T-16. Unbundle Residential Parking Costs from Property Cost

GHG Mitigation Potential

15.7%

Up to 15.7% of GHG emissions from project VMT in the study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Unbundling residential parking costs from property costs could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site.

Health and Equity Considerations

The unbundling of parking costs would help decrease housing costs for individuals who do not own personal vehicles.

Measure Description

This measure will unbundle, or separate, a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. On the assumption that parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces, this measure results in decreased vehicle ownership and, therefore, a reduction in VMT and GHG emissions. Unbundling may not be available to all residential developments, depending on funding sources.

Subsector

Parking or Road Pricing/Management

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Parking costs must be passed through to the vehicle owners/drivers utilizing the parking spaces for this measure to result in decreased vehicle ownership.

Cost Considerations

Unbundling residential parking costs from property costs may decrease revenue for property owners. This loss may be partially offset by reduced costs needed to maintain parking facilities with less car occupancy and the potential for non-resident parking as a supplementary income stream. For residents, reduced fees and the ability to go without owning a car is a major cost benefit. Municipalities also benefit from a reduction of cars on the road, which can lead to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Pair with Measure T-19-A or T-19-B to ensure that residents who eliminate their vehicle and shift to a bicycle can safely access the area's bikeway network.

GHG Reduction Formula

$$A = \frac{B}{C} \times D \times E$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–15.7	%	calculated
User Inputs				
B	Annual parking cost per space	[ ]	$ per year	user input
Constants, Assumptions, and Available Defaults				
C	Average annual vehicle cost	$9,282	$ per year	AAA 2019
D	Elasticity of vehicle ownership with respect to total vehicle cost	-0.4	unitless	Litman 2020
E	Adjustment factor from vehicle ownership to VMT	1.01	unitless	FHWA 2017

Further explanation of key variables:

- (B) – For most projects, this represents a monthly parking fee multiplied by 12. For deeded parking spaces, an estimate of the additional cost to a mortgage may be used, or the total cost may be prorated over 30 years. Costs to park will vary widely based on location; however, this value should consider if other nearby offsite parking options are available at lower cost. See Table T-16.1 in Appendix C for examples of monthly parking prices for different facility types.
- (C) – The average vehicle cost per year in 2019 was $9,282, based on a car driven 15,000 miles per year. Costs include gasoline, maintenance, insurance, license and registration, loan finance charges, and depreciation but do not include parking (AAA 2019).
- (D) – A synthesis of literature reported that, on the low end, a 0.4 percent decrease in vehicle ownership occurs for every 1 percent increase in total vehicle costs (Litman 2020).
- (E) – The adjustment factor from vehicle ownership to VMT is based on the following (FHWA 2017):
  - The average Californian household with 1 vehicle drives 11,117 miles per vehicle while households with 2 vehicles drives 11,223 miles per vehicle.
  - The reduction of 1 vehicle from a 2-vehicle household leads to a 0.94 percent decrease in VMT per vehicle.
  - So, $E = 1 - \left(\frac{11{,}117 \frac{\text{miles}}{\text{vehicle}} - 11{,}223 \frac{\text{miles}}{\text{vehicle}}}{11{,}223 \frac{\text{miles}}{\text{vehicle}}} \right) = 1.01$

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The GHG reduction from unbundled parking is capped at 15.7 percent, which is based on the use of (B_{max}) in the GHG reduction formula.

(B_{max}) The annual cost of parking space is capped at $3,600, or $300 per month. At monthly costs above $300, the cost of parking represents more than a 30 percent increase in total vehicle cost. In addition, this reflects the upper maximum of observed parking prices outside of extremely dense downtown areas (such as San Francisco's SOMA neighborhood).

Subsector Maximum

($\sum A_{max_{T\text{-}14 \text{ through } T\text{-}16}} \leq 35\%$) This measure is in the Parking or Road Pricing/Management subsector. This subcategory includes Measures T-14 through T-16. The VMT reduction from the combined implementation of all measures within this subsector is capped at 35 percent.

Example GHG Reduction Quantification

The user reduces VMT by unbundling the parking costs from property costs of a project, discouraging vehicle ownership, and therefore reducing VMT. In this example, the annual parking cost per space is $1,800 (B), which would reduce GHG emissions from project study area VMT (as compared to the same project with bundled parking costs) by 7.8 percent.

$$A = \left(\frac{\$1{,}800}{\$9{,}282}\right) \times -0.4 \times 1.01 = -7.8\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, 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

- AAA. 2019. *Your Driving Costs*. September. Available: https://exchange.aaa.com/wp-content/uploads/2019/09/AAA-Your-Driving-Costs-2019.pdf. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey – 2017 Table Designer*. Annual VMT / Vehicle by Count of Household Vehicles in California. Available: https://nhts.ornl.gov/. Accessed: March 2021.
- Litman, T. 2020. *Parking Requirement Impacts on Housing Affordability*. June. Available: https://www.vtpi.org/park-hou.pdf. Accessed: January 2021.