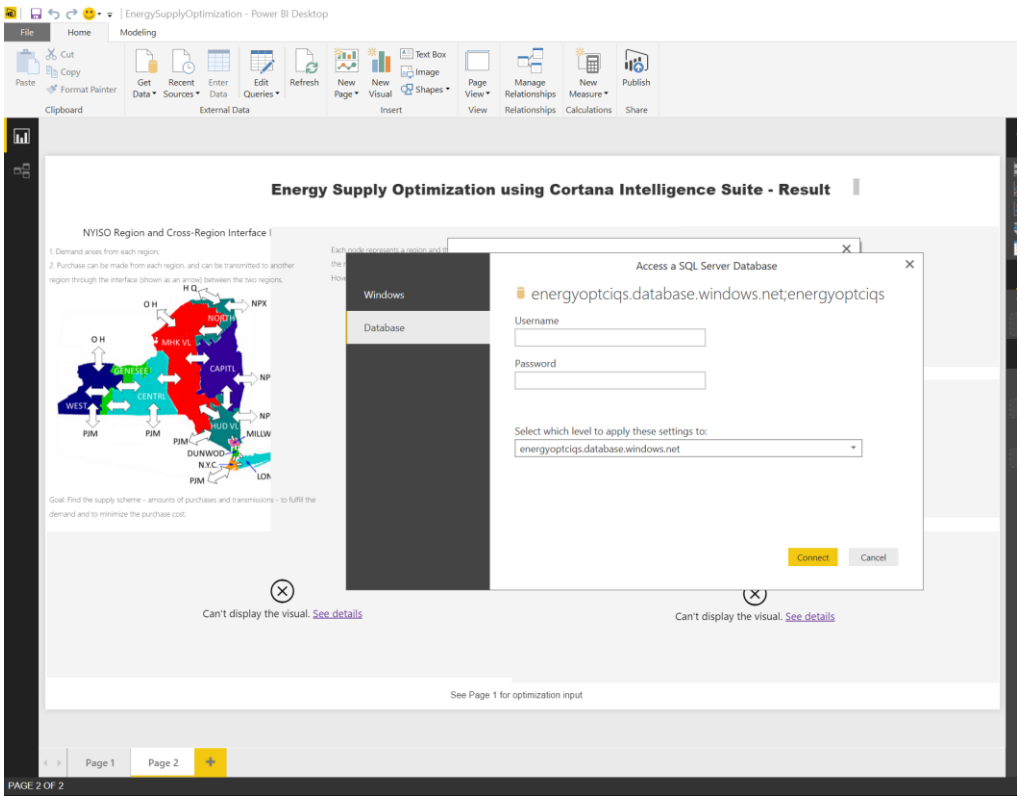
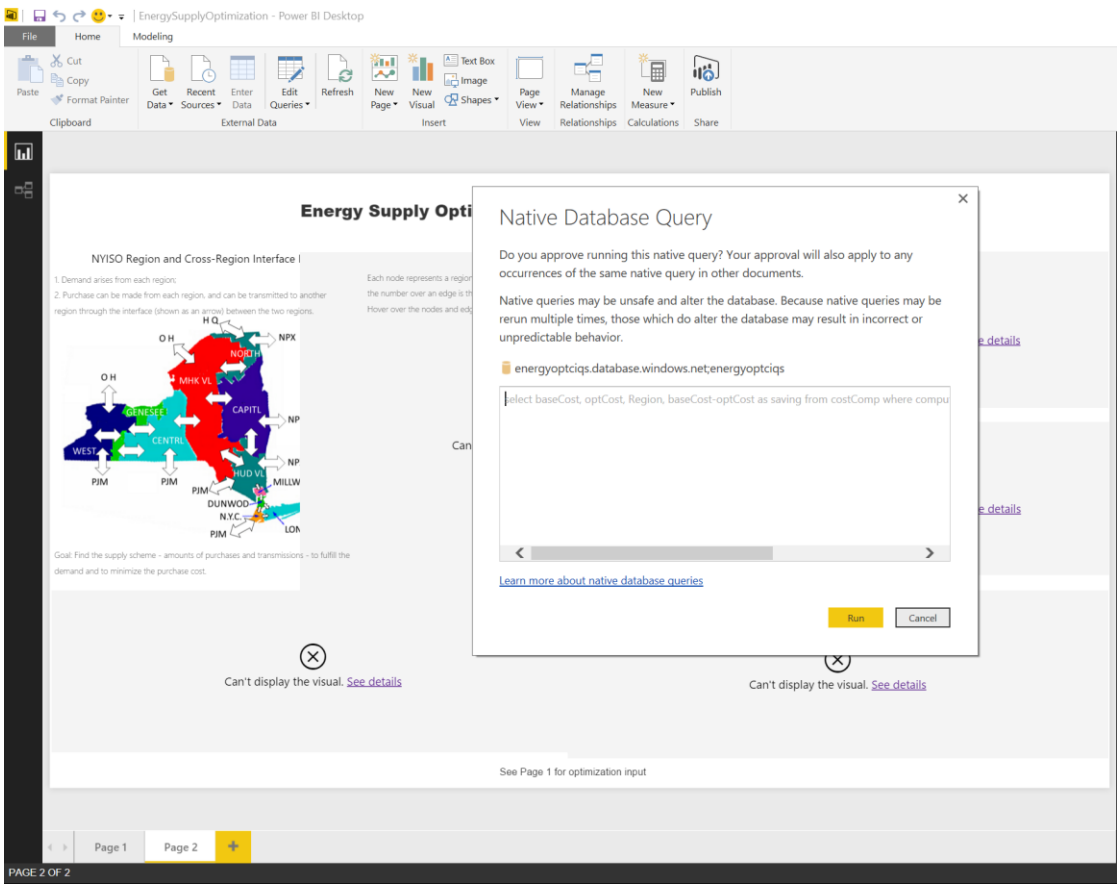
Create PowerBI Dashboard

Follow the below steps to produce your own dashboard to visualize the results.

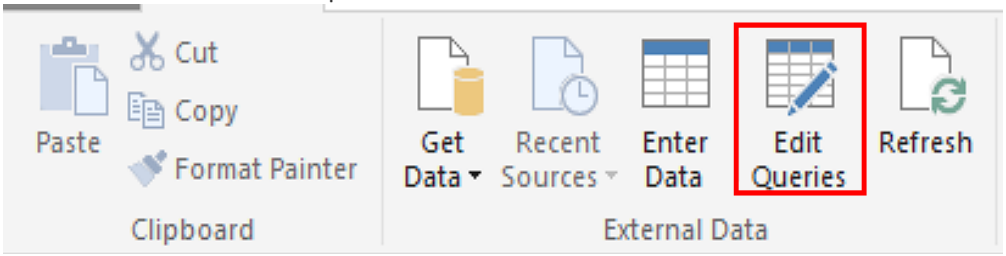
- Download PowerBI Desktop(Windows) from here and install it.

- Open the file “EnergySupplyOptimization.pbix” which we downloaded earlier. The dashboard will be empty and contain some errors when you first open it. If it asked you to enter credentials to access the database used to create this template as shown below, click “cancel”. It will try to run all the queries and will give some errors (due to incorrect SQL Server). Click “Cancel” until the error screen is gone.

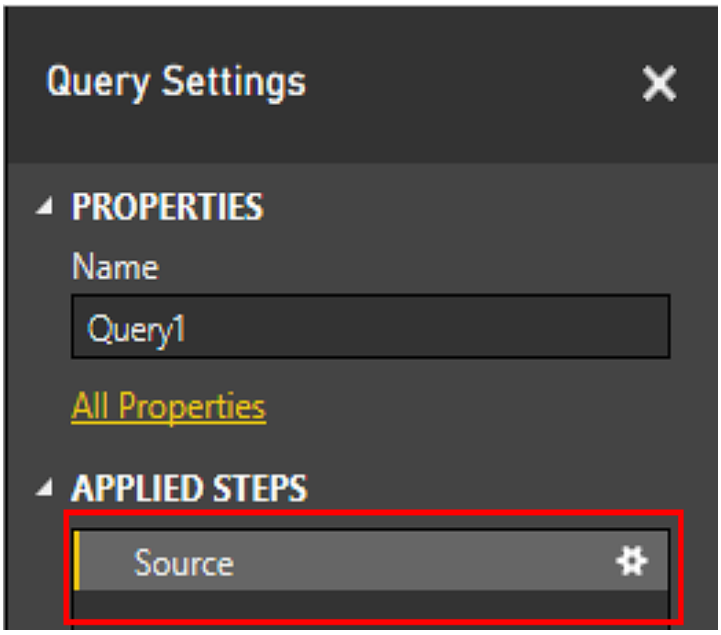


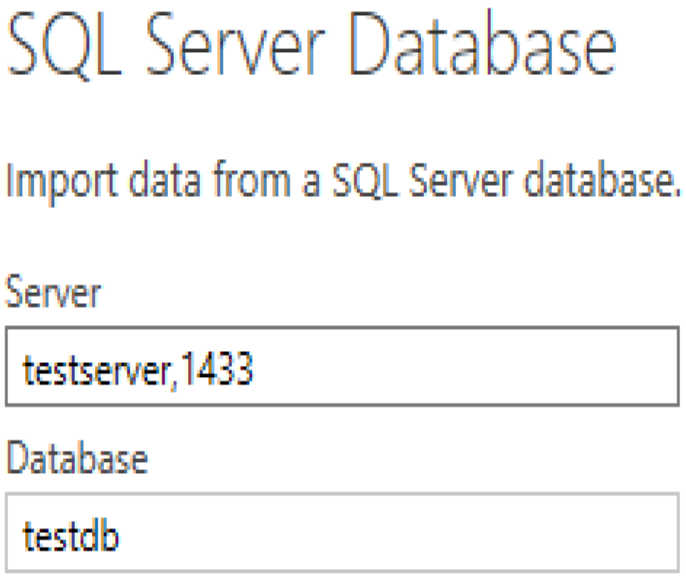


- Click “Edit Queries” at the top of the user interface.

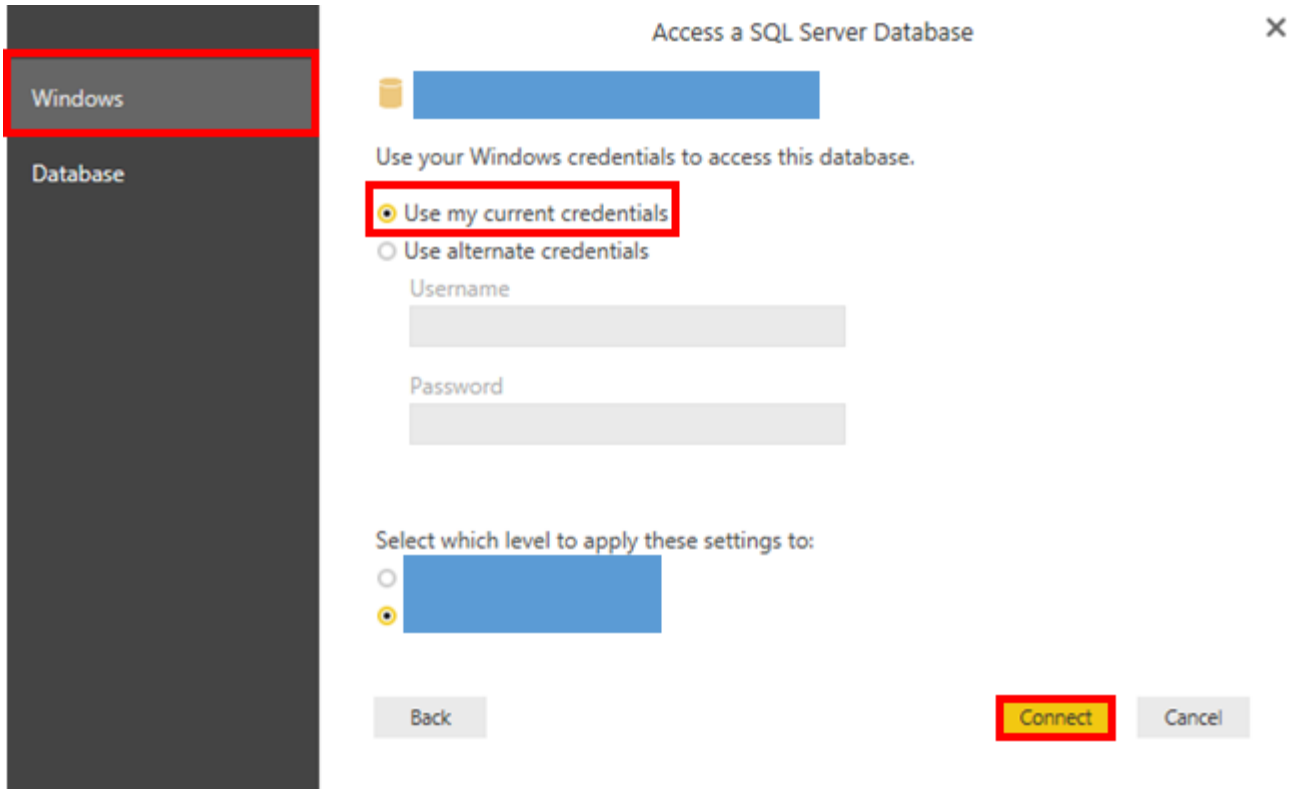


- Click “Source” on the right side of the user interface and enter your own server and database name in the prompt window.

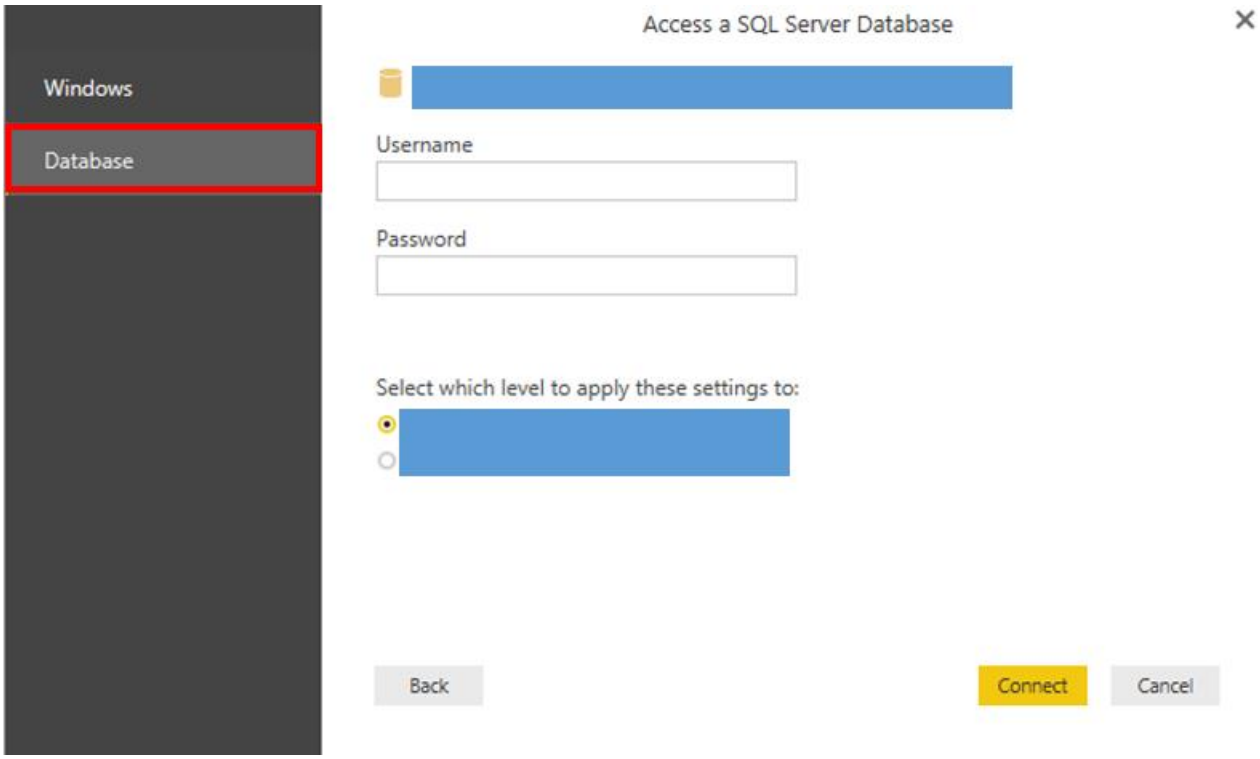




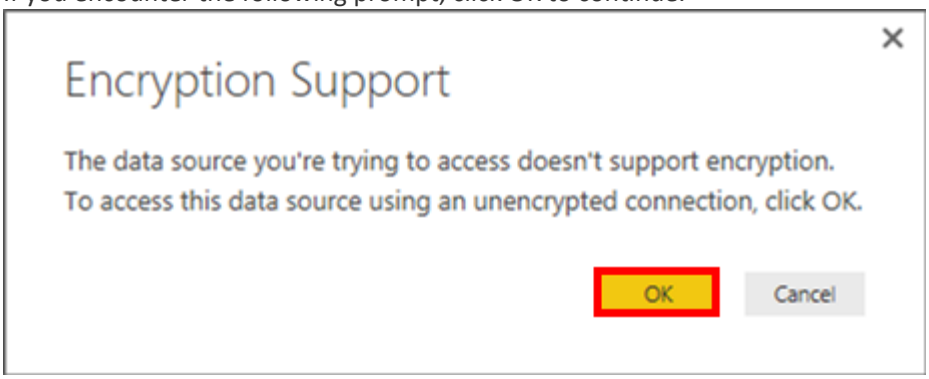
- Enter user name and password for accessing the database
  For Windows Authentication, select “Windows” on the left side of the prompt window as shown below.



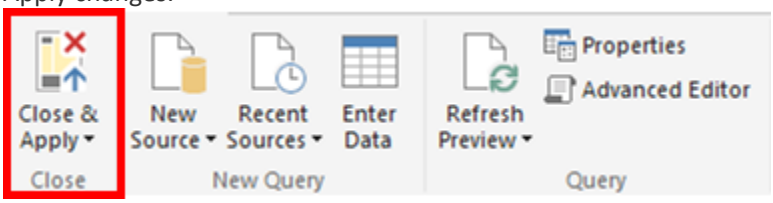
For SQL Server Authentication, select “Database” on the left side of the prompt window as shown below.



If you encounter the following prompt, click OK to continue.

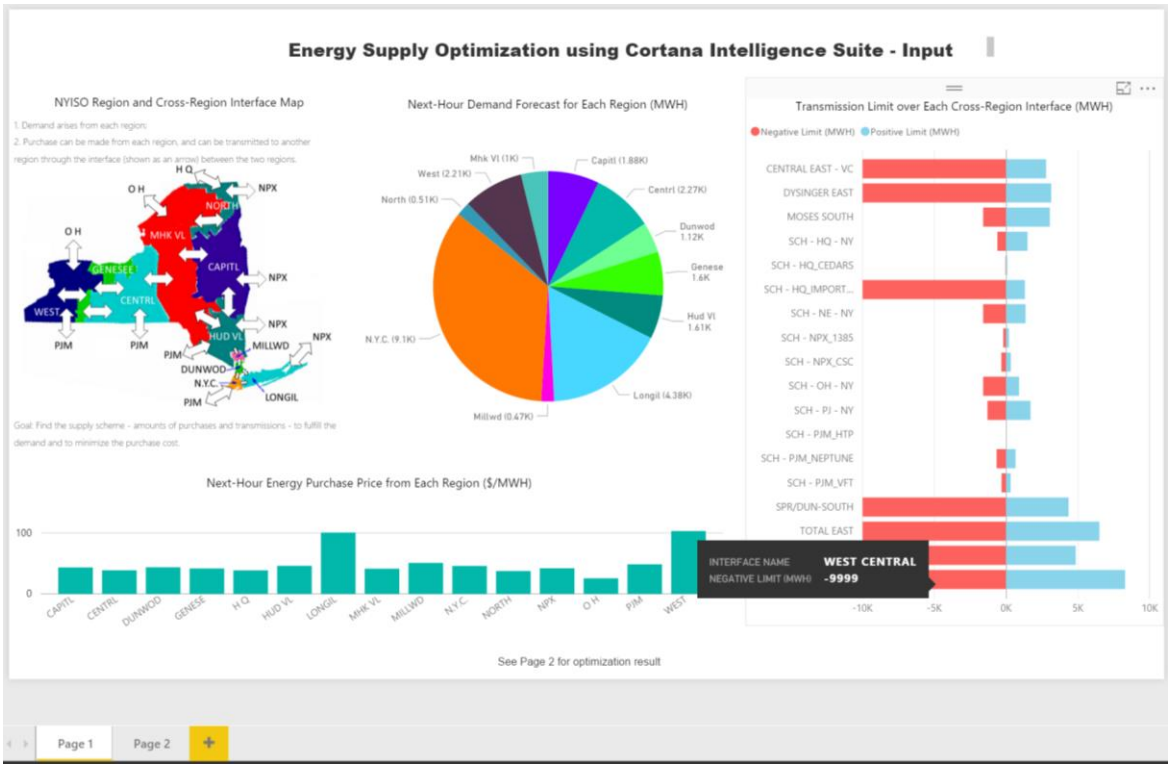


- Do the same for all the six queries.
- Apply changes.



- Save the Dashboard [Ctrl+S]

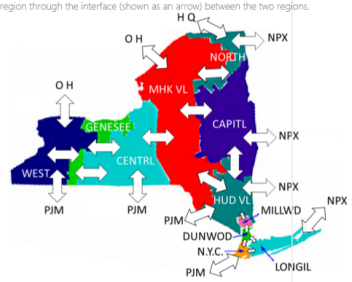
You should see a PowerBI dashboard looks like the figure below. At first, you only see the actual load data in yellow. The first set of forecasted demand will be produced within 20~30minutes. Refresh the dashboard to see the latest data. **NOTE**: If you are using Windows Authentication, you will only see one region on the dashboard, as we assumed a less powerful server is used and only created a job for one region.



Energy Supply Optimization using Cortana Intelligence Suite - Result

NYISO Region and Cross-Region Interface Map

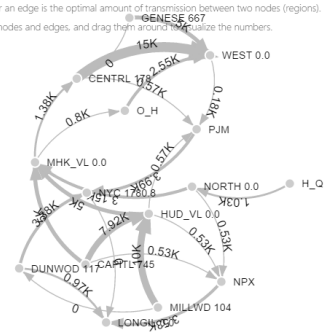
1. Demand arises from each region;
2. Purchase can be made from each region, and can be transmitted to another region through the interface (shown as an arrow) between the two regions.



Goal: Find the supply scheme - amounts of purchases and transmissions - to fulfill the demand and to minimize the purchase cost.

Next-Hour Optimal Supply Scheme: Purchase and Transmission (MWH)

Each node represents a region and the accompanying number is the optimal amount of purchase; the number over an edge is the optimal amount of transmission between two nodes (regions). Hover over the nodes and edges, and drag them around to visualize the numbers.



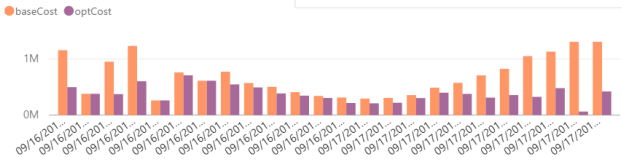
Next-24Hour Optimal Purchase from Each Region (MWH)

Region	CAPITL	CENTRL	DUNWOD	GENESE	HUD VL	LO
09/16/2016 11:00	7,457.25	17,868.17	1,174.97	6,678.14	0.00	
09/16/2016 12:00	0.00	17,937.49	1,127.44	6,598.96	0.00	
09/16/2016 13:00	7,504.71	17,844.65	1,207.80	6,579.86	0.00	
09/16/2016 14:00	7,321.08	0.00	1,044.56	6,606.26	7,782.13	
09/16/2016 15:00	0.00	0.00	987.08	6,478.05	0.00	
09/16/2016 16:00	0.00	0.00	968.40	6,470.38	0.00	

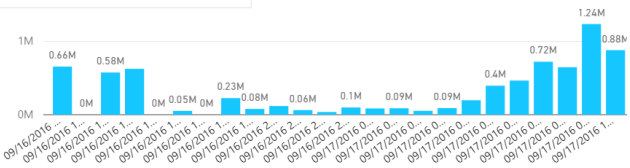
Next-24Hour Optimal Cross-Region Transmission (MWH)

Region	CAPITL->HUD VL	CENTRL->MHK VL	DUNWOD->LONGIL
09/16/2016 11:00	7,923.15	-1,382.59	970.72
09/16/2016 12:00	0.00	-1,383.90	884.22
09/16/2016 13:00	7,801.91	2,994.73	854.81
09/16/2016 14:00	0.00	-9,999.00	4,782.50
09/16/2016 15:00	0.00	-9,999.00	539.93
09/16/2016 16:00	0.00	-1,465.44	385.67

Next-24Hour Cost Comparison: Current/Baseline Scheme v.s. Optimal Scheme ($)



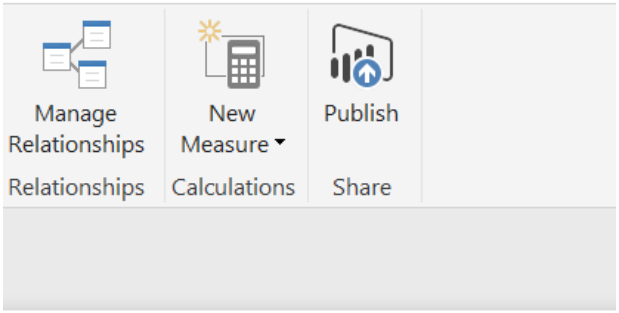
Next-24Hour Cost Savings by Using the Optimal Scheme instead of the Current/Baseline scheme ($)



See Page 1 for optimization input

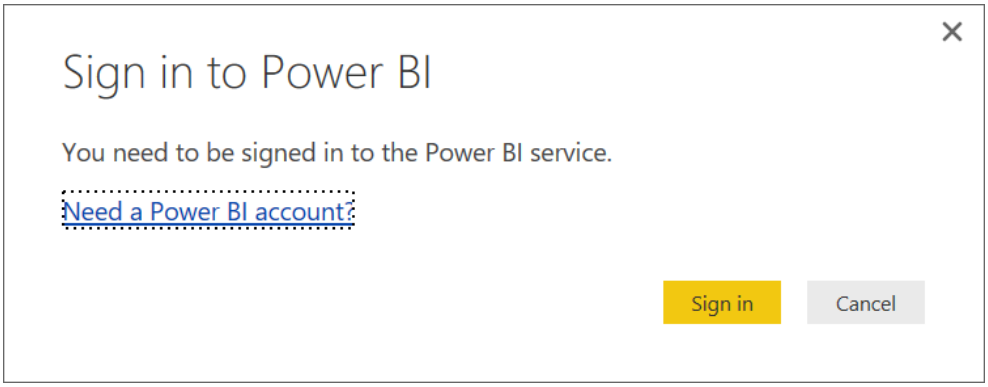
Publish Dashboard

- Click on the Publish button under the Home tab on top of the Dashboard



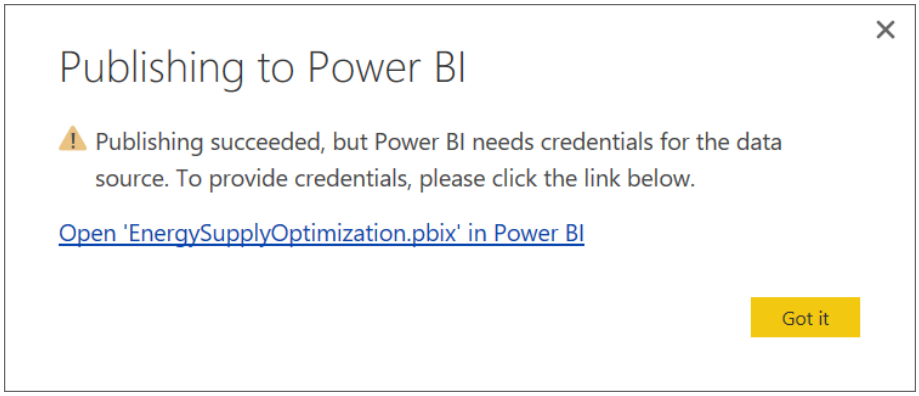
using Cortana Intelligence S

- If you are not logged in to PowerBi with your windows accound, you will be asked to Sign in

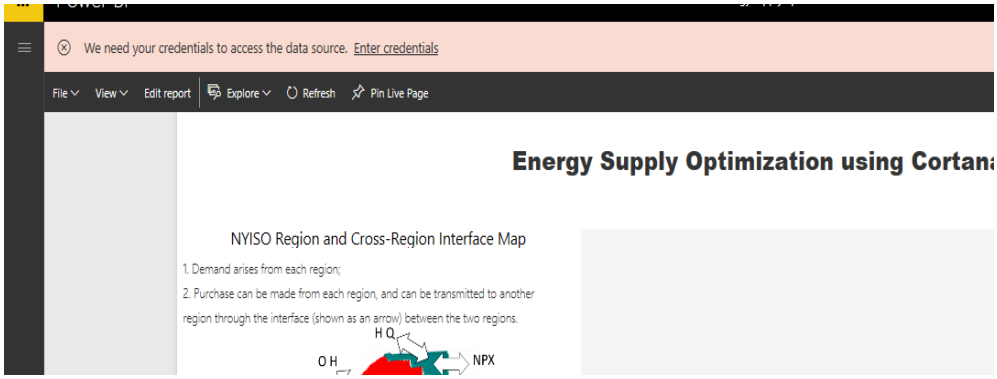


- Select your workspace in which you want this Dashboard to be

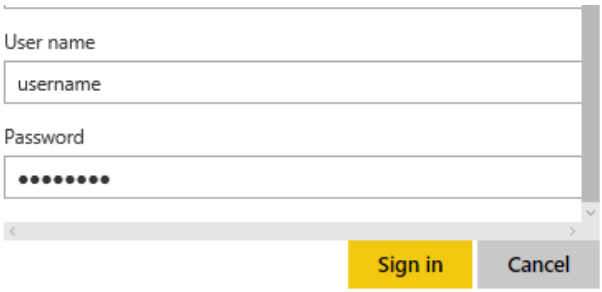
- Once done, you will get following message, requesting to provide the credentials of the SQL Server. Click on the link mentioned to update the server credintials



- This will open the powerbi on your brower. Sign in with your windows account. On the top you will see option to enter credentials. Click on “Enter Credentials”



- Click on “Edit credentials” and provide User name and Password for the SQL server and Sign in



- You can find EnergySupplyOptimization under Reports on left side of the page

Share the Dashboard and Reports: Link