B...
3	/Imperial Content/Electrical/Generics/Systems/Bas...	ADSK_10000002	/Imperial Content/Electrical/Generics/Systems/B...
4	/Imperial Content/Electrical/Generics/Systems/Bas...	ADSK_10000003	/Imperial Content/Electrical/Generics/Systems/B...

## Step 5: Create a Folder Hierarchy in the Autodesk Fabrication Folder Table

Now that we have our CODItem\_FK, we now are going to begin to create the primary key to link our Autodesk Fabrication Folder table to it. Much like Step 4, we are going to split our “Folder Path” by the backslash “\” delimiter. This will allow us to select which columns we need to merge later to create our key.

- Navigate to the “Autodesk Fabrication” table, Right click on the “Folder Path” column and select “Duplicate Column”
- Right click and select “Folder Path – Copy” and select “Split Column”, “By Delimiter”. Select the Custom. Enter a back slash in the delimiter, then open the advanced editor portion of the pane. Enter the Info as follows:

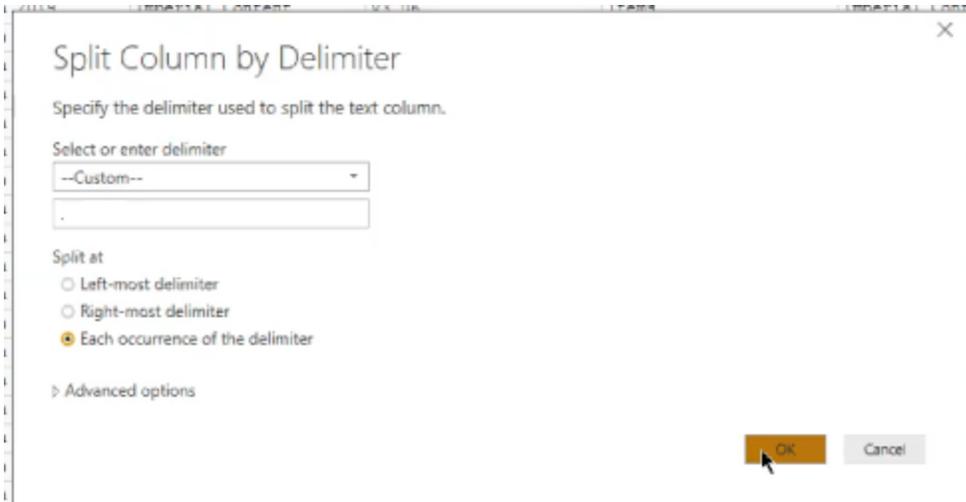


- The result will give us the first 10 folders as columns which will be used as a reference in the future. This comes in handy if your database location changes.

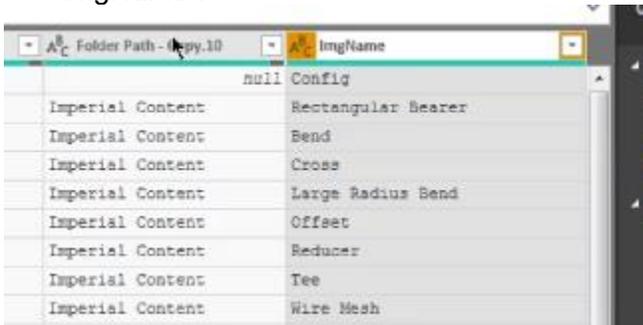
## Step 6: Extract the Item Name from our Autodesk Fabrication Table

In this step we will remove unneeded columns the filetype extension from the “Name” column in the Autodesk Fabrication Folder table. This will then be merged later with our folder path to create our Primary key.

- Remove columns “Folder Path – Copy.1-5”, Content, And attributes. This will improve the performance of the file and give us our base hierarchy. A short cut to do this is to left click on the furthest left column, hold shift, select the furthest right column, right click, select “Remove Columns” or press delete.
- Select and duplicate the “Name” column. Split the “Name – Copy” column by the period “.” delimiter. Select “OK”

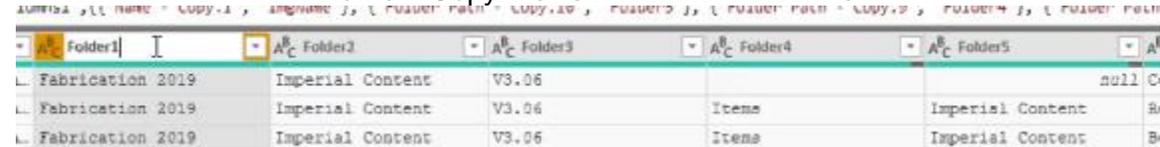


- Remove the “Name – Copy.2” column and rename the “Name – Copy.1” column to “ImgName”.



Folder Path - Copy.10	ImgName
	null Config
Imperial Content	Rectangular Bearer
Imperial Content	Bend
Imperial Content	Cross
Imperial Content	Large Radius Bend
Imperial Content	Offset
Imperial Content	Reducer
Imperial Content	Tee
Imperial Content	Wire Mesh

- Rename the “Folder Name – Copy.1-5” Columns to “Folder1-5”

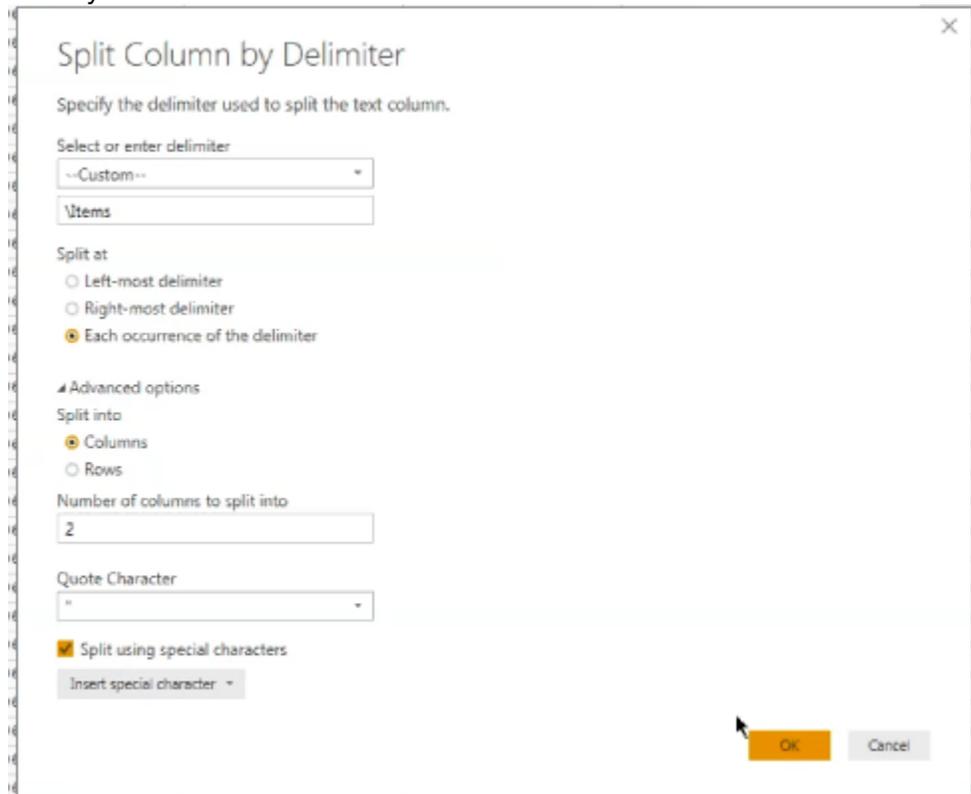


Folder1	Folder2	Folder3	Folder4	Folder5
Fabrication 2019	Imperial Content	V3.06		null
Fabrication 2019	Imperial Content	V3.06	Items	Imperial Content
Fabrication 2019	Imperial Content	V3.06	Items	Imperial Content

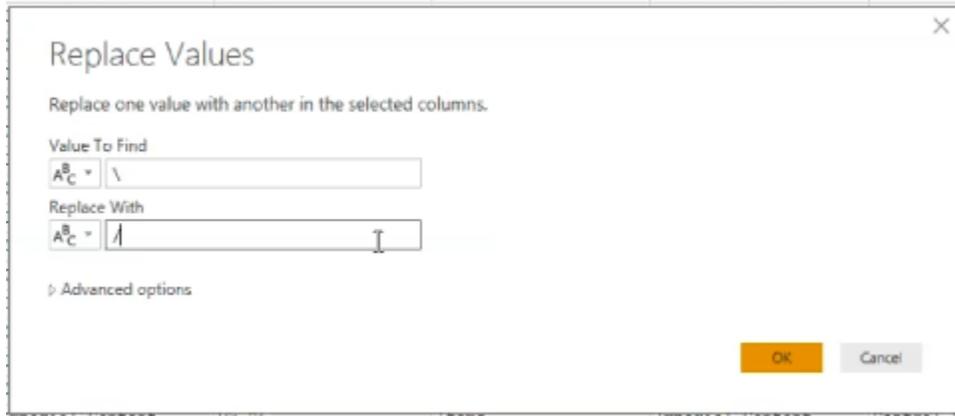
## Step 7: Create Primary Key in the Autodesk Fabrication Folder Table

Now that we have prepared the columns in steps 5 and 6, we can build our primary key. Using the “ImgName” and “Folder Path” columns, we will modify them as follows:

- First, in the Autodesk Fabrication Folder table we will duplicate the “Folder Path” folder.
- Split the “Folder Path – Copy” by delimiter “\Items”. Next, in the advanced options select the “columns” option, enter 2 for number of columns, and split into special characters. Select “OK”. The result is the first part of the Primary key.



- Remove the “Folder Path Copy.1” Column
- Select the “Folder Path – Copy.2”, right click and select replace values. We are going to replace the backslash “\” with the forward slash “/”. This will give us our match to the folder path portion of our foreign key in the SI-WriteAllDatabaseIDs table.



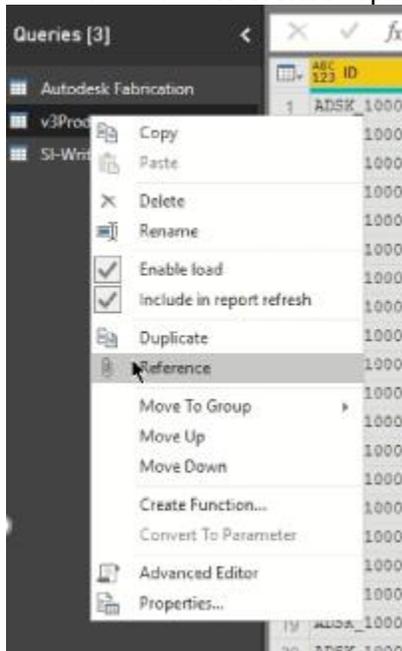
- Next, duplicate the “ImgName” column. After it is created, hold down ctrl and select “Folder Path - Copy.2” and the “ImgName – Copy” columns. Right click and select the “Merge Columns”. Set the separator to “- - None - -” and enter “CODItemName” for the column name. This is now our Primary Key to the SI-WriteAllDatabaseIDs table.



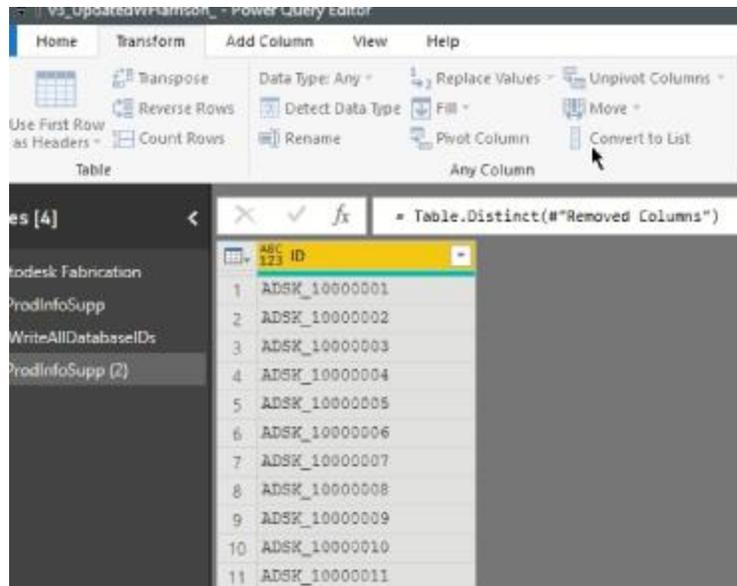
## Step 8: Create the Database ID lookup List

In this step we are going to reference our Product Information and create a list of Database IDs. When you create a list, it only allows for Unique Values. This helps us in two ways, one it will give us an error if there are duplicate values in our database IDs, and the second giving us the ability to use it as a lookup reference when we build our relationships.

- Navigate to the Queries pane and right click on the “v3ProdInfoSupp” query. Select the “Reference” option in the dropdown.



- Right click on the ID column and select “Remove Other Columns” this will give us our IDs only.
- Navigate to the “Transform” tab on the ribbon and select “Convert to List”

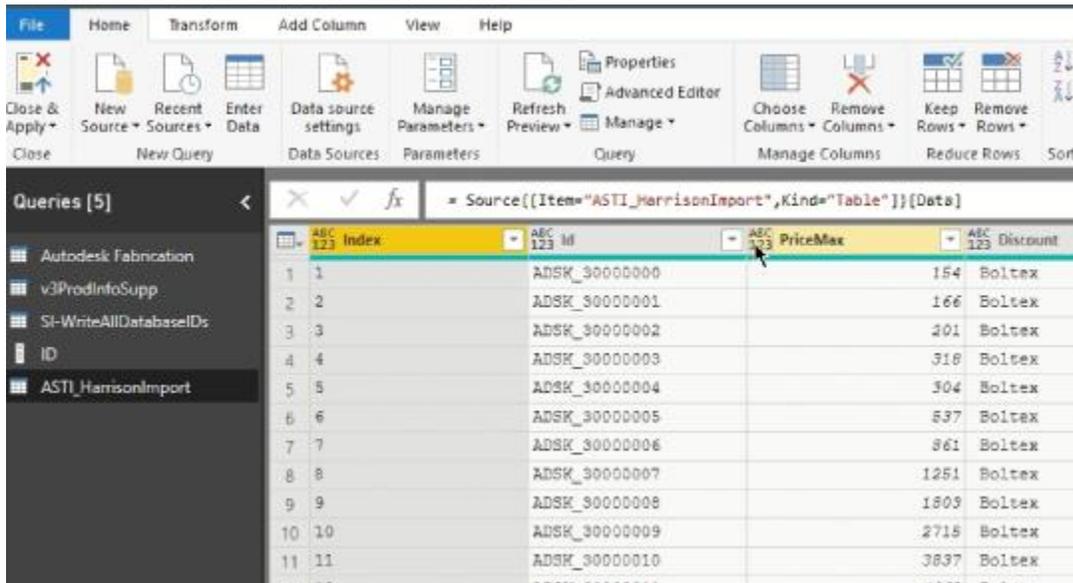


- Right Click “v3ProdInfoSupp(2)” and Rename it to “ID”

## Step 9: Import Harrison Pricing

This step is the import of the Harrison Pricing excel file to show how to add more data to the existing model we have.

- Navigate to “New Source” in the ribbon of the Power Query module. Open the ASTI\_HarrisonImport.xlsx file.
- Select the “ASTI\_HarrisonImport” table and click “OK”. The result will be a new Query with the table name and should look like this:



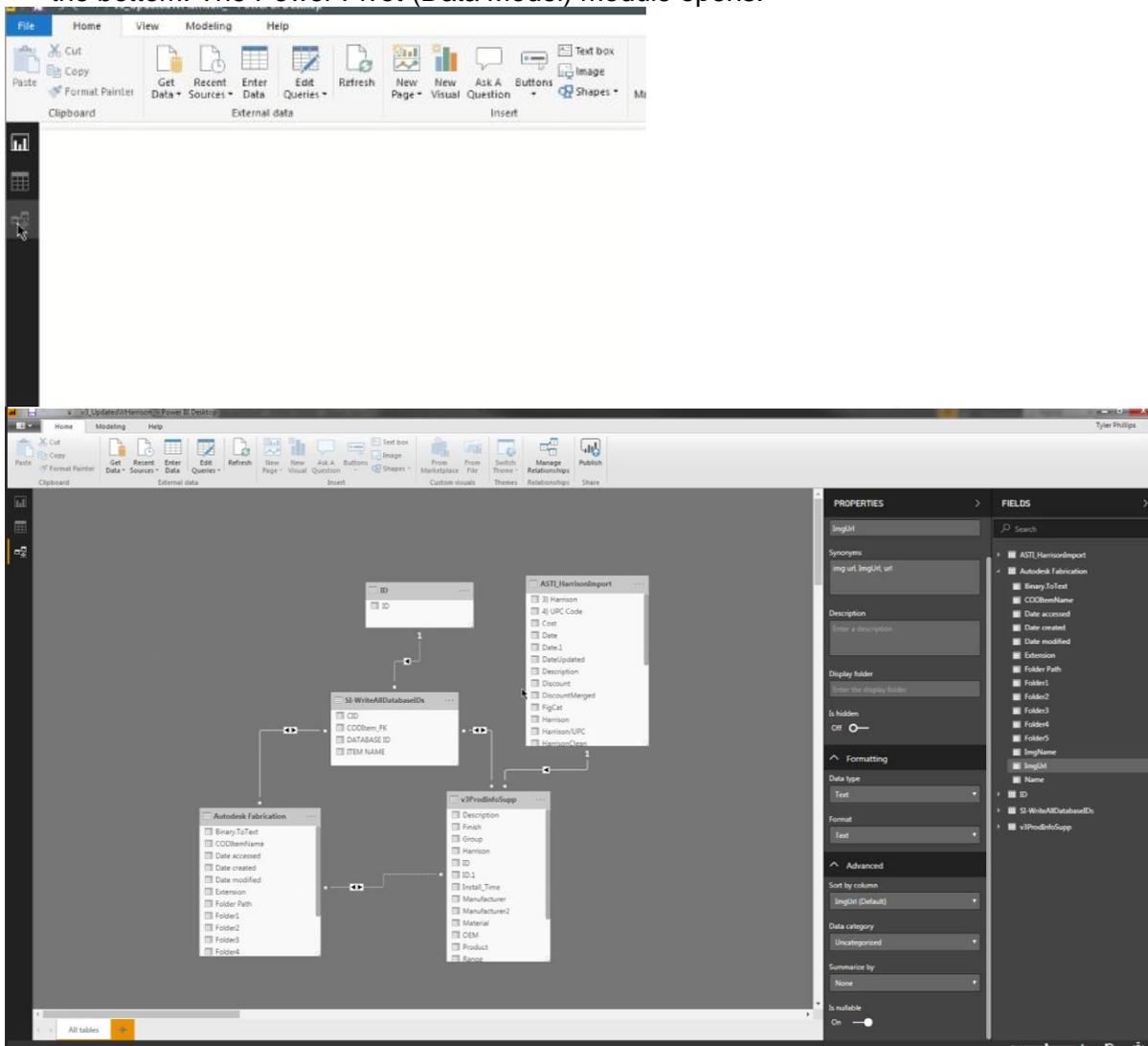
- Right click on the “ABC123” in the “PriceMax” column and select “Fixed Decimal Number”. This converts the format to currency.

PriceMax	ABC	Discou
154	Boltex	
166	Boltex	
201	Boltex	

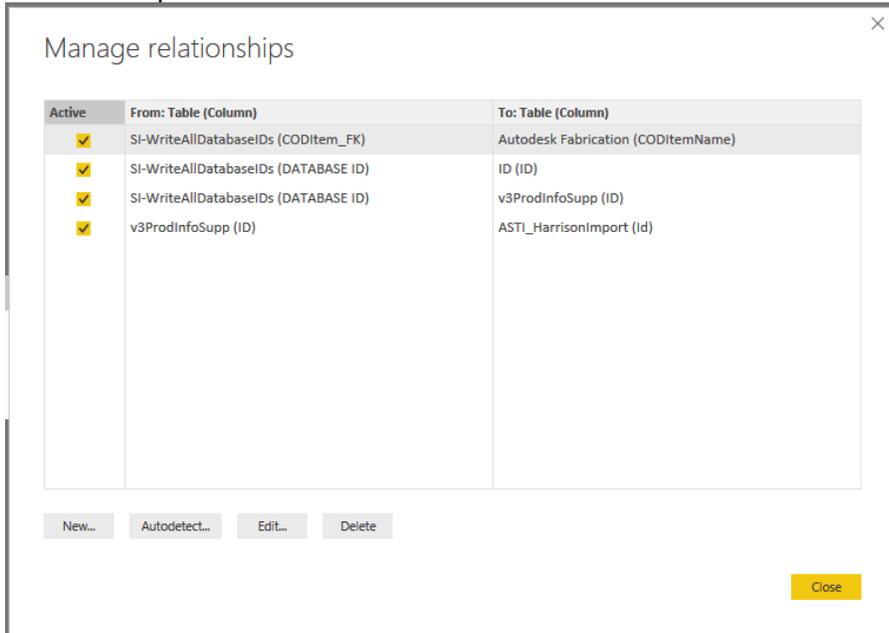
## Step 10: Build Data Model with Relationships

Now that we have all our data imported and transformed, we are ready to build relationships. This is done in the Power Pivot module of Power BI Desktop.

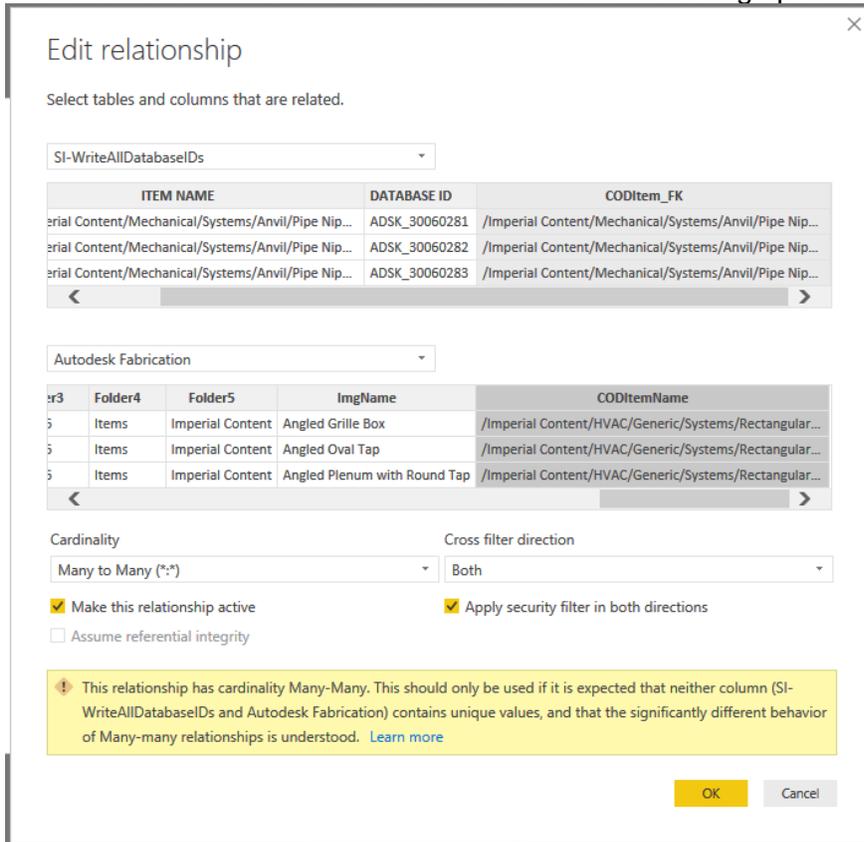
- Navigate to and select the “Close and Apply” button in the ribbon of the Power Query Editor. This will bring us back to the main page of Power BI desktop. Select the Power Pivot button on the left ribbon. It is the 3<sup>rd</sup> button at the bottom. The Power Pivot (Data Model) module opens.



- Select the “Mange Relationships” in the top Ribbon. This will bring up all of our relationships between our tables. Some will be autogenerated but, we will also be creating a few of our own. The pane is shown below:



- Select the first relationship between our “Autodesk Fabrication” table and our “SI-WriteAllDatabaseIDs” table and click “edit”. This will bring up the relationship preview pane.



- This is a Many to Many relationship is between our Primary Key “CODItemName” column from the Autodesk Fabrication Table and our Foreign Key “CODItemName\_FK” from the SI-WriteAllDatabaseIDs table. This relationship is also set to “Many to Many” and Both with the security filter checked. This option narrows the filtering down to require that both rows must match exactly to be shown.
- Our next relationship is between the our “DATABASE ID” from the SI-WriteAllDatabaseIDs Table and our “ID” column from the ID List. This relationship is also set to “Many to Many” and Both with the security filter un checked. This option allows for missing or blank values to show which will give us insight to errors in our data if they become present.

### Edit relationship ✕

Select tables and columns that are related.

SI-WriteAllDatabaseIDs

ITEM NAME	DATABASE ID	CODItem_FK
erial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060281	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...
erial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060282	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...
erial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060283	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...

ID

ID
ADSK_10000001
ADSK_10000002
ADSK_10000003

Cardinality

Many to one (\*:1)

Cross filter direction

Both

Make this relationship active
   
 Assume referential integrity

Apply security filter in both directions

OK
Cancel

- Just like the previous, the next relationship is between the database IDs of both our SI-WriteAllDatabaseIDs and v3ProdInfoSupp tables.

✕

## Edit relationship

Select tables and columns that are related.

SI-WriteAllDatabaseIDs ▾

CID	ITEM NAME	DATABASE ID	CODItem_FK
2522	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060281	/Imperial Content/Mechanical/Systems/Anv
2522	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060282	/Imperial Content/Mechanical/Systems/Anv
2522	/Imperial Content/Mechanical/Systems/Anvil/Pipe Nip...	ADSK_30060283	/Imperial Content/Mechanical/Systems/Anv

v3ProdInfoSupp ▾

ID	Group	Manufacturer	Product	Description	Size	Material	Specification
ADSK_10002393	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 12R	Alu-Zinc	Electrical
ADSK_10002394	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 18R	Alu-Zinc	Electrical
ADSK_10002395	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 24R	Alu-Zinc	Electrical

Cardinality

Cross filter direction

Many to Many (\*:\*) ▾

Both ▾

Make this relationship active
  Apply security filter in both directions

Assume referential integrity

⚠ This relationship has cardinality Many-Many. This should only be used if it is expected that neither column (SI-WriteAllDatabaseIDs and v3ProdInfoSupp) contains unique values, and that the significantly different behavior of Many-many relationships is understood. [Learn more](#)

OK

Cancel

- The final relationship is between the Database IDs of our v3ProdInfoSupp and our ASTI\_Harrison Import, set to the Many to Many Type like the previous.

## Edit relationship ✕

Select tables and columns that are related.

v3ProdInfoSupp

ID	Group	Manufacturer	Product	Description	Size	Material	Specification
ADSK_10002393	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 12R	Alu-Zinc	Electrical
ADSK_10002394	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 18R	Alu-Zinc	Electrical
ADSK_10002395	Electrical	Generic	TBC	Unequal Tee	(6"x6") - (12"x6") - 24R	Alu-Zinc	Electrical

ASTI\_HarrisonImport

Index	Id	PriceMax	Discount	Units	DateUpdated	Status
400	ADSK_30000768	\$0.00		(each)	null	Active
401	ADSK_30000769	\$0.00		(each)	null	Active
402	ADSK_30000770	\$0.00		(each)	null	Active

Cardinality: Many to Many (\*:\*)

Cross filter direction: Both

Make this relationship active  Apply security filter in both directions

Assume referential integrity

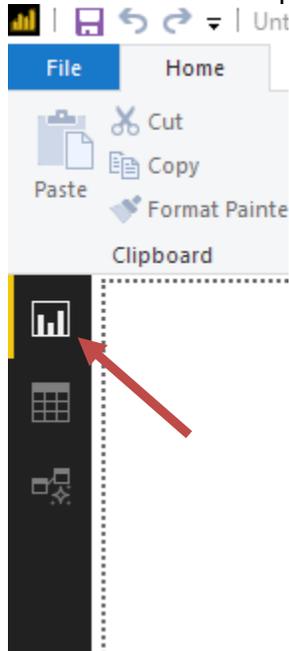
⚠ This relationship has cardinality Many-Many. This should only be used if it is expected that neither column (v3ProdInfoSupp and ASTI\_HarrisonImport) contains unique values, and that the significantly different behavior of Many-many relationships is understood. [Learn more](#)

OK
Cancel

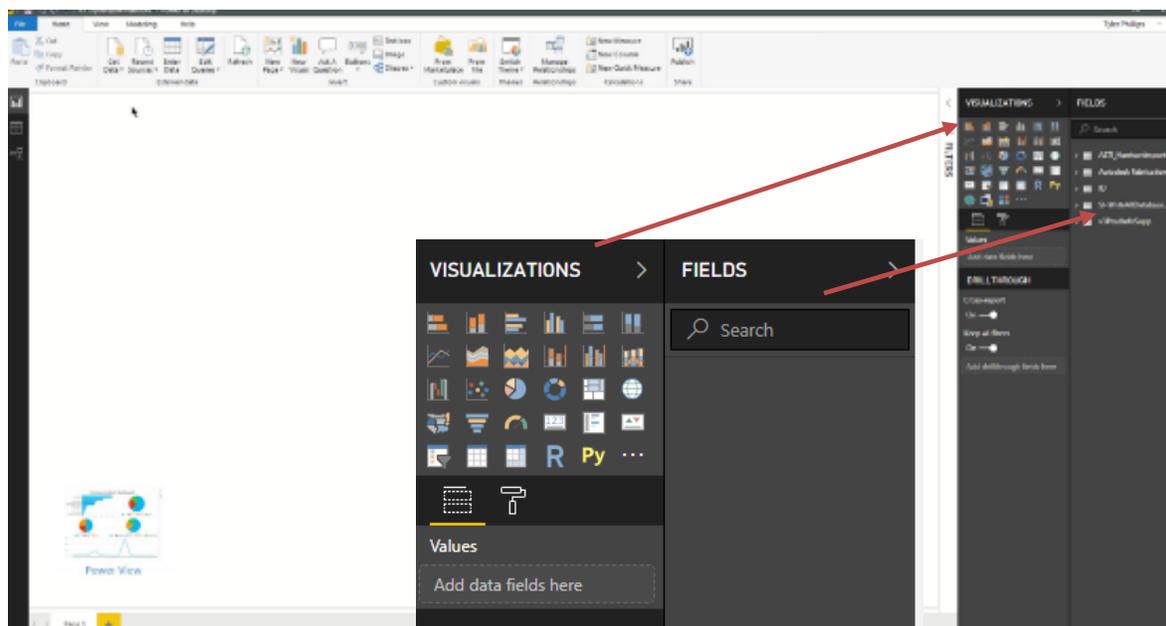
## Step 11: Import and Build Visuals

Now that we have our relationships built, we are ready to start building our dashboard. We will first navigate to the main window of Power BI desktop (Power View) and begin to import and design our visuals. The process is broken down into 3 steps; selecting/importing a visual, inserting data into the visual, and finally formatting/customizing the visual to fit our needs.

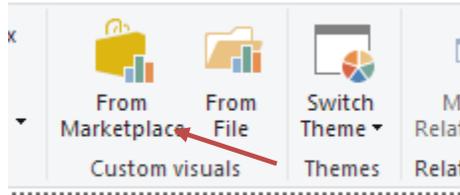
- Navigate to the Power View portion of Power BI desktop by selecting the Report button on the left ribbon. It is the top one.



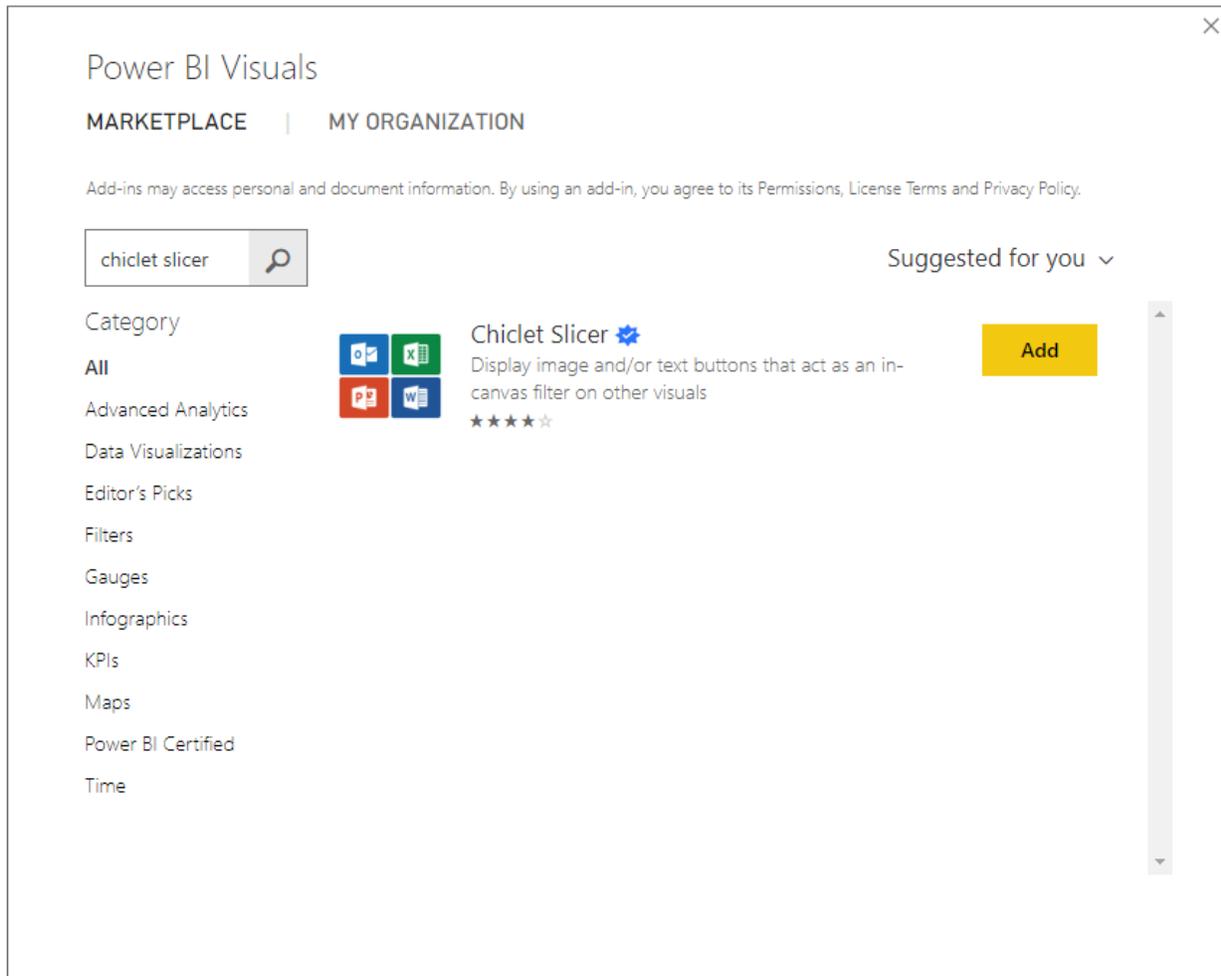
- This brings up the main dashboard which has our Visuals Pane and Data Fields shown on the right.



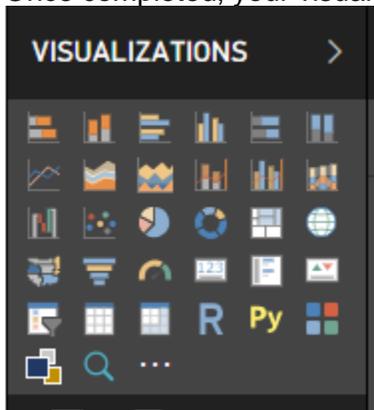
- For our dashboard we need to import 3 visuals that are not included in the default file. The ones we will be importing are the “Chiclet Slicer” , “Image Grid”, and “Text Filter” visuals. To import these, we need to navigate and select the “From Marketplace” button in the Custom Visuals portion of the ribbon.



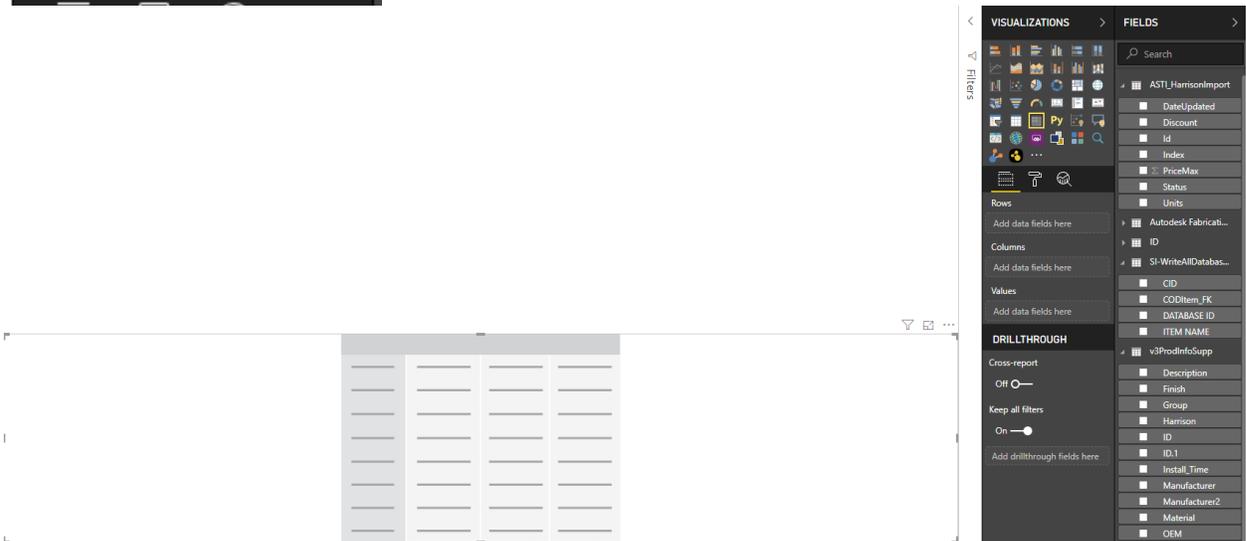
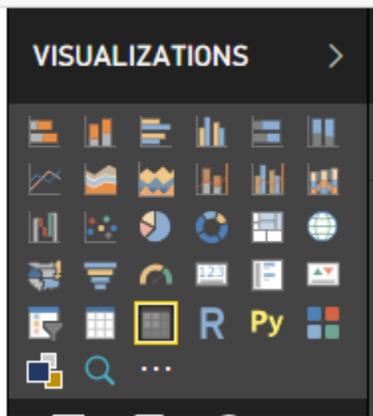
- To find the visual simply search the name in the search bar then click “Add” to bring it into your report. Repeat this step with all the visuals mentioned above.



- Once completed, your visuals pane should look like this (our imported visuals are the last 3):

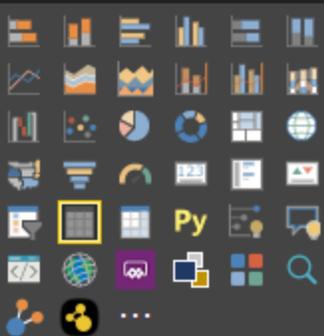


- The first visual we are going to use is the "Table Visual". Select and place it at the bottom of the dashboard.



- Next, we are going to add columns from our datasets, the final layout will closely resemble the Product Information Editor data set. Drag and drop the fields from their respective tables in the order shown below. (Install Type was renamed from Install\_Time which was a typo)

**VISUALIZATIONS** >



Values

- ID x
- Group x
- Material x
- Install\_Type x
- Product x
- Range x
- Finish x
- Description x
- Size x
- Specification x
- Manufacturer x
- PriceMax x
- Units x
- Harrison x
- UPC x
- OEM x
- CID x

**DRILLTHROUGH**

Cross-report

Off

Keep all filters

**FIELDS** >

Search

ASTI\_HarrisonImport

- DateUpdated
- Discount
- Id
- Index
- PriceMax
- Status
- Units

Autodesk Fabricati...

- ID

SI-WriteAllDatabas...

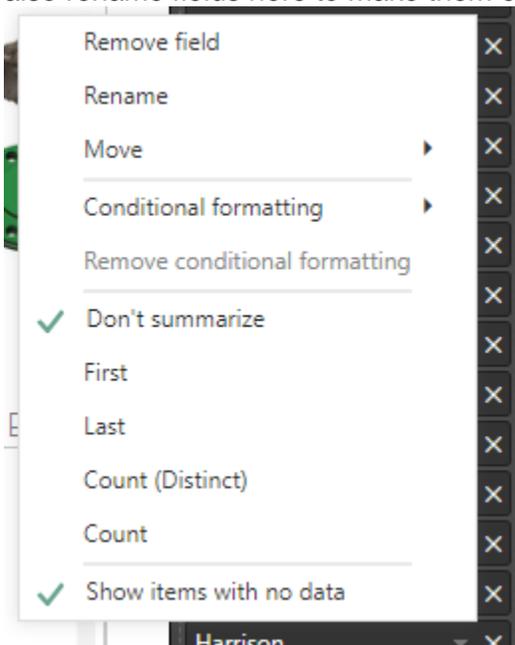
- CID
- CODItem\_FK
- DATABASE ID
- ITEM NAME

v3ProdInfoSupp

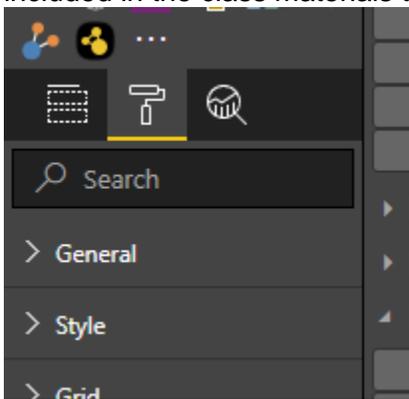
- Description
- Finish
- Group
- Harrison
- ID
- ID.1
- Install\_Time
- Manufacturer
- Manufacturer2
- Material
- OEM
- Product
- Range
- Size
- Source\_Descr...
- Specification
- UPC

Column	Table
ID	v3ProdInfoSupp
Group	v3ProdInfoSupp
Material	v3ProdInfoSupp
Install_Type (Renamed from Install_Time typo)	v3ProdInfoSupp
Product	v3ProdInfoSupp
Range	v3ProdInfoSupp
Finish	v3ProdInfoSupp
Description	v3ProdInfoSupp
Size	v3ProdInfoSupp
Specification	v3ProdInfoSupp
Manufacturer	v3ProdInfoSupp
PriceMax	ASTI_Harrison
Units	ASTI_Harrison
Harrison	v3ProdInfoSupp
UPC	v3ProdInfoSupp
OEM	v3ProdInfoSupp
CID	SI-WriteAllDatabaseIDs

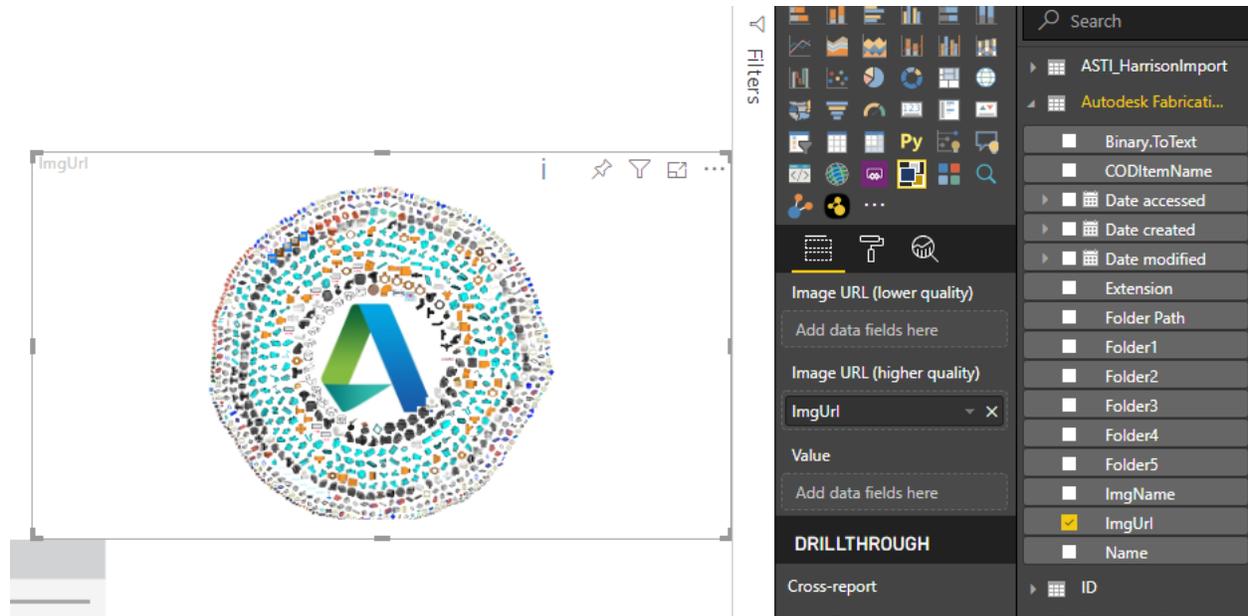
- Select the arrow on the first field (ID) and apply these settings (shown below). This will make our selections show all items with no data and the table will not summarize rows. You can also rename fields here to make them easier to understand for visualization.



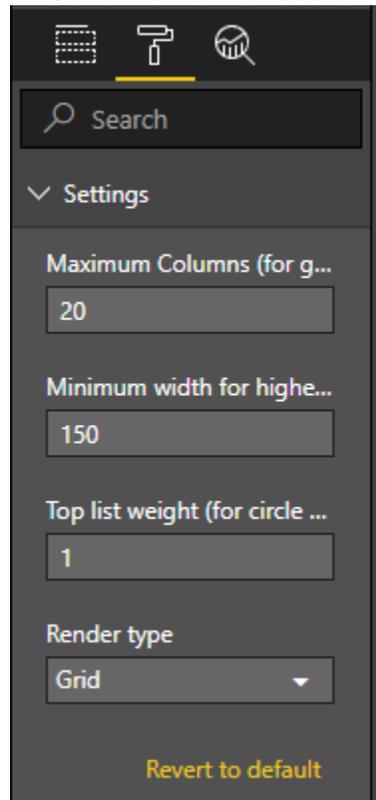
- To format the table, select the paintbrush icon of the visual, this is where we can apply all the formats and customizations to them that we would like. You can copy the .pbix file included in the class materials to get these formats.



- Our next visual will be the Image Grid. Select and place it as shown. Drag and drop the imgUrl Field from the Autodesk Fabrication Table to the “Image URL (higher quality)” box in the visual fields editor.



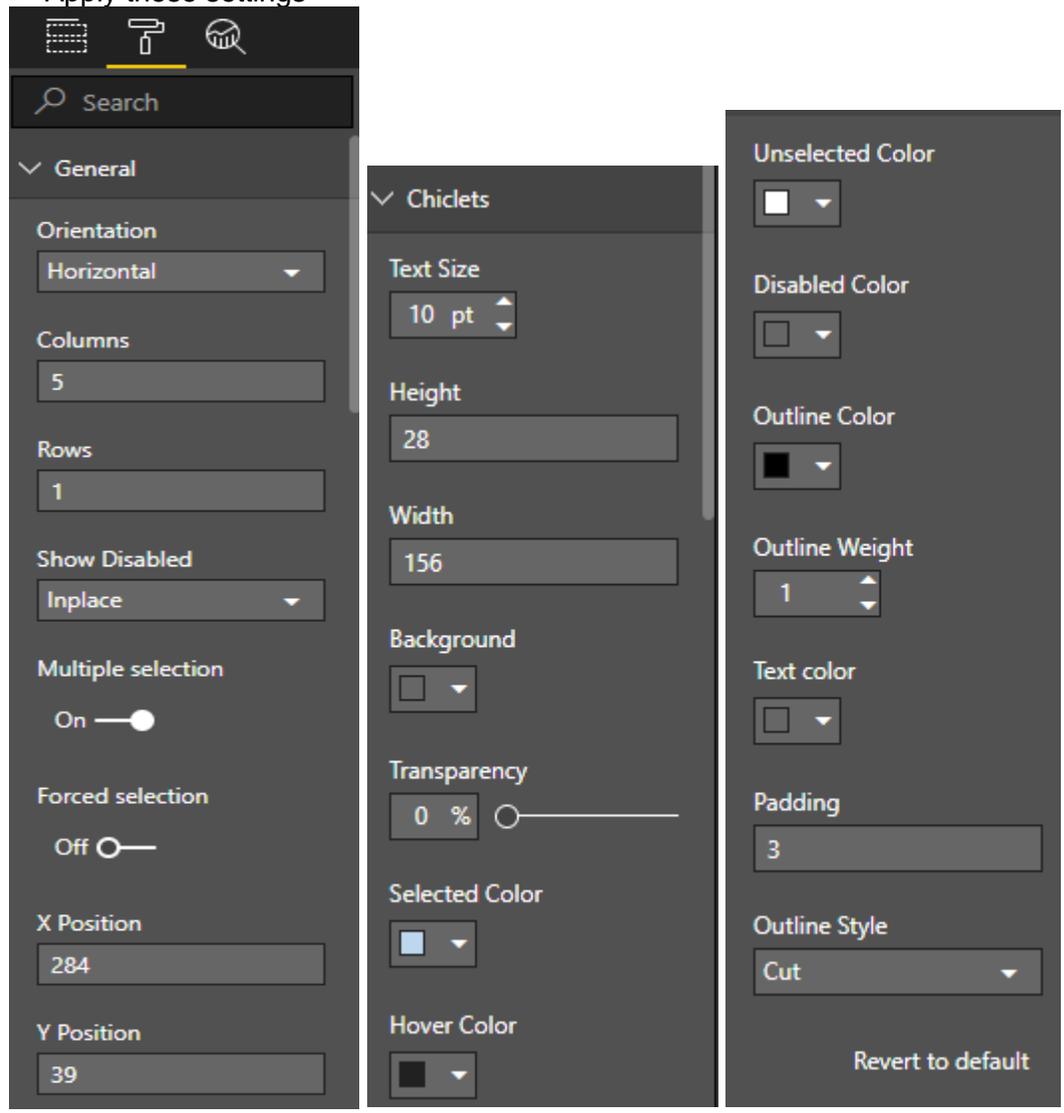
- Go to the Format section and apply these settings



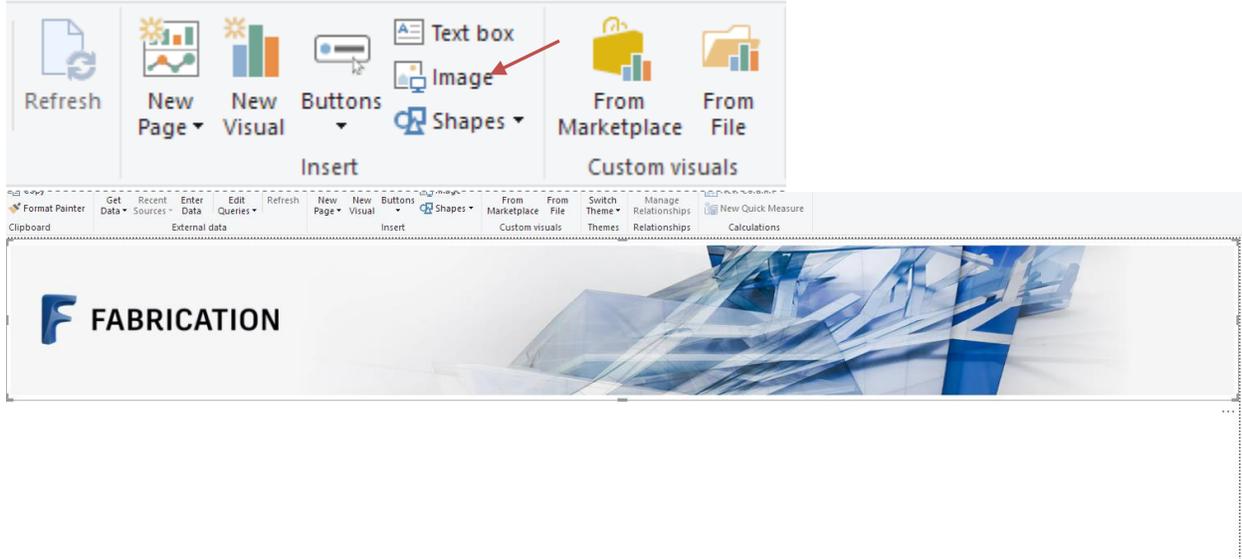
- Next add a chiclet slicer with the “Group” from the v3ProdInfoSupp table in the category slot of the field editor.



- Apply these settings



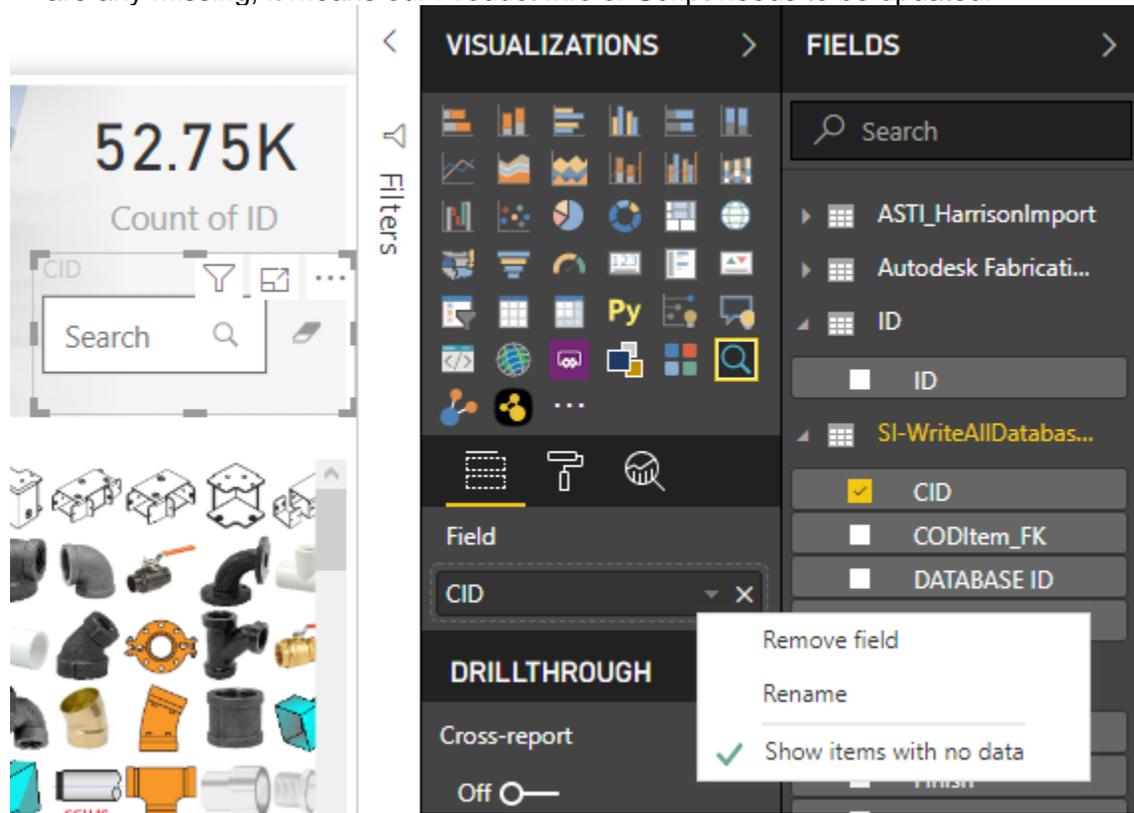
- Add two more chiclet slicers using the “Material” and “Install\_Type” columns from the v3ProdInfoSupp Table. Use the same settings as above except change Orientation from Horizontal to Vertical and adjust columns and rows to your preference.
- Next, import the FabricationWallpaper.PNG by selecting insert image from the ribbon.



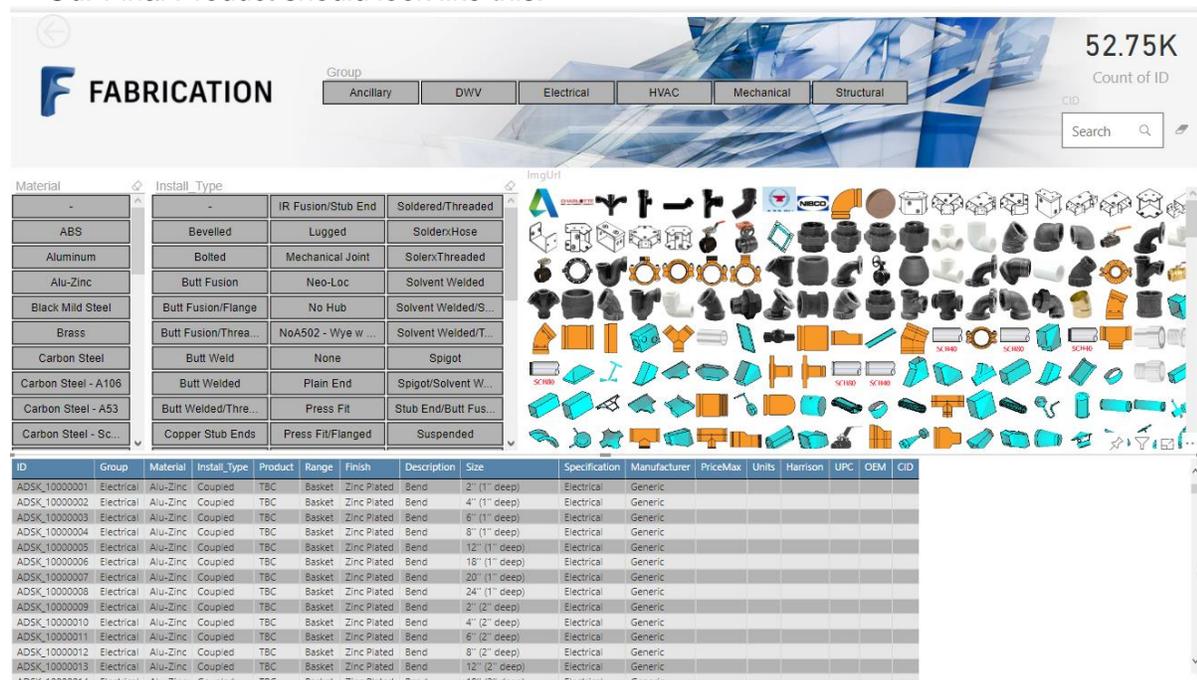
- Add a card visual with the ID column from our “ID” List and select “Count (Distinct)”. This will show us the number of database IDs per selection as we drill through the fields. Because of the relationships we made it will show a 2 or more on one Database ID when we select one in the table.

The image shows a data visualization interface. On the left, a card displays the value '658' with the label 'Count of ID'. Below the card are several images of mechanical parts, including green flanges and valves, with a red '30' next to one of them. The main interface is divided into two panels: 'VISUALIZATIONS' and 'FIELDS'. The 'VISUALIZATIONS' panel shows a grid of visualization options, with a 'Py' icon highlighted. The 'FIELDS' panel shows a list of fields, including 'ASTI\_HarrisonImport', 'Autodesk Fabricati...', 'ID', and 'SI-WriteAllDatabas...'. The 'ID' field is selected. Below the fields list, there are options for 'Count of ID', 'DRILLTHROUGH', and 'Cross-report'. A context menu is open over the 'Count of ID' field, showing options: 'Remove field', 'Rename', 'First', 'Last', 'Count (Distinct)' (which is checked), 'Count', and 'Show value as'. The 'DRILLTHROUGH' section has a 'Cross-report' toggle set to 'Off' and a 'Keep all filters' toggle set to 'On'. There is also an 'Add drillthrough fields' button.

- Add a Text filter visual with the CID column from our “SI-WriteAllDatabseIDs” table and select “Show Items With No Data”. This allows us to search our database by CID. If there are any missing, it means our Product Info or Script needs to be updated.



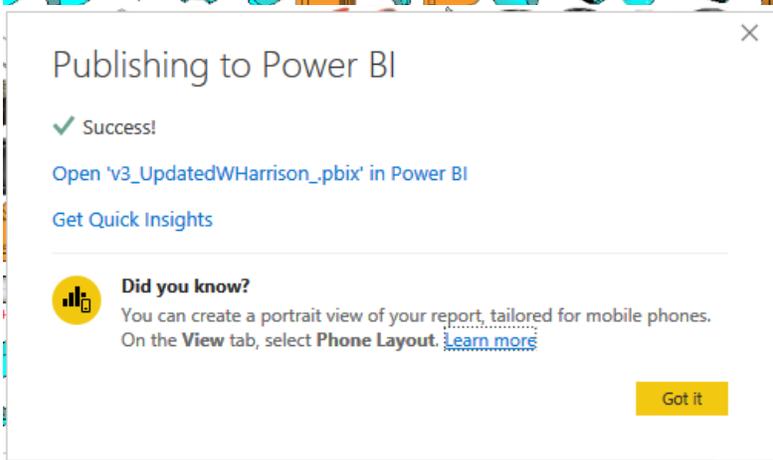
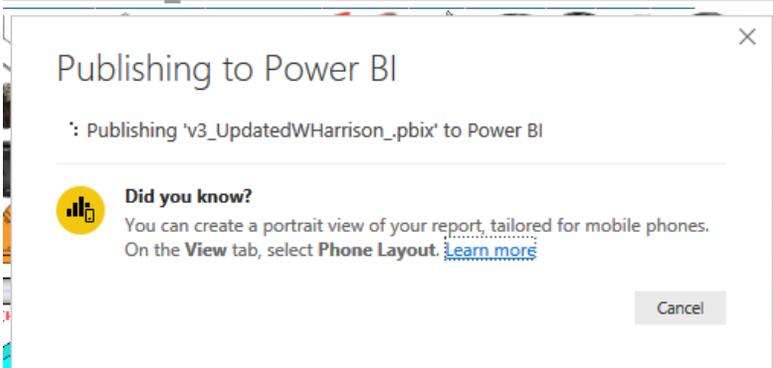
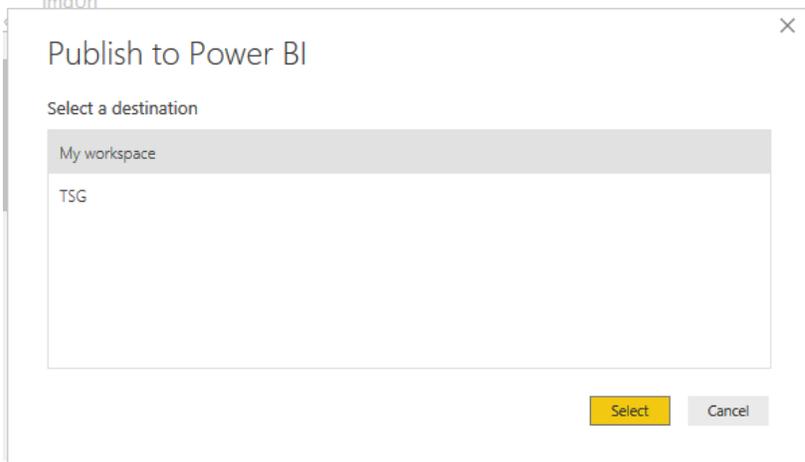
- Our Final Product should look like this:

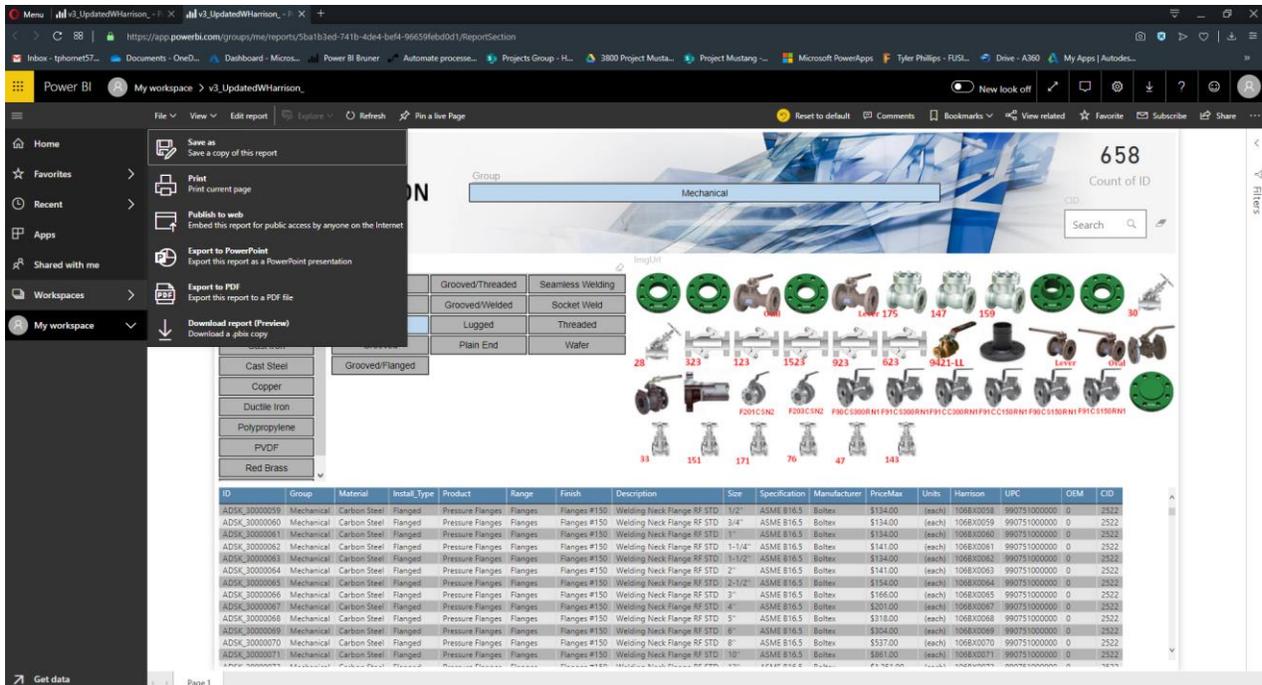


## Step 12: Uploading our Dashboard to the Web (Power BI Service)

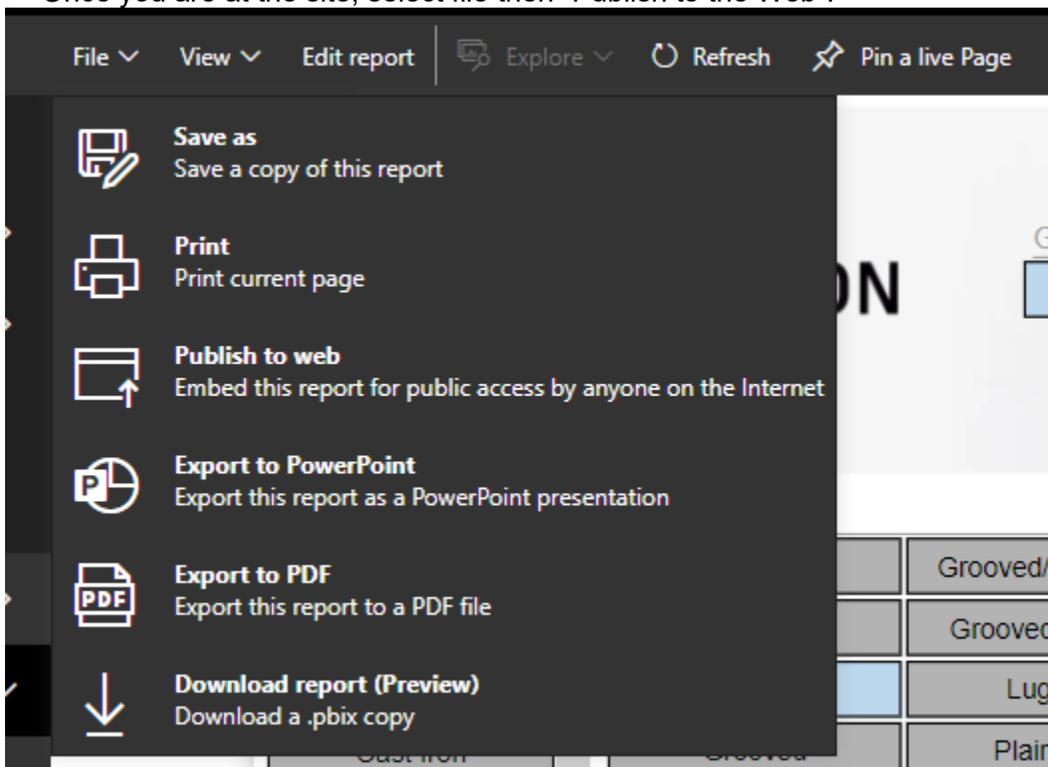
In this step we will upload our dashboard to the web for sharing. This is where our working dashboards can have refresh schedules set and QR codes generated.

- Navigate to the “Publish” button in the share portion of the top ribbon and select it. Select “My Workspace” in the Publish to Power BI Pane. Next, a progress pane that will generate a link to where it is in Power BI Service. Click the link to pull up your Power BI Service website. This is not a shareable link.

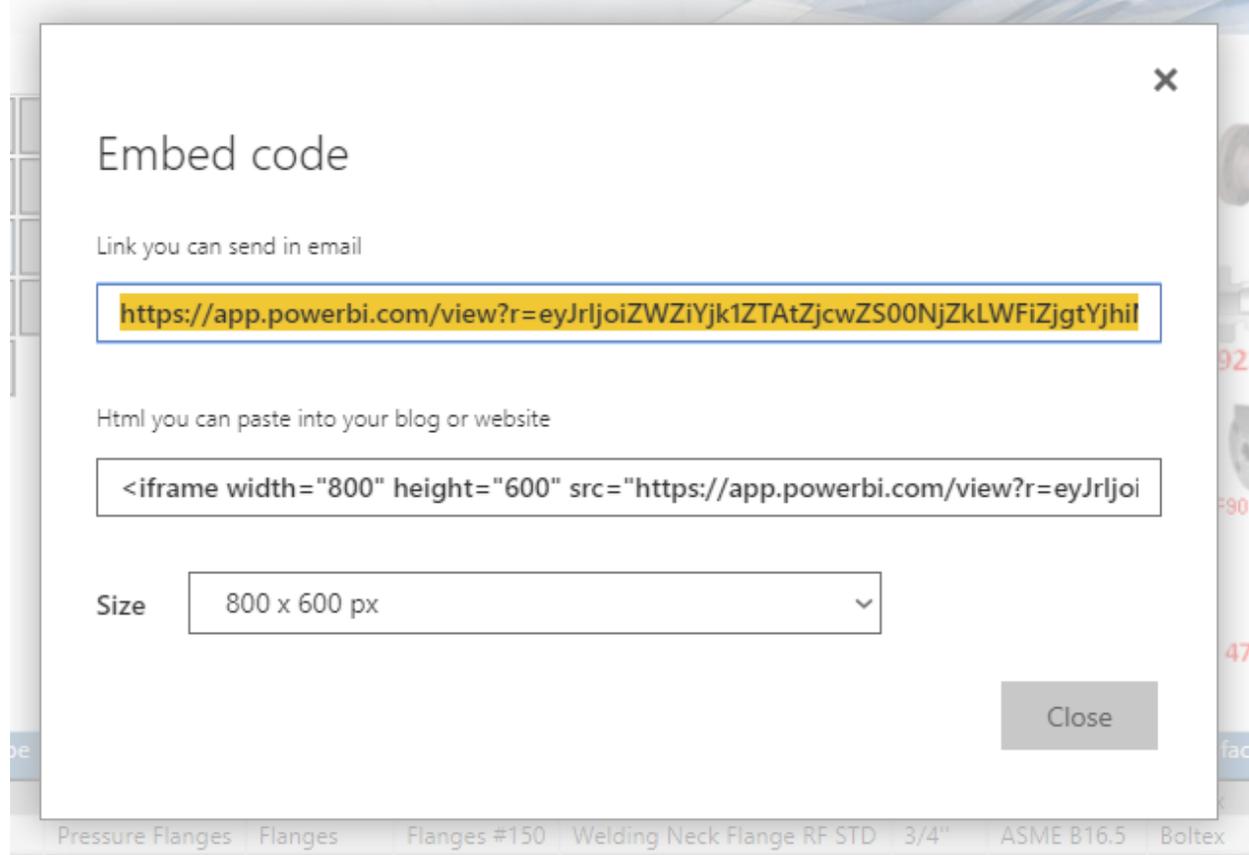




- Once you are at the site, select file then “Publish to the Web”.



- Copy and paste the Embed Code in a new window



- Your Dashboard is now shareable to anyone.
  - Note: If you want to remove information. Re-Upload the same Dashboard with no data in it (Blank files). This will remove all the information on the next refresh.

### Step 13: Setting Refresh Schedules

There are two ways to update and refresh Dashboards. One is manually by repeating the step above. Two is automatically. There is an additional software that needs to be downloaded to do this and it's called On-Premises data gateway.

- Download the software from the class documents "PowerBIGatewayInstaller.exe" as (personal mode)
  - See link for explanation <https://powerbi.microsoft.com/en-us/gateway/>
- Set up and make sure it is running.

# On-premises data gateway

**Status** ✔ The gateway tp\_home is online and ready to be used.

Service Settings Gateway version number: 3000.9.194 (September 2019)  
A new version is available. [Download](#)

Diagnostics

Network  Help us improve the on-premises data gateway by sending usage information to Microsoft.  
[Read the privacy statement online](#)

Connectors

**Logic Apps, Azure Analysis Services** [Create a gateway in Azure](#)  
North Central US

**PowerApps, Microsoft Flow** ✔ Ready  
Default environment

**Power BI** ✔ Ready  
Default environment

- From you Power BI Service site select My Workspace and navigate to your datasets

Power BI My workspace

Home Favorites Recent Apps

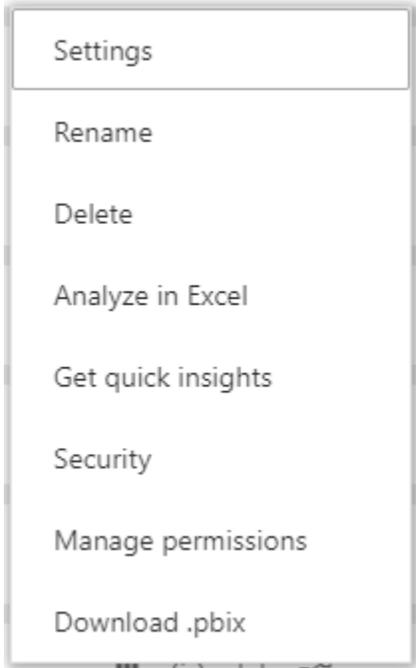
Search content...

Dashboards Reports Workbooks Datasets

NAME ↑

MonthlvProiectStatus-v1.2

- Find your data set (same name as .pbix file) and select “Settings” from the 3-dot ellipsis



- It will bring up the settings for this Dataset. If you uploaded the dashboard with the “Personal Gateway” it will remember your credentials. If you choose On Premises you will need to add the data sources individually.
- Navigate to “Scheduled Refresh” to set a refresh schedule and apply

◀ Data source credentials

ASTI_HarrisonImport.xlsx	<a href="#">Edit credentials</a>
SI-WriteAllDatabaseIDs.TXT	<a href="#">Edit credentials</a>
V3.06	<a href="#">Edit credentials</a>
V3ProdInfo.xlsx	<a href="#">Edit credentials</a>

▶ Parameters

◀ Scheduled refresh

Keep your data up to date

On

Refresh frequency

Daily

Time zone

(UTC-05:00) Eastern Time (US and Canada)

Time

[Add another time](#)

Send refresh failure notifications to the dataset owner

Email these users when the refresh fails

Tyler Phillips X Enter email addresses

Apply

Discard

## Tips and Tricks

### Tip1: Extract .xlsx or .csv from a dashboard

You can extract a .csv from a table once you have drilled down to an item type. I use this feature to create new content or modify existing content in the product information editor.

- In the dashboard select the ellipses in the top right corner. Select “export data” and save as however you like.

91CC300RN1F91CC150RN1 F90CS150RN1 F91CS150RN1

s	Harrison	UPC	OEM	CID
:h)	106WB0058	990734000000	120002000	2522
:h)	106WB0059	990734000000	120003000	2522
:h)	106WB0060	990734000000	120010000	2522
:h)	106WB0061	990734000000	120011000	2522
:h)	106WB0062	990734000000	120012000	2522
:h)	106WB0063	990734000000	120020000	2522
:h)	106WB0064	990734000000	120022000	2522
:h)	106WB0065	990734000000	120030000	2522
:h)	106WB0066	990734000000	120032000	2522
:h)	106WB0067	990734000000	120040000	2522
:h)	106WB0068	990734000000	120050000	2522

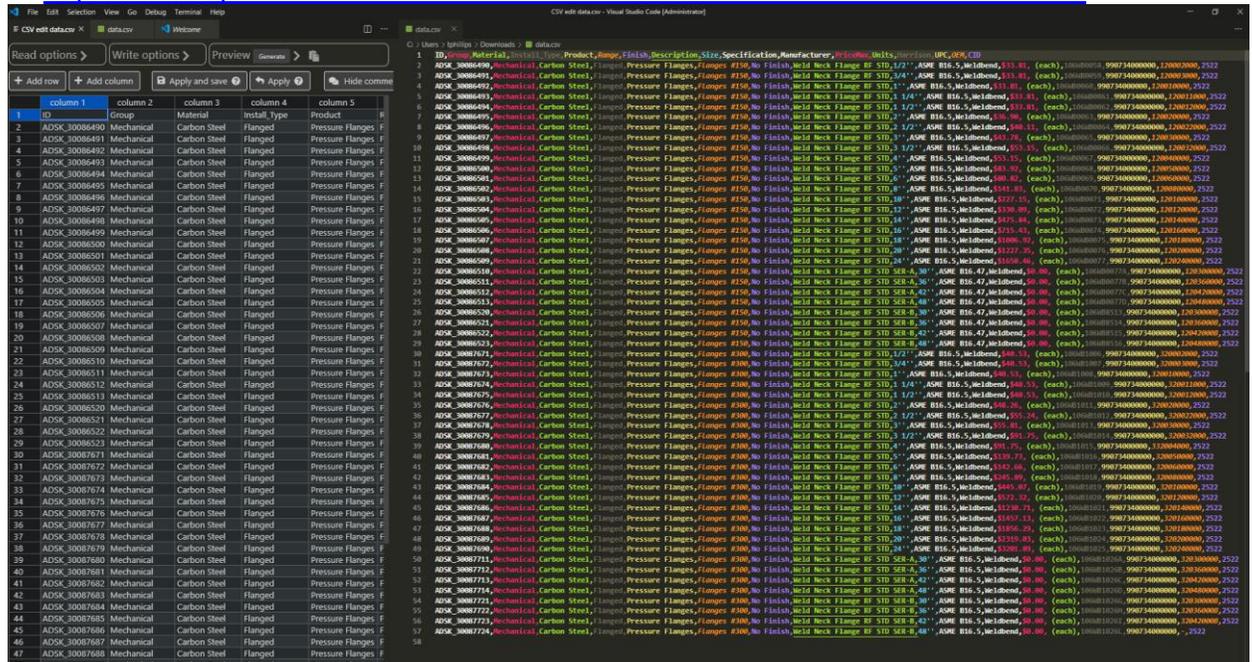
- Open comments
- Export data
- Show data
- Spotlight
- Sort descending
- Sort ascending
- Sort by

ID	Group	Material	Install Type	Product	Range	Finish	Description	Size	Specification	Manufacturer	PriceMax
ADSK_30086490	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	1/2"	ASME B16.5	Weldbend	\$33.8:
ADSK_30086491	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	3/4"	ASME B16.5	Weldbend	\$33.8:
ADSK_30086492	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	1"	ASME B16.5	Weldbend	\$33.8:
ADSK_30086493	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	1 1/4"	ASME B16.5	Weldbend	\$33.8:
ADSK_30086494	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	1 1/2"	ASME B16.5	Weldbend	\$33.8:
ADSK_30086495	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	2"	ASME B16.5	Weldbend	\$36.9:
ADSK_30086496	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	2 1/2"	ASME B16.5	Weldbend	\$40.1:
ADSK_30086497	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	3"	ASME B16.5	Weldbend	\$43.7:
ADSK_30086498	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	3 1/2"	ASME B16.5	Weldbend	\$53.1:
ADSK_30086499	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	4"	ASME B16.5	Weldbend	\$53.1:
ADSK_30086500	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	5"	ASME B16.5	Weldbend	\$83.9:
ADSK_30086501	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	6"	ASME B16.5	Weldbend	\$80.8:
ADSK_30086502	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	8"	ASME B16.5	Weldbend	\$141.8:
ADSK_30086503	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	10"	ASME B16.5	Weldbend	\$227.1:
ADSK_30086504	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	12"	ASME B16.5	Weldbend	\$330.0:
ADSK_30086505	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	14"	ASME B16.5	Weldbend	\$475.8:
ADSK_30086506	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	16"	ASME B16.5	Weldbend	\$715.4:
ADSK_30086507	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	18"	ASME B16.5	Weldbend	\$1,006.9:
ADSK_30086508	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	20"	ASME B16.5	Weldbend	\$1,227.3:
ADSK_30086509	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD	24"	ASME B16.5	Weldbend	\$1,650.4:
ADSK_30086510	Mechanical	Carbon Steel	Flanged	Pressure Flanges	Flanges #150	No Finish	Weld Neck Flange RF STD SER-A	30"	ASME B16.47	Weldbend	\$0.0:

## Tip 2: Download VsCode and these extensions

VsCode editor will open .csv files and with the extension can be edited without the formatting applied. This is a huge time saver when editing or modifying product information.

- VsCode download link: <https://code.visualstudio.com/download>
- Csv editor extension: <https://marketplace.visualstudio.com/items?itemName=janisdd.vscodedit-csv>
- Rainbow csv: <https://marketplace.visualstudio.com/items?itemName=mechatroner.rainbow-csv>

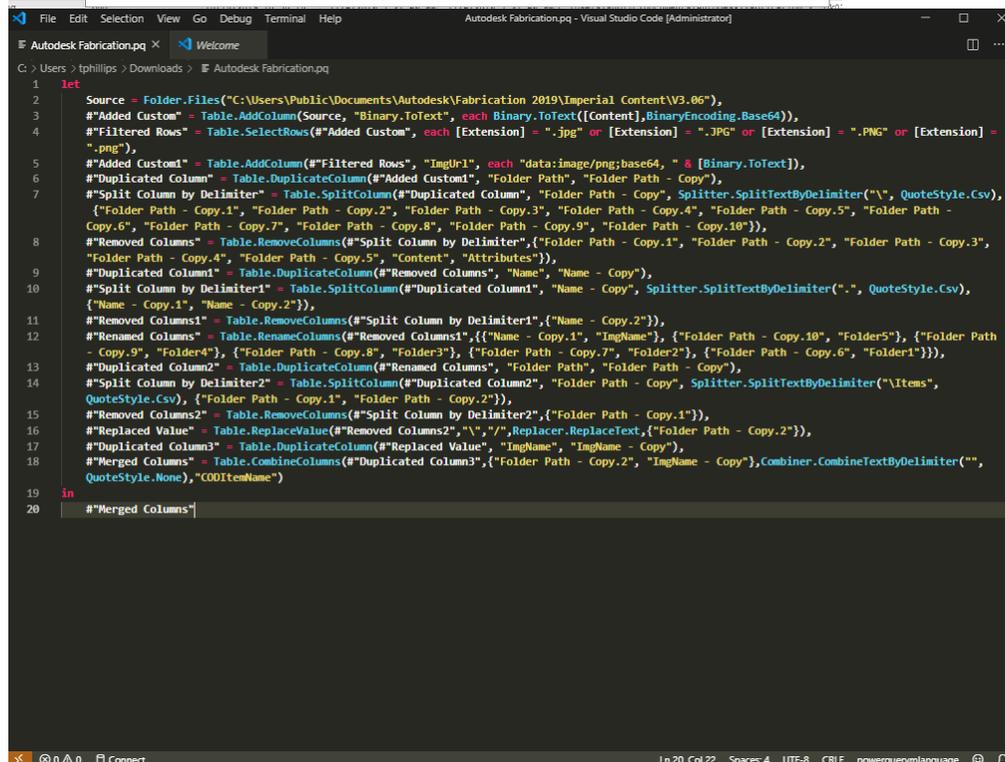
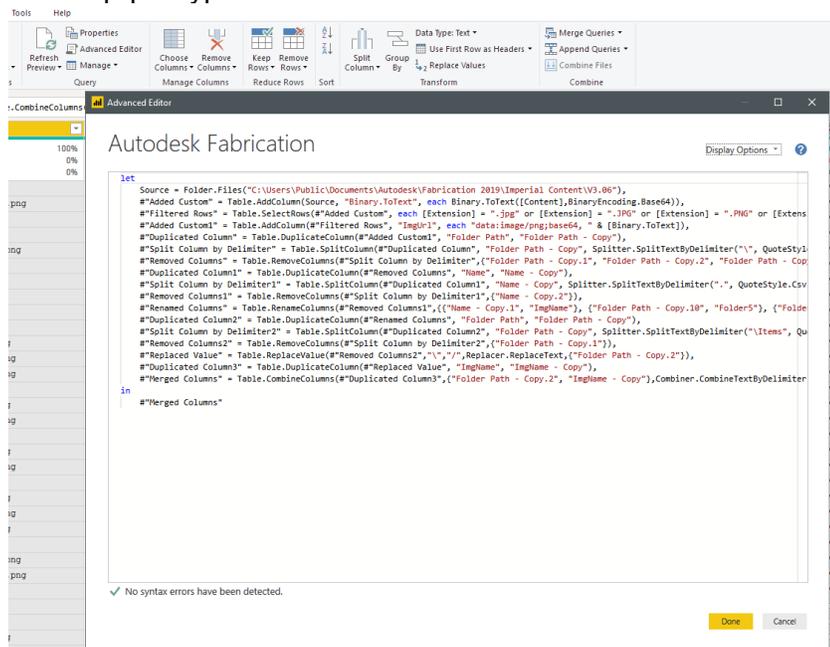


ID	Group	Material	Install Type	Product
ADSK_30086490	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086491	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086492	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086493	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086494	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086495	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086496	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086497	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086498	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086499	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086500	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086501	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086502	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086503	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086504	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086505	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086506	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086507	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086508	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086509	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086510	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086511	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086512	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086513	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086514	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086515	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086516	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086517	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086518	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086519	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086520	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086521	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086522	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086523	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086524	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086525	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086526	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086527	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086528	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086529	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086530	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086531	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086532	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086533	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086534	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086535	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086536	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086537	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086538	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086539	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086540	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086541	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086542	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086543	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086544	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086545	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086546	Mechanical	Carbon Steel	Flanged	Pressure Flanges F
ADSK_30086547	Mechanical	Carbon Steel	Flanged	Pressure Flanges F

## Tip 3: Save queries from the advanced editor to paste for later use

Save M language Scripts from the Advanced editor as power query files

- Download Power Query Extension for VsCode: <https://marketplace.visualstudio.com/items?itemName=sea1jxr.powerquerymlanguage>
- Open advanced editor from Power Query, copy and paste into VsCode and save as .pq filetype

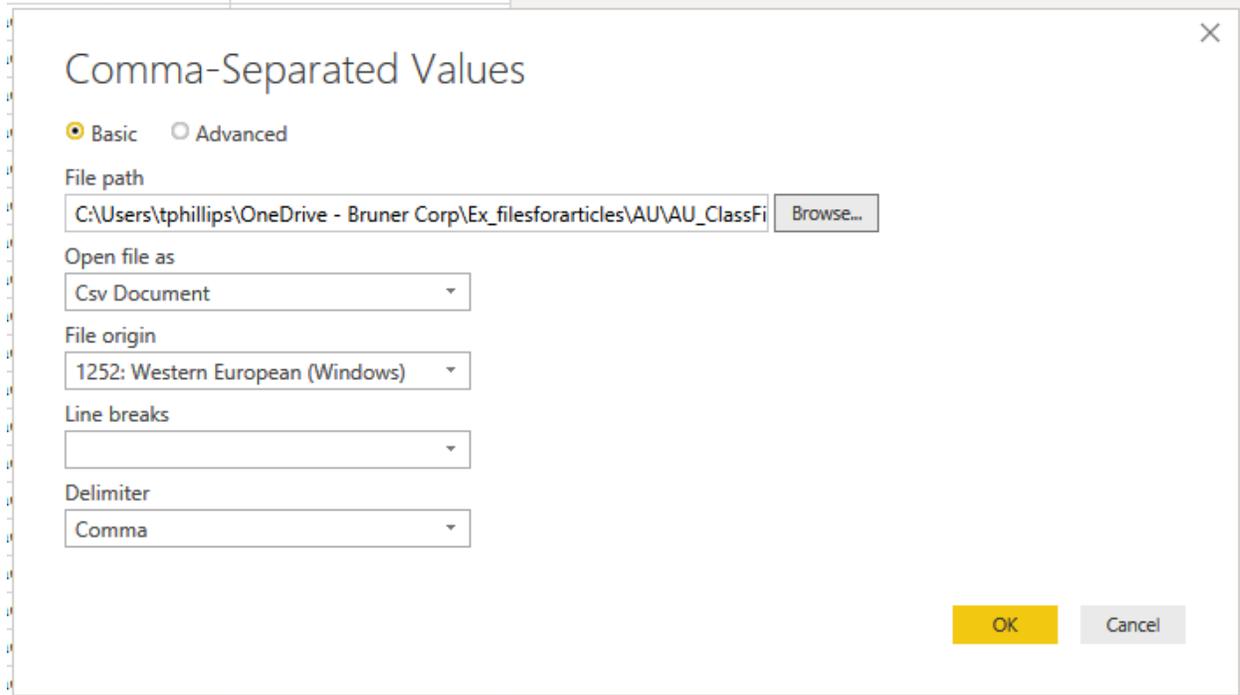


## Common Errors

### Data Source Errors

These are usually caused by working on a different domain or the file you connected to has been moved

- To fix navigate to the source step in the applied steps pane in power query and select the gear then browse to the new location and select OK.



- In the class files, all of the queries are saved as txt files. Once you have saved and extracted the folder to your downloads folder. Input your user account info in the source blocks shown below: then paste into the advanced editor in Power BI

```

QueryTemplate_ASTIHarrisonImport.txt x  Untitled-1
QueryTemplate_ASTIHarrisonImport.txt
1  let
2      Source = Excel.Workbook(File.Contents("C:\Users\{YourUsernameHere}\Downloads\CC5317252_Add1ClassMaterials\ASTI_HarrisonImport.xlsx"), null, true),
3      ASTI_HarrisonImport_Table = Source{[Item="ASTI_HarrisonImport",Kind="Table"]}[Data],
4      #"Changed Type" = Table.TransformColumnTypes(ASTI_HarrisonImport_Table,{{"PriceMax", Currency.Type}})
5  in
6      #"Changed Type"
    
```

```

QueryTemplate_ASTIHarrisonImport.txt
let
    Source = Excel.Workbook(File.Contents("C:\Users\tphillips\Downloads\CC5317252_Add1ClassMater
    ASTI_HarrisonImport_Table = Source{[Item="ASTI_HarrisonImport",Kind="Table"]}[Data],
    #"Changed Type" = Table.TransformColumnTypes(ASTI_HarrisonImport_Table,{{"PriceMax", Currenc
in
    #"Changed Type"
    
```

## Resources & Contact Info

### **RADACAD**

This site will prompt you to enter an email and you will receive 6 books outlining everything you need to get started on Power BI. Most if not all of the content in this handout owes its roots to these books.

- <https://radacad.com/>

### **Excel is Fun**

You Tube account that gives lessons for just about everything you need to know in Power query and is definitely worth a subscribe.

- <https://www.youtube.com/user/ExcelsFun>

### **Contact Info**

- Linked In: <https://www.linkedin.com/in/tyler-phillips-04860565/>
- Work Email: [tphillips@brunercorp.com](mailto:tphillips@brunercorp.com)
- Personal Email: [tphornet57@gmail.com](mailto:tphornet57@gmail.com)
- Git Hub Link to files: [CCS317252-Navigating Fabrication BIM Content With PowerBI](#)