Part 3 Plan

After looking at the rubric for this model, It occurred to me there are three tasks that need to be completed. These are data validations for states and dealers; totals for states and dealer by specified product; and a dynamic table that provides all required data for each county in the state. The first chunk is straight forward, I created a unique list for states and for dealers sorted alphabetically and then referenced each of these in a data validation list.

The second chunk required more work. While looking at the data provided, I noticed that information was spread among various sheets and tables in ways that were not easy to reference. My first goal was to find an easy way to extract the desired data for each type of product recorded. What I did is I created a list of all unique item types provided in the Item-Y field. I then assigned each a number 1 through 24. Then I used an index function to create a helper column that contained the corresponding number for each item type. Then I created a helper row above each of the column headers in Analysis. This row contains the number that corresponds to what each column is supposed to total. Some of the total ask for the value instead of quantity for the item. To do this I had to extract the price for each item per desired unit from commodity price. I created a helper column that contained the number designation for each item type needed for calculation. I did this manually because the data was formatted such that referencing would be difficult and I determined that it would be faster by hand for the size of the data. I then created another helper column in the Acres and Production sheet that provided the price multiplier for each product. The final formula was =IFERROR(INDEX(Price\_per\_Unit,MATCH('Acres and Production'!H2,Commodity,0)),1).

With the data organized I went to make a sum array function that would total each item by state. Using the helper columns I created, I made the formula =SUM((State\_Y=Analysis!$C$2)\*(Item\_Code=E$1)\*Price\*DATA\_Y). then all I had to do was drag it across the rest of the columns. Then for the Dealers, I created a helper column in Acres and production to return dealers per county. I slightly altered the formula to =SUM((Dealer\_Y=Analysis!$C$6)\*(Item\_Code=E$1)\*Price\*DATA\_Y).

For the final chunk, I just had to use the work I did previously to create a dynamic table of all counties in the state. To find state, I used an index function with a hard stop to return the counties for each state. The function was =IF(ROW(1:1)<=INDEX(Sheet5!$F$4:$F$53,MATCH($C$2,Sheet5!$E$4:$E$53,0)),INDEX(County\_SP,MATCH($C$2,State\_SP,0)+ROW(1:1)-1),""). The hard stop is the total amount of counties per state, which is located on sheet 5. I copied the formula down 260 rows, even though the most counties one state has is 254. I did this because I always like to have a rows in my tables.

For Dealers per each county I used the formula =IF($C10="","",INDEX(Dealer\_SP,MATCH($C$2&$C10,State\_SP&County\_SP,0))). I added state to the match criteria because multiple counties in different states could share the same name. for the rest of the columns I repurpose the calculation formulas in chunk two to look up the item by state and county. The formula is =IF($C10="","",SUM((State\_Y=Analysis!$C$2)\*(County\_Y=$C10)\*(Item\_Code=E$1)\*Price\*DATA\_Y)). With the table filled out I went to make subtotal functions. The formula was =SUBTOTAL(9,E10:E361). This way the total would changed based on how the data was filtered.

During this project, the only thing that gave me issues was finding an easy way to reference the item types. Besides that, no part of this project gave me an issue. The only change I made was to make a non-array function for county lookup to reduce calculation time.