

Energy Performance Report

Data and Analytical Transparency with
PowerBI and Open Data



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

Ammon Reagan
Building Energy Analyst
Department of Environment

An aerial photograph of San Francisco at dusk. The city's lights are glowing, and the Golden Gate Bridge is visible in the distance. The text "San Franciscans want a healthy environment" is overlaid on the image. The word "a" is green, and "healthy environment" is also green, while "San Franciscans want" is white.

San Franciscans want a healthy environment

**Department of
Environment
is committed
to tackling this
goal**

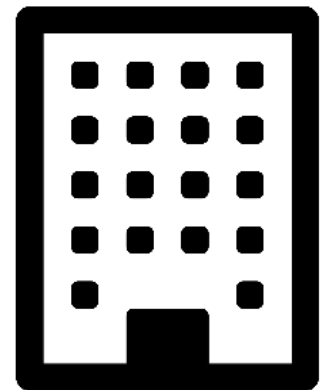
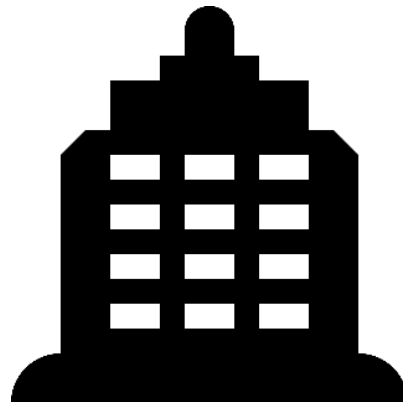
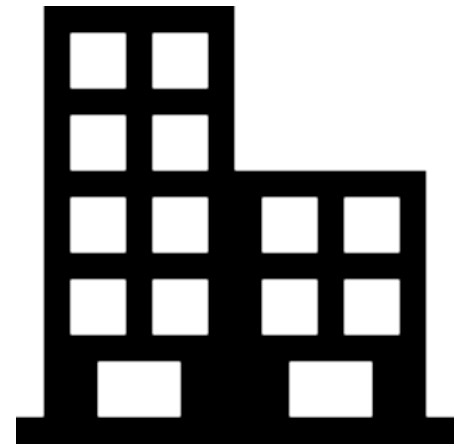
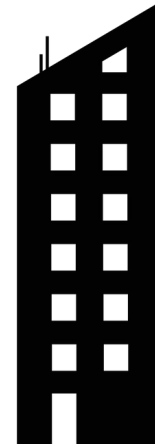
1000

A photograph of the Golden Gate Bridge in San Francisco, California, viewed from a low angle. The bridge's iconic orange-red towers and suspension cables are prominent against a clear blue sky. The bridge spans across a body of water, with the city's hills visible in the background.

We all play a role
but what is the
biggest emissions
contributor



Buildings emit **45%** of
Greenhouse Gas
Emissions in SF



Existing Buildings Energy Performance Ordinance passed in 2011





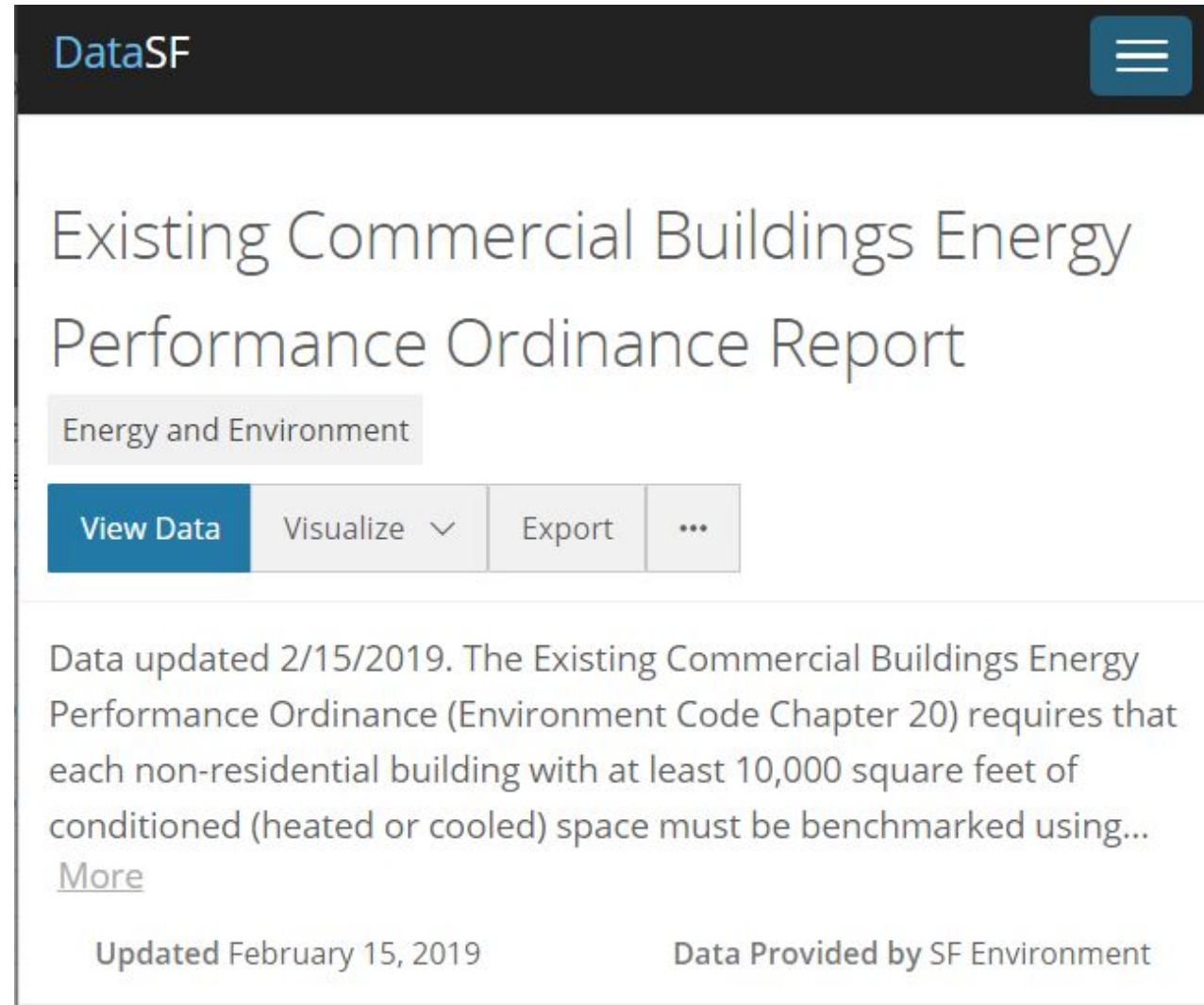
*“aims to **empower** owners, operators, managers, and occupants with **strategic data** to control utility costs, and to **motivate owners to seize the benefits of energy efficiency** for their business and buildings”*

Requirements of Ordinance



- Annual energy benchmarking
- Periodic energy efficiency assessments
- Public disclosure of energy use for commercial buildings of 10,000 sqft or greater

Complied with Public Disclosure via Open Data



The screenshot shows the DataSF interface for the 'Existing Commercial Buildings Energy Performance Ordinance Report'. The header includes the 'DataSF' logo and a menu icon. The main title is 'Existing Commercial Buildings Energy Performance Ordinance Report', with a sub-category 'Energy and Environment'. Below the title is a navigation bar with buttons for 'View Data', 'Visualize', 'Export', and a more options menu. The main content area contains a paragraph of text about the ordinance, followed by a 'More' link. At the bottom, there are two pieces of information: 'Updated February 15, 2019' and 'Data Provided by SF Environment'.

DataSF

Existing Commercial Buildings Energy Performance Ordinance Report

Energy and Environment

[View Data](#) [Visualize](#) [Export](#) [...](#)

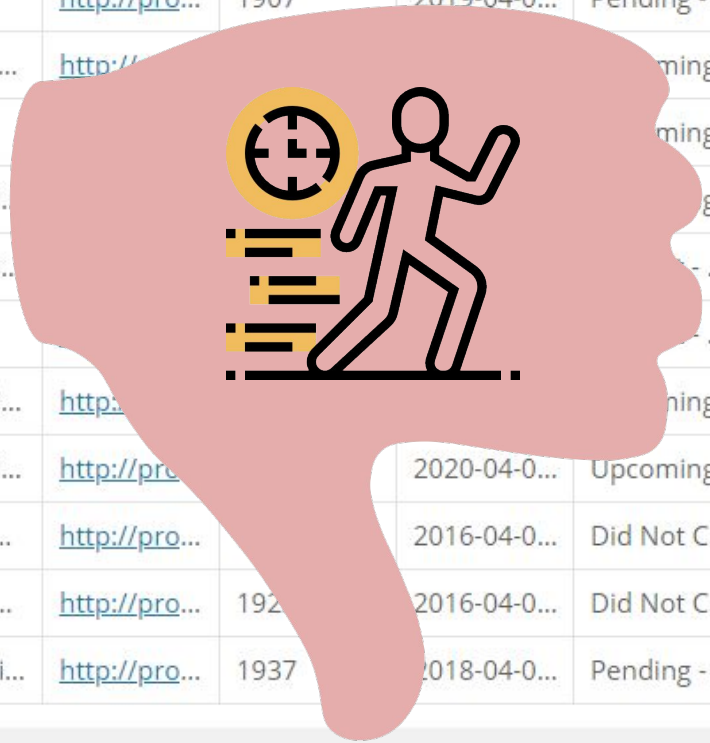
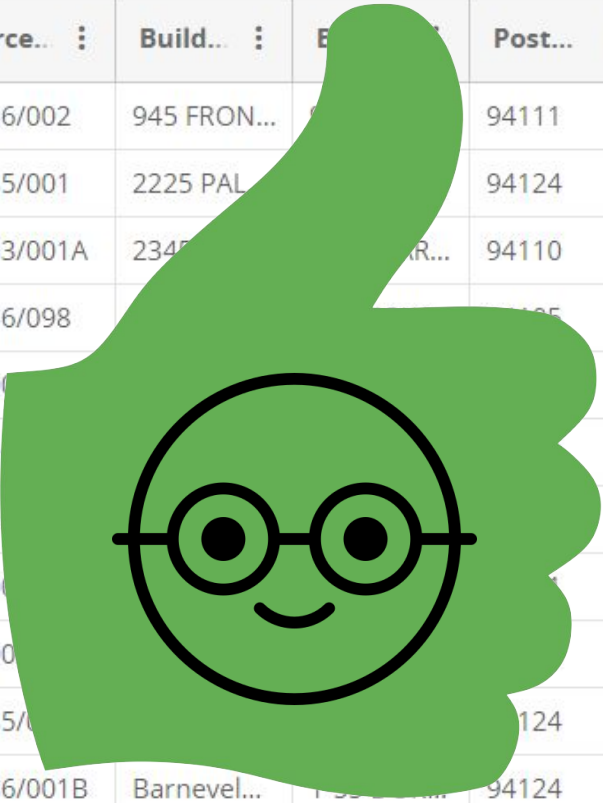
Data updated 2/15/2019. The Existing Commercial Buildings Energy Performance Ordinance (Environment Code Chapter 20) requires that each non-residential building with at least 10,000 square feet of conditioned (heated or cooled) space must be benchmarked using...
[More](#)

Updated February 15, 2019 Data Provided by SF Environment

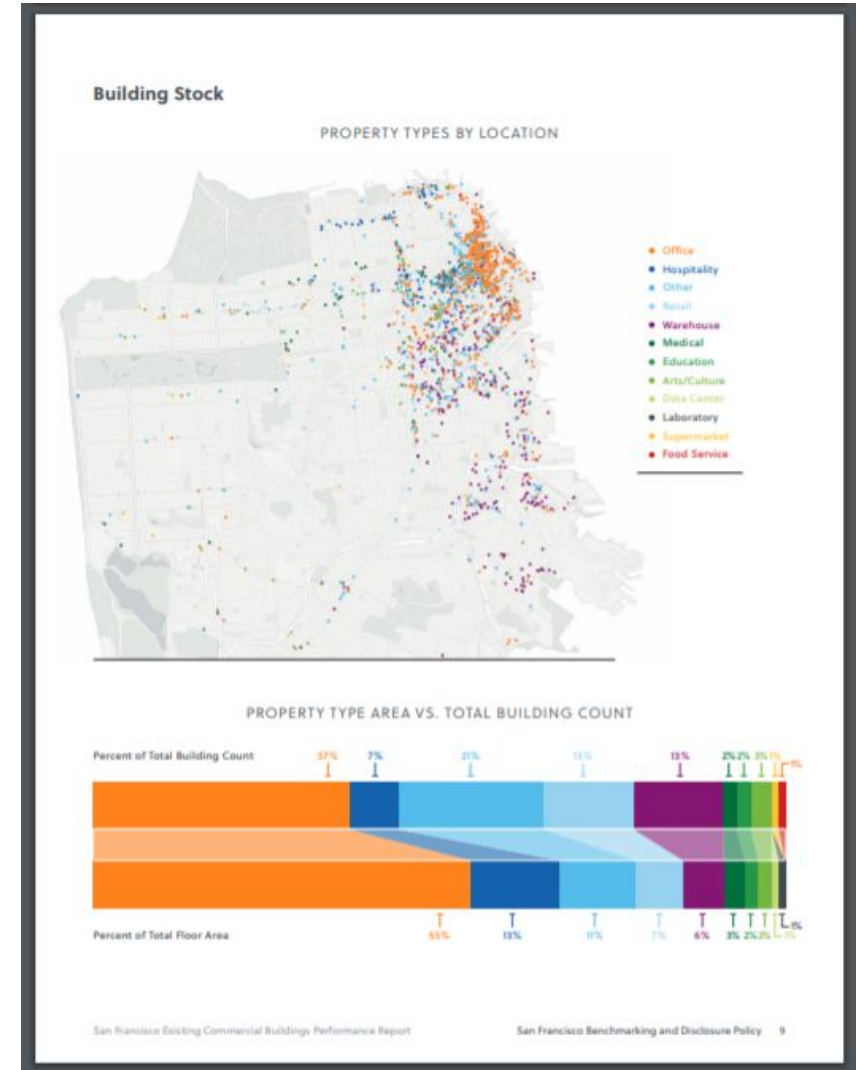
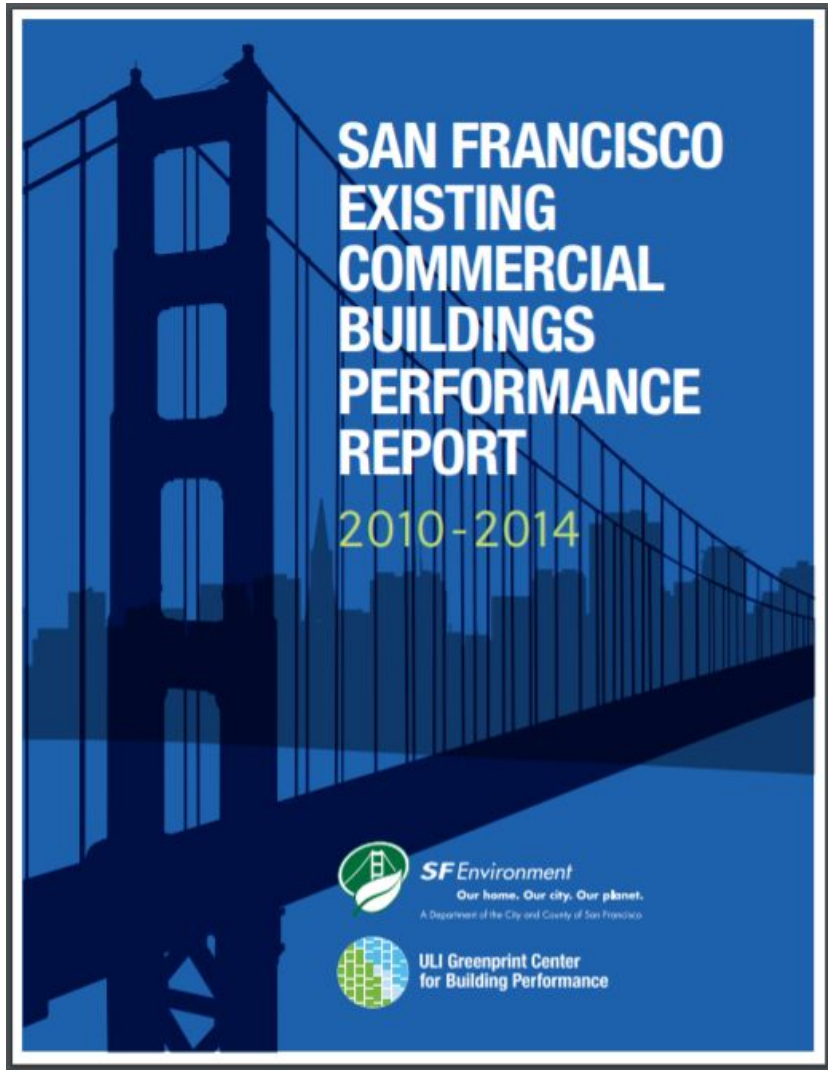
The problem

Raw data \neq Transparency

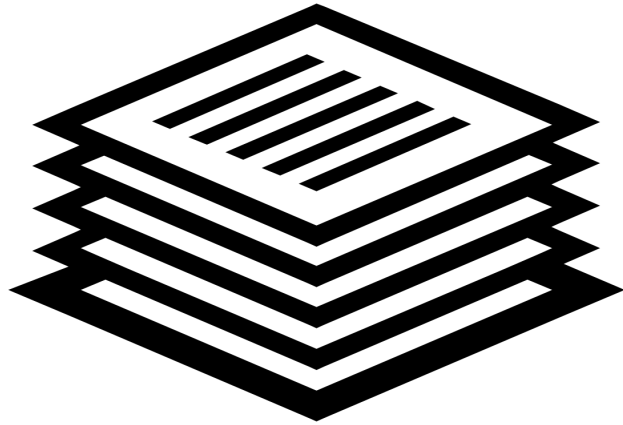
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Commissioned report to help contextualize raw data



Problem



30 pages

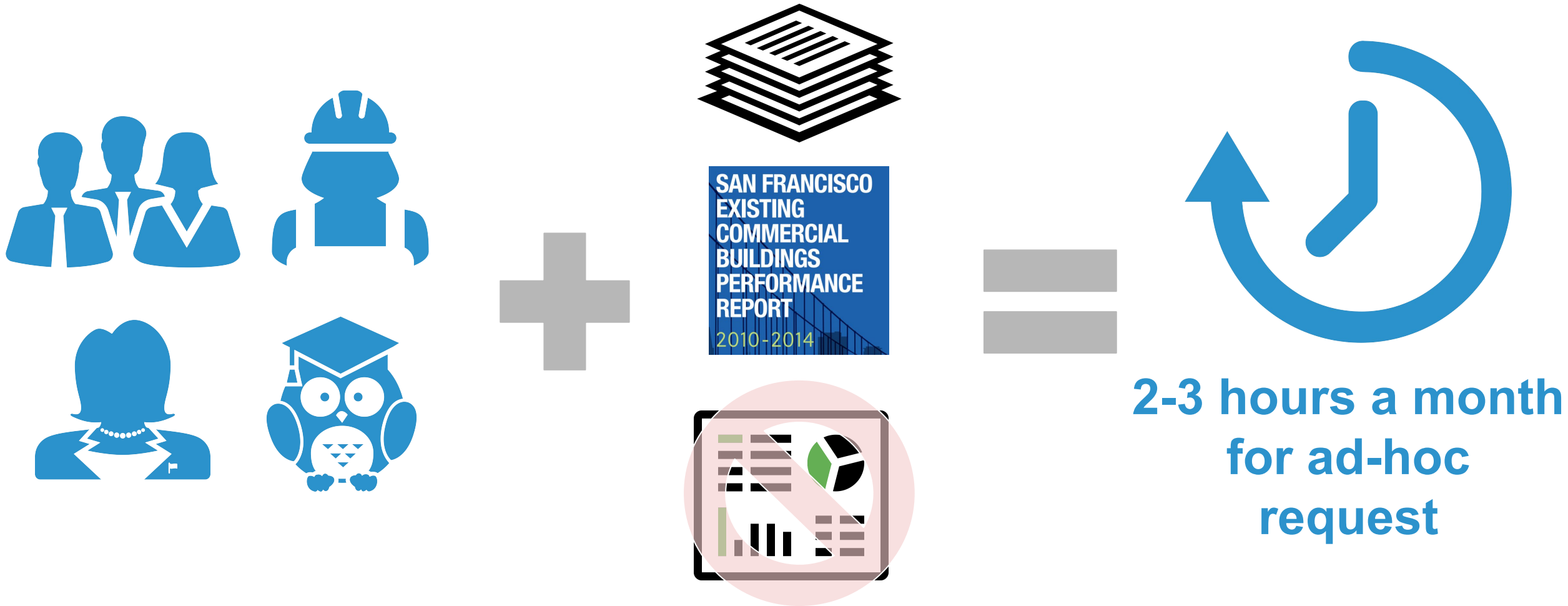


Single Point
in Time



Not
Interactive

Static report could not keep up with questions from stakeholders



What was done



PowerBI



**Stepping back and
thinking about diverse
stakeholders needs**

Connected directly to Salesforce for weekly updates of report



DEMO

Existing Buildings Ordinance Performance Report

San Francisco's Existing Commercial Buildings (ECB) Energy Performance Ordinance requires annual energy benchmarking, periodic energy efficiency assessments, and public disclosure of energy use for commercial buildings of 10,000 square feet or greater. The ordinance was informed by recommendations from the [Mayor's Task Force on Existing Commercial Buildings](#) and aims to empower owners, operators, managers, and occupants with strategic data to control utility costs, and to motivate owners to seize the benefits of energy efficiency. This report presents an automatically updating analysis of the past 4+ years of energy use history.

NUMBER OF BUILDINGS

1649

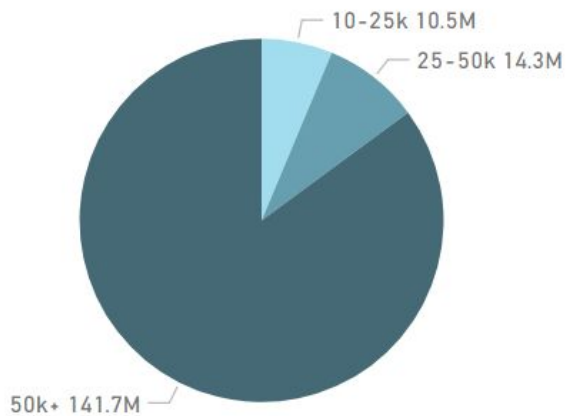
TOTAL FLOOR AREA

167M

% OF COMMERCIAL ENERGY USE

62%

TOTAL FLOOR AREA, BY BUILDING SIZE



Click on a piece of the pie to see the property use type distribution in each square footage group

SAN FRANCISCO BUILDING STOCK:

Buildings subject to the ECB ordinance comprise 12 property/use types: office, hotel, retail, arts & culture, education, food service, healthcare, other, religious, supermarket, technology and warehouse. Office buildings dominate the market, constituting over 50% of affected floor area, and hotel and retail are the next most common uses.

Large commercial buildings are concentrated in San Francisco's downtown neighborhoods including: Financial District, South of Market (SOMA), North Beach, and Civic Center. The largest concentration of warehouses is in the Bayview, in the city's southeastern quadrant.

The bulk of the floor area subject to the ordinance is in the largest buildings - those greater than 50,000 sq ft.

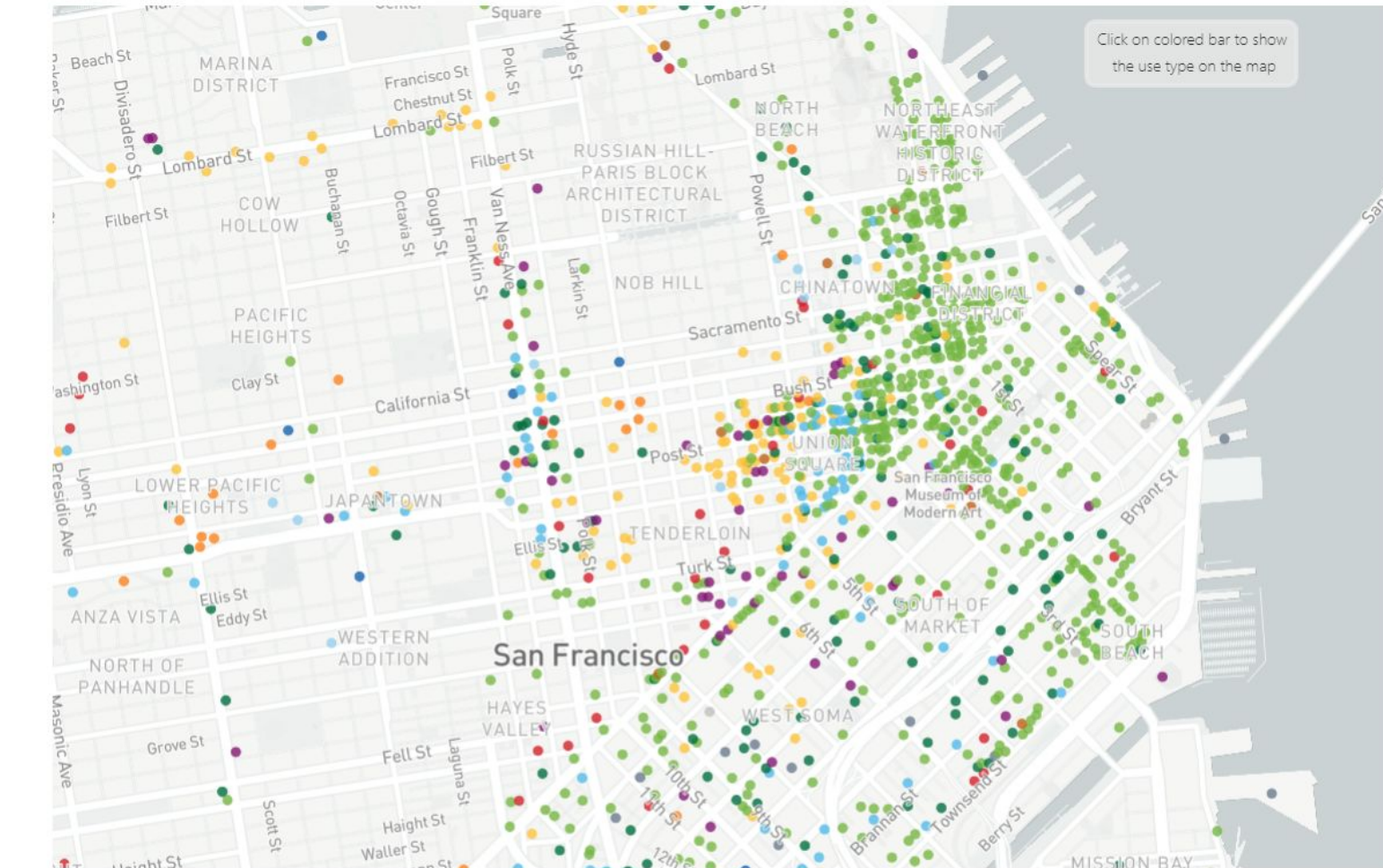
Percent of Total Floor Area



● Arts & Culture ● Education ● Food service ● Healthcare ● Hotel ● Office ● Other ● Religious ● Retail ● Supermarket ● Technology ● Warehouse



Percent of Total Number of Buildings



Benchmark Compliance:

BENCHMARK YEAR

2014

2015

2016

2017

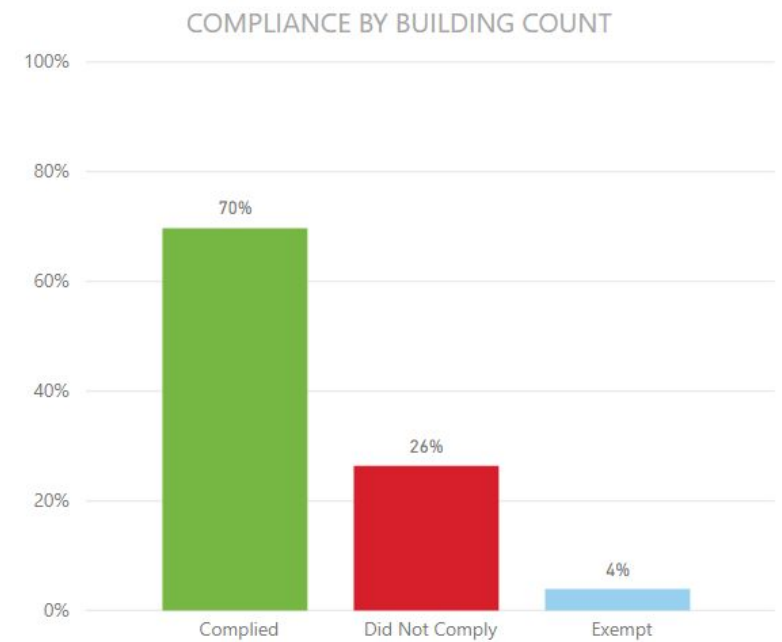
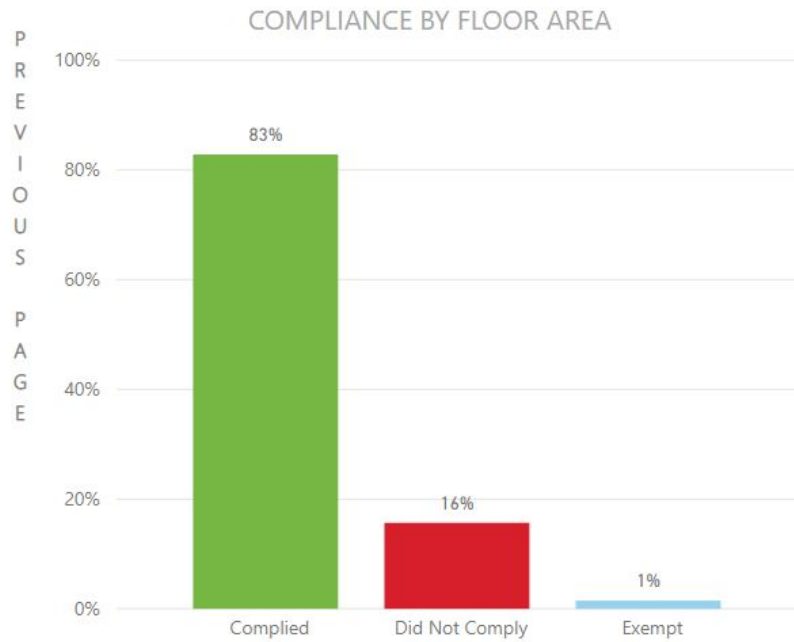
SQUARE FOOTAGE GROUP

10-25k

25-50k

50k+

For the most recent year of reporting, buildings fall into one of three categories below: complied, did not comply or exempt. Buildings are exempted from a given year's requirement due to vacancy, major renovation, and (most common) a sale or lease transaction. Unlike other US cities' benchmarking ordinances, San Francisco's ordinance applies to buildings as small as 10,000 square feet. These smaller buildings, not operated by a property management company, are generally harder to reach to provide support and may have fewer available resources to benchmark energy use.



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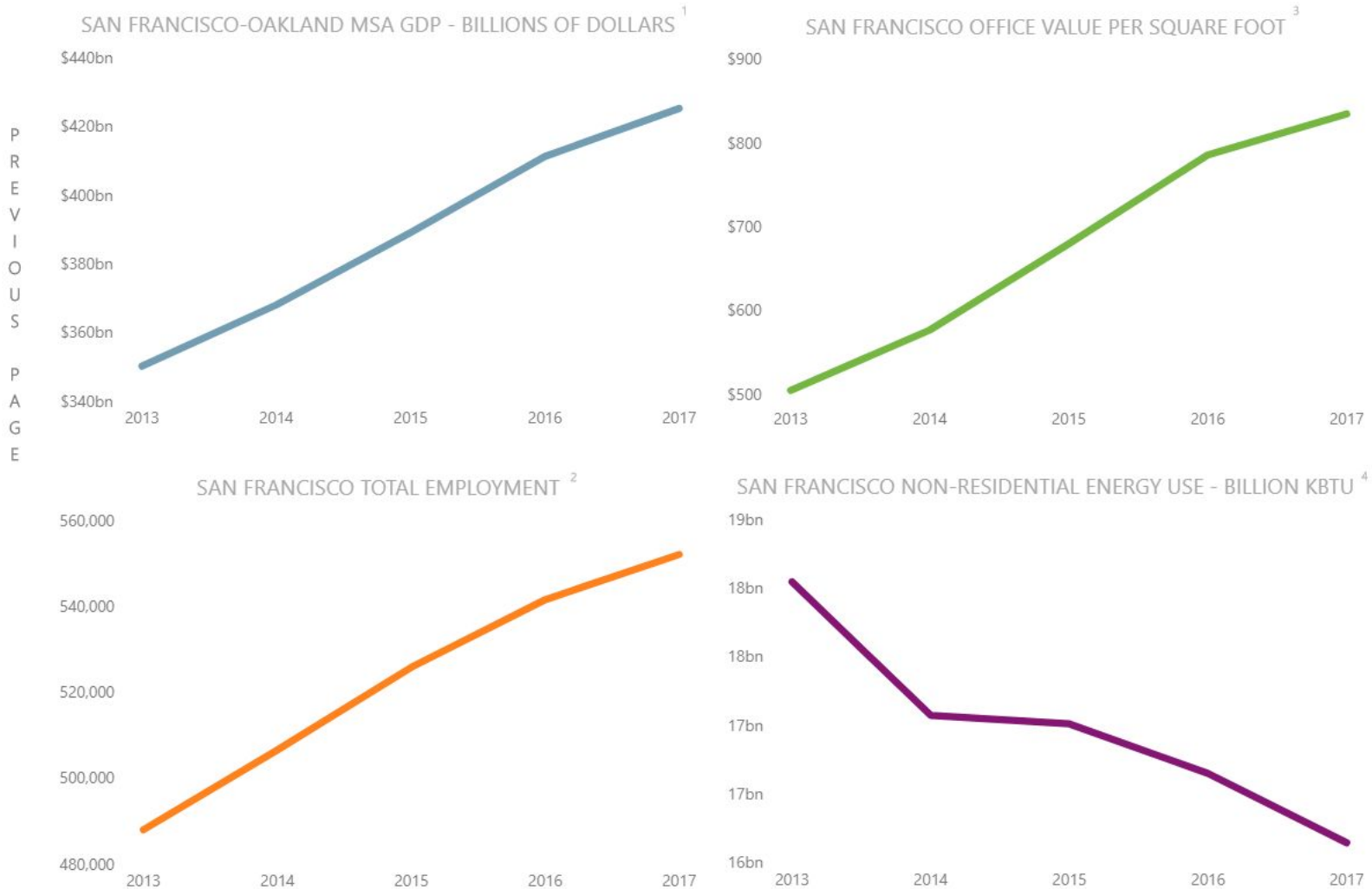
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Energy Use and Economic Growth: *Decoupled*

San Francisco has enjoyed a robust economy in recent years; with a booming economy has come considerable job growth, and strong demand has spurred new commercial construction. Though the building stock, job market, and economy have grown, citywide gross energy use by commercial buildings has been cut more than 10%.



USE TYPE CATEGORY

Benchmarking Results:

Hotel

Office

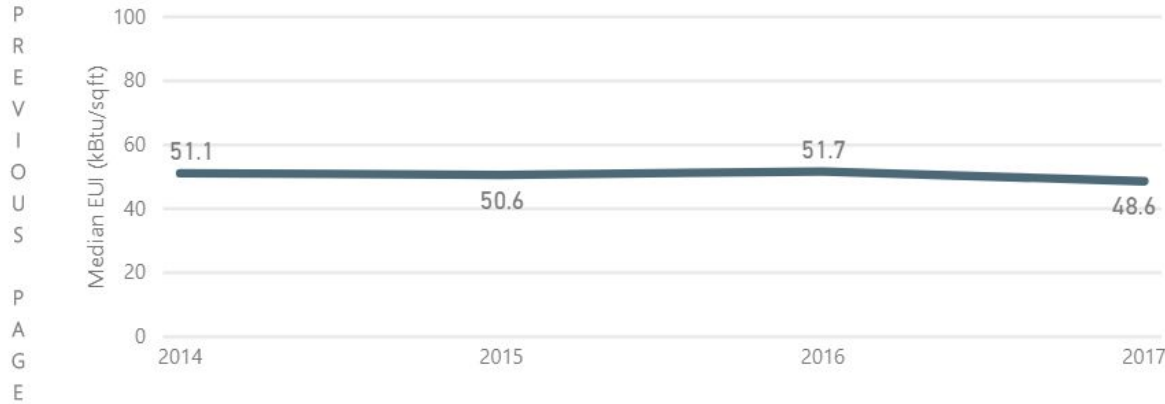
Retail

In a robust economy with high occupancy and growing property values, median reported office energy use intensity is well below the national median (67 kBtu/sq ft nationally vs 50 kBtu/sq ft locally), and the local median ENERGY STAR score is 87 on a scale from 1-100. EUI has improved in recent years while net absorption has been positive. Nonetheless, audits have identified considerable opportunity for cost-effective energy efficiency improvement. Click any graph below to drill down to specific office buildings.

Office

744	55.27
# of Buildings	Average EUI (kBtu/sqft)
98,542,119	47.30
Total Floor Area	Median EUI (kBtu/sqft)
309,101.70	89
Total Emissions (Tons CO2)	Median ENERGY STAR Score

ENERGY USE INTENSITY FOR CONSISTENTLY COMPLYING PROPERTIES



ADDITIONAL FILTERS:

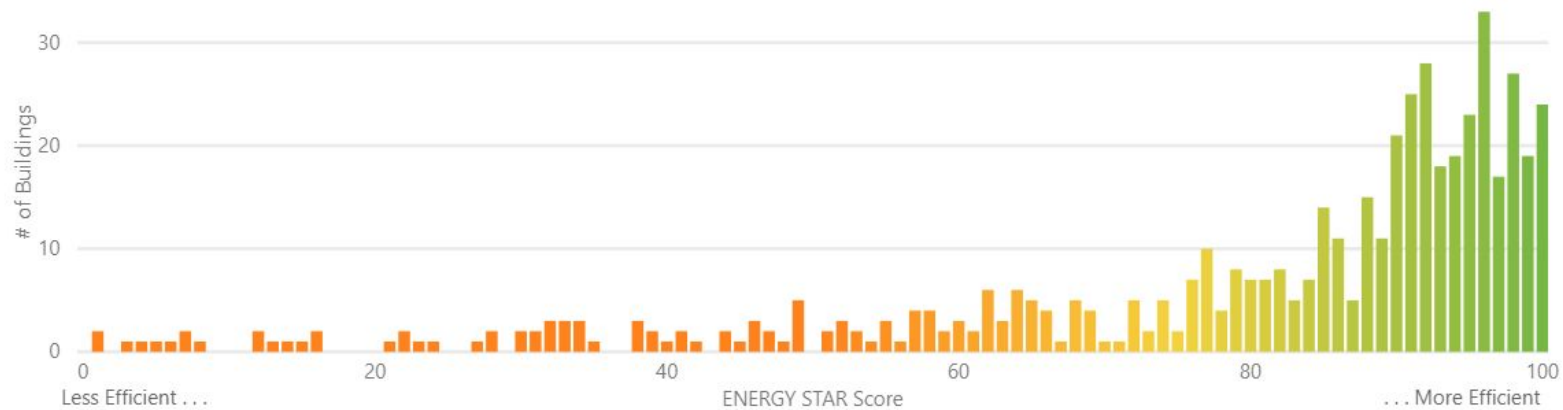
SQUARE FOOTAGE GROUP

- 10-25k
- 25-50k
- 50k+

BENCHMARK YEAR

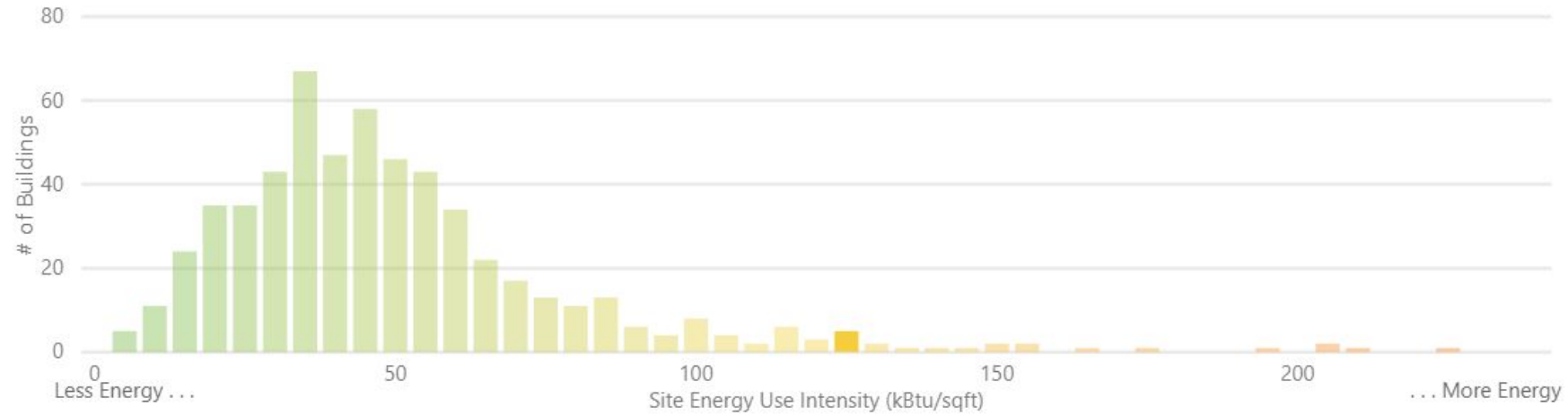
- 2014
- 2015
- 2016
- 2017**

ENERGY STAR SCORE DISTRIBUTION



Click on a colored box in one of the distribution charts to see which buildings are included.

SITE ENERGY USE INTENSITY DISTRIBUTION



BUILDING ENERGY USE DETAILS

Building Address	APN	Benchmark Year	Weather Normalized Site EUI	ENERGY STAR Score
505 BEACH ST	0023/002	2017	125.20	
1750 ALAMEDA ST	3912/002	2017	125.50	30
4109 18TH ST	2695/001	2017	125.90	12
348 6TH ST	3754/007	2017	128.00	24
358 PINE ST	0260/009	2017	129.40	7

Additional Benchmarking Results:

USETYPE CATEGORY

Healthcare

Healthcare

34
of Buildings

3,637,559
Total Floor Area

60.70
Median EUI (kBtu/sqft)

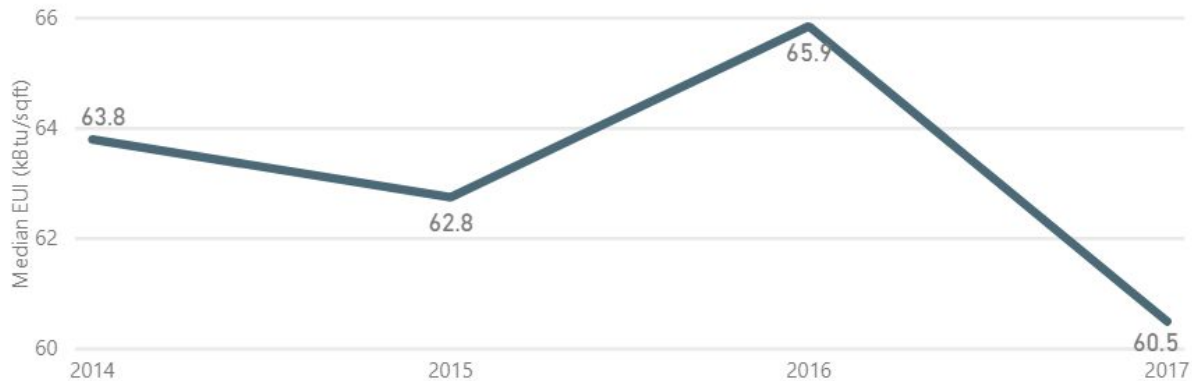
19,461.20
Total Emissions (Tons CO2)

70
Median ENERGY STAR Score

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ENERGY USE INTENSITY FOR CONSISTENTLY COMPLYING PROPERTIES



ADDITIONAL FILTERS:

SQUARE FOOTAGE GROUP

10-25k

25-50k

50k+

BENCHMARK YEAR

2014

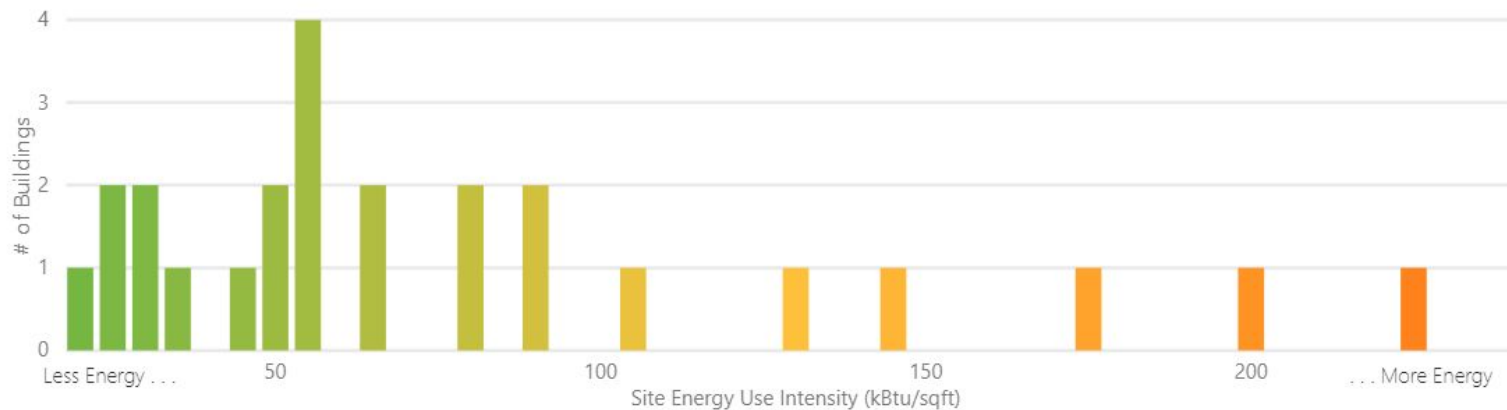
2015

2016

2017

Click on a colored box in one of the distribution charts to see which buildings are included.

SITE ENERGY USE INTENSITY DISTRIBUTION



The result



**San Francisco 1st to
have interactive report**



**Save time + Weekly
Update**



**All stakeholders using
single tool, getting same
results**

What's next

Incorporating with rest of Scorecards



BENCHMARKING PROFILE



456 Montgomery

456 MONTGOMERY ST
SAN FRANCISCO CA, 94104

Parcel number: 0239/012

Building type: Offices

Floor area: 270,099 ft²

Benchmark status:

2017: ✔ Complied

2016: ✔ Complied

Audit status:

2018: ✔ Exempt - ENERGY STAR

[BENCHMARK NOW](#)

LOCAL RANKING:

#22

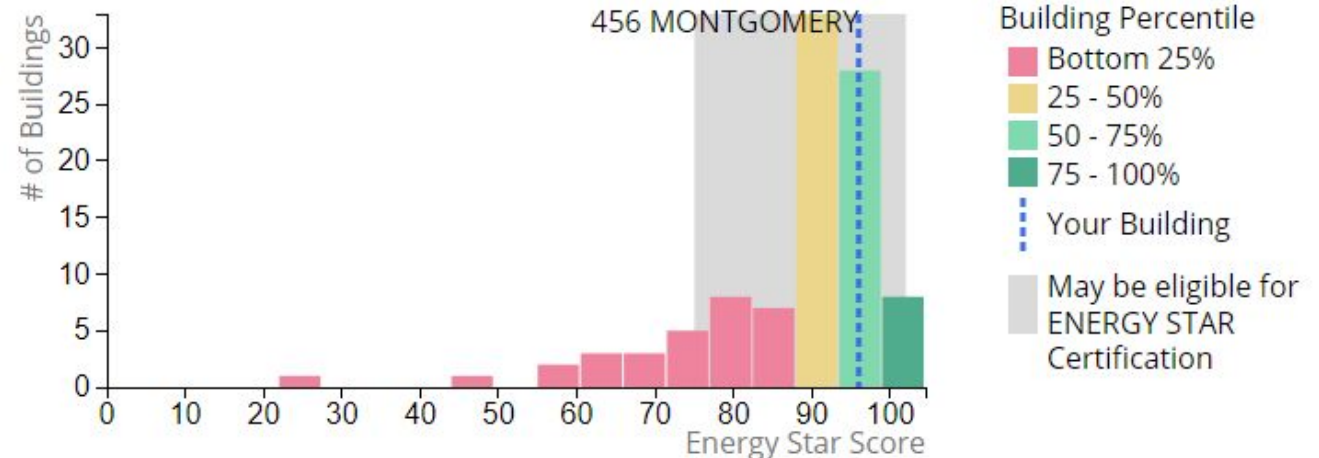
out of 99

Similar Size Offices [i](#)

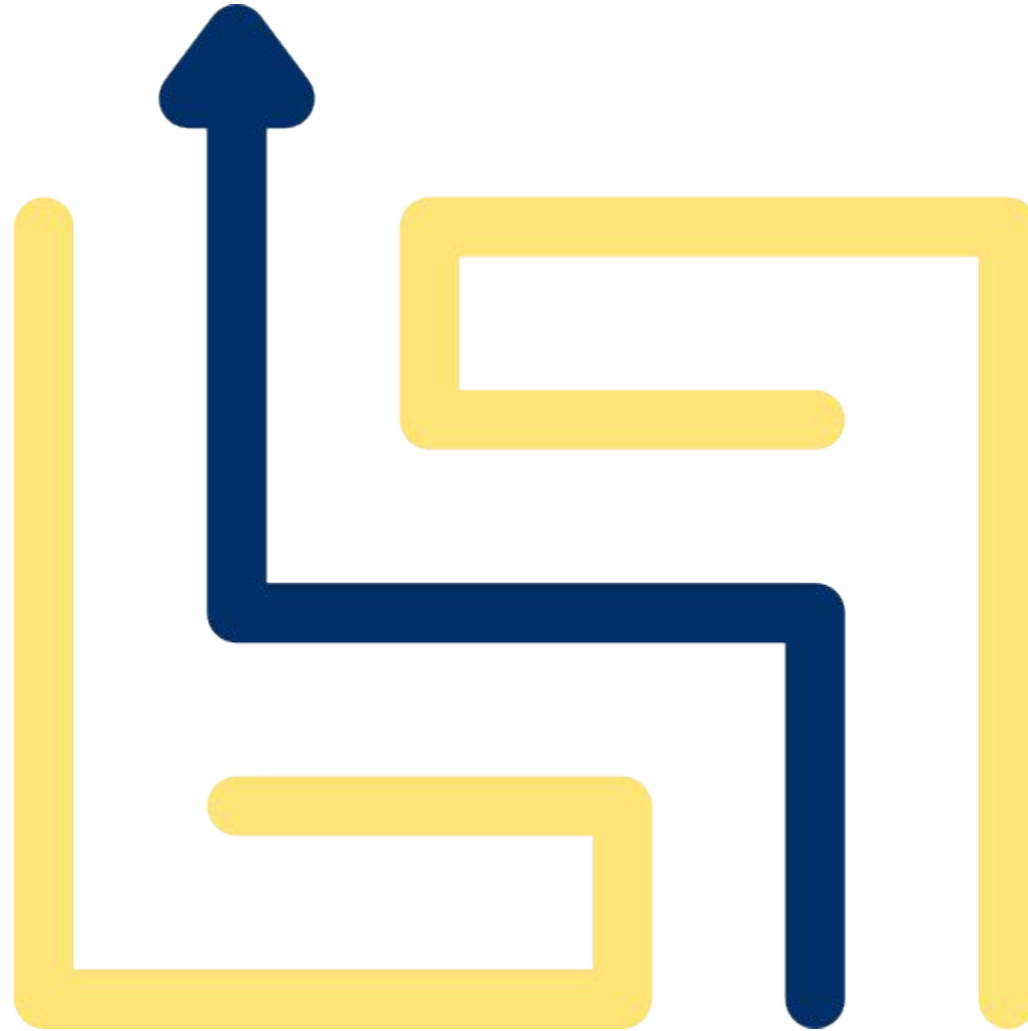
Based on the ENERGY STAR score and Energy Use Intensity reported in 2017, energy use at 456 Montgomery is ranked 22 out of 99 Offices between 100,000-300,000 square feet in gross floor area.

LATEST ENERGY STAR SCORES FOR OFFICES 100,000-300,000 SQUARE FEET IN SAN FRANCISCO

ENERGY STAR
Score
96
out of 100



Use PowerBI for pathways analysis for decreasing carbon emissions



Thank you

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