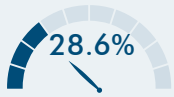


# T-4. Integrate Affordable and Below Market Rate Housing



## GHG Mitigation Potential



Up to 28.6% of GHG emissions from project/site multifamily residential VMT

## Co-Benefits (icon key on pg. 34)



## Climate Resilience

Increasing affordable housing creates the opportunity for a greater diversity of people to be closer to their desired destinations and the resources they may need to access during an extreme weather event. Close proximity to destinations allows for more opportunities to use active transportation and transit and to be less reliant on private vehicles. Alleviating the housing-cost burden also enables more people to remain housed, and increases people's capacity to respond to disruptions, including climate impacts.

## Health and Equity Considerations

Neighborhoods should include different types of housing to support a variety of household sizes, age ranges, abilities, and incomes.

## Measure Description

This measure requires below market rate (BMR) housing. BMR housing provides greater opportunity for lower income families to live closer to job centers and achieve a jobs/housing match near transit. It is also an important strategy to address the limited availability of affordable housing that might force residents to live far away from jobs or school, requiring longer commutes. The quantification method for this measure accounts for VMT reductions achieved for multifamily residential projects that are deed restricted or otherwise permanently dedicated as affordable housing.

## Subsector

Land Use

## Locational Context

Urban, suburban

## Scale of Application

Project/Site

## Implementation Requirements

Multifamily residential units must be permanently dedicated as affordable for lower income families. The California Department of Housing and Community Development (2021) defines lower-income as 80 percent of area median income or below, and affordable housing as costing 30 percent of gross household income or less.

## Cost Considerations

Depending on the source of the affordable subsidy, BMR housing may have implications for development costs but would also have the benefit of reducing costs for public services, similar to Measure T-1, *Increase Residential Density*.

## Expanded Mitigation Options

Pair with Measure T-1, *Increase Residential Density*, and Measure T-2, *Increase Job Density*, to achieve greater population and employment diversity.





## GHG Reduction Formula

$$A = B \times C$$

## GHG Calculation Variables

| ID  | Variable  | Value  | Unit | Source     |
|---|---|--------|------|------------|
| <b>Output</b>   |   |        |      |            |
| A   | Percent reduction in GHG emissions from Project/Site VMT for multifamily residential developments | 0–28.6 | %    | calculated |
| <b>User Inputs</b>                                    |   |        |      |            |
| B   | Percent of multifamily units permanently dedicated as affordable                                  | 0–100  | %    | user input |
| <b>Constants, Assumptions, and Available Defaults</b> |   |        |      |            |
| C   | Percent reduction in VMT for qualified units compared to market rate units                        | -28.6  | %    | ITE 2021   |

Further explanation of key variables:

- (B) – This refers to percent of multifamily units in the project that are deed restricted or otherwise permanently dedicated as affordable.
- (C) – The 11th Edition of the *ITE Trip Generation Manual* (ITE 2021) contains daily vehicle trip rates for market rate multifamily housing that is low-rise and not close to transit (ITE code 221) as well as affordable multifamily housing (ITE code 223). While these rates do not account for trip length, they serve as a proxy for the expected difference in vehicle trip generation and VMT generation presuming similar trip lengths for both types of land use. If the user has information about trip length differences between market rate and affordable housing, then adjusting the percent reduction accordingly is recommended.

Users should note that the ITE trip rate estimates are based on a small sample of studies for the affordable housing rate and that no stratification of affordable housing by number of stories was available. This is an important distinction since the multifamily low-rise vehicle trip rate applies to four or fewer stories. Therefore, this measure may not apply to affordable housing projects with more than four stories.

## GHG Calculation Caps or Maximums

### Measure Maximum

( $A_{max}$ ) The maximum GHG reduction from this measure is 28.6 percent. This maximum scenario is presented in the below example quantification.



### Subsector Maximum

( $\sum A_{\max_{T-1 \text{ through } T-4}} \leq 65\%$ ) This measure is in the Land Use subsector. This subsector includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

### Example GHG Reduction Quantification

The user reduces project VMT by requiring a portion of the multifamily residential units to be permanently dedicated as affordable. In this example, the percent of units (B) is 100 percent, which would reduce GHG emissions from VMT by 28.6 percent.

$$A = 100\% \times -28.6\% = -28.6\%$$

### Quantified Co-Benefits



#### Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO<sub>x</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.



#### Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).



#### VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

### Sources

- California Department of Housing and Community Development. 2021. *Income Limits*. Available: <https://www.hcd.ca.gov/grants-funding/income-limits/index.shtml#:~:text=%E2%80%9CAffordable%20housing%20cost%E2%80%9D%20for%20lower,of%20gross%20income%2C%20with%20variations>. Accessed; November 2021.
- Institute of Transportation Engineers (ITE). 2021. *Trip Generation Manual*. 11th Edition. Available: <https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>. Accessed; November 2021.