

# Development Cost Trends in Affordable Housing

Kaine Hutchins, Research and Analysis Intern

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**MaineHousing**  
Maine State Housing Authority

353 Water Street  
Augusta, Maine 04330  
207-626-4600, 1-800-452-4668  
Maine Relay 711  
[www.mainehousing.org](http://www.mainehousing.org)

## Executive Summary

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*Construction cost containment will be an important topic of discussion for Maine as it struggles to recover from the consequences of the 2008 housing crisis. Residential housing construction took a substantial hit and the shortage of residential construction workers has inflated overall construction costs. This, combined with Maine's aging demographics, poses a huge problem for developers and housing institutions across the state.*

*At MaineHousing, recent efforts to collect and analyze development cost data stemmed from dwindling profit margins for Low Income Housing Tax Credit (LIHTC) developers and increased demand for these same low-income units. The purpose of this paper is to identify trends in development costs and any indicators that correlate with those trends. For analysis purposes, development costs were broken into several categories including: construction costs, soft costs, financing costs, miscellaneous costs, acquisition costs, and fees and reserves. Three different assessments on varying aspects of construction, including development costs, building specifications, and developers, were used to compare and contrast projects grouped by key variables, known as splits.*

*To start, a literature review was conducted to evaluate previously identified indicators/patterns of development costs, and how such methodology could translate to Maine's housing market. Studies from the states of New Mexico, California, Missouri, Minnesota, and Washington were helpful in developing research questions, ideas and implementation, but innate differences in the economy, demographics, and timespan make it difficult to compare research findings.*

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## Introduction

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Maine's population is aging - by 2030 over 25% of the state will be age 65 and older and the demand for affordable housing is going to increase at a time when total development costs (TDC) are rising and profit margins are shrinking. By developing low-income housing units now, Maine can adequately house its senior population and provide affordable housing for its younger generations. This research began with the goal being to identify the variables that drive up development cost. Specifically, what costs are rising, when they're rising, and what's causing them to rise. Ultimately we want to provide metrics and analysis to guide future decision-making in the affordable housing market.

## Literature Review

Research from multiple housing institutions (including New Mexico, Missouri, Minnesota, Washington state, and California) aided the development of research questions and methods of analysis used. Due to the limited number of relevant studies available and the differences in housing markets, not all the findings can be considered relevant to Maine. However, their practices and procedures influenced the design of the research and suggested correlations between certain variables and rising costs. The main findings are:

- The largest contributor to development cost is construction, primarily composed of material and labor costs and greatly influenced by market conditions.
- Affordable housing units (subsidized development) saw similar development costs to market-rate units (unsubsidized development), although soft costs and miscellaneous costs were slightly higher.
- The larger the scale of the project, the less expensive per unit TDC becomes.
- Projects in metro areas generally cost less than projects in rural areas. This is probably because metro projects tend to have more units and therefore have lower TDC per unit costs (among other characteristics).
- Community opposition, local building regulations and financing sources were also major influences of TDC.

## Research Questions

Research, derived from the questions below, was oriented around studying as much data from MaineHousing's multifamily database as possible to correlate qualities/characteristics of projects that are significantly and consistently exerting influence on overall costs, building size, and location.

- 1) What are the major expenses causing development costs to rise and how have they changed over the past 10 years?
- 2) How do project size, location, and cost trends compare among the 3 different construction types? Rural vs. Metro? 4% vs. 9% Tax Credit program?
- 3) Are some developers better at staying within their budget lines? Which developer builds for lower costs? Who builds higher quality units? (considering cost and size)
- 4) Which type of project provides the highest quality units for its residents?
- 5) What appears to be the most promising area in which to build new affordable housing units in the future?

## Main Findings

While the purpose of this paper is to correlate varying types of projects to development cost trends, the relatively small number of projects with adequate cost data limited the conclusiveness of any findings. Still, these findings may prove helpful and meaningful in the selection process of future affordable housing developments:

1. Total Development Cost (per unit) has actually been on a downward trend for most project types the past 10 years, with a more pronounced declining trend from 2012 onward. The exception is Acquisition Rehab projects and projects receiving the 4% Tax Credit, which saw slight increases in their per unit cost trends.
2. Construction costs are on the rise, which is concerning since they constitute so much of the budget. This is being combatted by lowering costs elsewhere and increasing the amount of units per project, thus achieving greater cost efficiency through economies of scale.
3. There are many moving variables determining development costs, but the most consistently influential were the construction type of the project, the tax credit it receives, and the type of people it plans to house.

## Data and Methodology

The data used for research came from MaineHousing's multifamily database. Due to missing information (costs, building specifications information, etc.) many of the projects could not be used in the examination. The missing data caused the elimination of 46 projects, bringing the sample size from 120 to 74, spanning January 1, 2006 to December 31, 2015.

Because there are so many different costs associated with housing development, each needs to be isolated and examined for correlation with key characteristics of the project. Key characteristics are qualities that dictate costs, building specifications, or the kind of residents a project will host. These characteristics are grouped together into what will be referred to as "splits" and they are important analysis tools for comparing projects and identifying trends. For example, "construction type" is a split, separating projects into either New Construction, Acquisition Rehab, or Adaptive Reuse projects.

Splits: Broken down into Key Characteristics

- Construction Type (New Construction, Acquisition Rehab, Adaptive Reuse)
- Property Type (Family housing or Senior housing)
- Location (Metro - located within 15 miles of a population 25,000 or more, Rural - all other projects)
- Program Type (4% Tax Credit or 9% Tax Credit)

Other project characteristics impacting costs and building specifications are:

- Number of Units (important variable in cost considerations, used in cost per unit calculations which accommodate for project size)
- Living Space Ratio (prominent indicator of unit quality)

Cost categories are groupings of similar types of costs related to a project, and they include Construction Costs, Soft Costs, Finance Costs, Miscellaneous Costs, Acquisition Costs, and Fees + Reserves. They are used to separate and sort costs via splits and as key characteristics to identify trends within different areas of cost. Of these categories there exists a more granulated breakdown of costs, which include:

- **Construction Costs** (Off & On Site Improvements, Labor and Materials, General Requirements, Builder Profit, Construction Contingency, and Bond)
- **Soft Costs** (Permit Fees, Survey and Engineering, Architecture and Engineering, Legal, Title and Recording, Accounting, Construction Period Tax, Construction Period Insurance, and Soft Cost Contingency)
- **Finance Costs** (Construction Loan Origination Fees, Construction Loan Interest, Permanent Loan Fees, and Lender Inspection)
- **Miscellaneous Costs** (Easements/Utility Back Charges, Appraisal, Environmental Study, LIHTC Fees, Specialist/Historic Fees, Traffic Study, Commissioning, Furniture Fixtures Equipment, Relocation, and Other costs)
- **Acquisition Costs** (Building Acquisition, Land Acquisition, Legal, and Existing Reserves)
- **Fees + Reserves** (Operating Deficit Escrow, Pre-funded Replacements, Tax and Insurance Escrow, Total Syndication Expenses, Consultant Fee, Developer Overhead, Developer Profit, Rent Up and Marketing, and TIF Reserve)

These characteristics were used as filters to group various kinds of projects with similar qualities together in order to identify any correlation with cost taking place. The more projects with mutual characteristics and cost increases, the more pronounced the variable can be considered as a cost driver.

## Part I - Cost Assessment

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### Overview

The development of affordable housing comes with many variables that could impact costs, both in terms of per unit costs and total spending on projects. Other than the volatility of the economy and housing markets, factors such as project size (how many units are being built *and* in terms of sq. ft.), financing, and developers play a prominent role in dictating costs. These variables working together is what produces the cost trends we observe in affordable housing development.

### Trends in Cost

#### Construction Type

- Adaptive Reuse projects were the most expensive units to build, followed by New Construction then Acquisition Rehab.
- However, while costs of Acquisition Rehab projects were on the rise, New Construction projects showed a relatively flat trend, and Adaptive Reuse projects show a declining trend.
- New construction and Adaptive Reuse projects use a much higher percentage of their budget on Construction Costs compared to Acquisition Rehab projects, making them more vulnerable to labor shortages and ensuing wage inflation.

#### Metro vs. Rural

Due to characteristics of Maine's economy and population distribution, distinguishing projects by city – or even by county – does not contribute much to the discussion of trends because so many projects are developed in the same areas. Projects are therefore distinguished being either Metro or Rural, with the vast majority of projects developed in Metro areas.

- Cost trends for Metro and Rural projects are actually quite similar, the differences are in per unit costs. Metropolitan projects (which average almost twice as many units as Rural) benefit from economies of scale, which reduces per unit costs.

#### Family Housing vs. Senior Housing

- There is a slight difference in costs between Family and Senior housing projects. Family projects averaged nearly \$500,000 more in TDC than Senior projects. This is likely the result of increased Construction Costs for multiple bedrooms, bathrooms, and living space that accommodate families well but are usually excluded in senior housing developments.

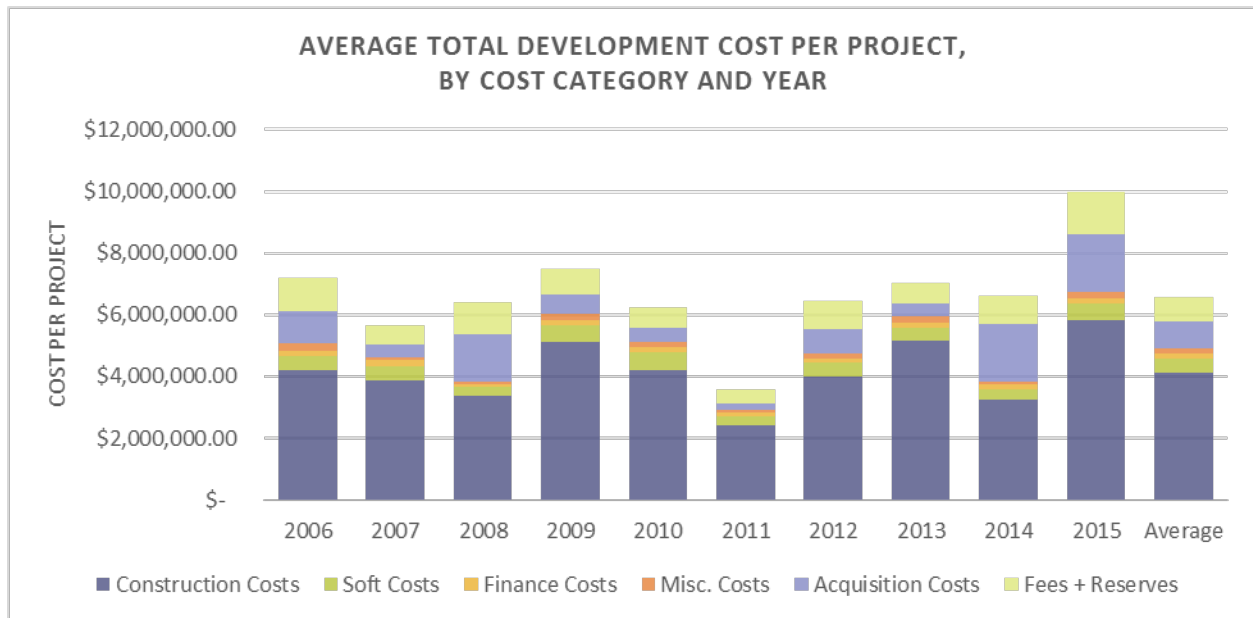
#### 4% vs. 9% Tax Credit

- Historically, the 4% Tax Credit had led to the completion of less expensive projects (on a per unit basis). This is because due to the tendency for 9% Tax Credit projects to have higher standards, such as environmental remediation or historical preservation to compensate the preferences of investors and/or other lending agencies.
- While 9% projects are generally more expensive, costs are declining. 4% projects are less expensive, but see an upward trend in costs.

## Cost Breakdown

Graph 1 – Displays Average Total Development Costs (TDC) per project broken down by cost category and year

Average costs from each category were summed to produce average TDC on a yearly increment. This is not on a per unit cost basis, so building size and number of units are determining factors of Total Development Costs.



As pictured by the graph above, construction remains the largest portion of development cost. Average Total Development Cost (TDC) for affordable housing projects has sustained a relatively flat trend, with the exception of the years 2011 and 2015. The low costs in 2011 are explained by the higher than usual number of Rural projects being built. Of the 9 projects with adequate cost data in that year, 6 were projects in Rural areas and 3 were in Metro. Since Rural projects have an average TDC much lower than Metro projects, data for that year skewed the rest of the trend.

In 2015 average TDC soared to nearly \$10 million a project, the highest mark in the timespan we examined. This again can be explained in part by the scope of projects being built. All were in Metropolitan areas with an average unit count of 57 per project, 20 units more than the average across the timespan. An increase in unit quantity subsequently caused increased Total Development Costs, albeit per unit costs are likely to drop due to economies of scale.

Table 1 – Average TDC and cost categories share of TDC.

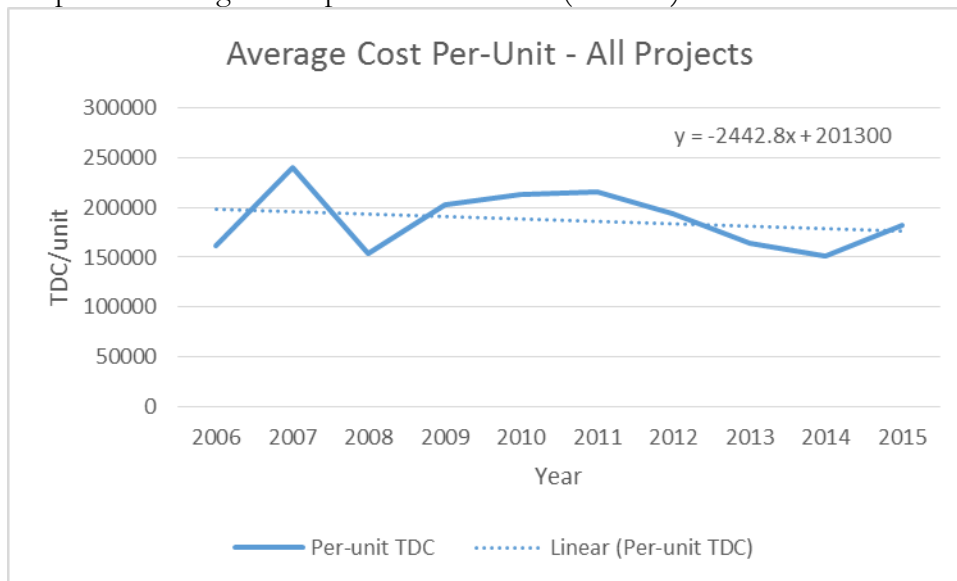
The graph below shows average TDC and the share of the TDC budget each cost category constitutes.

Project Type	Sample Size	AVG TDC	Average Share of TDC					
			Construction Costs	Soft Costs	Finance Costs	Misc. Costs	Acquisition Costs	Fees+Reserves
All Projects	74	\$ 6,297,354.02	64.84%	7.12%	2.40%	2.48%	14.99%	12.85%
New Con	36	\$ 5,761,080.92	69.33%	7.99%	2.63%	2.21%	6.84%	12.51%
Acq Rehab	23	\$ 6,397,803.67	54.58%	5.37%	2.08%	3.00%	30.03%	13.34%
Adap. Reuse	14	\$ 7,710,517.86	67.88%	7.61%	2.34%	2.29%	8.33%	12.73%
Metro	53	\$ 7,437,289.12	63.92%	6.98%	2.32%	2.34%	15.78%	12.94%
Rural	21	\$ 3,420,374.95	70.34%	8.10%	2.85%	3.10%	8.71%	12.76%
Family	40	\$ 6,611,599.48	64.77%	7.08%	2.32%	2.55%	15.00%	11.96%
Senior	34	\$ 5,927,653.47	64.65%	7.15%	2.50%	2.38%	14.83%	14.04%
4%	29	\$ 5,910,114.28	57.21%	6.48%	2.91%	1.76%	24.21%	14.24%
9%	37	\$ 7,612,673.04	68.21%	7.53%	2.13%	2.79%	8.45%	12.10%
Non-LIHTC	6	\$ 533,557.17	87.65%	3.48%	0.58%	0.78%	18.37%	1.77%

Construction Costs, mainly comprised of labor and materials, is the largest expense and greatly influenced by market conditions, followed by Acquisition Costs (14.99%) and Fees + Reserves (12.85 %). Metro projects, Senior projects, and projects with the 4% Tax Credit had the lowest percentage of Construction Costs as TDC and also had the lowest average TDC. Conversely, the types of projects with the highest percentage of Construction Cost as TDC have the highest average TDC. This suggests a positive correlation between TDC and Construction Costs as a percent of TDC.

### Yearly Cost Trends by Types of Projects

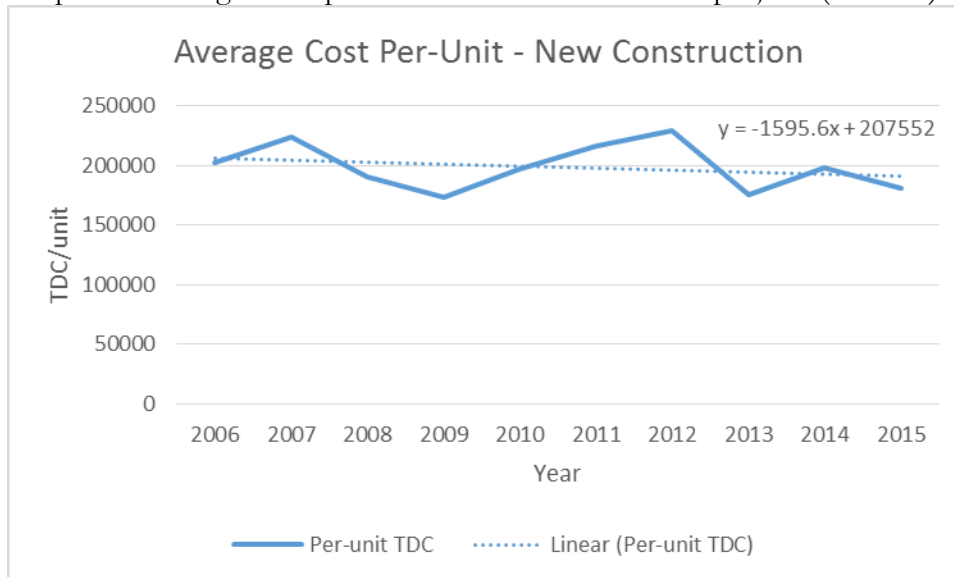
Graph 2 – Average TDC per unit cost trend (2006-15)



Average Total Development Cost per unit has decreased at a rate of \$2,442.80 over the past ten years. Cost reductions in 2008 can likely be attributed to lack of demand caused by the economic recession, with inflated labor and material prices causing overall costs to increase the following years.

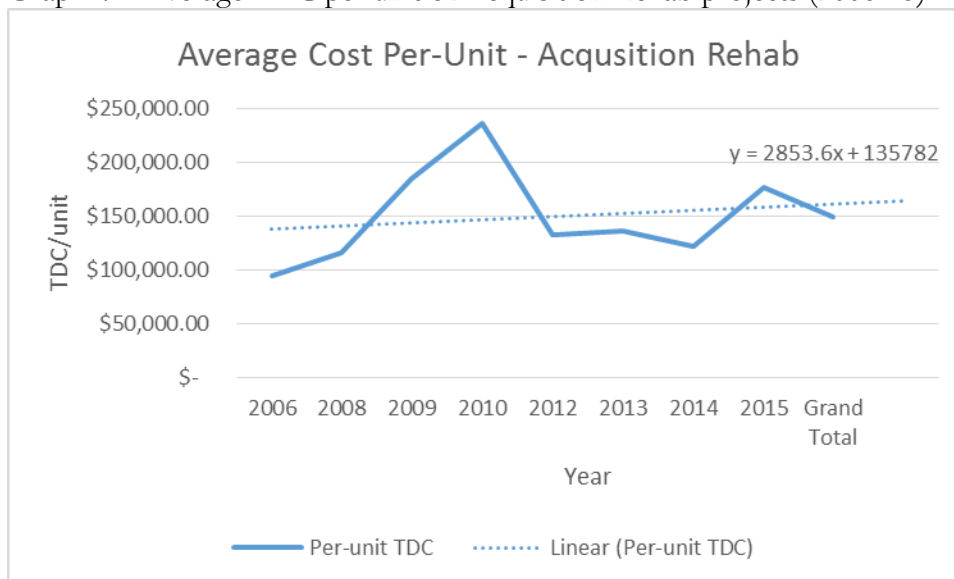
## Construction Type

Graph 3 – Average TDC per unit for New Construction projects (2006-15)



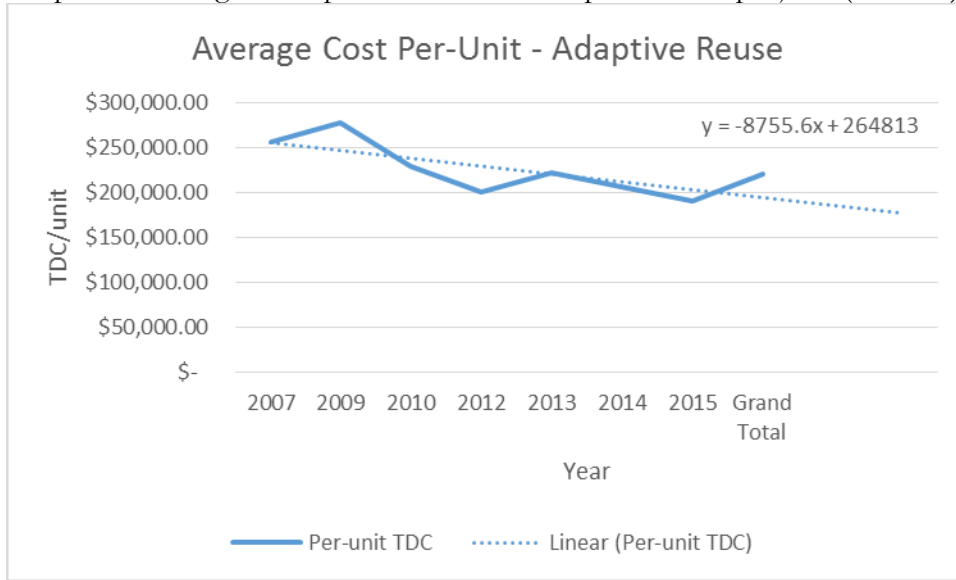
New Construction costs have seen a relatively flat trend, and decreased after 2012. Again, costs dip in 2008, with the following years seeing rising costs as a result of the economy conditions. Costs start to decrease downward following the year 2012.

Graph 4 – Average TDC per unit of Acquisition Rehab projects (2006-15)



Average cost per unit for Acquisition projects has been trending upward the past 10 years, despite remaining the least expensive per unit construction type, sitting on an average development cost of \$149,028.52 per unit. Prices soared in 2010, with three projects costing more than \$8 million TDC and an average cost per unit of \$247,227.44 between the three of them (Elm Terrace, Lofts at Bates Mill and Healy Terrace).

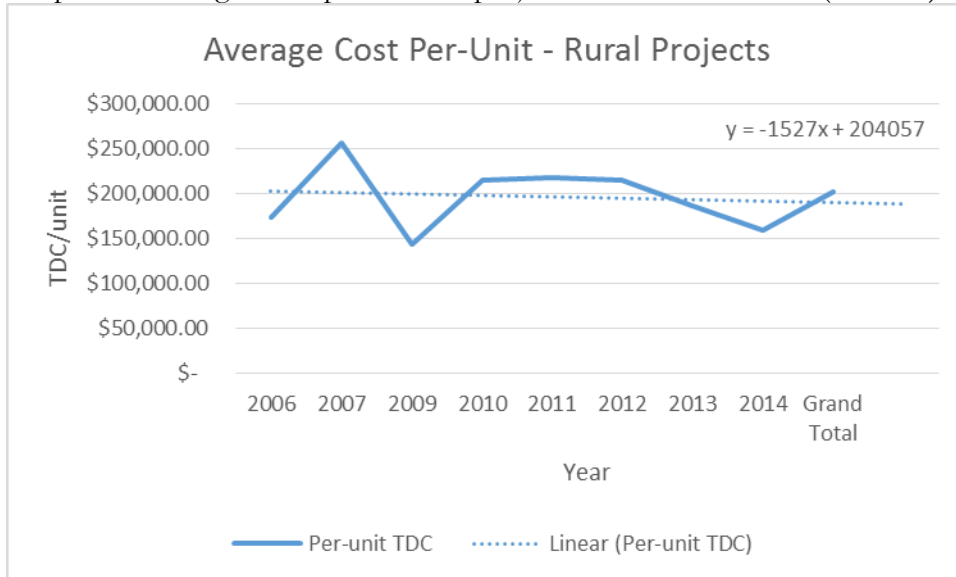
Graph 5 – Average TDC per unit costs of Adaptive Reuse projects (2006-15)



Adaptive Reuse has historically been the most expensive construction type, but its costs have been decreasing at a faster rate relative to other construction types. Its innately high costs stem from the challenges surrounding converting an old (sometimes industrialized) building structure into a twenty-first century apartment building that meets increasingly complex societal and environmental standards. However, the trend is relatively flat from 2012 onward.

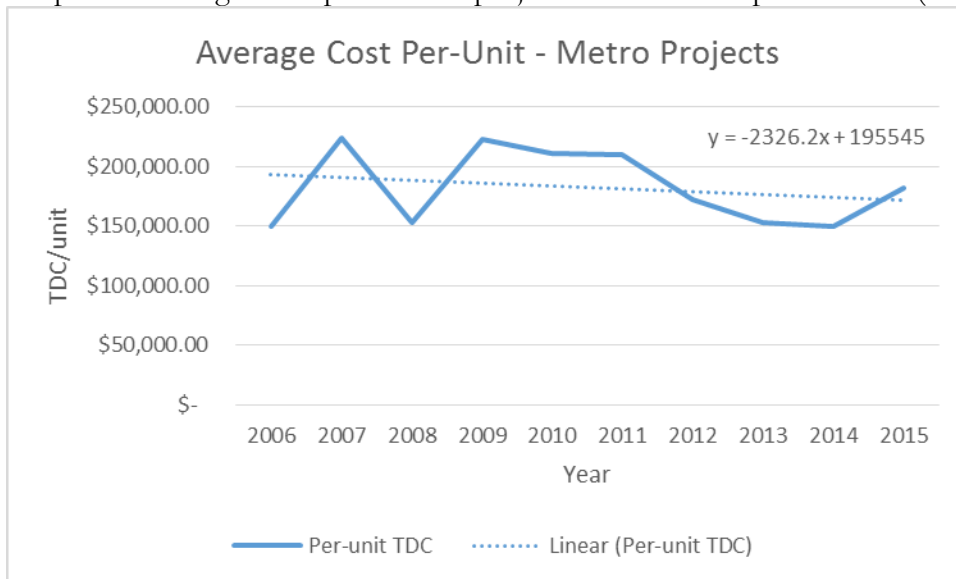
**Metro vs. Rural**

Graph 6 – Average TDC per unit for projects built in Rural areas (2006-15)



Continuing the trend, TDC per unit in Rural parts of the state were also relatively flat. Note that years 2008 and 2015 are missing from the graph, due to a lack of Rural projects for both years.

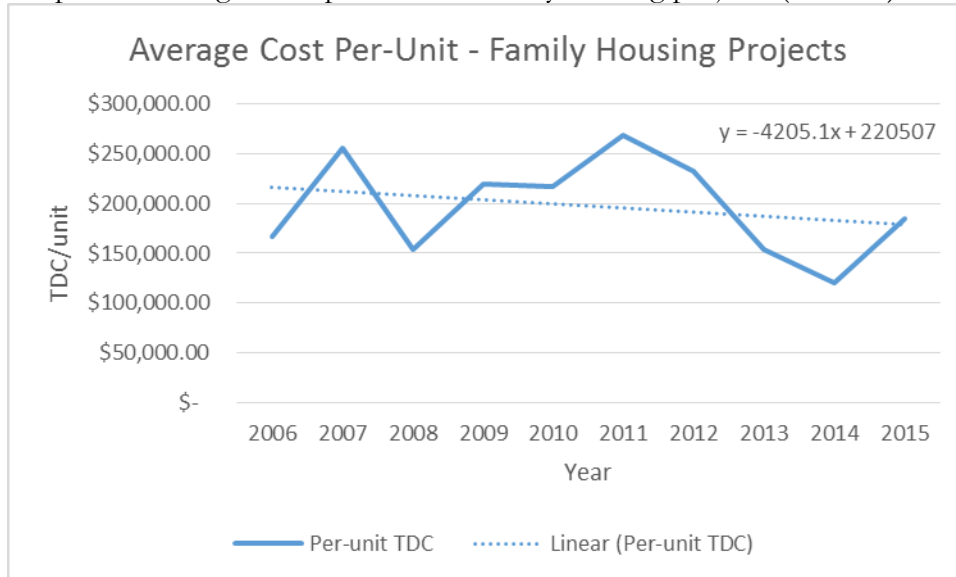
Graph 7 – Average TDC per unit for projects built in Metropolitan areas (2006-15)



The cost trend for projects in Metro areas is very similar to the trend of projects in Rural areas. The main difference is in the cost per unit, where Metro projects average slightly less than Rural projects.

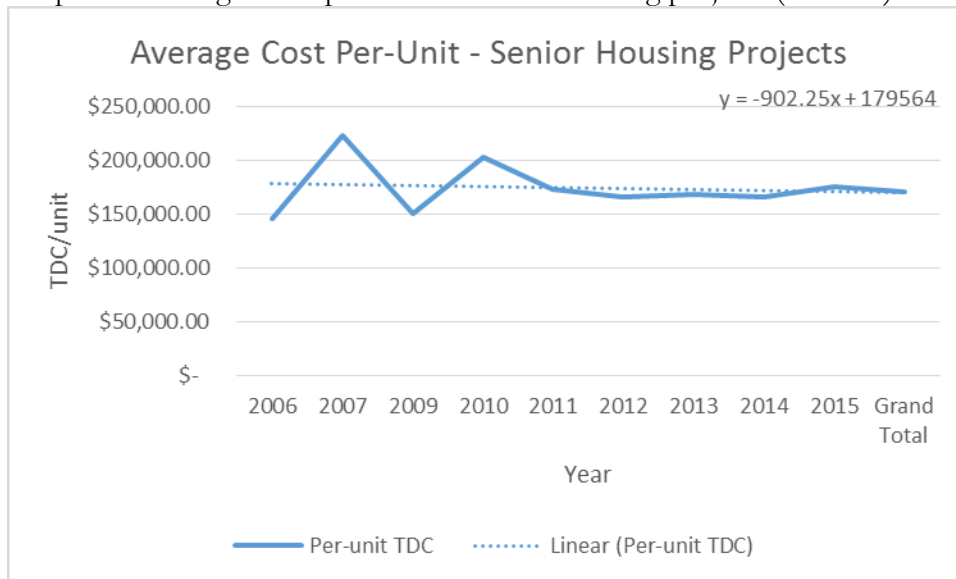
## Family Housing vs. Senior Housing

Graph 8 – Average TDC per unit for Family housing projects (2006-15)



Development costs for Family projects continued the downward trend as well, with prices being more sporadic than some of the other splits. The years immediately following the recession saw a considerable spike in costs until 2011, when costs started to drop just as considerably.

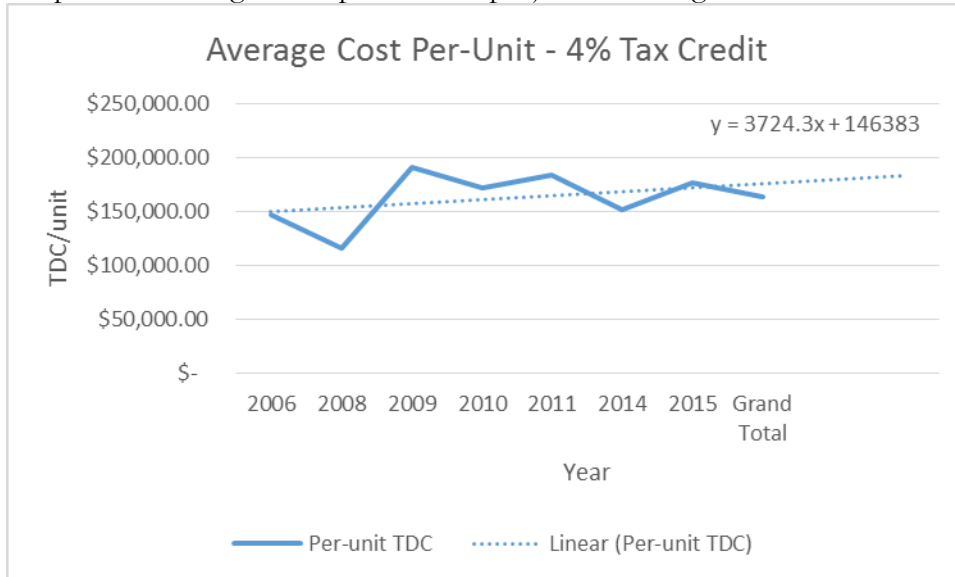
Graph 9 – Average TDC per unit for Senior housing projects (2006-15)



Senior housing has historically been less expensive than Family housing to develop and costs have experienced a flat trend in the post-recession years. This is welcoming, as Senior housing demand is only expected to increase in the

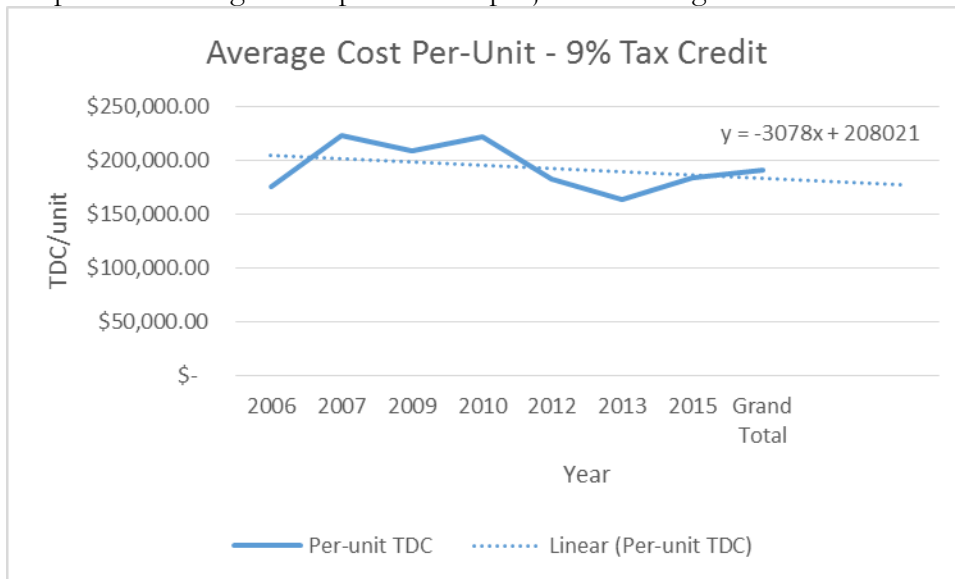
## 4% vs. 9% Tax Credit

Graph 10 – Average TDC per unit for projects receiving the 4% Tax Credit



Projects receiving the 4% Tax Credit typically have lower costs than projects using the 9% Tax Credit. Costs were trending upward until the recovery years (2010 onward), where costs start to settle.

Graph 11 – Average TDC per unit for projects receiving the 9% Tax Credit



Contrary to the 4% Tax Credit, average TDC per unit costs have been on the decline for the 9% Tax Credit. The recession years see higher costs, but from 2010 onward there is a downward trend.

## Cost Changes: From Initial Application to Actual Cost

To gather a good picture of what costs are rising, TDC data from application to actual cost was collected and compared with projects separated into their splits for comparative analysis. Since projects with more units are inherently more expensive, TDC per unit costs were compared to accommodate for varying project sizes.

Table 2 – Average TDC costs at application and actual cost. Both the monetary difference and the percentage difference for TDC were calculated.

Project Type	Sample Size	AVG # of Units	Application Cost		Actual Cost		AVG TDC Change		AVG Per Unit Change	
			AVG TDC	AVG Per Unit TDC	AVG TDC	AVG Per Unit TDC	\$	%	\$	%
All Projects	74	36.6	\$ 6,112,717.73	\$ 180,860.35	\$ 6,297,354.02	\$ 187,862.72	\$ 184,636.29	3%	\$ 7,002.36	4%
New Con	36	30.6	\$ 5,643,044.50	\$ 197,534.39	\$ 5,761,080.92	\$ 201,209.96	\$ 118,036.42	2%	\$ 3,675.57	2%
Acq Rehab	23	44.1	\$ 6,232,490.87	\$ 143,583.99	\$ 6,397,803.67	\$ 149,028.52	\$ 165,312.80	3%	\$ 5,444.53	4%
Ad Reuse	14	37.5	\$ 7,251,111.50	\$ 199,259.69	\$ 7,710,517.86	\$ 220,316.94	\$ 459,406.36	6%	\$ 21,057.25	11%
Metro	53	42.3	\$ 7,184,146.77	\$ 173,814.94	\$ 7,437,289.12	\$ 181,516.19	\$ 253,142.35	4%	\$ 7,701.25	4%
Rural	21	20.0	\$ 3,408,634.90	\$ 198,641.64	\$ 3,420,374.95	\$ 203,880.15	\$ 11,740.05	0%	\$ 5,238.51	3%
Family	40	38.0	\$ 6,312,463.33	\$ 189,670.61	\$ 6,611,599.48	\$ 201,779.12	\$ 299,136.16	5%	\$ 12,108.51	6%
Senior	34	35.3	\$ 5,877,722.91	\$ 170,495.35	\$ 5,927,653.47	\$ 171,490.48	\$ 49,930.56	1%	\$ 995.13	1%
4%	29	40.1	\$ 5,882,135.17	\$ 161,544.28	\$ 5,910,114.28	\$ 164,250.67	\$ 27,979.10	0%	\$ 2,706.39	2%
9%	37	38.7	\$ 7,286,716.19	\$ 183,824.21	\$ 7,612,673.04	\$ 191,644.19	\$ 325,956.85	4%	\$ 7,819.99	4%
Non-LIHTC	6	2.0	\$ 527,176.83	\$ 263,588.42	\$ 533,557.17	\$ 266,778.58	\$ 6,380.33	1%	\$ 3,190.17	1%

Costs from application to actual cost seem to rise slightly across types of projects, with an average of \$184,636.29 per project (3% increase) or \$7,002.36 per unit (4% increase)

The trend is even more pronounced for Adaptive Reuse projects, which see an average increase of \$459,406.36 per project (6% increase) or \$21,057.25 per unit (11% increase). Projects seeing the least variation in cost from application to actual cost are Senior projects and projects receiving the 4% Tax Credit.

Table 3 - Cost increases (From Application to Actual Cost) by cost category, separated by types of projects.

Average project costs at application are compared to average project actual costs, with the percentage change listed below. Projects that exceed a 10% increase in a cost receive scrutiny, indicated by a red flag.

Project Type		All Projects	New Con	Acq Rehab	Ad Reuse	Metro	Rural	Family	Senior	4%	9%	Non-LIHTC
AVG Construction Costs	App	\$ 3,834,126.67	\$ 3,932,156.53	\$ 2,946,842.45	\$ 5,026,565.64	\$ 4,584,016.95	\$ 2,696,362.10	\$ 4,098,424.05	\$ 3,530,962.03	\$ 3,082,755.96	\$ 5,005,551.14	\$ 443,625.67
	AC	\$ 4,083,185.19	\$ 3,994,250.47	\$ 3,492,212.58	\$ 5,233,847.07	\$ 4,910,763.36	\$ 2,841,817.93	\$ 4,282,641.03	\$ 3,832,256.87	\$ 3,381,271.04	\$ 5,192,578.08	\$ 467,653.50
	Diff	\$ 249,058.51	\$ 62,093.94	\$ 545,370.12	\$ 207,281.43	\$ 326,746.40	\$ 145,455.83	\$ 184,216.97	\$ 301,294.84	\$ 298,515.08	\$ 187,026.95	\$ 24,027.83
	% Diff	6%	2%	19%	4%	7%	5%	4%	9%	10%	4%	5%
AVG Soft Costs	App	\$ 400,913.43	\$ 435,414.39	\$ 312,203.39	\$ 469,285.57	\$ 467,768.24	\$ 297,173.21	\$ 399,240.50	\$ 402,881.59	\$ 374,135.83	\$ 490,529.35	\$ 26,421.83
	AC	\$ 448,617.22	\$ 460,392.08	\$ 343,554.71	\$ 586,929.64	\$ 511,888.86	\$ 354,800.66	\$ 468,317.23	\$ 423,992.22	\$ 382,945.85	\$ 573,395.43	\$ 18,593.50
	Diff	\$ 47,703.79	\$ 24,977.69	\$ 31,351.32	\$ 117,644.07	\$ 44,120.62	\$ 57,627.45	\$ 69,076.73	\$ 21,110.63	\$ 8,810.02	\$ 82,866.08	\$ (7,828.33)
	% Diff	12%	6%	10%	25%	9%	19%	17%	5%	2%	17%	-30%
AVG Finance Costs	App	\$ 175,850.00	\$ 170,390.83	\$ 192,928.57	\$ 165,940.79	\$ 204,237.84	\$ 126,717.19	\$ 180,449.35	\$ 170,844.82	\$ 185,070.07	\$ 189,214.22	\$ 4,017.00
	AC	\$ 150,858.11	\$ 151,630.47	\$ 133,330.52	\$ 180,571.64	\$ 177,541.19	\$ 111,293.55	\$ 153,132.95	\$ 148,014.56	\$ 171,764.30	\$ 162,008.43	\$ 3,104.83
	Diff	\$ (24,991.89)	\$ (18,760.36)	\$ (59,598.05)	\$ 14,630.86	\$ (26,696.66)	\$ (15,423.64)	\$ (27,316.40)	\$ (22,830.26)	\$ (13,305.77)	\$ (27,205.79)	\$ (912.17)
	% Diff	-14%	-11%	-31%	9%	-13%	-12%	-15%	-13%	-7%	-14%	-23%
AVG Miscellaneous Costs	App	\$ 114,152.47	\$ 90,173.55	\$ 130,596.82	\$ 147,275.57	\$ 125,877.89	\$ 91,211.43	\$ 117,652.38	\$ 110,652.56	\$ 95,087.07	\$ 133,793.05	\$ 4,152.67
	AC	\$ 156,094.53	\$ 127,264.79	\$ 192,099.25	\$ 176,930.71	\$ 175,125.05	\$ 123,362.04	\$ 168,906.62	\$ 140,802.68	\$ 103,761.19	\$ 212,637.75	\$ 4,152.67
	Diff	\$ 41,942.06	\$ 37,091.24	\$ 61,502.43	\$ 29,655.14	\$ 49,247.16	\$ 32,150.61	\$ 51,254.24	\$ 30,150.12	\$ 8,674.12	\$ 78,844.70	\$ 4,152.67
	% Diff	37%	41%	47%	20%	39%	35%	44%	27%	9%	59%	0%
AVG Acquisition Costst	App	\$ 965,699.69	\$ 353,737.53	\$ 2,062,175.36	\$ 667,701.67	\$ 1,325,229.14	\$ 361,690.20	\$ 995,729.97	\$ 930,825.81	\$ 1,497,756.21	\$ 632,520.74	\$ 86,333.33
	AC	\$ 943,772.79	\$ 394,129.38	\$ 1,921,438.70	\$ 642,634.50	\$ 1,304,325.46	\$ 304,611.23	\$ 991,797.54	\$ 879,124.08	\$ 1,430,813.96	\$ 643,274.72	\$ 98,000.00
	Diff	\$ (21,926.90)	\$ 40,391.85	\$ (140,736.66)	\$ (25,067.17)	\$ (20,903.68)	\$ (57,078.97)	\$ (3,932.43)	\$ (51,701.73)	\$ (66,942.25)	\$ 10,753.98	\$ 11,666.67
	% Diff	-2%	11%	-7%	-4%	-2%	-16%	0%	-6%	-4%	2%	14%
AVG Fees + Reserves	App	\$ 781,522.62	\$ 717,733.03	\$ 827,982.17	\$ 869,728.21	\$ 939,873.64	\$ 535,805.52	\$ 754,182.23	\$ 813,687.79	\$ 805,278.72	\$ 891,507.05	\$ 11,284.67
	AC	\$ 808,955.32	\$ 720,655.39	\$ 853,449.40	\$ 981,409.21	\$ 1,005,188.66	\$ 517,988.66	\$ 790,512.83	\$ 832,008.44	\$ 841,585.33	\$ 921,454.60	\$ 9,462.33
	Diff	\$ 27,432.70	\$ 2,922.36	\$ 25,467.22	\$ 111,681.00	\$ 65,315.01	\$ (17,816.86)	\$ 36,330.61	\$ 18,320.64	\$ 36,306.61	\$ 29,947.55	\$ (1,822.33)
	% Diff	4%	0%	3%	13%	7%	-3%	5%	2%	5%	3%	-16%
Average Total Development Cost	App	\$ 6,272,264.88	\$ 5,699,605.85	\$ 6,472,728.77	\$ 7,346,497.45	\$ 7,647,003.72	\$ 4,108,959.65	\$ 6,545,678.48	\$ 5,959,854.60	\$ 6,040,083.87	\$ 7,343,115.55	\$ 571,682.50
	AC	\$ 6,591,483.16	\$ 5,848,322.58	\$ 6,936,085.16	\$ 7,802,322.79	\$ 8,084,832.57	\$ 4,253,874.06	\$ 6,855,308.20	\$ 6,256,198.84	\$ 6,312,141.67	\$ 7,705,349.02	\$ 600,966.83
	Diff	\$ 319,218.28	\$ 148,716.73	\$ 463,356.39	\$ 455,825.33	\$ 437,828.85	\$ 144,914.40	\$ 309,629.72	\$ 296,344.24	\$ 272,057.80	\$ 362,233.47	\$ 29,284.33
	% Diff	5%	3%	7%	6%	6%	4%	5%	5%	5%	5%	5%

The category seeing the highest and most consistent cost increases is the Miscellaneous Costs category (see Page 5), where costs rise an average of 33% from application to actual cost. Soft Costs

also saw a few projects pass the 10% scrutiny threshold, rising an average \$47,703.79 across all types of projects.

However, the more significant increases are still in the Construction Costs category, even though the percentages are relatively low. Construction Costs constitute such a large portion of Total Development Costs (an average of 64% of TDC across all types of projects) that even small percentage increases represent very significant sums as Construction Costs increased an average of \$249,058.51 among all projects from application to actual cost.

## Granulated Cost Breakdown

### Noticeable sub-cost category cost increases

Costs examined at an even more granulated level reveal exactly what specific costs are rising. Not every cost is noticeably rising, or rising at all, so only the largest costs are reported in detail, since they have the greatest influence on the inflation overall costs.

For analysis, cost categories were broken up even further. Granulated costs with significant influence (average cost of \$200,000 or more) on overall costs are in bold:

Construction Costs – **Site Improvements, Labor and Materials, General Requirements, Builder Profit**, Construction Contingency, and Bond costs

Soft Costs – Permit Fees, Survey and Engineering, **Architecture and Engineering**, Legal costs, Title and Recording costs, Accounting costs, Construction Period Tax, Construction Period Insurance, and Soft Cost Contingency

Finance Costs – Construction Loan Origination Fees, Construction Loan Interest, Permanent Loan Fees, and Lender Inspection

Miscellaneous Costs – Easements/Utility Back Charges, Appraisal, Environmental Studies, LIHTC Fees, Specialists/Historic Fees, Traffic Study, Commissioning, Furniture Fixtures Equipment, Relocation costs, and Other costs

Acquisition Costs – **Building Acquisition costs, Land Acquisition costs**, Legal costs, and Existing Reserves

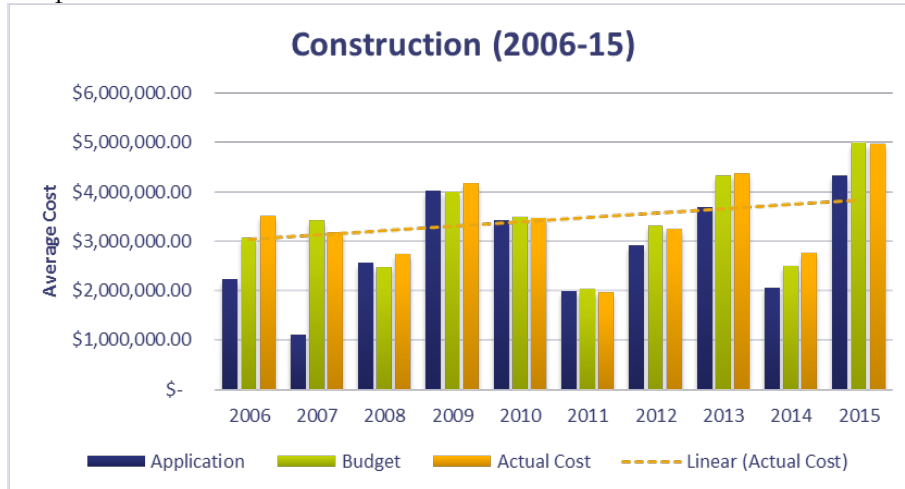
Fees + Reserves – Operating Deficit Escrow, Pre-funded Replacements, Tax and Insurance Escrow, Total Syndication Expenses, Consultant Fee, **Developer Overhead, Developer Profit**, Rent Up and Marketing, and TIF Reserves

## Significant Influencers of Costs

Below are the largest costs regardless of sub-cost category, averaging at least \$200,000 (for all projects).

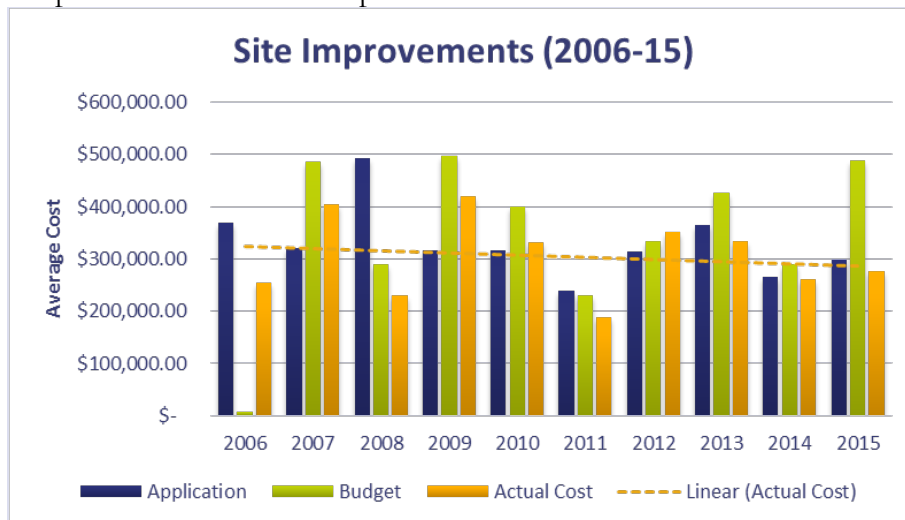
### Significant Construction Costs

Graph 12 – Labor and Materials from 2006-15



As previously stated, Labor and Materials is by far the largest cost category, averaging \$3,442,826.06 per project, and constituting well over half of Total Development Costs. Unfortunately for developers, costs have been on the rise the past 10 years. After the recession in 2008, costs have fluctuated and risen overall, with 2015 being the most expensive year to date at nearly \$5 million per project in construction costs.

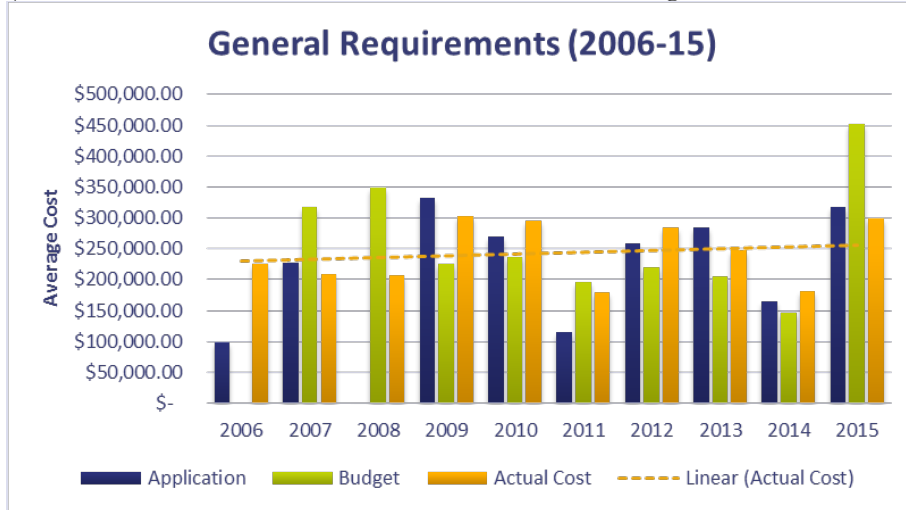
Graph 13 – Costs of Site Improvements from 2006-15



Site Improvements averaged \$316,961.88 per project. Prices were relatively high during the pre-recession years and into the recession while experiencing some degree of volatility. The overall trend is relatively flat, especially in the years following the recession.

Graph 14 – Costs of General Requirements from 2006-15

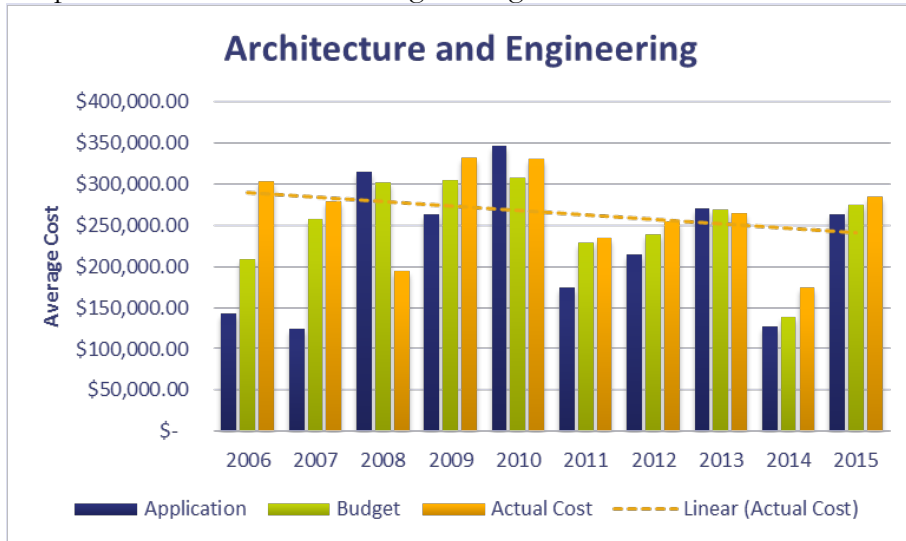
(Note that cost data from 2006 and 2008 were missing and therefore aren't represented the graph)



General Requirements costs were an average of \$256,667.35 per project. Costs have been rising slightly over the past 10 years, but the degree is too small to consider any possible trend conclusive.

### Significant Soft Costs

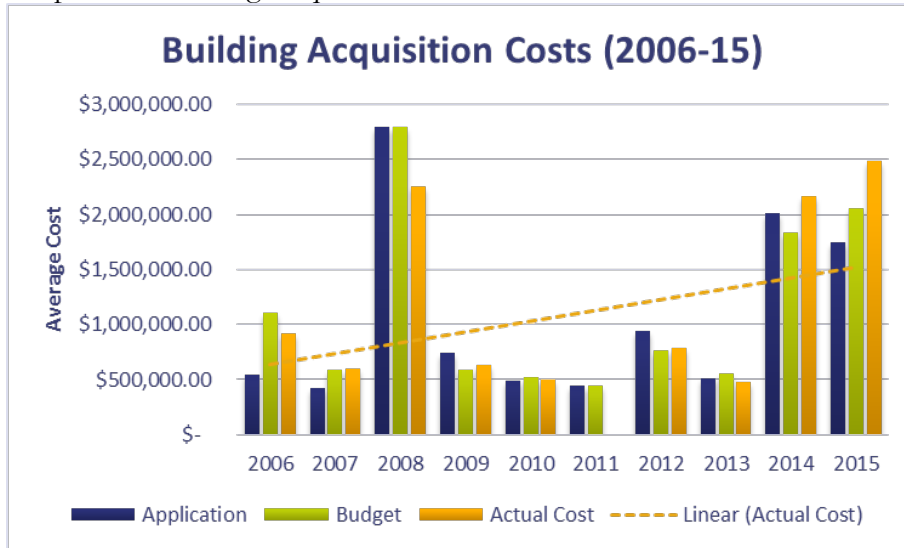
Graph 15 – Architecture and Engineering costs from 2006-15



Architecture and Engineering costs were an average \$272,086.65 per project. Before and during the recession years (2006-2010), average costs soared to \$287,661.26 per project, but post-recession years saw the average drop to \$242,645.77, indicating a downward trend in these costs.

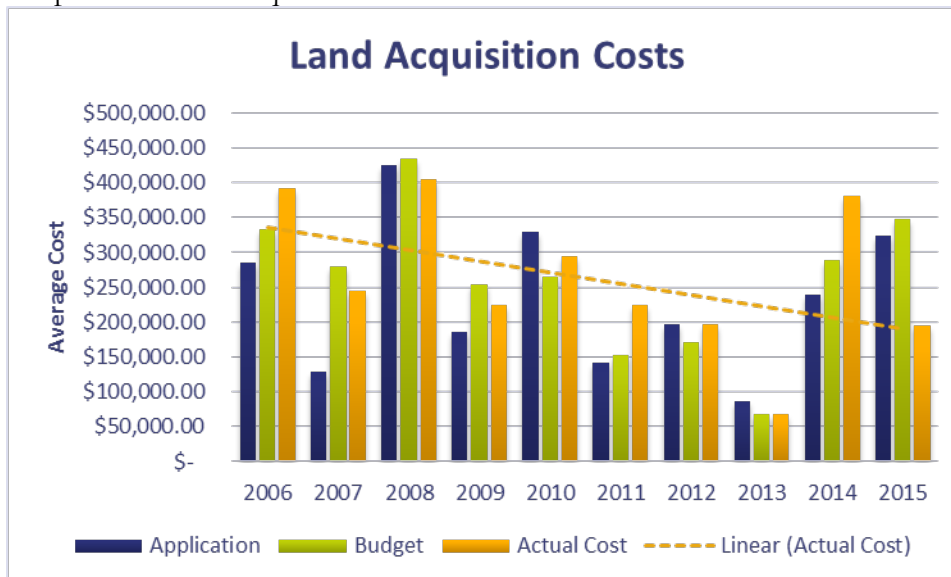
## Significant Acquisition Costs

Graph 16 – Building Acquisition Costs from 2006-15



Acquisition costs are difficult costs to analyze because they depend on the construction type and the location of the project (buildings in Metro areas are typically worth more than buildings in Rural areas). A spike in Acquisition costs in 2008 is due to one of the 2 projects built (with sufficient cost data) being an expensive Acquisition Rehab, with a Building Acquisition cost of \$2,260,000.00 (Forest Green, Portland). Higher Building Acquisition costs in 2014 and 2015 can be explained by an uptick in Acquisition Rehab projects, (12 out of 17 projects funded in 2014 were Acquisition Rehab projects), skewing the average Building Acquisition cost of all projects.

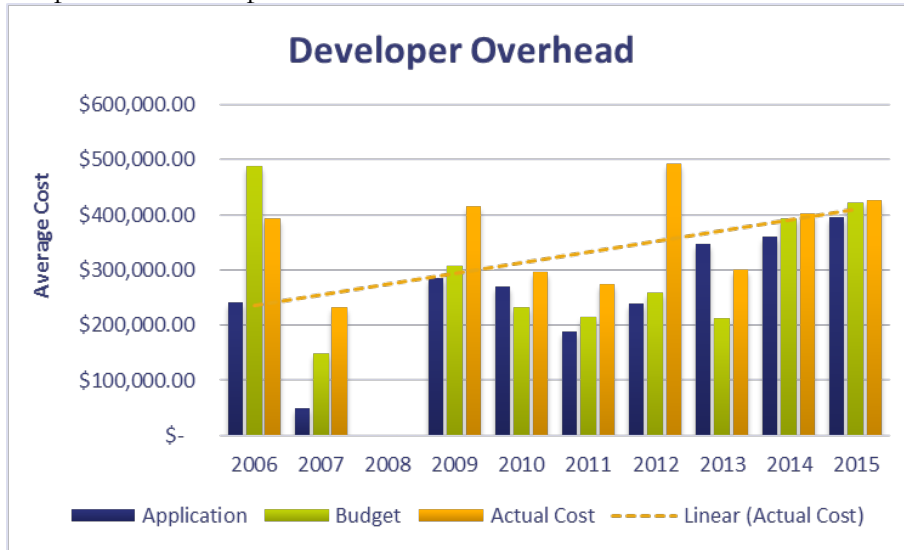
Graph 17 – Land Acquisition Costs from 2006-15



Land Acquisition costs (\$260,898.48 per project) have been on the downward trend for the 10 year timespan being examined. Unlike Building Acquisition costs, Land Acquisition costs are less expensive for Acquisition Rehab projects (\$280,260 per project) than for New Construction projects (\$312,928 per project), and are considerably low for Adaptive Reuse projects (\$120,000 per project).

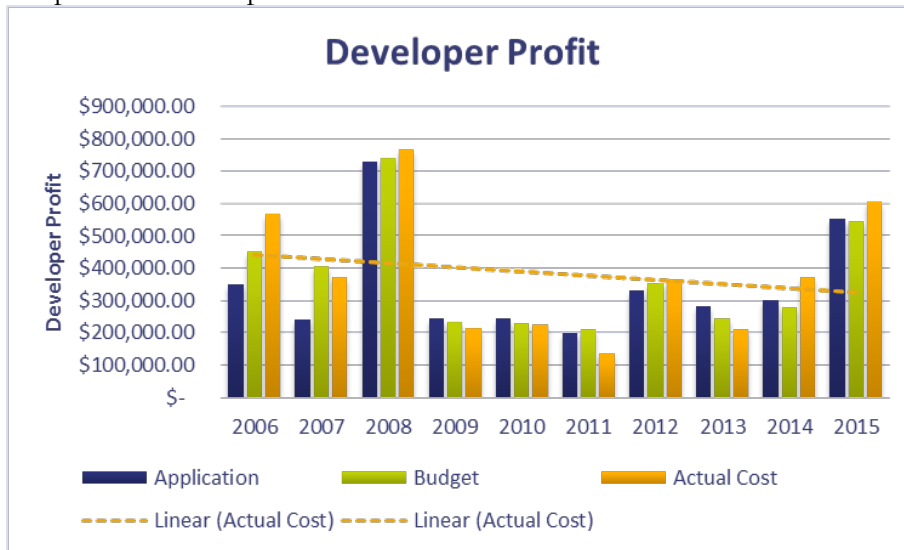
## Significant Fees + Reserves Costs

Graph 18 – Developer Overhead costs from 2006-15



Developer Overhead costs were an average of \$358,546.80 per project and have been steadily rising since the recession.

Graph 19 – Developer Profit from 2006-15



Developer Profit has seen a slightly downward trend over the past 10 years. However, after the 2006-2008 timespan, costs have been slowly rising to the point reached in 2015 at \$427,412.17 per project.

## Cost Assessment Summary

While development costs in general have been rising, it is important to note the data starts at 2006 and the economically turbulent years that followed do not provide a sufficient benchmark to measure development costs of recent years, as supply and demand and other market principles play a significant role in both the application process and the selection process of projects (as evidenced by the drastic reduction in the number of projects being built in 2008). The shortage of construction workers in Maine has strained construction companies by inflating labor costs, making what was already the largest portion of development costs even more significant. The main findings regarding costs are:

- 1) Construction costs are on the rise. Average costs have fluctuated throughout the entirety of the 10 year span examined, but increases in labor costs are forcing developers to think more innovatively to shed overall costs. Developers are also averaging an increasing amount of units per project from year to year, achieving greater cost efficiency through economies of scale.
- 2) Generally, the more units being built per project the lower development costs will be per unit. This is why the types of projects that average 40+ units, such as those projects constructed in Metro areas (42 units per project, \$173k per unit), Acquisition projects (44 units per project, \$143k per unit) and projects receiving the 4% Tax Credit (40 units per project, \$161k per unit), have 3 out of the 4 lowest per unit costs.
- 3) Costs are very dependent on the type of project being built. For example, Acquisition Rehab projects, Senior projects, and 4% Tax Credit projects all averaged less TDC per unit than other project types in their split. Developers who specialize in one type of construction are not easily compared to developers specializing in a different construction type.
- 4) Total Development Cost typically rises from application to actual cost, and has averaged a 5% increase across all projects. The highest increase was for Acquisition Rehab projects at 7%, followed by Adaptive Reuse projects and projects being constructed in Metropolitan areas, each allowing a 6% increase to occur from application to actual cost.
- 5) The cost category with the largest average dollar value increase was Construction at \$249K a project, while Miscellaneous costs were the most consistent in their increases. Financial costs saw an average decrease of \$25k across all projects from application to actual costs.
- 6) There appears to be an underlying cost pattern that mirrors economic trends experienced over the 10-year time period. Costs are high pre-recession, fluctuate during the recession, and form a relatively flat-downward trend from 2012 onward. And this is, more than it is not, true for all types of projects with the lone exception being Acquisition Rehab projects, which experienced a dramatic surge in costs up until 2010, after which costs dropped and level off until another small surge in 2015.

## Part II - Building Assessment

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### Overview

Development costs have been rising but they are not the only aspect of affordable housing development. Looking specifically at the specifications of the buildings under construction (such as the number of units in a building, and the total project space and project living space, both of which are measured in sq. ft.) can reveal a lot regarding the basis of their costs *and the quality* of life received by residents.

### Trends in Size

#### Construction Type

- New Construction projects averaged the least amount (30.3) of units per project and the lowest living space ratio (.67) per project.
- Acquisition Rehab projects averaged the most units per project (45.4) and the highest living space ratio (.70).
- Adaptive Reuse projects fell in the middle (38.0 units and .66 ratio) of both categories.

#### Metro vs. Rural

- The sharpest juxtaposition of size between any split is the one between Metro and Rural projects. Metro developments averaged 42 units per project, while Rural developments averaged the least with 20 units per project.
- On the other hand, Rural projects averaged the most living space per unit and the highest living space ratio (0.74) across all splits, while Metro projects averaged 689.6 sq. ft. of living space per unit and the lowest living space ratio of all types of projects at 0.63.

#### Family Housing vs. Senior Housing

- Family housing developments averaged 37.5 units per project compared to 35 units per project for Senior housing projects. Senior housing units also averaged the least amount of living space per unit among all splits.
- Accordingly, Senior housing units also averaged the lowest living space ratio across all splits, with Family housing projects averaging the third highest living space ratio.

#### 4% vs. 9% Tax Credit

- There are no discernable trends between the sizes of projects that receive the 4% Tax Credit and projects that receive the 9% Tax Credit. Because the tax credit is what generates development capital, trends are more apparent in costs rather than project size. Both types of tax credit produced projects averaging about 40 units per project and a living space ratio of 0.66.

## Unit Quality

Each project's living space ratio was calculated by dividing its living space (sum of all units) by its total space. Projects with low living space to total space ratios are thought to offer lower quality units to their residents.

Table 4 – Average number of units, average unit (living space), total space (both in sq. ft.) and the living space ratio separated by splits.

Project Type	Average # of Units	Average Unit Space	Average Total Space	Ratio
All Projects	36.43	734.21	1,093.07	0.67
New Con	30.39	677.79	1,036.61	0.65
Acquisition Rehab	45.43	768.66	1,090.32	0.70
Adaptive Reuse	38.07	817.46	1,240.82	0.66
Metro	43.26	689.55	1,071.06	0.64
Rural	19.19	844.70	1,148.67	0.74
Family	37.50	826.99	1,172.08	0.71
Senior	35.18	635.64	1,011.67	0.63
4%	39.24	678.98	1,029.30	0.66
9%	40.46	726.55	1,107.48	0.66
Non-LIHTC	2.00	971.33	1,330.00	0.73

Of the three construction types, New Construction averages the least number of units per project and had the lowest living space ratio. Acquisition Rehab projects averaged the most units per project and a favorable .70 living space ratio.

The sharpest discrepancy in living space ratios within a single split is between Metro projects and Rural projects. Intuitively, buildings in Metropolitan areas have higher demand for housing, therefore developers are inclined to build more units to meet expected demand. It is only natural to expect the living space to shrink to accommodate the extra units. Inversely, projects in Rural areas typically have less demand and provide fewer units, allowing for more living space per unit.

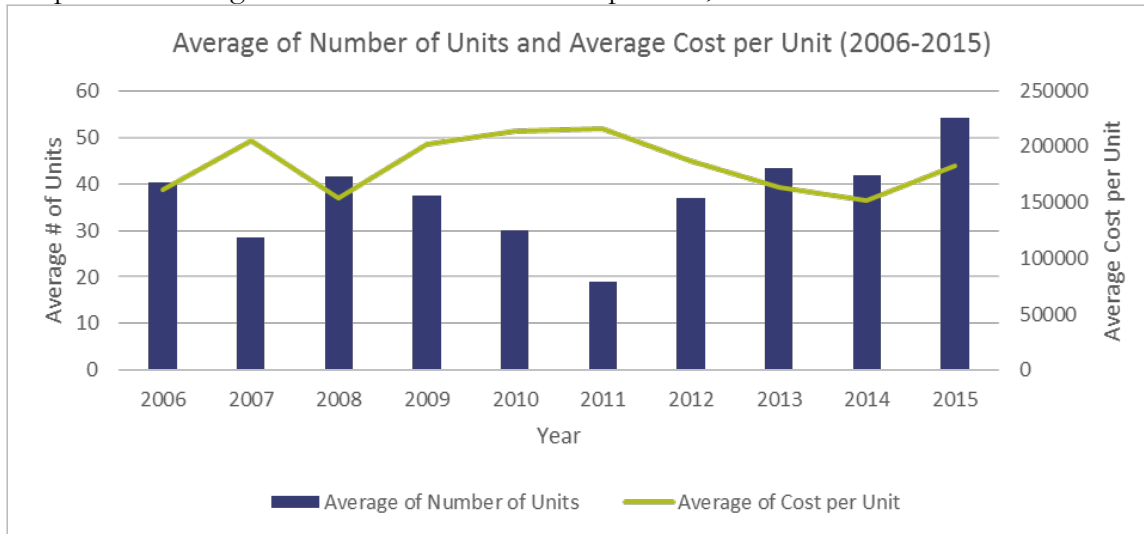
There is also a sharp discrepancy between Family housing and Senior housing property types. This is because Senior projects tend to be developed in Metropolitan areas for proximity to grocery stores, pharmacies, health institutions and other municipal amenities that seniors need. Also, Senior housing projects tend to include more common areas, common space and extra facilities to go along with the extra assistance elderly residents might need, and end up having a smaller living space ratio. Family projects do not usually have much common space and typically have a favorable living space ratio.

## Building Size/Scale

Reinforcing the assumption that more units equals less expensive per unit costs, the graph below represents the average number of units being built per project and the price per unit from the years

2006-2015. Generally, as quantity of units goes down the price per unit goes up, indicating an inverse relation between quantity of units and price per unit.

Graph 20 – Average Number of Units and Cost per unit, 2006-15



Increases in both per unit costs and quantity of units per project led to the inflation of development costs in 2015, skewing the near flat trend that development costs experienced during the post-recession years.

### Building Assessment Summary

Results of the building assessment yield similar findings as the cost assessment; the types of projects being built exert significant influence on the building specifications. Development costs, average number of units, and living space ratio have recognizable patterns stemming from the choice of project:

- Certain subjective qualities, such as common space/areas and support services, can negatively impact living space ratio but do not necessary mean a unit is of less quality. This an aspect of unit quality that cannot be accurately measured with the information available.
- Rural projects possess the highest living space ratio and the least amount of units. Metro projects are on the opposite end of the spectrum for both.
- Acquisition Rehab projects average a good living space ratio and the most amount of units, on top of being the least expensive to produce.
- Even across different types of projects, it remains true that more units in a project typically yields less expensive per unit costs.

## Part III - Developer Assessment

### Overview

As part of analyzing development costs, MaineHousing is interested in studying costs of development projects built by common developers to see variations in regard to budget costs (from application to budget to actual cost), building sizes, and unit quality. The developers being assessed had at least 3 development projects built within the 10-year timespan being examined, ranging from 3 projects to 20. The actual names of the development companies are not shown and are instead listed as Company A – I.

### Developer Building Assessment

Because some types of construction will have different costs than others, it is important to conceptualize the sample of construction types a particular developer is building. A company frequently constructing Adaptive Reuse projects should not be assessed in the same regard as a developer that's building Acquisition Rehab projects because of the variation between their costs.

Table 5 – Number of projects completed by each developer within the timespan being examined. Splits are also distinguished to show the number of projects belonging to each project type within a split.

Developer	Total Project Count	New Construction	Acquisition Rehab	Adaptive Reuse	Metro	Rural	Family	Senior	4%	9%
Company A	20	12	5	3	18	2	11	9	8	12
Company B	9	0	9	0	8	1	5	4	9	0
Company C	6	4	1	0	2	4	1	5	1	5
Company D	4	0	1	3	4	0	3	1	1	3
Company E	6	2	3	1	4	2	4	2	2	3
Company F	3	2	1	0	2	1	2	1	1	2
Company G	5	3	2	0	4	1	1	4	2	3
Company H	4	2	1	1	4	0	4	0	0	3
Company I	3	0	2	1	3	0	2	1	3	0

Company A was the most frequent developing partner for MaineHousing. Of the 74 projects being examined, they were responsible for over a quarter of them, 20 projects. After Company A, Company B was the second most frequent partner with 9 projects, followed by Companies C and E, with 6 each.

As mentioned before, it is important to note a developer's construction type mix before configuring their costs relative to others. For instance, Company B built 9 projects and all of them were Acquisition Rehab projects. On average, Acquisition Rehab projects are less expensive per unit than others. So comparing Company B to Company D, which produced 4 projects with 3 of them being Adaptive Reuse projects (typically higher average per unit costs), is difficult because of discrepancies in their costs.

Buildings are evaluated using the same criterion as the building assessment section, meaning living space is the primary consideration of building quality and developers are judged on their living space ratio.

Building specifications were sorted by developer and examined to see how trends from the building assessment section translate when grouped by developer. On the graph, developers are ordered (from left to right) by average number of units per building (from least to greatest).

Table 6 – Average number of units, average living space, and total space (both in sq. ft.) and the living space ratio.

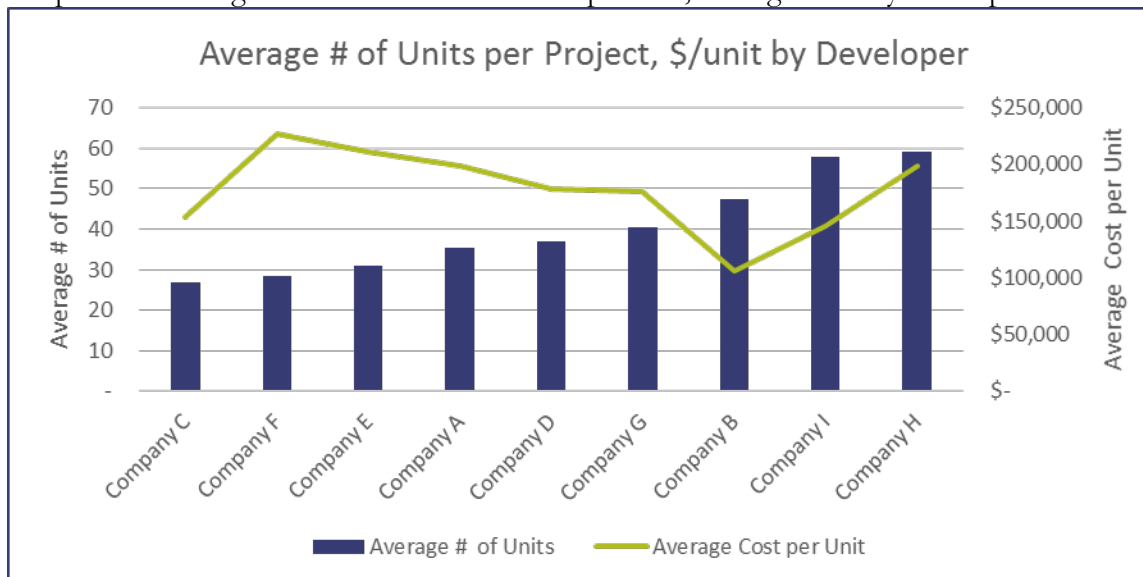
Developer	Average # of Units	Average Living Space (sq ft)	Average Total Space (sq ft)	Average Living Space Ratio
Company C	27.00	27,665.67	16,742.60	0.61
Company F	28.33	31,506.33	16,997.50	0.54
Company E	31.00	32,160.00	22,805.40	0.71
Company A	35.25	32,670.00	22,039.83	0.67
Company D	37.00	51,842.00	38,318.75	0.74
Company G	40.40	30,705.50	20,524.75	0.67
Company B	47.56	50,243.11	36,277.11	0.72
Company I	58.00	48,935.00	40,748.00	0.83
Company H	59.25	71,033.50	40,981.00	0.58

Findings show a slight but direct correlation between the living space ratio and the number of units in a given building. The exception is Company H, which is the only developer to average more than 30 units per project while having a living space ratio less than .67 (.58).

There was an even more pronounced correlation between construction type and living space ratios. Of all the 22 projects built by developers with a living space ratio greater than .70 (Companies E, B, D, and I), 15 were Acquisition Rehab projects, 5 were Adaptive Reuse and 2 were New Construction. Of the other 38 projects built by top developers that offered living space ratios less than .70, 23 were New Construction projects, 10 were Acquisition Rehab and 5 were Adaptive Reuse projects. This demonstrates the influence the type of construction exerts on group averages, even when projects are unique to a certain developer.

## Developer Cost Assessment

Graph 21 – Average number of units and cost per unit, distinguished by developer



The findings indicate the trend of more units equaling less cost tentatively continues, even as projects are sorted by developer. From left to right, costs start relatively high then dwindle as the number of units per project increases. The exception is Company H, which offered an average of nearly 60 units with costs approaching \$200,000 each.

Of the 21 projects built by developers who averaged more than 40 units per project (the right half of the graph excluding Company D); 14 were Acquisition Rehab, 5 were New Construction, and 2 were Adaptive Reuse.

Of the 39 projects built by developers averaging less than 40 units per project (the left part of the graph including Company D); 20 were New Construction, 11 were Acquisition Rehab and 8 were Adaptive Reuse.

Table 7 – Average Total Development Costs, average number of units, and average cost per unit, distinguished by developer.

Developer	Average TDC	Average # of Units	Average Cost per unit
Company B	\$ 5,264,058.80	47.56	\$ 106,583.26
Company I	\$ 7,979,372.00	58.00	\$ 145,868.13
Company C	\$ 4,151,832.83	27.00	\$ 153,262.29
Company G	\$ 4,643,296.25	40.40	\$ 176,302.55
Company D	\$ 6,514,564.50	37.00	\$ 178,043.50
Company H	\$ 11,863,555.50	59.25	\$ 199,169.36
Company A	\$ 6,977,682.70	35.25	\$ 199,172.10
Company E	\$ 6,336,571.39	31.00	\$ 211,051.53
Company F	\$ 6,554,859.67	28.33	\$ 227,314.74

Out of the most frequent developers, Company B averaged the less expensive costs by far (\$106,583.26 per unit). And as previously mentioned, the fact that Company B exclusively built Acquisition Rehab projects (that were all 4% Tax Credit projects, which are less expensive on average than 9% Tax Credit projects) most likely has an impact on average costs.

Company A averaged a relatively high \$199,172.10 per unit. With an average unit count of 35 and a construction type mix fairly indicative of the sample set as a whole, there is no clear reason as to why development costs would be higher than average.

Company E and F each had per unit costs greater than \$200,000. It's possible that because each developer had half of their projects built in Rural areas that their costs were higher than average. It could be the lone Adaptive Reuse project for each that is skewing the averages higher, but with a limited sample of projects it is difficult to draw substantiated conclusions.

Company D and G had nearly identical average per unit costs (\$178,043.50 and \$176,302.55 respectively). Company G averaged 40 units per project and had a construction type mix typical of the sample set as a whole, so the middle-of-the-pack per unit cost makes sense.

On the other hand, 3 out of 4 of Company D projects were Adaptive Reuse, which should theoretically skew averages higher. This is not the case however, and Company D development costs were relatively low considering its construction mix.

The chart below displays development costs broken down by cost category. The percent below each figure is the average of percent increase (from application to budget) for that developer for all their projects. Projects with categories experiencing more than a 25% increase receive scrutiny.

Table 8 – Average cost of each cost category, as well as percentage increases from application to actual cost for each developer.

Cost Category	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I
Average Construction Costs	\$ 4,411,068.85 9%	\$ 4,027,986.00 94%	\$ 2,828,806.00 -9%	\$ 3,652,503.75 5%	\$ 4,424,844.33 9%	\$ 4,685,642.00 -6%	\$ 3,148,646.00 -36%	\$ 8,280,136.75 -4%	\$ 3,838,698.33 -10%
Average Soft Costs	\$ 556,259.40 8%	\$ 234,553.00 2%	\$ 399,809.50 6%	\$ 578,213.50 68%	\$ 520,386.67 31%	\$ 462,751.33 9%	\$ 355,357.75 -22%	\$ 770,727.00 9%	\$ 362,384.00 20%
Average Finance Costs	\$ 174,437.25 -11%	\$ 116,711.33 -34%	\$ 113,500.67 -33%	\$ 149,638.00 39%	\$ 143,000.33 36%	\$ 147,448.67 -21%	\$ 118,321.50 -30%	\$ 241,189.25 -32%	\$ 256,355.33 6%
Average Miscellaneous Costs	\$ 156,704.53 23%	\$ 109,273.67 158%	\$ 118,821.67 65%	\$ 198,129.25 184%	\$ 226,628.00 193%	\$ 106,574.67 22%	\$ 85,118.00 18%	\$ 325,577.50 48%	\$ 80,177.00 -57%
Average Acquisition Costs	\$ 871,199.80 -5%	\$ 2,097,681.67 -1%	\$ 167,236.75 43%	\$ 1,350,000.00 -17%	\$ 452,868.50 -32%	\$ 368,628.67 -27%	\$ 312,770.00 6%	\$ 656,107.50 20%	\$ 2,717,853.00 -11%
Average Fees+Reserves	\$ 815,848.10 3%	\$ 1,342,663.33 48%	\$ 579,403.83 -6%	\$ 923,580.00 7%	\$ 568,843.56 -3%	\$ 783,814.33 12%	\$ 701,275.50 -34%	\$ 1,589,817.50 11%	\$ 723,904.33 -12%
Average TDC	\$ 6,985,517.93 6%	\$ 7,928,869.00 43%	\$ 4,207,578.42 -6%	\$ 6,852,064.50 6%	\$ 6,336,571.39 8%	\$ 6,554,859.67 -5%	\$ 4,721,488.75 -32%	\$ 11,863,555.50 0%	\$ 7,979,372.00 -10%

From application to actual cost, Company G has historically done the best job at keeping costs within budget lines. Construction costs and Fees + Reserves, the two largest cost categories, each saw cost decreases over a third of their application cost. Company I, C, and F each had slight yet admirable cost decreases, while the Company H saw zero percent change from application costs to actual costs. Company D, E, and A each had slight cost increases ranging from 6% to 8%, figures that should not be a focus of concern. Company B had an average application to actual cost increase of over 40%, indicating an area of concern.

Company B saw the largest increase in Construction costs, rising 94% from application to actual costs. Other than Company G's 36% decrease, Construction costs across other developers did not experience any significant changes.

Company D and E saw significant increases in soft costs, while only Company G saw a significant decrease in soft costs.

Company B, C, F and G each saw their finance costs significantly drop from application to actual costs while Company A saw a moderate drop. Company D and E saw significant increases in their finance costs while Company I saw a slight increase.

Miscellaneous costs continue the trend of almost universally rising. Company I is the only developer to report a decrease from application to actual cost. Company B, C, D, E, and H all recorded significant increases from application to budget, while Company A and F saw moderate increases.

The only developer to see a significant increase in Acquisition costs was Company C. Company H experienced a moderate increase. Companies A, B, and I saw slight decreases in their Acquisition costs while Company F and E saw significant decreases.

For Fees + Reserves, only Company B saw significant increases from application to actual costs, while Companies A, D, F, and H saw slight to moderate increases, with all other developers experiencing decreases ranging from -3% to -34%.

## Developer Assessment Summary

The purpose of the developer assessment was to identify any trends specific to a developer. The lack of complete data limits the conclusiveness of the results. Any findings, patterns, or correlations should be considered tentative, but considered nonetheless. The main findings after assessing the developers were:

- 1) It remains generally true that the more units created in a project, the less expensive per unit construction becomes. The fact that this trend held true even when projects were sorted by different criteria gives it more validation as a substantiated correlation. The exception is projects developed by Company H, which averaged the most units per project but still saw per unit costs creeping towards \$200,000.
- 2) A very tentative, but notable, correlation appeared between the number of units and living space. Contrary to intuition, the more units a project produced the better the living space ratio. Again, this was generally true with the exception of Company H, which was the only developer to average more than 30 units per project to have a living space ratio less than .67, with a ratio of .58.
- 3) Even when projects are sorted by developer, the type of construction used exerts a significant amount of influence on overall costs and building specifications. Identified trends remain correlated with factors not specific to a particular, meaning the developer does not have as much an influence on overall costs as previously anticipated.

## Conclusion

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The biggest finding from this study should be that economic conditions have significant influence not only on costs, but where a project is being built and what kind of project is being built. Due to MaineHousing's quasi-governmental nature, it possesses the financial flexibility to proactively adapt to shifting economic environments. Cost trends, building trends, and social trends can and should be used to assess the best possible construction methods and practices, with evaluation being a constant occurrence.

After research and analysis, the answers to the research questions (see Page 3) are as follows:

- 1) *What are the major expenses causing development costs to rise and how have they evolved over the past 10 years?*

While construction costs have been rising, average Total Development Costs per unit have experienced a relatively flat trend, though downward from 2012 onward. There are a multitude of possible explanations for this:

- The economy is recovering from the recession, meaning the demand lag is fading and the labor force is slowly reaching pre-recession levels. This possibility is evidenced by construction's share of TDC being lower during 2006-07 (before recession), then again in 2012-15 (after recession)
- MaineHousing's change in executive leadership. The new Director of MaineHousing took his leadership position in 2012, with public perception and cost containment at the top of his priority list. Changes in the decision-making process could have led to the stabilization of costs from 2012 and onward.
- More units are being built into projects, allowing lower costs through economies of scale (an assumption proven to be generally true in housing development). Projects funded after 2012 averaged 44 units per project, compared to 32 units per project for prior years. The discrepancy is even more exaggerated when split three ways; before recession (2006-08 – 37 units), during recession (2009-11 – 28 units), and after recession (2012-15 – 44 units). This evidences the inverse correlation between the number of units per project and the subsequent per unit costs.

All this being said, there is no steering away from rising construction costs, which constitutes the vast majority of costs and concern for developers. A shortage of construction workers has swelled labor costs and squeezed margins thin, forcing developers to shave costs from other categories. This trend is especially prevalent in the years immediate following the recession. In order to stop this, Maine sorely needs an influx of construction workers.

- 2) *How do project size, location, and cost trends compare across the different splits?*

### Construction Type

Over the past 10 years, New Construction projects have generally been more expensive to build and provide lower quality units to residents (purely in terms of total space and living space ratio). Acquisition Rehab projects have been less expensive to build and provide quality units to residents.

Adaptive Reuse are typically quality units, but have been the most expensive project type to build across all splits.

There are no discernable differences in the location trends of various construction types, as trends for each are fairly indicative of all projects collectively.

### **Metro vs. Rural**

In terms of total project cost, Metro projects are typically much more expensive than Rural projects. But this is only because Metro projects average more unit. Per unit costs for a Metro project are actually slightly less expensive on average.

As one would suspect, Metro units are typically smaller than Rural units. Again, this is a factor of number of units – Metro projects usually offer more units with less space while Rural units usually offer less units with more space.

### **Family Housing vs. Senior Housing**

Senior housing projects have the smallest units on average with the lowest living space ratio. Meanwhile, Family housing projects had one of the highest living space (sq. ft.) and living space ratio combinations.

However, Family housing projects averaged nearly \$200,000 and averaged a \$20,000 increase from application to actual cost. Senior projects which averaged roughly \$170,000 per unit saw virtually no increase from application cost to actual cost.

### **4% vs. 9% Tax Credit**

Projects that received a 9% Tax Credit are likely to be more expensive (on a per unit basis) than projects receiving the 4% Tax Credit. This has contributed to added costs surrounding the highly competitive credit, such as increasingly expensive environmental standards.

There are virtually no differences in the building dimensions between the two projects types. Both 4% and 9% programs averaged nearly 40 units, roughly 700 square feet of living space and a living space ratio of 0.66.

*3) Which developers are best at staying within their budget lines, and why have some gone over? Which developers produced the less expensive unit? The best unit? (Considering cost and size)*

Developers best at staying within budget lines have been Company G, I, and C, with each seeing decreases from average TDC at application to average TDC at actual cost. (See Pages 26 –28.) The worst at staying within budget lines has been Company B, which saw an average increase of 43% from application cost to actual cost, highlighted by a 94% average increase in construction costs.

Company B produced the least expensive units by far, with Company I following second. Between the two developers, there were 11 Acquisition Rehab projects built, 1 Adaptive Reuse project and zero New Construction projects.

Companies I, D and B averaged the highest living space ratios in that order, while also posting robust living space per unit averages. Of the projects built by these developers, zero were New Construction projects.

*4) Which type of project provides the highest quality units for its residents?*

Based entirely on size and living space ratio, projects in Rural areas offer the highest quality of units, with Family projects closely behind. Acquisition Rehab offers a superb living space ratio and average living space, while Adaptive Reuse projects averaged a lot of living space and a living space ratio on par with all projects collectively.

Conversely, Senior units averaged the least amount of living space and the lowest living space ratio, followed by Metro projects averaging the second lowest in both categories.

*5) What can these results tell MaineHousing about building in the future?*

More than anything, the results show that market conditions and project composition are the prominent determinants of cost. MaineHousing can and should take a proactive approach in the planning and timing of construction projects to accommodate for fluctuations in economy and housing demand.

For the most part, Acquisition Rehab projects passed assessments with flying colors. They offer the less expensive per unit costs with favorable living space. Construction costs also constitute less of TDC for Acquisition projects than the other two construction types, so in times of inflating construction costs Acquisition Rehab projects should be more appealing.

Obviously not every project can be the same, and often times it is more economically beneficial to use differing construction types based on the circumstances. For instance, Adaptive Reuse projects take old, stagnant infrastructure and transform them into economic generators that breathe life into communities. This report does not consider the improved economic vitality of a community after the construction of affordable housing.

If the problem of rising costs persists, special consideration towards 4% Tax Credit projects might be undertaken. 9% Tax Credit developments typically jump through extra hoops to please investors and capital lenders, adding costs and cutting margins. 4% developments have averaged roughly \$25,000 less per unit and are almost congruent in dimensions (number of units, living space, and ratio) as 9% Tax Credit projects.

There is no “one size fits all”, but the trends of projects developed over the past 10 years can play a significant role in deciding how and where these projects are built in the future.