



Trends in Article 80 Development

Research Division



**boston planning &
development agency**

Produced by the BPDA Research Division:

Alvaro Lima – Director
Jonathan Lee – Deputy Director
Christina Kim – Senior Research Associate
Phillip Granberry – Senior Researcher/Demographer
Matthew Resseger – Senior Researcher/Economist
Kevin Kang – Research Associate
Jing Chen – Research Assistant
Avanti Krovi — Research Assistant
Kelly McGee – Research Manager
Interns: Erin Cameron & Ahsim Shaaban

The BPDA Research Division strives to understand the current environment of the city to produce quality research and targeted information that will inform and benefit the residents and businesses of Boston. The Division conducts research on Boston’s economy, population, and commercial markets for all departments of the BPDA, the City of Boston, and related organizations. The information provided in this report is the best available at the time of publication.

All or partial use of this report must be cited. Our preferred citation is as follows:
Boston Planning & Development Agency Research Division, January 2019

More research produced by the Boston Planning & Development Agency can be found on the BPDA Research Website: [Research Publications](#)

Research requests can be made through the BPDA Research Division’s [Research Inquiries](#).



**boston planning &
development agency**

Brian P. Golden, Director

Overview

- The BPDA Research Division maintains a dataset of projects approved through Article 80B Large Project Review, 80E Small Project Review, 80A Notice of Project Change, 80C Planned Development Area Review, or 80D Institutional Master Plan Review (see Glossary). Details including square footage, residential units, and development cost are recorded at initial approval and again if a project receives an NPC approval. Permit and certificate of occupancy data come from the Inspectional Services Department and allow the Research Division to track project lifecycle from approval through construction and completion.
- This Report analyzes development trends in five sub-markets (housing, office, hotel, industrial, and institutional) while describing concurrent economic and demographic trends that may influence development. Together, these data depict the recent cycle of real estate development in Boston, from the beginning of Article 80 in 1996 through the development downturn during the 2008-2009 recession to the recent development boom coinciding with the city's economic recovery.

Glossary

- **Article 80:** Adopted in 1996 by the BPDA to provide clear guidelines for the development review process, including but not limited to review of a project's impacts on transportation, public realm, the environment, and historic resources. Public input is encouraged throughout a project's review timeline.
- **Institutional Master Plan:** Planning and zoning document required by Article 80-D for all colleges, universities, and hospitals with over 150,000 square feet of tax-exempt real estate. IMPs are generally renewed every ten years.
- **Large Project:** Required for all projects that involve the addition of an aggregate gross floor area of more than 50,000 square feet.
- **Notice of Project Change (NPC):** A document which may be filed by a project proponent with the BPDA if the project scope undergoes changes that are substantial enough to call for additional review and approval.
- **Small Project:** Required for projects that involve the addition of an aggregate gross floor area of between 20,000 and 50,000 square feet and/or any project that results in the creation of 15 or more dwelling units.
- **Planned Development Area:** An overlay zoning district which may be established under Article 80 where a development that is well-suited to its location cannot be accommodated by the general zoning for the area. For example, a development that involves a large building, a cluster of buildings, or a mix of uses.
- **3-Year Rule:** If a project is approved and then returns to the BPDA for an NPC within three years, the net change in square footage, development cost, and units is recorded. If the NPC returns to the BPDA more than three years since the project was originally approved, the gross square footage, development cost, and units are recorded.

Contents

1. Boston's Economic Boom
2. Overview of Development Trends
3. Development Markets
 - Housing
 - Office
 - Hotel
 - Industrial
 - Institutional
4. Revenue and Jobs
5. Appendix



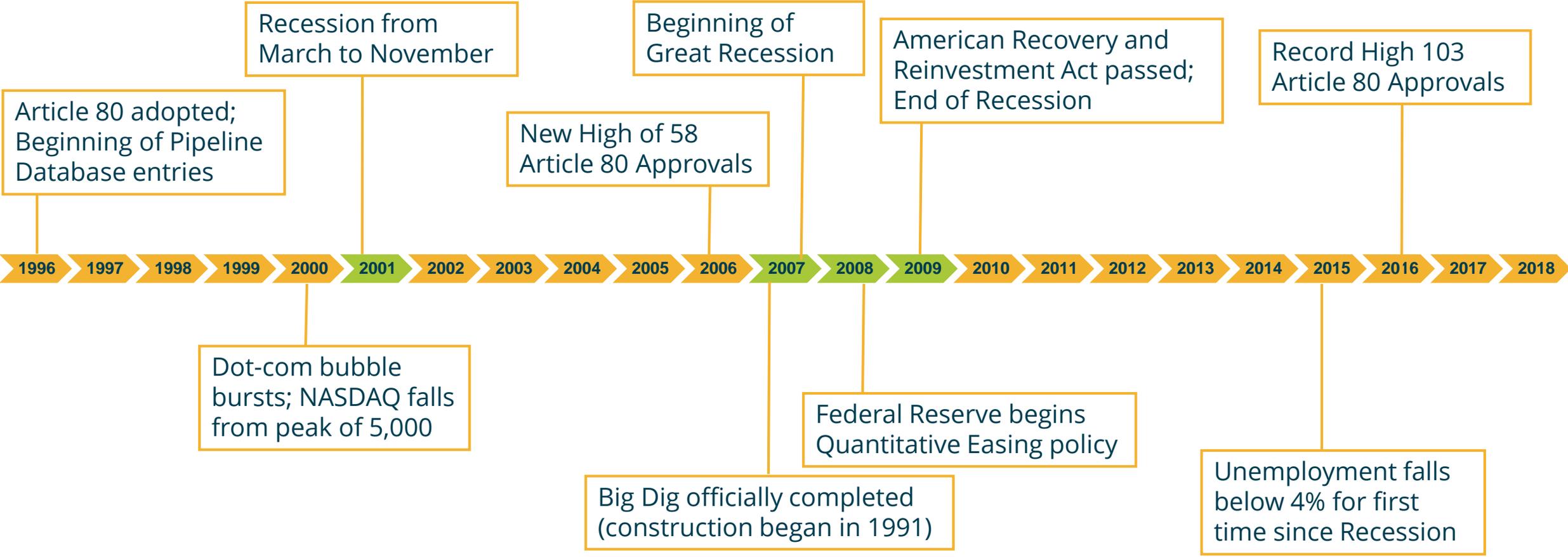
1.

Boston's Economic Boom



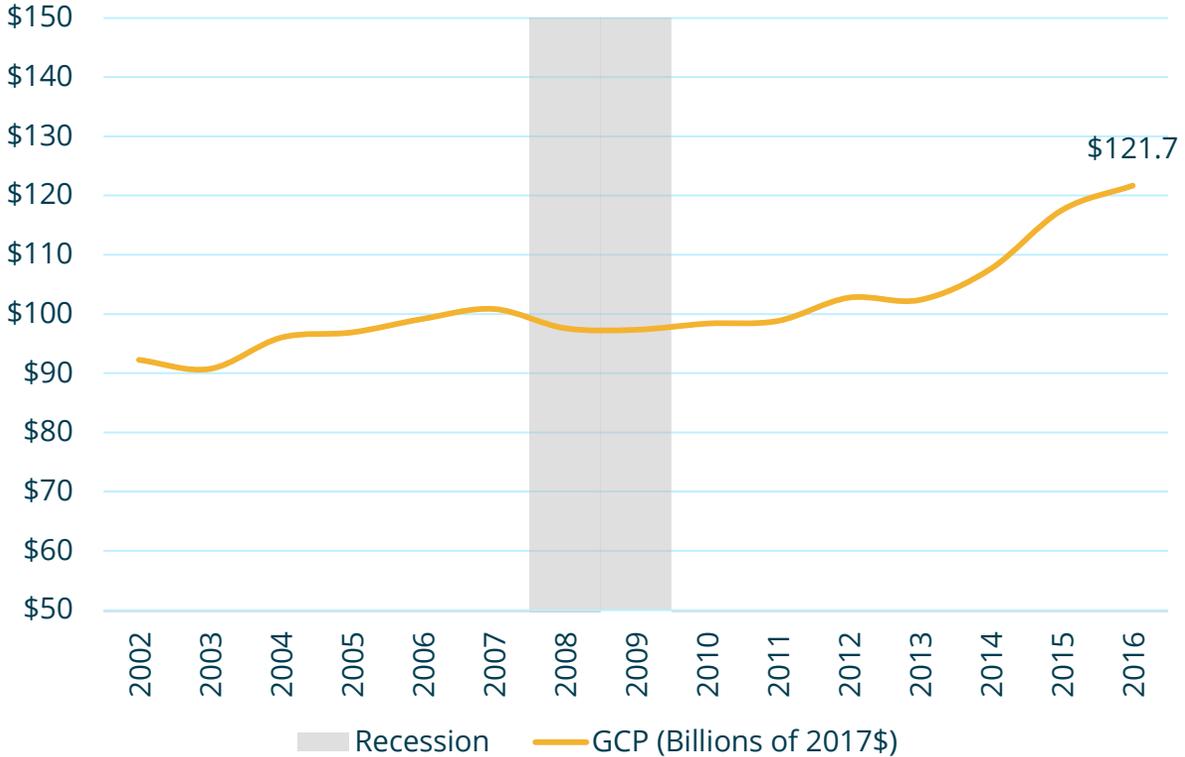
**boston planning &
development agency**

Major Economic Events Since Adoption of Article 80

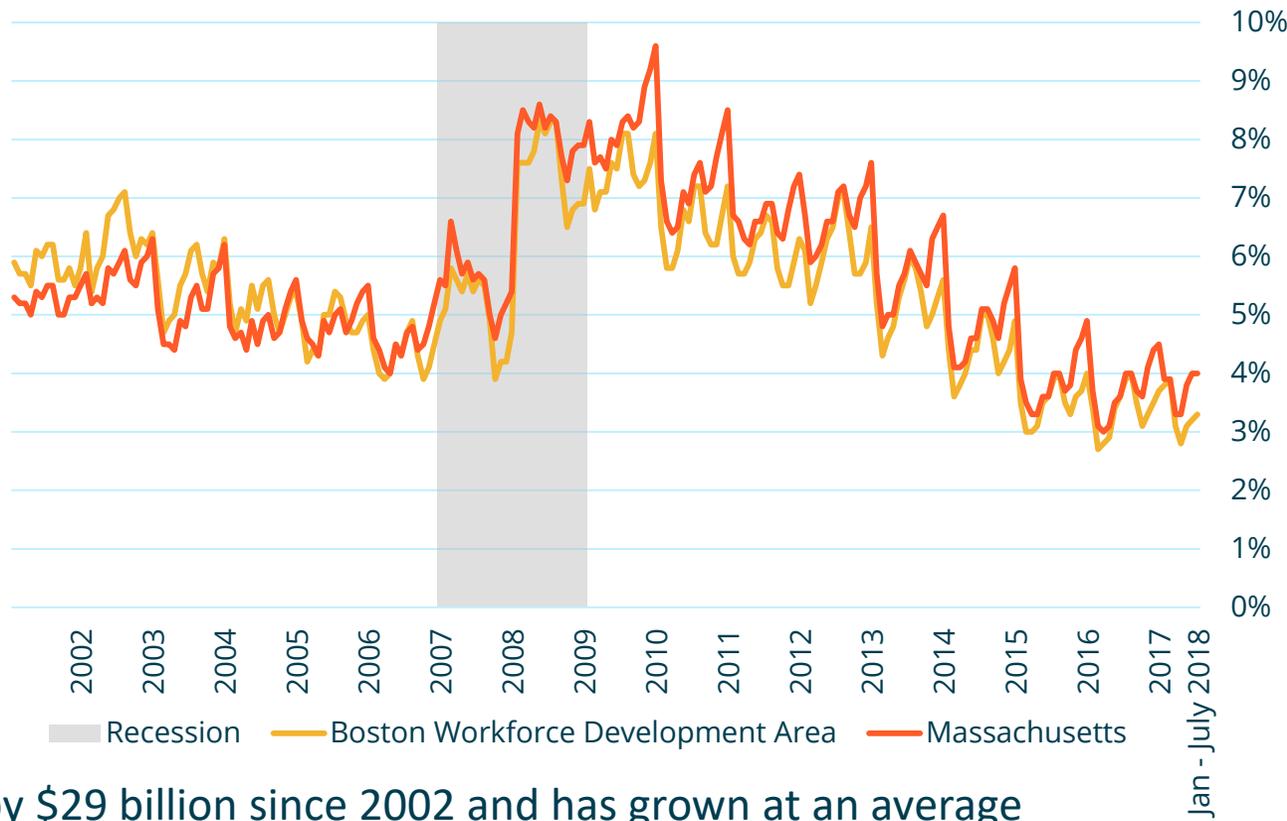


Boston's recovery from the recession has been strong

Gross City Product (Billions of 2017\$)



Unemployment Rate for Boston and Massachusetts



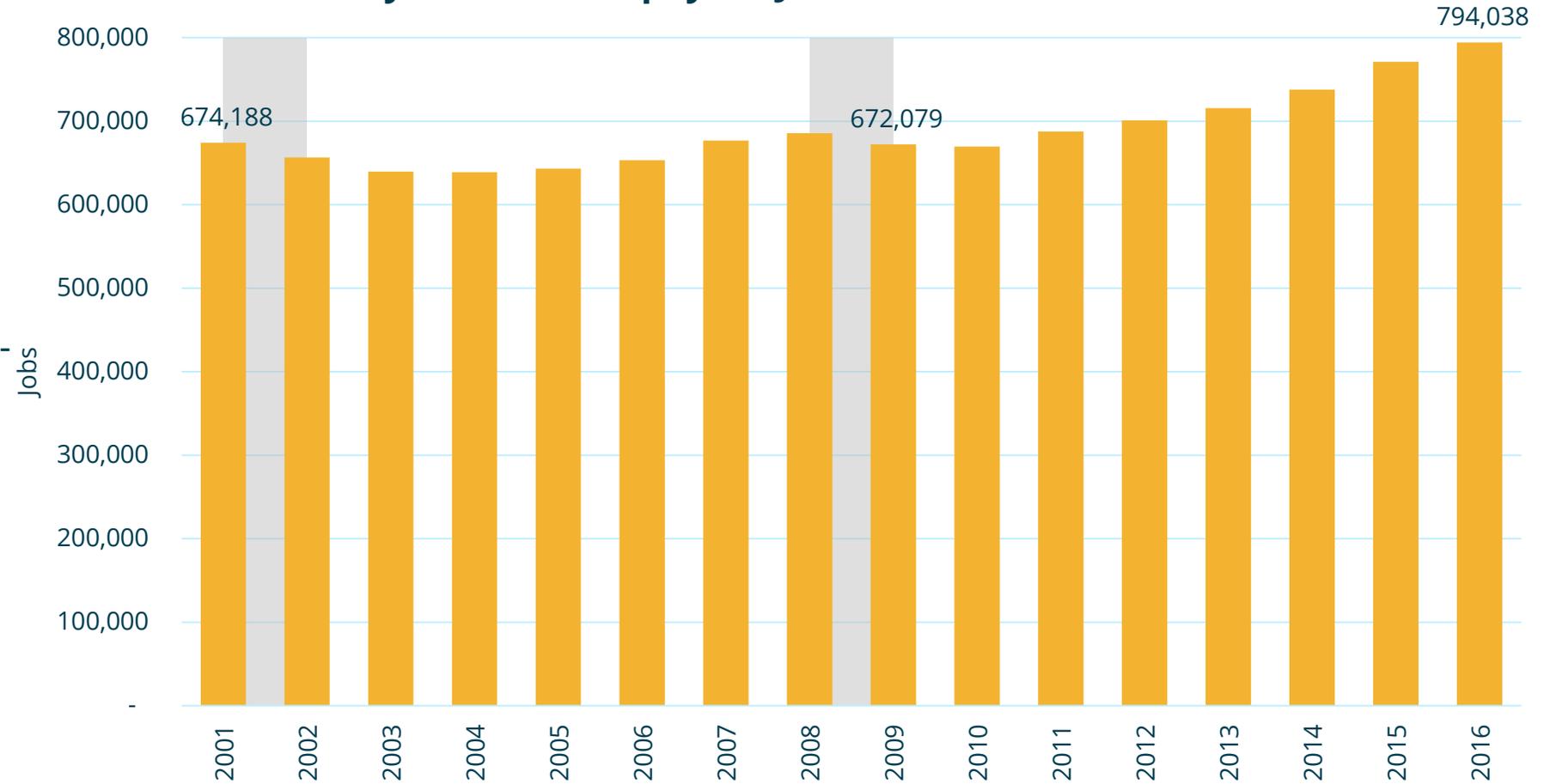
Boston's total annual economic activity has increased by \$29 billion since 2002 and has grown at an average rate of 2.6% per year since 2009. Average annual unemployment hit a low of 3.7% in 2017, with Boston's rate remaining below Massachusetts'.



Source: U.S. Bureau of Economic Analysis; Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BPDA Research Division Analysis.

120,000 new jobs in Boston since the end of the recession

Payroll and Non-payroll Jobs Located in Boston



The number of payroll and non-payroll jobs increased 24% to 794,000 in 2016, from a recent low of 639,000 in 2004.

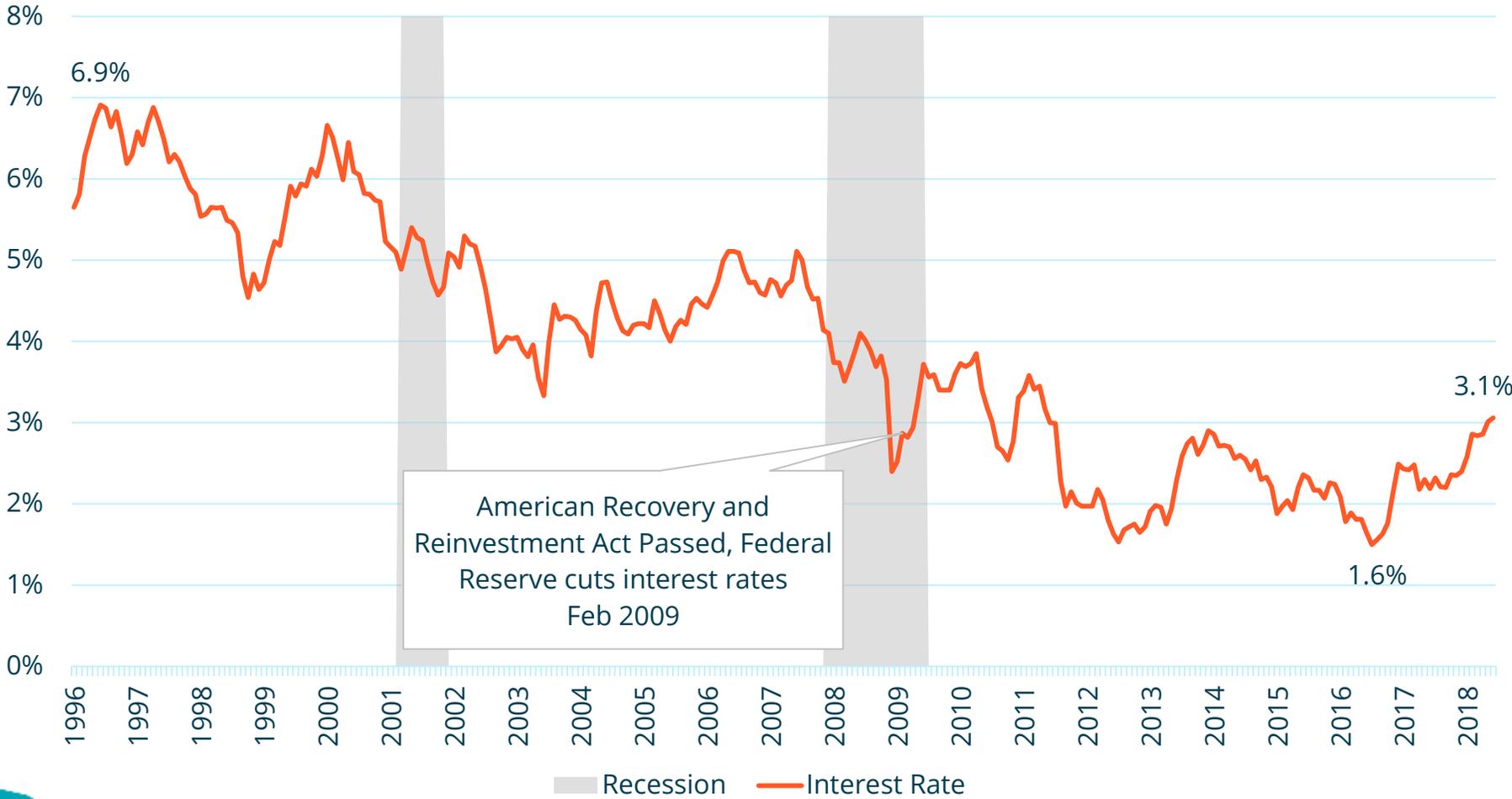
2.

Overall Development Trends



Low interest rates have made borrowing attractive

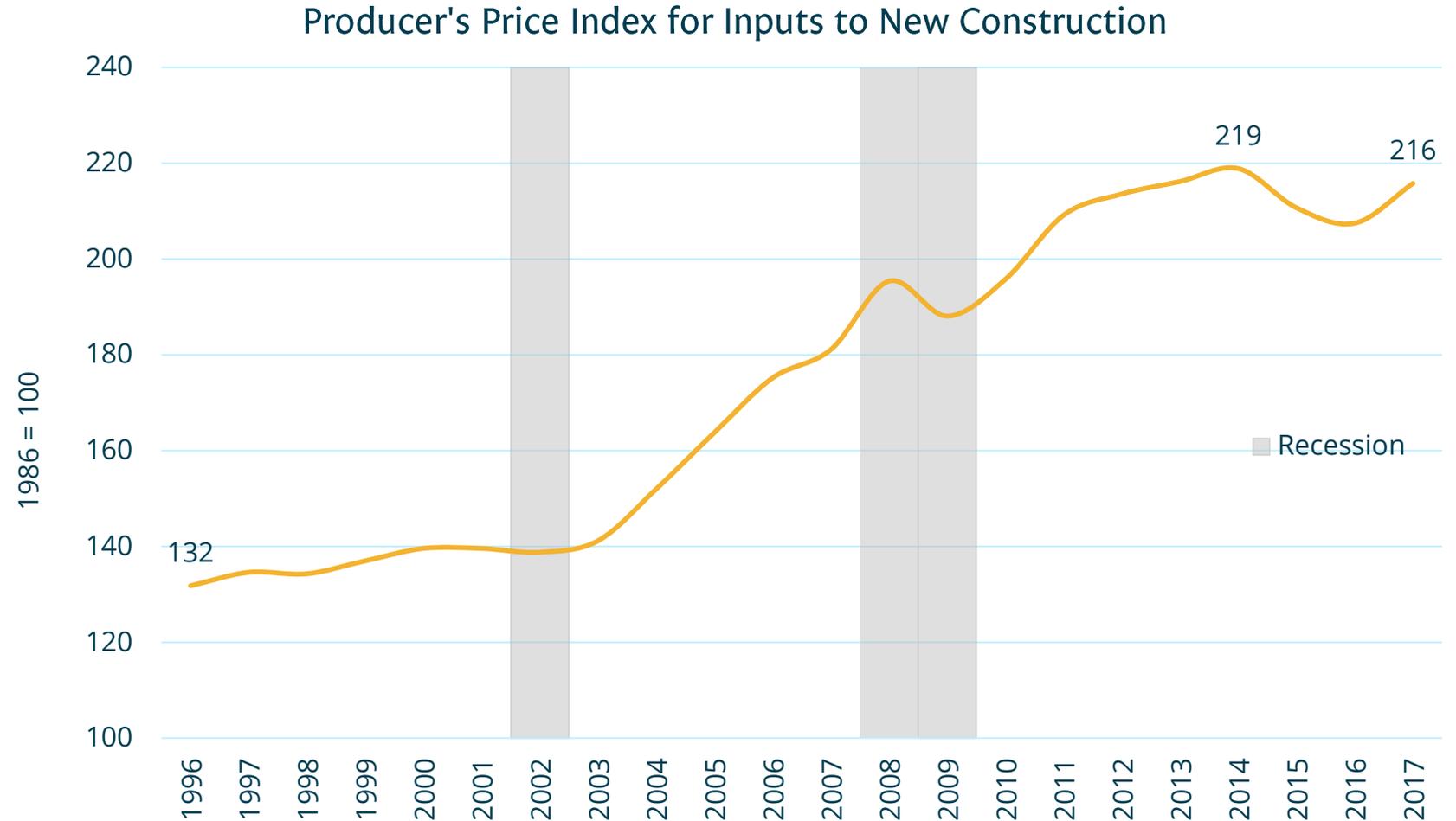
10 Year Treasury Rate



Rates have stayed below 4% since 2009 and have only recently begun to rise from a low of 1.6% in 2016.

The cost of construction inputs has risen

Since 1996, the price index for inputs to new construction has increased 64%, with brief dips in 2009 and 2015-2016.

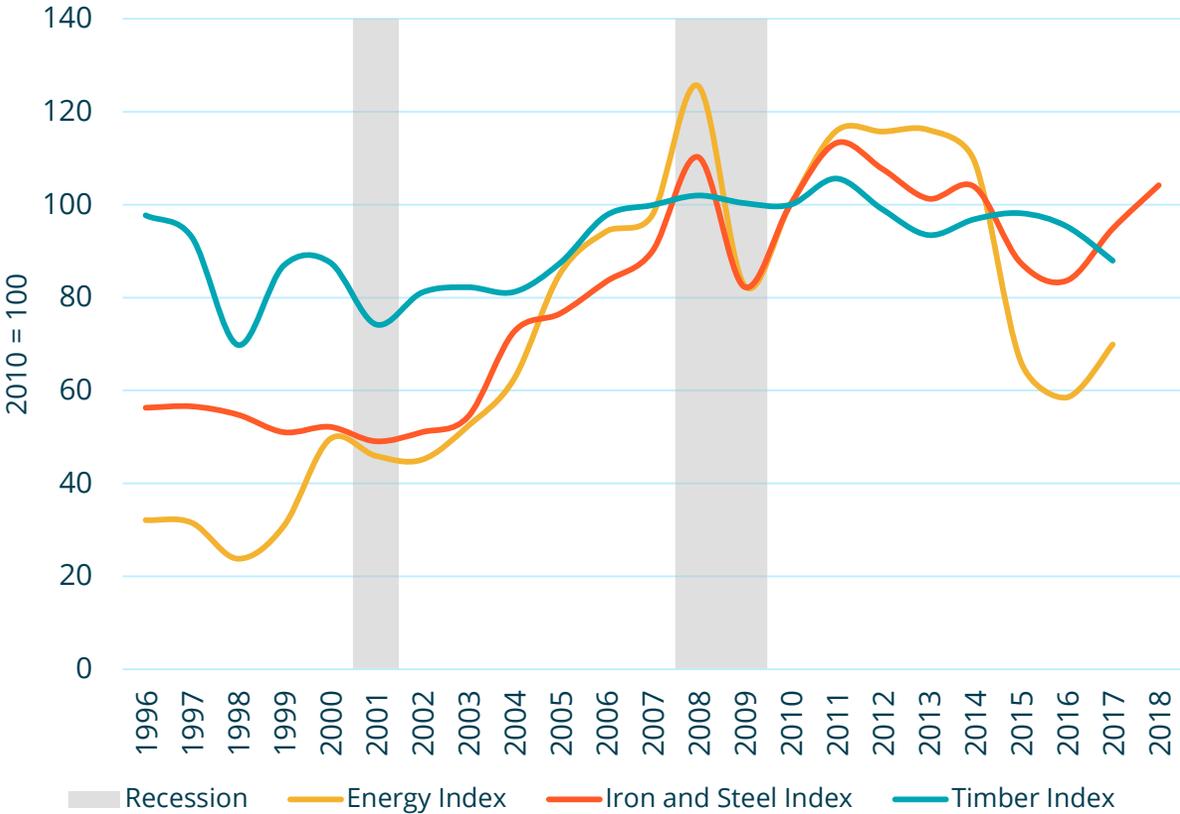


Construction commodity prices have fluctuated

Commodity Prices (2017 \$)

	<i>Crude Oil</i>	<i>Natural Gas</i>	<i>Plywood</i>	<i>Aluminum</i>	<i>Iron Ore</i>
<i>Unit</i>	Per barrel	Per Million British Thermal Units	Per sheet	Per metric ton	Per dry metric ton
<i>10-year high</i>	\$107 (2012)	\$9.68 (2008)	\$7.54 (2007)	\$3,108 (2007)	\$171 (2008)
<i>10-year low</i>	\$52 (2016)	\$2.81 (2012)	\$5.18 (2015)	\$1,912 (2015)	\$64 (2015)
<i>2017</i>	\$61	\$3.42	\$5.62	\$2,274	\$83

Commodity Indices for Energy, Iron and Steel, and Timber

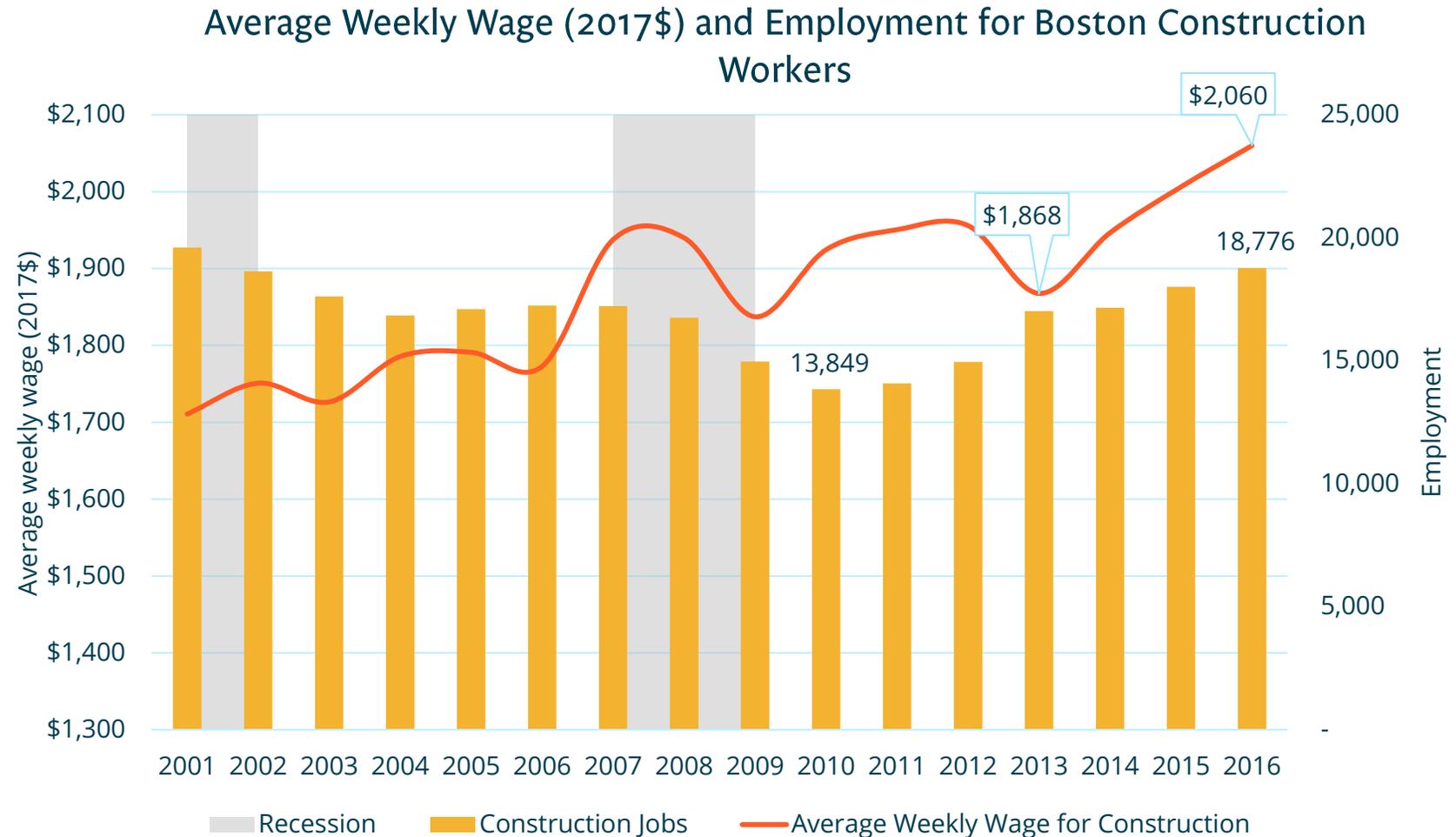


Sources: Federal Reserve Bank of St. Louis, Producer Price Index by Commodity for Metals and Metal Products: Iron and Steel, Updated August 9, 2018; The World Bank, Commodity Price Data (The Pink Sheet), Updated June 2018, BPDA Research Division Analysis.

Employment in construction has been rising alongside wages

Weekly average wages for Boston workers in the construction industry grew at an average annual rate of 0.9% between 2001 and 2017, compared to 0.7% for all industries.

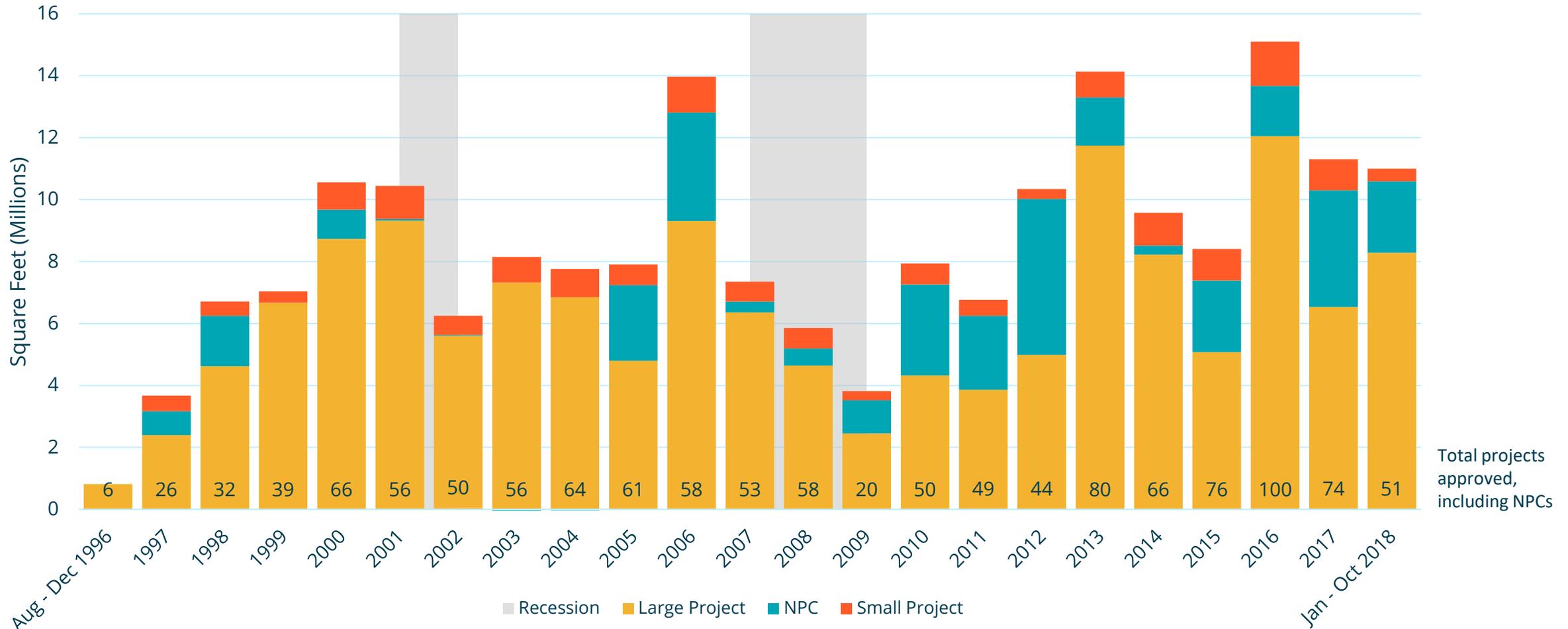
Rising wages and employment reflect the high demand for construction labor.



Source: U.S. Bureau of Labor Statistics and the Massachusetts Executive Office of Labor and Workforce Development (EOLWD), ES-202 Wage and Employment data, BPDA Research Division Analysis.

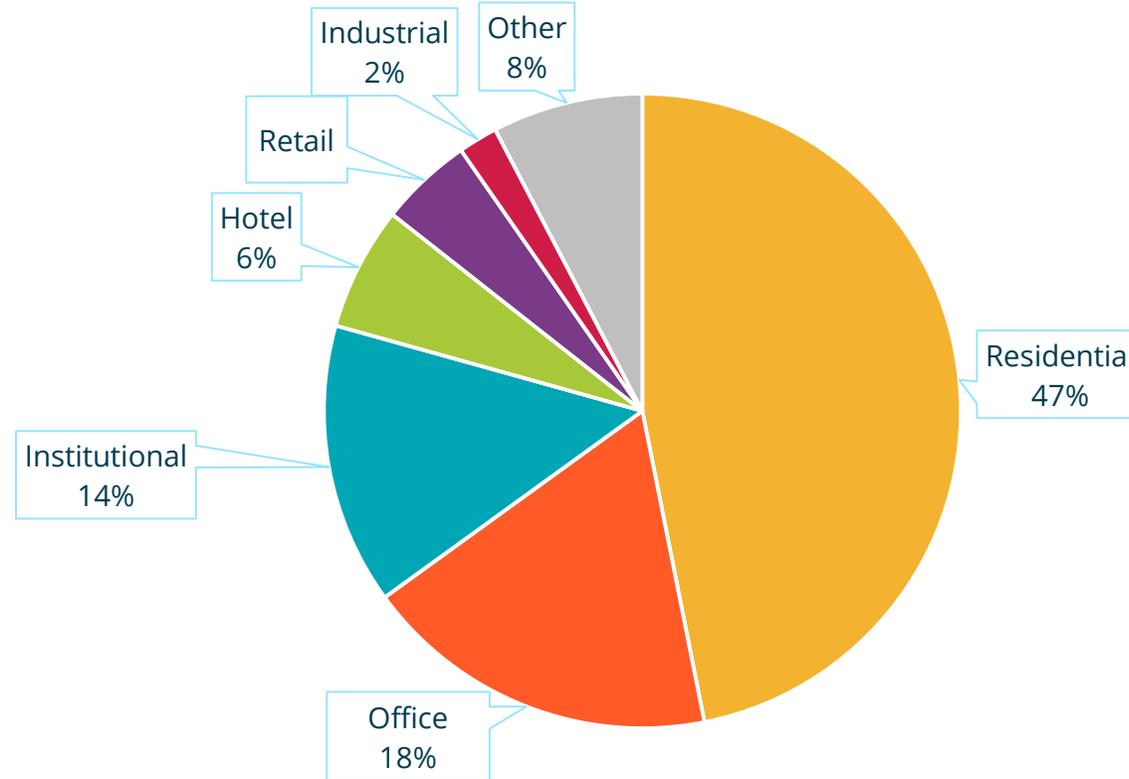
Article 80 Approvals Since 1996

Total Square Footage and Projects Approved by Project Type



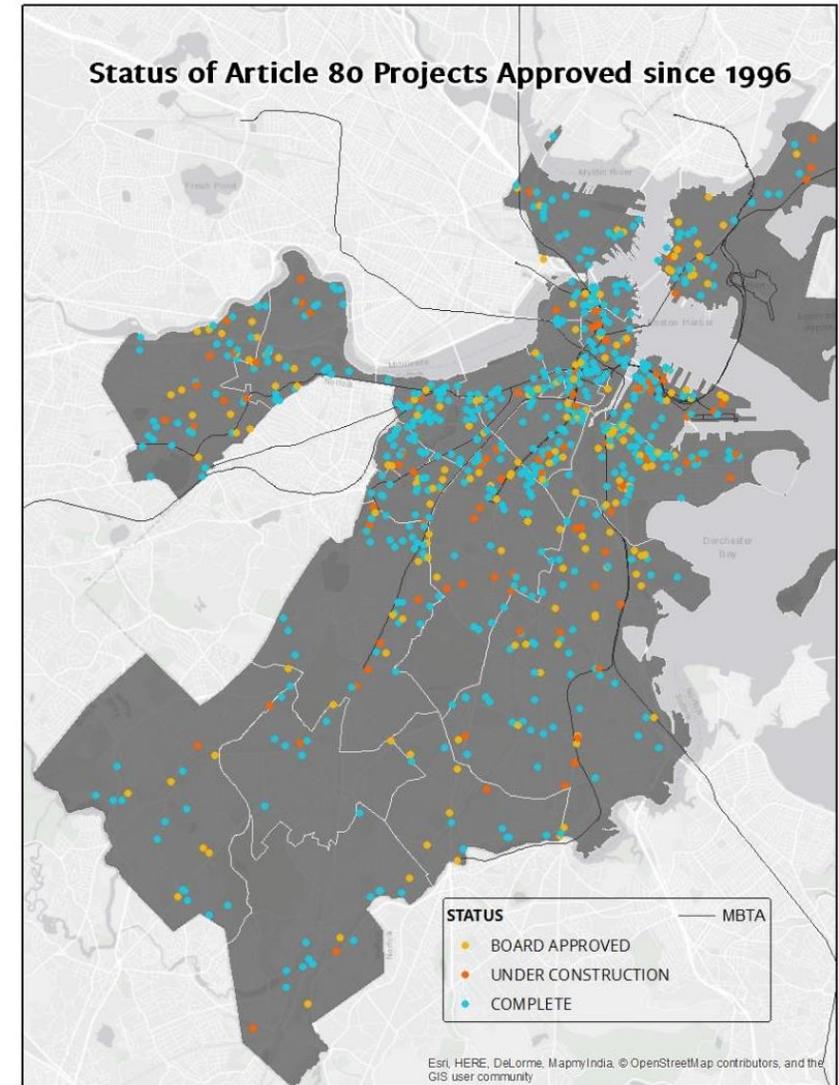
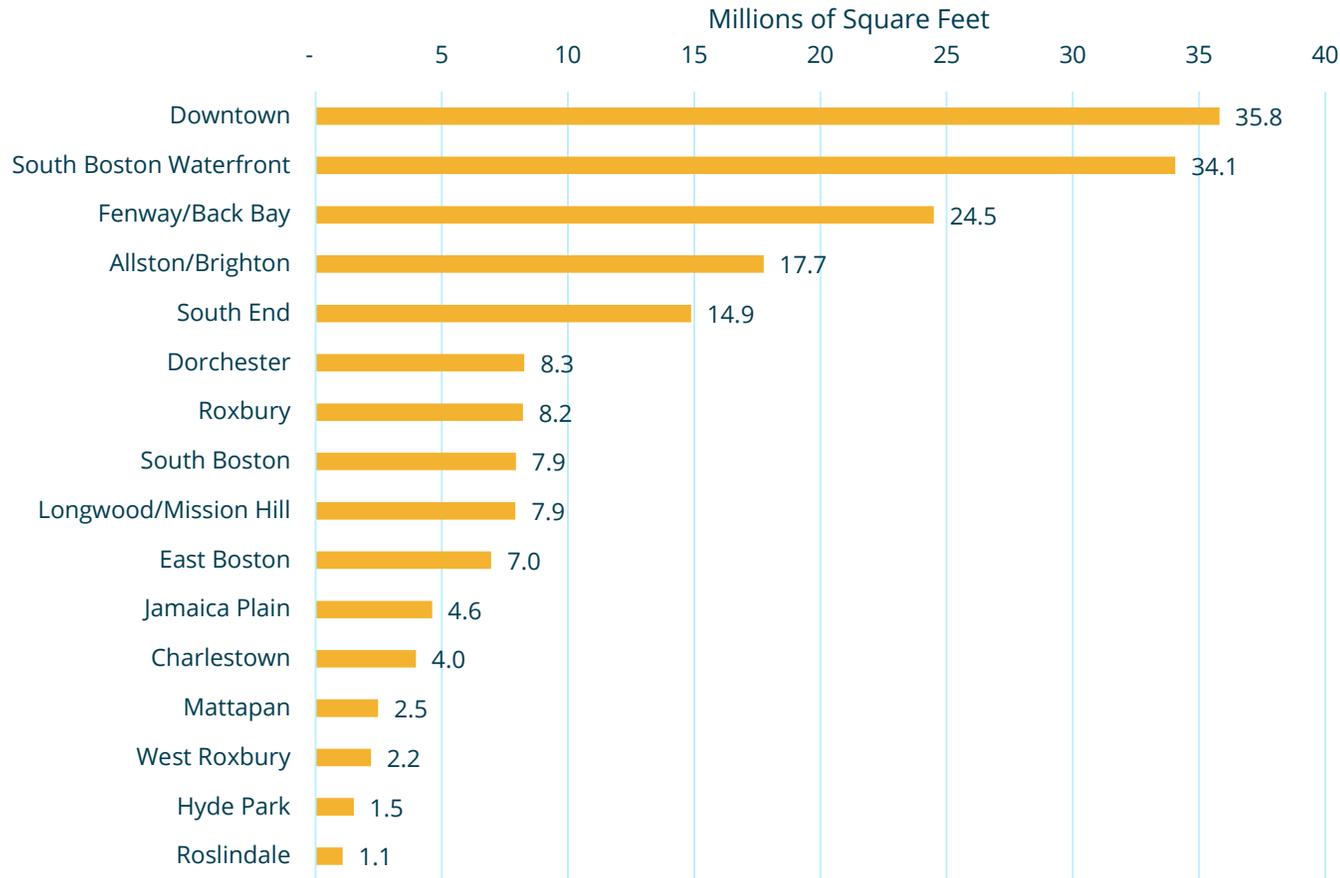
Residential projects account for almost half of all square footage approved since 1996

Square Footage Approved by Type
August 1996 – October 2018



Downtown and the Waterfront have seen the most development

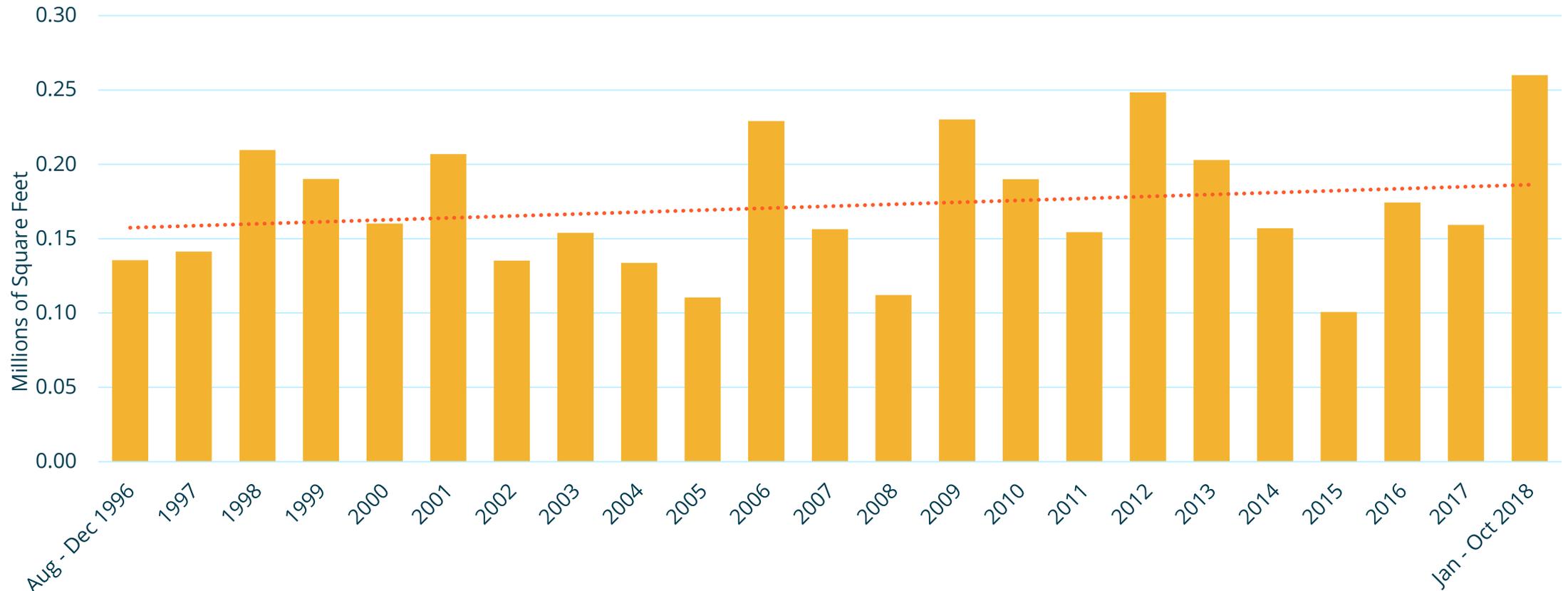
Article 80 Approvals by Neighborhood
August 1996 – October 2018



Source BPDA Pipeline Database (current as of October 1st, 2018), BPDA Research Division Analysis. Gross square footage of most recent approval taken. Downtown includes Chinatown, Leather District, West End, North End, and Beacon Hill. South End includes Bay Village. Square footage updated to reflect data improvement, January 2019.

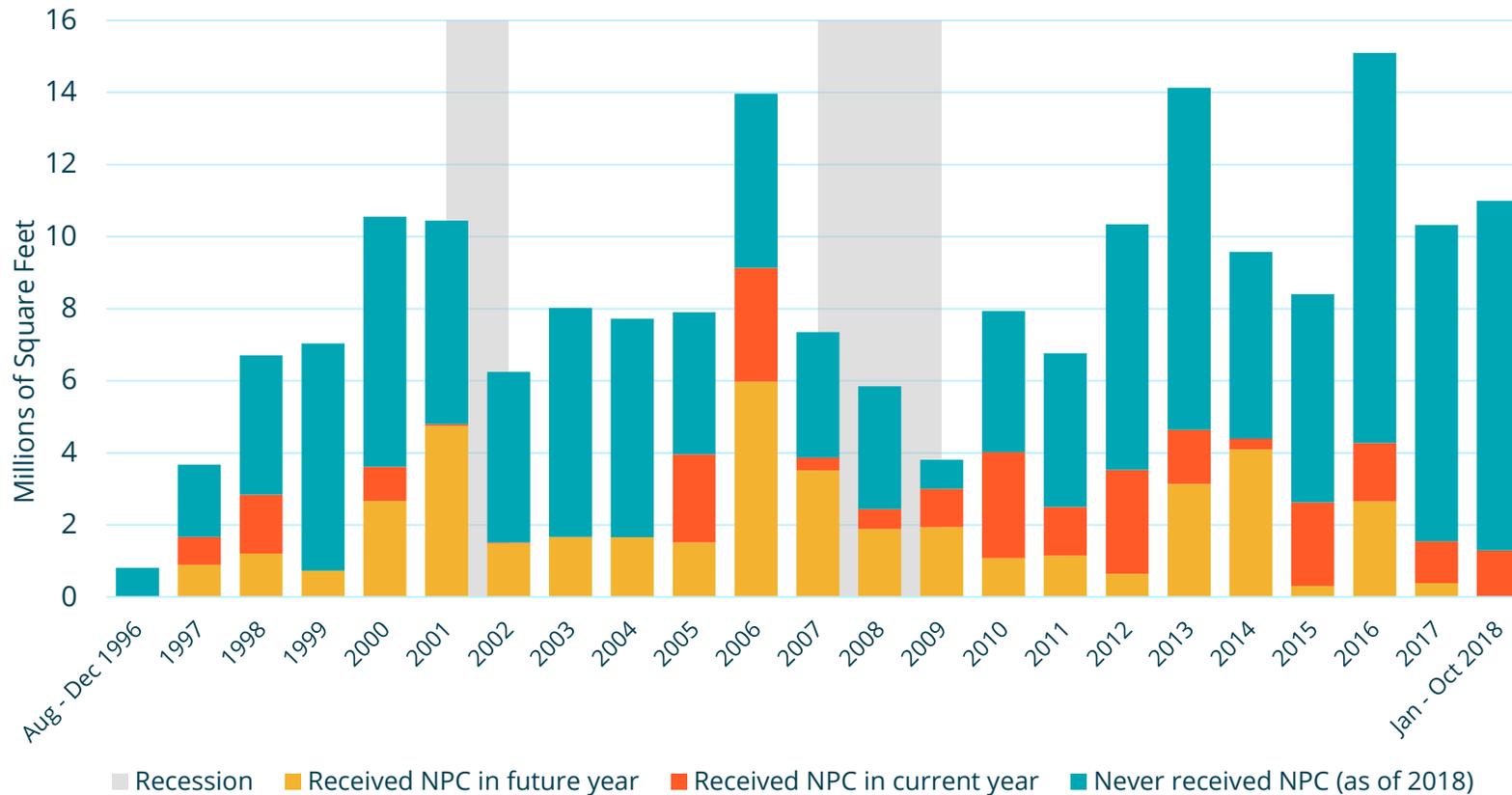
There has been a modest uptick in average size of approved projects

Average Square Footage for First-Time Approvals by Year of Approval



Around 22% of square footage approved since 1996 has returned to the Board for an NPC

Square Footage Approved as an NPC and Square Footage Approved Returning to the Board in Future Year as NPC



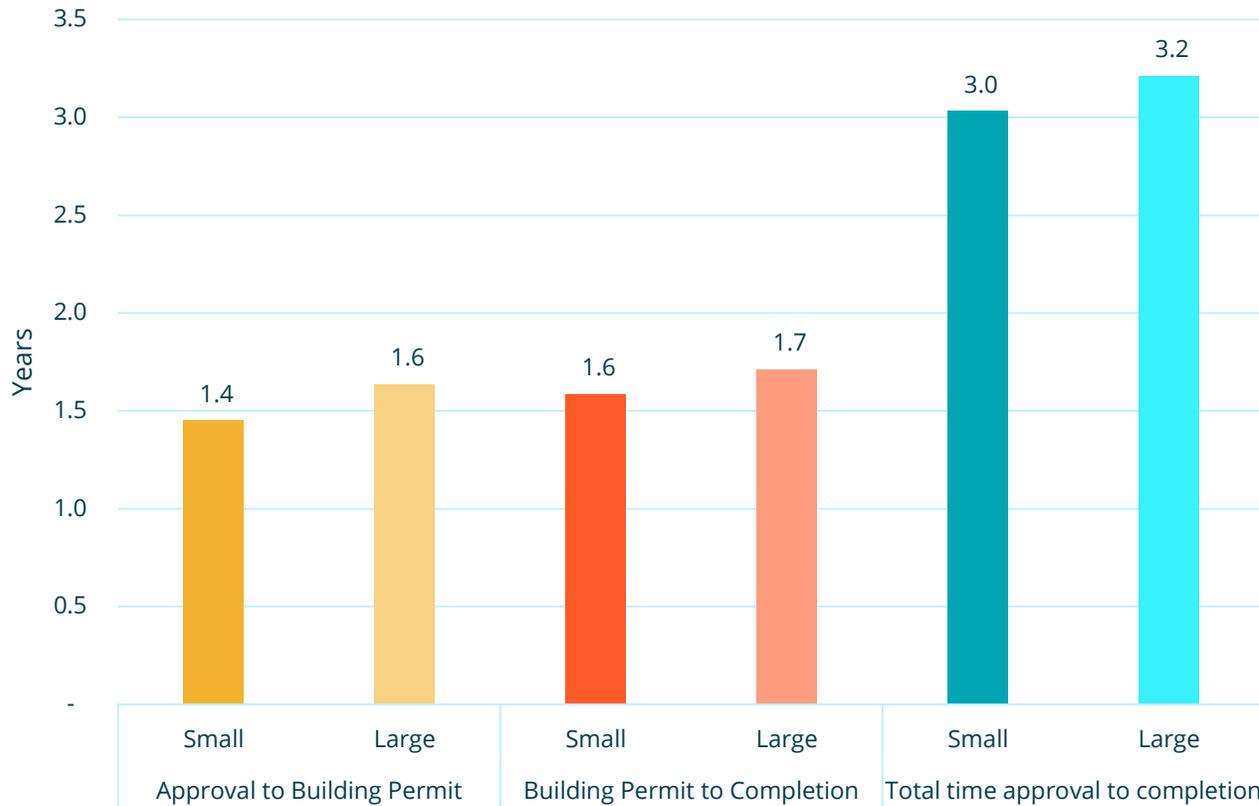
Projects approved leading up to or during a recession tended to return to the Board for changes in the future.

46% of square footage approved in 2001 and 48% of square footage approved in 2007 returned to the Board in subsequent years.

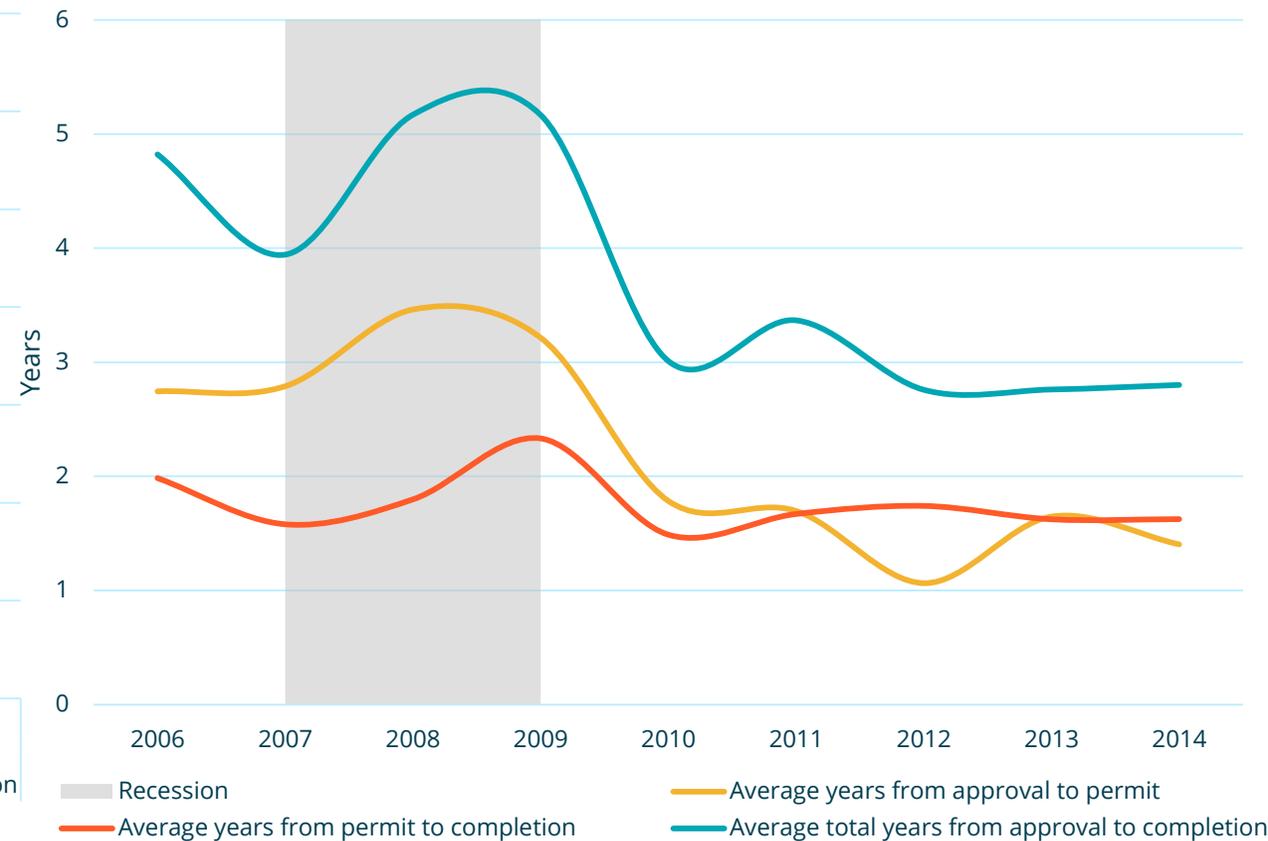
Source: BPDA Pipeline Database (current as of October 1st, 2018), BPDA Research Division Analysis. Square foot totals take net square footage except for projects outside of the 3-Year rule, where the square footage is counted twice.

The average project timeline from approval to completion is around 3 years

Project Timelines for Small and Large Projects Approved
2006 - 2014



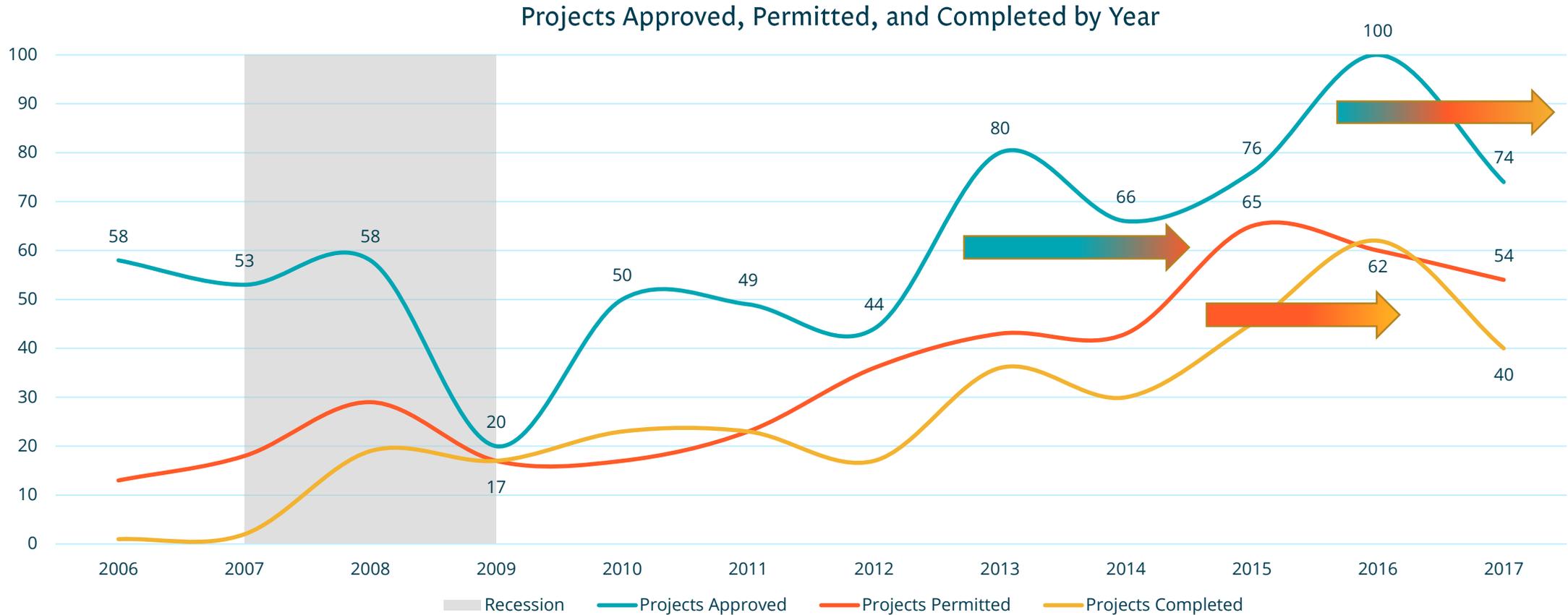
Average Time to Major Project Milestones by Year of Approval



Source: BPDA Pipeline Database (current as of October 1st, 2018), BPDA Research Division Analysis. Time to permitting calculated by taking the average days between original approval and first construction permit for all projects with a permit. Time under construction calculated by taking the average days between construction permit and certificate of occupancy for all projects with both. Time to completion calculated by taking the average days between original approval and certificate of occupancy for all projects with a COO. For projects that have received an NPC, timelines calculated from original approval date. Charts updated January, 2019 to reflect data improvement.

A wave of completions is likely on the way

Following the recession, project approvals saw a sharp increase in 2013. A spike in permitting followed, with the most permits issued in 2015. A second wave of approvals in 2016 will likely produce an increase in permitting and construction in the near future.



3a.

Markets: Housing



**boston planning &
development agency**

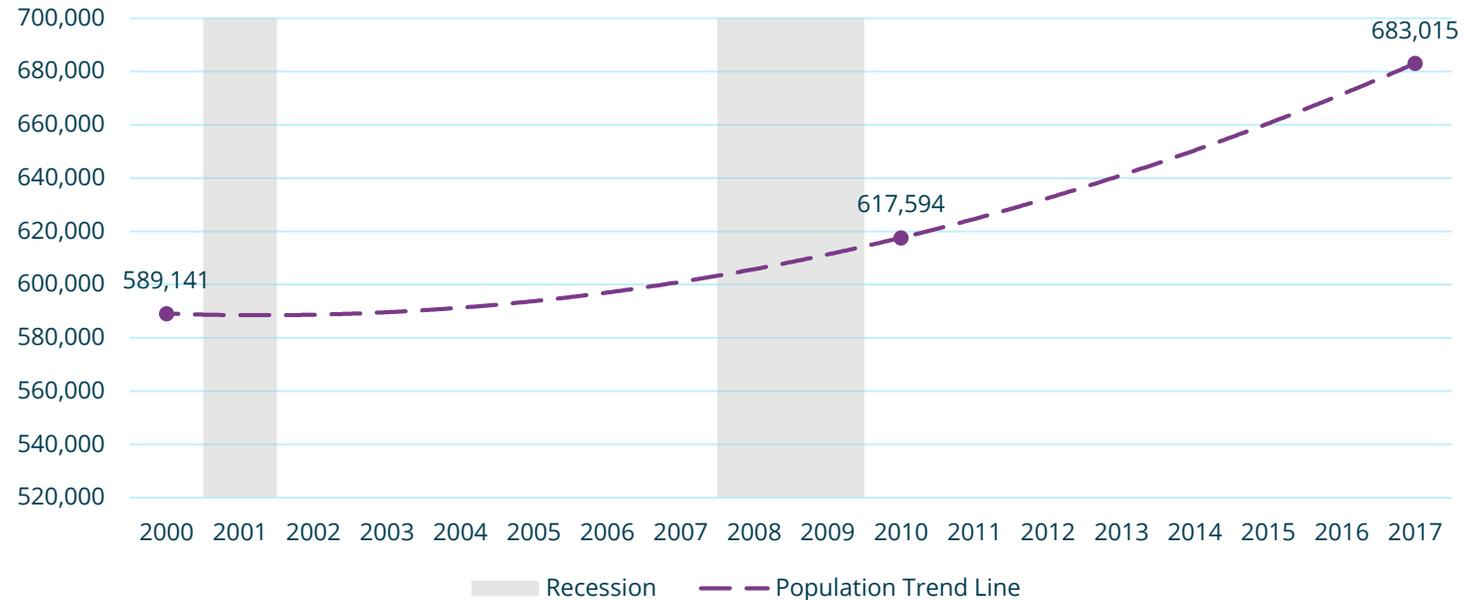
As population in Boston grows, demand for housing has increased

Boston's population has grown by approximately 93,000 since 2000.

According to the BPDA's Population Projection,¹ the population is expected to increase to 760,000 by 2030, still slightly less than the high of 800,000 in 1950.

¹ For more information, see Housing a Changing City, Boston 2030: 2018 Update.
https://docs.google.com/document/d/1WRWTkvd7_hAKIkz-_F8-J_HCq5mCrWKxBUeFOVgwaM/edit

Boston's Total Population



Source: U.S. Census Bureau, 2017 1-year American Community Surveys and 2000-2010 Decennial Census, BPDA Research Division Analysis

	1990	2000	2010	2015	2016	2017	2010 to 2017 Compound Annual Growth
Massachusetts	6,016,425	6,349,097	6,547,629	6,794,422	6,811,779	6,859,819	0.7%
Metropolitan Boston*	4,133,895	4,391,344	4,552,402	4,774,321	4,794,447	4,836,531	0.9%
City of Boston	574,283	589,141	617,594	669,469	672,840	683,015	1.4%

Source: U.S. Census Bureau, 2015-2017 1-year American Community Surveys and 1990-2010 Decennial Census, BPDA Research Division Analysis *Boston-Cambridge-Newton, MA-NH Metro Area

Boston is on track to surpass the original goals set out in the Housing Boston 2030 Plan

- Original goal: build 53,000 units by 2030, based on expected population of 709,000 by 2030.
- Since inception of plan, 27,513 units have been permitted, including:
 - 2,085 low income restricted rental housing units
 - 8,492 middle income units
- In 2018, Boston updated its goal to 69,000 new units by 2030, based on a revised population projection of 760,000 and the city's progress in constructing new housing.

The supply of housing units has grown 16% since 2005

In 2017, there were 293,538 housing units in the City, of which 91% were occupied.

Of occupied units, 35% were owner-occupied in 2017.

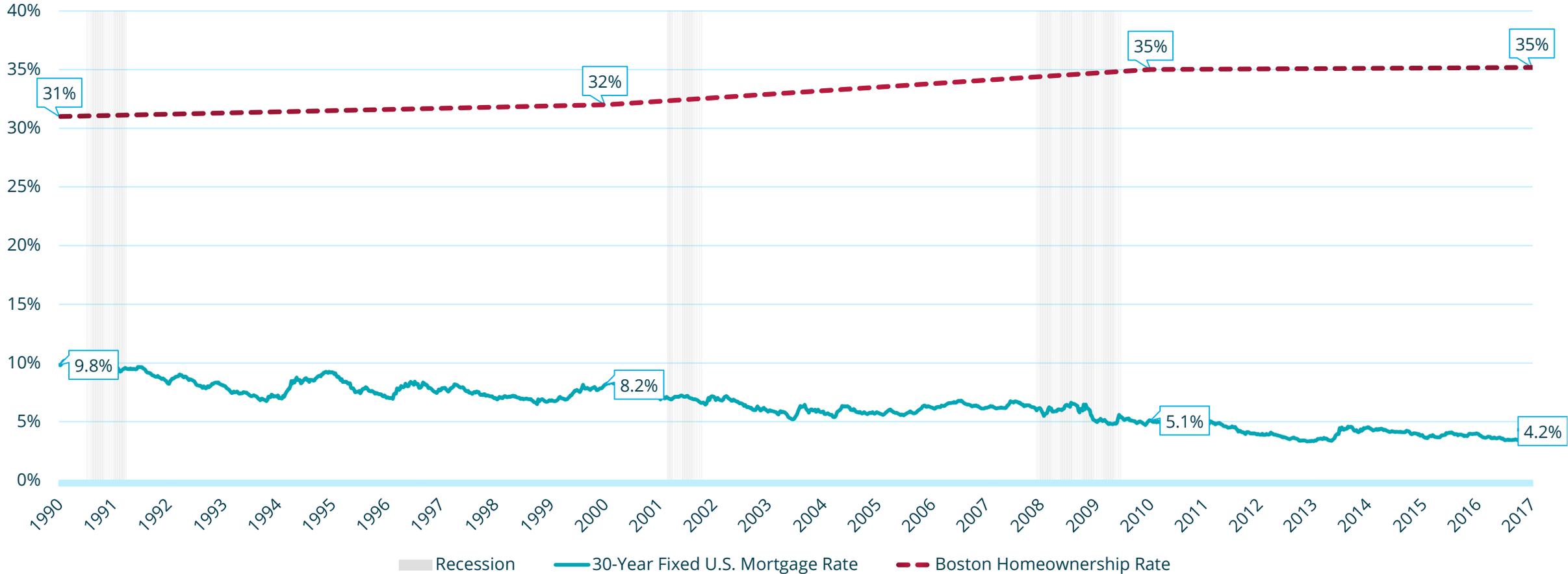
Vacancy data also includes new units that have entered the market for sale but are not yet occupied.

Occupied Housing Units by Owner/Renter Status



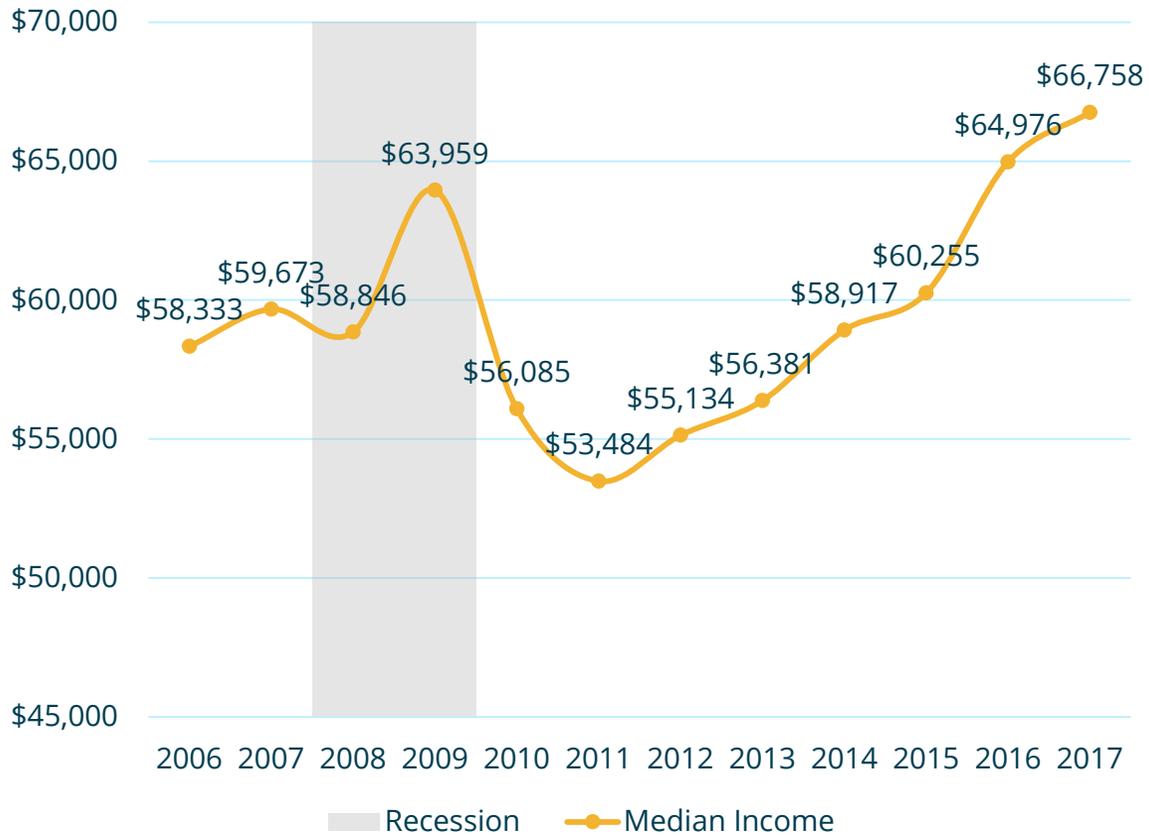
Decreasing mortgage interest rates have coincided with rising homeownership rates

30-Year Fixed-Rate Mortgage Rate

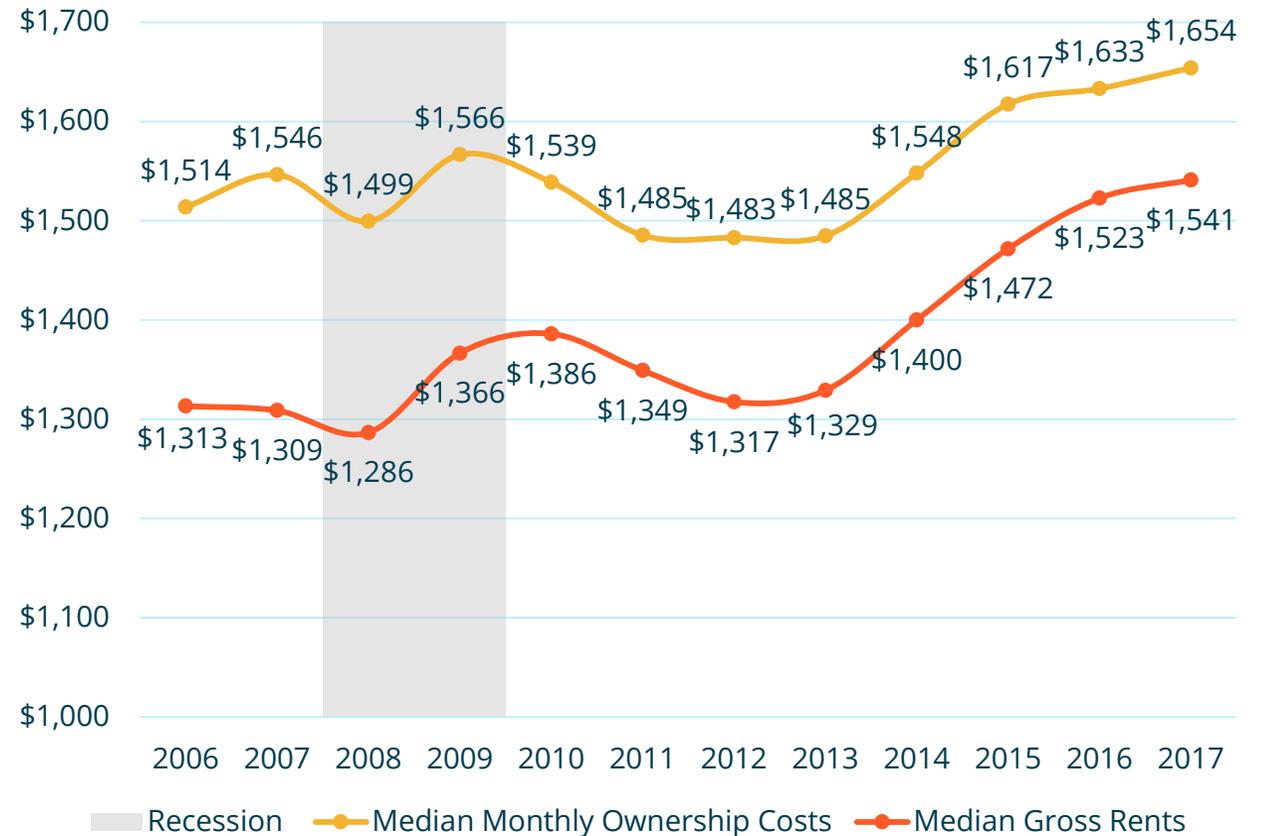


Since 2012, housing costs and incomes have increased.

Median Household Income (2017 \$)



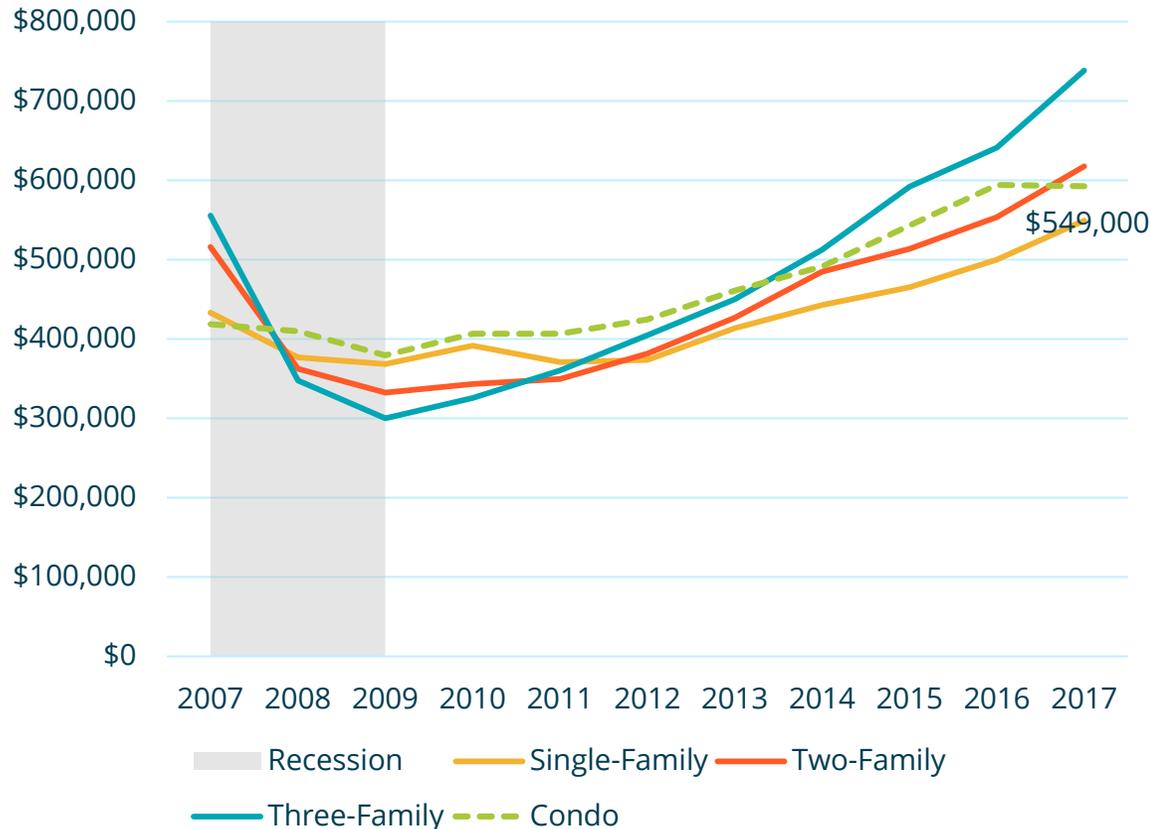
Median Monthly Rents and Ownership Costs (2017 \$)



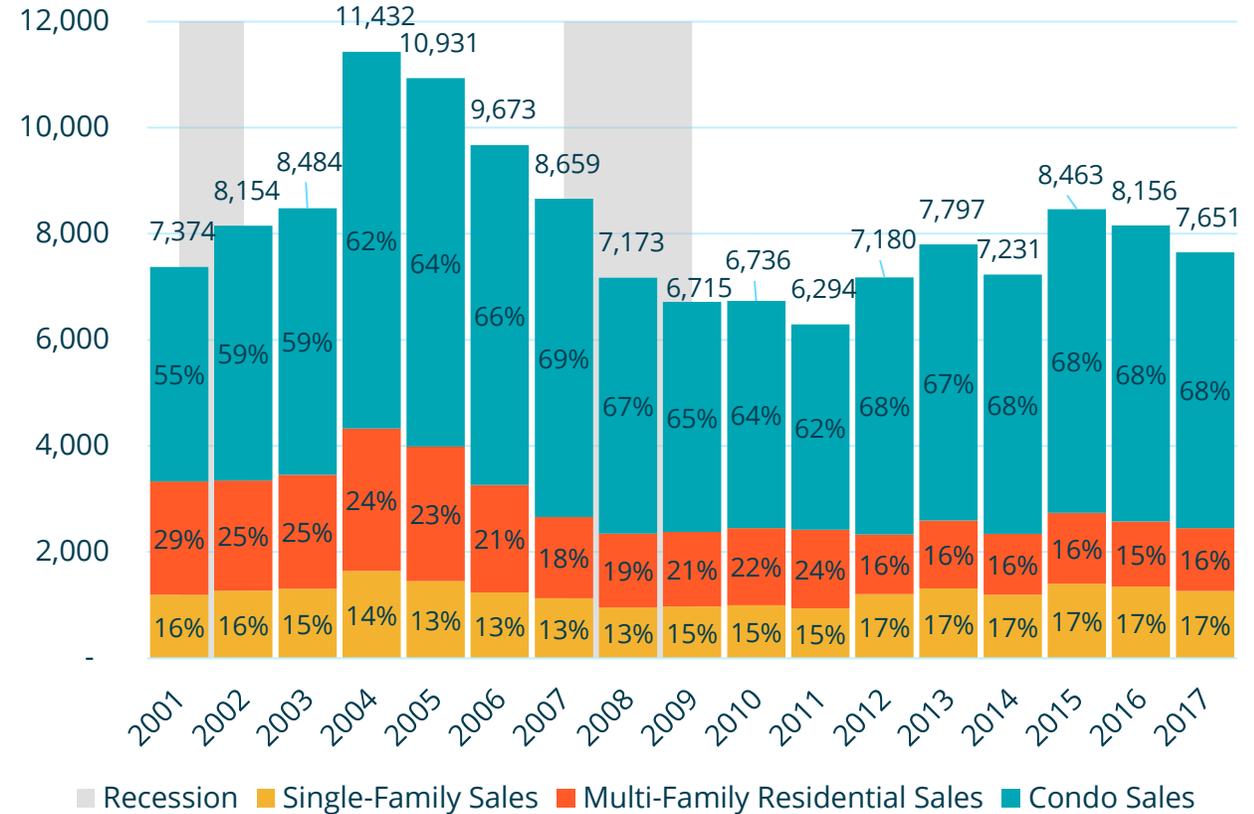
Median monthly rent increased by 17% from 2006 to 2017, faster than median household income, which grew 14% in the same time period. Monthly ownership costs grew only 9%. The percentage households that are housing cost burdened (pay 30% or more of household income on housing costs) decreased from 49% in 2006 to 41% in 2017.

Residential sales volume remains below the height of 2004, while sales prices have surpassed their pre-recession peak

Median Residential Sales Prices¹ (2017 \$)



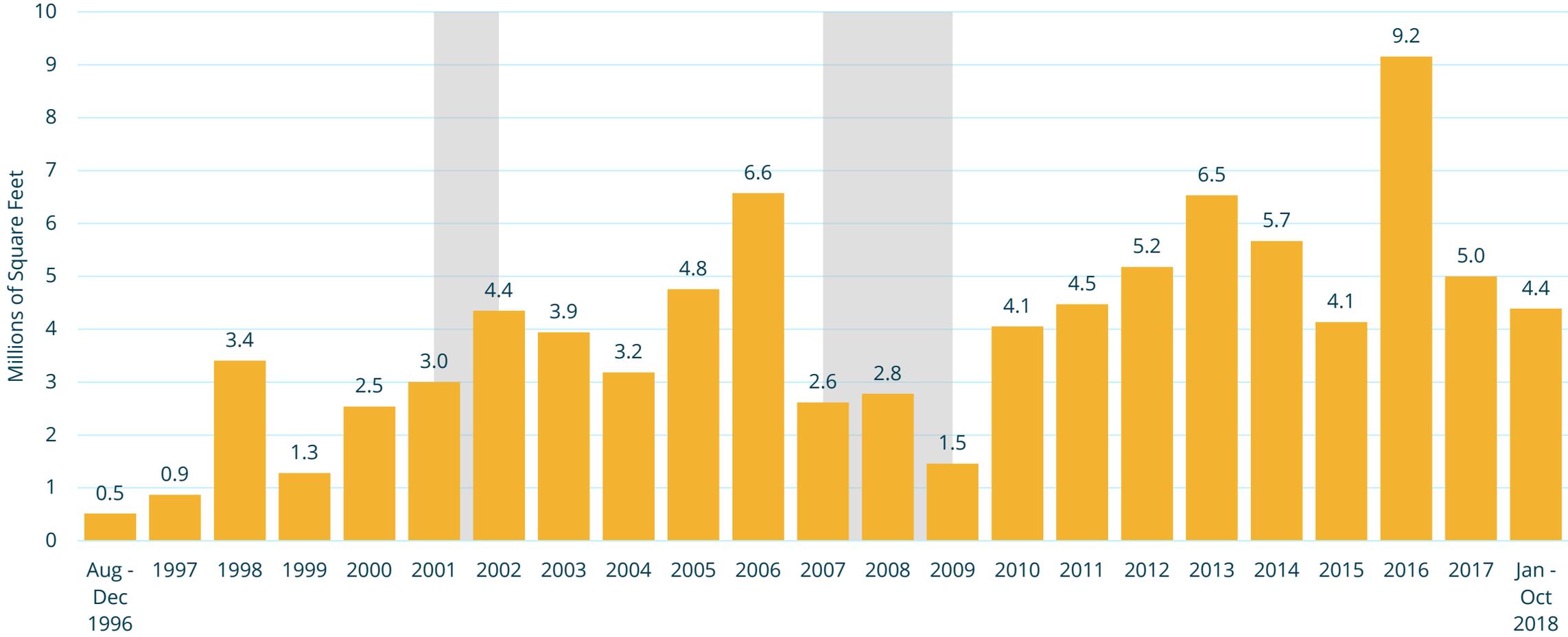
Residential Sales Volume



Residential sales gradually declined from 2004 through the recession and didn't hit bottom until 2011. Sales increased through 2015 but have since fallen. Meanwhile, prices of units, particularly two-family and three-family units, have consistently increased since 2009.

Article 80 residential project approvals peaked in 2016, making up 61% of that year's total square footage

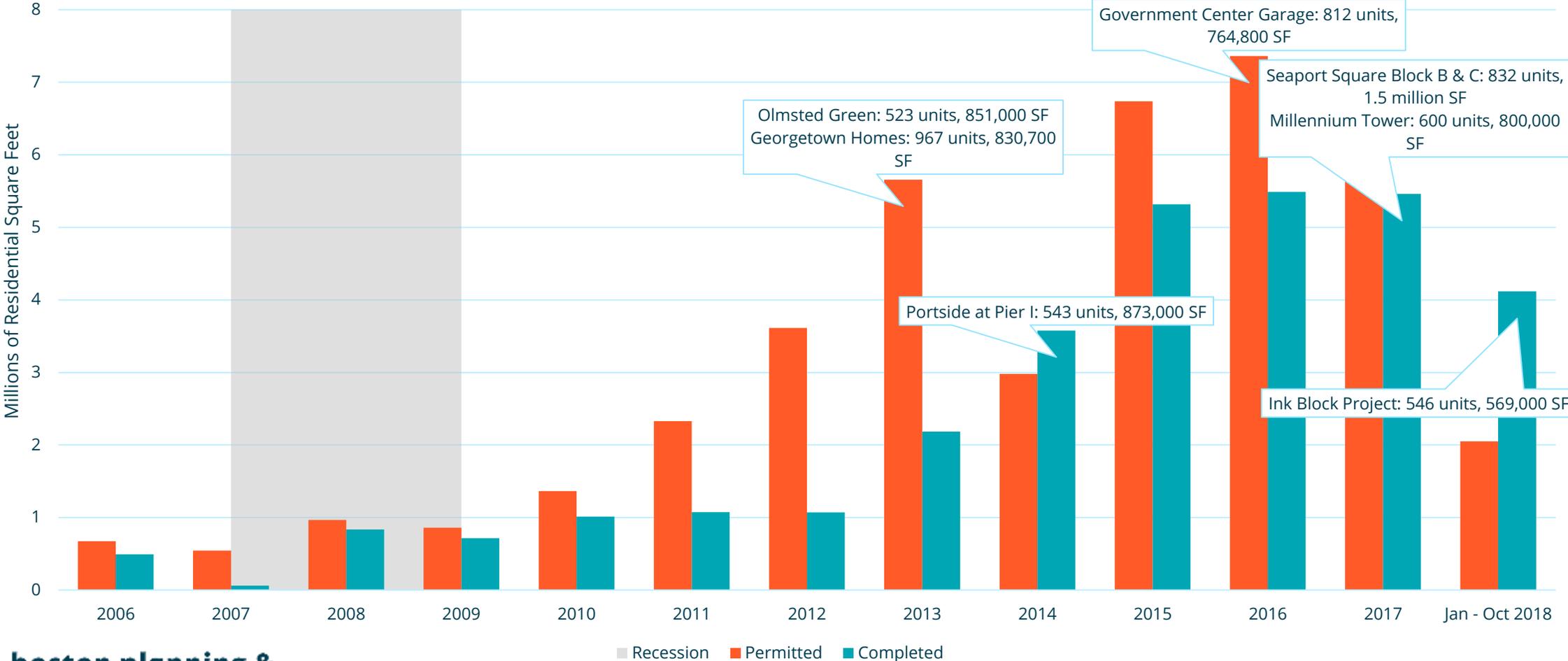
Residential square footage approved per year (Millions SF)



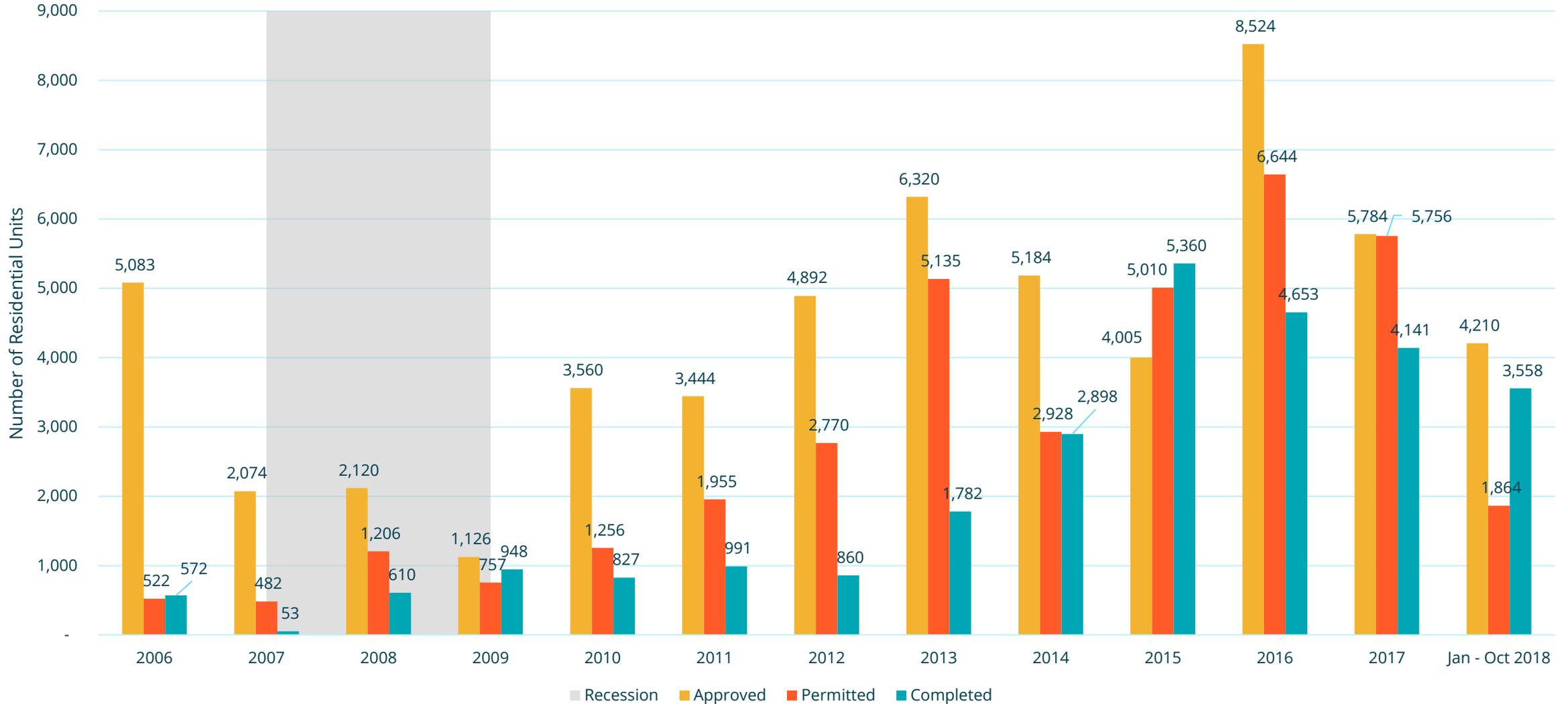
Source: BPDA Pipeline Database, current as of October 1st, 2018, BPDA Research Division Analysis. Square footage associated with NPCs counted as net change except for projects that were approved more than three years prior, for which total square footage was counted (3-year rule).

More than 5 million residential square feet were completed in each of 2015, 2016, and 2017

Residential Square Feet Permitted and Completed by Year



Residential units approved, permitted, and completed each year



3b.

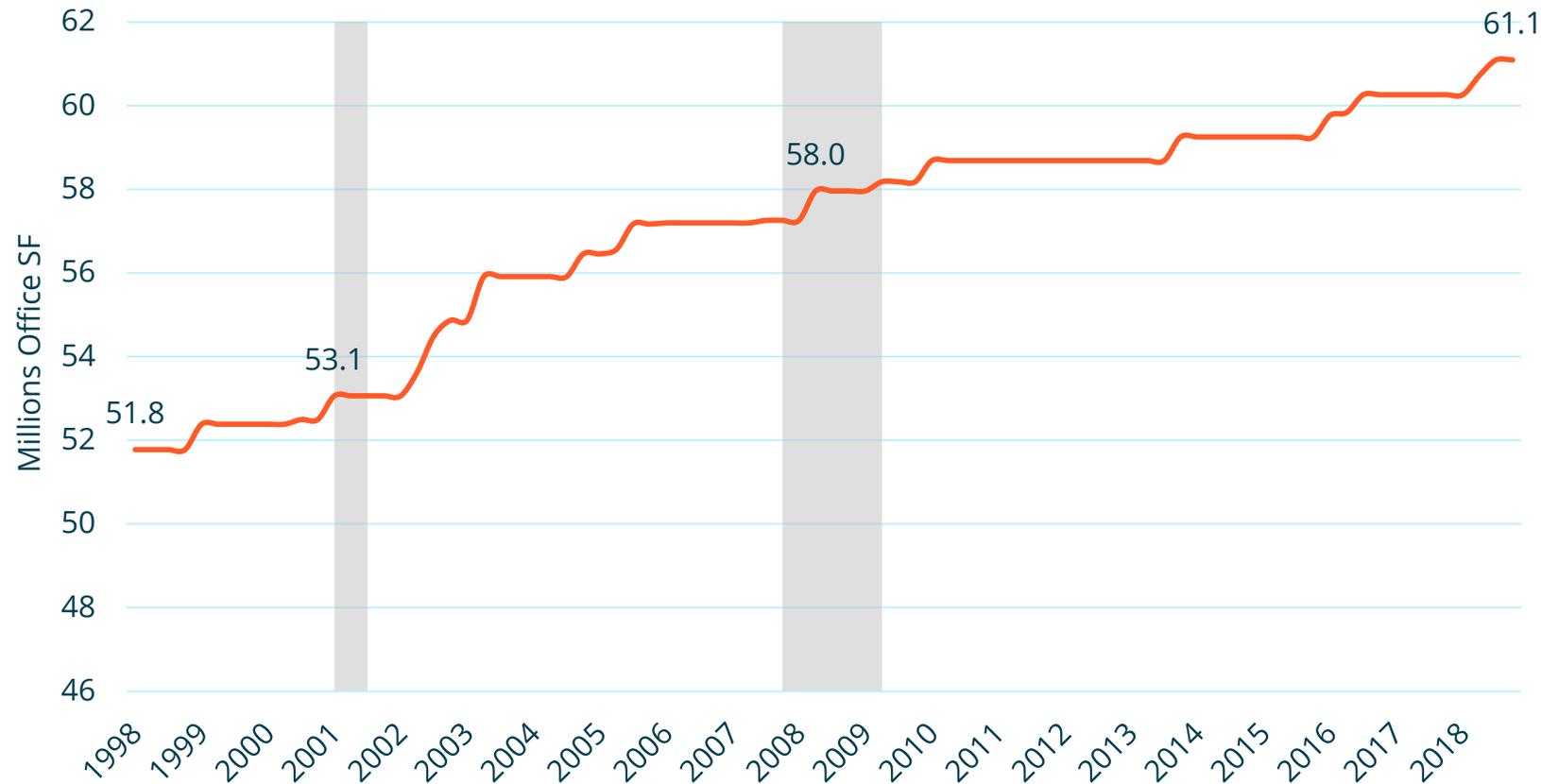
Markets: Office



**boston planning &
development agency**

Office inventory has grown by 3.8 million square feet in the past 10 years

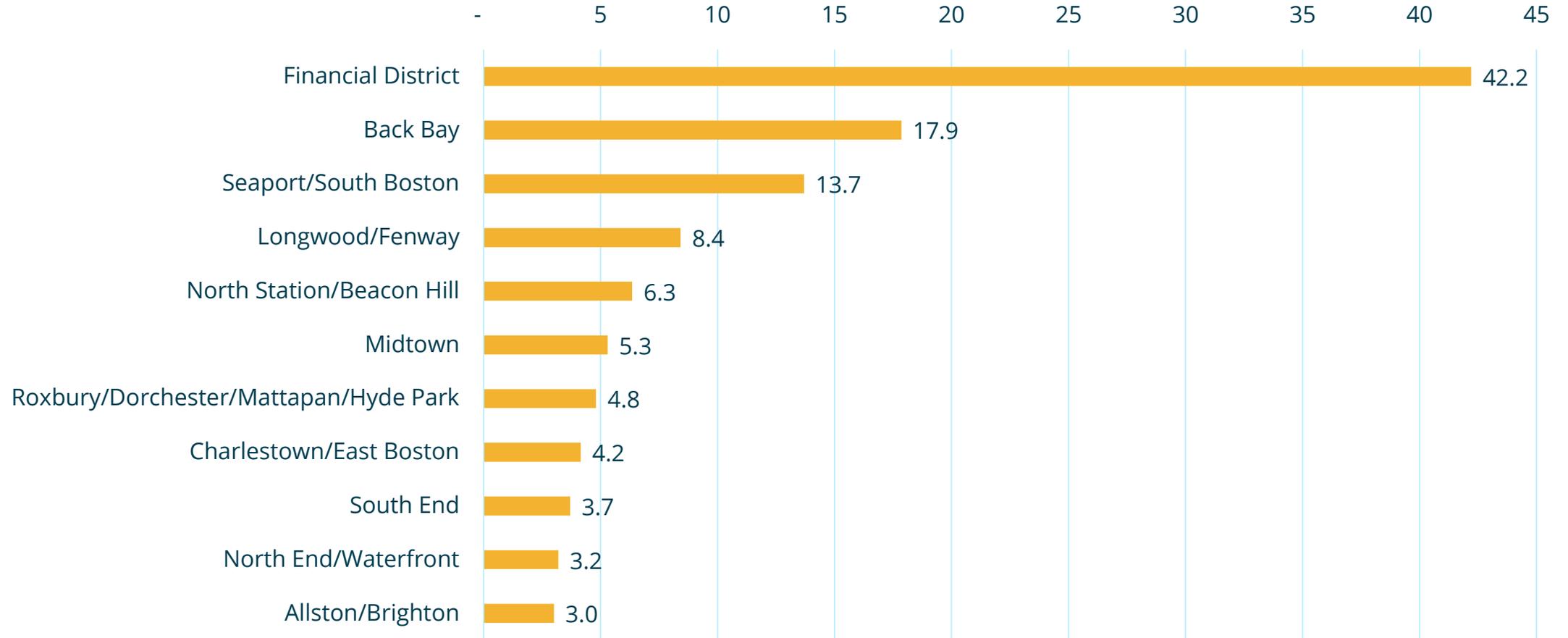
Office Inventory (Millions of Square Feet)



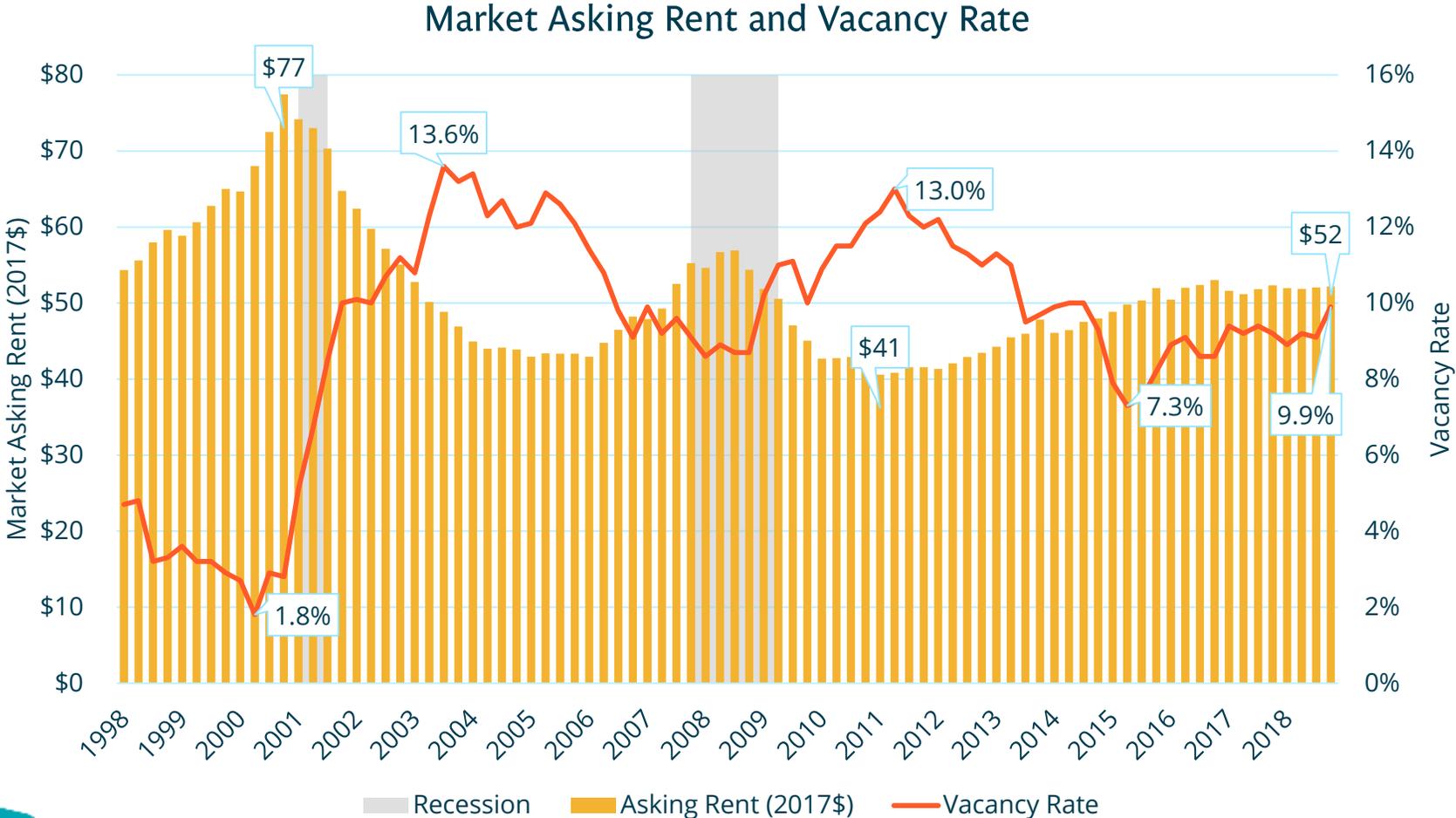
There are 313 office buildings in Boston and 10 million square feet are available for lease.

The Financial District accounts for 42 million square feet of office space

Q4 2017 Office Inventory by Submarket (Millions SF)



Office vacancy rates have fallen to less than 10% since a peak of 13% in 2011; high demand has increased office asking rents slightly

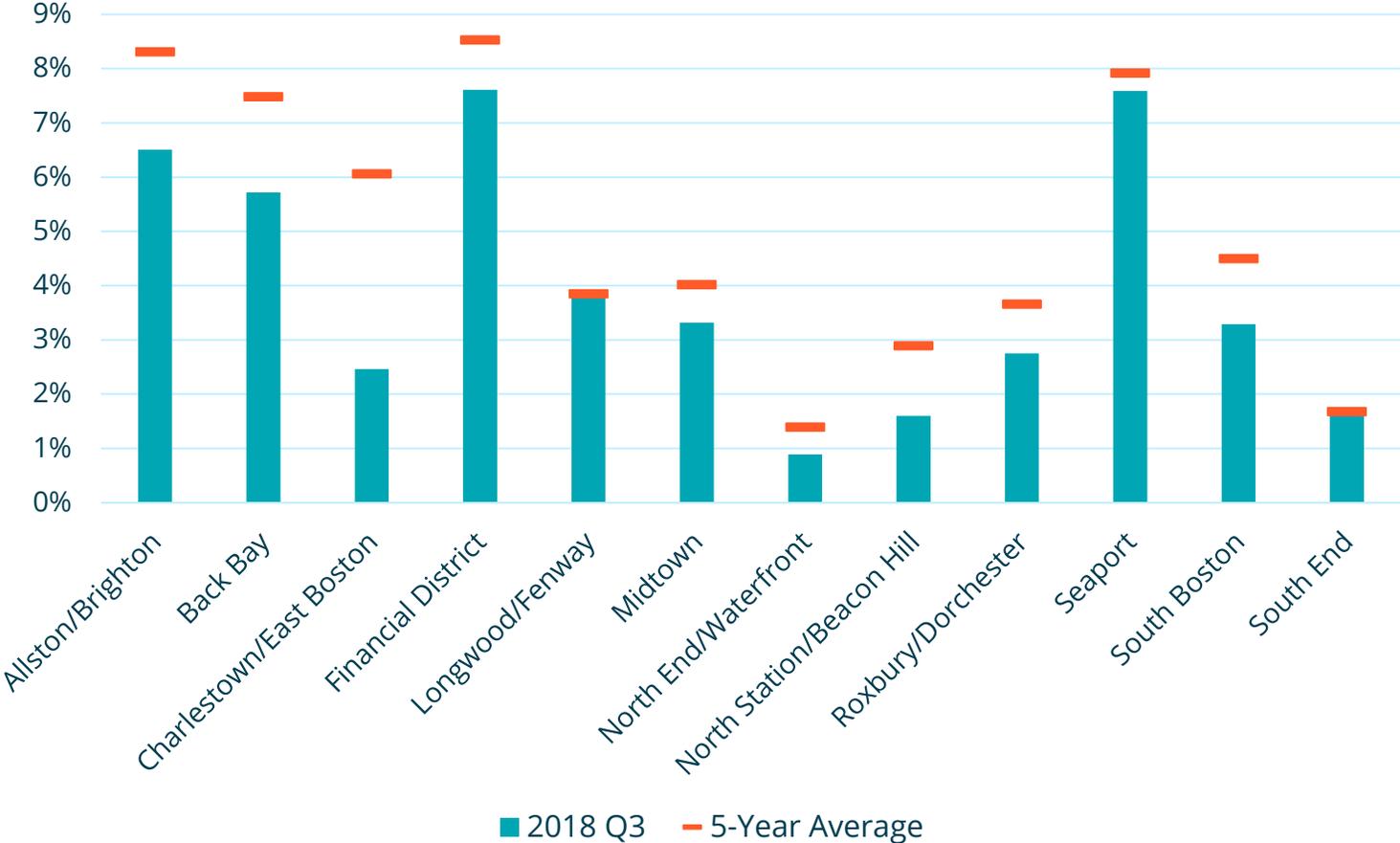


Vacancy is currently at 9.9% in Boston, compared to 16.9% nationwide.

Asking rent for office space is \$52/sqft in Boston, compared to \$36/sqft nationwide.

Vacancy rates have decreased in all of Boston's office submarkets except for Longwood and the South End

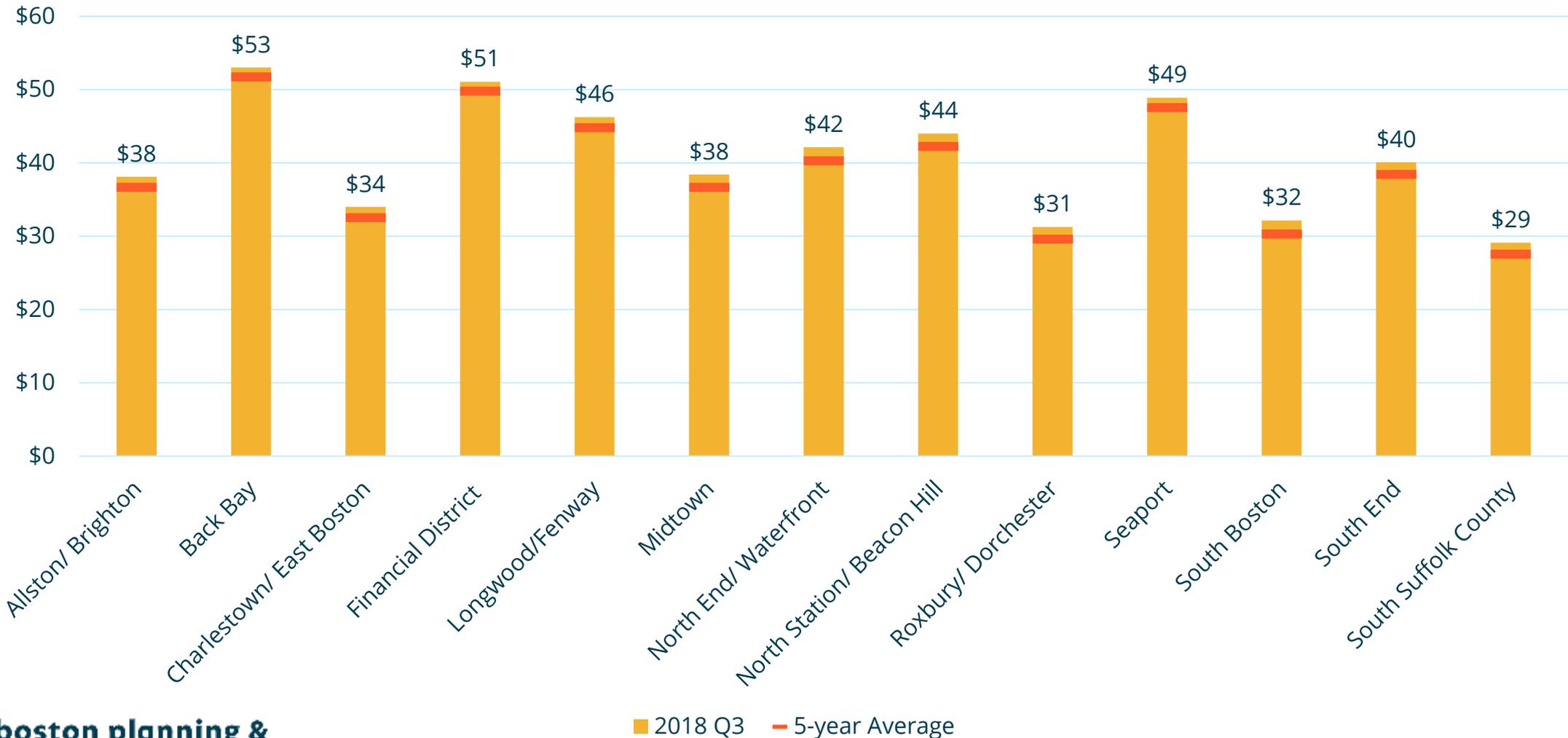
Vacancy Rate by Submarket



Vacancy is highest in the Financial District and the Seaport, which may be due to large amounts of new construction resulting in new available space.

Office rents are growing in all Boston submarkets

Market Rent by Submarket (2017\$/sqft)



Hiring in professional occupations has contributed to the demand for office space

Boston has added almost 26,000 jobs in information, finance/insurance, professional and technical services, and management since 2001.

Reebok, New Balance, and Amazon are among the companies that have opened or are soon to open new offices in the city.

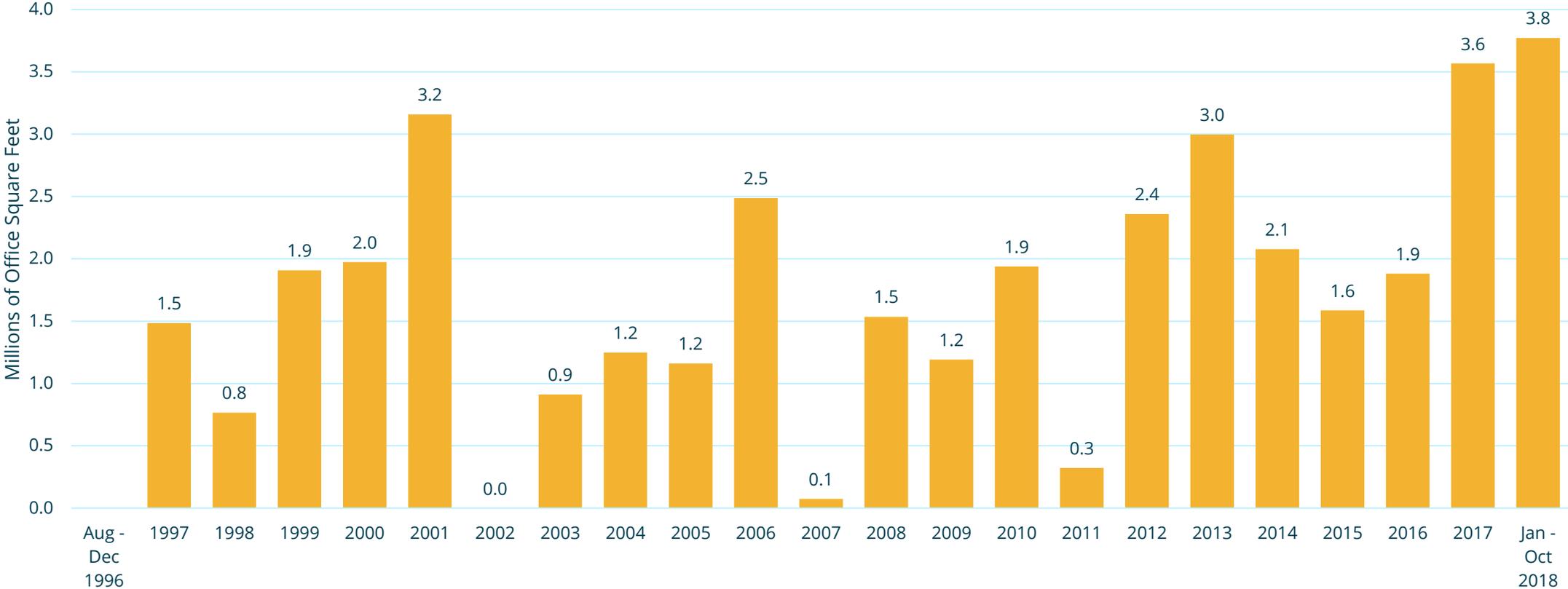
Employment in Office-Based Occupations



Office Approvals are on an upward trend

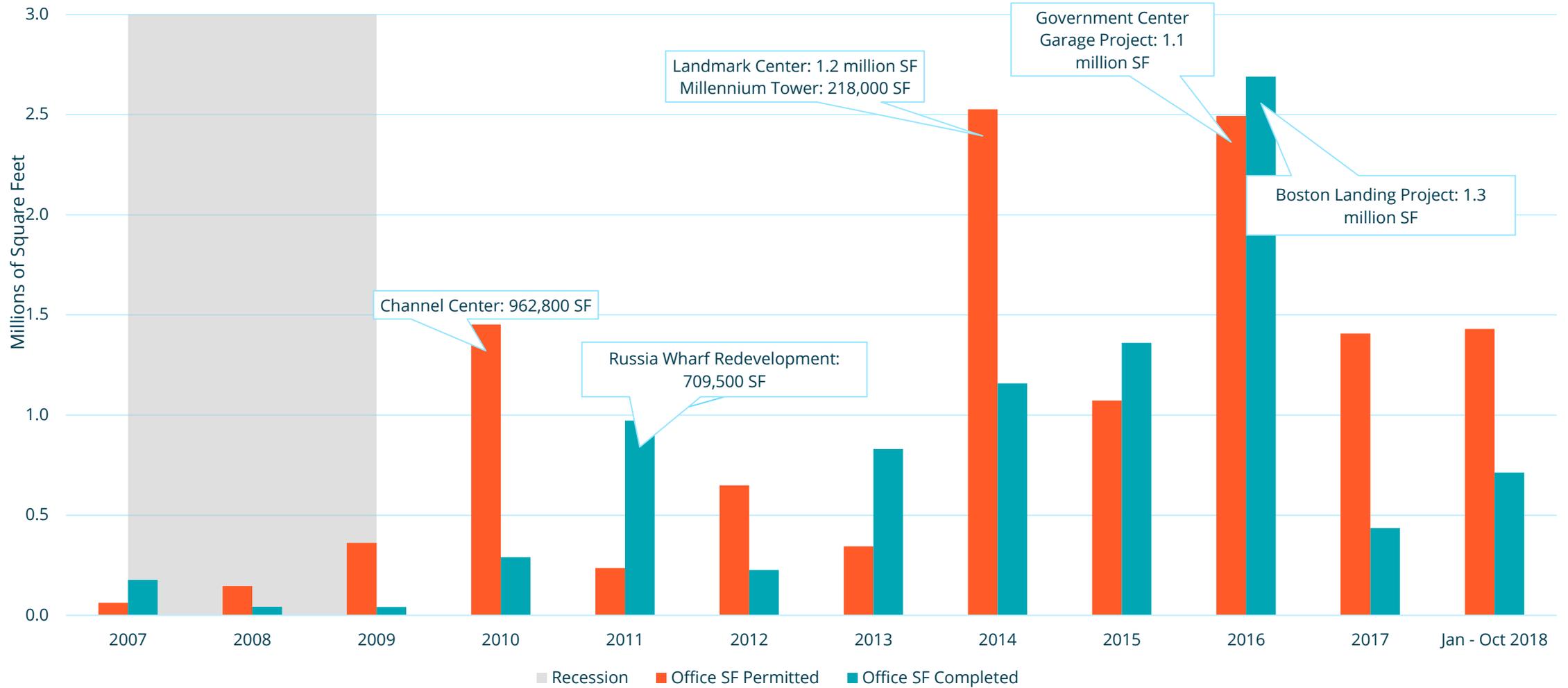
2018 surpassed the record set by 2001 in office square footage approved, with 3.8 million square feet set to be built

Office Approvals (Millions of SF)



Source: BPDA Pipeline Database, current as of October 1st, 2018, BPDA Research Division Analysis. Square footage associated with NPCs counted as net change except for projects that were approved more than three years prior, for which total square footage was counted (3-year rule).

Office Square Footage Permitted and Completed by Year



3c.

Markets: Hotels



**boston planning &
development agency**

Boston's growth as a tourist and business center have contributed to a booming hotel market

- Suffolk County received \$8.8 billion in domestic travel expenditures (half of Massachusetts's total) in 2016¹
- The Greater Boston Convention & Visitors Bureau projects visitors to Greater Boston to increase from 21.2 M in 2017 to 22.7 M in 2019²
- As of March 2018, Boston had 85 licensed hotels, totaling 21,000 rooms³

¹ Research Department of the U.S. Travel association, prepared for the Massachusetts Office of Travel and Tourism, "The Economic Impact of Travel on Massachusetts Counties, 2016"

<https://www.massvacation.com/wp-content/uploads/2016/11/MA-2016-Report-Oct-4-2017-2.pdf?x90875>

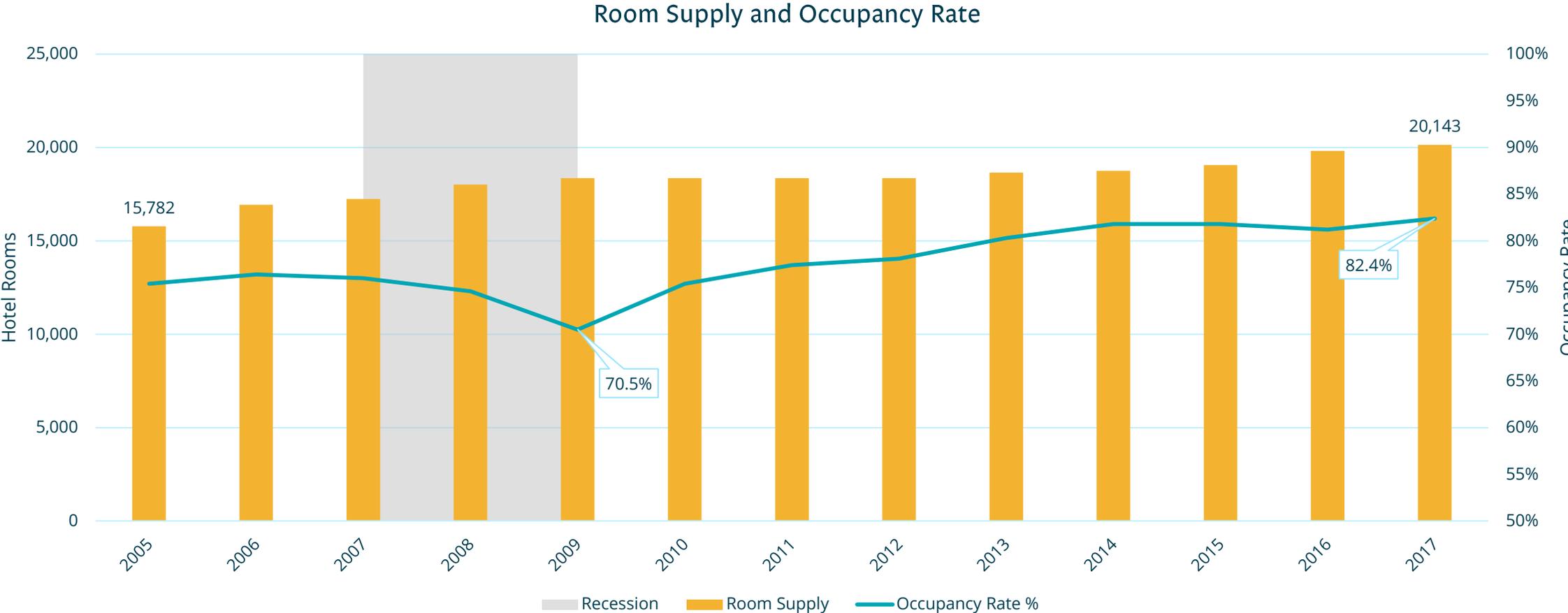
² Greater Boston Convention & Visitors Bureau, Statistics & Reports, <https://www.bostonusa.com/media/statistics-reports/>

³ Boston Source: Boston Licensing Board and STR Inc, BPDA Research Analysis.

Hotel room supply and occupancy rates are rising

The hotel occupancy rate has risen to 83% since a low of 71% in 2009.

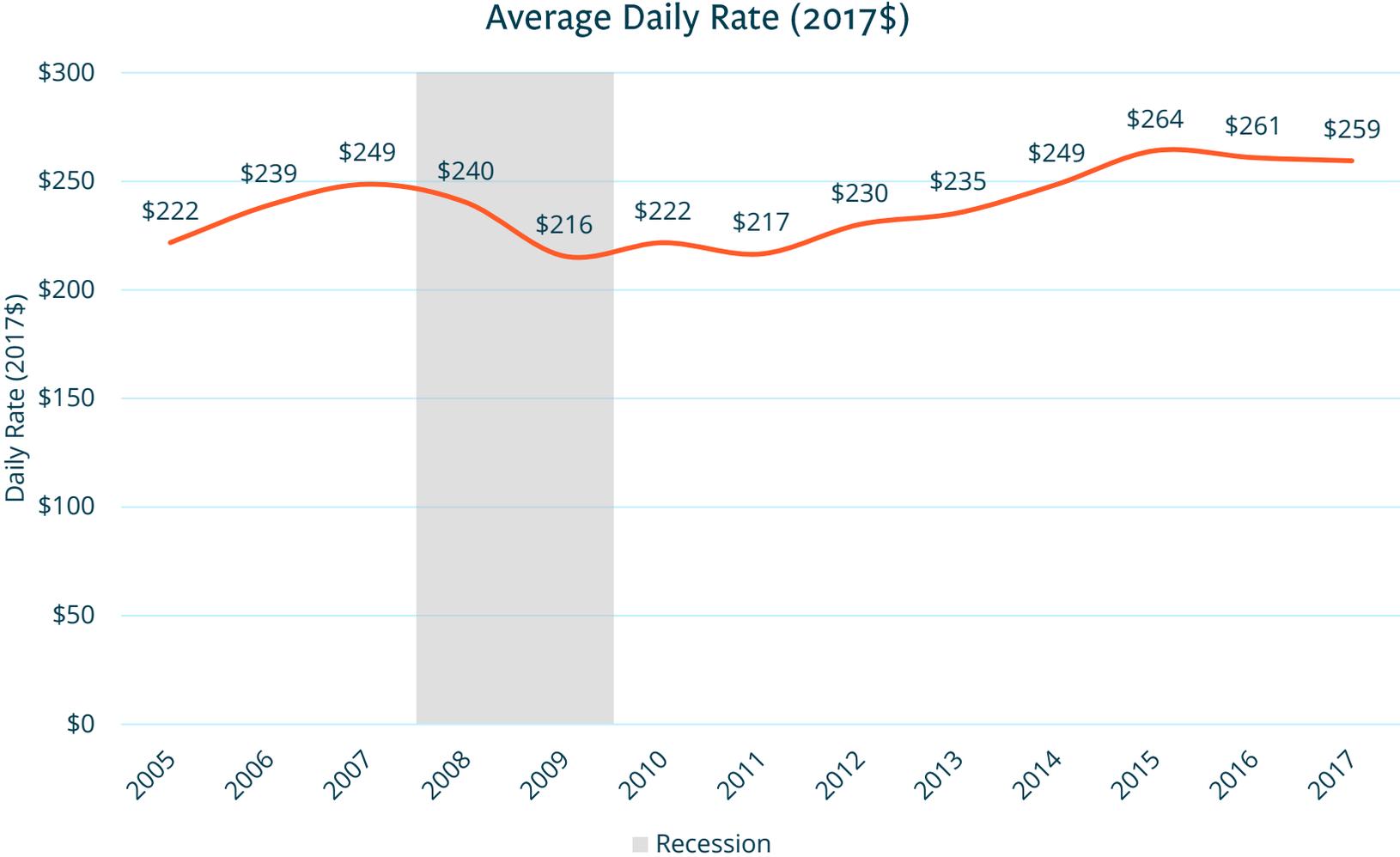
Optimal occupancy rates range from 75% to 85% for full-service hotels, according to STR.¹



¹ Optimal occupancy is the level where hotels hit peak gross operating profit, after which operational costs lead to diminishing returns
<http://www.hotelnewsnow.com/Articles/88561/Peak-profitability-Finding-balance-of-occupancy-rate>
 Source: ADR and Occupancy reported by Pinnacle Advisory Group. BPDA Research Division count of room supply at the end of each calendar year.
 Room Supply counts only rooms in hotels of 50 or more rooms.

Hotel rates have also been growing

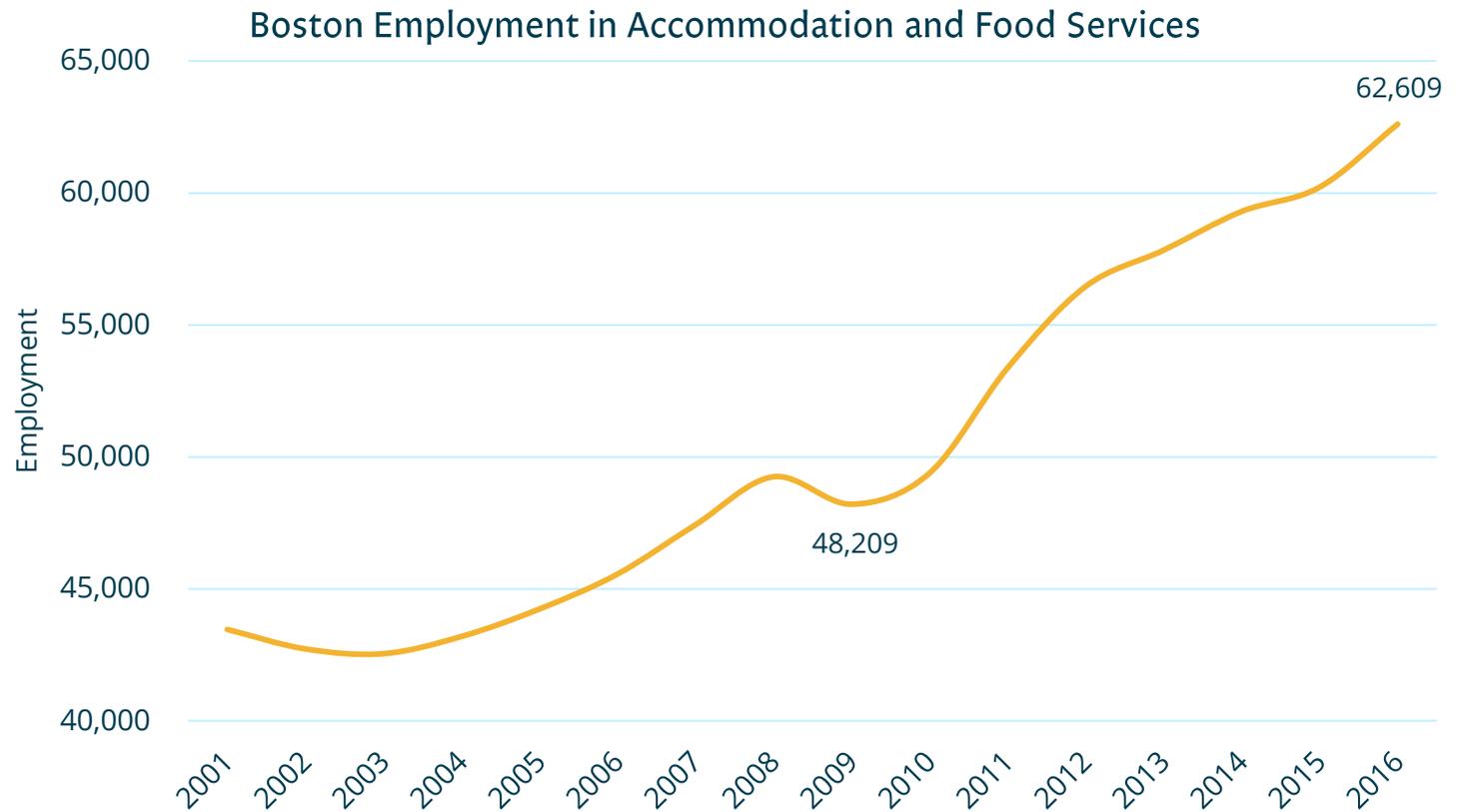
Average daily rate (a measure of average rental income per paid occupied room in a given year) has grown 20% since 2005.



Employment in accommodation and food services has grown

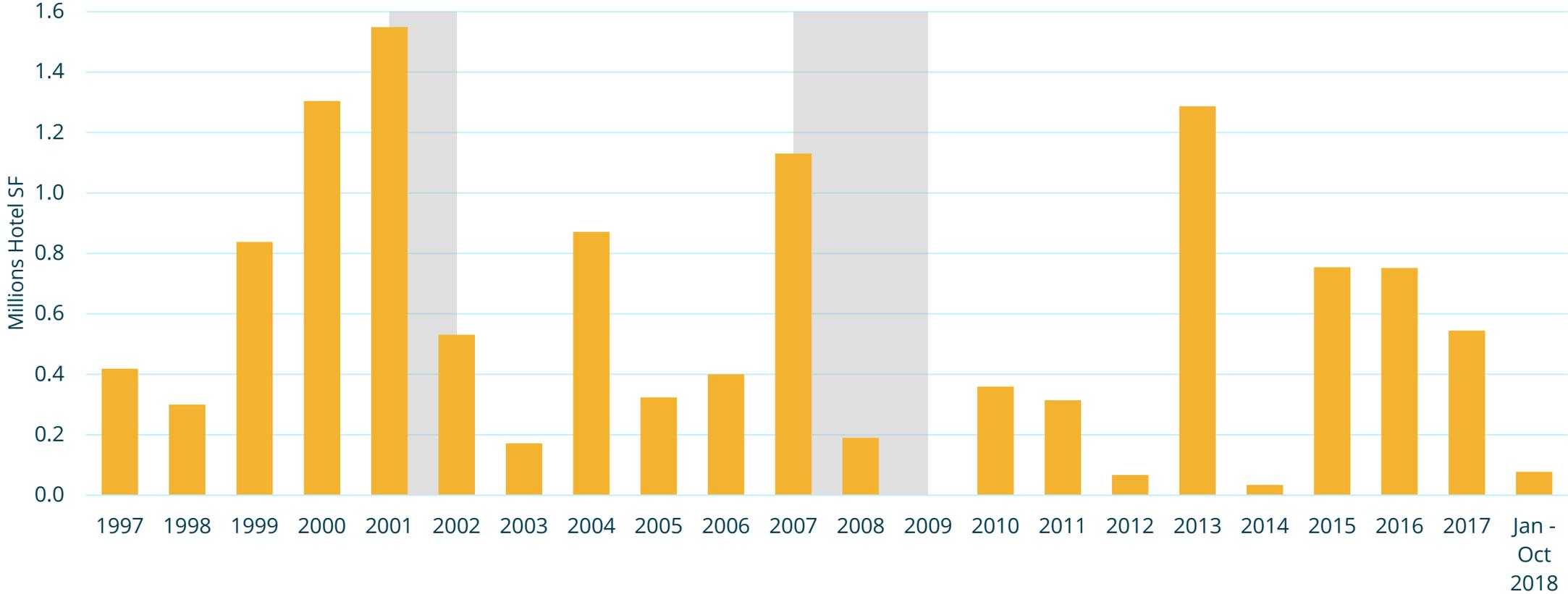
Accommodation and food services added 19,000 jobs in Boston since 2001 (3rd most among industries).

It was the 5th largest employment category in 2016, making up 8% of jobs.



Hotel approvals peaked in 2001

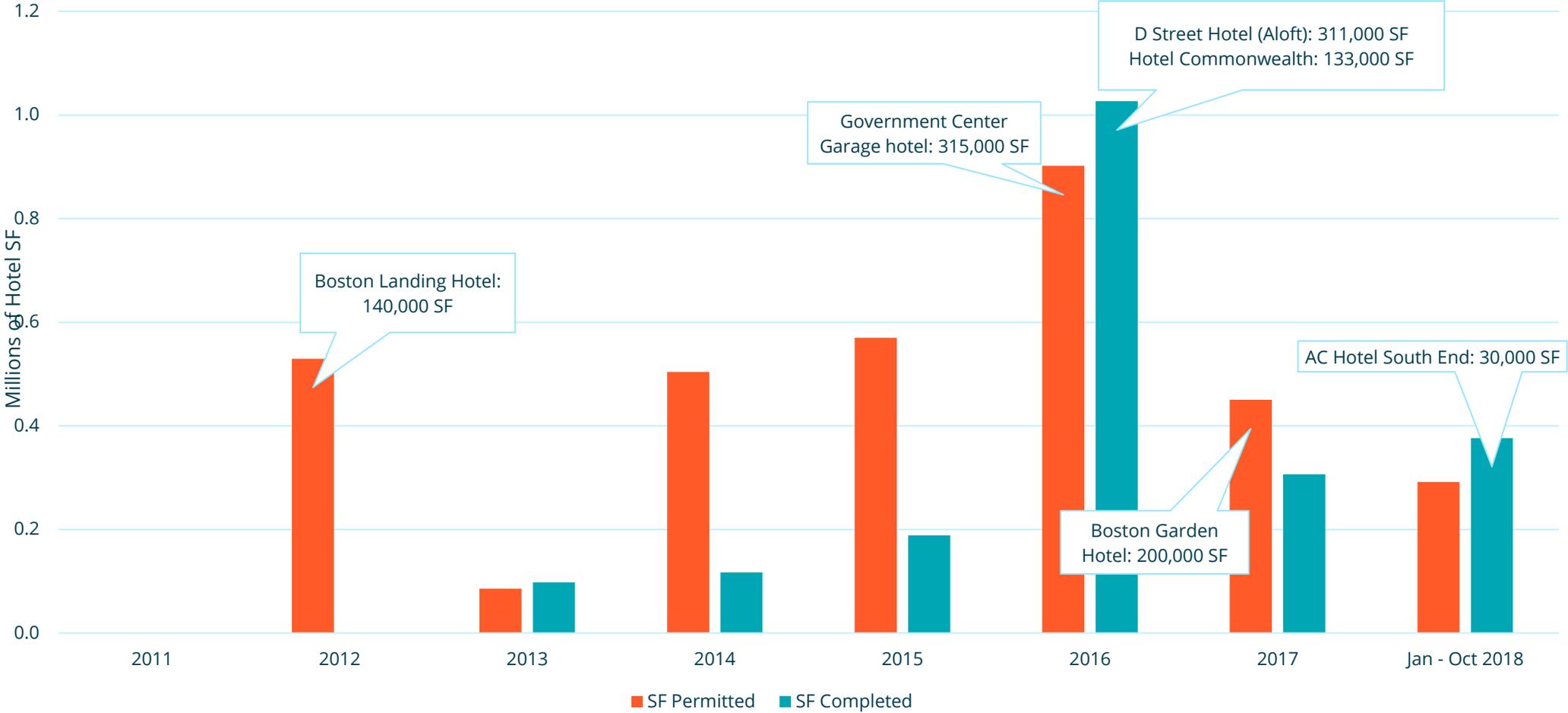
Hotel Square Footage Approved by Year



Source: BPDA Pipeline Database, current as of October 1st, 2018, BPDA Research Division Analysis. Square footage associated with NPCs counted as net change except for projects that were approved more than three years prior, for which total square footage was counted (3-year rule).

Major hotel projects underway and completed

Hotel Square Footage Permitted and Completed by Year



3d.

Markets: Industrial



**boston planning &
development agency**

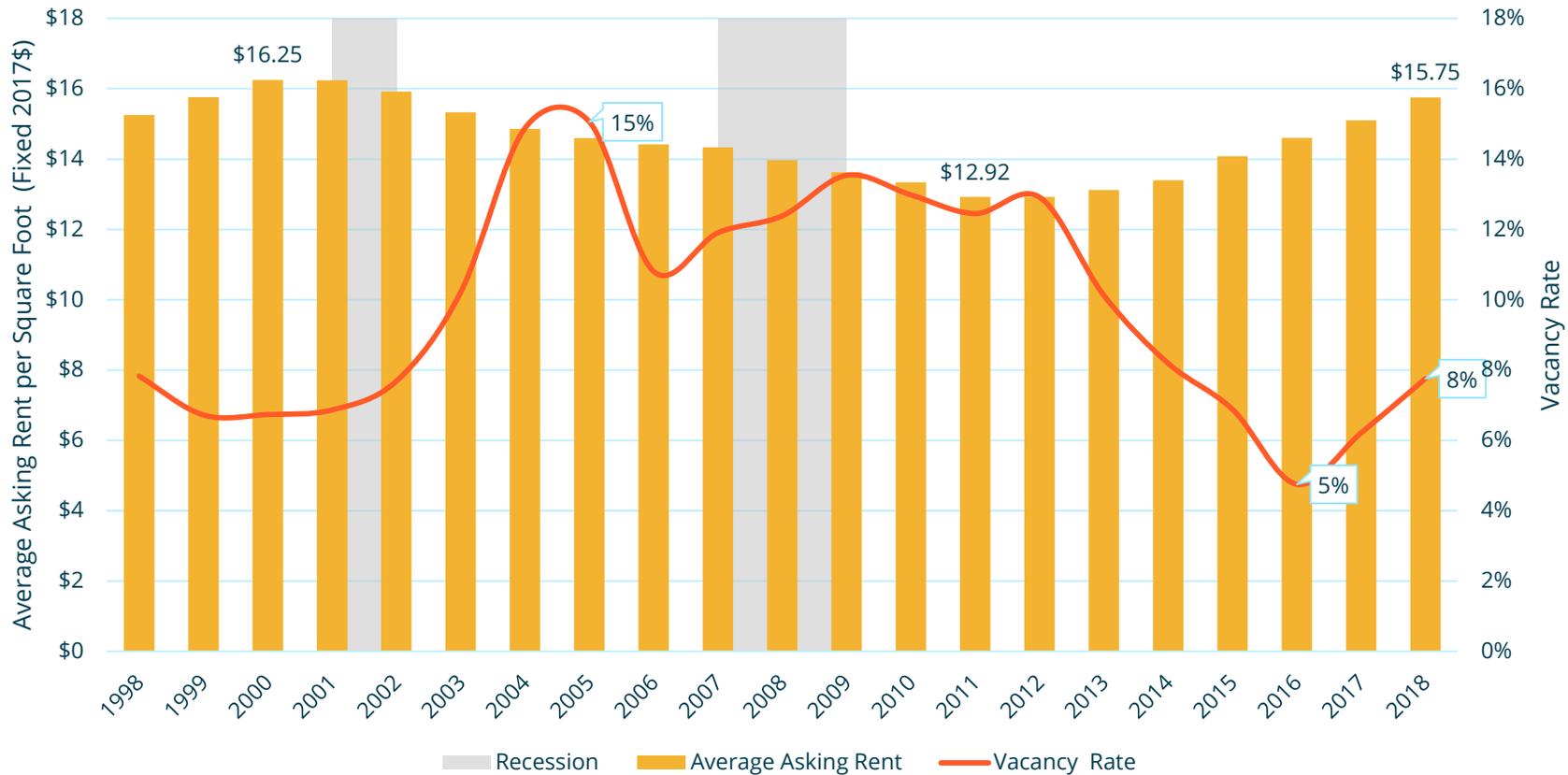
Industrial space in Boston has declined 18% since 1998

- Industrial space in 1998 totaled 30.3 million square feet; inventory in 2018 totaled 24.8 million square feet
- The Roxbury/Dorchester submarket has the largest inventory in Boston at 9.1 million SF

Total Industrial Square Footage by Submarket, 2018	
<i>Submarket</i>	<i>Industrial Inventory</i>
Roxbury / Dorchester	9,122,887
Fort Point Channel / South Boston	4,720,548
Downtown Boston	4,396,189
South Suffolk County (W Roxbury, Mattapan, Hyde Park)	4,167,789
Brighton / Fenway	2,372,502
Total	24,779,915

Average industrial rent has increased 22% since 2011

Average Asking Rent (2017\$/SF) and Industrial Vacancy

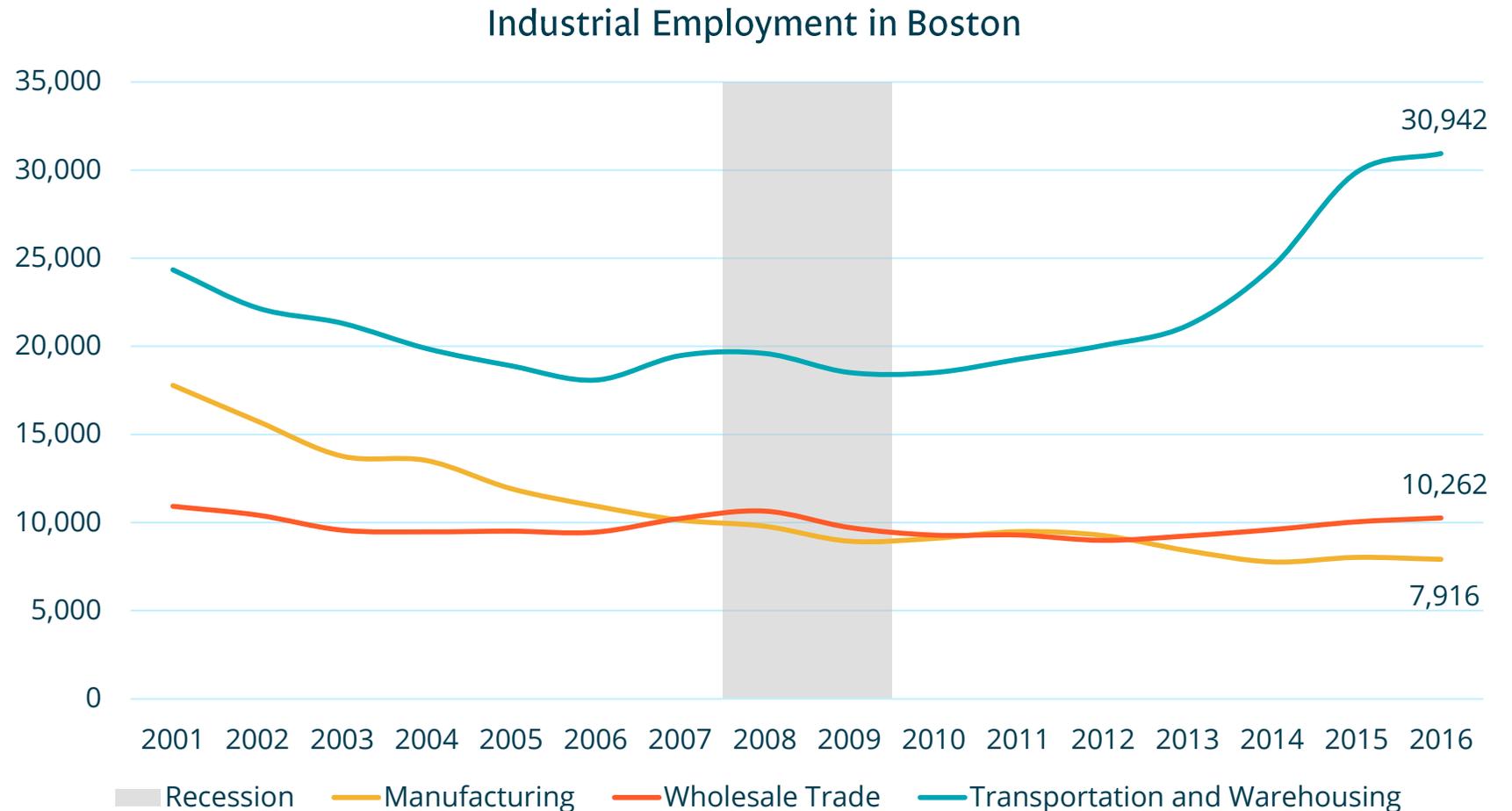


The Brighton/Fenway submarket has the highest industrial rents in Boston, at \$25 per square foot.

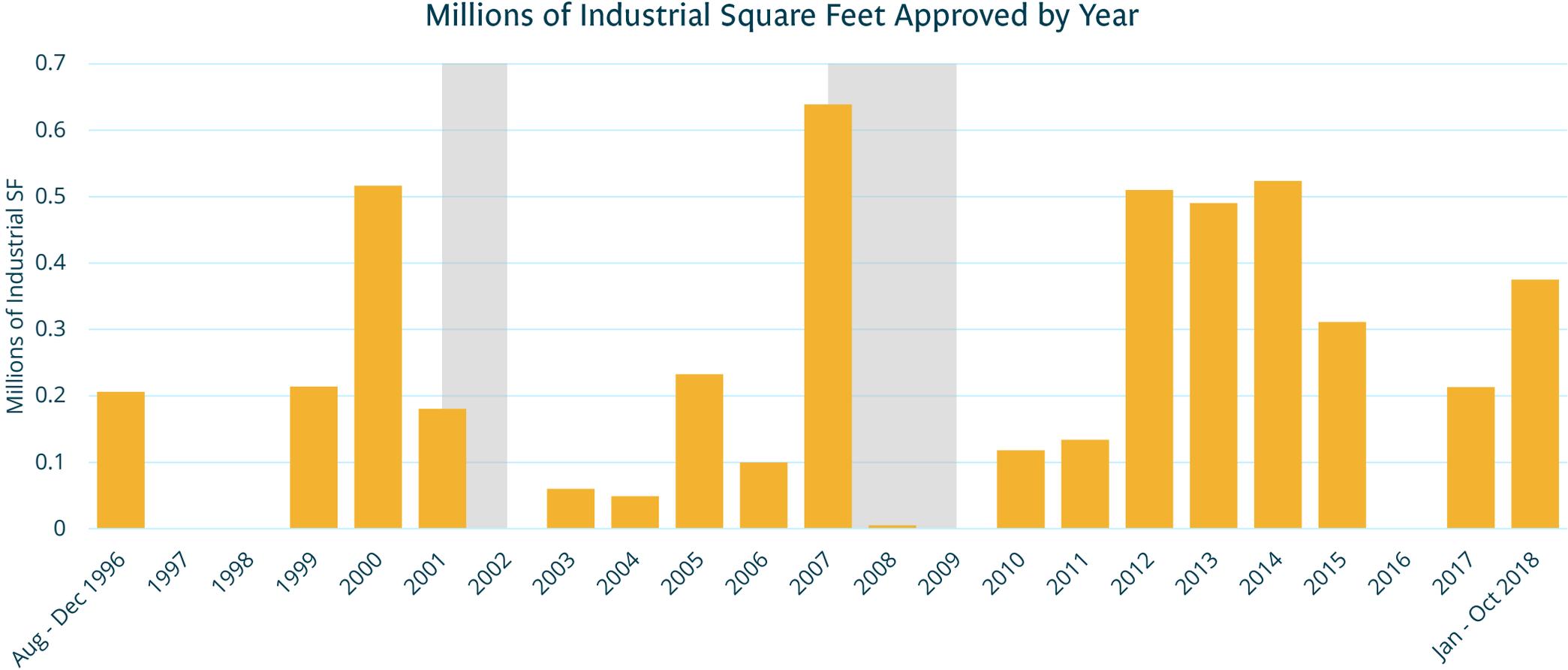
Citywide vacancy rates have increased slightly since 2016 but are almost half the rate in 2005

Since 2009, employment in transportation and warehousing have been on the rise

Transportation and warehousing has grown at a compound annual rate of 5.3% since 2001, the highest of any industry in Boston.

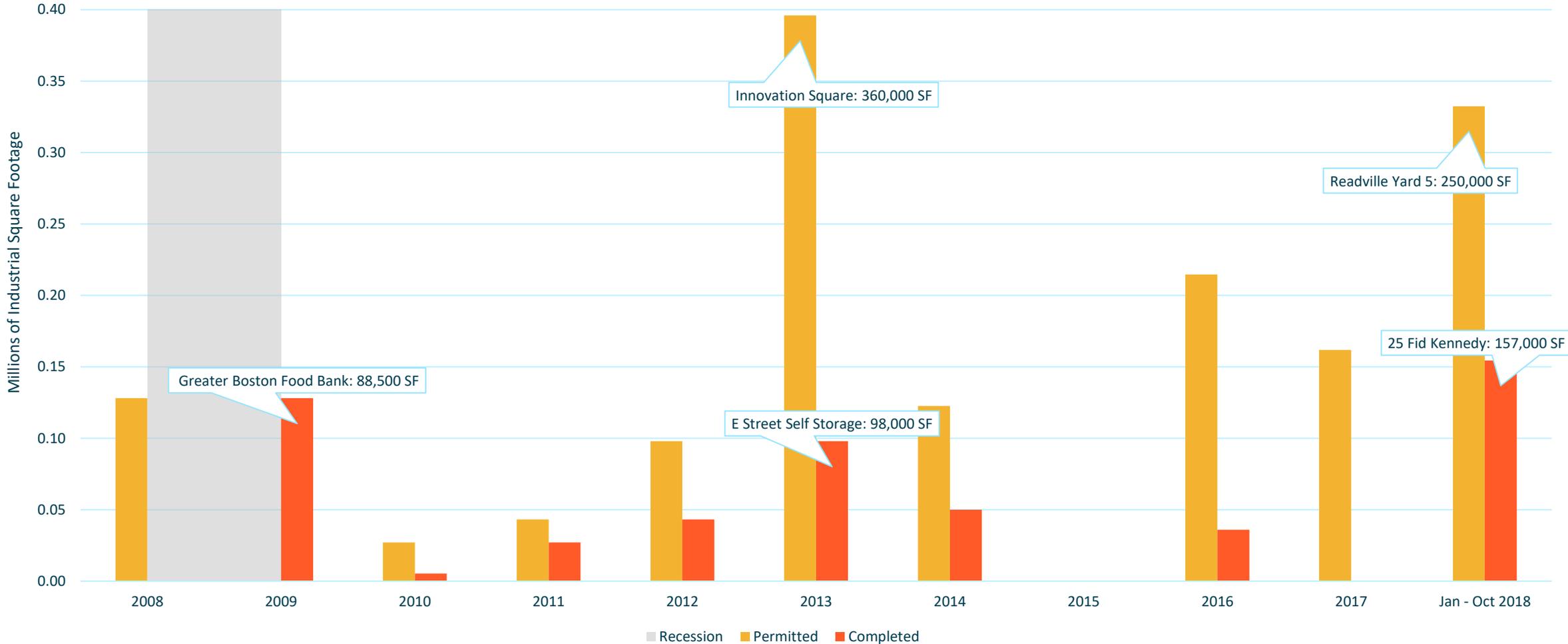


Since the recession, 2.7 million industrial square feet have been approved



Source: BPDA Pipeline Database, current as of October 1st, 2018, BPDA Research Division Analysis. Number of projects refers to total board actions, counting original approvals and NPCs once each. Square foot totals take the net square footage except for projects outside of the 3-Year rule, where the square footage is counted twice.

Millions of Industrial Square Feet Permitted and Completed per Year



3e.

Markets: Institutional



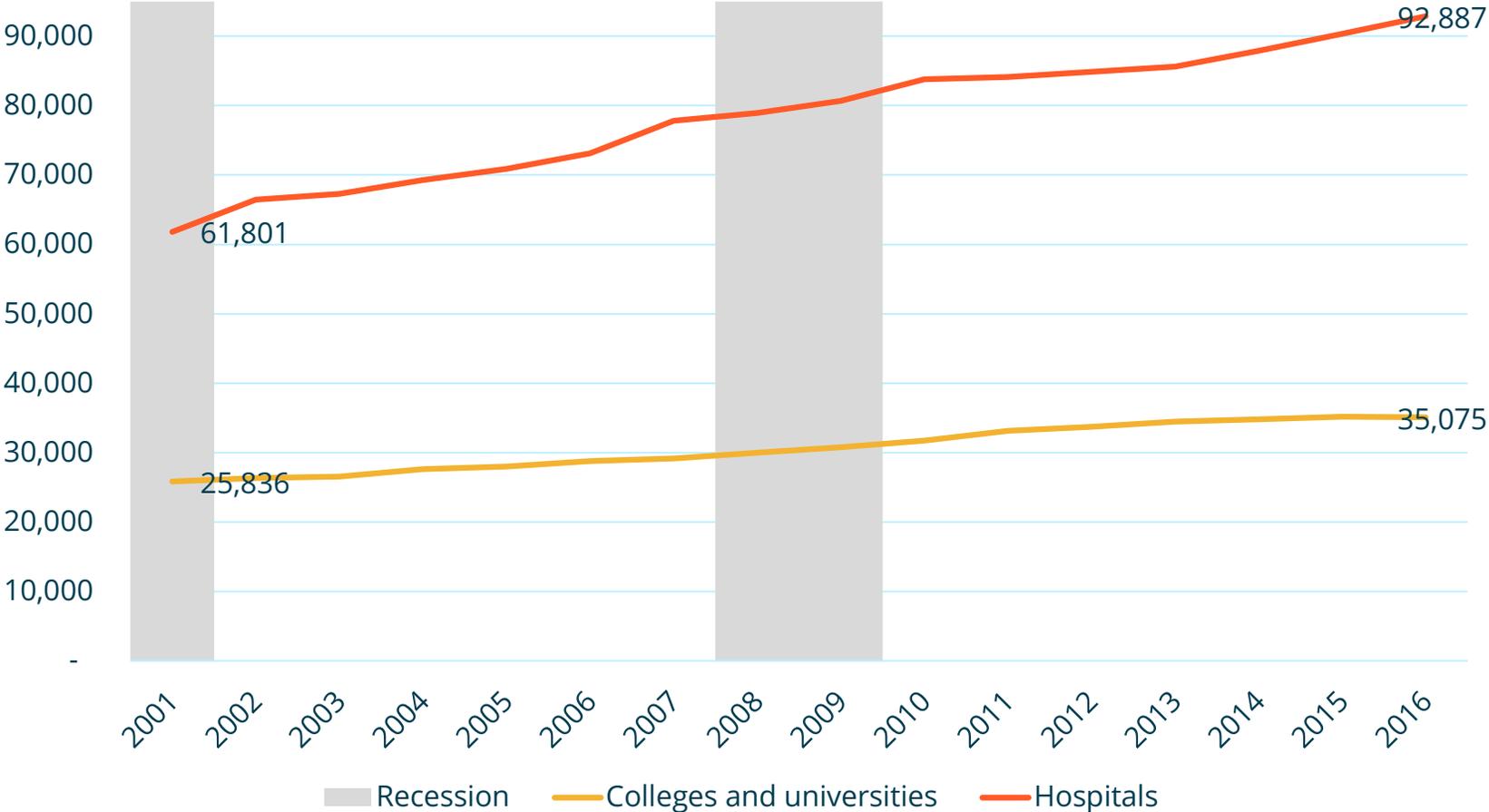
**boston planning &
development agency**

Universities and hospitals bring in billions of research dollars to the city's economy

- 21 in-patient hospitals with 6,021 beds as of 2017
- 25 neighborhood health clinics
- Most NIH funding of any U.S. city for 23 consecutive years, totaling \$1.97 billion in 2017

Universities and hospitals are creating jobs

Payroll Employment in Universities and Hospitals



Employment in Boston hospitals has increased by 50% since 2001.

College and university employment has increased by 36% over the same time period.

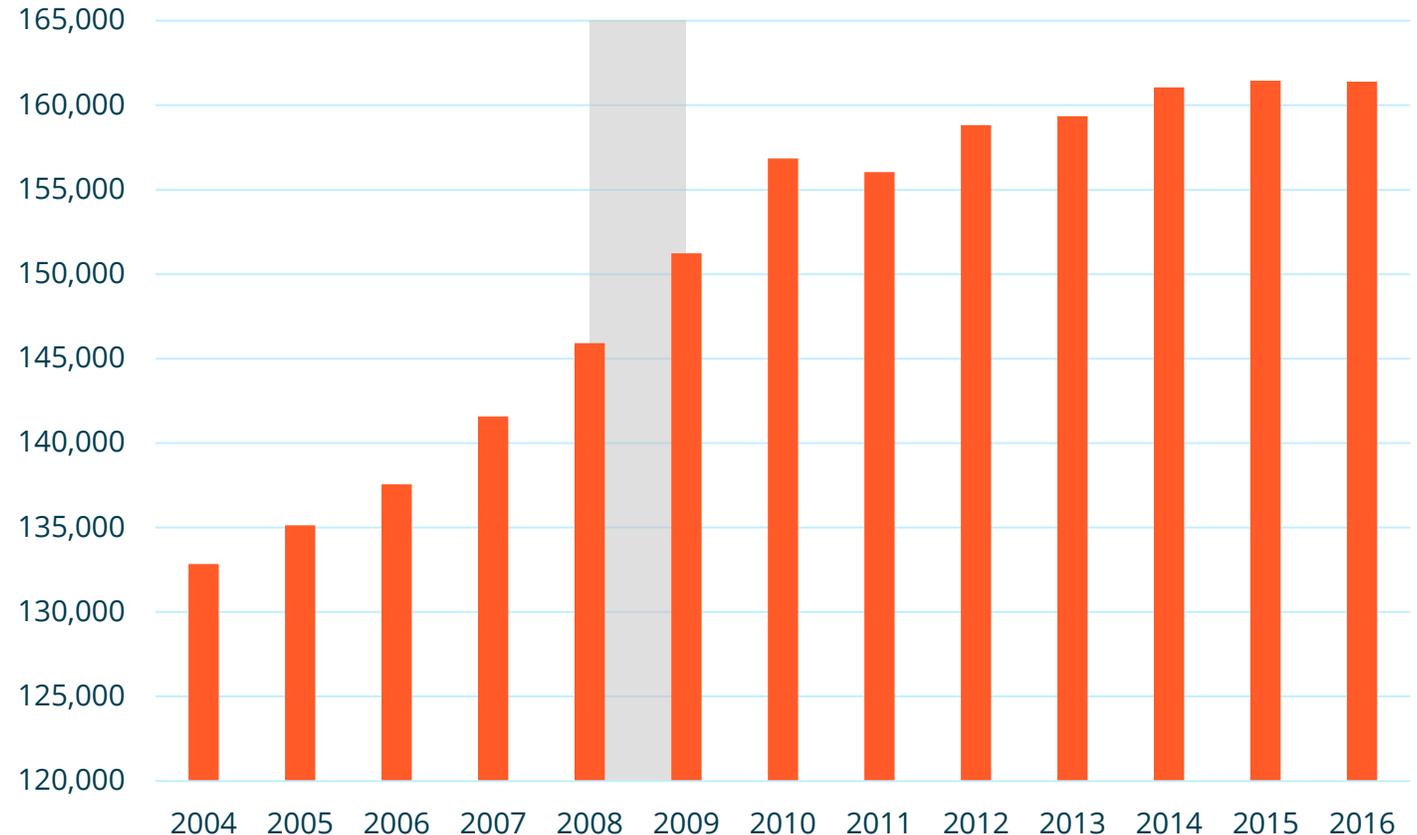
Student enrollment has grown 21% since 2004

161,399 full and part time students enrolled in the city's universities and colleges in 2016.

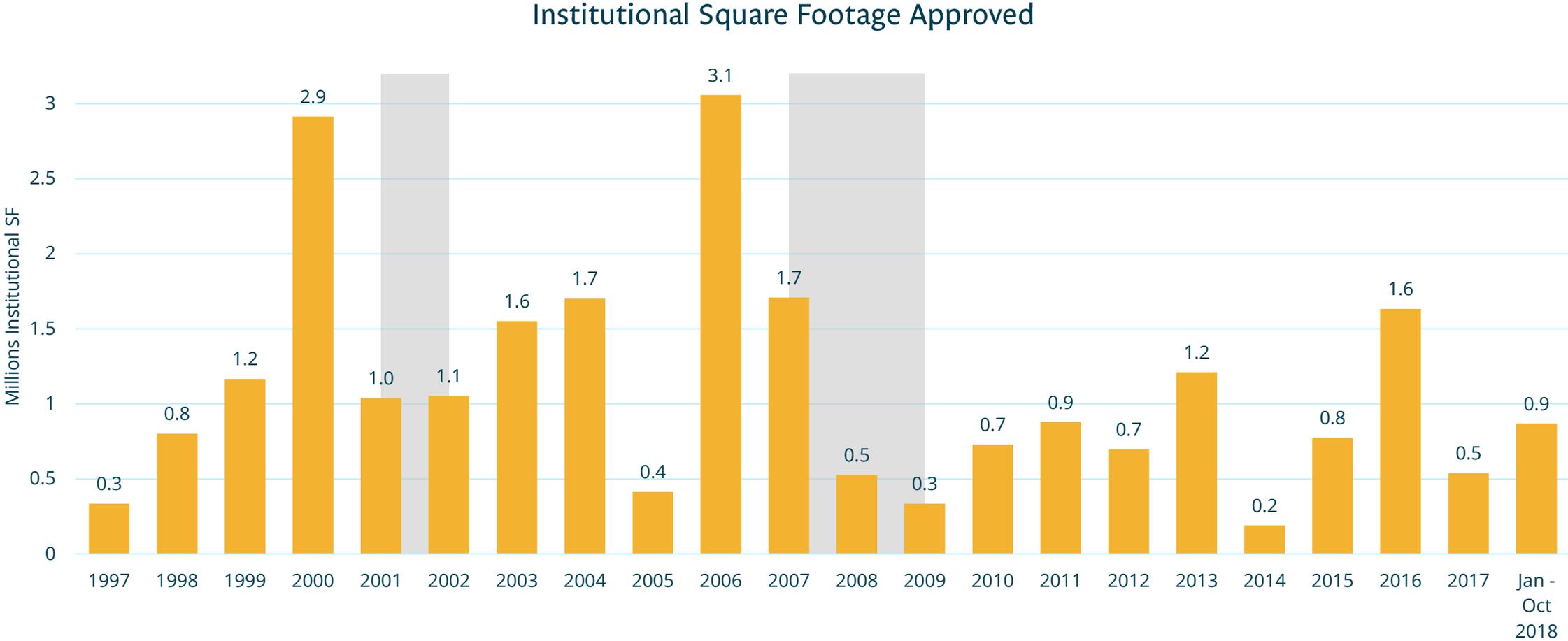
In 2016:

- 1,106 dorm beds permitted
- 624 beds added to existing stock
- 2,536 beds under construction or soon to be constructed

Student Enrollment (Undergraduate and Graduate)



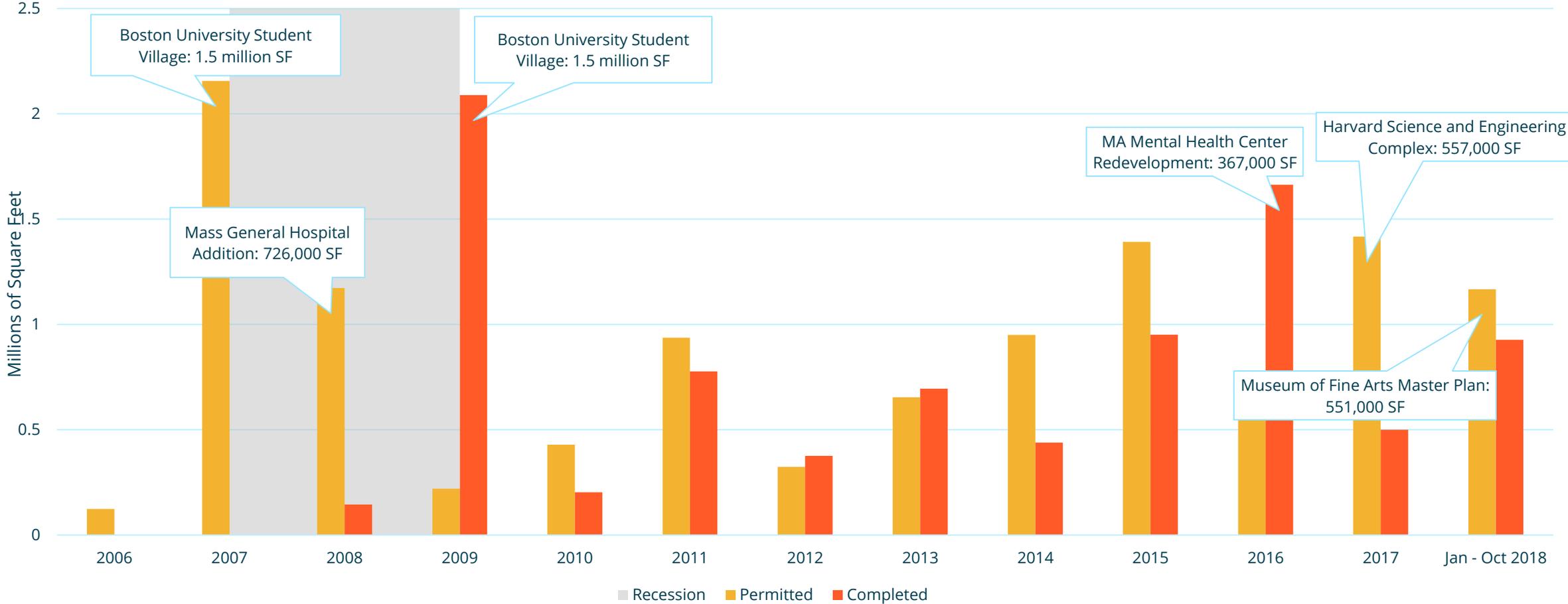
Institutional approvals peaked before the recession



Source: BPDA Pipeline Database, current as of October 1st, 2018, BPDA Research Division Analysis. Square footage associated with NPCs counted as net change except for projects that were approved more than three years prior, for which total square footage was counted (3-year rule)

Major Institutional Projects

Institutional Square Footage Approved, Permitted, and Completed

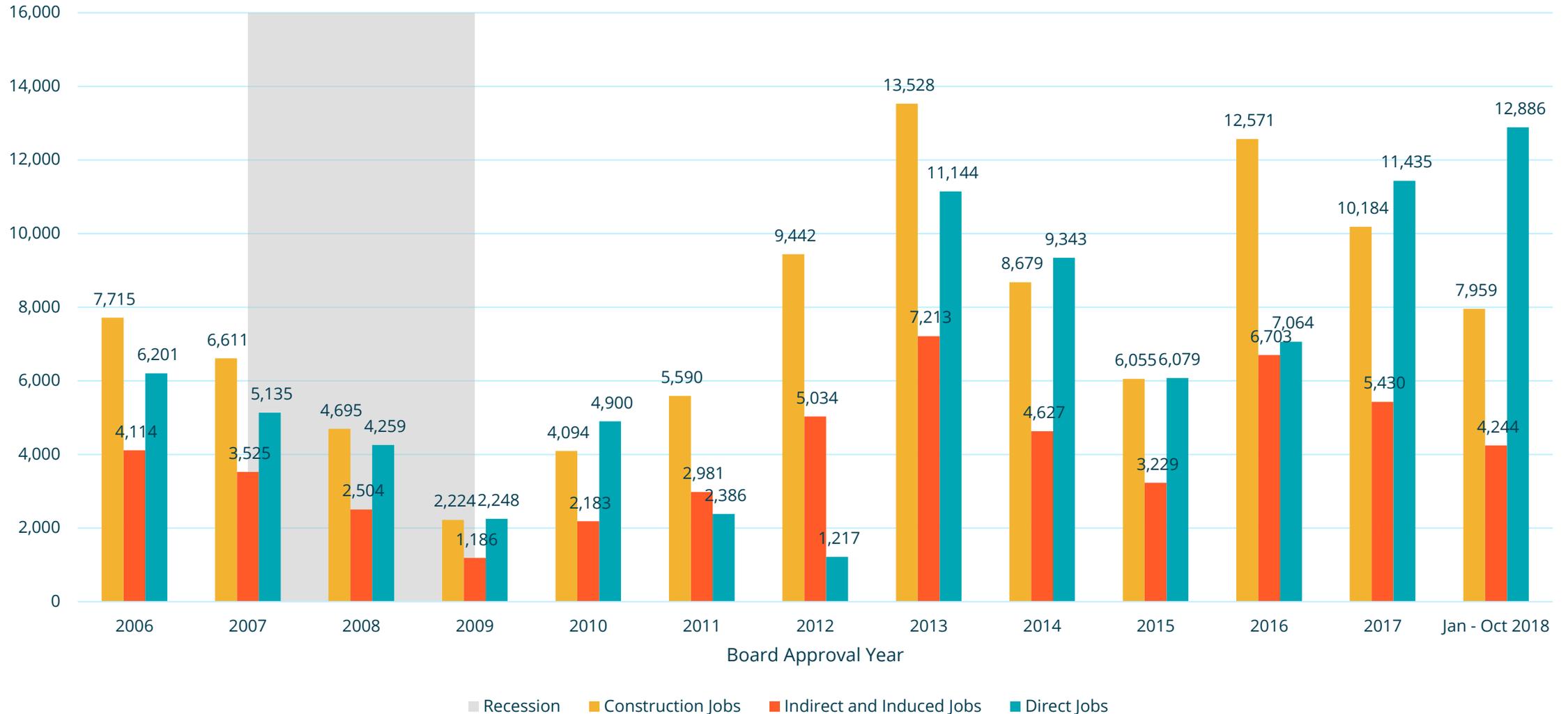


4.

Impacts of Development

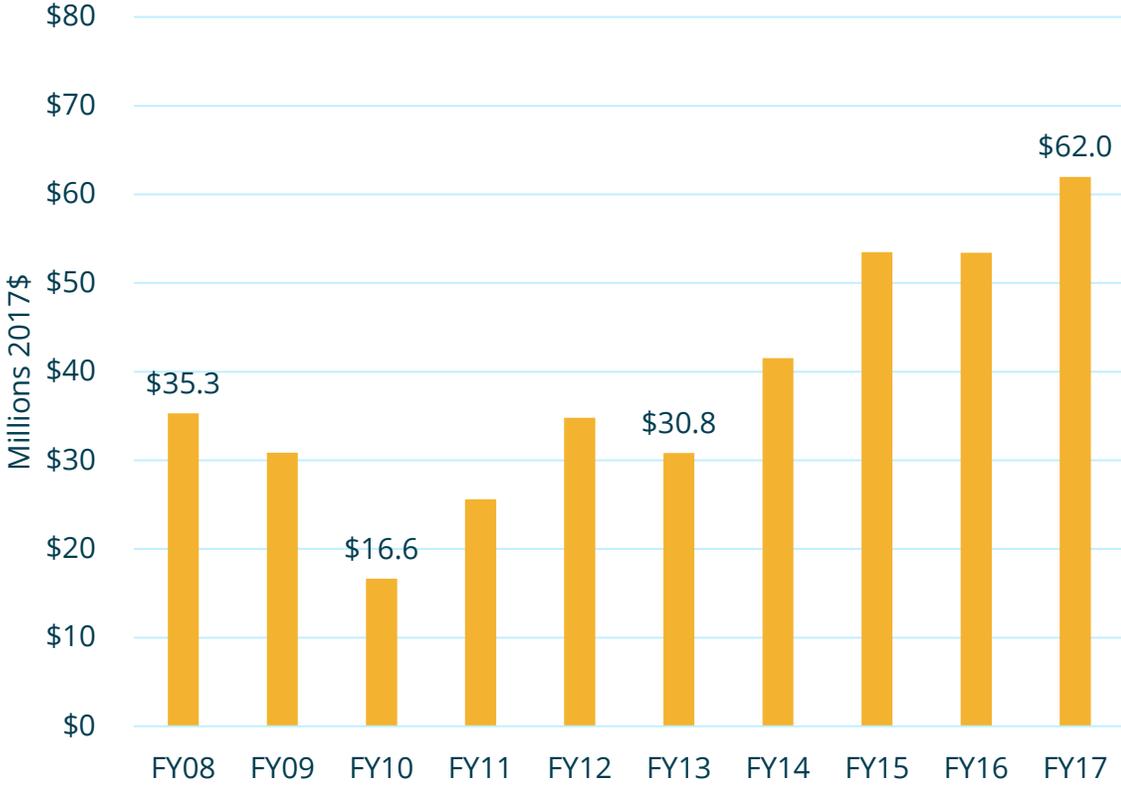


Job Estimates of Article 80 Development

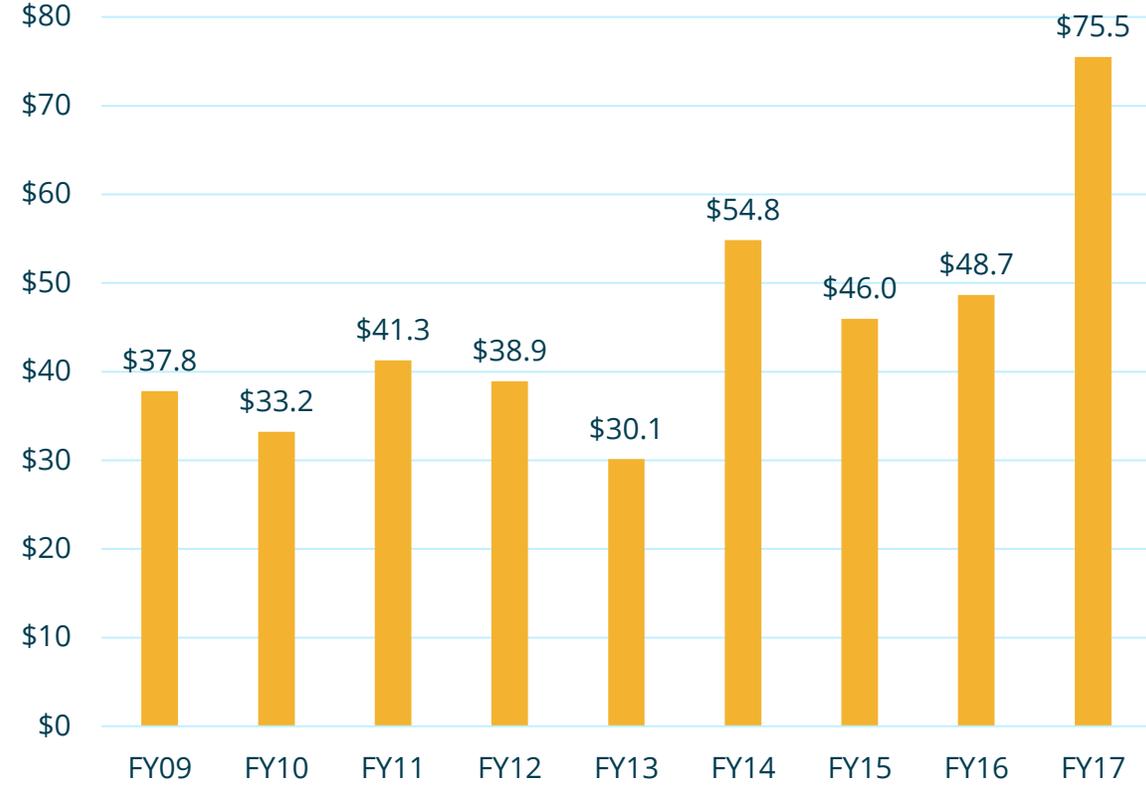


New construction has contributed new revenue sources

Building Permit Revenues (Millions 2017 \$)

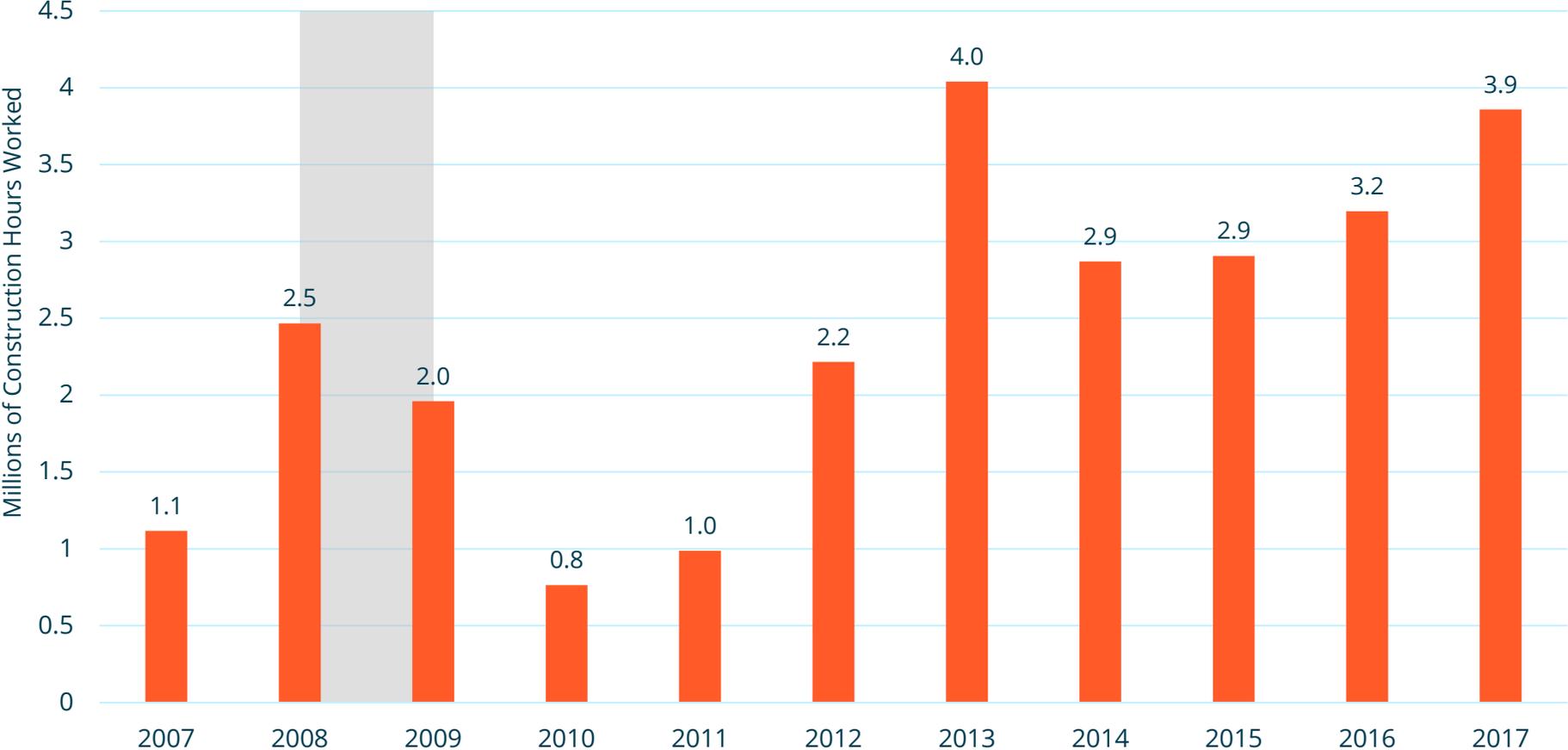


Tax Levy from New Development (Millions 2017\$)



Article 80 Projects have produced construction jobs

Boston Resident Job Policy Reported Hours (Millions)



Article 80 Projects created a total of 3.9 million construction job-hours in 2017

The Boston Residents Job Policy (BRJP) mandates that projects over 50,000 square feet and any public development project must comply with the following hiring practices: 1) at least 51% of total work hours of journey people and apprentices must go to Boston residents 2) at least 40% of works hours must go to people of color and 3) at least 12% of work hours must go to women. The data in the chart represent the total number of work hours occurring on projects to which the BJR applies.

Source: Boston Residents Jobs Policy Compliance Reports, BPDA Research Division Analysis.

Linkage / IDP Revenue has contributed to housing and job training

- Since the inception of the linkage program in 1983 through December 2017, the Neighborhood Housing Trust (NHT) has awarded approximately \$176.7 million in grant funds, representing 5% of the combined development cost of all assisted projects
- NHT funding contributed to the construction, pending construction, or renovation of 14,467 housing units, of which 12,329 were income restricted
- The Neighborhood Jobs Trust disbursed \$2.2 million to job training and education programs in FY2017, helping to equip more than 2,300 low- and moderate- income Boston residents with essential job skills

5.

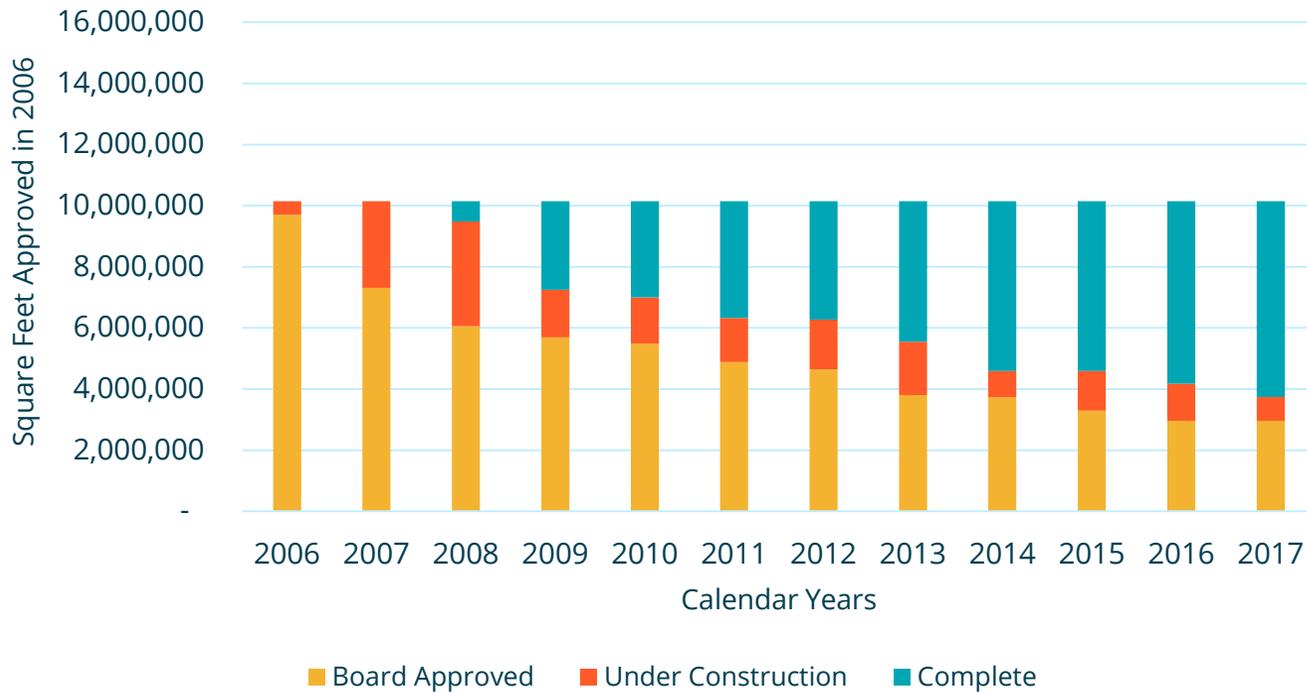
Appendix



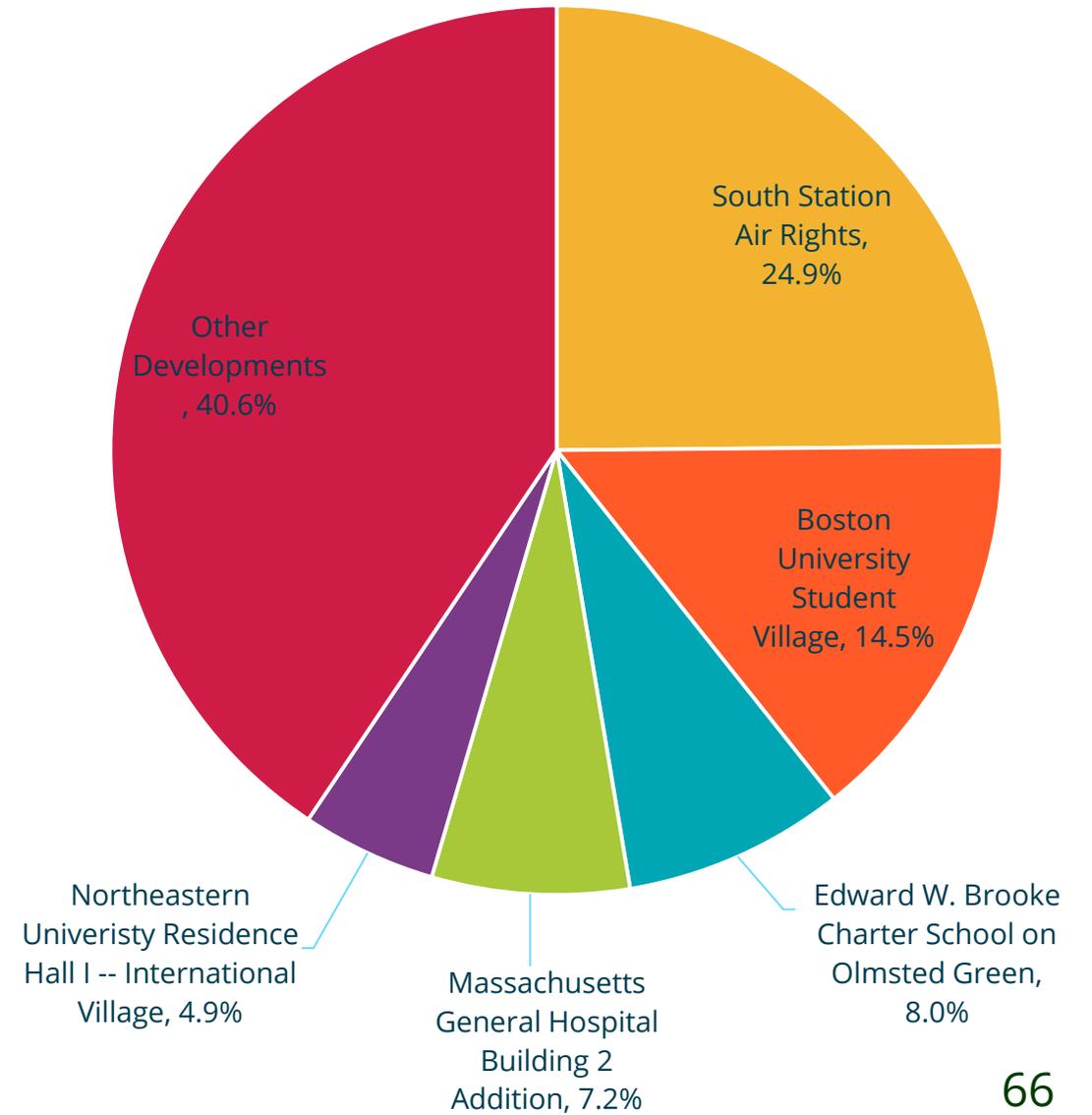
**boston planning &
development agency**

2006

All 2006 Board Approved Square Footage by Status
2006-2017

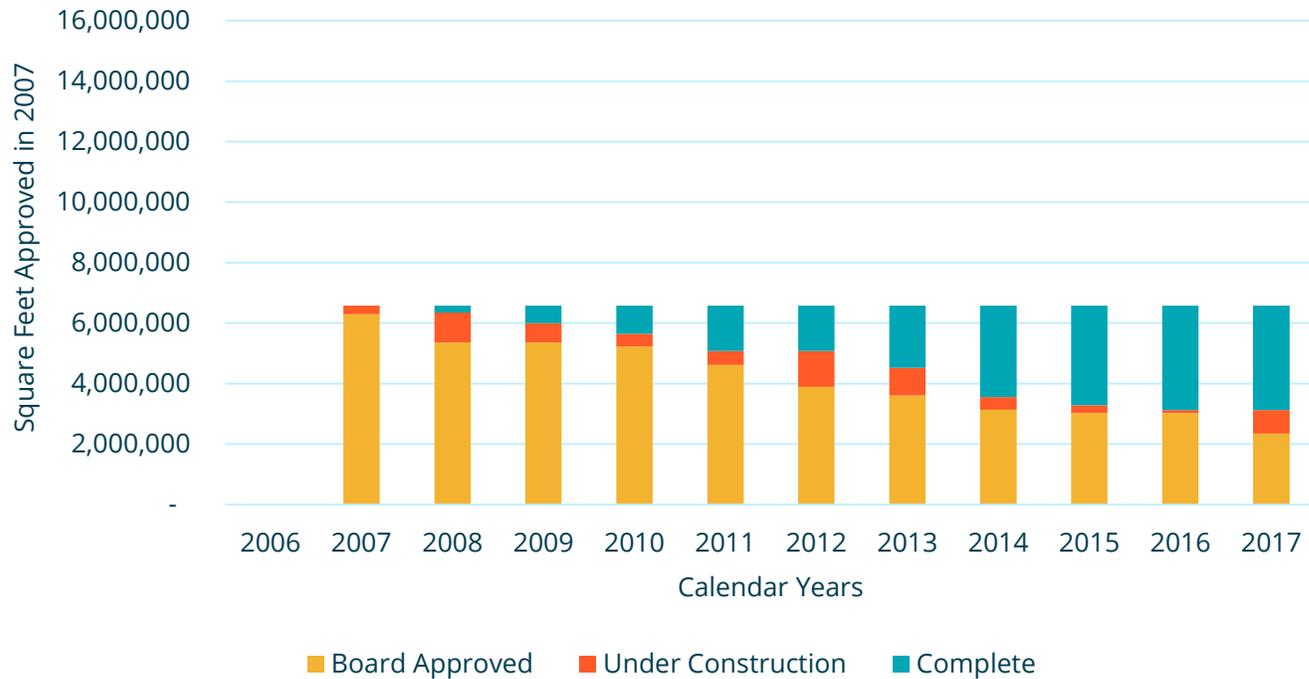


Board Approved SF in 2006:
10,144,671

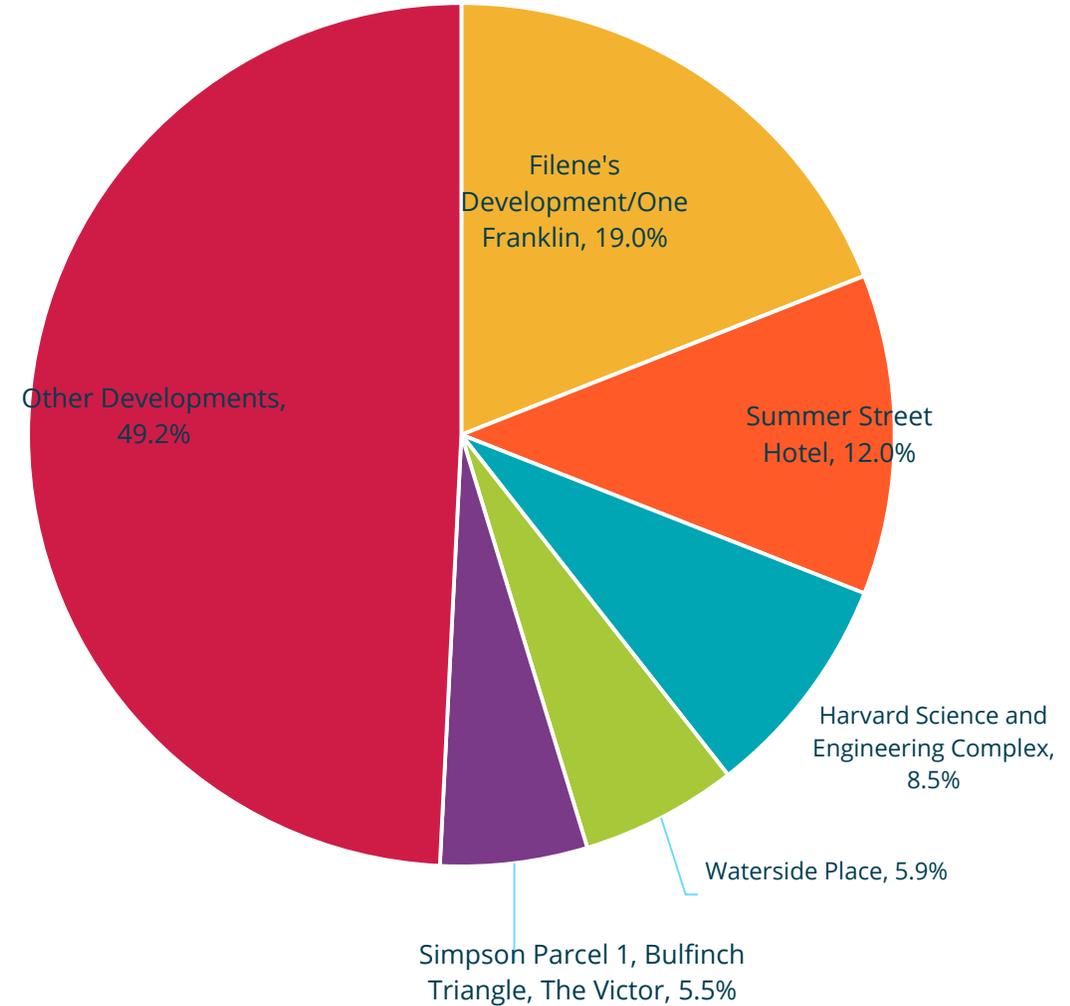


2007

All 2007 Board Approved Square Footage by Status
2006-2017

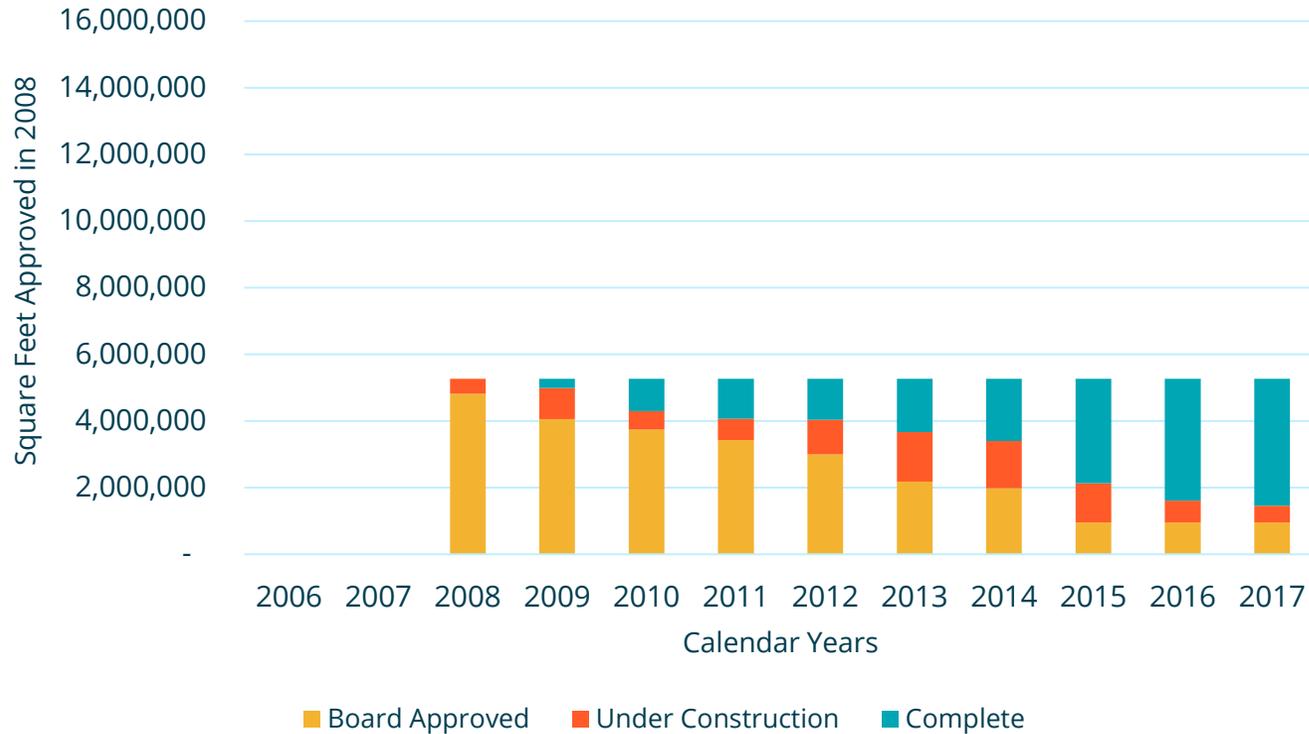


Board Approved SF in 2007:
6,579,307

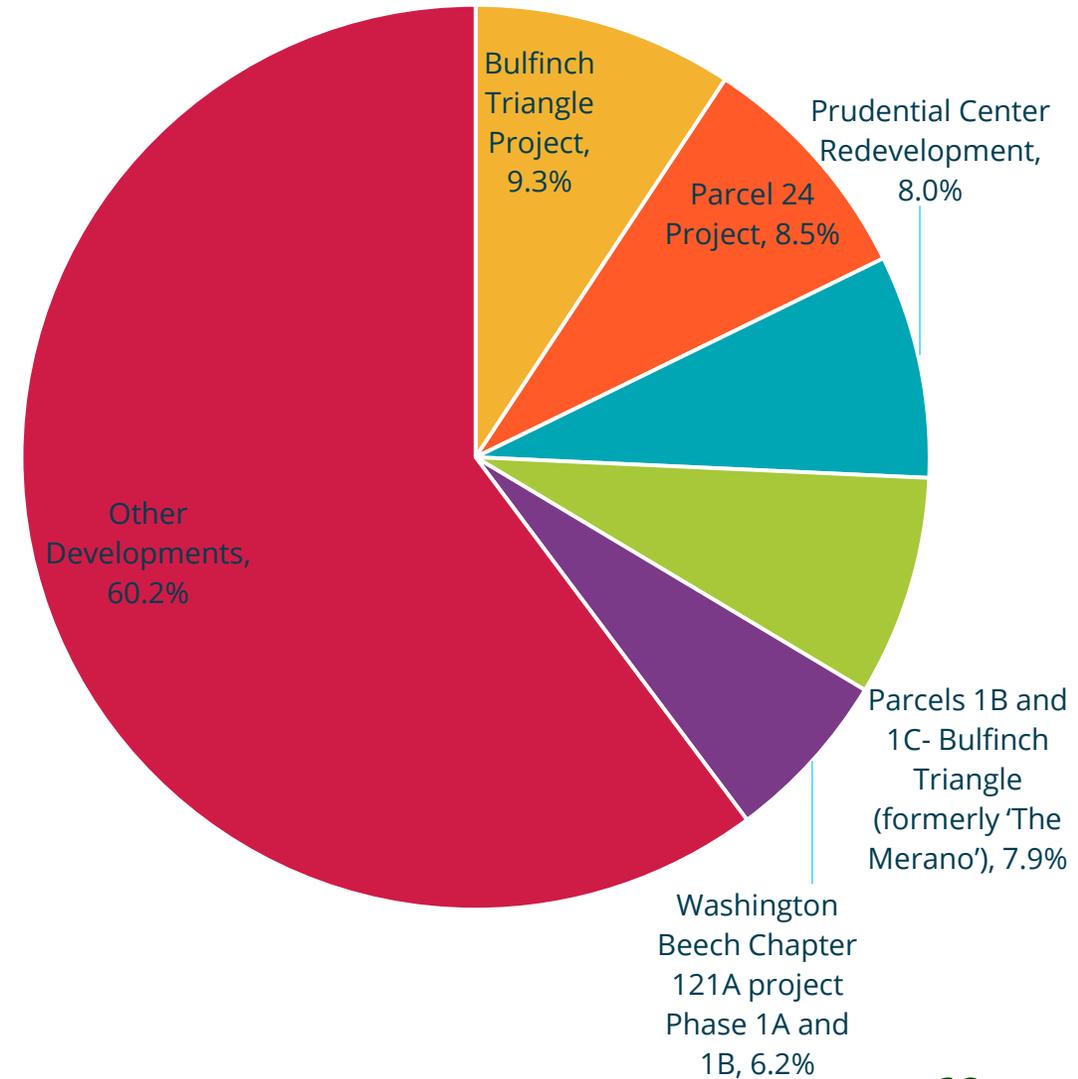


2008

All 2008 Board Approved Square Footage by Status, 2006-2017

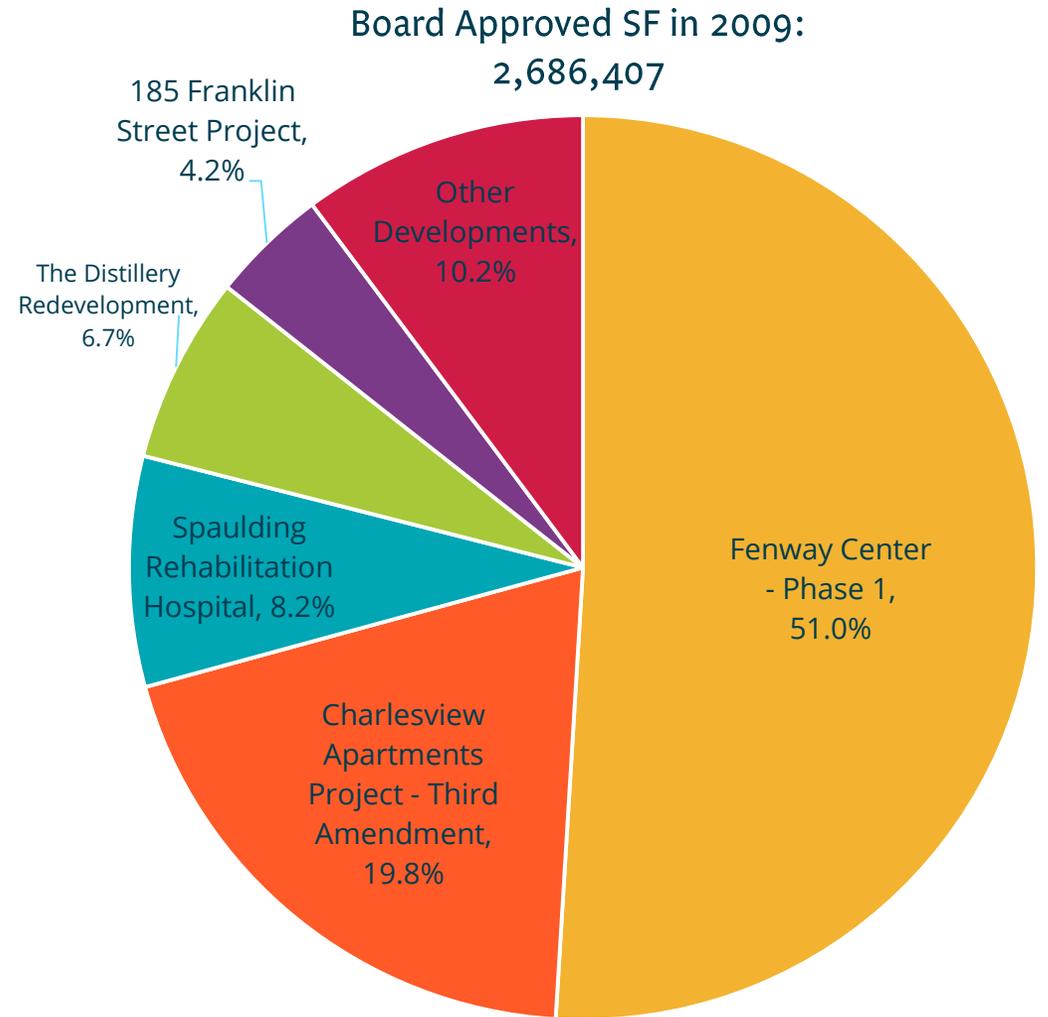


Board Approved SF in 2008:
5,266,302



2009

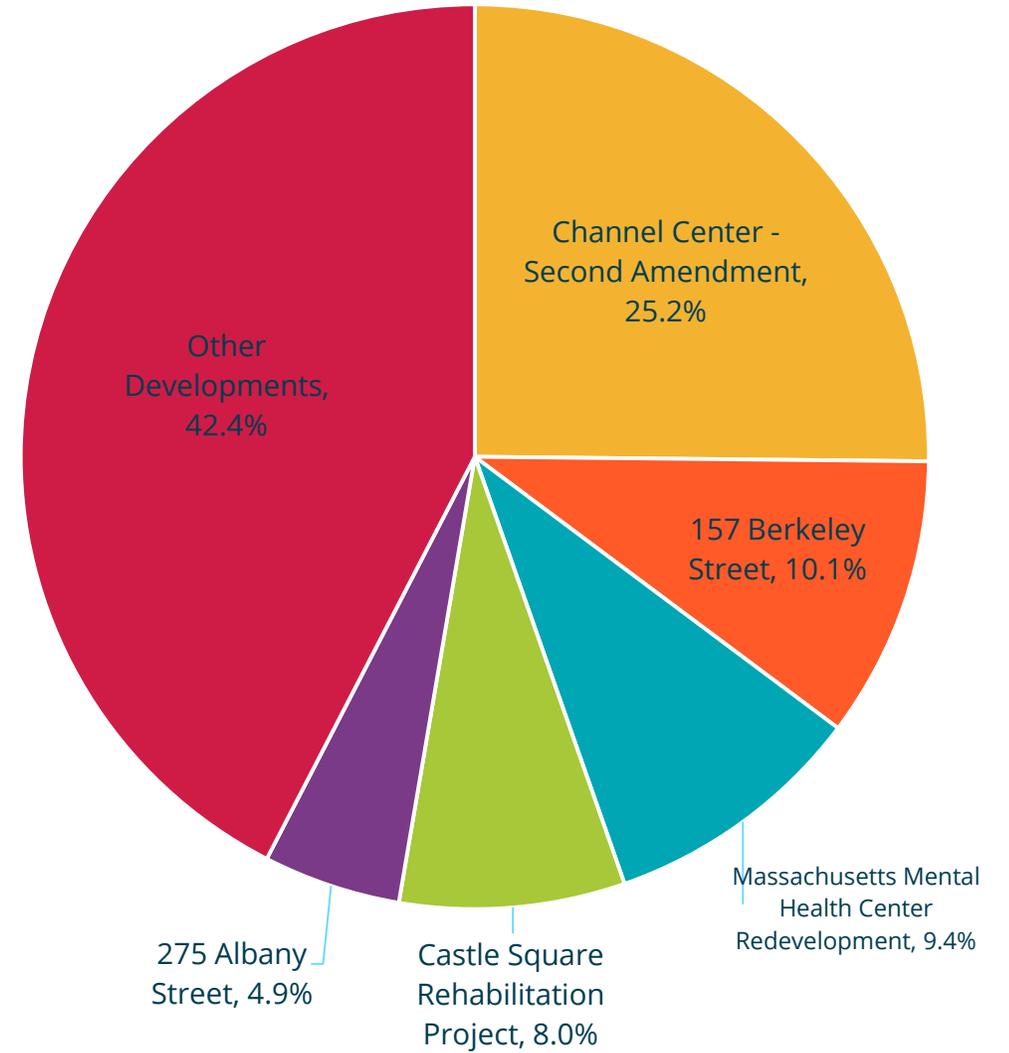
All 2009 Board Approved Square Footage by Status, 2006-2017



2010

Board Approved SF in 2010:
6,736,887

All 2010 Board Approved Square Footage by Status, 2006-2017

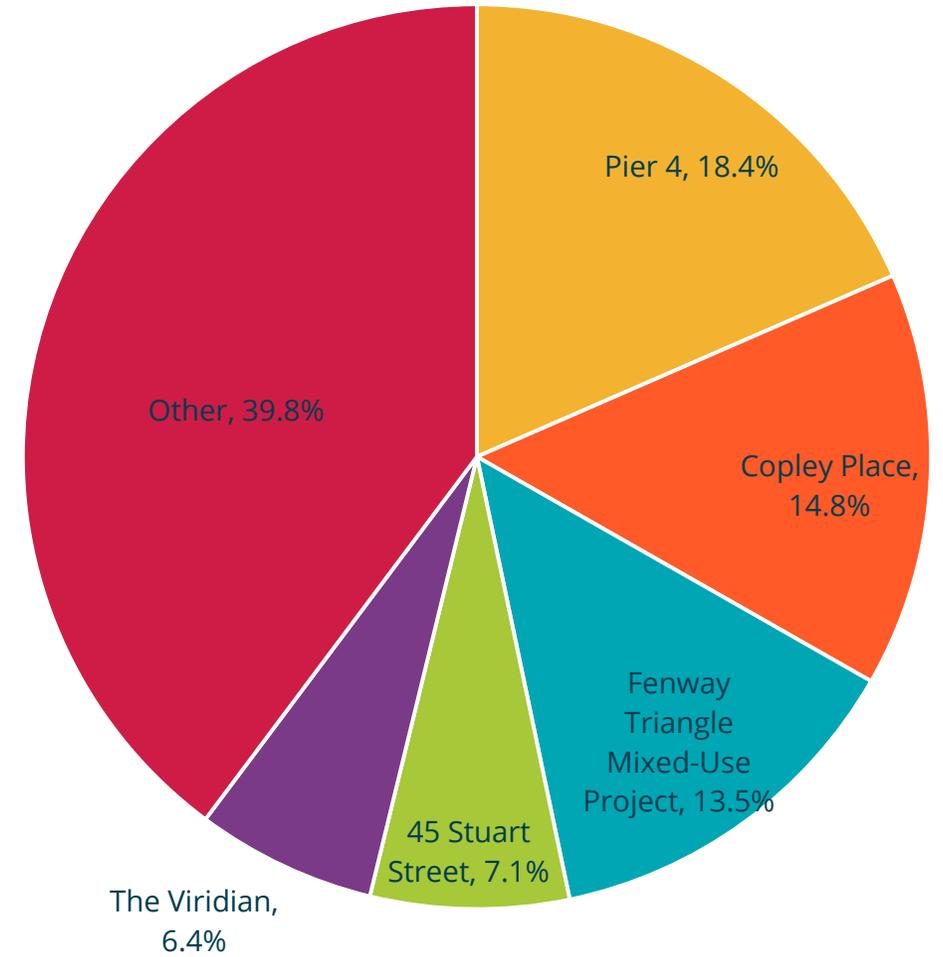


2011

All 2011 Board Approved Square Footage by Status, 2006-2017



Board Approved SF in 2011:
5,431,564

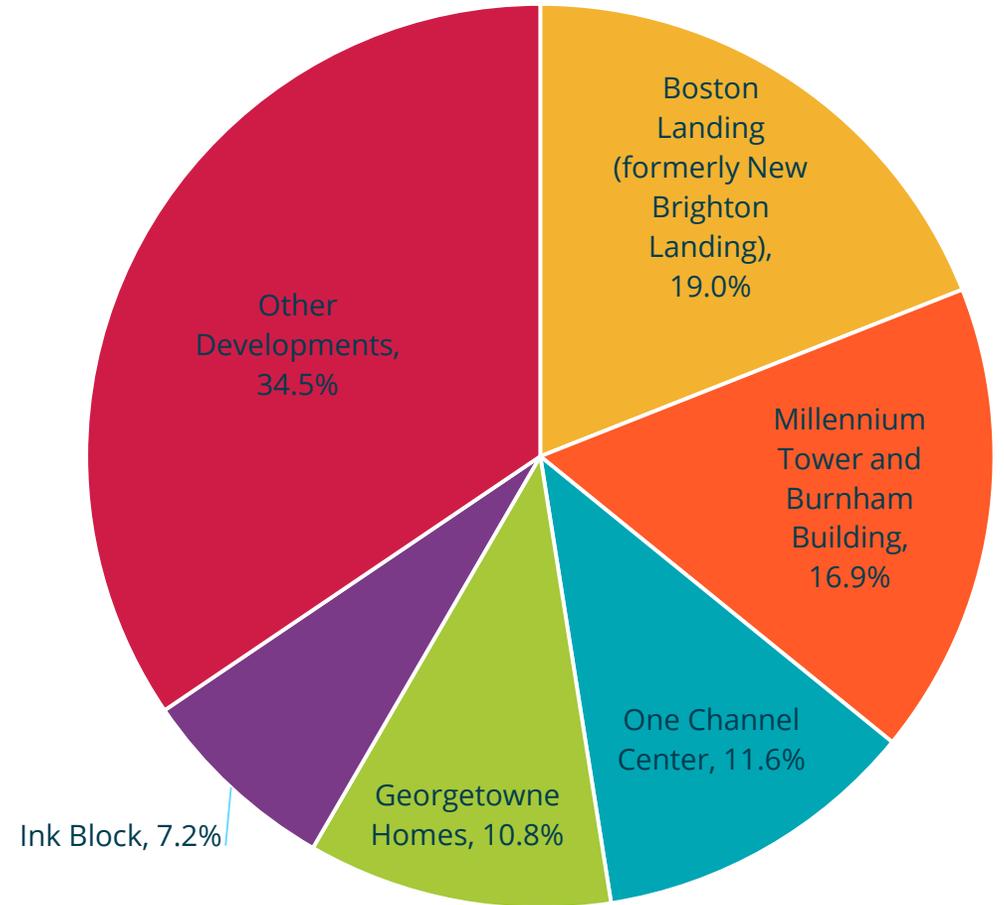


2012

All 2012 Board Approved Square Footage by Status, 2006-2017



Board Approved SF in 2012:
7,661,206

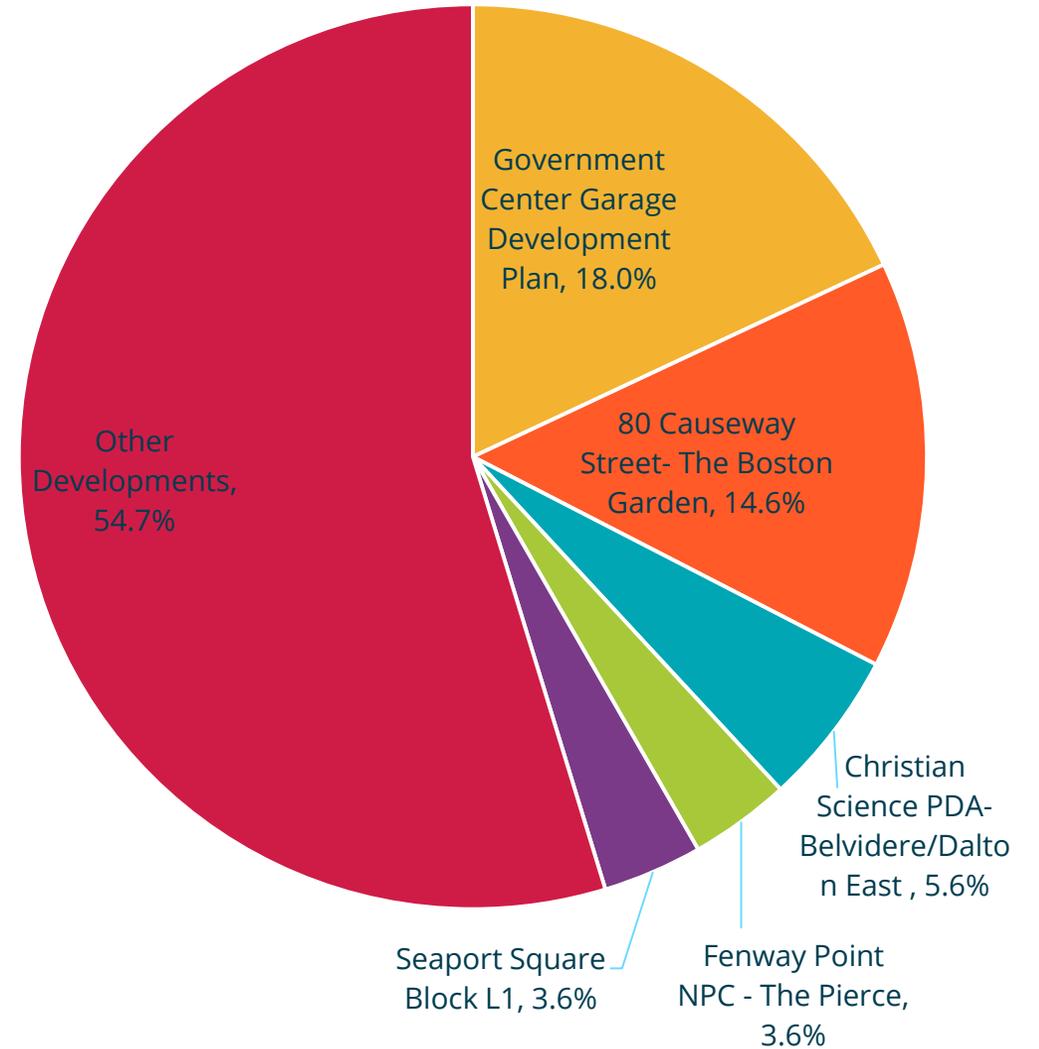


2013

All 2013 Board Approved Square Footage by Status, 2006-2017



Board Approved SF in 2013:
12,824,359

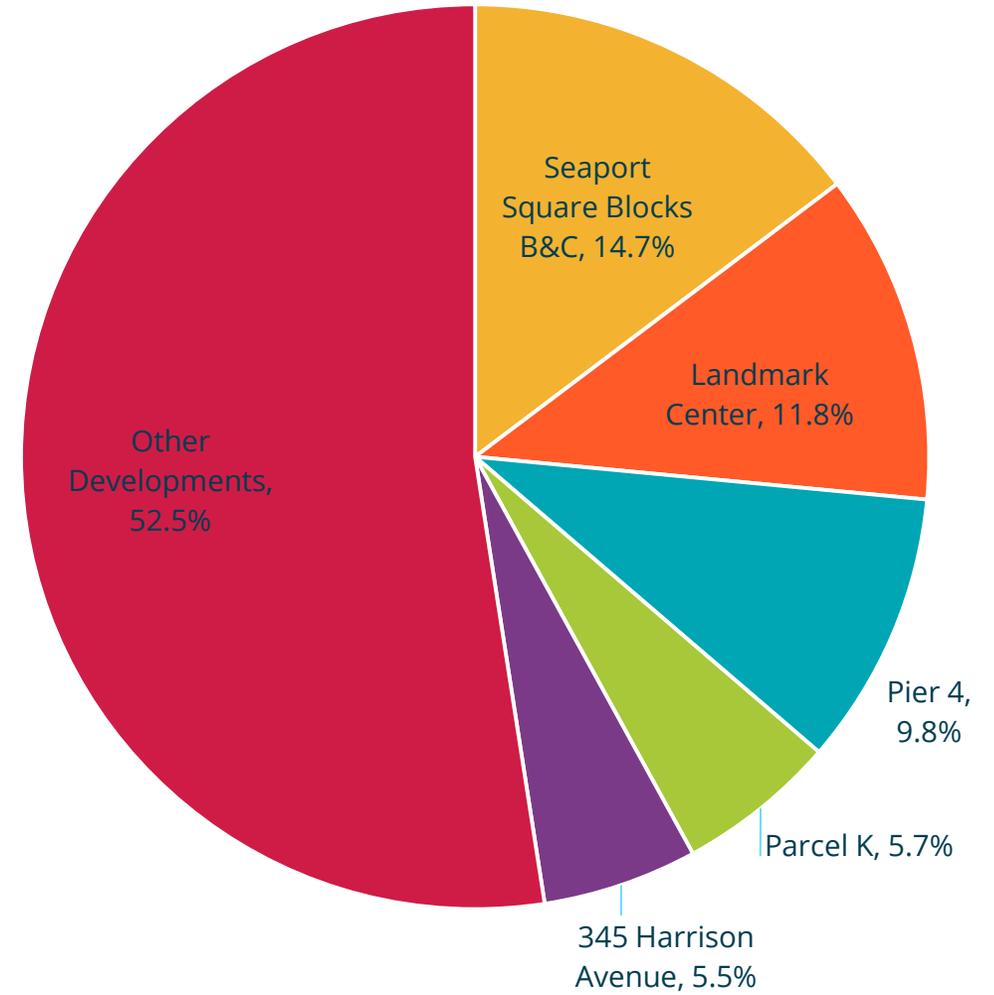


2014

All 2014 Board Approved Square Footage by Status, 2006-2017



Board Approved SF in 2014:
10,207,961

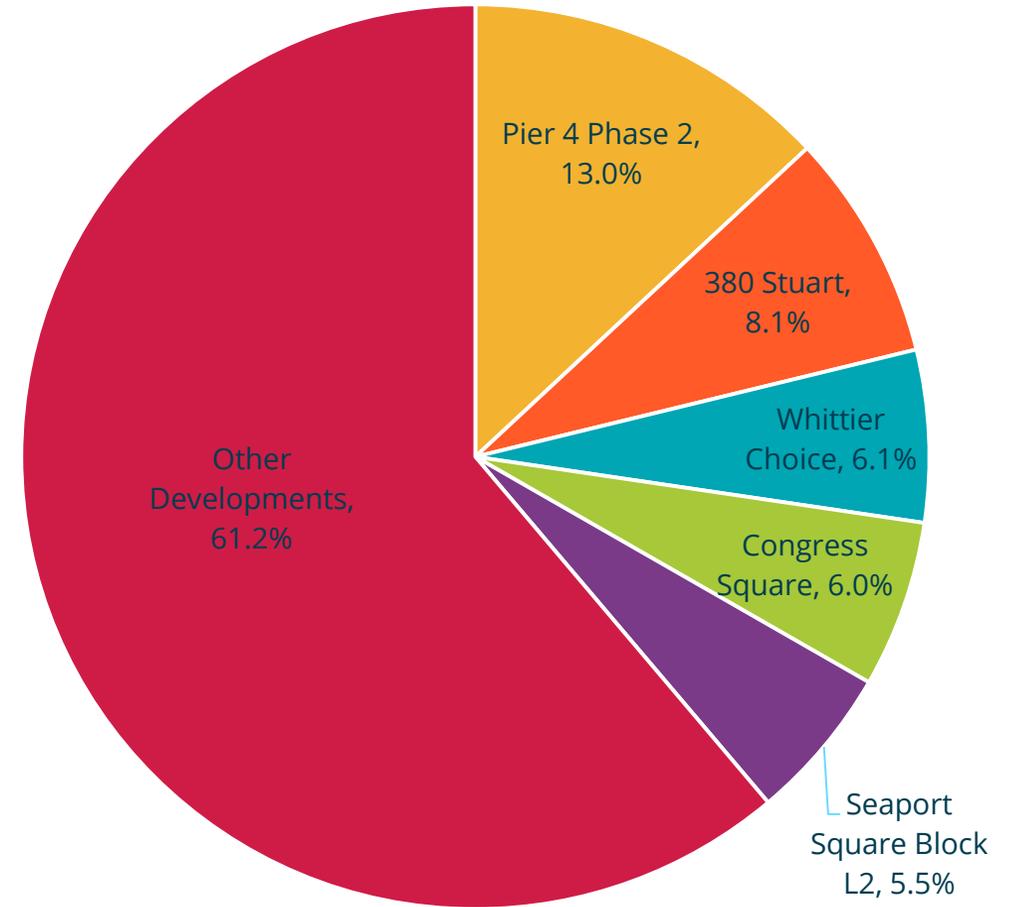


2015

All 2015 Board Approved Square Footage by Status, 2006-2017



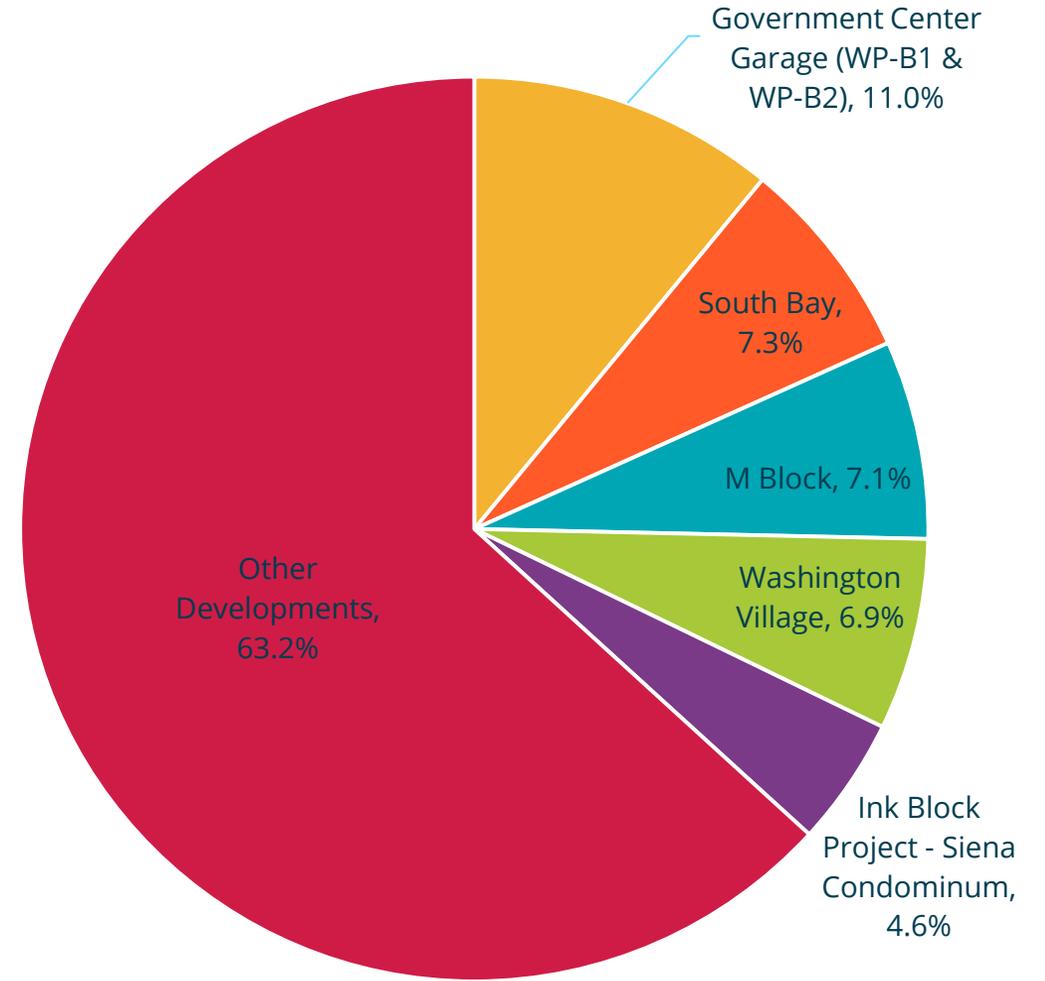
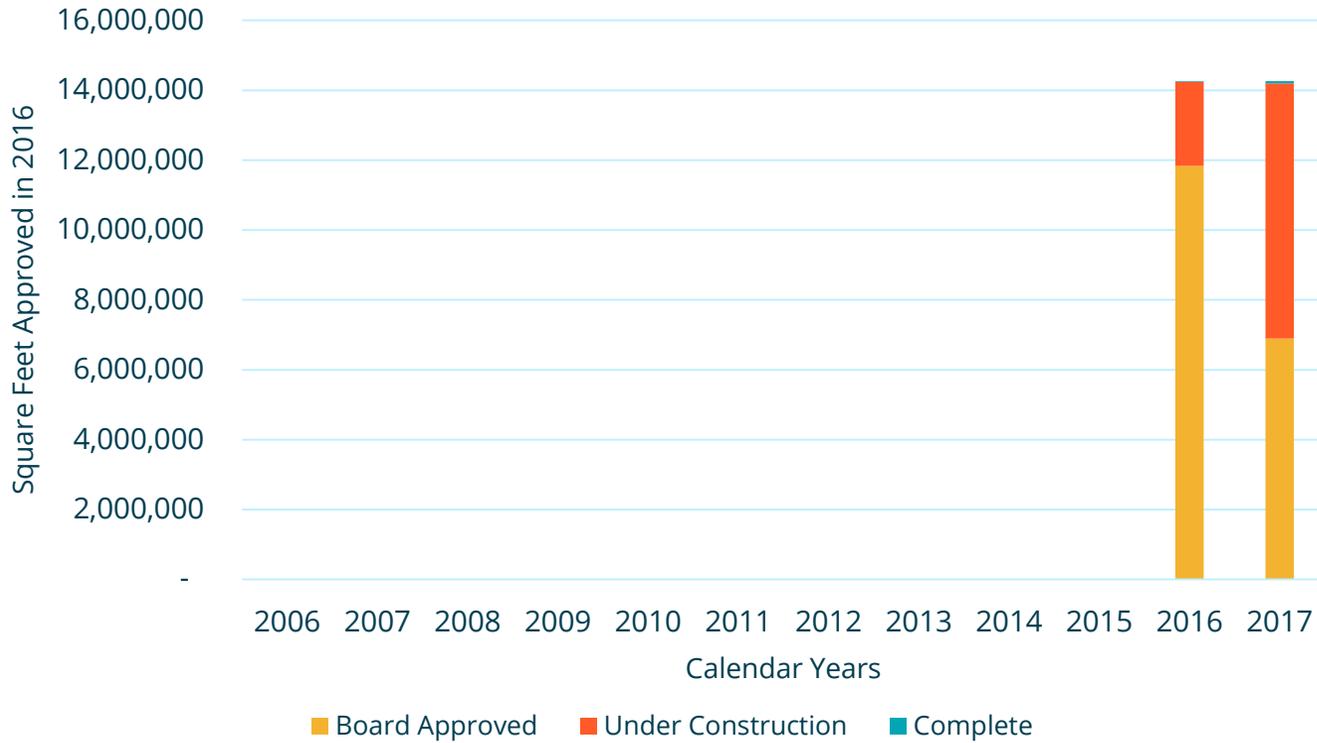
Board Approved SF in 2015:
7,677,262



2016

Board Approved SF in 2016:
14,257,389

All 2016 Board Approved Square Footage by Status, 2006-2017



2017

Board Approved SF in 2017:
16,872,914

All 2017 Board Approved Square Footage by Status, 2006-2017

