CUNY Energy Cost and Distribution

Presented by:
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Pre-context

For this assignment I will

- Breakdown on the approached used to analyze and present the information from the tables
- Describe the visualizations created
- Discuss inferences that can be made from the data

Measures:

- Measures are created using *PublishedDataDimFacility, PublishedData FactAccountBilling,* and *PublishedData Dates*
- Columns Created:
  - #EnergyUsage
  - #OnPeak_EnergyUsage
  - #OffPeak_EnergyUsage
  - % #OnPeak_EnergyUsage
  - % #OffPeak_EnergyUsage
  - % Total_#EnergyUsage
  - QTD_EnergyAmount
  - PM_EnergyAmount
  - QTD_BillingAmount
  - PM_BillingAmount
  - Ranking Facility by Energy Usage
  - #Billing Amount
  - % Total_#BillingAmount
  - Ranking Facility by Billing Amount
  - Facility Amount
  - Ranking Borough by Energy Amount
  - Ranking Borough by Billing Amount
  - Ranking Borough by Facility Amount
  - Ratio_BillingAmount_FacilityAmount
  - Ranking_Borough_by_Efficiency
- Visuals
- Explanation of the Data

Created Measures:

- Measure Column: #EnergyUsage
- Shows the total Amount of Energy Used

```
#EnergyUsed =
SumX( 'PublishedData FaceAccountBilling', 'PublishedData
        FaceAccountBilling'[AccountEnergyUsage])
```

- Measure Column: #OnPeak_EnergyUsage
- Shows the total Amount of OnPeak Energy Used

```
#OnPeak_EnergyUsed =
SumX( 'PublishedData FaceAccountBilling', 'PublishedData
        FaceAccountBilling'[OnPeakEnergyUsage])
```

- Measure Column: #OffPeak_EnergyUsage
- Shows the total Amount of OffPeak Energy Used

```
#OffPeak_EnergyUsed =
SumX( 'PublishedData FaceAccountBilling', 'PublishedData
        FaceAccountBilling'[OffPeakEnergyUsage])
```

113M

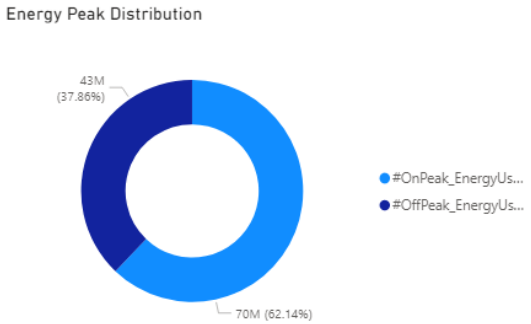
#EnergyUsage

70M

#OnPeak_EnergyUsage

43M

#OffPeak_EnergyUsage



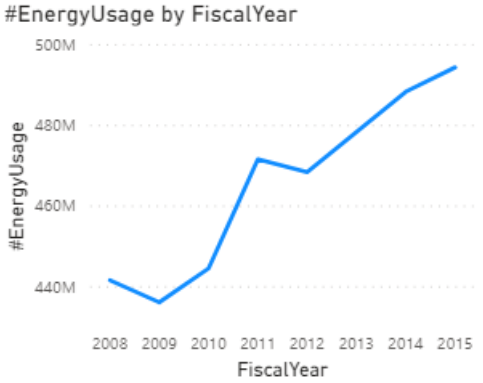
Measures Created

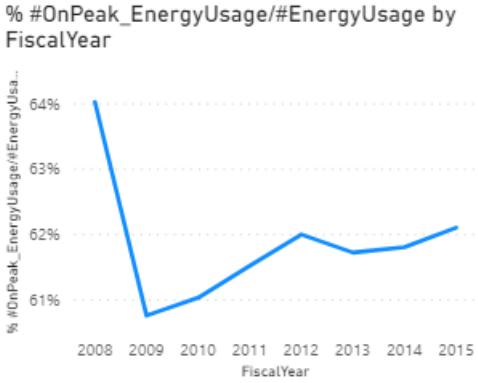
- Measure Column: % #OnPeak_EnergyUsage/#EnergyUsage
- Shows the Ratio of OnPeak Energy to Total Energy Usage

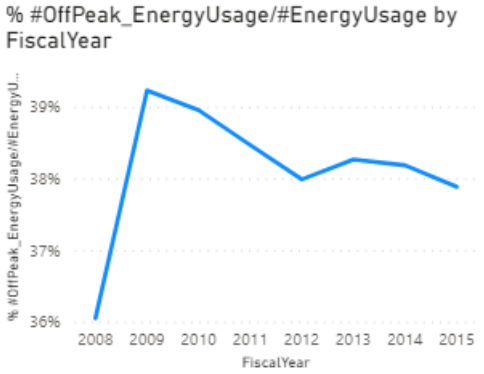
```
% #OnPeak_EnergyUsage/#EnergyUsage =
Divide( [#OnPeak_EnergyUsage], [#EnergyUsage])
```

- Measure Column: % #OffPeak_EnergyUsage/#EnergyUsage
- Shows the Ratio of OffPeak Energy to Total Energy Usage

```
% #OffPeak_EnergyUsage/#EnergyUsage =
Divide( [#OffPeak_EnergyUsage], [#EnergyUsage])
```







View

Year	#EnergyUsage	#OnPeak_EnergyUsage	#OffPeak_EnergyUsage	% #OnPeak_EnergyUsage/#EnergyUsage	% #OffPeak_EnergyUsage/#EnergyUsage
2007	**232509973**	**156973749**	**75734484**	**67.51%**	**32.57%**
Qtr 3	**122574842**	**89467784**	**33107058**	**72.99%**	**27.01%**
July	40709300	40709300	0	100.00%	0.00%
August	39579436	23799590	15779846	60.13%	39.87%
September	42286106	24958894	17327212	59.02%	40.98%
Qtr 4	**109935131**	**67505965**	**42627426**	**61.41%**	**38.78%**
October	38782052	23754540	15027512	61.25%	38.75%
November	36219771	21847654	14475217	60.32%	39.96%
December	34933308	21903771	13124697	62.70%	37.57%
2008	**436572645**	**263230145**	**173539040**	**60.29%**	**39.75%**
Qtr 1	**105267366**	**64095240**	**41368666**	**60.89%**	**39.30%**
January	35693407	20942999	14851508	58.67%	41.61%
February	35577944	22061844	13611540	62.01%	38.26%
March	33996015	21090397	12905618	62.04%	37.96%
Qtr 2	**103854251**	**61710864**	**42143387**	**59.42%**	**40.58%**
April	32305327	19584023	12721304	60.62%	39.38%
May	33474872	19627354	13847518	58.63%	41.37%
June	38074052	22499487	15574565	59.09%	40.91%
Qtr 3	**122171014**	**72994594**	**49176420**	**59.75%**	**40.25%**
July	42983404	25815739	17167665	60.06%	39.94%
August	39806777	23191644	16615133	58.26%	41.74%
Total	**3723639952**	**2303995982**	**1420061650**	**61.87%**	**38.14%**

Measures Created

- Measure Column: QTD_EnergyAmount
- Shows the Quarter to Date Energy Amount

```
QTD_EnergyAmount =
Calculate( [#EnergyUsage], DATESQTD('PublishedData Dates'[Date]))
```

- Measure Column: PM_EnergyAmount
- Shows the Previous Month's Energy Amount

```
PM_EnergyAmount =
Calculate( [#EnergyUsage], DATEADD('PublishedData Dates'[Date], -1, MONTH))
```

Year	#EnergyUsage	QTD_EnergyAmount	PM_EnergyAmount
2007	**232509973**	**109935131**	**197576665**
Qtr 3	**122574842**	**122574842**	**80288736**
July	40709300	40709300	
August	39579436	80288736	40709300
September	42286106	122574842	39579436
Qtr 4	**109935131**	**109935131**	**117287929**
October	38782052	38782052	42286106
November	36219771	75001823	38782052
December	34933308	109935131	36219771
2008	**436572645**	**105280014**	**434656707**
Qtr 1	**105267366**	**105267366**	**106204659**
January	35693407	35693407	34933308
February	35577944	71271351	35693407
March	33996015	105267366	35577944
Qtr 2	**103854251**	**103854251**	**99776214**
April	32305327	32305327	33996015
May	33474872	65780199	32305327
June	38074052	103854251	33474872
Qtr 3	**122171014**	**122171014**	**120864233**
July	42983404	42983404	38074052
August	39806777	82790181	42983404
September	39380833	122171014	39806777
Qtr 4	**105280014**	**105280014**	**107811601**
October	33667968	33667968	39380833
November	34762800	68430768	33667968
December	36849246	105280014	34762800
2009	**439795726**	**108297313**	**438205839**
Qtr 1	**107775745**	**107775745**	**109781623**
January	37414815	37414815	36849246
February	35517562	72932377	37414815
March	34843368	107775745	35517562
Qtr 2	**100971482**	**100971482**	**100528523**
Total	**3723639952**	**118126889**	**3681596854**

Measures Created

- Measure Column: %Total_EnergyUsage
- Shows the % of Total Energy Usage

```
%Total_EnergyUsage=
Divide( [#EnergyUsage], Calculate([#EnergyUsage], AllSelected( )), 0)
```

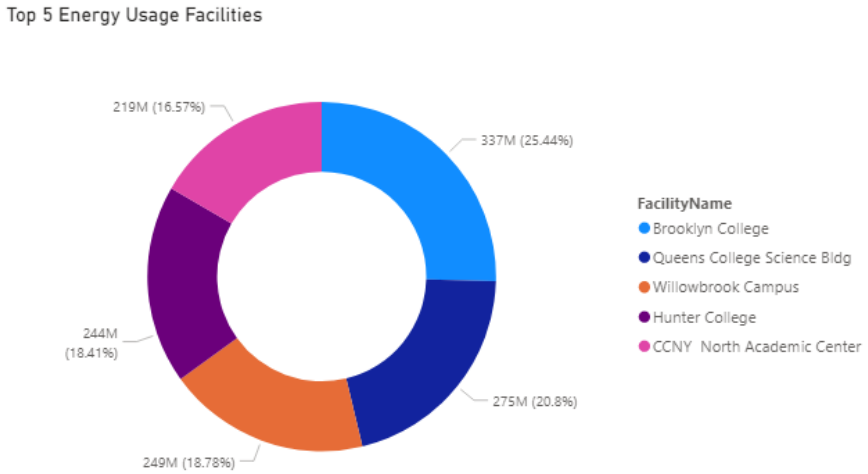
View

FacilityName	#EnergyUsage	% Total_#EnergyUsage	#OnPeak_EnergyUsage	#OffPeak_EnergyUsage	% #OnPeak_EnergyUsage/#EnergyUsage	% #OffPeak_EnergyUsage/#EnergyUsage
Brooklyn College	336665531	9.06%	169372019	167293512	50.31%	49.69%
Queens College Science Bldg	275261075	7.41%	145476891	129784184	52.85%	47.15%
Willowbrook Campus	248538303	6.69%	122490933	126047370	49.28%	50.72%
Hunter College	243587046	6.56%	121958186	121628860	50.07%	49.93%
CCNY North Academic Center	219338276	5.90%	106926406	112411870	48.75%	51.25%
City College of New York	213584889	5.75%	105866094	107718795	49.57%	50.43%
Kingsborough Community College	186676701	5.02%	107955202	78721499	57.83%	42.17%
Lehman College	163476772	4.40%	83893474	79583298	51.32%	48.68%
Manhattan Community College	141890938	3.82%	66416914	75474024	46.81%	53.19%
York College	119816713	3.23%	57360224	62456489	47.87%	52.13%
John Jay Coll. Metropolis Bldg	114620704	3.09%	55646733	58973971	48.55%	51.45%
Queensborough Comm Coll	114106034	3.07%	64598866	49507168	56.61%	43.39%
Baruch College Site B	109427777	2.95%	56043402	53384375	51.21%	48.79%
CUNY Graduate Center	92159746	2.48%	52157583	40002163	56.59%	43.41%
Laguardia Community Coll	86951120	2.34%	50973268	35977852	58.62%	41.38%
Baruch College Site A	82394815	2.22%	41451396	40943419	50.31%	49.69%
Medgar Evers College	78290478	2.11%	78290478	0	100.00%	0.00%
Namm Hall	74682843	2.01%	44362679	30320164	59.40%	40.60%
Hostos Community College	63313606	1.70%	47892562	15421044	75.64%	24.36%
Bronx C.C. Quadrangle Bldgs	63220765	1.70%	31117901	32102864	49.22%	50.78%
Laguardia CC	56816912	1.53%	56816912	0	100.00%	0.00%
John Jay Coll. Miles Bldg	48121395	1.30%	48121395	0	100.00%	0.00%
NYC Technical College	47200722	1.27%	47200722	0	100.00%	0.00%
Baruch College	31216229	0.84%	31216229	0	100.00%	0.00%
Hunter Coll Brookdale Campus	30109848	0.81%	30109848	0	100.00%	0.00%
CUNY Computer Center	28806080	0.78%	28806080	0	100.00%	0.00%
Lehman Coll Carmen Hall	28688800	0.77%	28688800	0	100.00%	0.00%
S J Hines Health Complex	28522563	0.77%	28522563	0	100.00%	0.00%
Bronx C.C. Silver Hall	27065200	0.73%	27065200	0	100.00%	0.00%
CCNY South Campus	26525440	0.71%	26525440	0	100.00%	0.00%
CCNY - South Campus HT Service	22758323	0.61%	20449594	2308729	89.86%	10.14%
_Unassigned	19714805	0.53%	19714805	0	100.00%	0.00%
Total	**3715079984**	**100.00%**	**2295436014**	**1420061650**	**61.79%**	**38.22%**

Measures Created

- Measure Column: Ranking Facility by Energy Use
- Ranks Facilities by their Energy Usage

%Ranking Facility by Energy Use =
RankX(ALL ('PublishedData DimFacility'[FacilityName]), [#EnergyUsage])



FacilityName	#EnergyUsage	Ranking Facility by Energy Usage
Brooklyn College	336665531	1
Queens College Science Bldg	275261075	2
Willowbrook Campus	248538303	3
Hunter College	243587046	4
CCNY North Academic Center	219338276	5
City College of New York	213584889	6
Kingsborough Community College	186676701	7
Lehman College	163476772	8
Manhattan Community College	141890938	9
York College	119816713	10
John Jay Coll. Metropolis Bldg	114620704	11
Queensborough Comm Coll	114106034	12
Baruch College Site B	109427777	13
CUNY Graduate Center	92159746	14
Laguardia Community Coll	86951120	15
Baruch College Site A	82394815	16
Medgar Evers College	78290478	17
Namm Hall	74682843	18
Hostos Community College	63313606	19
Bronx C.C. Quadrangle Bldgs	63220765	20
Laguardia CC	56816912	21
John Jay Coll. Miles Bldg	48121395	22
NYC Technical College	47200722	23
Baruch College	31216229	24
Hunter Coll Brookdale Campus	30109848	25
CUNY Computer Center	28806080	26
Lehman Coll Carmen Hall	28688800	27
S J Hines Health Complex	28522563	28
Bronx C.C. Silver Hall	27065200	29
CCNY South Campus	26525440	30
CCNY - South Campus HT Service	22758323	31
_Unassigned	19714805	32
BMCC Fiterman Hall	19704231	33
Hunter College HS	18664891	34
Total	**3723639952**	**1**

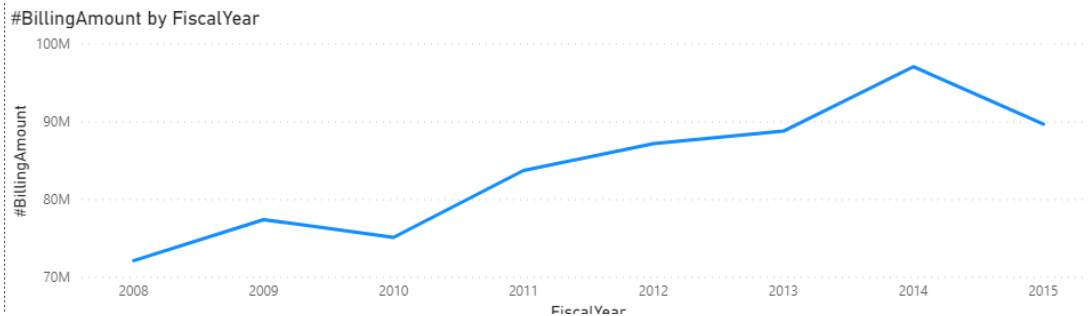
Measures Created

- Measure Column: #BillingAmount
- Shows the Total Billing Amount

#BillingAmount=
SumX('PublishedData FactAccountBilling', 'Publisheddata
FactAccountantBilling' [RevisedBilledAmount])

- Measure Column: %Total_BillingAmount
- Shows the % of Total Energy Usage

%Total_BillingAmount=
Divide([#BillingAmount], Calculate([#BillingAmount], AllSelected( )), 0)



Year	#BillingAmount	% Total_#BillingAmount
⊟ 2007	34,971,818.30	5.21%
⊟ Qtr 3	18,643,137.09	2.78%
July	6,518,719.70	0.97%
August	5,866,781.98	0.87%
September	6,257,635.41	0.93%
⊟ Qtr 4	16,328,681.21	2.43%
October	4,721,415.68	0.70%
November	5,262,042.99	0.78%
December	6,345,222.54	0.95%
⊞ 2008	76,974,033.33	11.47%
⊞ 2009	74,558,050.19	11.11%
⊞ 2010	81,023,635.41	12.07%
⊞ 2011	86,002,738.20	12.81%
⊞ 2012	86,297,001.45	12.85%
⊞ 2013	91,628,395.34	13.65%
⊞ 2014	95,752,266.21	14.26%
⊞ 2015	44,106,133.41	6.57%
Total	671,314,071.84	100.00%

Measures Created

- Measure Column: QTD_BillingAmount
- Shows the Quarter to Date Billing Amount

QTD_EnergyAmount =
Calculate([#BillingAmount], DATESQTD('PublishedData Dates'[Date]))

- Measure Column: PM_BillingAmount
- Shows the Previous Month's Billing Amount

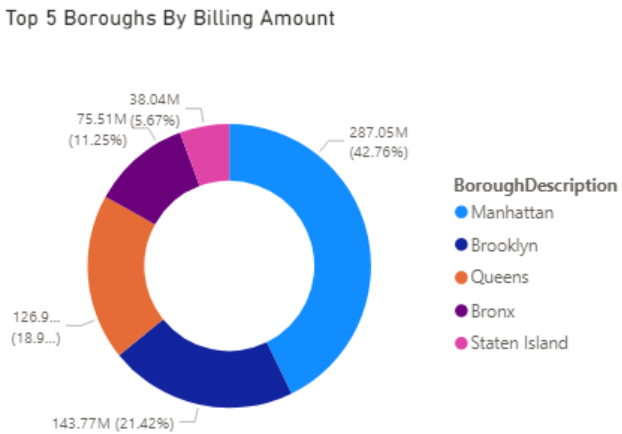
PM_BillingAmount =
Calculate([#BillingAmount], DATEADD('PublishedData Dates'[Date], -1, MONTH))

Year	#BillingAmount	QTD_BillingAmount	PM_BillingAmount
2007	**34,971,818.30**	**16,328,681.21**	**28,626,595.76**
Qtr 3	**18,643,137.09**	**18,643,137.09**	**12,385,501.68**
July	6,518,719.70	6,518,719.70	
August	5,866,781.98	12,385,501.68	6,518,719.70
September	6,257,635.41	18,643,137.09	5,866,781.98
Qtr 4	**16,328,681.21**	**16,328,681.21**	**16,241,094.08**
October	4,721,415.68	4,721,415.68	6,257,635.41
November	5,262,042.99	9,983,458.67	4,721,415.68
December	6,345,222.54	16,328,681.21	5,262,042.99
2008	**76,974,033.33**	**17,232,277.20**	**76,136,416.69**
Qtr 1	**21,087,151.48**	**21,087,151.48**	**20,660,216.06**
January	7,057,844.18	7,057,844.18	6,345,222.54
February	7,257,149.34	14,314,993.52	7,057,844.18
March	6,772,157.96	21,087,151.48	7,257,149.34
Qtr 2	**16,099,689.06**	**16,099,689.06**	**16,331,288.48**
April	4,824,376.43	4,824,376.43	6,772,157.96
May	4,734,754.09	9,559,130.52	4,824,376.43
June	6,540,558.54	16,099,689.06	4,734,754.09
Qtr 3	**22,554,915.59**	**22,554,915.59**	**21,865,252.62**
July	7,697,240.82	7,697,240.82	6,540,558.54
August	7,627,453.26	15,324,694.08	7,697,240.82
September	7,230,221.51	22,554,915.59	7,627,453.26
Qtr 4	**17,232,277.20**	**17,232,277.20**	**17,279,659.53**
October	4,511,884.96	4,511,884.96	7,230,221.51
November	5,537,553.06	10,049,438.02	4,511,884.96
December	7,182,839.18	17,232,277.20	5,537,553.06
2009	**74,558,050.19**	**16,526,357.46**	**74,699,081.09**
Qtr 1	**22,128,881.31**	**22,128,881.31**	**22,285,037.25**
January	8,243,603.93	8,243,603.93	7,182,839.18
February	6,858,594.14	15,102,198.07	8,243,603.93
March	7,026,683.24	22,128,881.31	6,858,594.14
Qtr 2	**15,517,779.27**	**15,517,779.27**	**16,616,631.43**
Total	**671,314,071.84**	**20,040,736.65**	**664,313,151.87**

Measures Created

- Measure Column: Ranking Facility by Billing Amount
- Shows the Rank of Facilities by Billing Amount

```
Ranking Facility by Billing Amount=
RankX( ALL ('PublishedData DimFacility'[FacilityName]),
            [#BillingAmount])
```



BoroughDescription	#BillingAmount	% Total_#BillingAmount	Ranking Facility by Billing Amount
Manhattan	**238,766,481.02**	**39.40%**	**1**
Hunter College	44,907,707.41	7.41%	1
CCNY North Academic Center	37,437,732.73	6.18%	2
City College of New York	30,849,831.13	5.09%	3
Manhattan Community College	30,721,682.50	5.07%	4
John Jay Coll. Metropolis Bldg	19,655,007.20	3.24%	5
Baruch College Site A	19,112,113.99	3.15%	6
CUNY Graduate Center	18,115,069.68	2.99%	7
Baruch College Site B	14,798,491.24	2.44%	8
John Jay Coll. Miles Bldg	11,794,152.57	1.95%	9
Hunter Coll Brookdale Campus	11,374,692.57	1.88%	10
Brooklyn	**141,760,066.64**	**23.39%**	**1**
Brooklyn College	65,256,408.44	10.77%	1
Kingsborough Community College	35,240,853.69	5.82%	2
Namm Hall	13,309,435.57	2.20%	3
Medgar Evers College	13,289,366.61	2.19%	4
NYC Technical College	8,019,223.89	1.32%	5
Kingsborough CC T Bldgs	2,531,844.19	0.42%	6
Fieldhouse	1,726,455.88	0.28%	7
Student Support Services	1,608,830.17	0.27%	8
Brooklyn College Student Union	777,648.20	0.13%	10
Queens	**121,198,563.80**	**20.00%**	**1**
Bronx	**66,242,208.15**	**10.93%**	**1**
Staten Island	**38,036,259.76**	**6.28%**	**1**
Total	**606,003,579.37**	**100.00%**	**1**

Measures Created

- Measure Column: #FacilityAmount
- Shows the Number of Facilities

```
#FacilityAmount=
DistinctCountNoBlank('PublishedData DimFacility'[FacilityName])
```

- Measure Column: Ranking Borough by Energy Amount
- Ranks Boroughs by Energy Amount

```
Ranking Borough by Energy Usage =
RankX( ALL ('PublishedData DimFacility'[BoroughDescription]), [#EnergyUsage])
```

- Measure Column: Ranking Borough by Billing Amount
- Ranks Boroughs by Billing Amount

```
Ranking Borough by Billing Amount =
RankX( ALL ('PublishedData DimFacility'[BoroughDescription]), [#BillingAmount])
```

- Measure Column: Ranking Borough by Facility Amount
- Ranks Boroughs by Facility Amount

```
Ranking Borough by Facility Amount =
RankX( ALL ('PublishedData DimFacility'[BoroughDescription]), [#FacilityAmount])
```

Measures Created

- Measure Column: #Ratio_BillingAmount_FacilityAmount
- Shows the Ratio of Billing to Facility Amount

```
Ratio_BillinAmount_FacilityAmount =
DIVIDE([#BillingAmount], [#FacilityAmount])
```

- Measure Column: Ranking Borough by Efficiency
- Ranks Boroughs by Efficiency

```
Ranking Borough by Efficiency =
RankX( FIILTER (ALL ('PublishedData DimFacility'[BoroughDescription]), [BoroughDescription] <>
BLANK( )), [Ratio_BillingAmount_FacilityAmount],  ,ASC) - 1
```

View

BoroughDescription	#EnergyUsage	#BillingAmount	#FacilityAmount	Ranking Borough by Energy Amount	Ranking Borough by Billing Amount	Ranking Borough by Facility Amount
Manhattan	1540281792	287,051,624.34	1005	1	1	3
Brooklyn	781327287	143,772,238.17	1313	2	2	1
Queens	740067662	126,944,490.57	1210	3	3	2
Bronx	412721935	75,509,459.00	877	4	4	4
Staten Island	249241276	38,036,259.76	379	5	5	5
Total	**3723639952**	**671,314,071.84**	**4707**	**1**	**1**	**1**

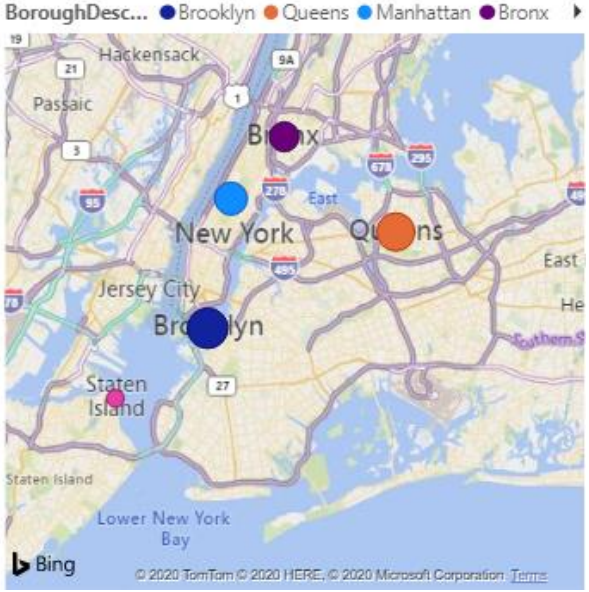
BoroughDescription	Ratio_BillingAmount_FacilityAmount	Ranking Borough by Efficiency
Bronx	86,099.73	1
Staten Island	100,359.52	2
Queens	104,912.80	3
Brooklyn	109,499.04	4
Manhattan	285,623.51	5
Total	**142,620.37**	**5**

View

Energy Usage Per Borough

Billing Amount Per Borough

Facility Amount Per Borough



Conclusion

- By looking through the data, we can see there is a lot of interesting details that can be displayed
- We observed the change in Energy and Bill Amount over quarters, months, and years
- We found the main sources of energy usages, whether it be through boroughs, facilities, or On/OffPeak usage
- We Ranked different Boroughs and Facilities based on their Energy Usage and Bill Amount
- We also Ranked Boroughs for efficiency by finding the energy to facility usage