BA BEALS ASSOCIATES, PLLC
Land Planning · Civil Engineering
Landscape Architecture · Septic Design & Evaluation
Stratham, NH

February 3, 2023

Re: Thibodeau - Route 9, Barrington

C/O James Hewitt
NHDOT Bureau of Highway Maintenance
PO Box 740
Durham, NH 03824

Jim,

The following is in response to your request for further information pertaining to the referenced project. Please be aware that the office/commercial trip generation numbers may be inflated as the most likely occupants of these spaces would be the homeowners. Finally, for the office use, fitted curve equations were not provided by ITE and the data was computed from the graphs provided in the ITE Manual.

Each of the 6-residential units will be 2-bedroom single-family dwellings with 480 s.f. commercial/office space in the bottom floor. Using the current ITE Trip Generation Manual we have developed the following.

DAILY TRAFFIC TRIP ENDS:

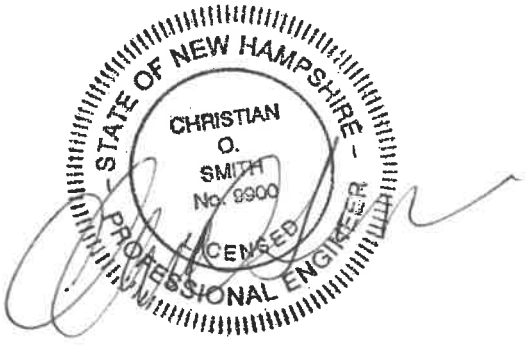
	Residential	Office/Commercial	Total
Weekday	78	44	**122**
Peak a.m. Weekday	9	5	**14**
Peak p.m. weekday	7	7	**14**

Please see attached calculations and Select pages from the ITE Trip Generation Manual 10th Edition – Volume 2.

Very Truly Yours,
BEALS ASSOCIATES, PLLC

Christian O. Smith

Christian O. Smith, PE
Principal



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NH-1387 - NH Route 9, Barrington, NH
Traffic Generation Calculations
ITE Trip Generation Manual 10th Edition

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Residential Use:

Weekday:

Avg. vehicle trip ends vs. Dwelling units on a Weekday;

Fitted Curve Equation: Ln(T)=0.92xLn(X)+2.71 (where T = Trip Ends & X = Number of dwelling units)

Ln(T)= 0.92xLn(6)+2.71
Ln(T) = 1.6484+2.71
Ln(T)= 4.3584
$T = e^{4.3584}$
T = 78.13; **78 trips per day (39 exiting, 39 entering)**

A.M. peak hour on Weekday (One hour between 7 a.m. - 9 a.m.):

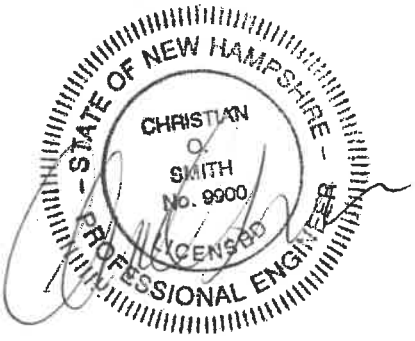
Fitted Curve Equation: T=0.71x(X)+4.80 (where T = Trip Ends & X = Number of dwelling units)

T=0.71x(6)+4.80
T=4.26+4.80= 9.06; **9 trips per hour (5 exiting, 4 entering)**

P.M. peak hour on Weekday (One hour between 4 p.m. – 6 p.m.):

Fitted Curve Equation: Ln(T)=0.96xLn(X)+0.20 (where T = Trip Ends & X = Number of dwelling units)

Ln(T)=0.96xLn(6)+0.20
Ln(T)=1.72+0.20= 1.92
$T = e^{1.92}$ = 6.82; **7 trips per hour (3 exiting, 4 entering)**



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Single-Family Detached Housing
(210)

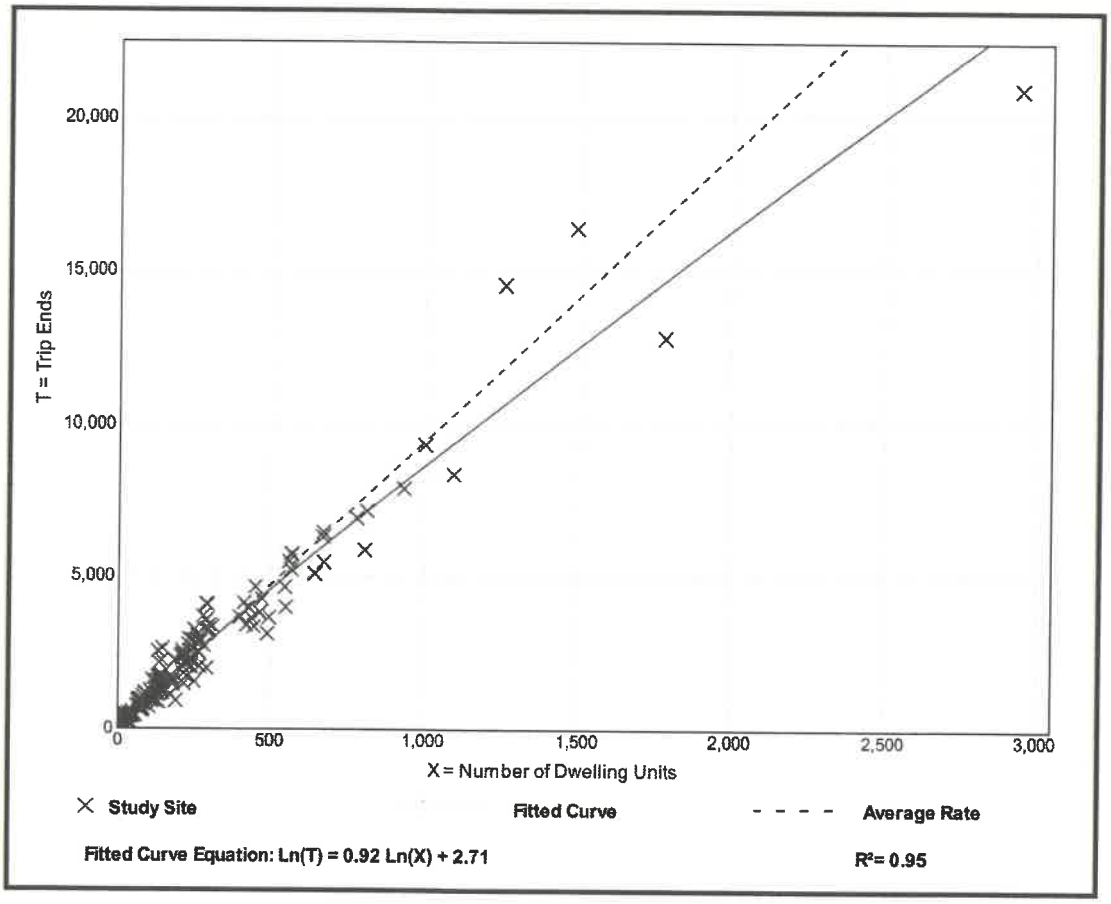
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



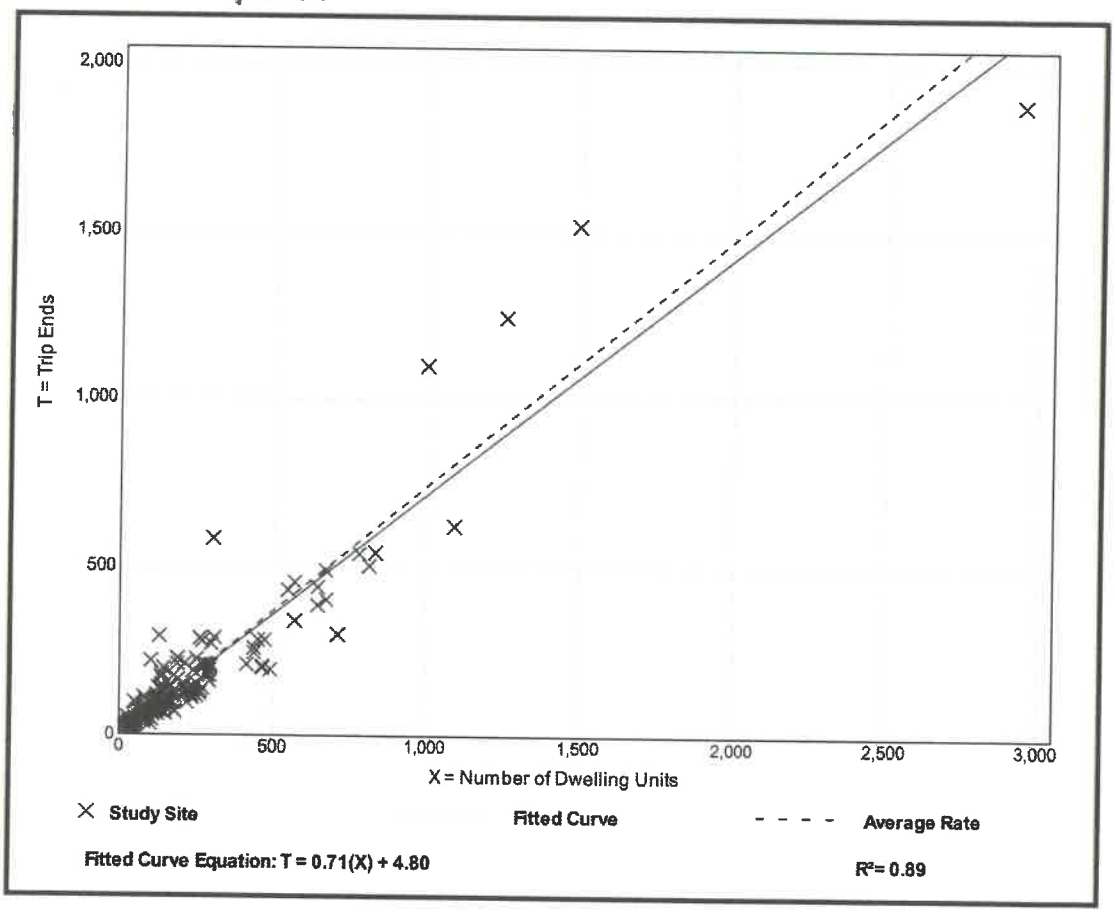
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



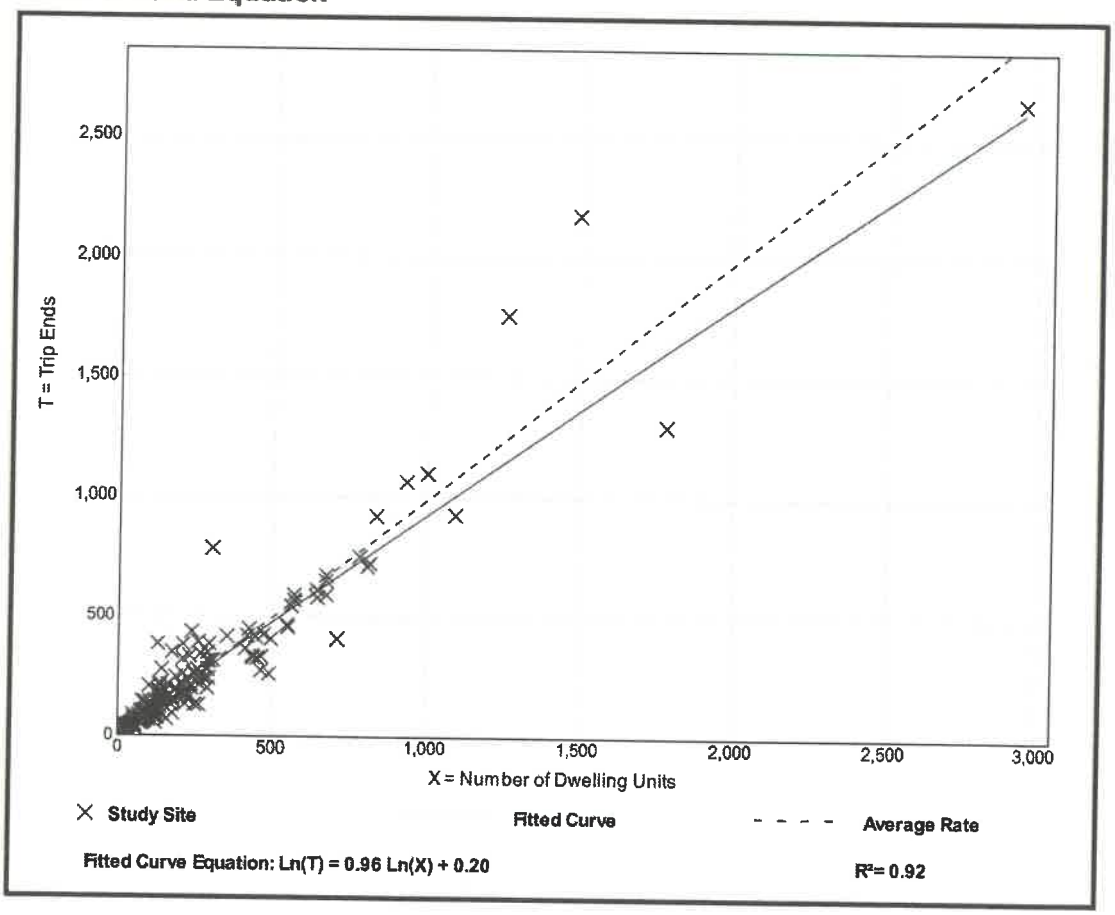
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



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Office/Commercial Use:
Fitted Curve Not Given;
Weekday:

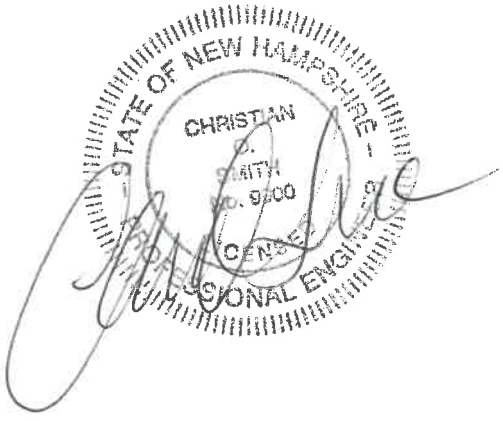
Avg. vehicle trip ends vs. Dwelling units on a Weekday;
Per 1,000 s.f. (total = 480x6 = 2,880 s.f/1,000 s.f. = 2.88)
From ITE Data Plan Graph (see attached)
44 trips per day (22 exiting, 22 entering)

A.M. peak hour on Weekday (One hour between 7 a.m. - 9 a.m.):

Per 1,000 s.f. (total = 480x6 = 2,880 s.f/1,000 s.f. = 2.88)
From ITE Data Plan Graph (see attached)
5 trips per hour (2 exiting, 3 entering)

P.M. peak hour on Weekday (One hour between 4 p.m. – 6 p.m.):

Per 1,000 s.f. (total = 480x6 = 2,880 s.f/1,000 s.f. = 2.88)
From ITE Data Plan Graph (see attached)
7 trips per hour (4 exiting, 3 entering)



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Small Office Building
(712)

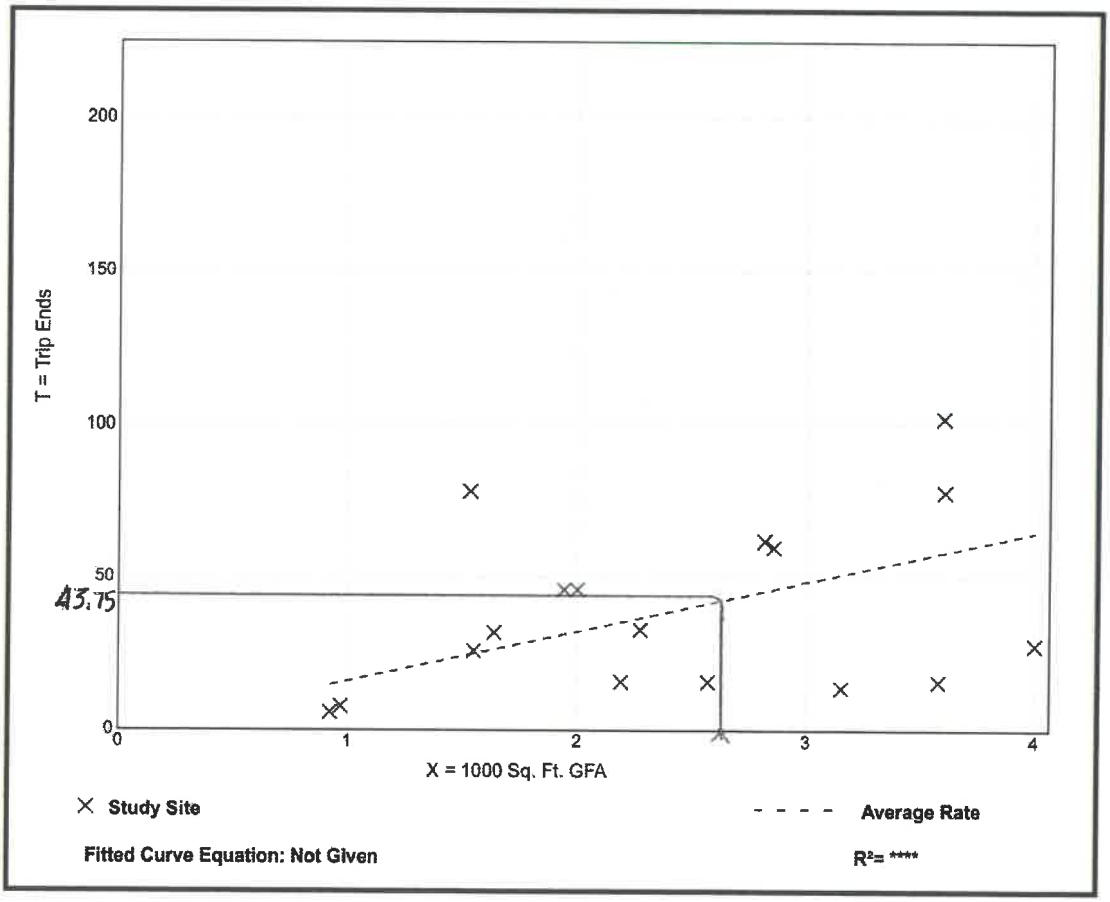
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 17
1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
16.19	4.44 - 50.91	11.03

Data Plot and Equation



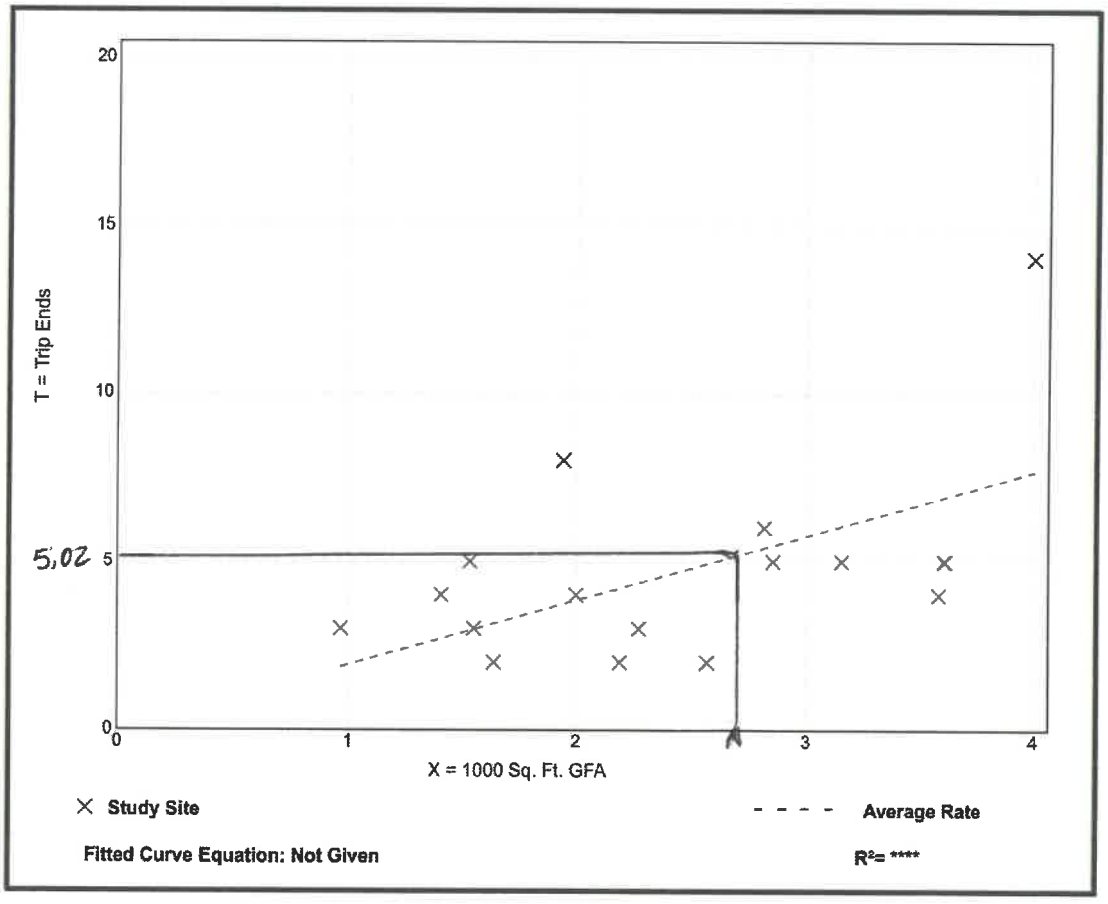
Small Office Building
(712)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 17
1000 Sq. Ft. GFA: 2
Directional Distribution: 83% entering, 18% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.92	0.78 - 4.12	0.97

Data Plot and Equation



Small Office Building
(712)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 17
1000 Sq. Ft. GFA: 3
Directional Distribution: 32% entering, 68% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.45	0.56 - 5.50	1.38

Data Plot and Equation