

San Diego Building & Housing Stock Analysis

Completed August 2023

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Building & Housing Stock Analysis | Background

Background and Summary of Approach

San Diego is the second largest city in California, home to a population of almost 1.4 million residents and over 300,000 buildings. San Diego has been working with the Building Electrification Institute (BEI) since 2018 to identify ways to reach its ambitious goal of reducing 90% of natural gas use in existing buildings by 2035.

The City is pursuing a building decarbonization roadmap to identify policy and program solutions to achieve this goal. This Building & Housing Stock Analysis (BHSA) provides critical baseline information for a data-driven and equitable approach. The analysis identifies common building types in San Diego and assesses a list of technical, ownership, and social vulnerability indicators. The findings across these indicators will help San Diego staff and stakeholders identify the needs, challenges, and opportunities across each building type, elevating important considerations to ensure the benefits of building decarbonization are distributed equitably across the community.

The project team included BEI, the City of San Diego Sustainability & Mobility Department with technical support from Steven Winter Associates.



Building & Housing Stock Analysis | Background

Goals: Develop a building inventory and assess opportunities for future decarbonization policies and programs, elevating data and trends that highlight the needs of Communities of Concern and under-resourced buildings across San Diego.

Potential Uses for Analysis

- **Share centralized building inventory and establish building typologies** to create a common understanding of the existing building stock
- **Ground discussions with community groups** on priorities, needs, and approaches to existing buildings
- **Identify buildings that may need more technical or financial support** to complete decarbonization retrofits
- **In the future, calculate potential costs and job impacts** from decarbonization retrofits

Building & Housing Stock Analysis | Approach

To achieve these goals, the project team analyzed three types of indicators:

Types of Indicators

Technical Indicators

Help identify buildings that have high opportunity or specific technical challenges for building electrification

Social Vulnerability & Environmental Risk

Help identify buildings that may need greater assistance and public investments to help the City design appropriate programs and strategies

Ownership & Decision-Making

Help identify buildings with owners or decision-makers who may need tailored outreach and support to help electrify

Building & Housing Stock Analysis | Approach

To complete San Diego’s Building & Housing Stock Analysis, the project team completed a four-step process:



The project team **identified publicly available datasets** with relevant data on buildings and the San Diego community.

The team **mapped several datasets onto the County’s tax assessor dataset**, then developed building typologies based on common characteristics and relevant policy considerations.

The team **prioritized a list of indicators to analyze across building typologies**, including technical, ownership & decision-making, and social vulnerability indicators.

The team **discussed each indicator and identified trends and takeaways** from the data analysis to inform equitable design and implementation of future policies and programs around building decarbonization.

Building & Housing Stock Analysis | List of Indicators

In discussion with City staff, balancing data availability and decarbonization priorities, the following indicators were prioritized for in-depth analysis:

Technical Indicators	Social Vulnerability & Environmental Risk Indicators	Ownership & Decision-Making Indicators
<ul style="list-style-type: none">▪ Number of Buildings▪ Building Typologies▪ Building Size▪ Residential Units▪ Vintage▪ Historic Districts▪ Solar PV▪ Benchmarked Energy	<ul style="list-style-type: none">▪ City Council Districts▪ Race & Language▪ Poverty Rate▪ Disadvantaged Communities▪ Justice40 Communities▪ Communities of Concern▪ Energy & Housing Cost Burden▪ Digital Access▪ Flood & Fire Risk▪ Heat Risk▪ Asthma Rate▪ Age	<ul style="list-style-type: none">▪ Ownership Type▪ Subsidized Affordable Housing▪ Publicly Owned Buildings

Technical Indicators



Technical Indicators

Technical Indicators

- Number of Buildings
- Building Typologies
- Building Size
- Residential Units
- Vintage
- Historic Districts
- Existing Solar PV
- Benchmarked Energy

Social Vulnerability & Environmental Risk Indicators

- City Council Districts
- Race & Language
- Poverty Rate
- Disadvantaged Communities
- Justice40 Communities
- Communities of Concern
- Energy & Housing Cost Burden
- Digital Access
- Flood & Fire Risk
- Heat Risk
- Asthma Rate
- Age

Ownership & Decision-Making Indicators

- Ownership Type
- Subsidized Affordable Housing
- Publicly Owned Buildings

Technical | Number of Buildings

There are just over 300,000 buildings in the city of San Diego, located on approximately 275,000 parcels.

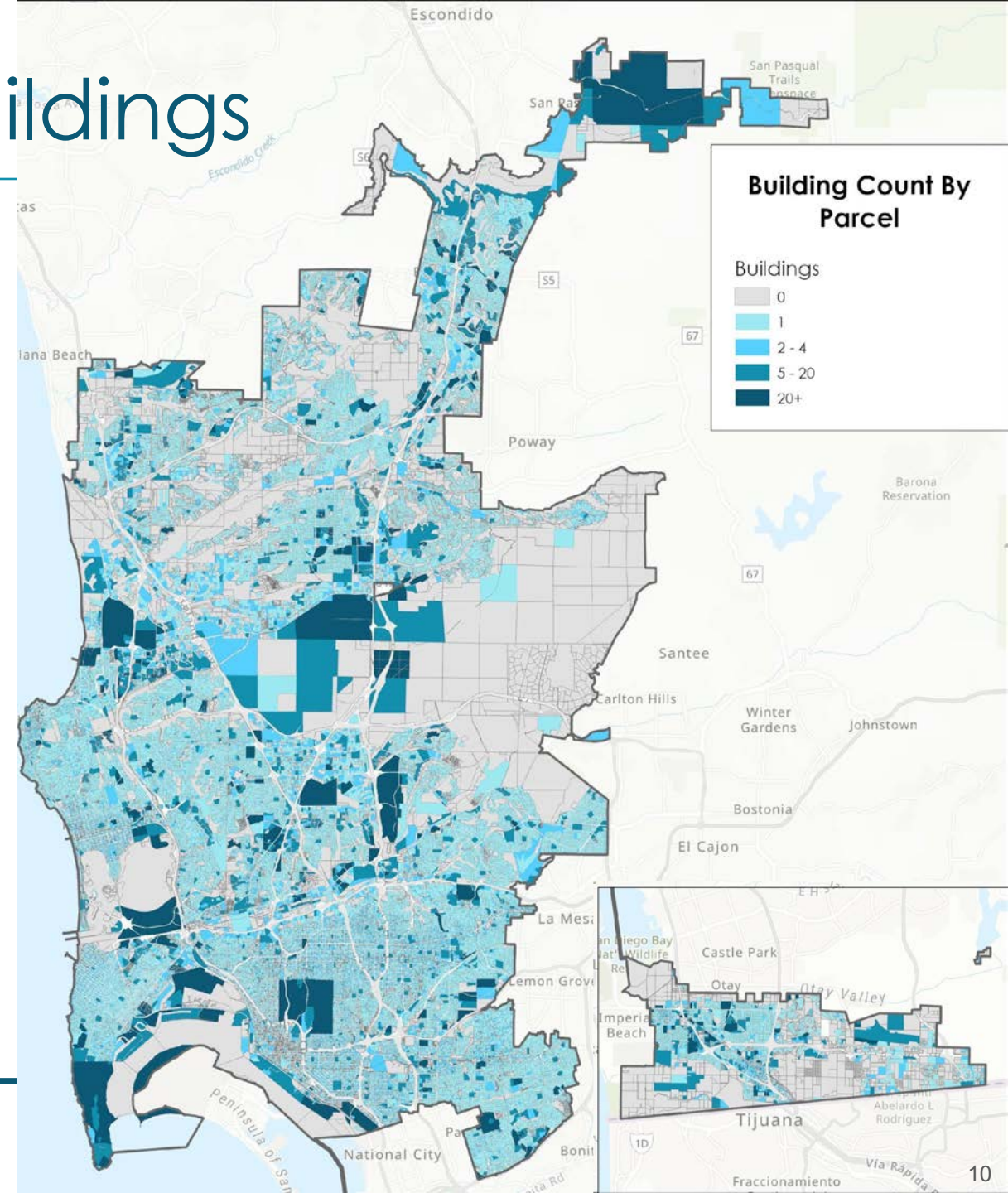
Most publicly available data, such as tax assessor data, is designed around parcels rather than buildings. The project team mapped a building footprints layer to parcel-based data in GIS to determine the total number of buildings across the City.

Total Buildings in San Diego: 306,976

Number of buildings is more accurate to the number of retrofits that will be needed to decarbonize the building sector.

Total Parcels in San Diego: 272,979

Number of parcels can be a closer proxy to number of owners or decision-makers, excluding condominiums, and are used to track compliance of local ordinances.



Technical | Number of Buildings

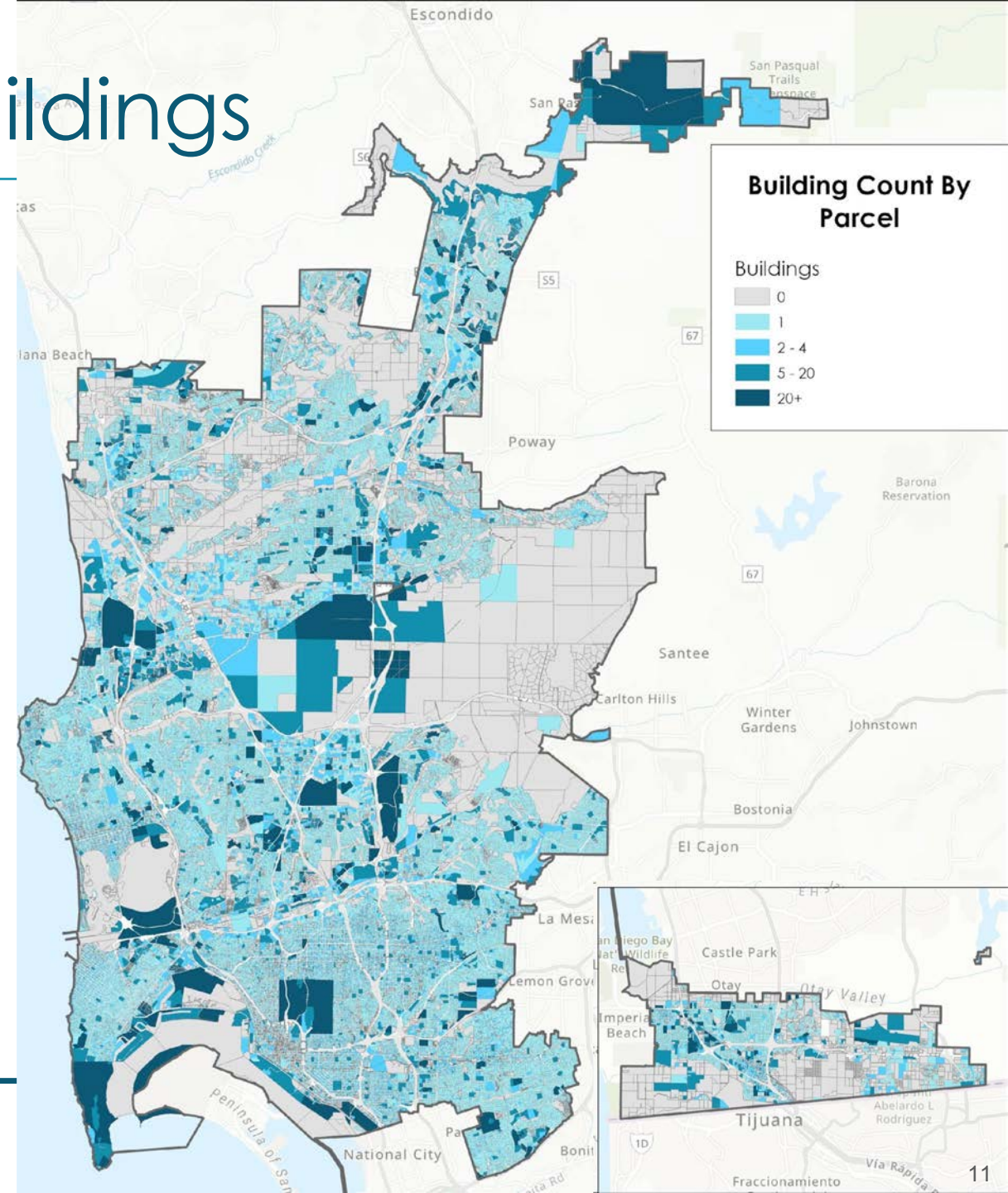
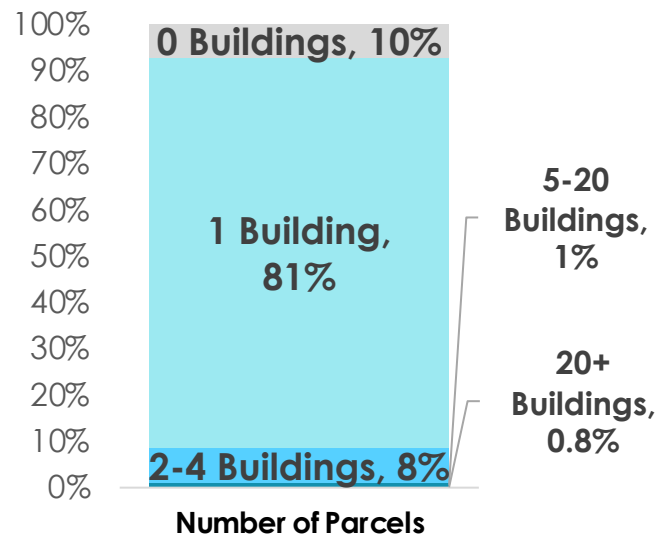
Parcels with Multiple Buildings

Most parcels have a single building on them (84%). However, parcels with more than one building present additional considerations for policy design, including challenges that may arise from shared ownership.

These parcels often include:

- Single family homes with Accessory Dwelling Units (ADUs)
- Campuses
- Manufactured home parks
- Condominiums

Number of Buildings per Parcel



Technical | Building Typologies

To create a shared understanding of the types of buildings across San Diego, the project team developed **16 building typologies that are common across the city**.^{*} Typologies were designed to align with use types that have specific needs, considerations, similar energy use, or ownership structures.

San Diego Building Typologies

- Residential: Single Family Homes
- Residential: Manufactured Homes
- Residential: 2-4 Unit Homes
- Residential: Condos & Co-Ops
- Multifamily Housing (5+ Units)

- Commercial: Hotels & Motels
- Commercial: General
- Commercial: Public Assembly
- Commercial: Office
- Commercial: Retail
- Commercial: Hospitals, Labs & Medical Offices

- Education: K-12 Schools (Public & Private)
- Education: Other
- Municipal
- Industrial
- Other & Unknown

^{*}For more details on final building typologies, see Appendix.

^{**}For example, municipal was isolated so the City is able to identify unique opportunities and challenges in City-owned buildings.

Technical | Building Typologies

Building Typologies	Number of Buildings		Total Square Footage	
Residential: Single Family Homes	212,120	69%	389.4 M	46%
Residential: Manufactured Homes	3,611	1%	2.4 M	0.3%
Residential: 2-4 Unit Homes	26,548	9%	31.4 M	4%
Residential: Condos & Co-Ops	22,176	7%	123.5 M	15%
Multifamily Housing (5+ Units)	15,139	5%	94.2 M	11%
Commercial: Hotels & Motels	533	0.2%	16.9 M	2%
Commercial: General	1,643	1%	9.4 M	1%
Commercial: Public Assembly	1,074	0.3%	2.5 M	0.3%
Commercial: Office	4,870	2%	58.7 M	7%
Commercial: Retail	732	0.2%	11.5 M	1%
Commercial: Hospitals, Labs & Medical Offices	726	0.2%	8.4 M	1%
Education: K-12 Schools (Public & Private)	3,089	1%	3.3 M	0.4%
Education: Other	186	0.1%	0.5 M	0.1%
Municipal	2,445	1%	6.4 M	1%
Industrial	4,201	1%	71.6 M	9%
Other & Unknown	7,883	3%	8.9 M	1%
TOTAL	306,976		839 M	

Across the city's 300,000 buildings is **almost 1 billion square feet of built space**. The **most common building type by far is single family homes**, representing 69% of buildings and 45% of built square footage.

All Residential Typologies

- **279,589 buildings** (91% of citywide building stock)
- **641 M square footage** (76% of built square footage citywide)

All Commercial Typologies

- **9,578 buildings** (4%)
- **107 M square footage** (12%)

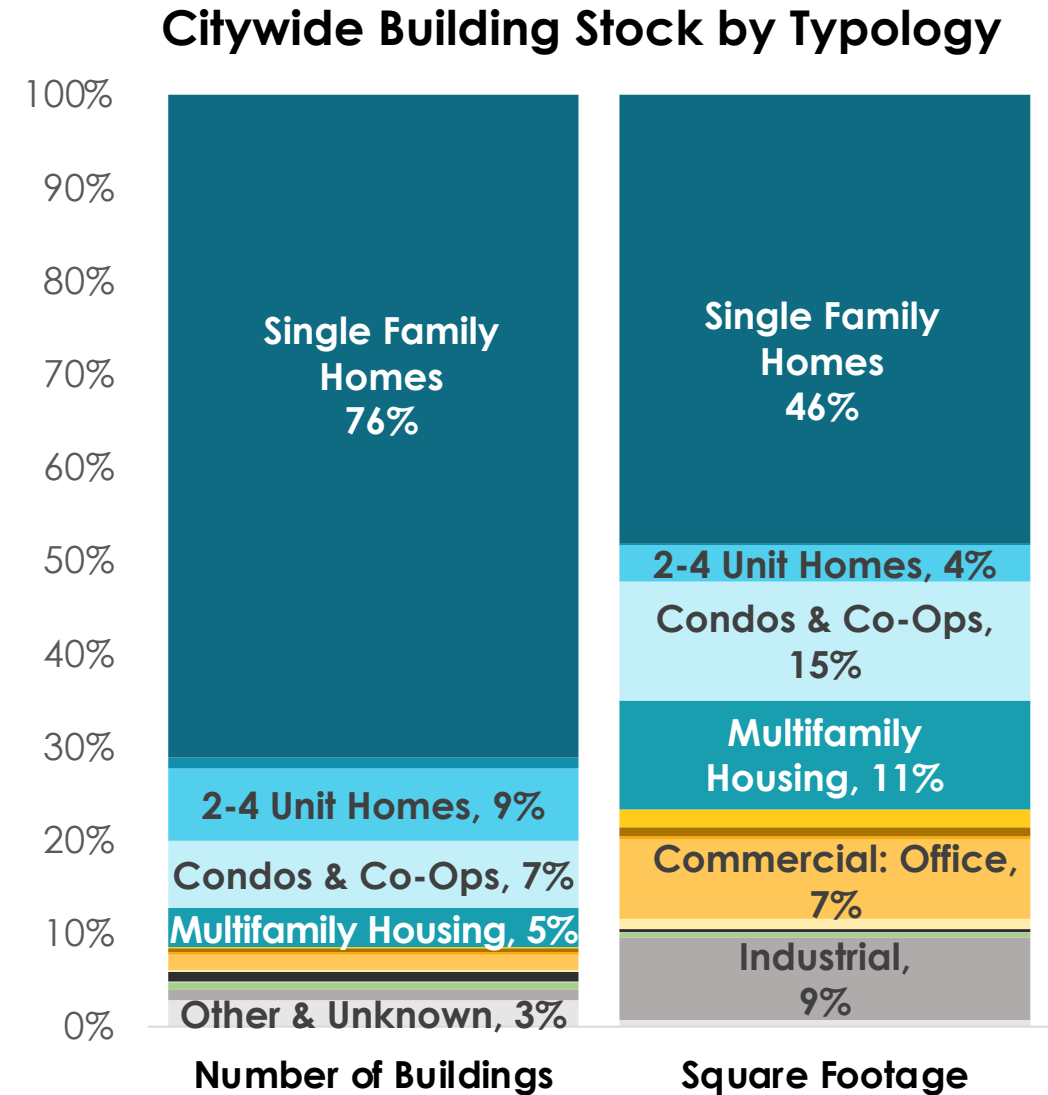
All Remaining Typologies

- **17,804 buildings** (6%)
- **91 M square footage** (12%)

Technical | Building Typologies

Building Typologies	Number of Buildings		Total Square Footage	
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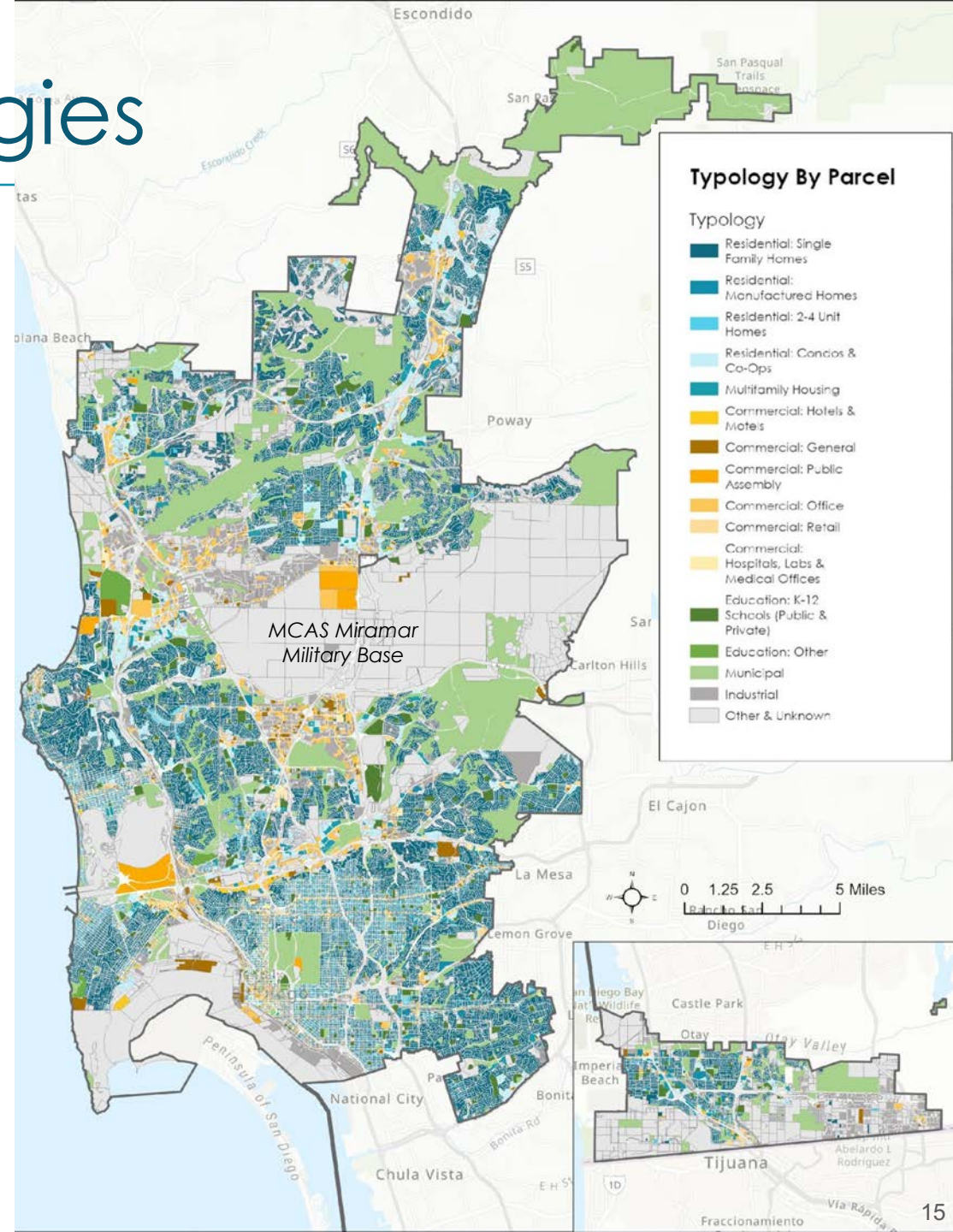
Percentages listed in the table above represent citywide percentages.



Technical | Building Typologies

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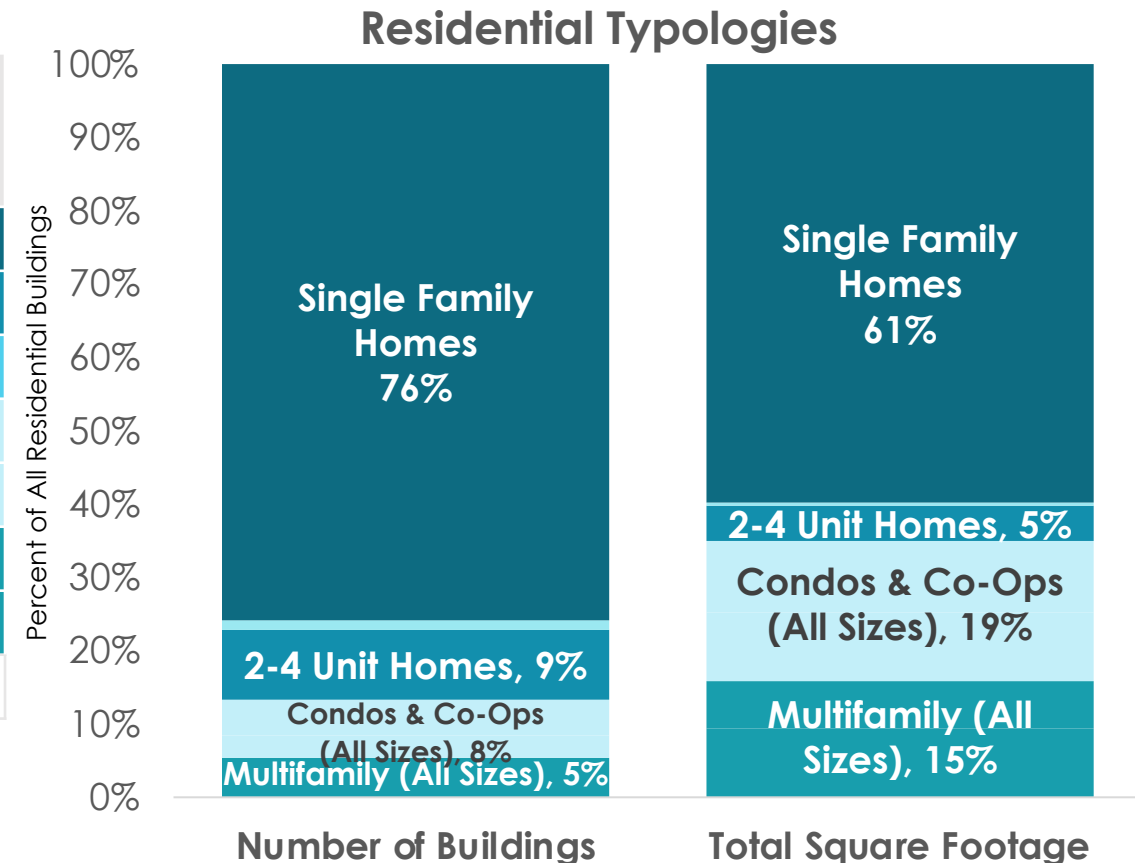


Technical | Residential Building Typologies

Small residential and multifamily typologies constitute **91% of buildings** citywide and **76% of built square footage** citywide. Single family homes dominate residential buildings citywide.

Residential Typologies	Residential Buildings		Residential Square Footage	
	Count	Percentage	Count	Percentage
Single Family Homes	212,120	76%	389 M	61%
Manufactured Homes	3,611	1%	2 M	0.3%
2-4 Unit Homes	26,548	9%	31 M	5%
Condos & Co-Ops (under 50k sq. ft.)	13,099	5%	55 M	9%
Condos & Co-Ops (over 50k sq. ft.)	9,072	3%	69 M	11%
Multifamily Housing (under 50k sq. ft.)	11,613	4%	41 M	6%
Multifamily Housing (over 50k sq. ft.)	3,526	1%	54 M	8%
TOTAL	279,589	100%	641 M	100%

Percentages listed in the table above represent percentage of all residential typologies.

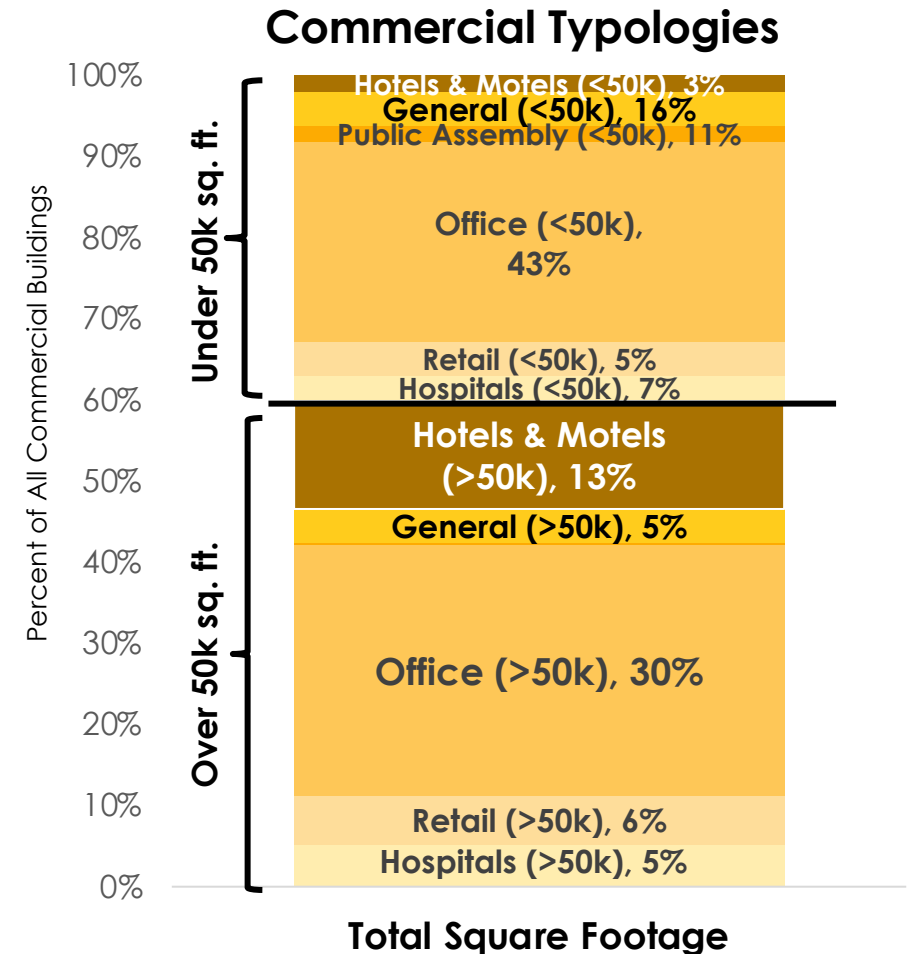


Technical | Commercial Building Typologies

Commercial typologies constitute **4% of buildings** and **12% of built square footage** citywide. Large commercial buildings (over 50k sq. ft.) represent 10% of citywide built square footage.

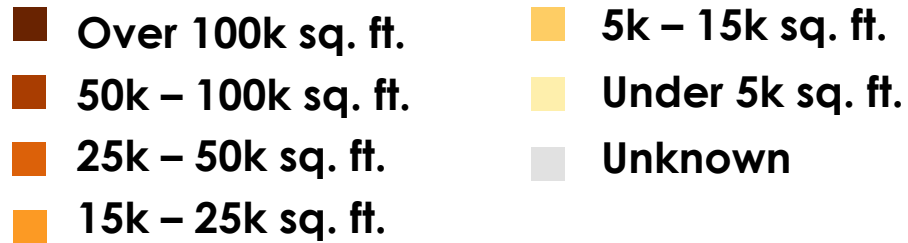
Commercial Typologies	Under 50k sq. ft.				Over 50k sq. ft.			
	Number of Buildings		Total Square Footage		Number of Buildings		Total Square Footage	
Hotels & Motels	289	3%	3 M	3%	244	3%	14 M	13%
General	1,532	16%	5 M	5%	111	1%	5 M	5%
Public Assembly	1,068	11%	2 M	2%	6	0.1%	0.3 M	0.3%
Office	4,074	43%	26 M	24%	796	8%	32 M	30%
Retail	493	5%	5 M	5%	239	2%	7 M	6%
Hospitals, Labs & Medical Offices	639	7%	3 M	3%	87	1%	5 M	5%
TOTAL	8,095		44 M		1,483		63 M	

Percentages listed in the table above represent percentage of all commercial typologies.

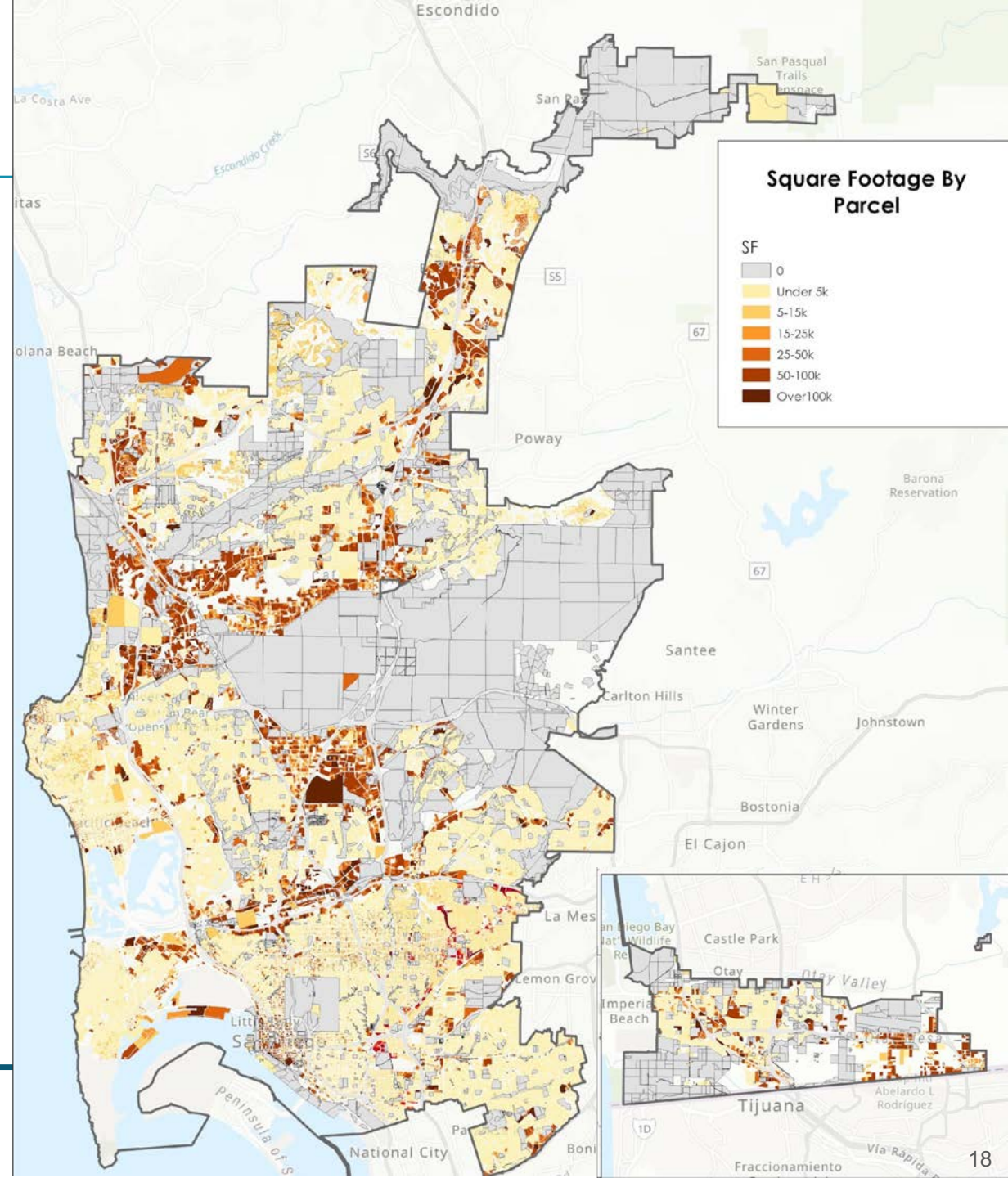


Technical | Building Size

Building size correlates with energy usage trends as well as complexity and type of retrofits needed. This analysis identified common thresholds that may be relevant for future policy and program design.

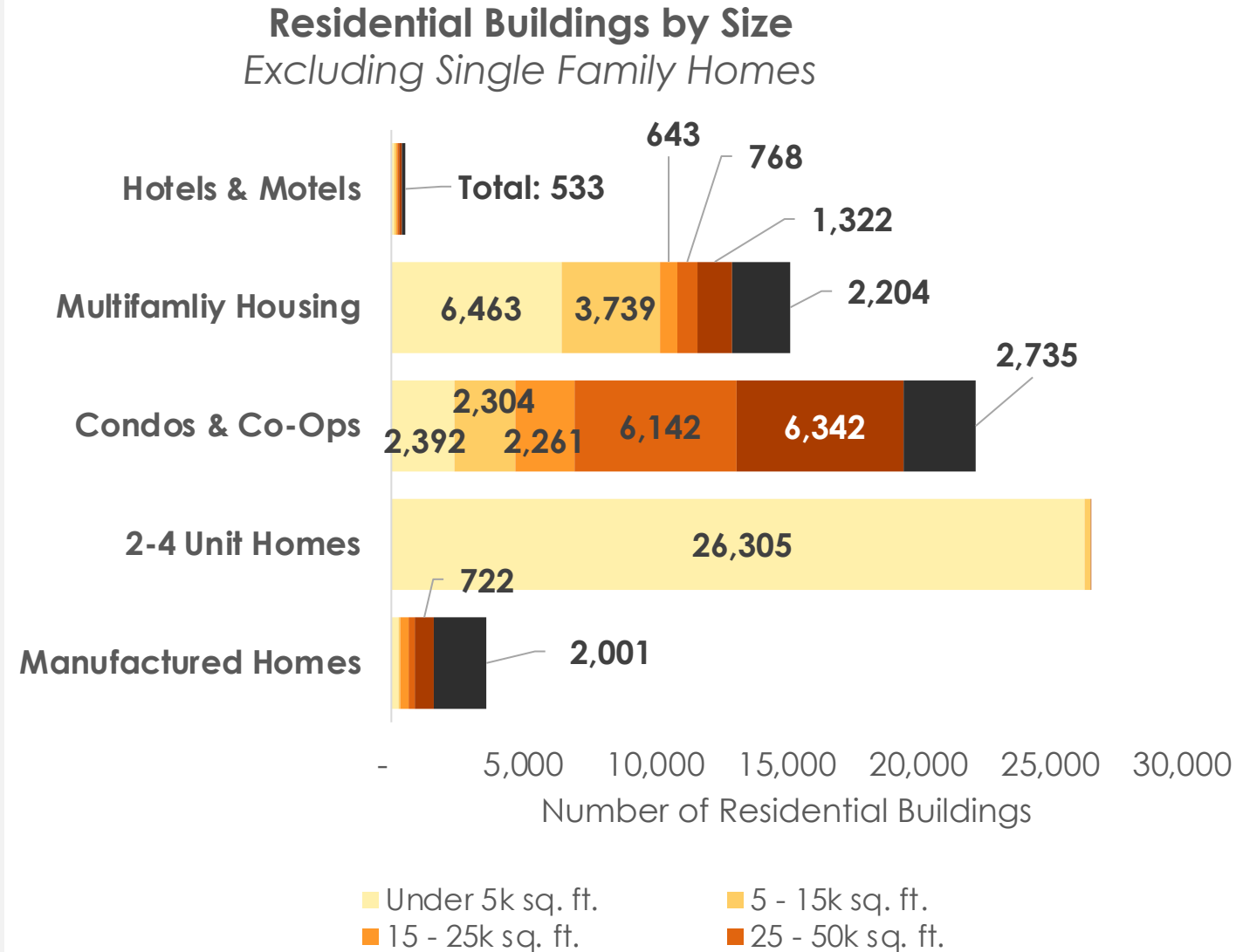


- **Almost 80% of San Diego buildings are under 5,000 sq. ft.**, the majority of which are single family homes.
- **About 19,000 (6%) of buildings are over 50,000 sq. ft.**, which represent **32% of built square footage** across the city. These large buildings tend to concentrate along commercial corridors, particularly clustered in Kearny Mesa, north and west of Miramar, Mission Valley, and Downtown.



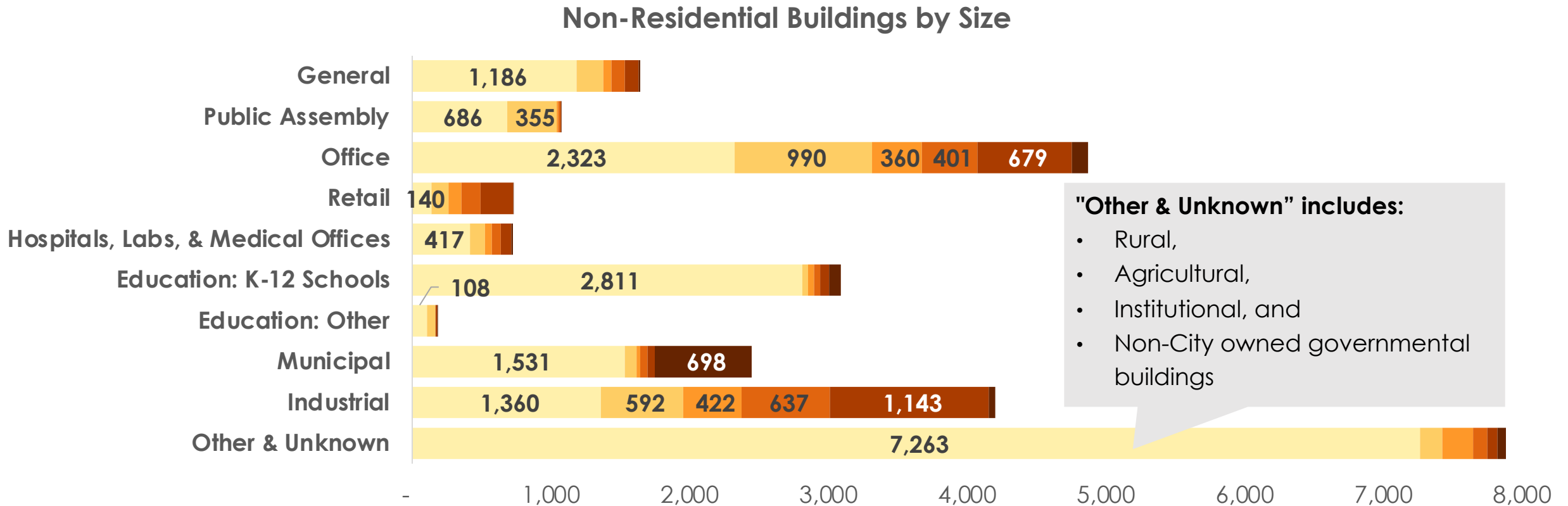
Technical | Residential Building Size

- **2-4 unit homes under 5,000 sq. ft. represent the second most common typology** in San Diego. This typology is **included in single family efficiency programs**, yet often face significantly more complex retrofits and decision-making processes.
- There are **15,000 large residential buildings** (over 50,000 sq. ft.), including approximately 9,000 condo & co-ops and 3,500 multifamily buildings.
- Some manufactured homes and condos with large square footage in the dataset may be **several smaller buildings with larger cumulative square footage**. Policy language should carefully consider these parcels, which may not be prepared for large building requirements.



Technical | Non-Residential Building Size

The **“Other & Unknown”** category is the largest non-residential category (3% of total buildings), followed by offices (2%), industrial buildings (1%), and education (1%). There are 24,500 non-residential buildings under 50,000 sq. ft., and 2,800 over.

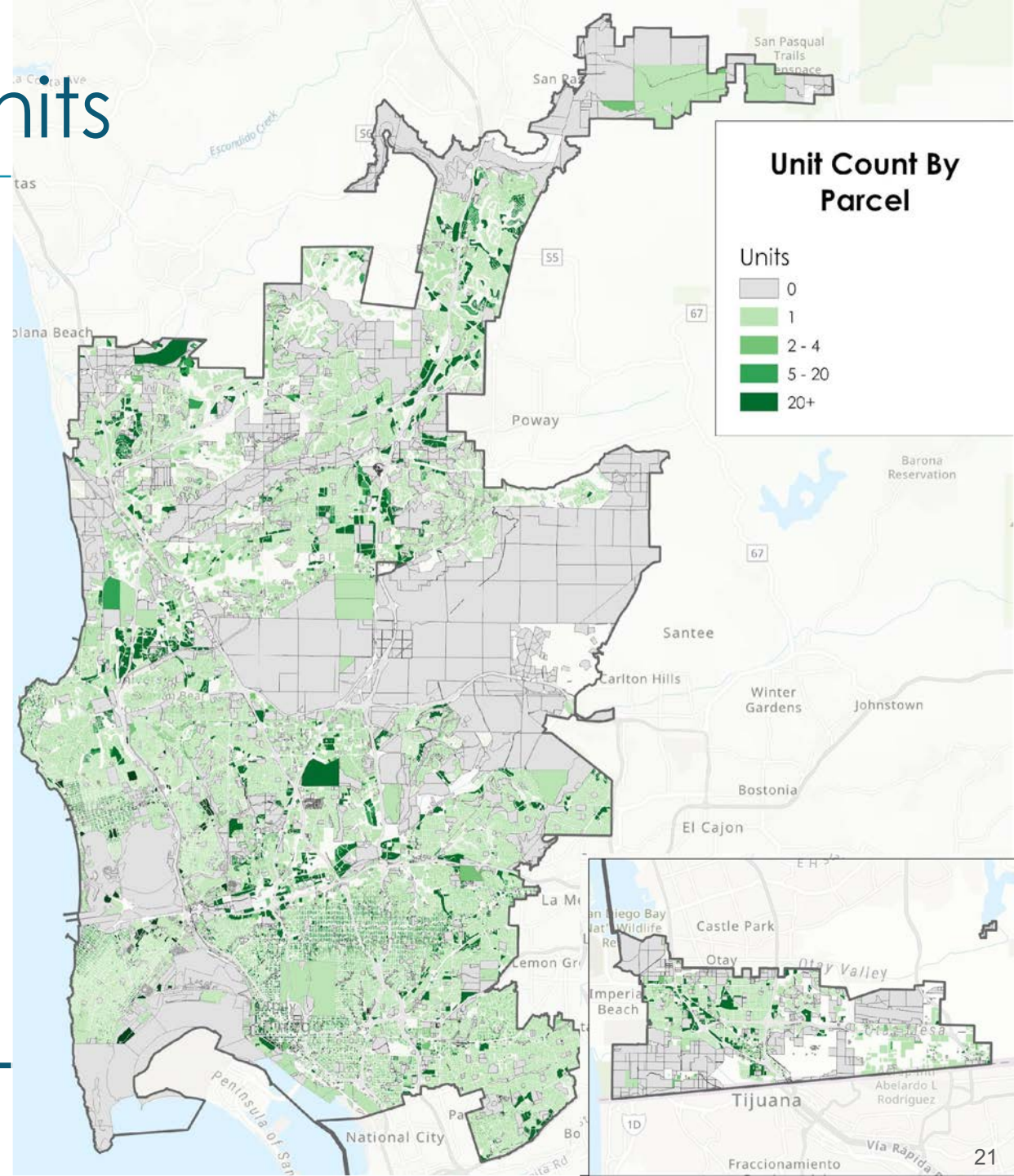
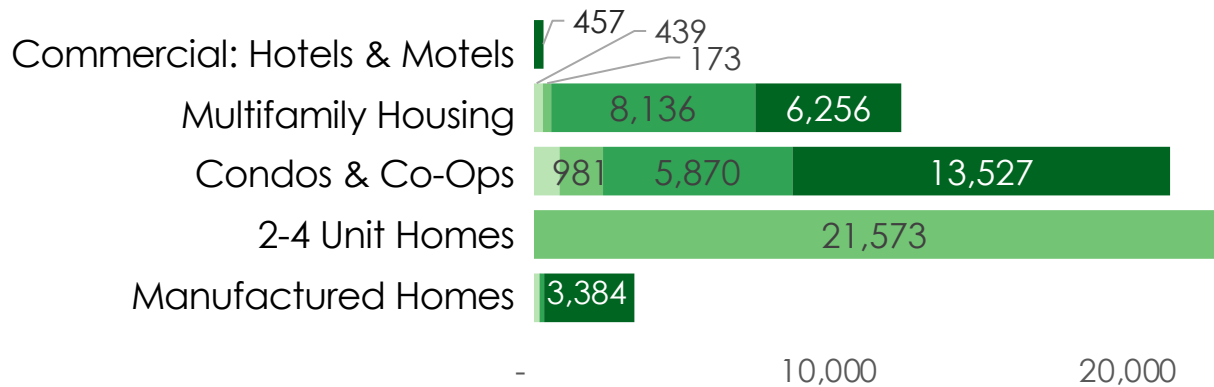


Technical | Residential Units

There are over 530,000 residential units across the city. 75% of units are in smaller and mid-sized buildings under 50,000 sq. ft., while 25% are in larger buildings over 50,000 sq. ft.

- 30,000 units are in hotels & motels, a typology included in residential units given limited, unique opportunities as short-term housing.
- Concentrations of multi-unit buildings are scattered geographically, but **higher concentrations of multi-unit buildings are clustered in Downtown, Mission Valley, San Ysidro, and University Heights.**

Number of Buildings by Unit Count
Excluding Single Family Homes



Technical | Vintage

Vintage, or age, of buildings can be a proxy for which buildings may need significant envelope improvements or have equipment close to end-of-life. A portion of older buildings may have undergone a significant renovation subject to increasingly strict state building codes, however vintage remains the closest proxy to existing conditions.

- **The majority of residential units in San Diego (57%) were built before 1978**, when a dedicated energy code went into effect in California and is often used as a proxy to indicate more efficient energy performance.
- **Only 9% of residential units were built after 2005**, which may indicate buildings that need less significant upgrades to fully electrify.

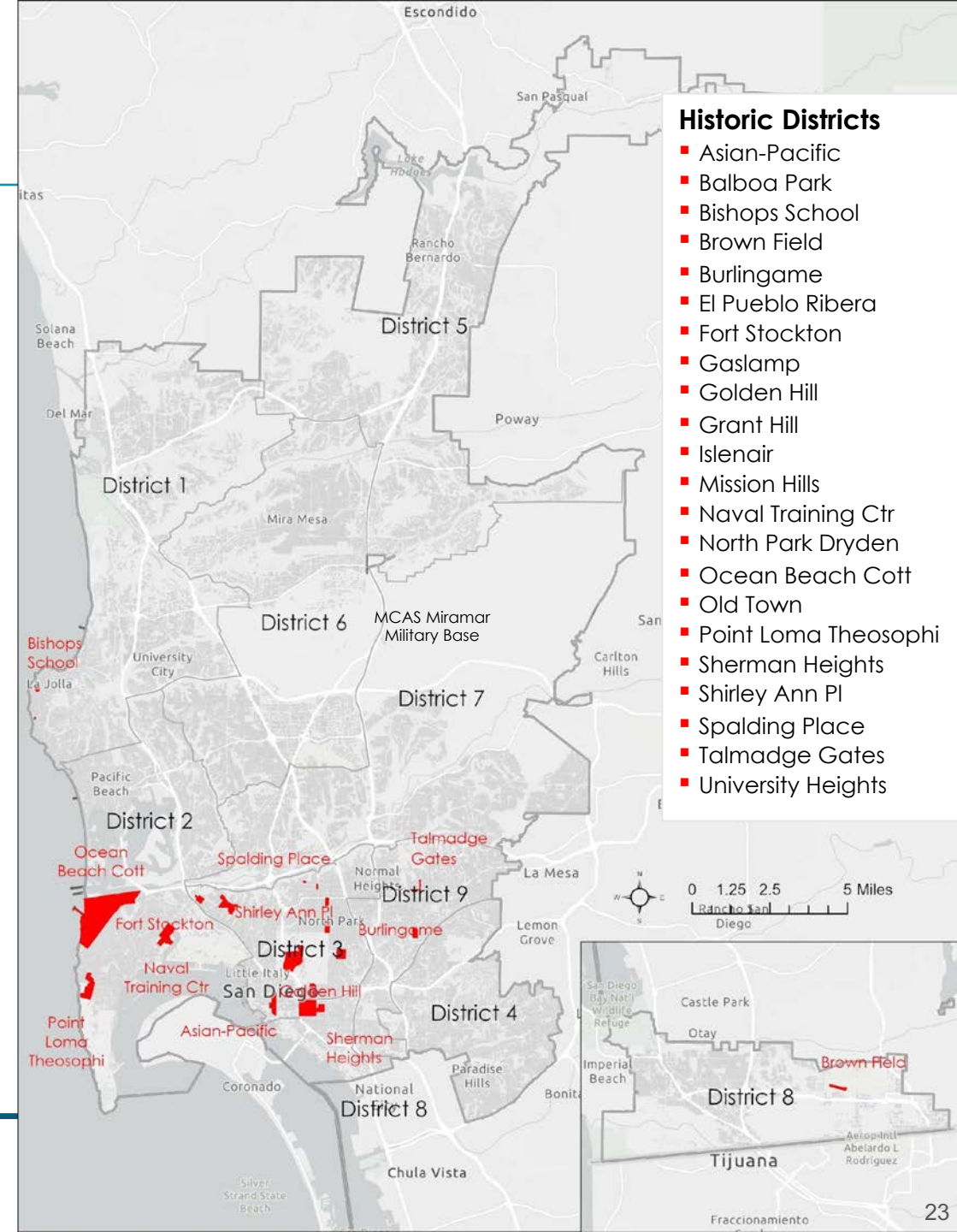
Building Vintage by Residential Units Across Typologies

Building Typology	Number of Units by Building Vintage								Total Units
	Pre-1978		1978 – 1991		1992 – 2005		Post-2005		
Single Family & ADUs	218,701	65%	61,571	18%	35,598	11%	20,979	6%	336,849
Multifamily	85,253	44%	56,598	29%	26,148	13%	26,751	14%	194,750
Total	303,954	57%	118,169	22%	61,746	12%	47,730	9%	531,599

Technical | Historic Districts

There are **22 historic districts** in the City, the majority of which are in and around downtown. These buildings may have additional complexities and restrictions on retrofits, such as limitations on changes to the building exterior and envelope, based on their historic designation. **Just over 6,400 buildings are located in these districts** (2% of citywide building stock).

Building Typology	Number of Buildings in Historic Districts	Percentage of Citywide Typology
Residential	4,162	2%
Multifamily Housing	884	6%
Education	103	3%
Municipal	390	16%
Commercial	368	4%
Industrial	20	0.5%
Other & Unknown	510	6%
Grand Total	6,437	2%



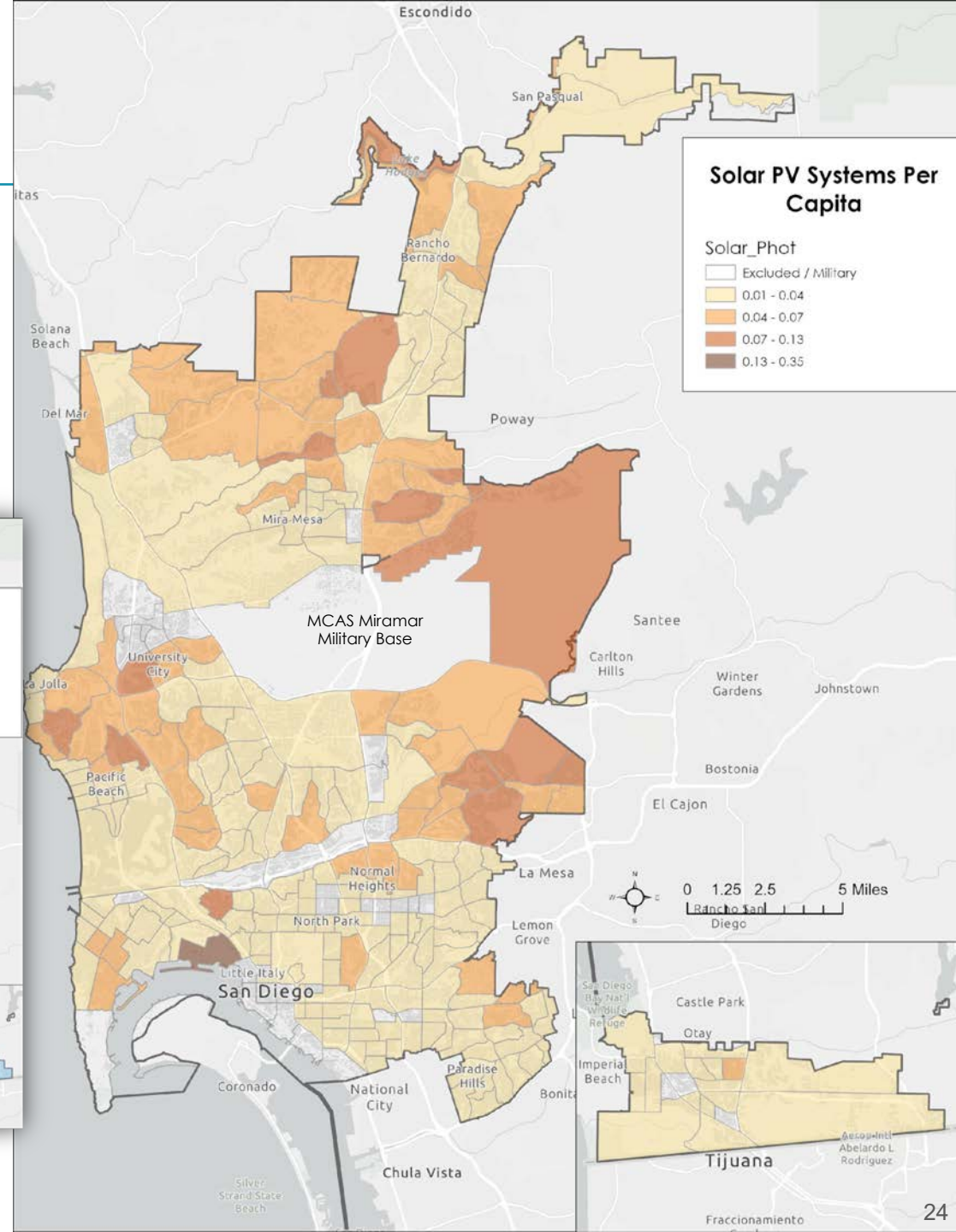
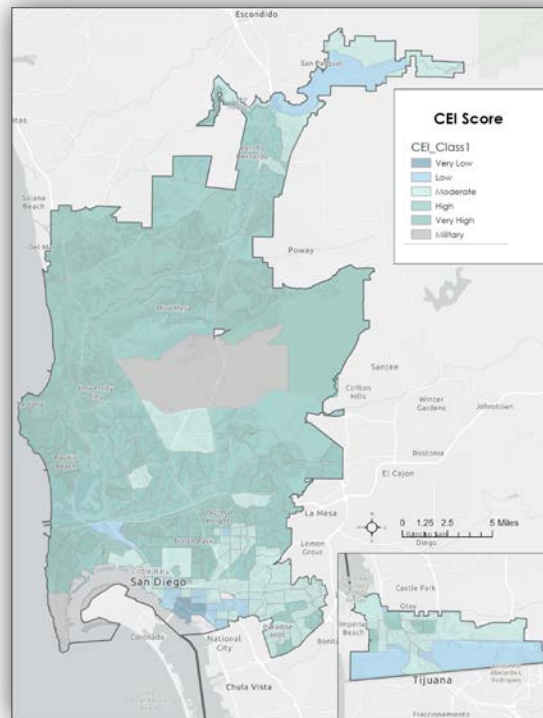
Technical | Solar PV

Solar PV, mapped here by census tract, is concentrated in northern and eastern San Diego, as well as University City and Pacific Beach.

Installed solar PV tends to correlate with higher-income areas of the city, with lower prevalence in San Diego's Communities of Concern.

- Approximately 75,000 buildings (majority single family homes) are located in Communities of Concern with very low solar penetration (under 4%). These buildings may benefit from targeted programs to increase solar uptake.

For comparison: Climate Equity Index Scores



*For more information on the Climate Equity Index scores, see [slide 54](#). Map source: San Diego [Climate Equity Index](#).

Technical | Benchmarked Energy

Understanding energy and emissions trends across different building typologies helps inform policy and program design and feasibility.

Although some technical indicators like building size, vintage, and typology are helpful proxies for energy usage, the City of San Diego also has access to a subset of actual reported energy usage from its **Building Energy Benchmarking Ordinance**. The project team was able to take a preliminary look at the 2021 reported data and trends across building typologies, including:

- **Energy Use Intensity (EUI)**, a metric used to compare energy usage adjusted for building size
- **Greenhouse Gas (GHG) Emissions Intensity** by fuel, to better understand the impact of natural gas usage versus electricity, and
- **ENERGY STAR® Score**, a nationally recognized metric ranging from 1 to 100 that compares against national averages for each building type.

**You can't manage
what you don't
measure.**

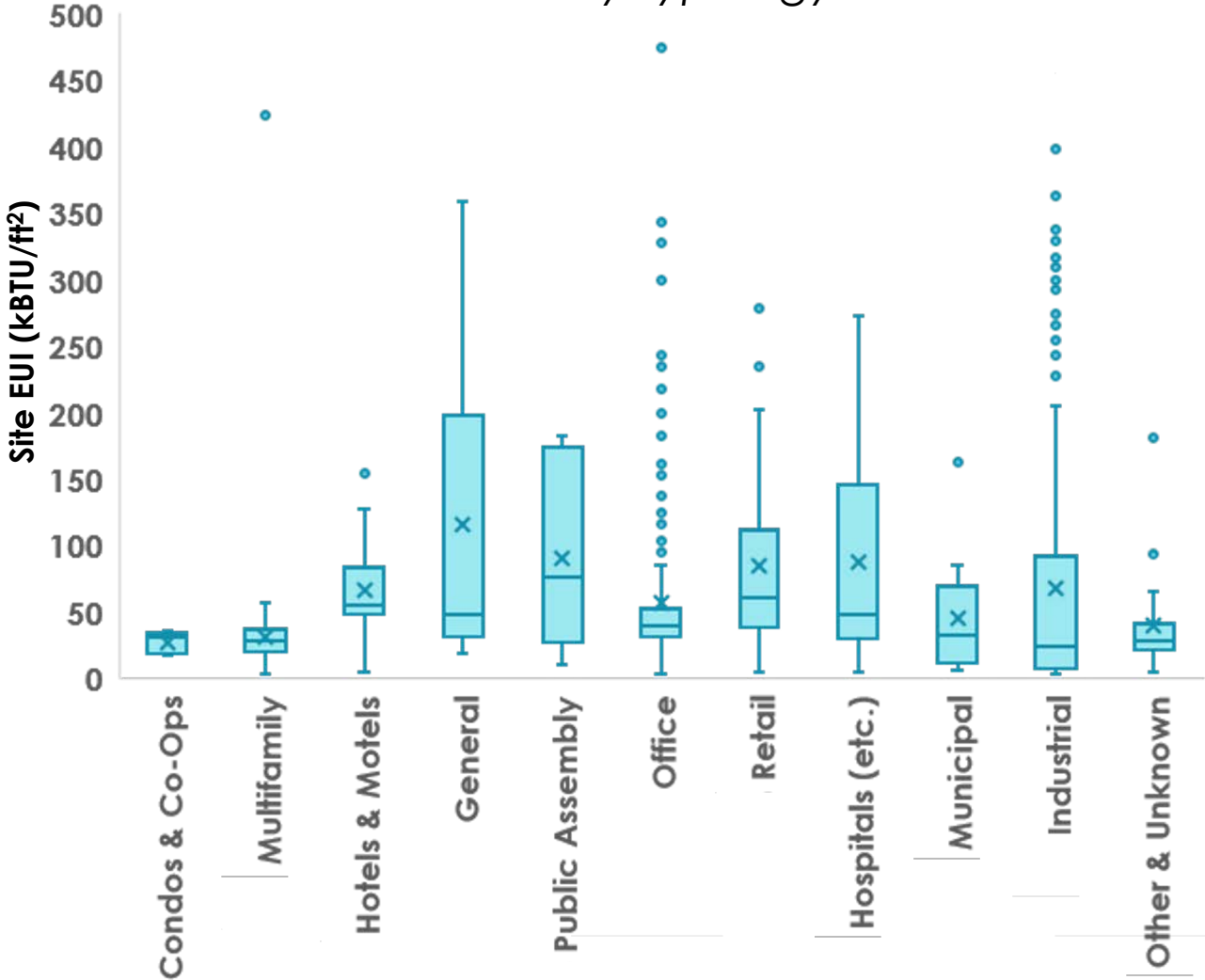


Benchmarked Energy | Site Energy Use Intensity

Site Energy Use Intensity (“Site EUI”) is the amount of energy consumed on the building site per square foot annually, a metric that normalizes across different building sizes.

Building Typologies	Number of Properties	Average EUI (kBtu/ft ²)
Residential: Condos & Co-Ops	5	27
Multifamily Housing (5+ Units)	197	31
Commercial: Hotels & Motels	30	66
Commercial: General	23	115
Commercial: Public Assembly	6	91
Commercial: Office	186	54
Commercial: Retail	35	84
Commercial: Hospitals, Labs & Medical Offices	34	86
Municipal	22	44
Industrial	183	64
Other & Unknown	24	89
TOTAL Benchmarked Properties	740	56

Site Energy Use Intensity (EUI) Distribution by Typology



Benchmarked Energy | Site EUI (cont.)

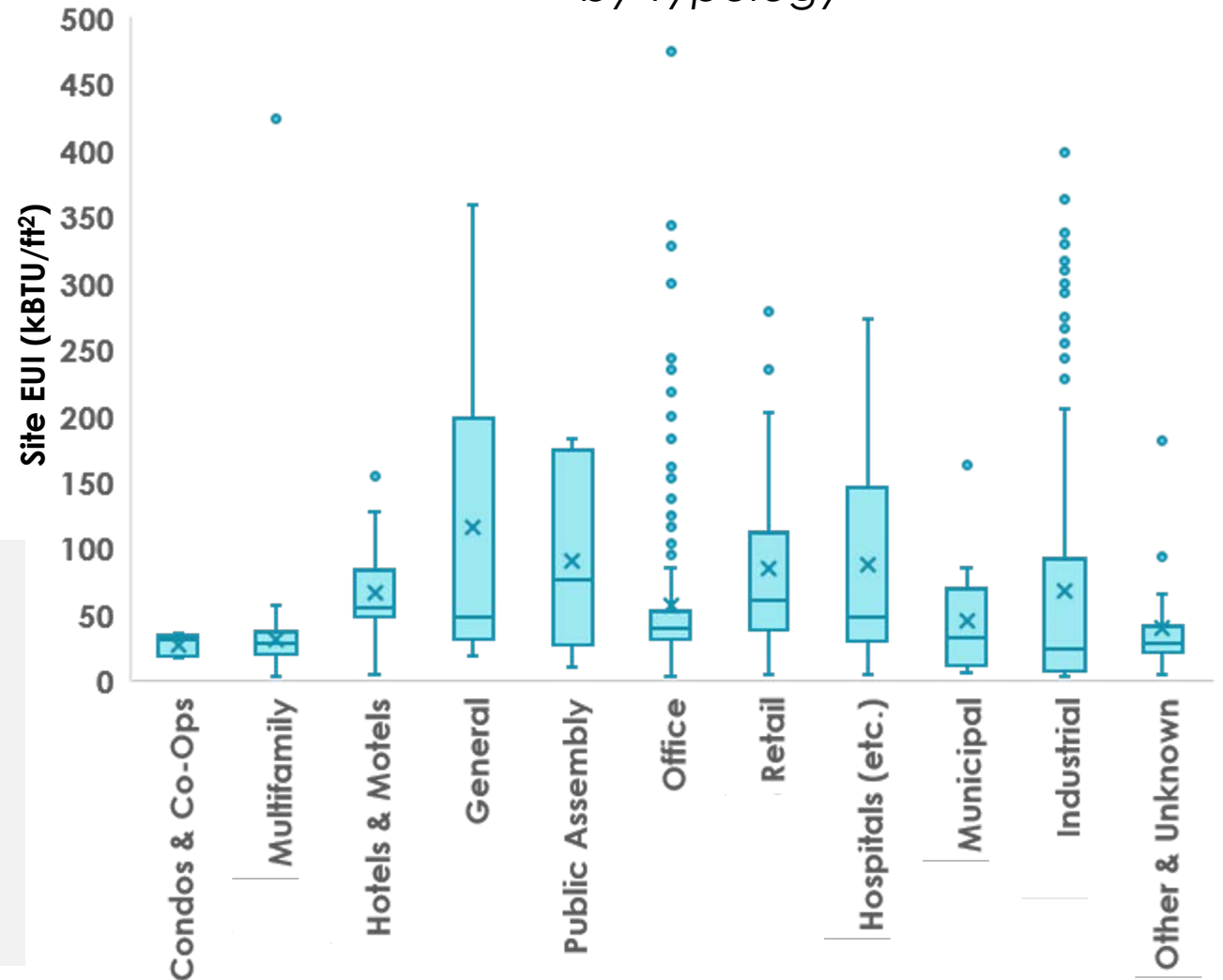
Key Takeaways

- **Commercial general, public assembly, and industrial may be typologies that are too broad** when considering a performance-based policy, given the wide range of Site EUI datapoints. These should be separated into more distinct typologies.
- **Offices have a wide range of Site EIUs** and may have significant energy efficiency and electrification opportunities to improve their performance.

Data quality notes:

- The project team mapped Energy Star Portfolio Manager use types to the BHSA typologies, and additional analysis may be needed to categorize buildings sufficiently for policy development.
- More data is needed on educational and residential buildings to identify trends, and typologies with large score ranges may need to be checked for data quality issues.

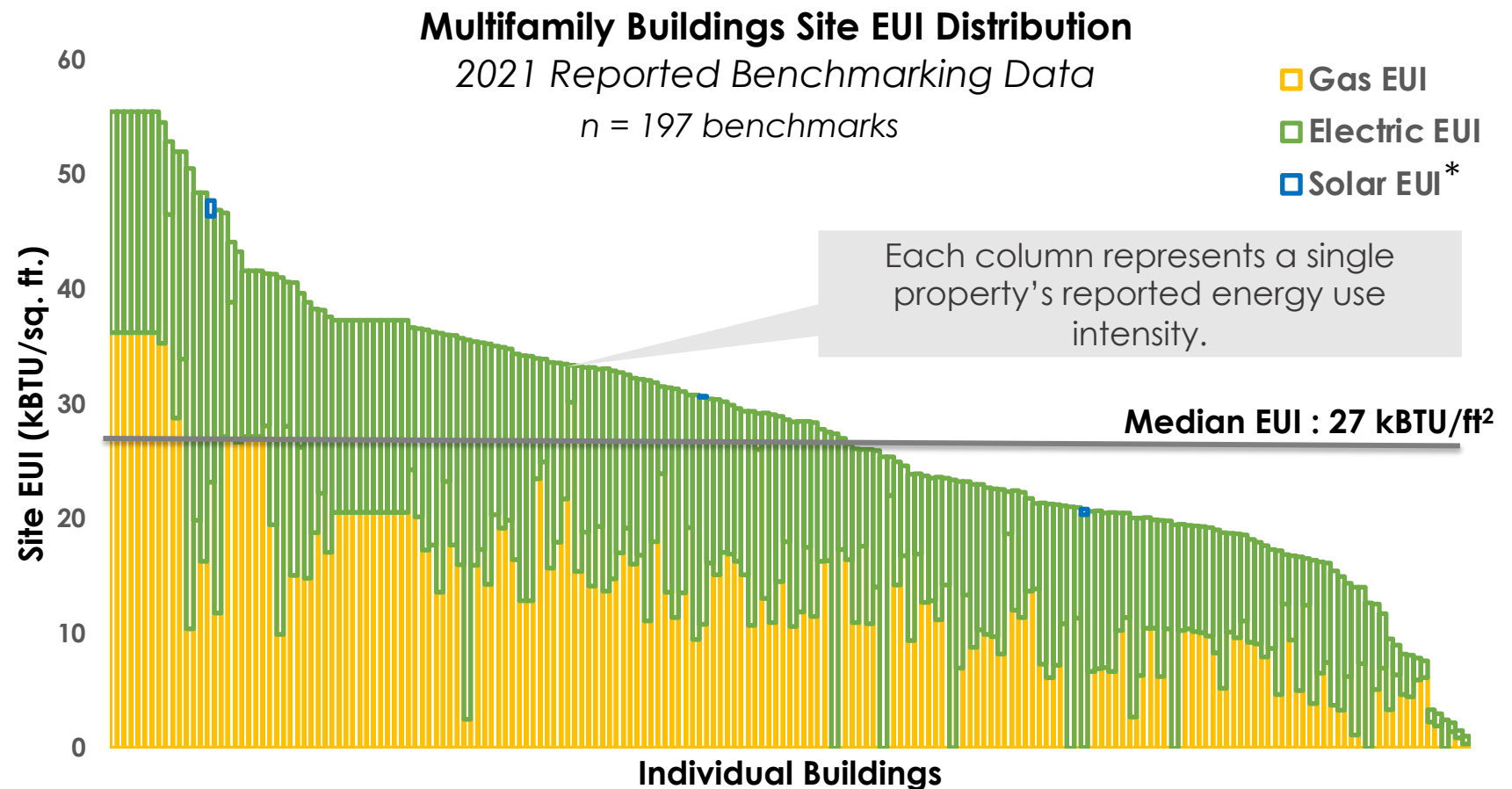
Site Energy Use Intensity (EUI) Distribution
by Typology



Benchmarked Energy | Site EUI (cont.)

The data can also be viewed in detail for each building typology. The chart below is an example of the multifamily typology (using 2021 reported data), showing EUI by natural gas and grid electricity.

- **Natural gas** use drives energy usage in multifamily buildings. This indicates that higher energy users could reduce gas usage to improve efficiency and emissions from their buildings. This may also be reflective of the 44% of multifamily buildings built prior to 1977 that may have lower efficiency.
- **All-electric or nearly all-electric** multifamily buildings exist in San Diego and could provide case studies to help other buildings. The majority of these buildings are performing better than the median.



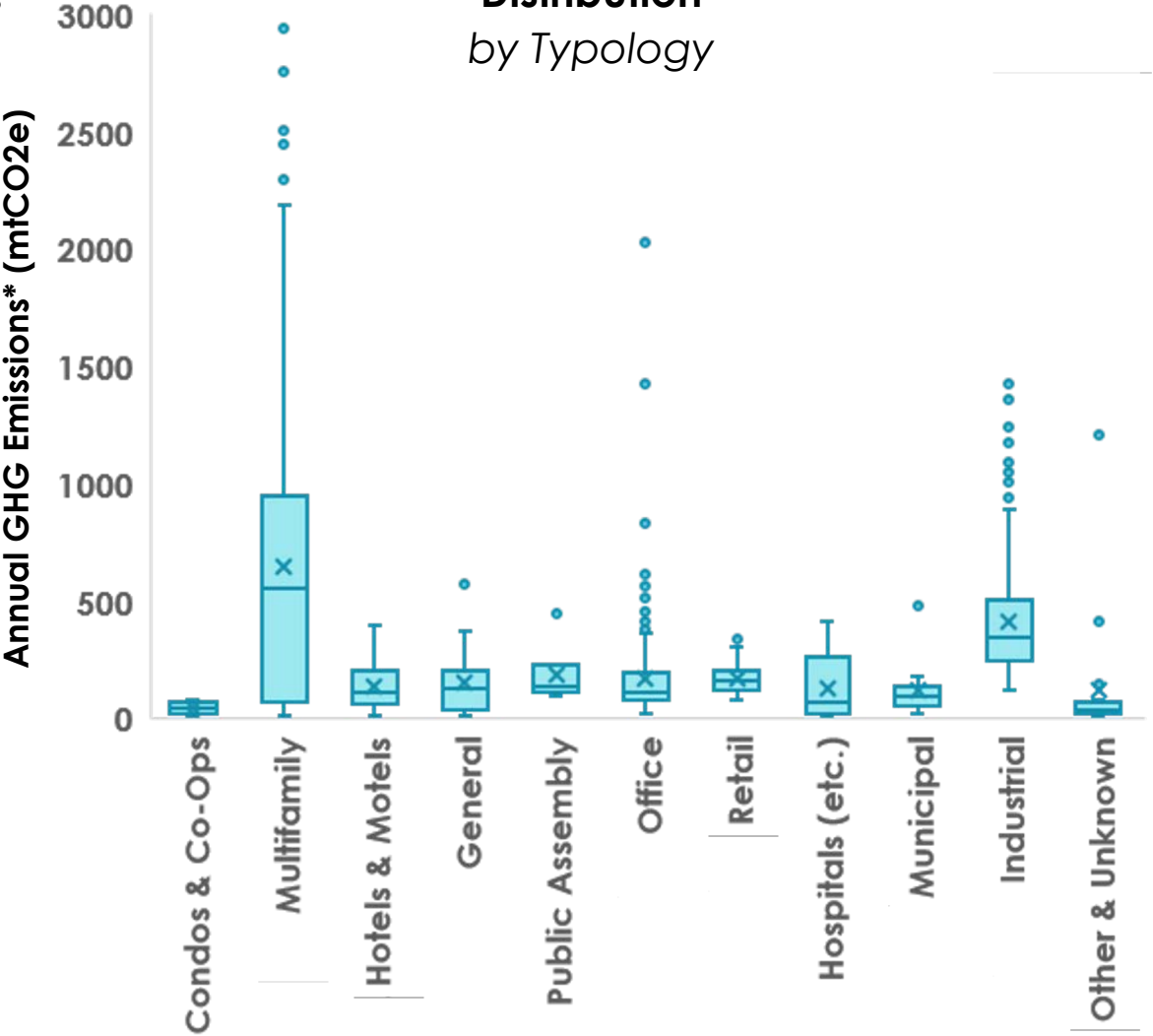
*Note solar use reporting is chronically low across cities with benchmarking ordinances and may be underrepresented in the data.

GHG Emissions | Distribution

Greenhouse gas (GHG) emissions show how much San Diego's buildings are contributing to climate change and air quality issues. As electricity becomes cleaner, this metric mainly reflects natural gas usage within buildings.

Building Typologies	Number of Properties	Avg. Annual GHG Emissions*
Residential: Condos & Co-Ops	5	296
Multifamily Housing (5+ Units)	197	256
Commercial: Hotels & Motels	30	446
Commercial: General	23	536
Commercial: Public Assembly	6	291
Commercial: Office	186	481
Commercial: Retail	35	611
Commercial: Hospitals, Labs & Medical Offices	34	998
Municipal	22	331
Industrial	183	369
Other & Unknown	24	1,048
ALL Benchmarked Properties	745	434

Annual Greenhouse Gas (GHG) Emissions Distribution by Typology



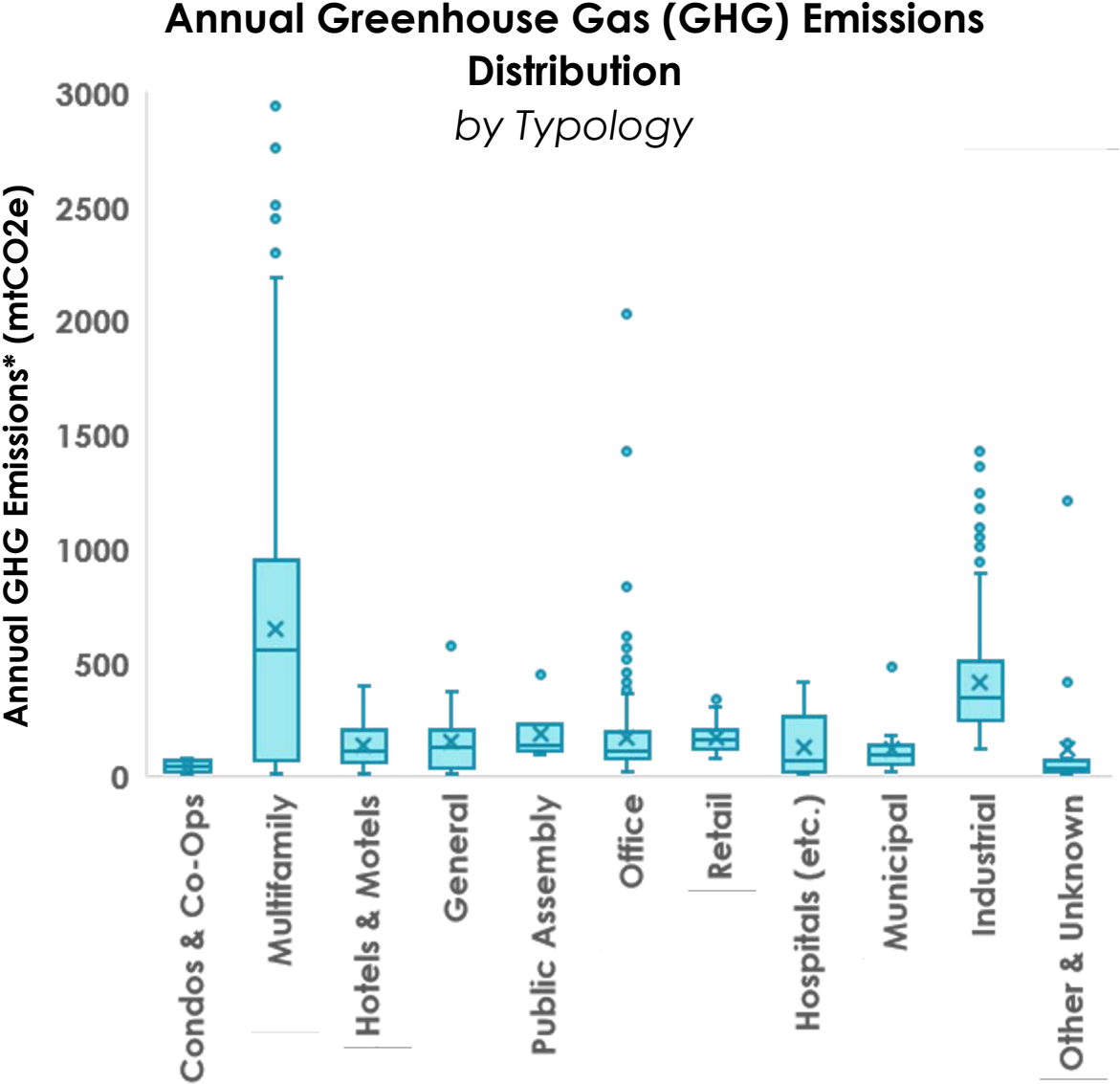
*Annual GHG emissions are measured in metric tons of CO2 equivalent (mtCO2e), a unit that converts various greenhouse gases into equivalent CO2 emissions. 29

GHG Emissions | Distribution

Takeaways

- **Multifamily buildings have the widest range and highest average GHG emissions per square foot** of San Diego's building typologies. Energy use and GHG emissions in multifamily buildings is driven by high natural gas usage, majority of which is for space and water heating.
- **Industrial buildings emit relatively high GHG emissions per square foot as well.** These buildings may need specialized engineering and support if these emissions are related to hard-to-electrify industrial processes.

Note: City of San Diego may have a different methodology for accounting GHG emissions locally. These metrics reference Energy Star Portfolio Manager's calculations.

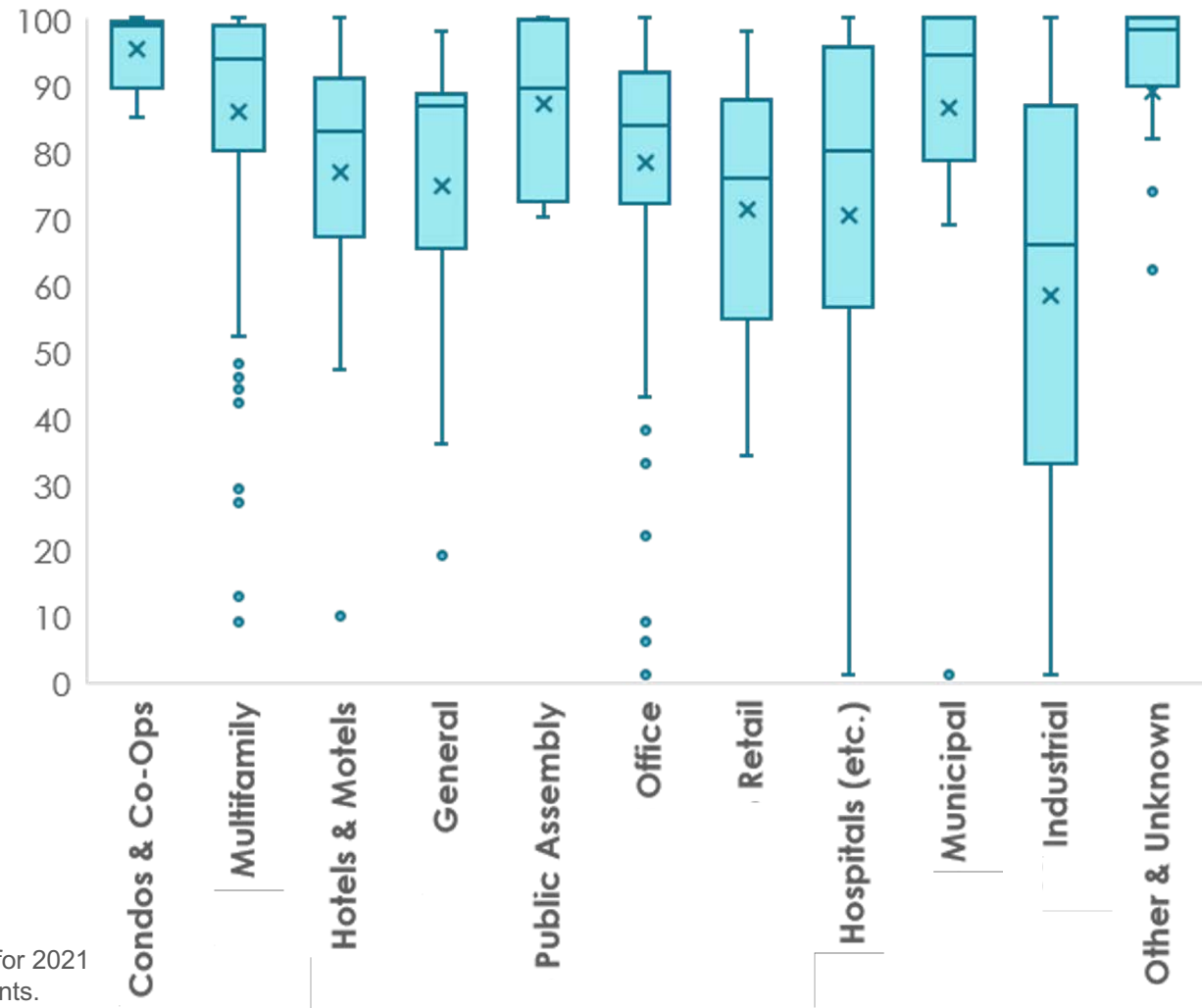


Benchmarked Energy | Energy Star Score

ENERGY STAR® Scores range from 1 to 100, normalizing energy use for weather and comparison across typology national averages.

Building Typologies	Number of Properties	Average Energy Star Score
Residential: Condos & Co-Ops	5	95
Multifamily Housing (5+ Units)	197	86
Commercial: Hotels & Motels	30	77
Commercial: General	23	75
Commercial: Public Assembly	6	87
Commercial: Office	186	79
Commercial: Retail	35	71
Commercial: Hospitals, Labs & Medical Offices	34	69
Municipal	22	87
Industrial	183	58
Other & Unknown	24	88
ALL Benchmarked Properties	745	78

Energy Star Score Distribution by Typology



Note: Not all building typologies are eligible for an Energy Star Score. These include all assigned scores for 2021 submitted benchmarking data, both certified and uncertified, excluding typologies with insufficient datapoints.

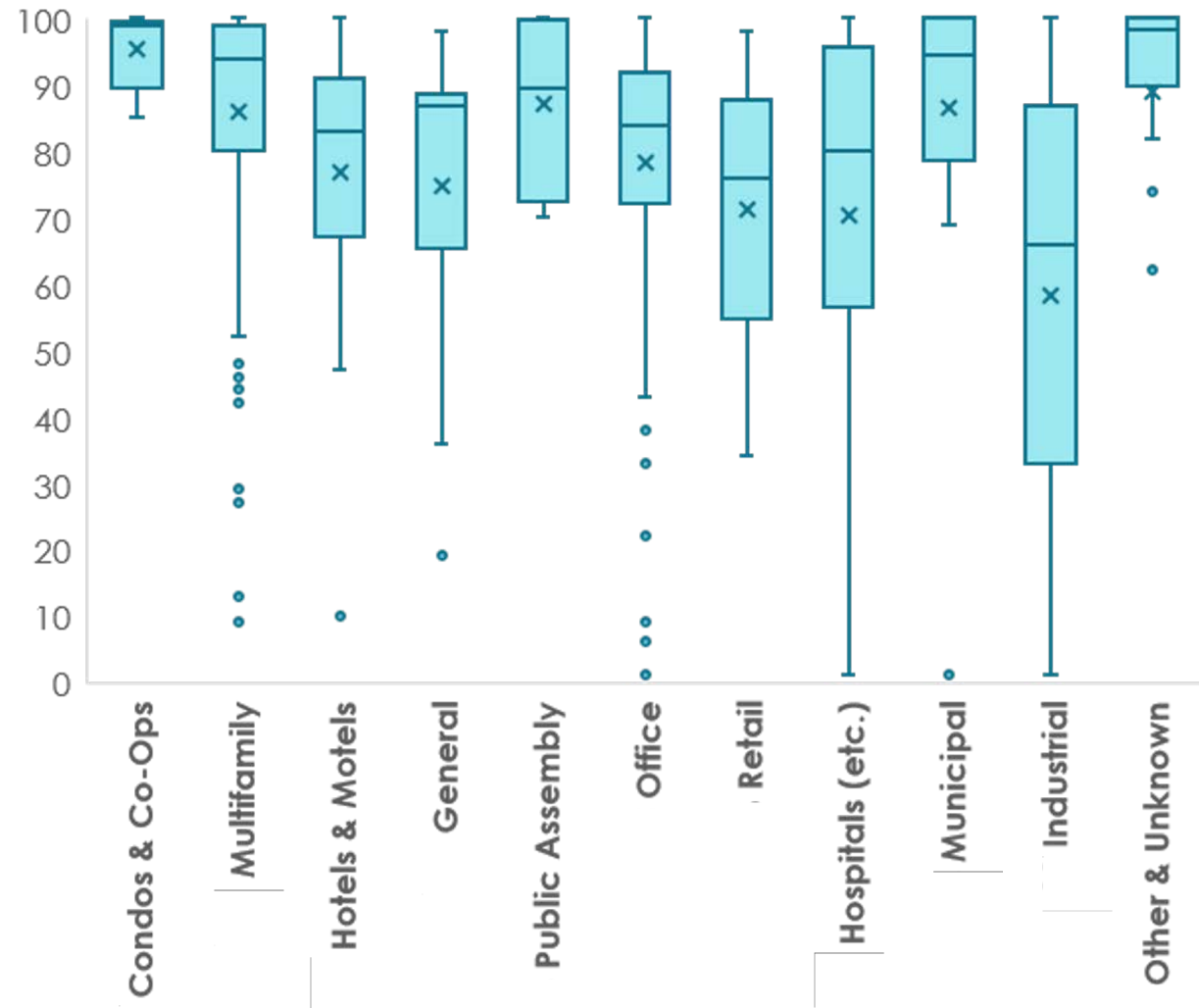
Benchmarked Energy | Energy Star Score

Key Takeaways

- **San Diego buildings tend to have high Energy Star scores compared to national averages, indicating that they are relatively energy efficient.** However, even these buildings could continue to improve efficiency, data reporting, and lower their emissions.
- **Industrial buildings have the lowest median and average Energy Star Scores of building typologies in San Diego,** followed by commercial retail and hospital buildings.
- Many low scoring multifamily and office buildings have significant opportunities for efficiency and electrification upgrades to improve their overall performance.

Data quality note: More data is needed on educational and residential buildings to identify trends, and typologies with large score ranges may need to be checked for data quality issues.

Energy Star Score Distribution
by Typology



Benchmarked Energy | Preliminary Findings

Benchmarking data is a critical tool for designing performance-based building policies* that motivate ambitious action. Based on this preliminary benchmarking analysis, future policy development should consider the following takeaways:

- **Clean, robust benchmarking data is needed to underpin the design of any performance-based policy approach in San Diego.** Greater enforcement to improve data quality and compliance would be critical to ensure the City has the right data for future policy design.
- **Adding staff capacity to the City's benchmarking team** could improve the data and help building decision-makers take action. Proactive outreach to under-resourced buildings, automated data quality systems, and technical assistance for building owners to interpret the data would all be important to ensure better data quality and more voluntary efficiency and electrification upgrades.
- **Certain typology categorizations may need to be adjusted in future policy development** given the wide range of energy use in the reported data, particularly for mixed use, commercial general, offices, and industrial buildings.
- **The City could consider expanding benchmarking requirements over time** to include additional building sizes and typologies to broaden the impact and set a foundation for future policies to build on.

Technical Indicators | Key Takeaways

Summary of Key Takeaways (1 of 2)

Of the 300,000 buildings in San Diego, the vast majority are residential buildings (91% of buildings, 76% of sq. ft., including 532,000 residential units).



Single Family Homes are the most common building type in San Diego (69% of buildings, 46% of sq. ft). 2-4 unit homes are the second most common, and although they are included in single family programs, they may face additional complexities.

There are 13,000 large residential buildings (over 50,000 sq. ft.), including about 9,000 condo & co-ops and 3,500 multifamily buildings. Multifamily buildings have the widest range and highest average GHG emissions per square foot, driven by gas space and water heating.

The majority of residential units in San Diego (57%) were built before 1978, when a dedicated energy code went into effect in California and is often used as a proxy to indicate more efficient energy performance. This includes 65% of multifamily buildings. Only 9% of buildings were built after 2005.

San Diego Building Stock

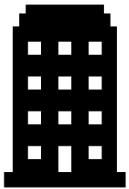


- **300,000 buildings**
 - 91% Residential
 - 3% Commercial
 - 6% Other
- **273,000 parcels**
- **Almost 1 billion sq. ft.**

Technical Indicators | Key Takeaways

Summary of Key Takeaways (2 of 2)

Approximately 75,000 buildings (majority single family homes) are located in Communities of Concern, according to the San Diego Climate Equity Index, which is a local tool to identify underserved areas of the City. These neighborhoods have low solar penetration (under 4%) and may benefit from targeted programs.



Commercial typologies make up only 3% of buildings, yet constitute 13% of built square footage citywide.

Large commercial buildings make up 8% of total square footage, and are currently subject to the City's benchmarking ordinance to track their energy and GHGs over time.

Only 14,000 buildings (5%) are over 50,000 sq. ft., although represent 22% of built square footage across the city, including multifamily, commercial and other typologies such as industrial. These large buildings tend to concentrate along commercial corridors.

Social Vulnerability & Environmental Risk



Social Vulnerability & Environmental Risk Indicators

Technical Indicators

- Number of Buildings
- Building Typologies
- Building Size
- Residential Units
- Vintage
- Historic Districts
- Existing Solar PV
- Benchmarked Energy

Social Vulnerability & Environmental Risk Indicators

- City Council Districts
- Race & Language
- Poverty Rate
- Disadvantaged Communities
- Justice40 Communities
- Communities of Concern
- Energy & Housing Cost Burden
- Digital Access
- Flood & Fire Risk
- Heat Risk
- Asthma Rate
- Age

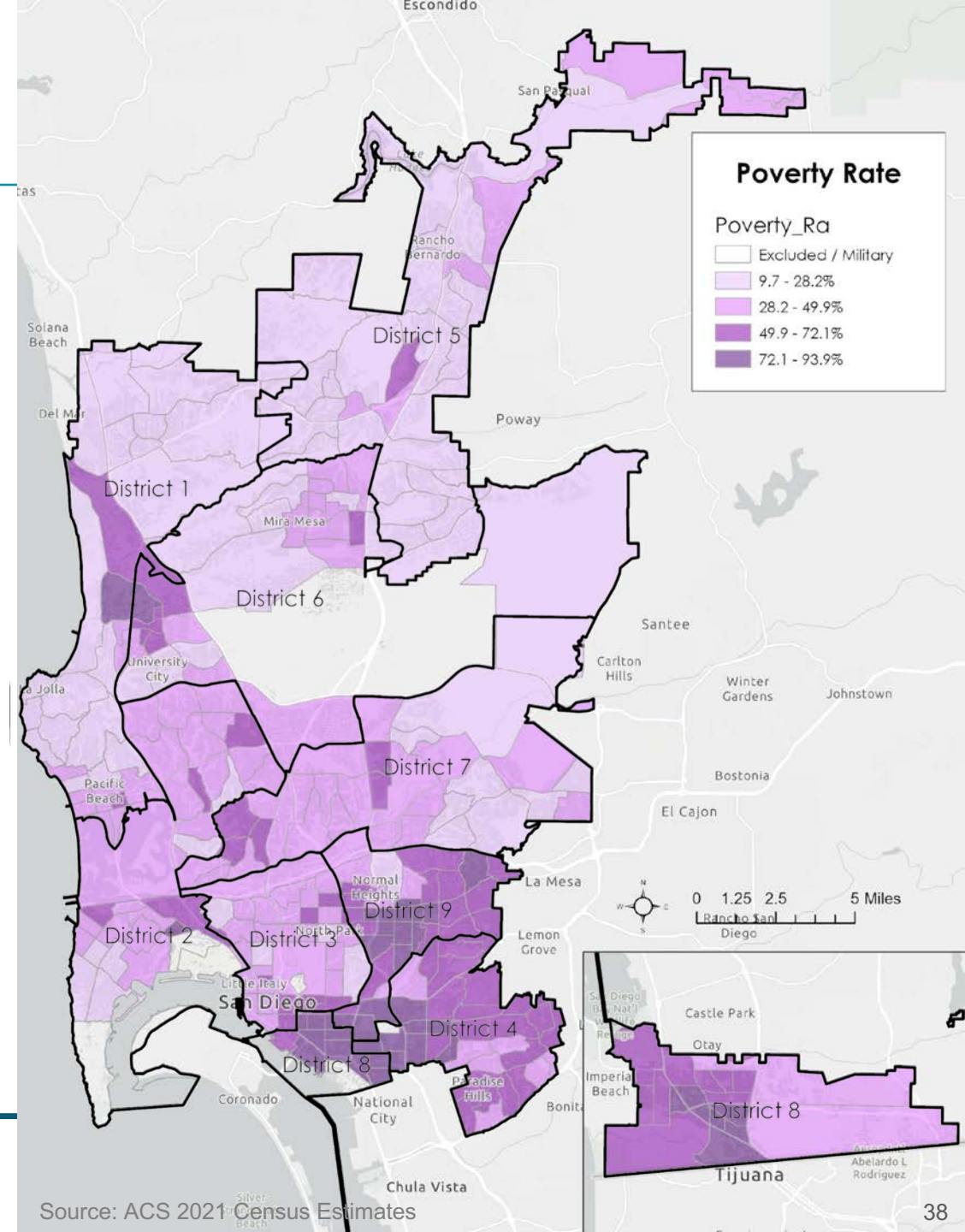
Ownership & Decision-Making Indicators

- Ownership Type
- Subsidized Affordable Housing
- Publicly Owned Buildings

City Council Districts

City Council Districts can be helpful to understand how to advocate for services in different areas of the City. They also serve as an avenue for community outreach and education through the District offices.

- In September 2022, these district boundaries were updated, significantly shifting in Districts 1, 2 and 6.
- Districts 4, 8, and 9 are where the majority of high poverty rate census tracts are located (see more information on [slide 49](#)).

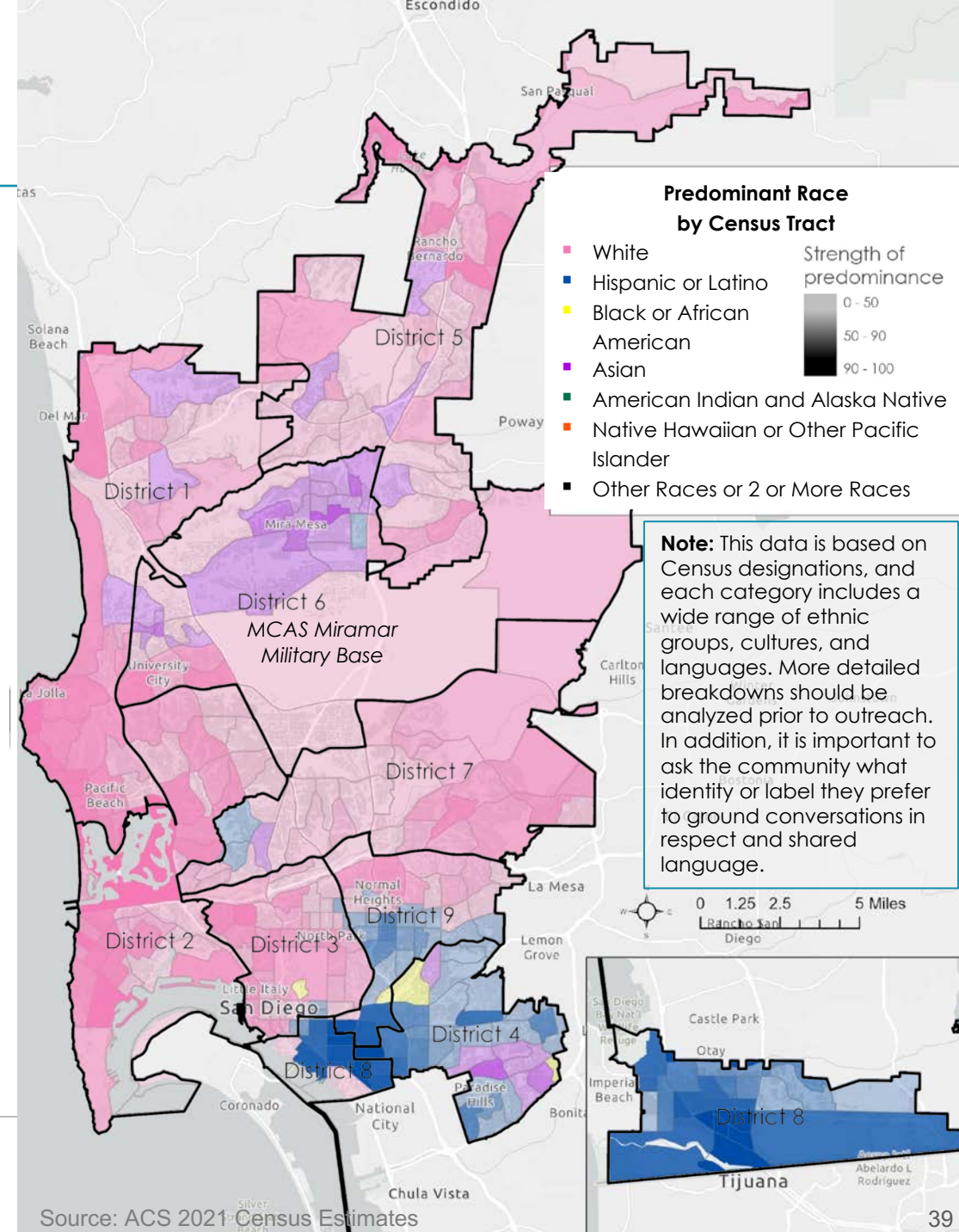
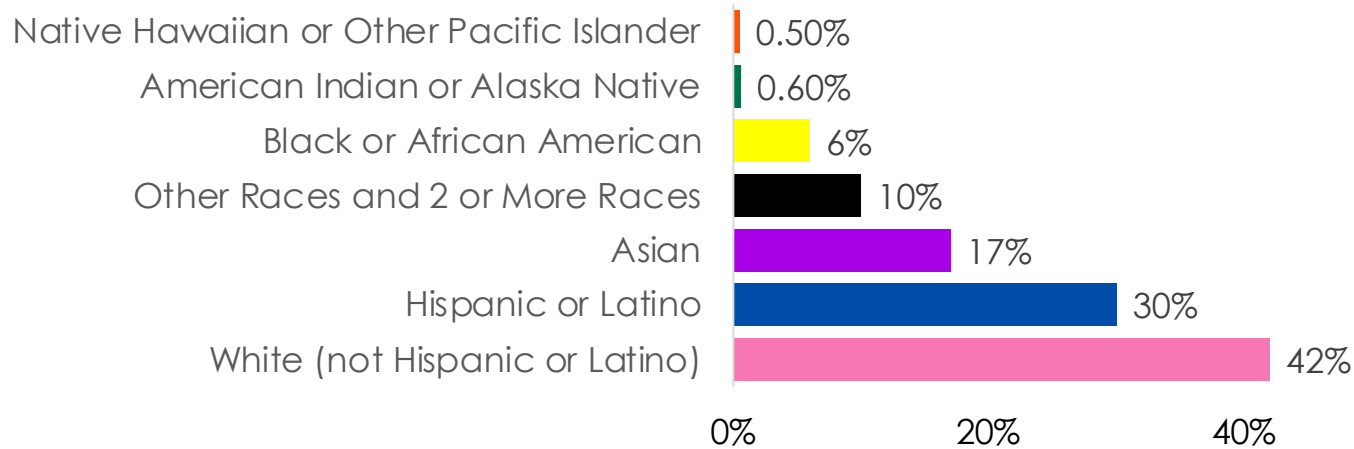


Social Vulnerability | Race

Race Distribution

The racial breakdown of San Diego is important for City staff and stakeholders to understand the **context, nuance, and needs of individual communities**. Due to a history of racist policies in the U.S. that excluded minorities from opportunity, self-determination, governance, and public investment, **race remains a major determinant of social vulnerability today.***

San Diego Population by Race



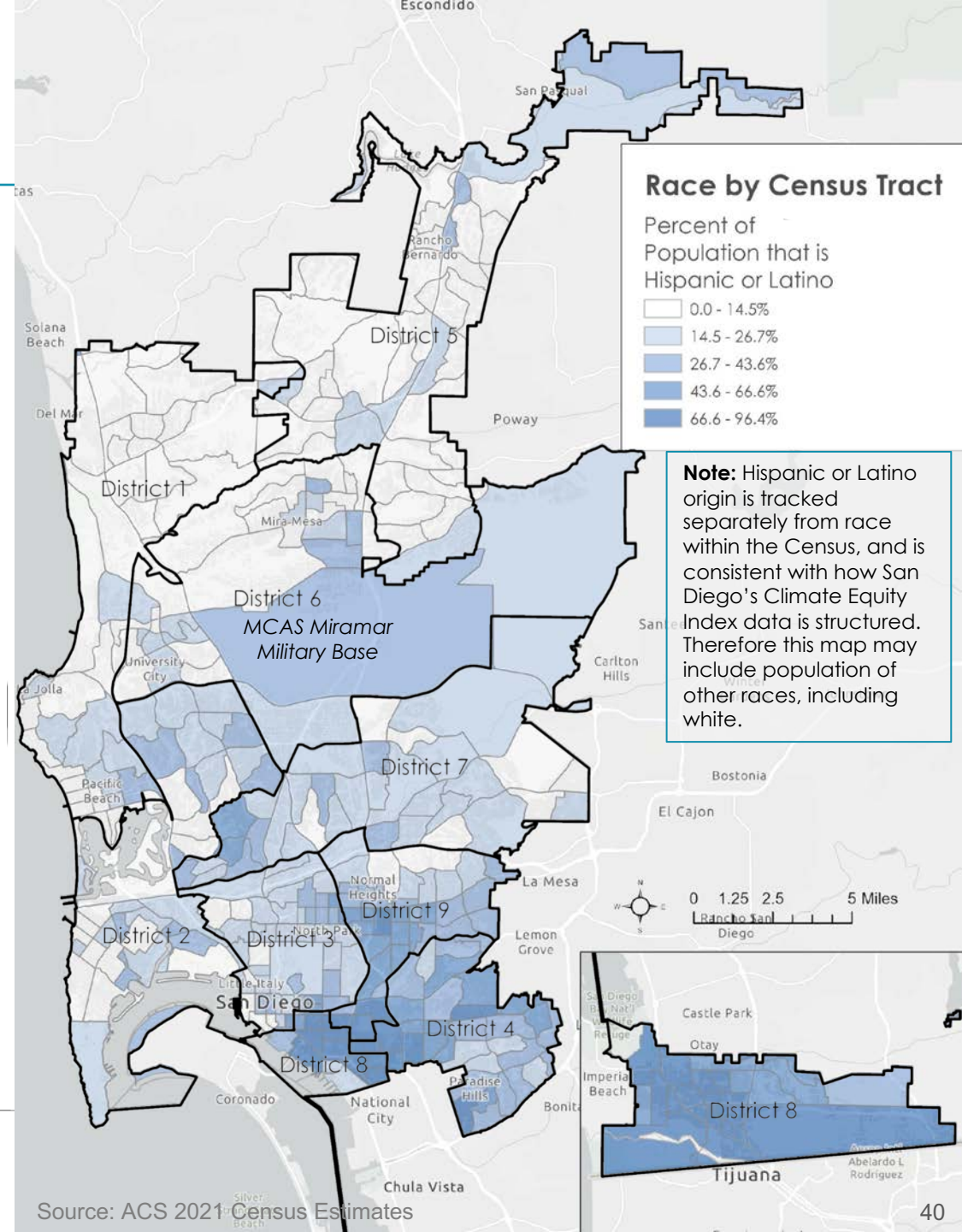
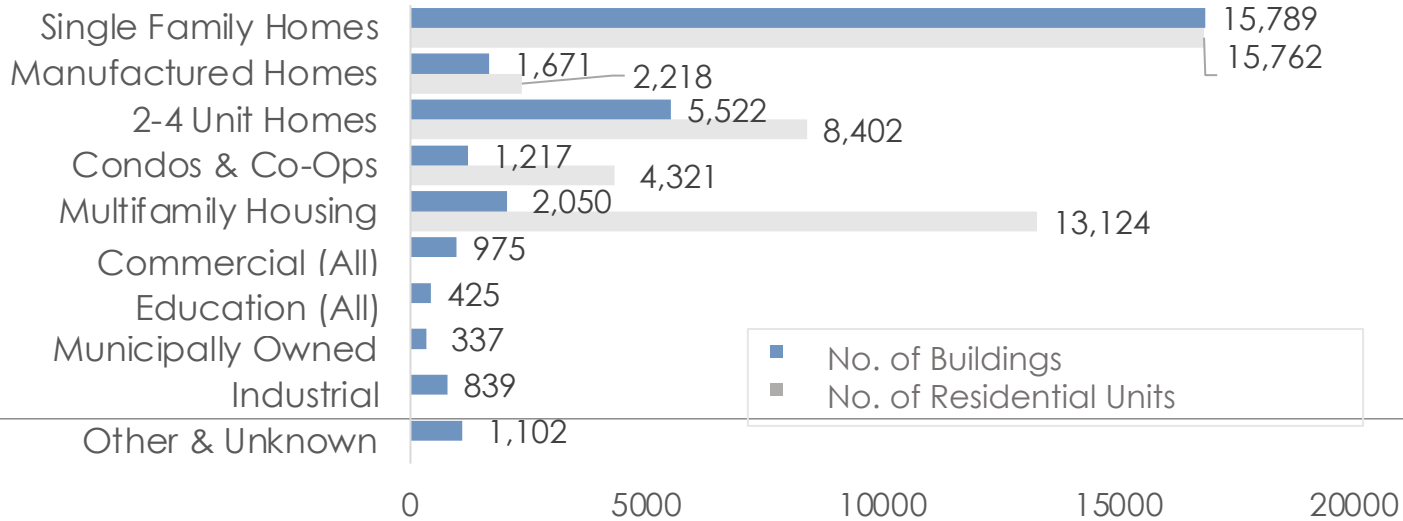
*Racism is a Social Determinant of Health, Wexner Medical Center. “[Racism] drives the inequities in housing, income and education, especially among Communities of Color. In many ways, it’s not just one of the social determinants — it’s the underlying structural determinant that sets the stage for all other social determinants.”

Social Vulnerability | Race

Hispanic or Latino Origin Population

- Hispanic or Latino communities represent 30% of population are densest in southern San Diego near downtown and San Ysidro but are present throughout much of the City.
- Census tracts with the highest concentration (67 – 96% of population) have a **higher rate of multifamily buildings** than other races.

Number of Buildings in Areas with High Latino Population
(Census Tracts with 67-96% Hispanic or Latino Population)

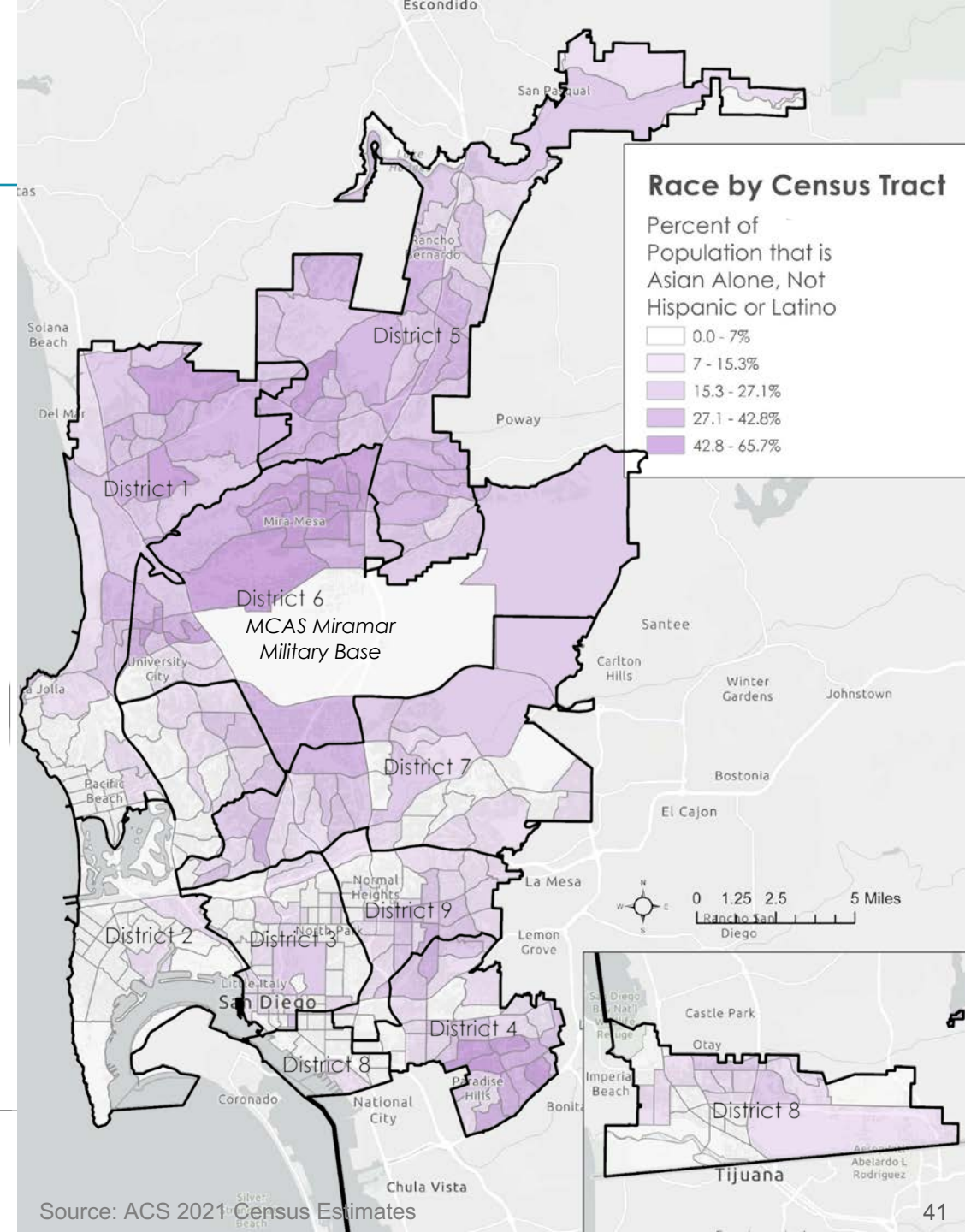
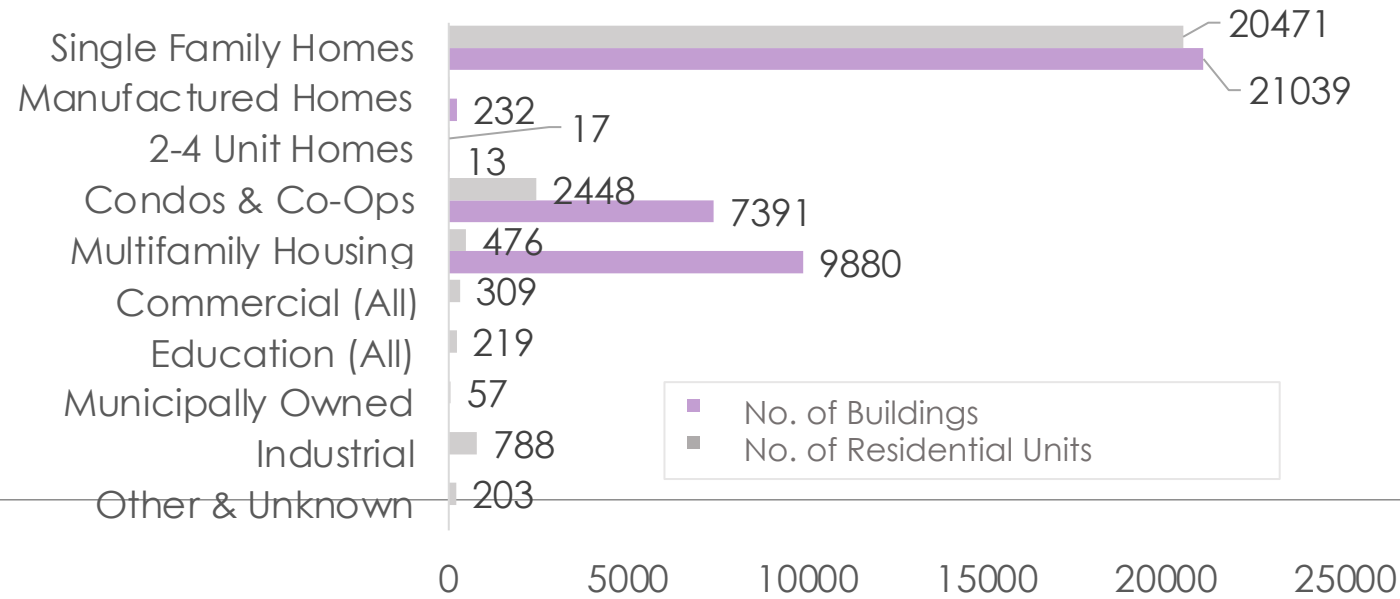


Social Vulnerability | Race

Asian Population

- Asian communities represent 17% of the population and cluster in and around **Lincoln Park**, as well as throughout the **Mira Mesa area**.
- The highest concentration of Asian communities in any census tract is 66% of the population.

Number of Buildings in Areas with High Asian Population
(Census Tracts with 43 - 66% Asian Population)

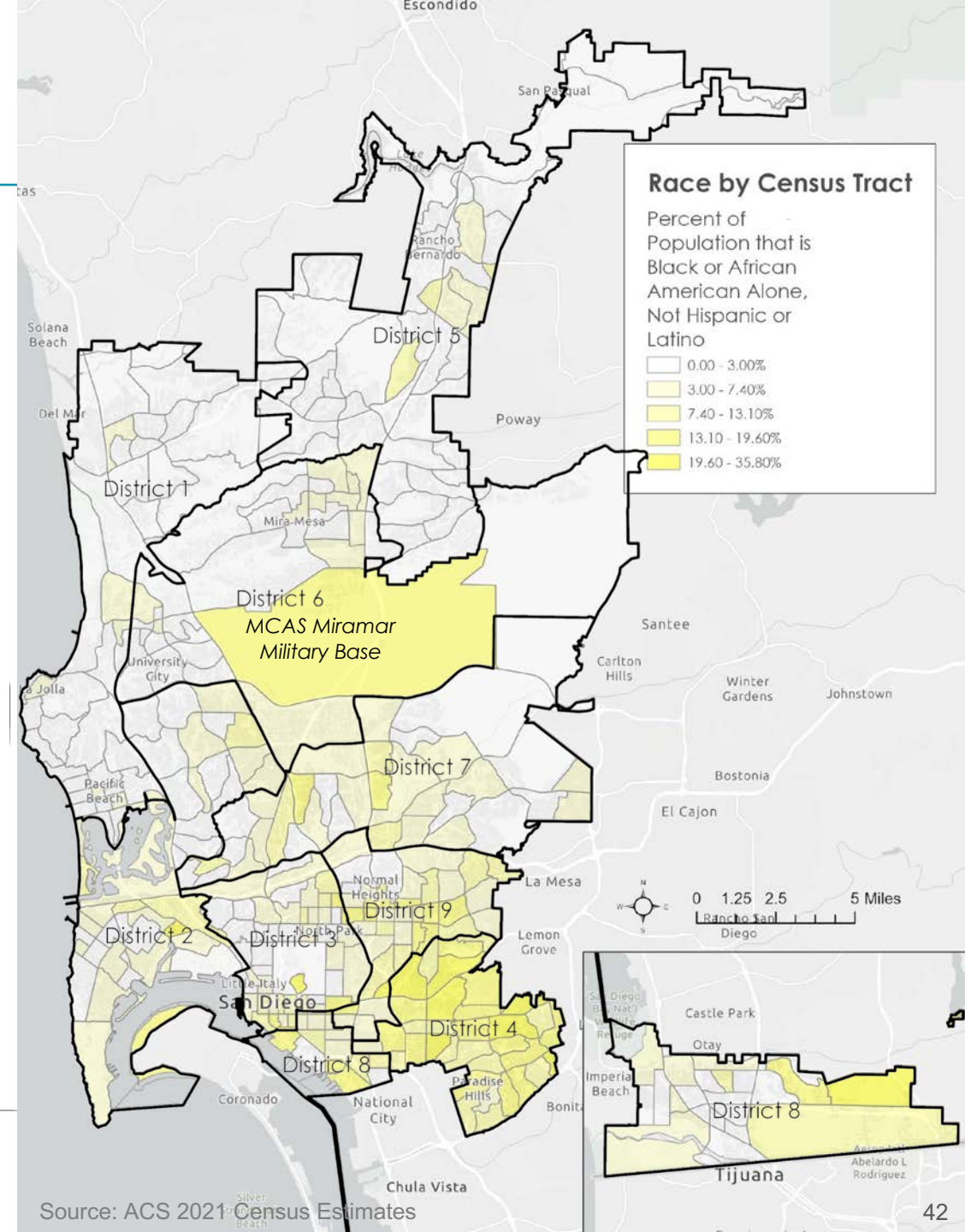
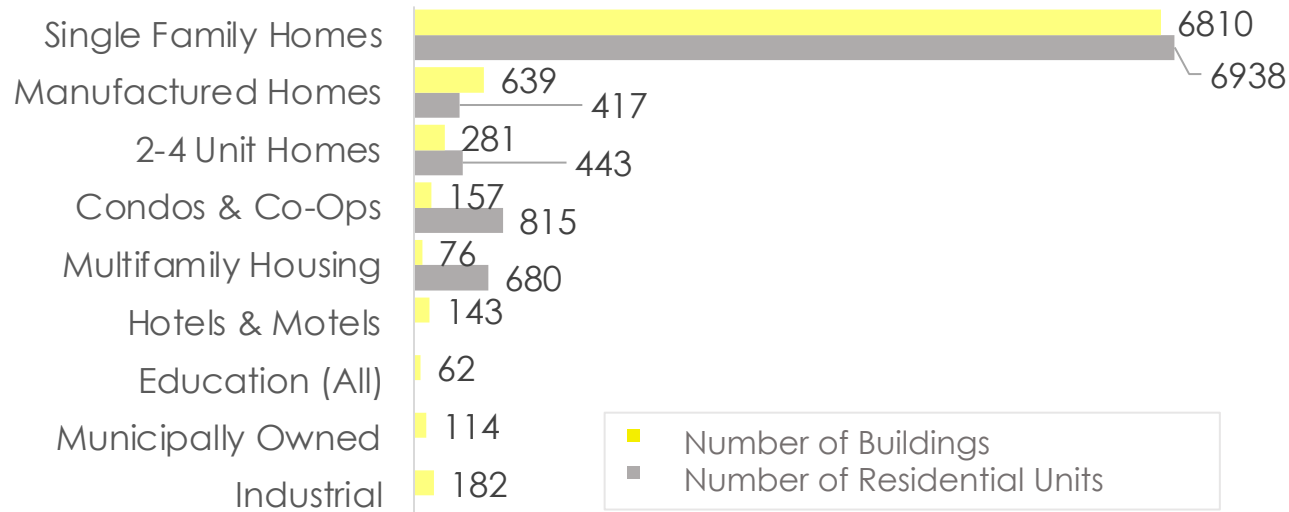


Social Vulnerability | Race

Black or African American Population

- Black or African American communities represent 6% of the population and to cluster in southern San Diego.
- The highest percentage of Black or African American communities in any census tract is 36%.

Number of Buildings in Areas with High Black Population (Census Tracts with 20 - 35% Black Population)



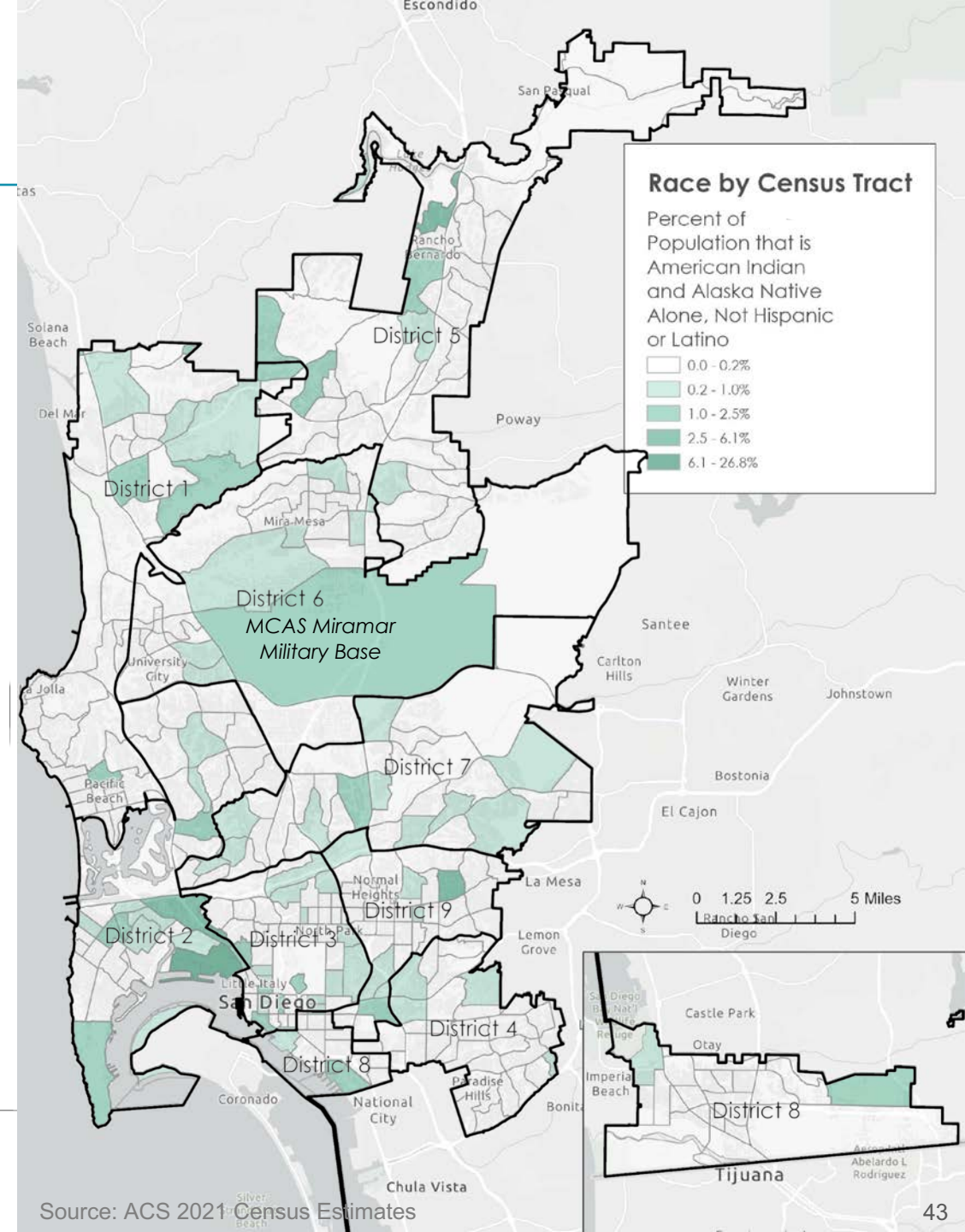
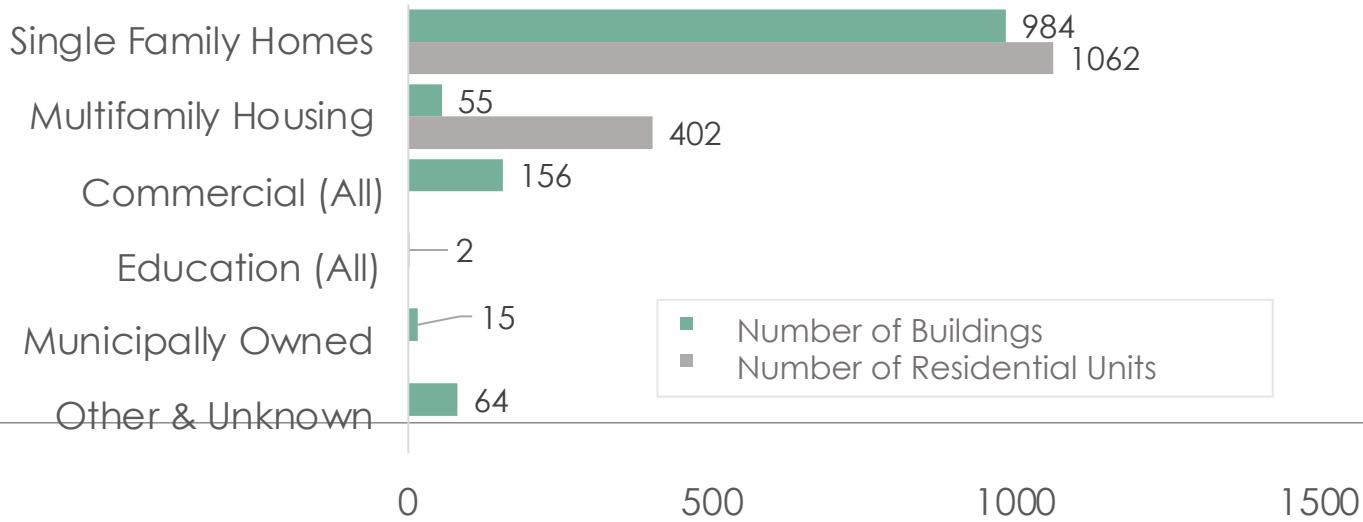
Source: ACS 2021 Census Estimates

Social Vulnerability | Race

American Indian and Alaska Native Population

- **American Indian and Alaska Native communities make up 0.6% of San Diego's population.**
- The census tract with the highest concentration (27% of the population) is located near the airport.

Number of Buildings in Areas with High American Indian Population
(Census Tracts with 6-28% American Indian or Alaska Native Population)

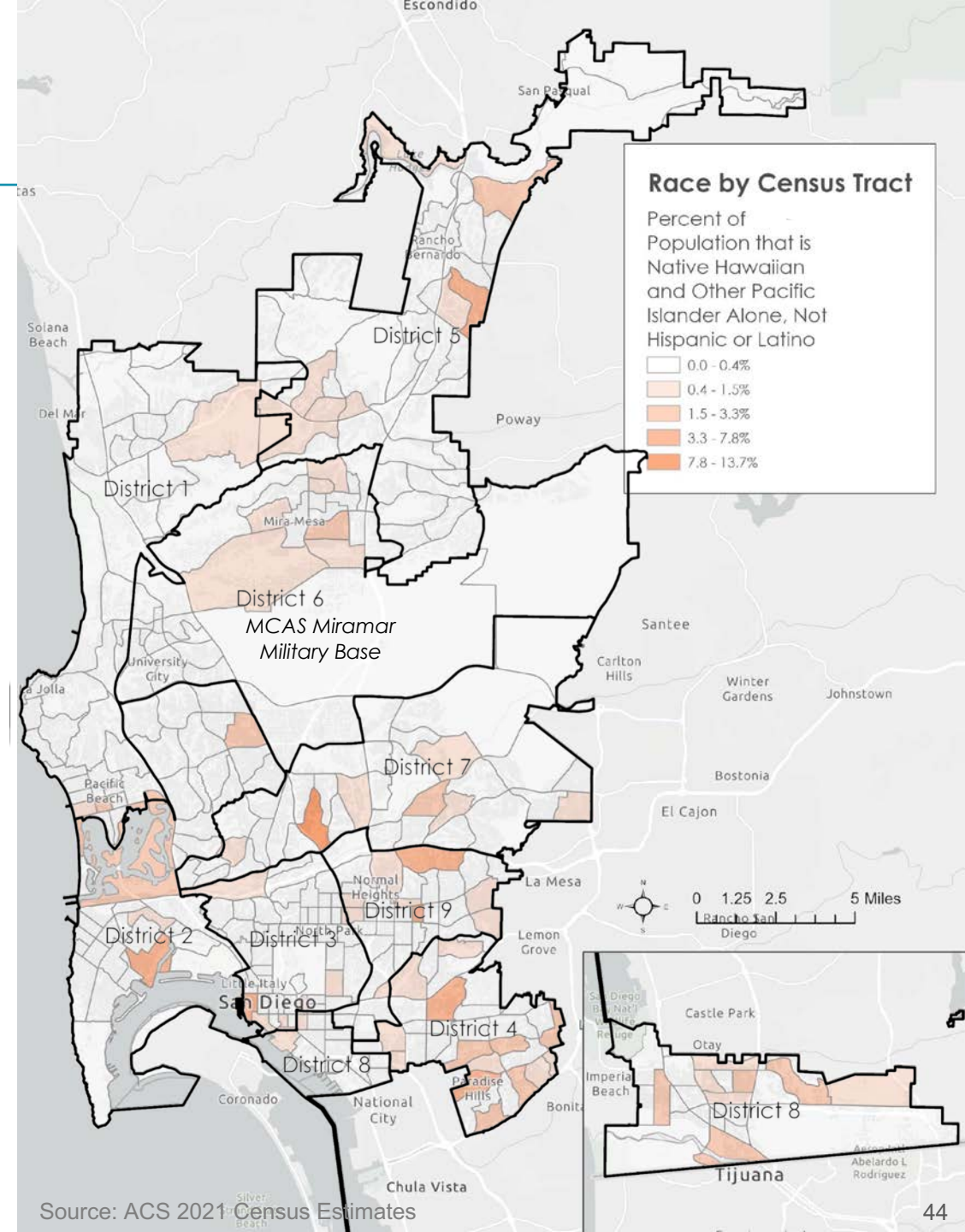
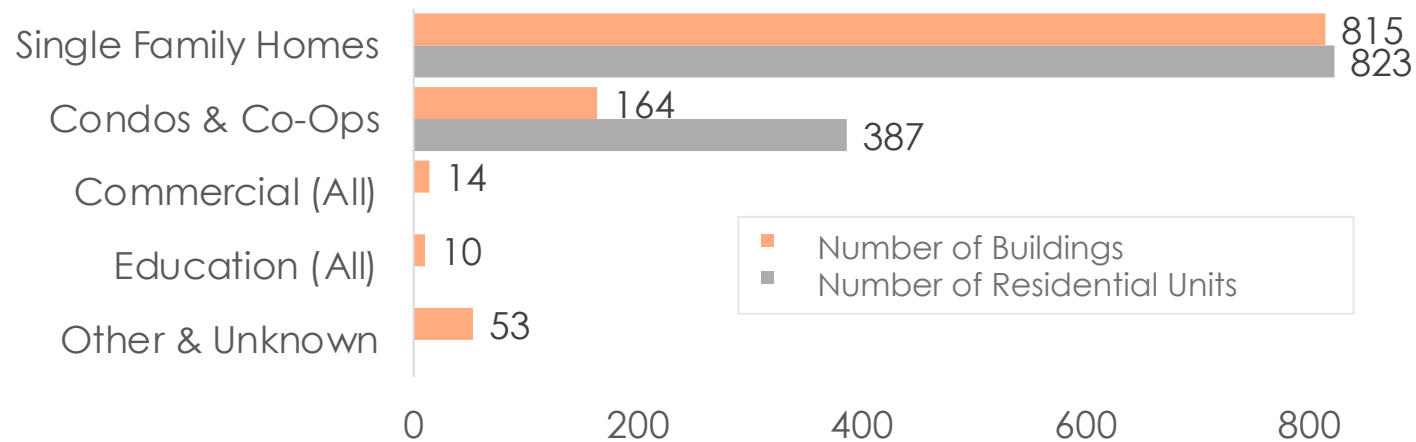


Social Vulnerability | Race

Native Hawaiian & Other Pacific Islander

- Native Hawaiian and Other Pacific Islander communities make up **0.6% of San Diego's population**.
- Census tracts with higher concentrations of these communities are scattered throughout San Ysidro and the eastern part of the city, with the highest percentage (14%) located near Serra Mesa.

Number of Buildings in Areas with High Hawaiian or API Population
(Census Tracts with 8 - 14% Hawaiian Native or Other Pacific Islander Population)

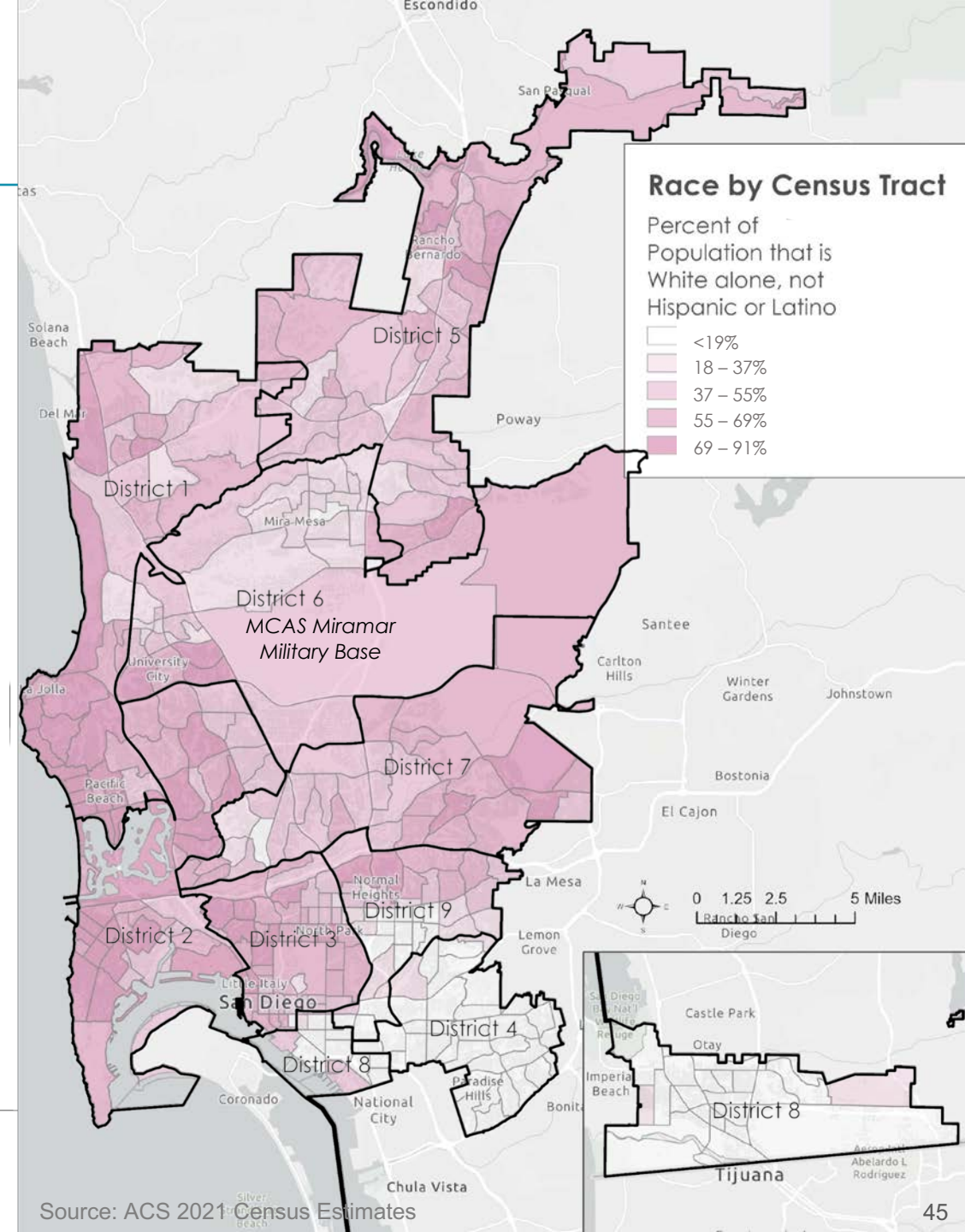
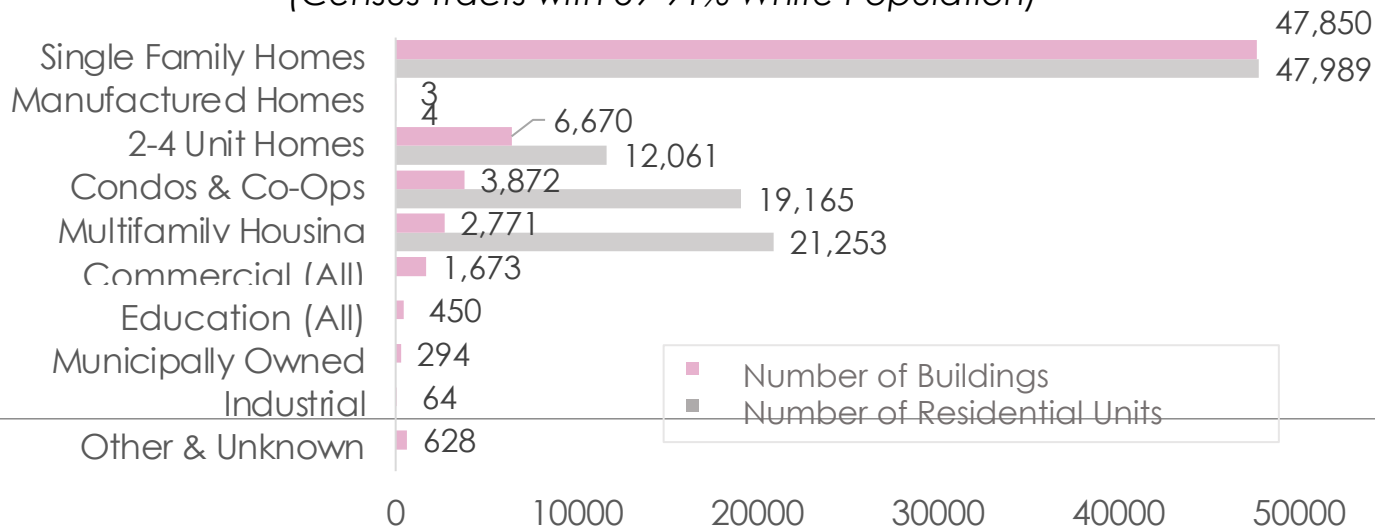


Social Vulnerability | Race

White Population

- **The white population (not Hispanic or Latino) represents 42% of San Diego's population.** Note this map excludes additional white population that is also Hispanic or Latino.
- The white population is spread throughout the City, but is notably absent in southern San Diego. Several census tracts have very high concentrations (70-90%).

Number of Buildings in Areas with High White Population
(Census Tracts with 69-91% White Population)

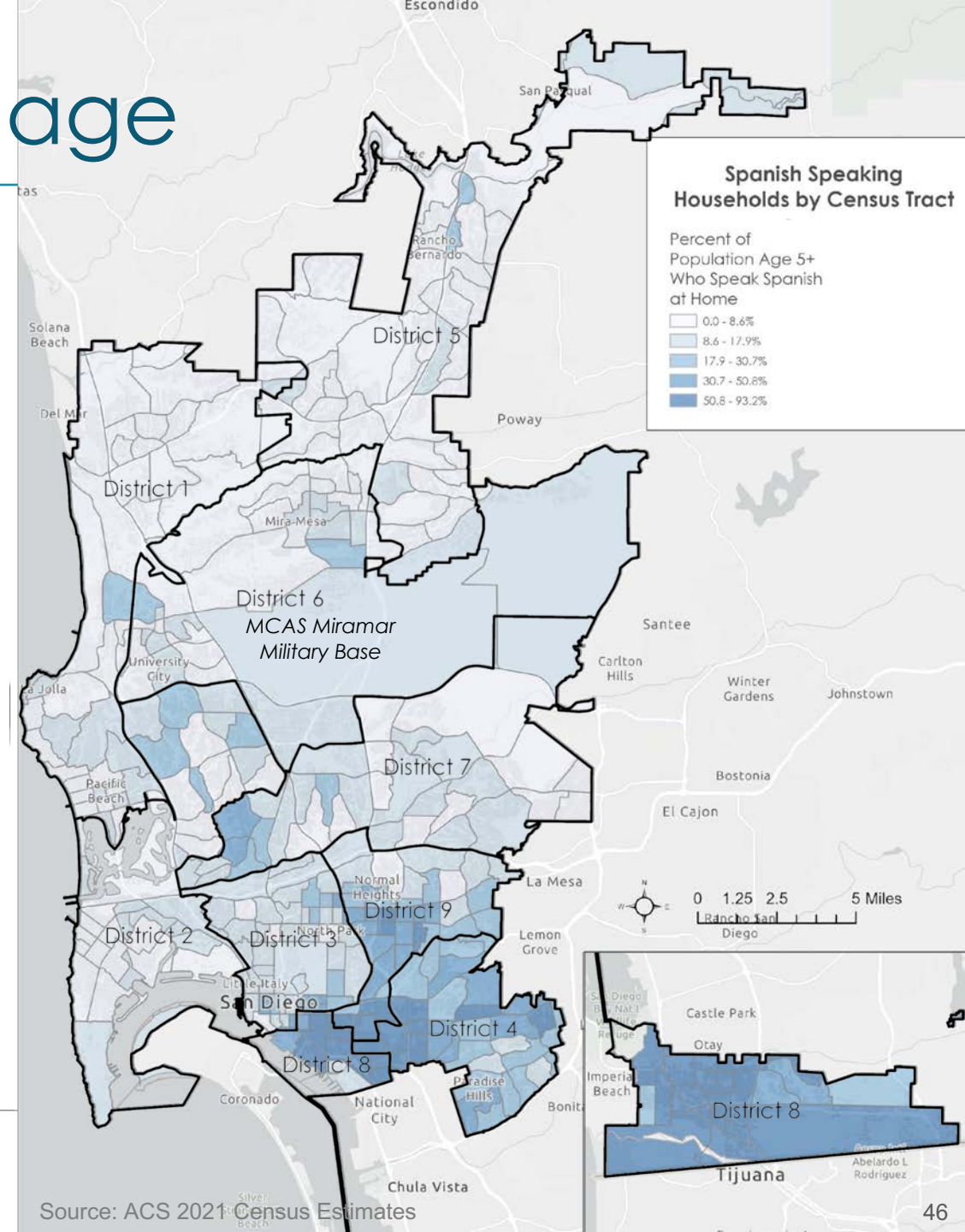


Social Vulnerability | Language

Spanish-Speaking Population

- Approximately **25% of the population speaks Spanish** in San Diego.
- The Spanish-speaking population aligns with the distribution of Hispanic or Latino Origin communities, with **high concentrations south of downtown and in San Ysidro**.
- A significant number of tracts have a very high percentage of Spanish speakers (51-93%).

Note: This map does not indicate households that solely speak Spanish, and therefore may include populations that speak English or other languages in addition to Spanish.



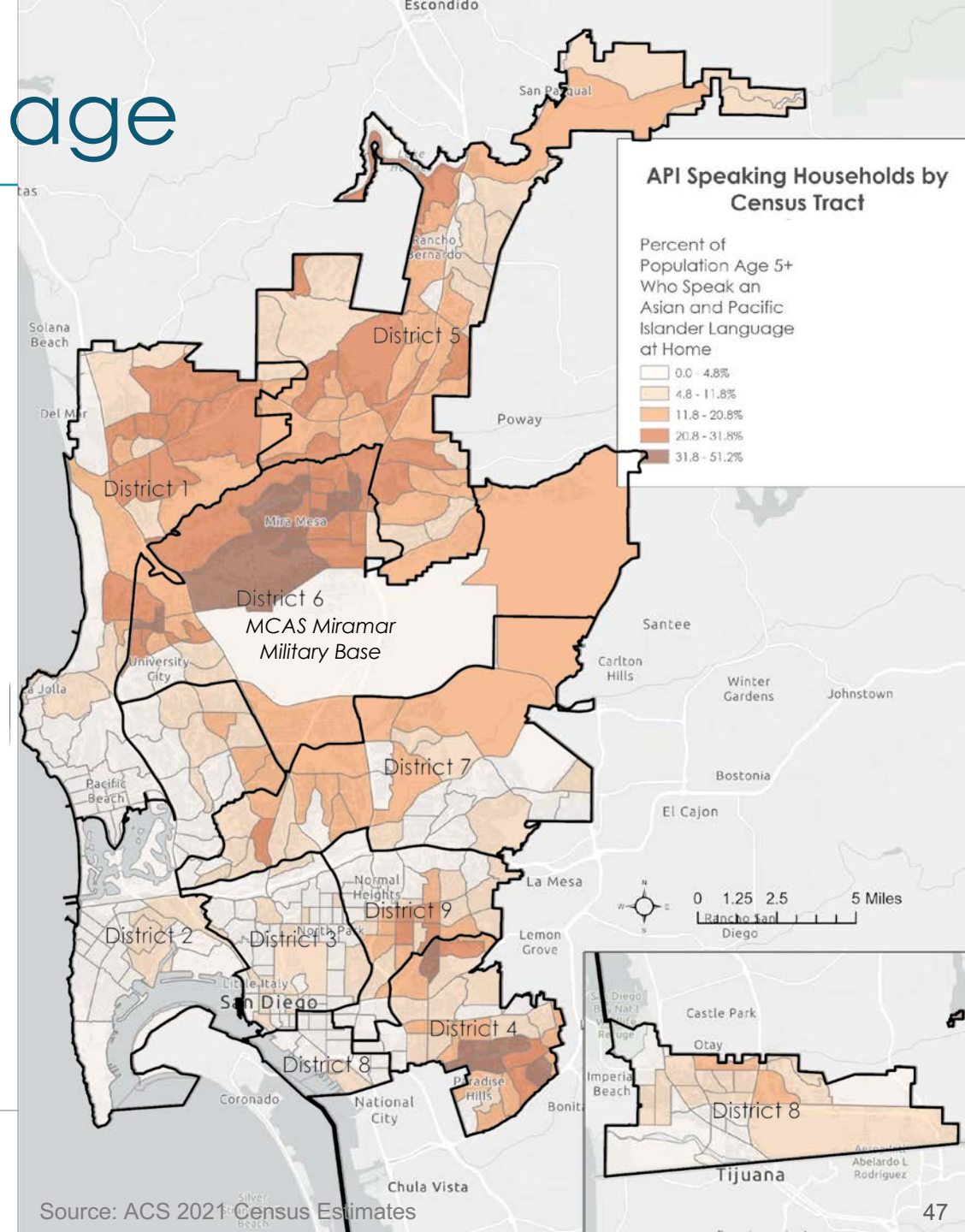
Social Vulnerability | Language

Asian Pacific Islander Language-Speaking Population

- Households that speak Asian or Pacific Islander languages have a similar geographic distribution to the location of Asian communities.
- Asian American and Pacific Islander communities in San Diego consist of over 50 distinct ethnic groups and over 100 languages spoken, including Filipino/Tagalog, Chinese, and Vietnamese.*
- **Certain census tracts have up to 50% API-speaking households.**

Note: This map does not indicate households that solely speak API Languages, and therefore may include populations that speak English or other languages in addition.

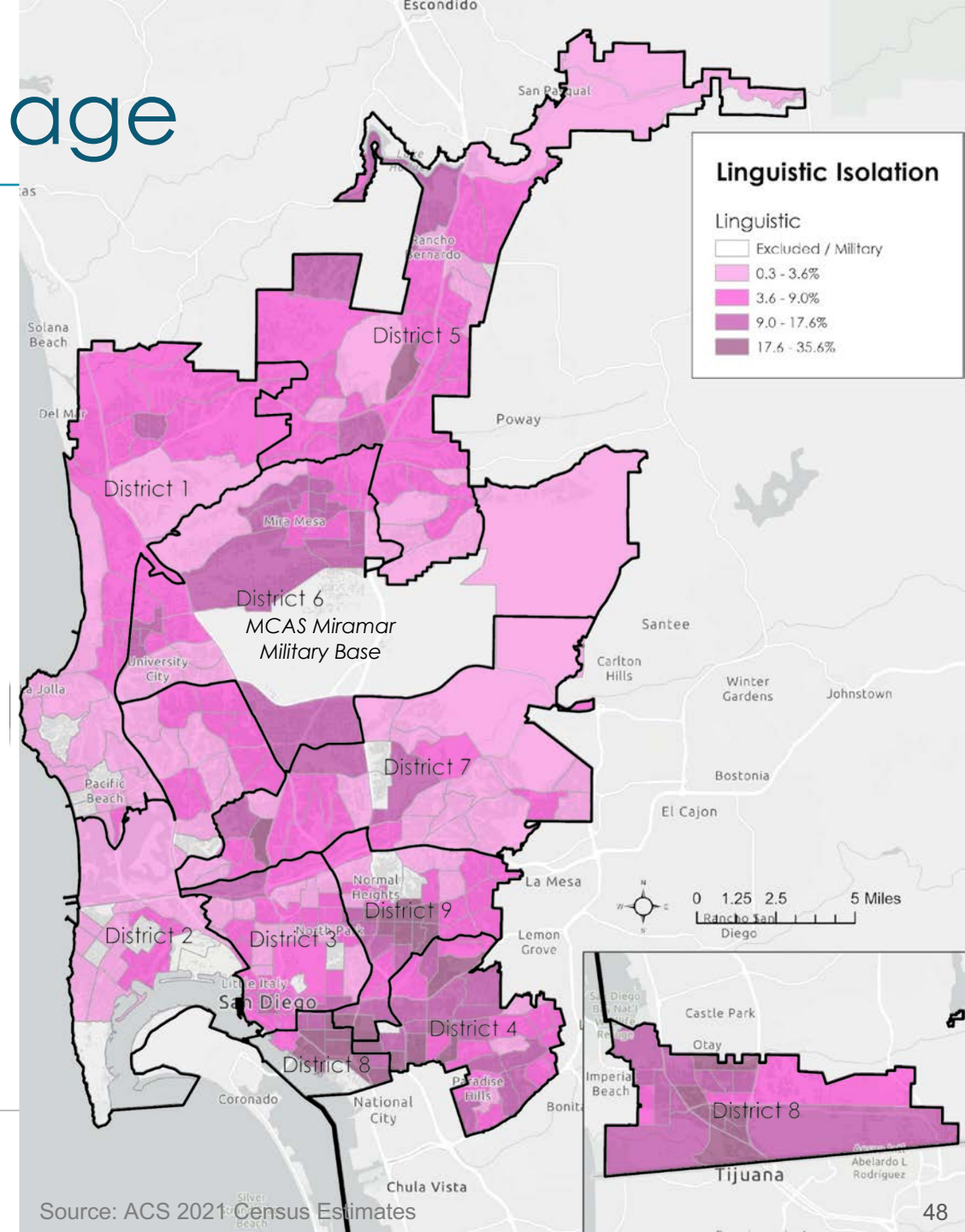
*Immigrant Integration in the City of San Diego.



Social Vulnerability | Language

Linguistic Isolation

- This map represents households that may have **low-to no English proficiency** and often lack access to information in their native language.
- When conducting outreach around building policies and programs to these communities, it will be important to:
 - **Provide live or written language translation services**, so information can be shared sufficiently, and feedback can be collected from linguistically isolated communities.
 - **Design culturally relevant materials** in partnership with community-based organizations that understand the culture, priorities, and needs of the communities they serve.
 - **Avoid jargon and build a shared vocabulary around buildings topics**, to avoid translations with unclear meaning.

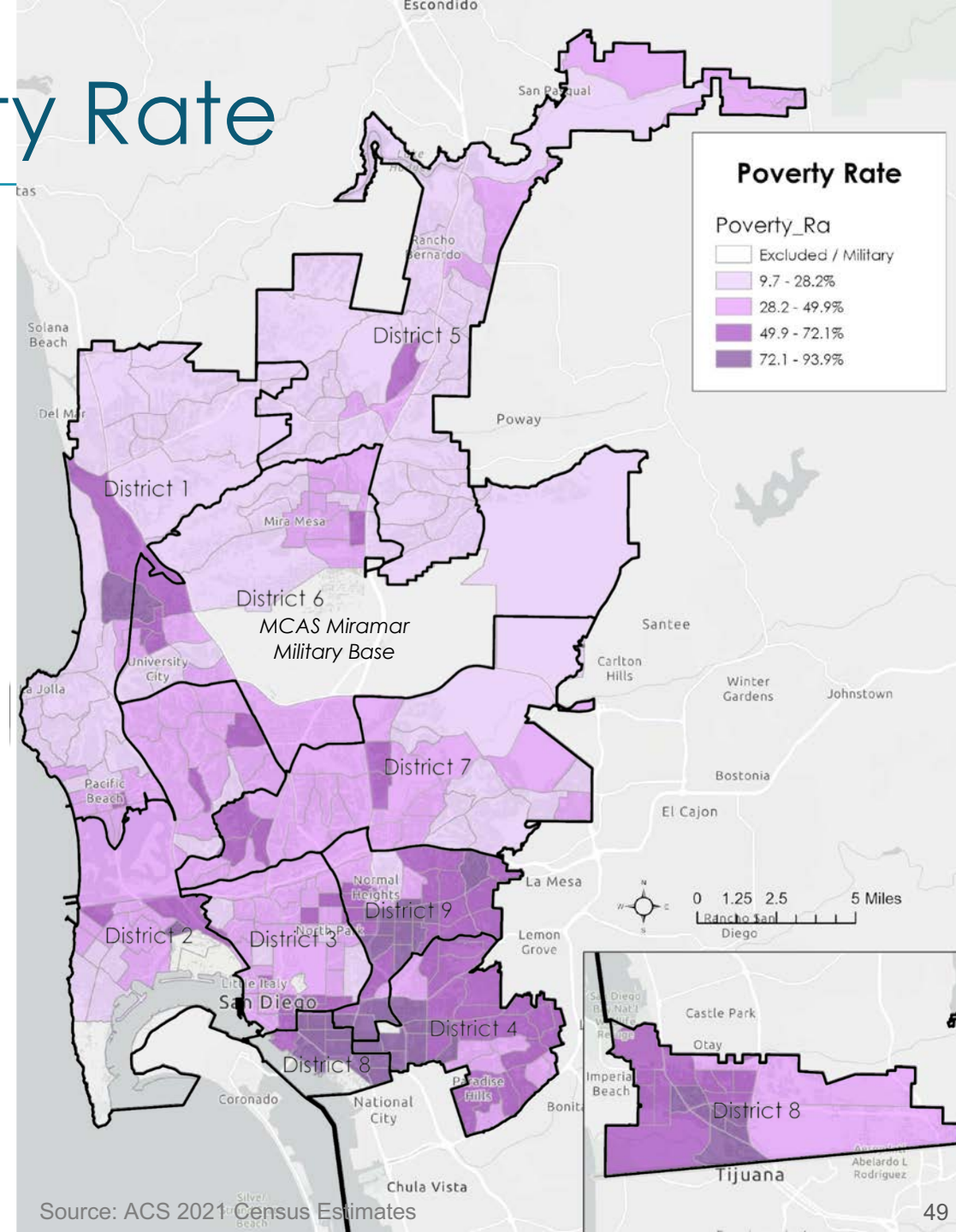


Social Vulnerability | Poverty Rate

Poverty Rate & Council Districts

- The City of San Diego's Climate Equity Index (CEI) defines poverty as those living below 300% of the Federal Poverty Line, **or about \$77,250 annual income for a family of four.***
- 13% of the population live in a high poverty rate census tract (72-94% poverty rate).**

Poverty Rate	Number of Buildings	Percent Citywide	Number of Residential Units	Percent Citywide
10 - 28%	106,834	35%	141,941	27%
28 - 50%	104,194	34%	211,559	40%
50 - 72%	58,175	19%	107,677	20%
72 - 94%	28,927	9%	49,345	9%
Military / Excluded	8,846	3%	21,642	4%
Grand Total	306,976	100%	532,173	100%



*Federal Poverty Line amount based on [ASPE 2019 Poverty Guidelines](#).

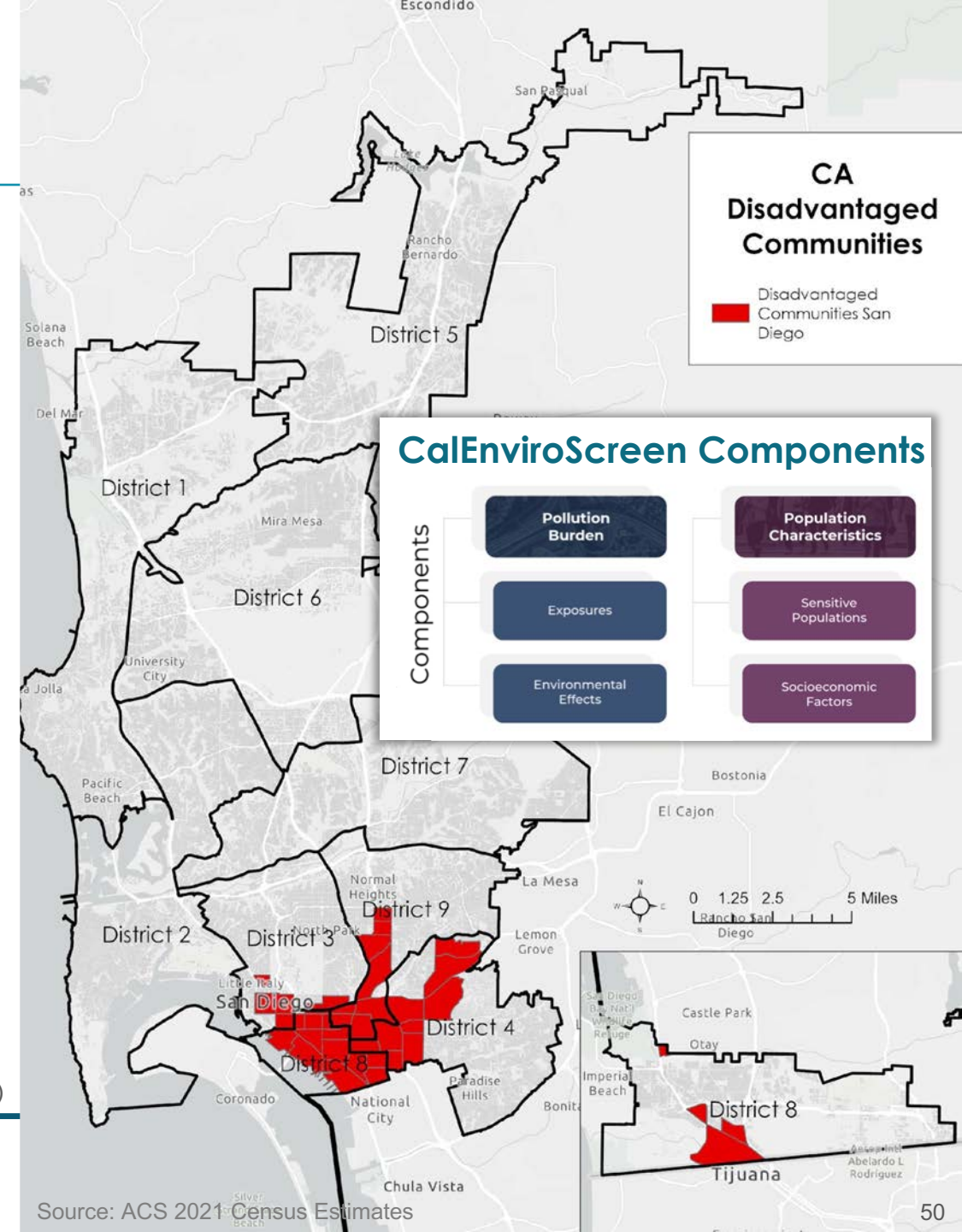
Social Vulnerability | Disadvantaged Communities

Disadvantaged Communities

"Disadvantaged communities" (or DACs) is a designation determined by CalEPA's CalEnviroScreen tool to determine eligibility for certain state climate funding. CalEnviroScreen uses both population characteristics and pollution burden to determine disadvantaged communities.

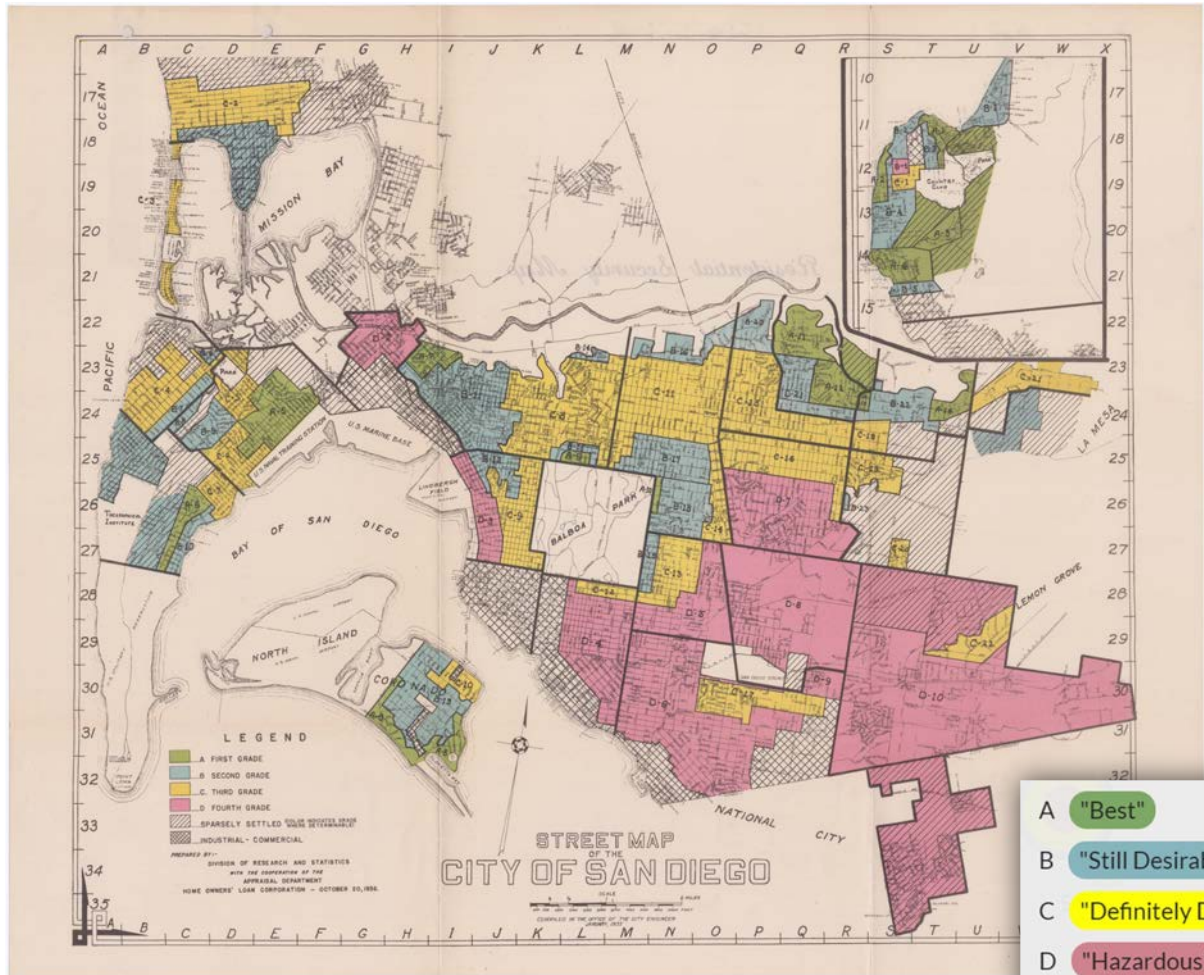
- There are **34 census tracts that qualify as DACs** in city of San Diego, clustered **in and to the east of downtown**, as well as **in the San Ysidro area** adjacent the U.S.-Mexico border.
- The Disadvantaged Communities include:
 - Population of approximately **129,000 people**,
 - 20,872 buildings**, and
 - 32,329 residential units**

Source: [Pollution & Prejudice](#), CalEPA (2021)



Social Vulnerability | Historically Redlined Communities

Historic Racial Discrimination & Segregation: HOLC Redlining Maps



This map depicts “residential security” maps (also known as “redlining” maps) created by the federal Home Owners’ Loan Corporation (HOLC).

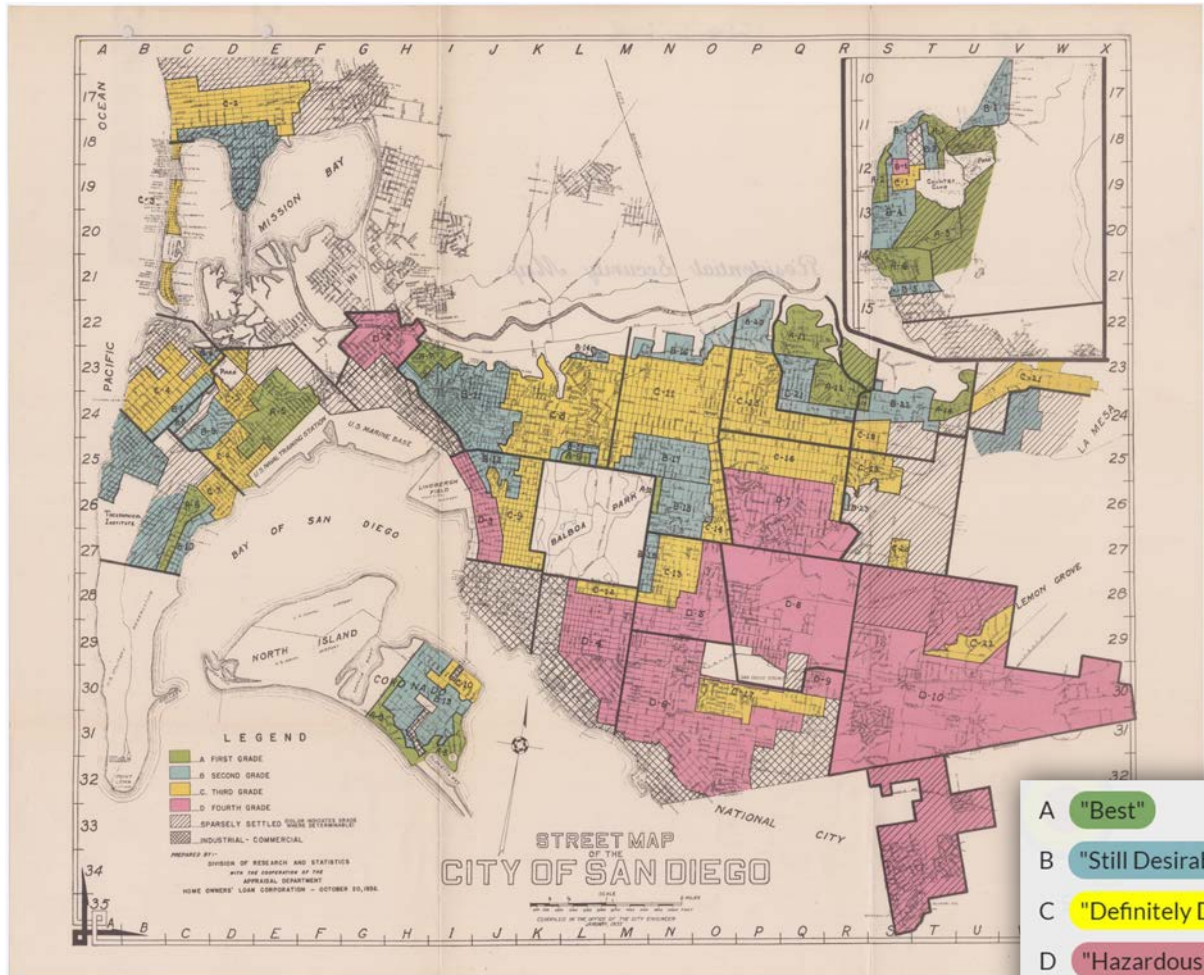
These maps were used to disinvest in communities of color, which were often deemed as “declining” or “hazardous” areas.

Although these maps are from the 1930s, private lenders continued to use the maps through the 1980s, and the impacts are still clearly felt today.

Similarities still exist between historically redlined communities and Disadvantaged Communities (DACs) today. A strong correlation exists between high CalEnviroScreen scores (see next slide), including disparities in pollution burden, lower income, lower property value, and increased health impacts.

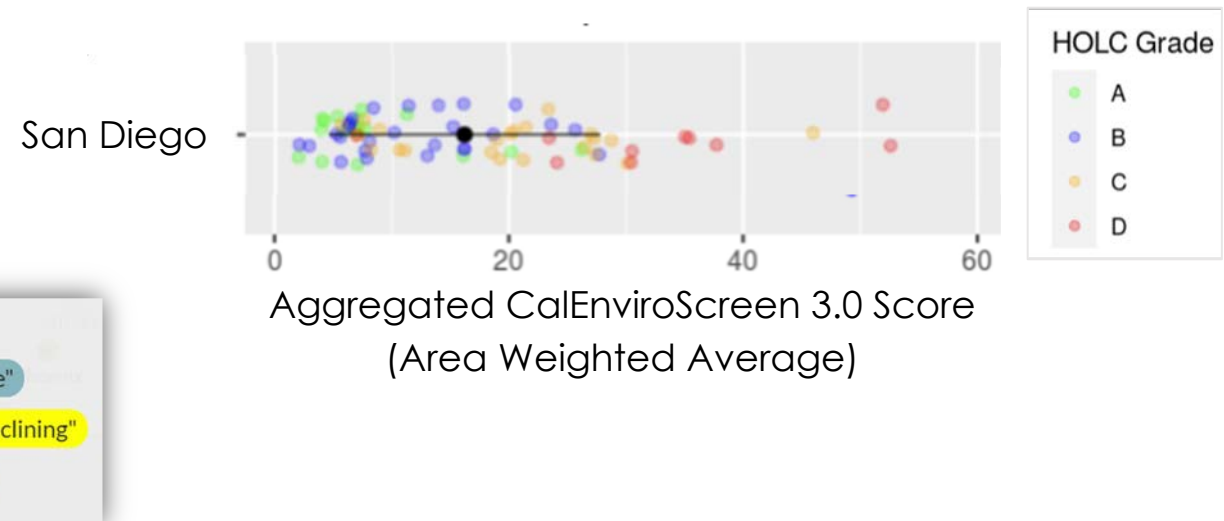
Social Vulnerability | Historically Redlined Communities

Historic Racial Discrimination & Segregation: HOLC Redlining Maps



Below is an analysis comparing these historically redlined neighborhoods to today's lower CalEnviroScreen scores (indicating Disadvantaged Communities). A correlation still exists between redlined areas ("D" grade) and disadvantaged communities.

HOLC Grade and CalEnviroScreen 3.0 Score

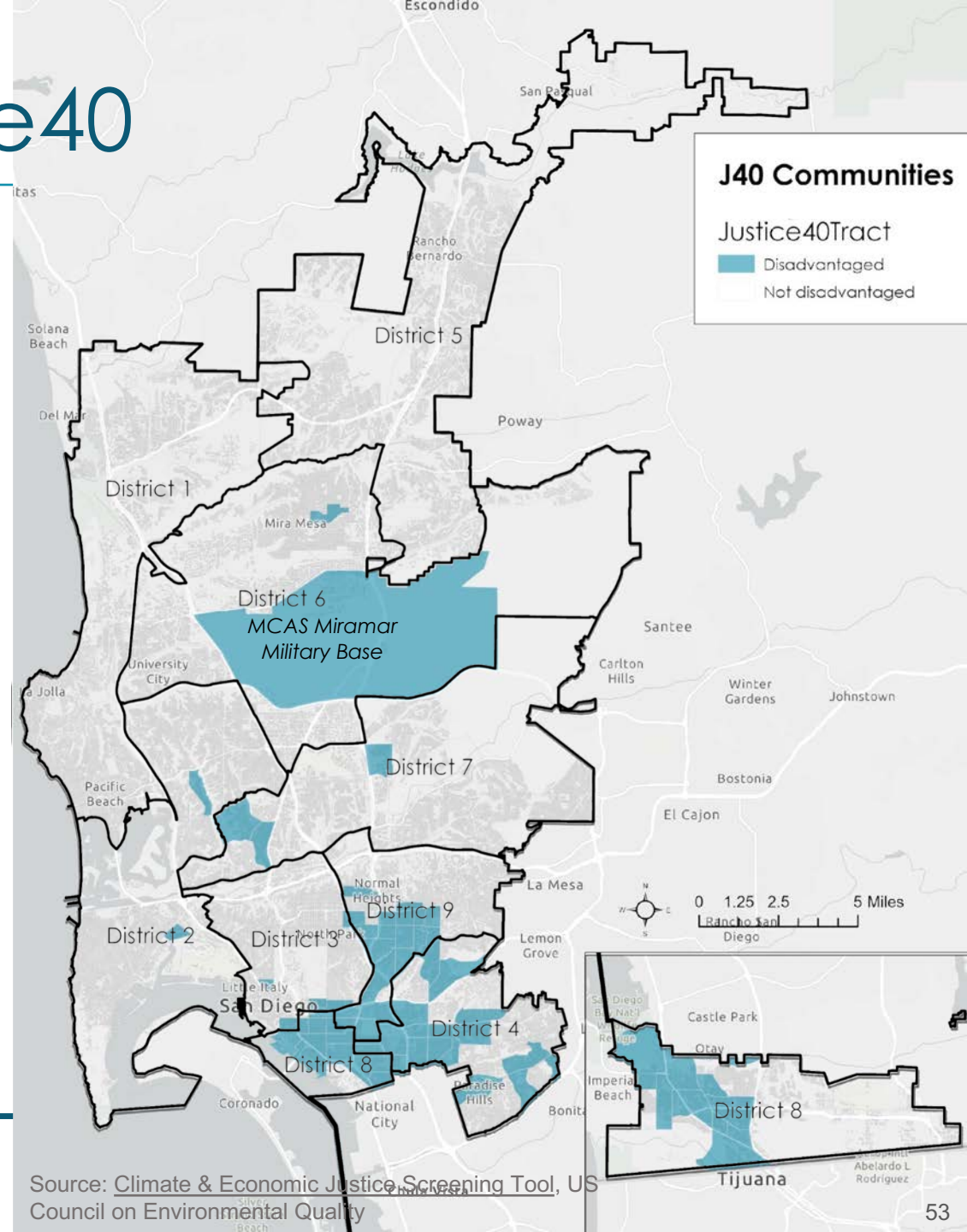


Social Vulnerability | Justice40

Justice40 Communities

The Justice40 (“J40”) Initiative is a federal designation from the Biden-Harris Administration to identify disadvantaged communities across the country. The initiative has identified a goal of at least 40% of benefits from initiatives to address climate change, pollution, and environmental hazards will flow to these disadvantaged communities.

- **There are 77 census tracts that qualify as J40 communities** in San Diego, clustered in southern San Diego in and around downtown, as well as some dispersed to the north.
- J40 communities include:
 - Population of approximately **374,000 people**,
 - **56,350 buildings**, and
 - **100,468 residential units**.



Source: [Climate & Economic Justice Screening Tool](#), US Council on Environmental Quality

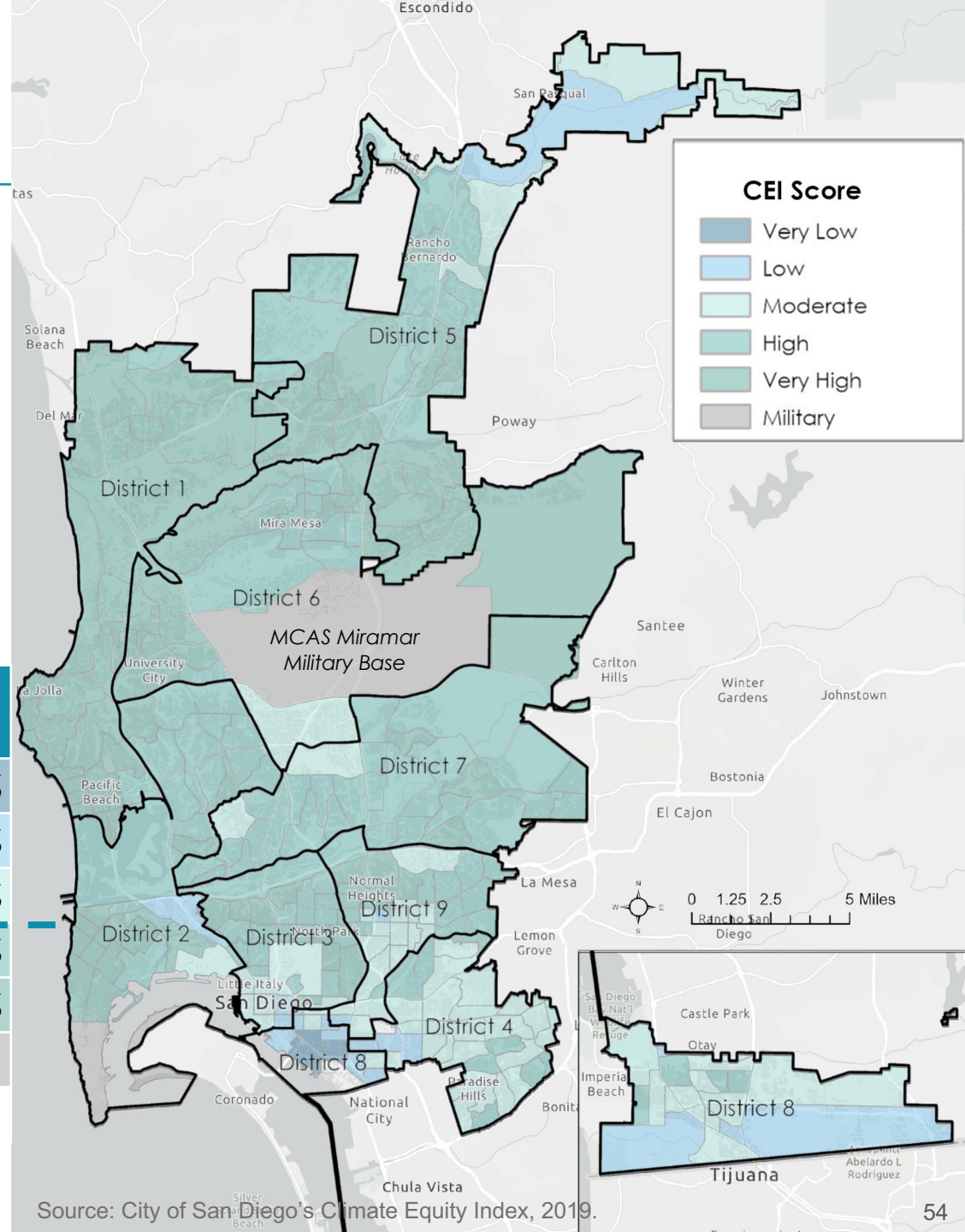
Social Vulnerability | Communities of Concern

Communities of Concern

- Communities of Concern is a local designation based on City of San Diego's Climate Equity Index (CEI). The CEI score averages across 41 indicators, with lower CEI scores indicating lower "access to opportunity."*
- Approximately 6% of the population (84,500 people) lives in a census tract with a Very Low or Low CEI score, and 24% with a Moderate CEI Score.**

Communities of Concern

CEI Classification	Population	% of Population	Number of Census Tracts	% of Census Tracts
Very Low (0-20)	12,371	1%	3	1%
Low (20-40)	72,162	5%	17	6%
Moderate (60-80)	354,225	24%	68	23%
High (60-80)	621,812	42%	117	40%
Very High (80-100)	409,212	28%	89	30%
Military / Excluded				
Total	1,469,782		294	



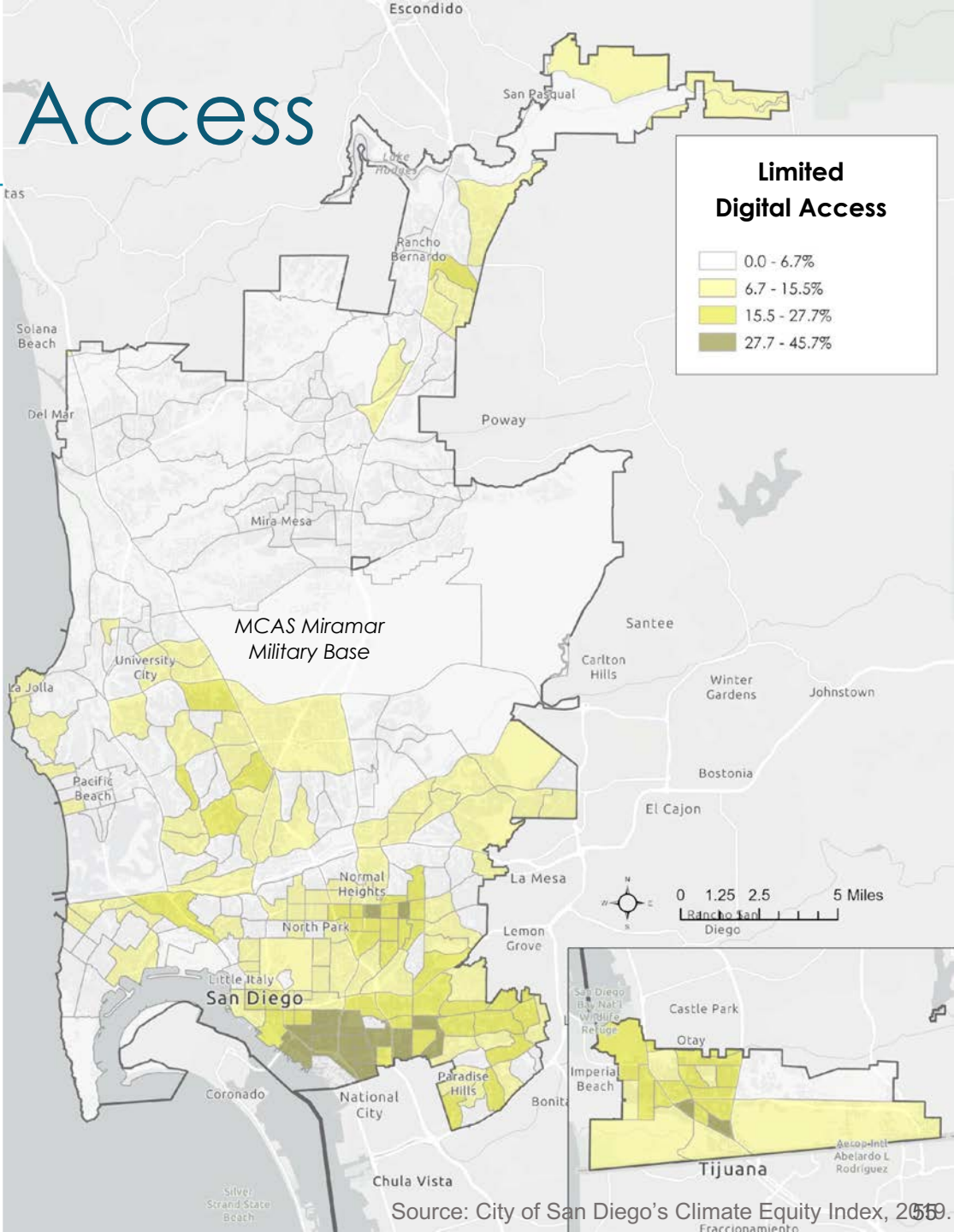
*Access to opportunity includes relatively fewer barriers to success, and could include greater access to public transit, pedestrian amenities, or lower energy, housing and transportation costs. 2019 San Diego's Climate Equity Index Report.

Social Vulnerability | Digital Access

Limited Digital Access

Digital access includes access to internet connection or internet-enabled devices. Approximately **17% of residential units are located in a census tract with limited digital access** (over 16% of population has limited access).

Residential Typologies	Number of Residential Units by Census Tract Average Lack of Digital Access			
	0 - 7%	7 - 16%	16 - 28%	28 - 46%
Single Family Homes	118,942	59,662	27,338	5,790
Manufactured Homes	741	1,966	2,426	198
2-4 Unit Homes	12,947	15,745	9,227	6,428
Condos & Co-Ops	58,348	38,432	9,227	609
Multifamily Housing	78,638	45,880	30,536	6,689
Total Units	252,107	161,685	79,954	19,714
Percent of Citywide Units	47%	30%	15%	4%



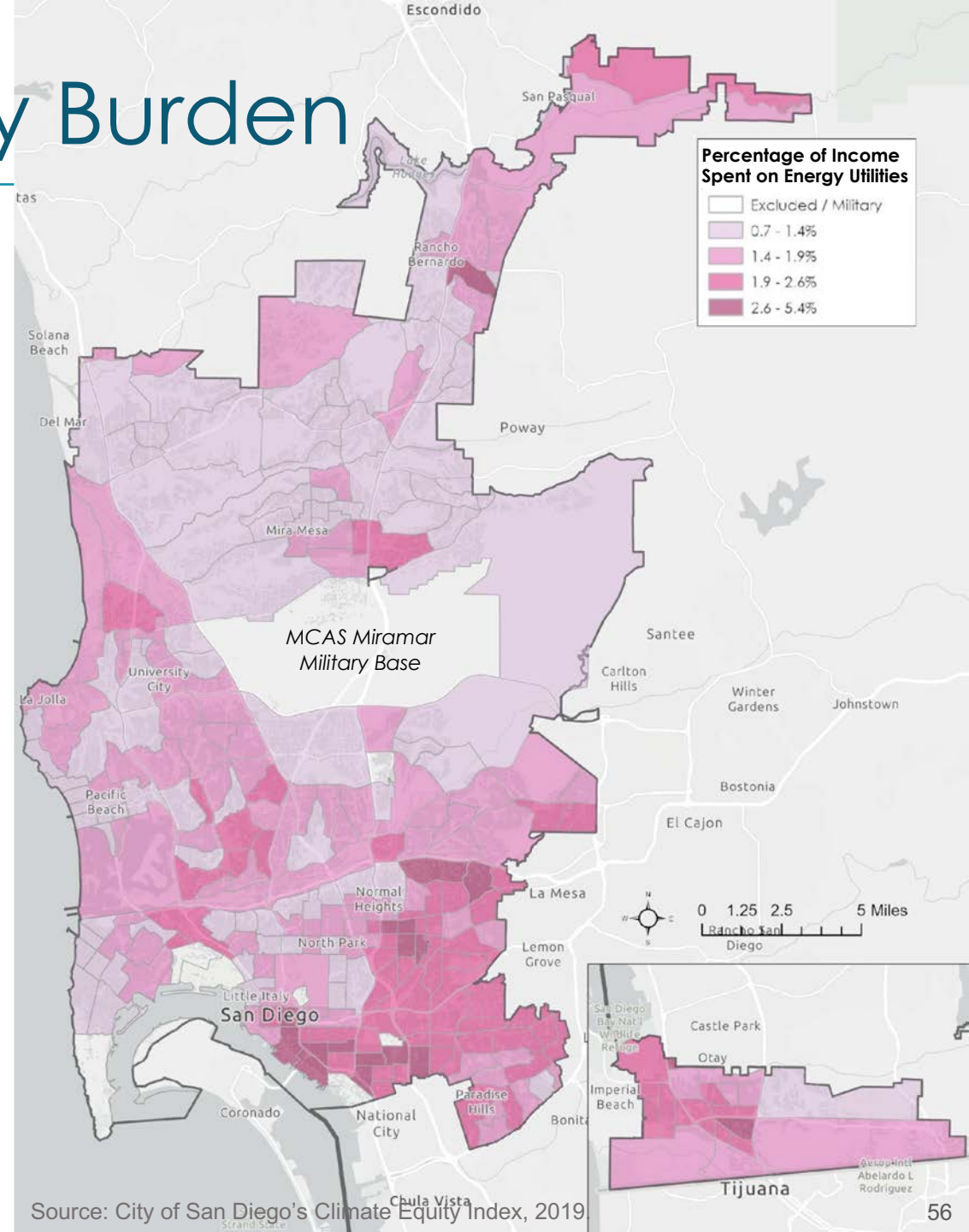
Source: City of San Diego's Climate Equity Index, 2023

Social Vulnerability | Energy Burden

Energy cost burden is the **percentage of income spent on home energy bills**, including electricity and gas.

- About 5% of residential units are located in a census tract with an average energy burden of over 2.6%.
- **11% of 2-4 unit homes** are in a census tract with the highest average energy burden (2.6-5.4% of income spent on energy).

Residential Typologies	Number of Residential Units by Census Tract Average Energy Cost Burden				
	Excluded / Military	0.7 – 1.4%	1.4 – 1.6%	1.7 – 2.6%	2.6 – 5.4%
Single Family Homes	4,847	90,370	34,929	79,238	7,572
Manufactured Homes	2,289	1278	344	3,563	146
2-4 Unit Homes	3,180	13,943	8,996	16,254	5,140
Condos & Co-Ops	6,196	40,652	32,655	31,439	2,557
Multifamily Housing	15,449	50,235	31,608	45,573	16,818
Total Units	31,961	196,478	108,532	176,067	32,233
Percent of Citywide Units	6%	37%	20%	33%	6%



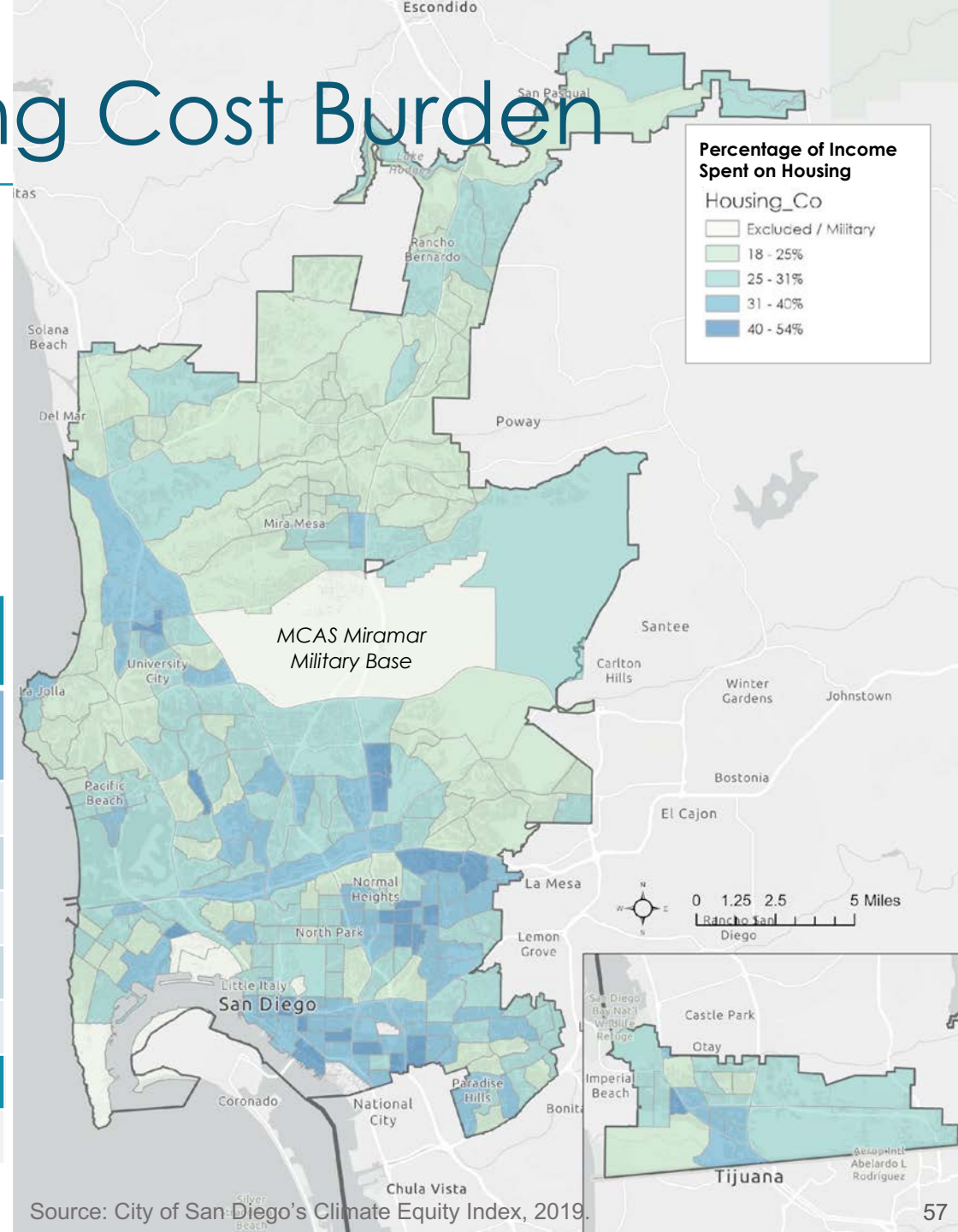
Social Vulnerability | Housing Cost Burden

Housing cost burden is the **proportion of income spent on rent or mortgage**. Over one-third is considered a high housing cost burden, while over half is considered severe.*

- Over half of San Diego's population is located in a census tract with an average housing burden of over 28%.
- 24% of residential units are located in a census tract with high energy burden.

Residential Typologies	Number of Residential Units by Census Tract Average Housing Cost Burden				
	Excluded / Military	18-25%	25-31%	31-40%	40-54%
Single Family Homes	4,831	100,424	74,985	30,178	5,037
Manufactured Homes	2,273	678	3,381	1,138	134
2-4 Unit Homes	3,164	5,641	17,833	16,962	3,864
Condos & Co-Ops	6,180	29,632	42,372	32,093	3,194
Multifamily Housing	15,433	22,242	56,527	47,167	18,237
Total Units	31,881	158,617	195,098	127,538	30,466
Percent of Citywide Units	6%	30%	37%	24%	6%

*Based on HUD definition.



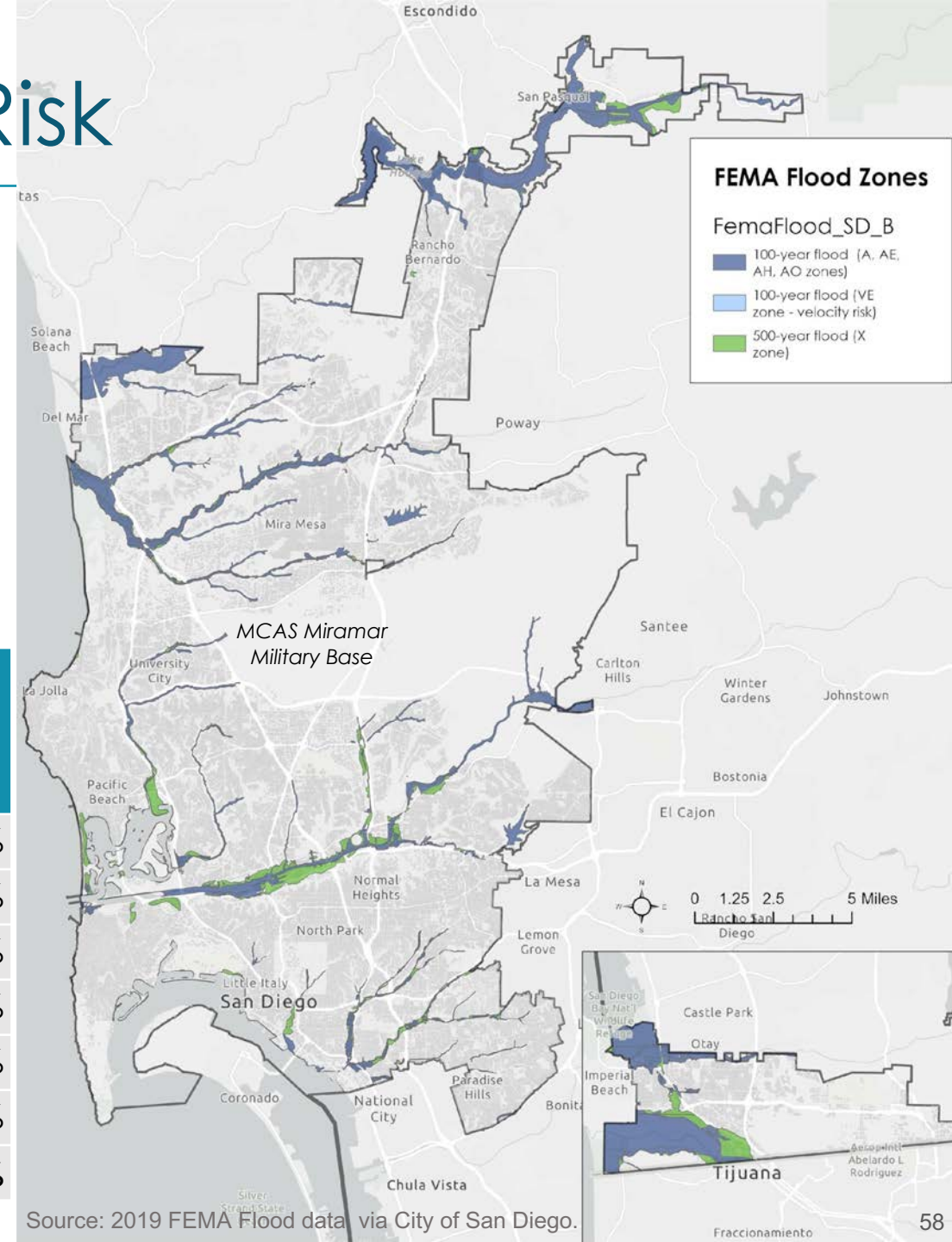
Environmental Risk | Flood Risk

FEMA Flood Zones

About **5% of San Diego's buildings lie in a FEMA Flood Zone** (about 14,000 buildings), which include buildings at risk of precipitation-driven flooding (mainly inland) from 100-year and 500-year storm scenarios (1% and 0.2% annual chance of flooding respectively)

- **More than half of these buildings are located in a Community of Concern**, a total of just under 8,000 buildings, with 3,500 in the 100-year flood zone.

Building Typology	Number of Buildings in FEMA Flood Zone Designations			Total Buildings in Flood Zone	Percent of Citywide Typology in Flood Zone
	100-Year Flood (A, AE, AH, AO)	100-Year Flood (VE)	500-Year Flood (X)		
Residential (All)	3,592	84	5,343	9,019	3%
Education (All)	227	0	132	359	.4%
Municipal	660	5	373	1,038	.1%
Commercial (All)	848	2	514	1,364	.3%
Industrial	484	0	368	852	.2%
Other & Unknown	1,287	13	258	1,558	1%
Total	7,098	104	6,988	14,190	5%



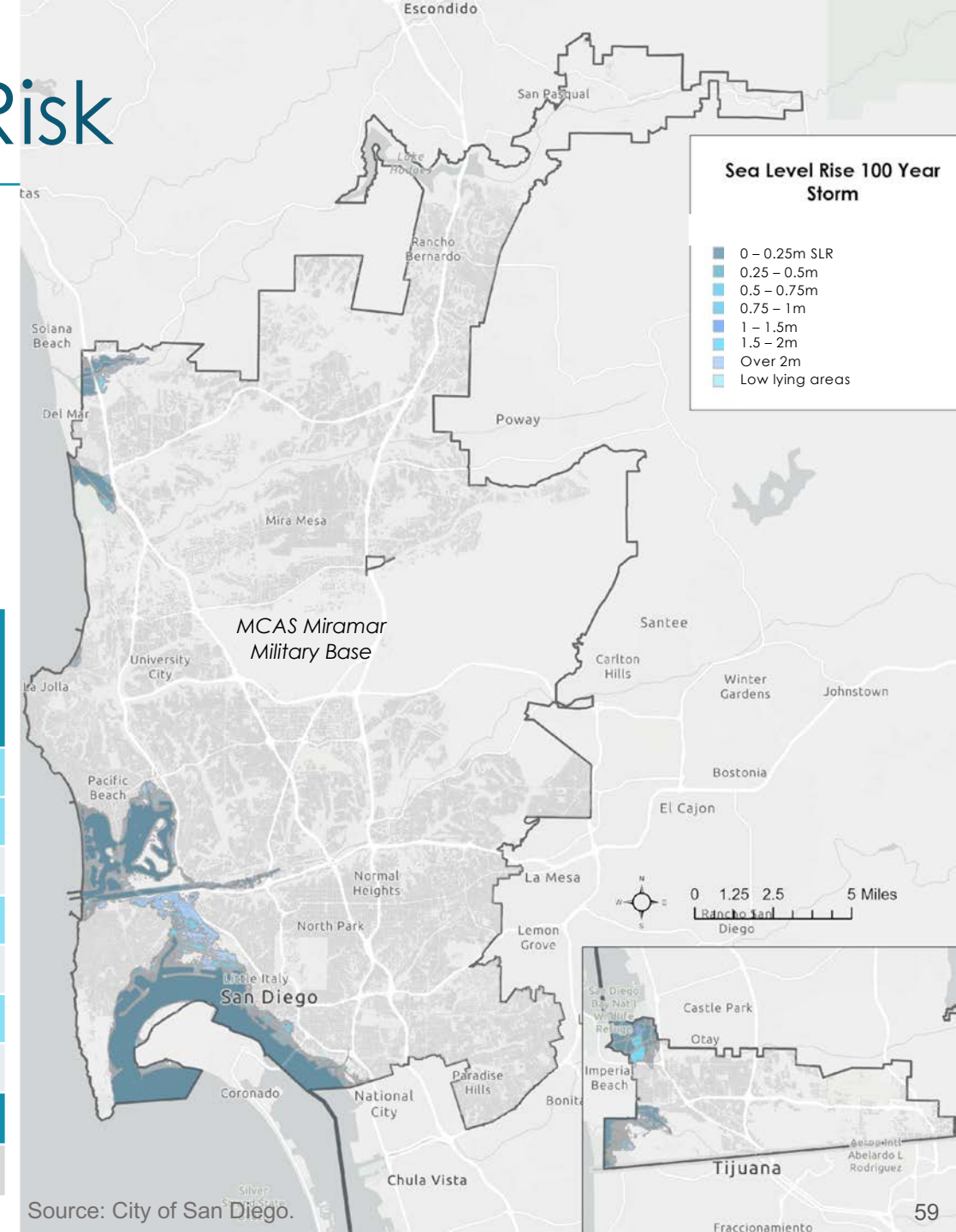
Environmental Risk | Flood Risk

Sea Level Rise

Sea Level Rise will compound flooding from severe storms. This model shows coastal flooding based on differing sea-level rise projections.

- About **7,000 buildings (2.3%)** are at risk of flooding if sea levels rise by **up to 2 meters**. If sea-level rise remains under 1 meter, about 1,200 buildings are at risk (0.4%).
- **Almost 1,500 buildings in Communities of Concern** are at risk if sea levels rise by 2 meters.

Building Typology	Height of Sea-Level Rise				Total Buildings at Risk
	Up to 1m	Up to 2m	Over 2m	Low-lying	
Residential Typologies	869	721	1,034	149	2,773
Multifamily Housing	81	125	159	21	386
Education (All)	-	5	35	3	43
Municipal	10	203	74	124	411
Commercial (All)	102	393	327	158	980
Industrial	5	69	147	26	247
Other & Unknown	188	483	1,332	332	2,335
Total	1,255	1,999	3,108	813	7,175
% of Citywide Buildings	0.4%	0.7%	1%	0.3%	2.3%

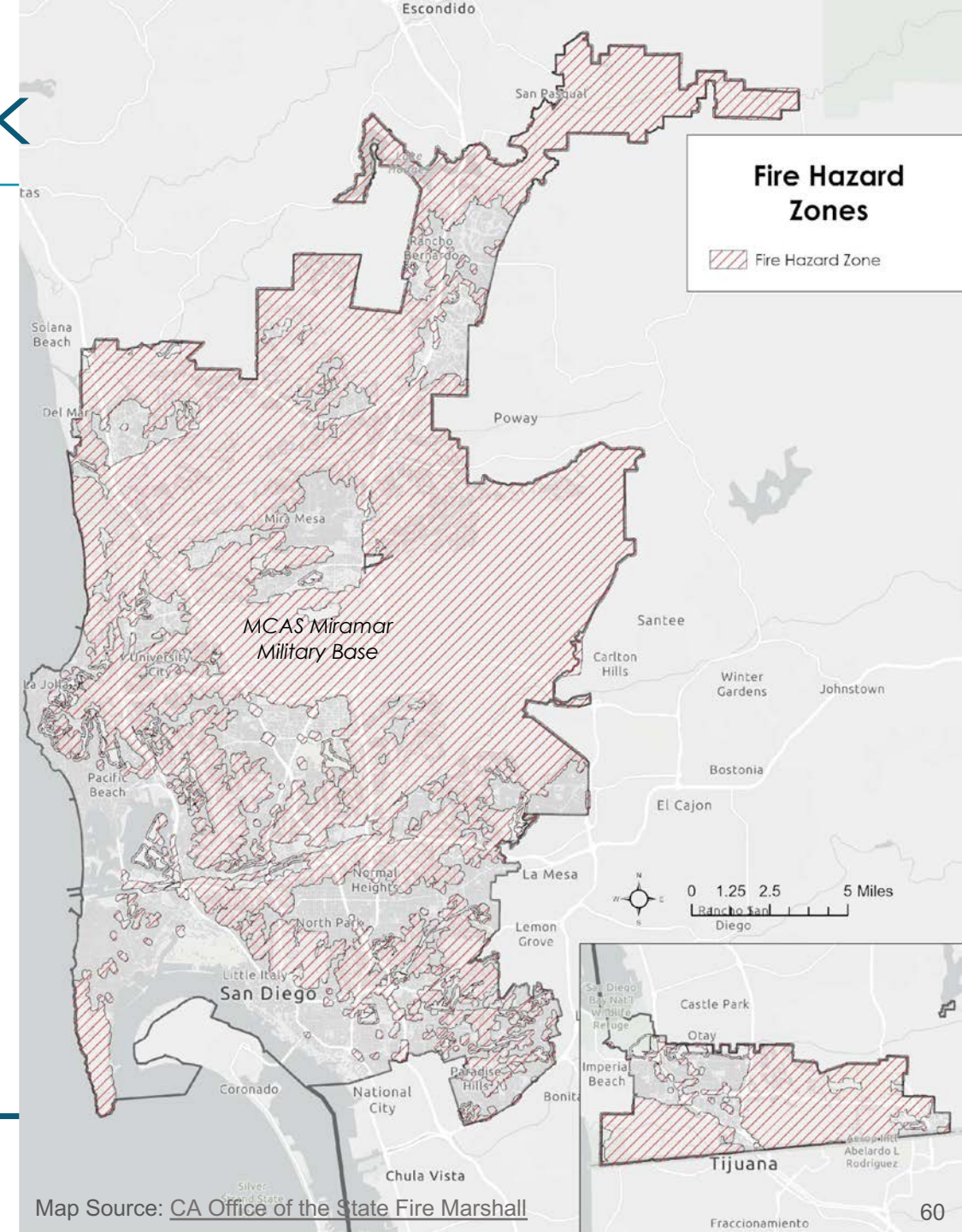


Source: City of San Diego.

Environmental Risk | Fire Risk

Fire Hazard Zones

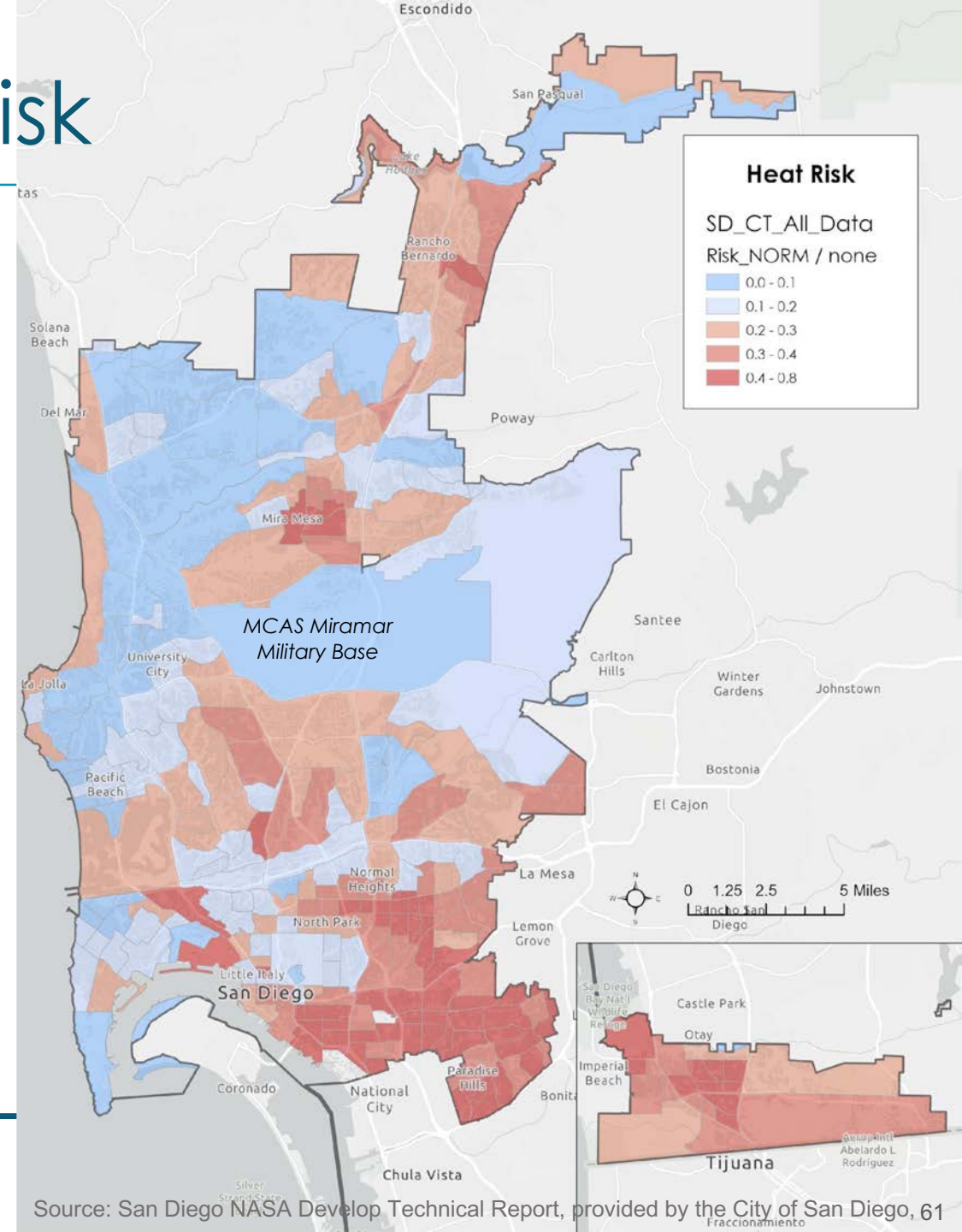
- **54% of the San Diego building stock lies in what the state defines as a Very High Fire Hazard Severity Zone**, totaling over 150,000 buildings.
- The State Fire Marshal defines Fire Hazard Severity is determined by a combination of indicators such as fire history, vegetation, topography, climate, and expected fire behavior.
- In addition to fire risk, it is important to consider health impacts such as **high-smoke days from nearby fires**.



Environmental Risk | Heat Risk

Heat Risk

- Heat waves are the deadliest natural disasters US communities face, and the risks are increasing as a result of climate change.* Dense urban areas with dark, hard surfaces exacerbate extreme heat, causing what is known as the “Urban Heat Island effect.” The need for cooling will increase as extreme heat events become more common, a need for which heat pumps could provide an efficient solution.
- In San Diego, a large portion of the City is at high heat risk**, with **32% of the building stock in a census tract with higher heat (over 0.3)**, with particularly high concentrations in the southern parts of San Diego. This includes:
 - 44% of 2-4 unit homes**
 - 42% of multifamily housing**

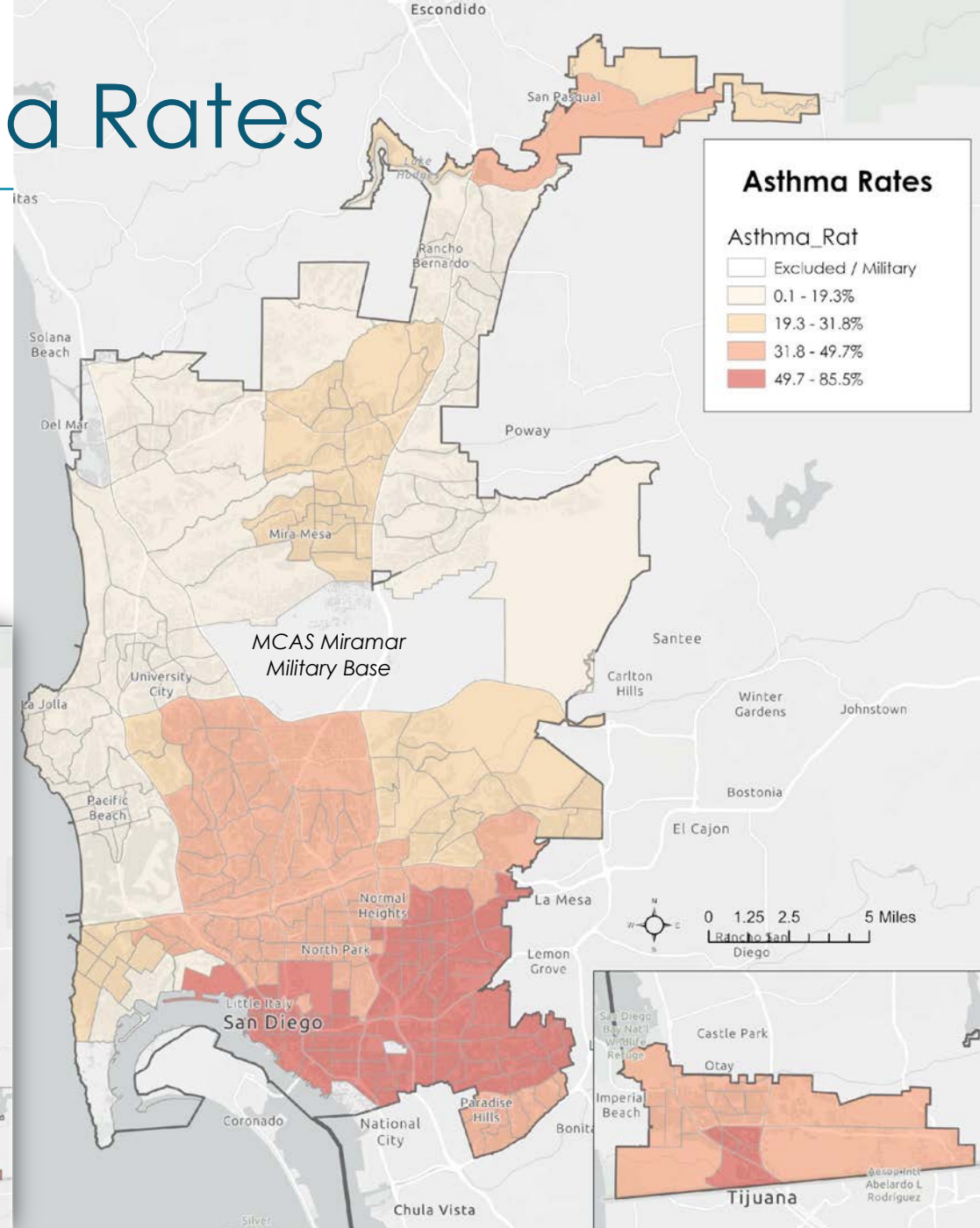
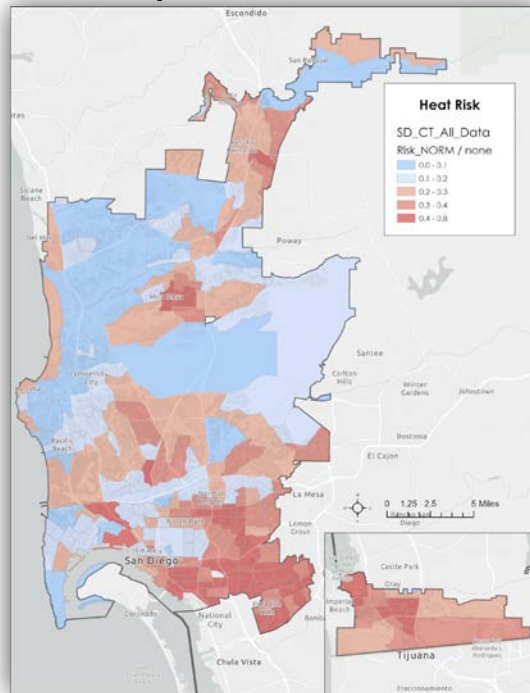


Social Vulnerability | Asthma Rates

Asthma Rates

- **An increase in asthma and other respiratory illnesses has been tied to a range of climate impacts**, including increased extreme heat and high-smoke days.
- In addition to these outdoor air quality concerns, asthma has also been tied to the use of gas stoves and other gas appliances.
- **Roughly 45% of buildings in San Diego are in a census tract with high asthma rates (over 32%)**, again with high concentrations in southern San Diego. This includes:
 - **73% of 2-4 unit homes**
 - **71% of multifamily housing**

For comparison: Heat Risk



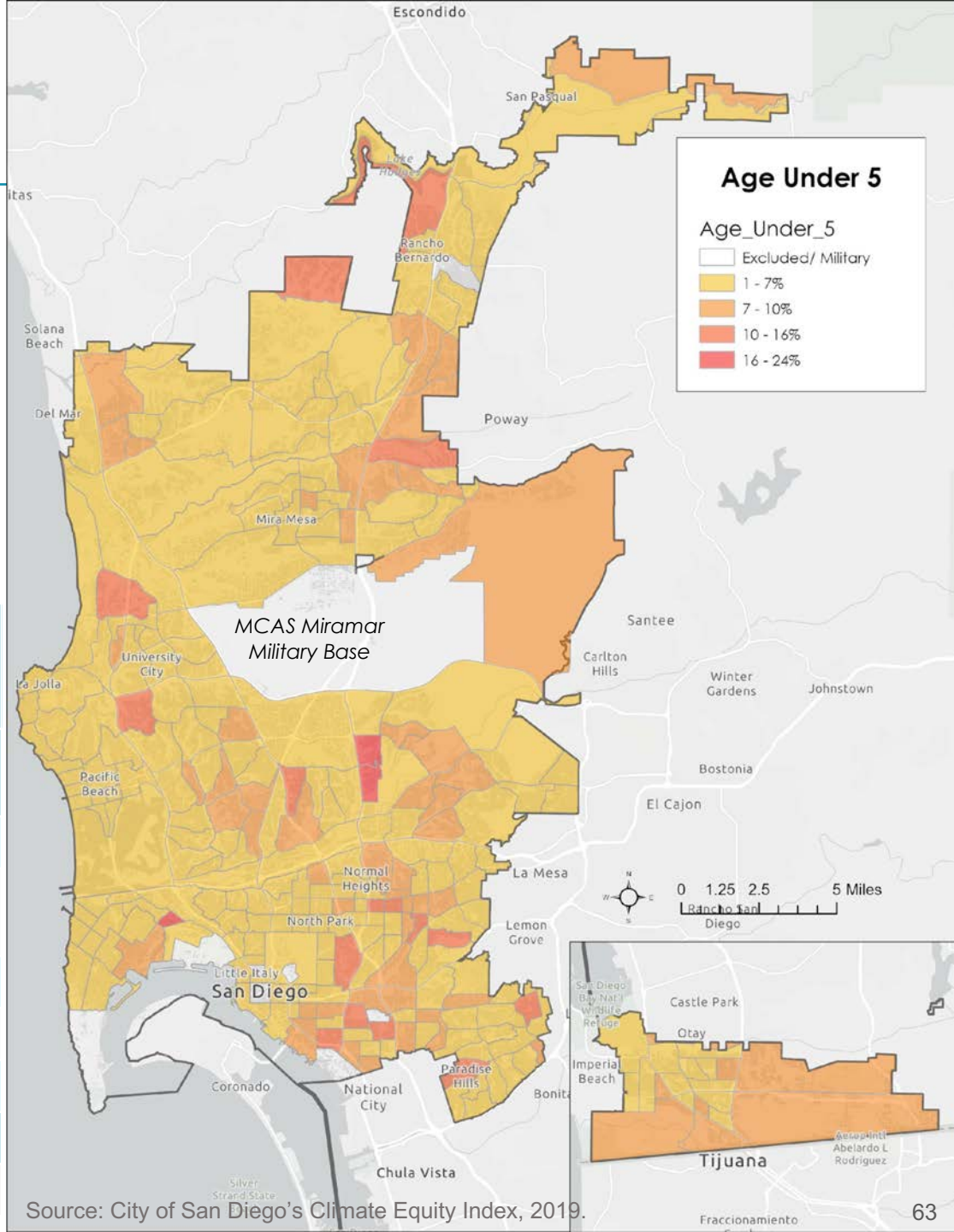
*Harvard School of Public Health: [Climate Change and Asthma](#)
**RMI's [Gas Stoves are a Health and Climate Problem](#).

Social Vulnerability | Age

Young children (under 5) are particularly vulnerable to the negative health impacts from poor air quality.

- **Young children make up approximately 6%** of the San Diego population.
- **Over 6,800 residential buildings are in a Community of Concern with a high percentage of young children**, which may benefit from targeted indoor air quality improvements.

Residential Building Typologies	Number of Buildings in Census Tract with High Percentage of Young Children (>10% of CT population below 5 years old)	
	Communities of Concern	All Census Tracts
Residential: Single Family Homes	3,993	12,045
Residential: Manufactured Homes	5	10
Residential: 2-4 Unit Homes	1,388	2,058
Residential: Condos & Co-Ops	82	803
Multifamily Housing	496	707
Total	5,964	15,621
% of All Residential Buildings	2%	6%

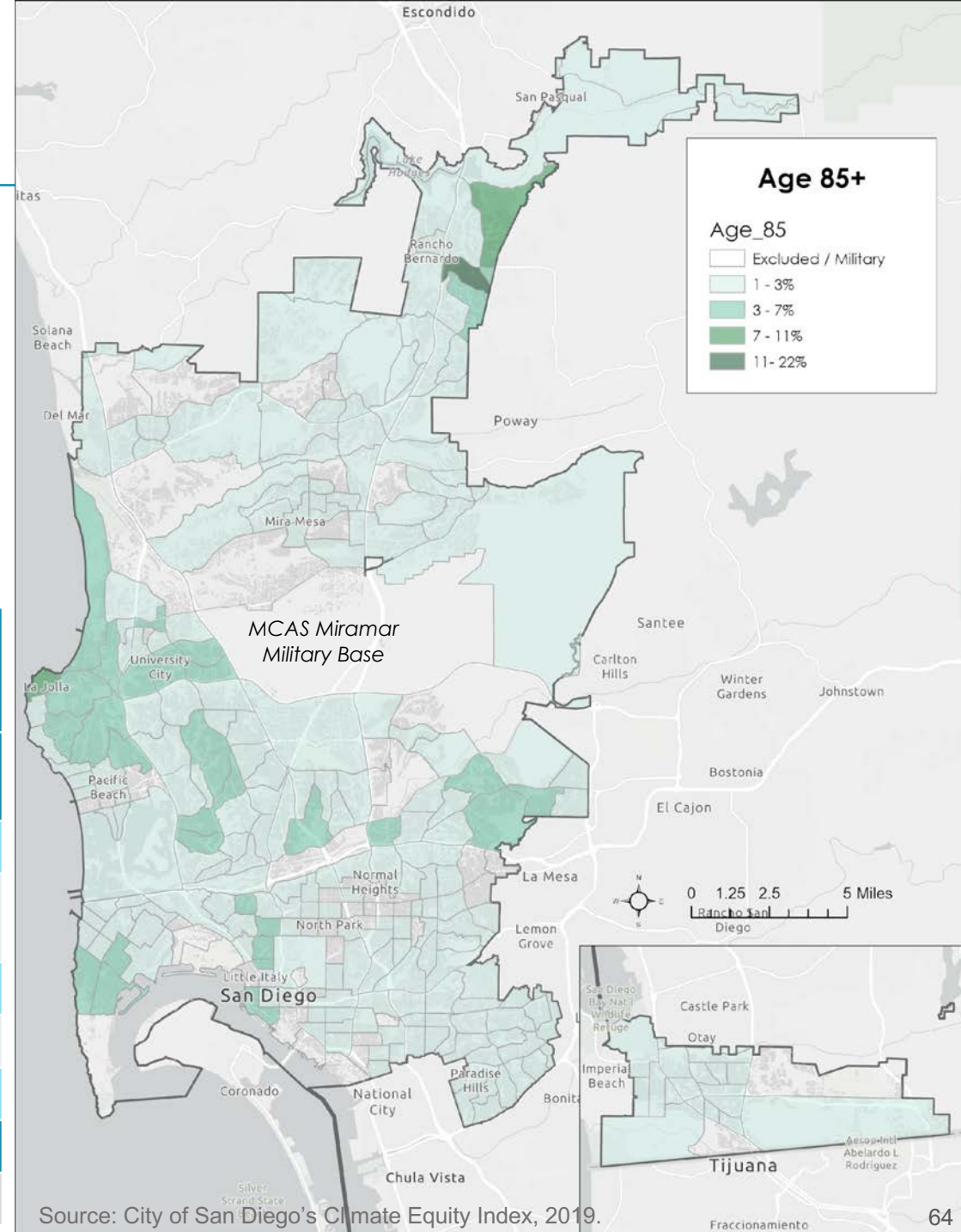


Social Vulnerability | Age

Older adults (over 85) are also particularly vulnerable to the negative health impacts from poor air quality.

- **Adults over 85 make up roughly 2%** of the San Diego population.
- **4,200 residential buildings are in census tracts with a high percentage of older adults.** The vast majority are single family homes. Aside from pockets in La Jolla and Rancho Bernardo, this population is generally spread out across the city.

Residential Building Typologies	Number of Buildings in Census Tract with High Percentage of Older Adults (>7% of CT population above 85 years old)	
	Communities of Concern	All Census Tracts
Residential: Single Family Homes	2,804	3,125
Residential: Manufactured Homes	--	--
Residential: 2-4 Unit Homes	--	44
Residential: Condos & Co-Ops	834	950
Multifamily Housing	--	78
Total	3,638	4,196
% of All Residential Buildings	1%	2%



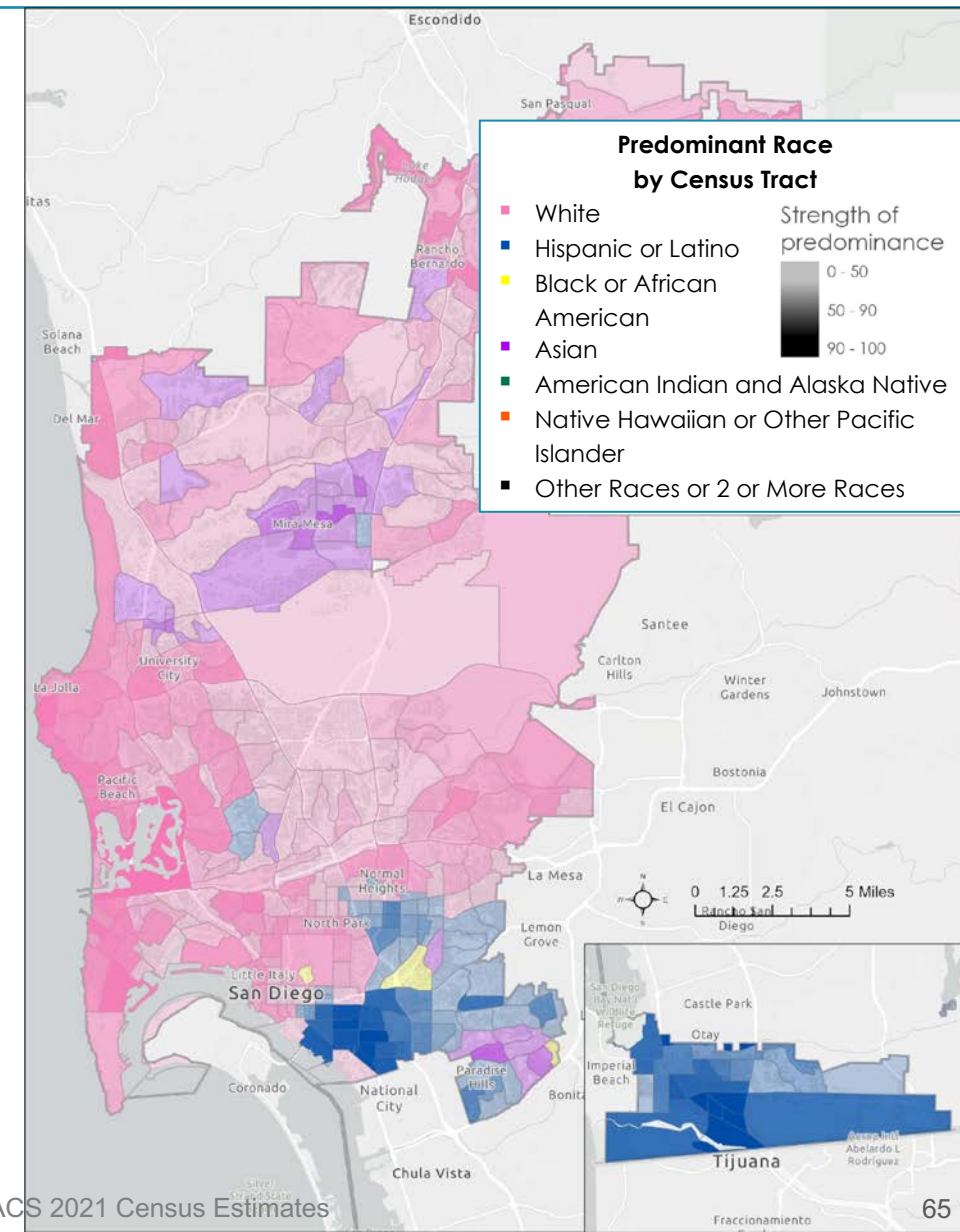
Social Vulnerability & Environmental Risk | Key Takeaways

Summary of Key Takeaways

San Diego is a diverse city with many different communities, ethnicities, and identities. To design building policies and programs effectively, it is important to consider who lives, works, and accesses these buildings and how to engage with those communities to co-create solutions.

Race remains a major determinant of health, opportunity, and overall community wellbeing. This is a trend seen across major U.S. cities due to a history of racist policies.

- San Diego's largest communities of color are **Hispanic or Latino (30% of the population), Asian (17%), and African American (6%)**
- **Communities of color are generally clustered in and around downtown San Diego and San Ysidro areas** (typically South of interstate 8).
- Communities of color represent a **higher share of residents living in manufactured homes and multifamily homes** compared to the white population. However, **the majority of every racial group lives in single family homes**, which is the most common building type in the city.



Social Vulnerability & Environmental Risk | Key Takeaways

Summary of Key Takeaways (1 of 2)

There are multiple designations for low-income communities of color in San Diego, including California's Disadvantaged Communities (DACs), federal Justice40 Initiative (J40) census tracts, and local Communities of Concern. These designations are critical to understand potential funding streams that these communities are eligible for and to better understand the specific vulnerabilities each community faces.

In general, **these communities are more susceptible to the impacts of climate change and face a disproportionate social vulnerabilities** compared to wealthier, white communities in San Diego. As such, The City should prioritize and thoughtfully engage members of these communities when developing any new policies and programs to address building energy use and emissions.

- This includes developing **culturally relevant outreach with robust translation services and trusted messengers**, and should not rely solely on digital engagement, because these communities have lower rates of digital access, higher rates of poverty, and higher rates of non-English speakers.
- This also includes developing **specific approaches for the local building stock**, which faces a variety of climate risks, including **extreme heat, flooding, and wildfires**, many of which are expected to be worse in San Diego's low-income communities of color.

Ownership & Decision- Making Indicators



Ownership & Decision-Making Indicators

Technical Indicators

- Number of Buildings
- Building Typologies
- Building Size
- Residential Units
- Vintage
- Historic Districts
- Existing Solar PV
- Benchmarked Energy

Social Vulnerability & Environmental Risk Indicators

- City Council Districts
- Race & Language
- Poverty Rate
- Disadvantaged Communities
- Justice40 Communities
- Communities of Concern
- Energy & Housing Cost Burden
- Digital Access
- Flood & Fire Risk
- Heat Risk
- Asthma Rate
- Age

Ownership & Decision-Making Indicators

- Ownership Type
- Subsidized Affordable Housing
- Publicly Owned Buildings

Ownership & Decision-Making | Ownership Type

Ownership Type

Ownership type designates who owns a building or housing unit and indicates potential decision-making considerations when completing building retrofits.

- **Owner-occupied buildings indicate that the building owner may be more motivated to invest in retrofits,** since they will directly benefit from them.
- **Renter-occupied buildings identify where tenants do not have control over building decisions.** Although they may still benefit from lower energy bills, **owners may be less financially motivated to make investments** in renter-occupied buildings, and tenants do not decision-making power – an issue called the “split incentive.”
- **There are multiple types of affordable housing in San Diego.** Some of these buildings have protections for tenants in place, while others do not.

Sources: City of San Diego [ADU](#) and [STRO definitions](#). BEI [subsidized](#) and [NOAH definitions](#). Market rate definition adapted from [CommonBond Communities](#).

Housing Definitions

- **Subsidized Affordable Housing:** Any property that receives tax credits, grants, and/or loans in exchange for restrictions on rent or resident income levels.
- **Naturally-Occurring Affordable Housing (NOAH):** Any property not subject to regulations restricting rent or incomes yet offers rents below average market rate and/or is affordable to existing residents.
- **Market Rate Rental:** Any property not subject to regulations restricting rent or incomes where rent is based on area market values and demand, often defined in relation to Area Median Income (AMI).
- **Short-term Rental:** STRs refer to the occupancy of a dwelling unit or part thereof for less than one month.
- **Accessory Dwelling Unit (ADU):** ADUs are detached or attached additional structures on a residential parcel that provide independent living area, smaller in size than the primary residence.
- **Condo and Co-Op:** A building with individually owned units, but shared ownership of the building or complex.

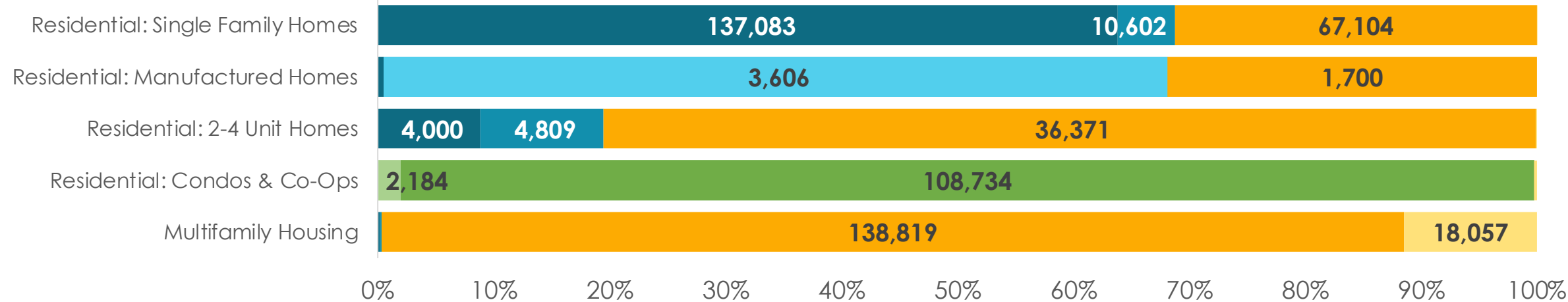
Ownership & Decision-Making | Ownership Type

Ownership Type in San Diego

- 70% of residential units in San Diego are renter-occupied.
- One third of single family homes (67,000 units) and a significant proportion of manufactured homes and condo buildings are renter-occupied. Rental buildings have unique needs that are not always addressed by incentive programs, but house tenants who would benefit from clean energy.
- Subsidized affordable housing provides housing for some of the most vulnerable populations, yet only constitutes 4% of residential units.

- Owner-Occupied
- Owner-Occupied - Possible ADU
- Assumed Owner-Occupied
- Condos and Co-Ops - 100% Owner-Occupied
- Condos and Co-Ops - Mixed Owner and Renter-Occupied
- Renter-Occupied - Market Rate, NOAH & Short-term Rentals*
- Renter-Occupied - Subsidized Affordable Housing

Number of Residential Units by Building Typology



*Market Rate, NOAH, and Short-term Rentals are combined in a single category given lack of available data. Note that subsidized housing unit counts may be inflated as it includes all units in the building, including some unsubsidized or market rate units.

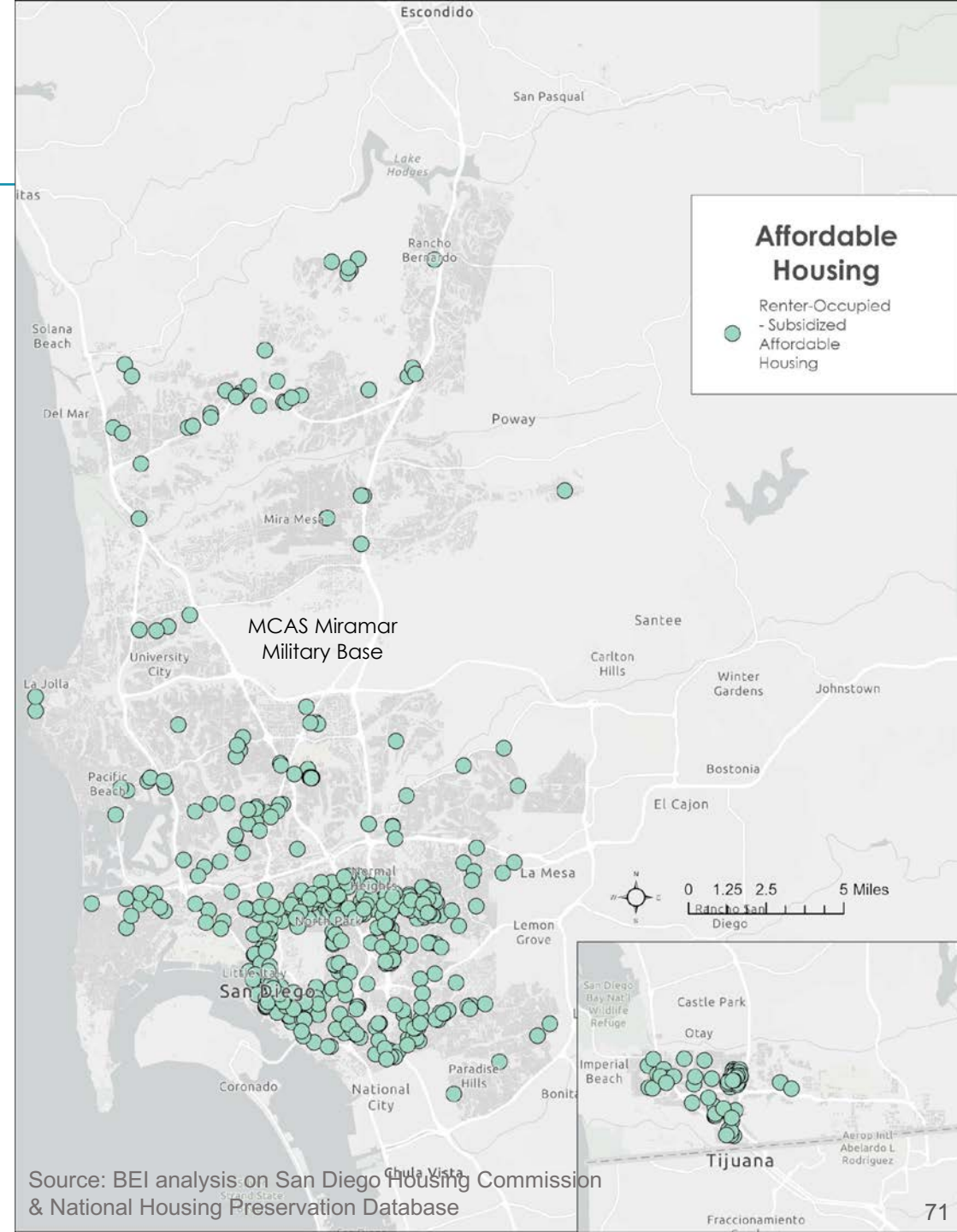
Ownership & Decision-Making | Subsidized Affordable Housing

Subsidized affordable housing is any property that receives tax credits, grants, and/or loans in exchange for restrictions on rent or resident income levels.

- **Affordable housing has unique restrictions, funding cycles, and needs assessments** based on the subsidies they receive, and therefore will need tailored retrofit solutions and incentives.
- **Affordable housing can be funded at the local, state, and federal levels.** Because separate agencies at these levels track their data differently, it can be difficult to determine accurate unit counts.
- The project team evaluated two datasets for San Diego to estimate the number of subsidized affordable units: **The National Housing Preservation Database and San Diego's Housing Commission dataset.**

Estimated Subsidized Affordable Units	17,215
Percent of Citywide Residential Units:	3%
Number of Buildings with Affordable Units:	2,282

*Estimate identified through GIS mapping of both local SD Housing Commission data and the National Housing Preservation Database. Units may be located in properties with both affordable and market rate units.



Source: BEI analysis on San Diego Housing Commission & National Housing Preservation Database

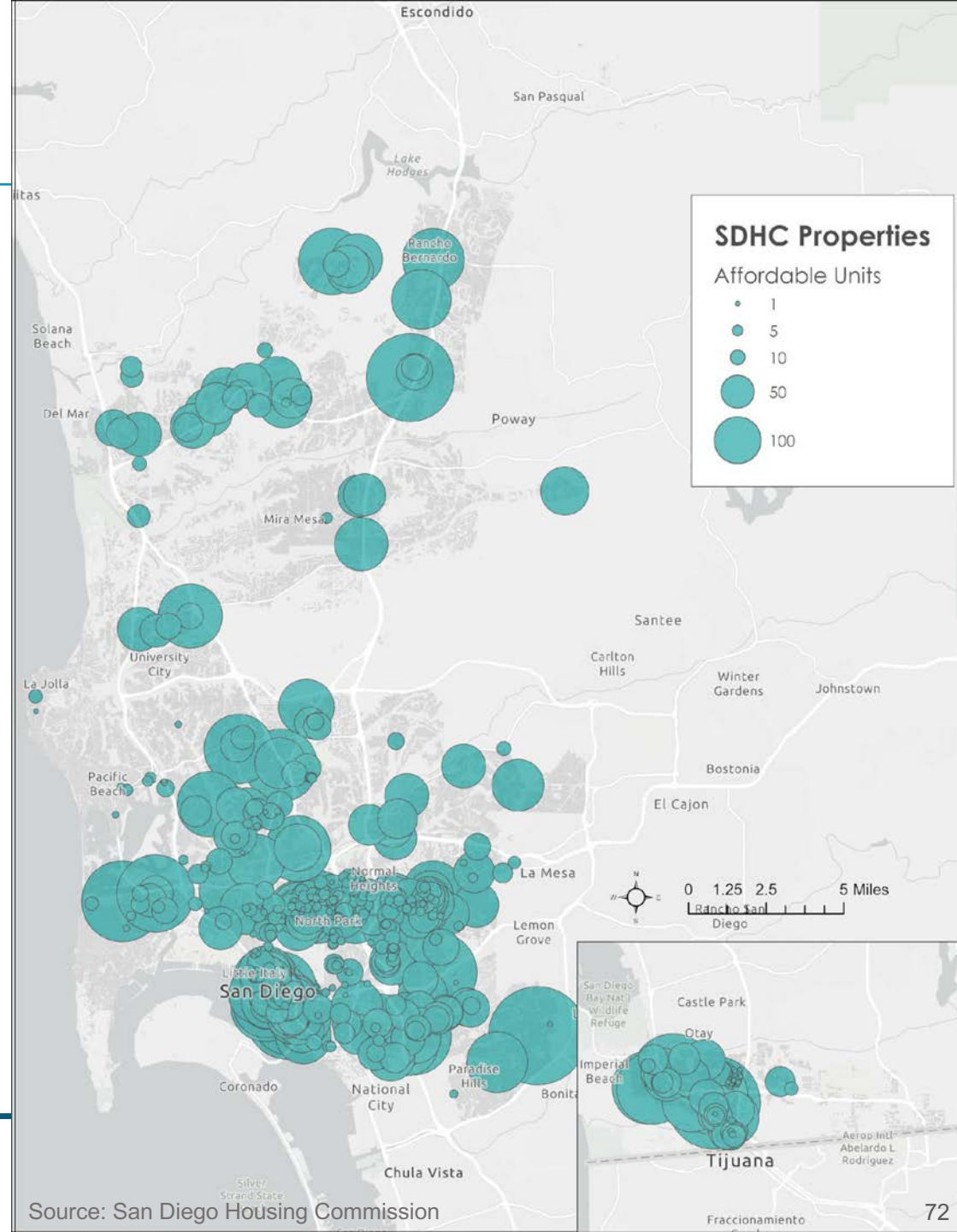
Ownership & Decision-Making | Subsidized Affordable Housing

City of San Diego Housing Commission (SDHC) Database

The local SDHC data includes buildings with local and some state subsidies.

- **15,127 subsidized units** are listed in this database across 2,099 buildings.
 - 97% of these units are located in multifamily buildings.
- **80% of buildings in the SDHC database pull subsidies from multiple programs**, which means that many of these buildings are adhering to a range of restrictions from various programs.

*San Diego County AMI and Income Limits, 2023



Ownership & Decision-Making | Subsidized Affordable Housing

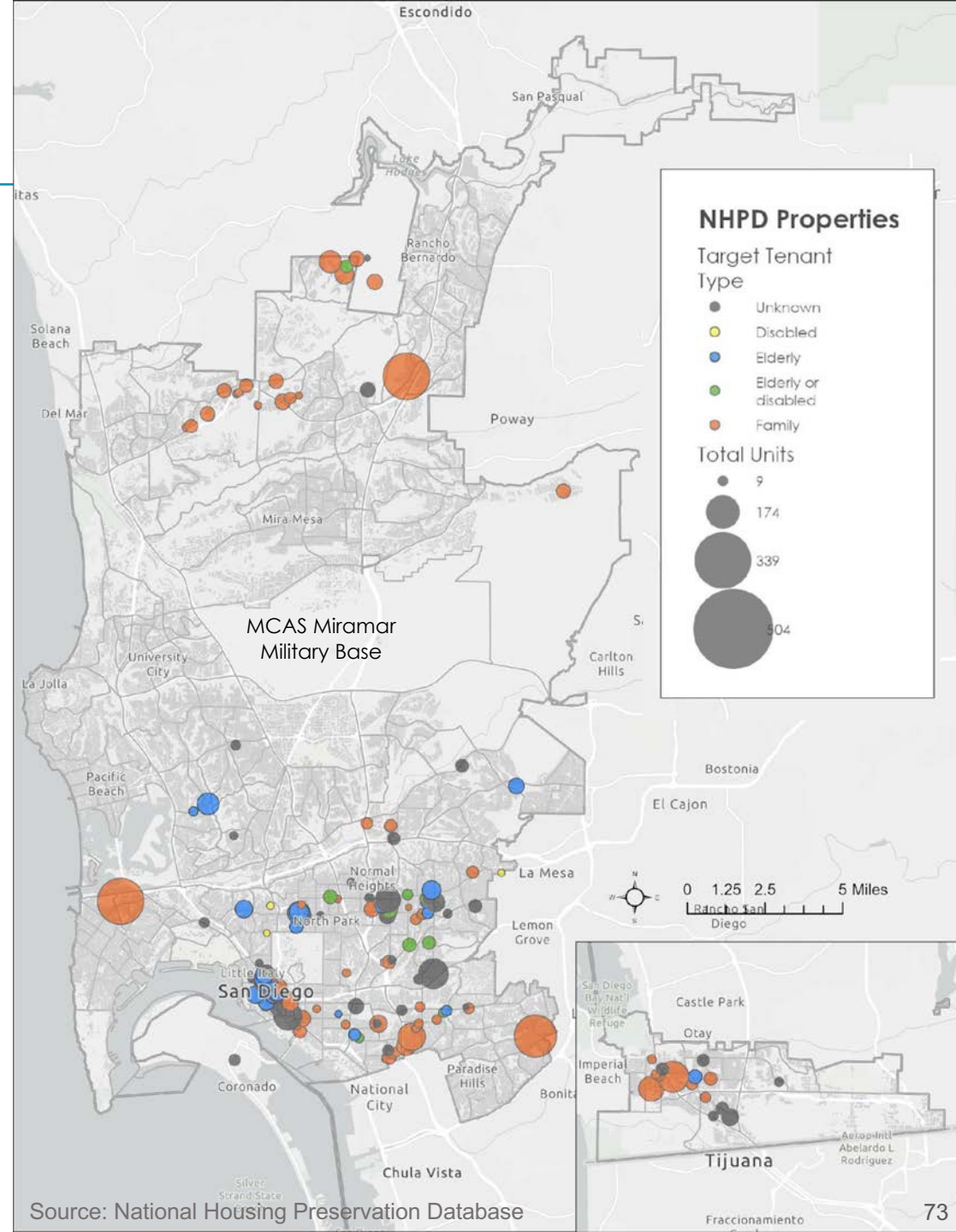
The National Housing Preservation Database (NHPD)

NHPD includes buildings with federal and some state subsidies. The database includes:

- **9,681 subsidized units** (1.8% of citywide) within **741 buildings**. The majority of these units are located in **multifamily buildings**.
- **Only 358 buildings contain units available to extremely low-income tenants** (earning under 30% AMI)*, all of which are in multifamily buildings.
- **“Target Tenant Type”** information in the table below indicates if units are specifically reserved for the elderly, disabled, families.

Building Typology	Number of Subsidized Units by NHPD Target Tenant Type			Total Subsidized Units	Percentage of Citywide Units
	Family	Elderly or Disabled	Unknown		
Single Family Homes	124	---	---	124	0.02%
Manufactured Homes	---	---	---	---	0%
2-4 Unit Homes	143	52	---	195	0.04%
Condos & Co-Ops	5,057	1,540	2,597	9,194	2%
Multifamily Housing	---	---	85	85	0.02%
Grand Total	5,537	513	4,768	10,766	1.8%

*San Diego County AMI and Income Limits, 2023



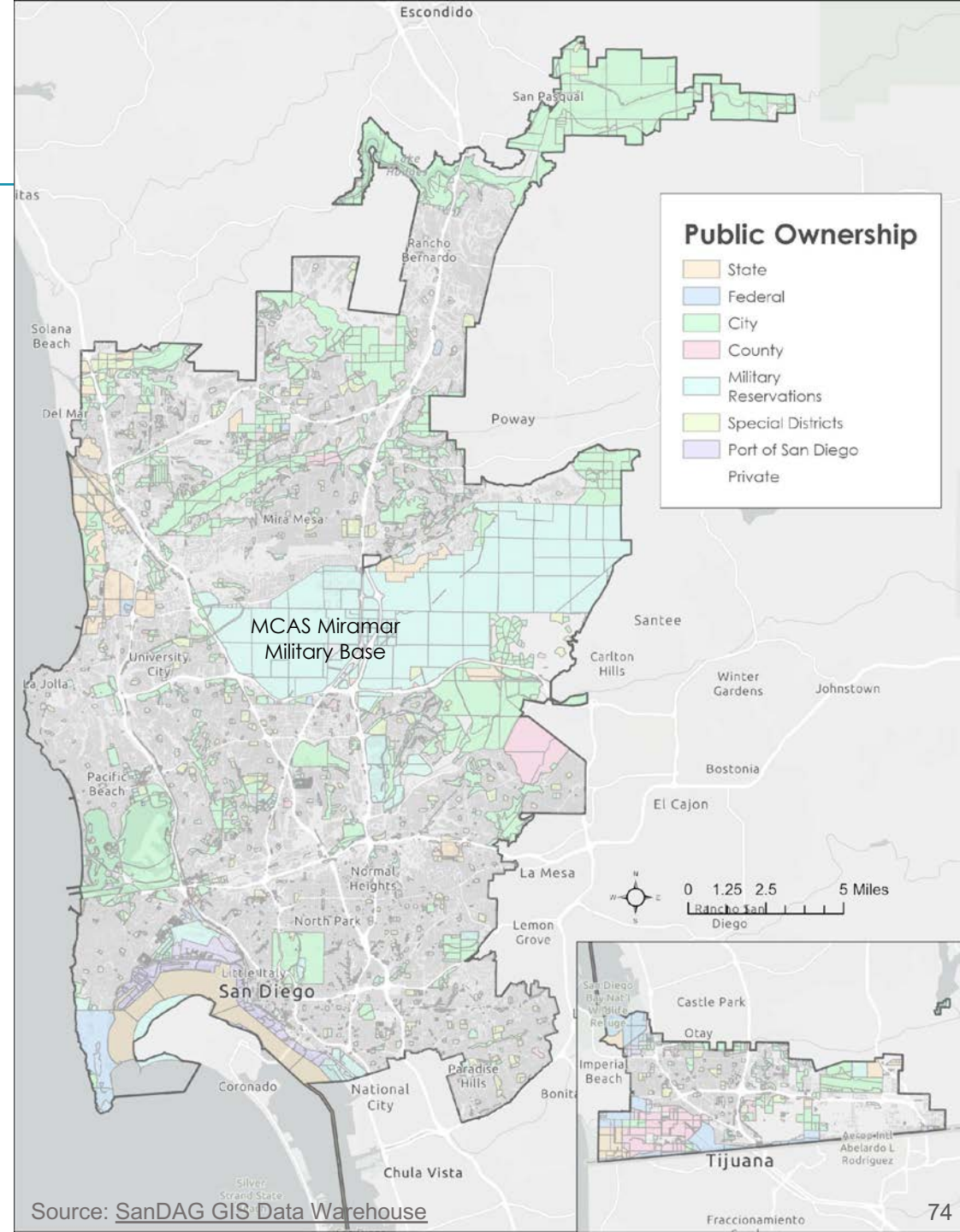
Source: National Housing Preservation Database

Ownership & Decision-Making | Public Ownership

There are approximately **11,000 publicly-owned buildings** in the City of San Diego. There is an opportunity for government to lead by example by pursuing and showcasing retrofits as models for the private sector.

The largest public building owners include the City, the U.S. military, and special districts such as the School District.

Public Buildings Owners	Number of Buildings	Percentage of Citywide Buildings
City	2,659	24%
County	136	1%
Federal	467	4%
Military	4,248	38%
Port of San Diego	395	4%
Special Districts	3,149	28%
State	59	0.5%
Grand Total	11,117	100%



Ownership & Decision-Making | Key Takeaways

Summary of Key Takeaways (1 of 2)

- **San Diego has a significant number of renters living in multifamily and small residential buildings.** 70% of residential units in San Diego are rental properties, including 30% of single family homes.
 - The high rate of renters may require additional outreach to better understand the needs of tenants and motivations of building owners. Addressing this segment may require robust incentives, tailored solutions, and tenant protections to deliver benefits to renters.
- Similar to other large U.S. cities, San Diego has an **insufficient amount of subsidized affordable housing given the number of low-income households** living in the city.
 - **There are currently an estimated 18,000 units of subsidized affordable housing** in San Diego, located in 1,200 buildings, which make up less than 4% of total residential units. Additional “naturally occurring” affordable housing exists but is difficult to quantify.
 - Because subsidized affordable housing has unique restrictions, funding cycles, and needs, **electrifying this building stock will require tailored efforts to coordinate investments over time** and within the financial and regulatory bounds of their affordability agreements.

Ownership & Decision-Making | Key Takeaways

Summary of Key Takeaways (2 of 2)

- **There are approximately 11,000 publicly owned buildings in San Diego.** These buildings present an opportunity for public agencies to showcase successful decarbonization retrofits.
 - Public buildings include **roughly 3,000 City-owned buildings and 3,000 owned by special jurisdictions**, like the San Diego School District. Additional public buildings are owned by the U.S. military.
 - **Public agencies have an opportunity to lead by example in these buildings**, which could include planning across a building portfolio, designing cost-effective retrofit solutions, implementing labor standards to create high road jobs, and sharing lessons learned on technical and financial challenges with the private sector.

Summary of Findings and Key Takeaways



Building & Housing Stock Analysis | Takeaways

Summary of Key Takeaways (1 of 3)

- **There are 300,000 buildings across San Diego, 91% of which are residential**, and the majority of buildings are single family homes (69%).
- **Over half of residential units were built before 1978** when state energy codes were formalized. These buildings may require significant investment in electric readiness like panel and wiring upgrades, as well as potentially higher health and safety needs, before electrifying.
- **Commercial, industrial, and other buildings represent 9% of buildings, but 23% of built square footage** across the city, presenting a potentially significant emissions savings opportunity. Policy solutions for larger buildings have been enacted across US cities (such as Building Performance Standards), and could be tailored for San Diego's local context.
- **Energy usage trends are available through the City's benchmarking ordinance.** This data can provide the foundation for setting feasible targets for different large building typologies and shows where natural gas use drives GHG emissions (which is particularly high in the multifamily sector).

Building & Housing Stock Analysis | Takeaways

Summary of Key Takeaways (2 of 3)

- **70% of housing units in San Diego are rental units.** Renters in San Diego will need to be thoughtfully engaged so policies and programs deliver the benefits of electrification and **avoid the risks of exacerbating unaffordability, housing cost burden, and displacement.**
 - These risks are particularly acute for smaller residential buildings that may serve as “**naturally occurring**” **affordable housing** for low- and moderate-income tenants. **Subsidized affordable housing** also faces specific decision-making timelines and challenges based on the requirements of federal, state, and local funding streams.
 - The City can collaborate with housing advocates and agencies, community-based organizations, affordable housing developers, and building owners to **design policies that will decarbonize these buildings and improve housing quality without exacerbating affordability and displacement risks.**

Building & Housing Stock Analysis | Takeaways

Summary of Key Takeaways (3 of 3)

- Thanks to its Climate Equity Index, **the City has identified local Communities of Concern that face overlapping inequities in terms of health, income, and economic opportunity**, and that are particularly vulnerable to the impacts of climate change.
 - These communities are the least responsible for the causes of climate change, yet bear the highest burdens and are least able to afford the transition to clean energy. Moreover, members of these communities have been historically excluded from policy and decision-making processes.
- **Co-creating solutions with San Diego's Communities of Concern that result in targeted public investments in these communities will lead to more equitable and effective local policies and programs**, ensuring that the benefits of transitioning away from fossil fuels by electrifying buildings are shared by all San Diegans.

Building & Housing Stock Analysis | Recommendations

Final Recommendations

- **Explore a combination of policy mandates and supportive programs** that require or strongly encourage building electrification in existing buildings. Voluntary action alone will not be enough to achieve the City's ambitious climate goals.
- **Co-create and iterate solutions in close collaboration with Communities of Concern.** These communities face compounding impacts from climate change, social vulnerabilities, and historic disinvestment. The City can co-design solutions to address the biggest challenges to electrification that can then scale to benefit all existing buildings and San Diegans.
- **Engage in culturally relevant outreach and engagement** to reach the many diverse communities in San Diego and to share the potential benefits of electrification. Traditional or light touch outreach has excluded these communities in the past and therefore can perpetuate existing inequities.
- **Partner with the City's Housing Commission and other housing stakeholders to identify opportunities** to accelerate comprehensive building retrofits in both the subsidized and "naturally occurring" affordable housing stock and preserve housing affordability so that all San Diegans can enjoy health, safe, affordable, and fossil fuel-free housing.



BEI Building
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Appendix: Building Typology Development



Building Typology Development

Goals for Defining Typologies

- Simple categories used to analyze building stock indicators
- Granular enough to be relevant to City and community stakeholders when discussing policies and programs
- Can include use type, size, height, or number of units

Final Typologies | Residential

Residential: Single Family Homes

- *This is the most common building typology in San Diego. Retrofit solutions will be similar across homes, particularly given most are under 5,000 sq. ft.*



Residential: Manufactured Homes

- *Separate typology given the differences in terms of decision-makers, community concerns, marketing approach, financial and technical barriers, and retrofit solutions compared to single family homes.*



Final Typologies | Residential

Residential: 2-4 Unit Homes

- *Separated from multifamily buildings given they are often not eligible for multifamily programs and may need to be addressed differently. This typology is a mix of buildings similar to small multifamily and single-family homes in terms of technical barriers and solutions for electrification.*



Residential: Condos & Co-Ops

- *This typology includes all sizes and unit combinations, so electrification retrofits could be similar to single family or multifamily buildings. This remains a separate typology given the different ownership structure, which requires different approaches to unit vs. whole-building upgrades and different outreach and assistance strategies.*



Final Typologies | Residential

Multifamily Housing

- *This typology includes buildings with 5 or more residential units. It may include some mixed-use buildings (such as ground-floor retail), which is not well identified in existing datasets.*



Final Typologies | Non-Residential

Commercial: General

- *Includes grocery stores, big box stores, pharmacies, and car-related buildings like car washes, auto shops, parking, and gas stations.*



Commercial: Public Assembly

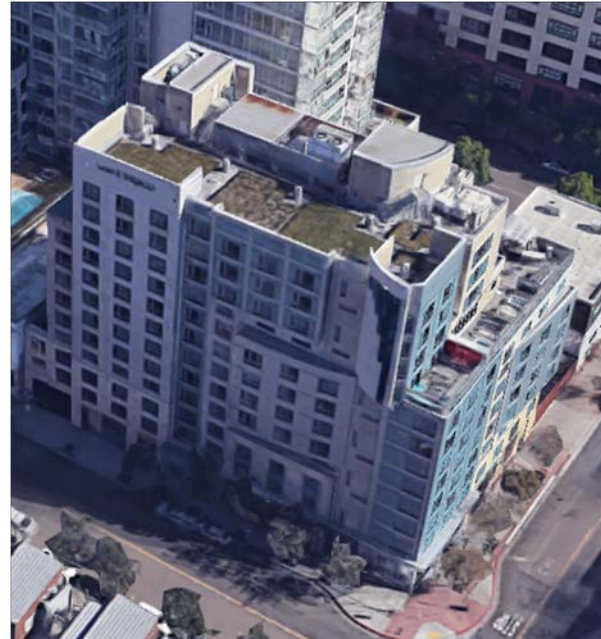
- *Includes unique larger buildings such as those located at the Sea World amusement park, as well as theaters, restaurants, bars, clubs, meeting halls, gyms, fitness centers, and other recreational buildings.*



Final Typologies | Non-Residential

Common commercial use types with unique building retrofit strategies

- **Commercial: Hotels & Motels**
- **Commercial: Office**
- **Commercial: Retail**



Hotels &
Motels



Office



Retail

Final Typologies | Non-Residential

Commercial: Hospitals, Labs & Medical Offices

- Hospitals, labs, and medical offices are a type of commercial building with unique energy and ventilation needs. Additional differences may also exist between inpatient and outpatient buildings. These buildings tend to have sophisticated building owners who could engage in campus-wide energy planning for retrofits.



Final Typologies | Non-Residential

Education: K-12 Schools (Public & Private)

- These buildings will have common funding opportunities specifically for K-12 schools. In addition, upgrading these buildings would have significant public health benefits for children.



Education: Other

- *Includes secondary education, public, and private universities. These buildings tend to have sophisticated building owners who could engage in campus-wide energy planning.*



Final Typologies | Non-Residential

Municipal

- *Includes only City-owned parcels, and may also include City-owned land where the building is owned by a separate entity.*

Industrial

- *Includes manufacturing and warehouses, often categorized together as “industrial” within datasets, although may have different retrofit strategies for each.*

Other & Unknown

- *Includes agricultural, rural, institutional and recreational buildings, as well as non-City-owned governmental buildings.*



Municipal



Industrial



Other & Unknown