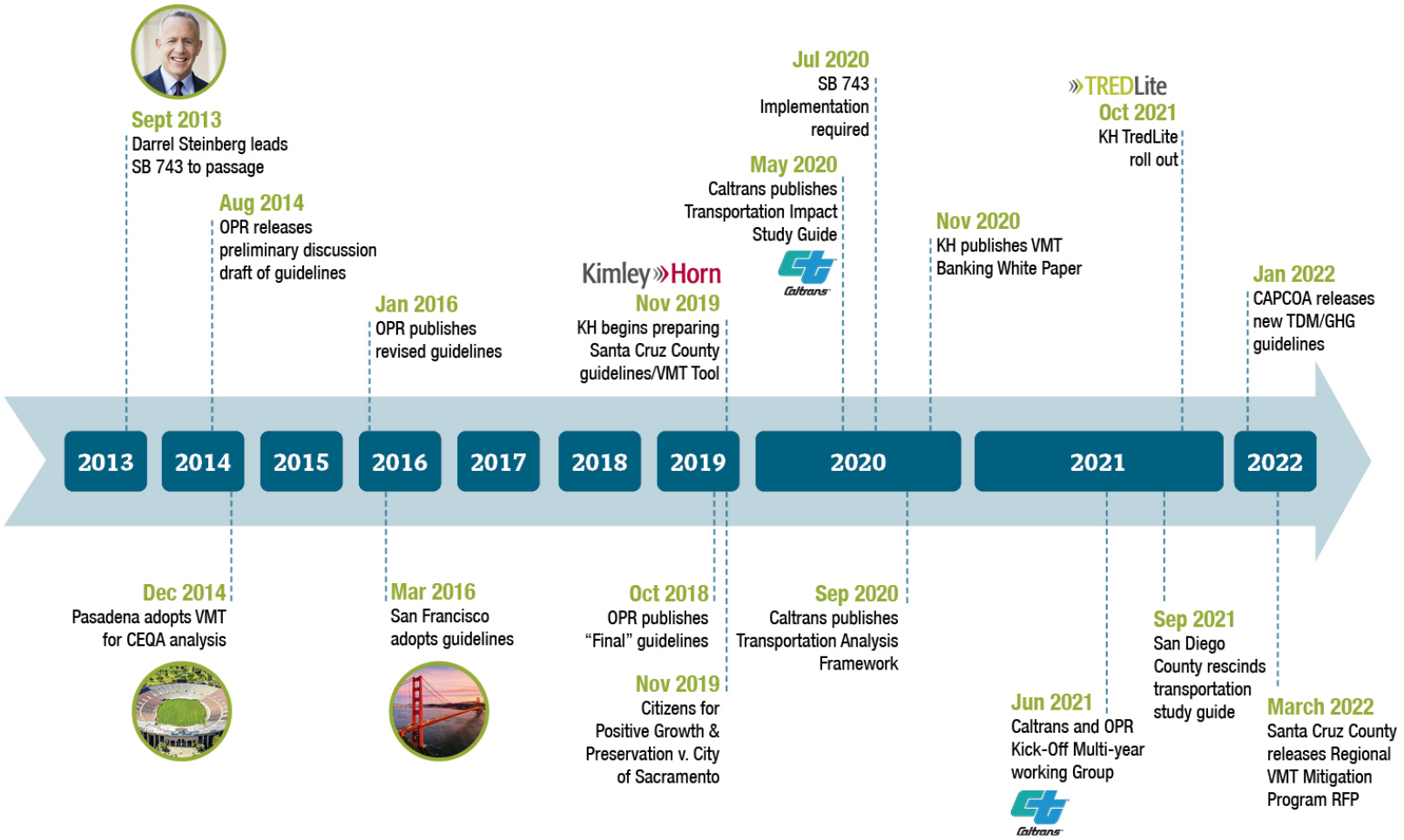


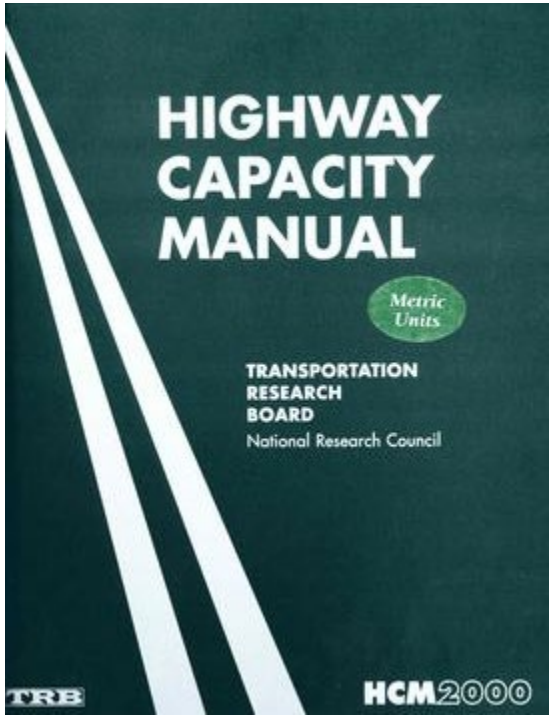

# Santa Cruz County VMT Mitigation Program

Documentation to accompany Santa Cruz County Regional VMT Mitigation Study Instructional Video

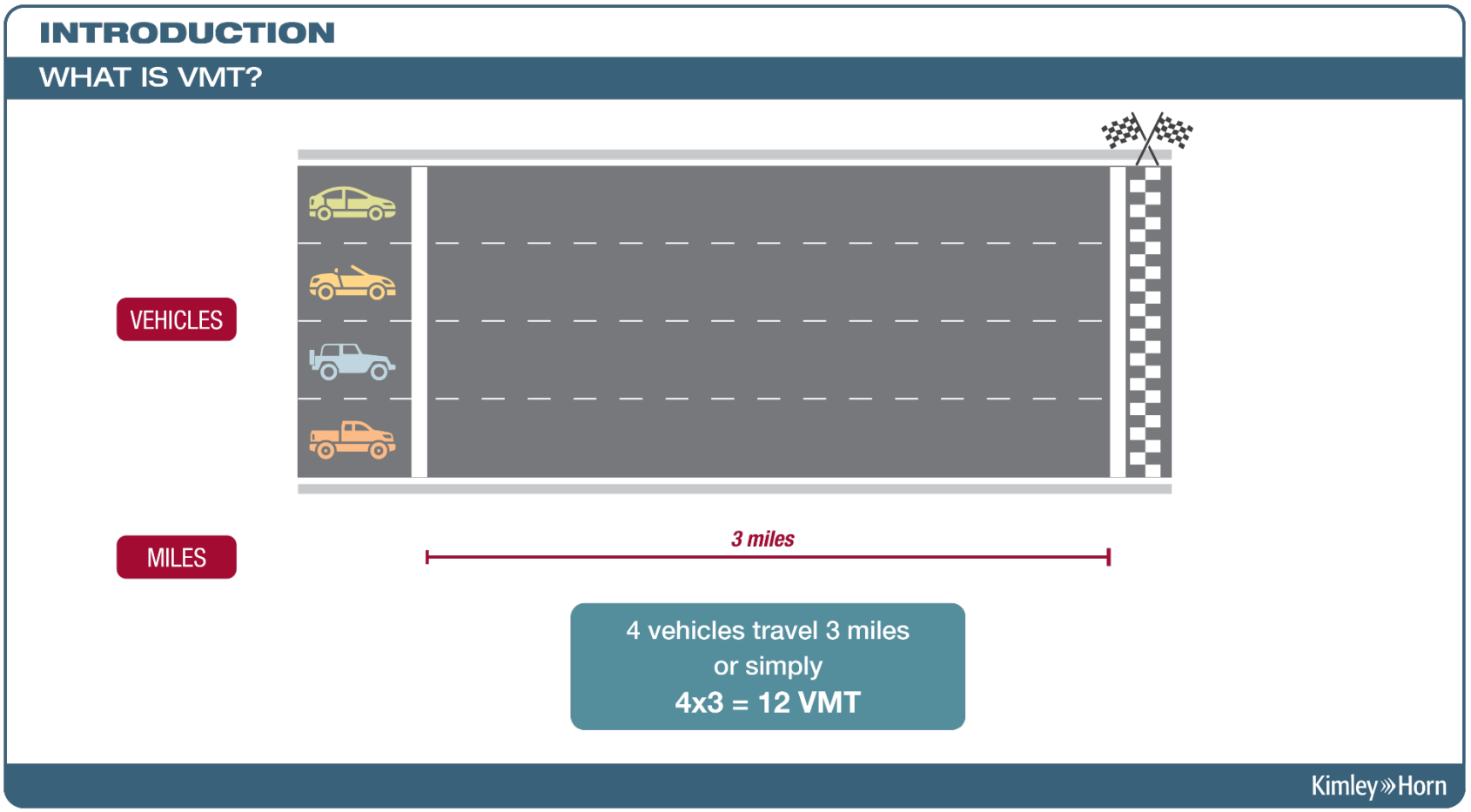
**History of SB 743 and Vehicle Miles Traveled (VMT)**




SB 743 was a bill passed by the California legislature that changes how an environmental review is conducted for a project. Projects can be both land use projects like a housing development or a transportation project like widening a road. Vehicle delay at an intersection or along a roadway is no longer considered an environmental impact. Instead, the focus is on the amount of vehicle miles traveled (VMT) produced by the project. The timeline shown above provides a summary of the implementation of SB 743.




Prior to the implementation of SB 743, transportation impacts were determined based on delay and the concept of Level of Service (LOS). LOS has been in use in the transportation industry since the first Highway Capacity Manual was released in 1950. Seven editions have been released since then and LOS has guided transportation decision making ever since. However, the use of LOS has been directly linked with urban sprawl (building housing further and further away from a downtown core leading to longer commutes and increases in vehicle emissions) and impacts to active transportation such as bicycles and pedestrians. This is because LOS is a metric that only considers improving travel for vehicles, oftentimes at the expense of other modes of travel. SB 743 looks to reverse these trends by measuring VMT which is more of how far people drive.




Vehicle miles traveled are calculated exactly as the term sounds, the number of miles traveled by each vehicle. As shown in the graphic above, four vehicles each traveling 3 miles means that each individual vehicle would have 3 VMT. When combined, all four vehicles account for a total of 12 VMT.

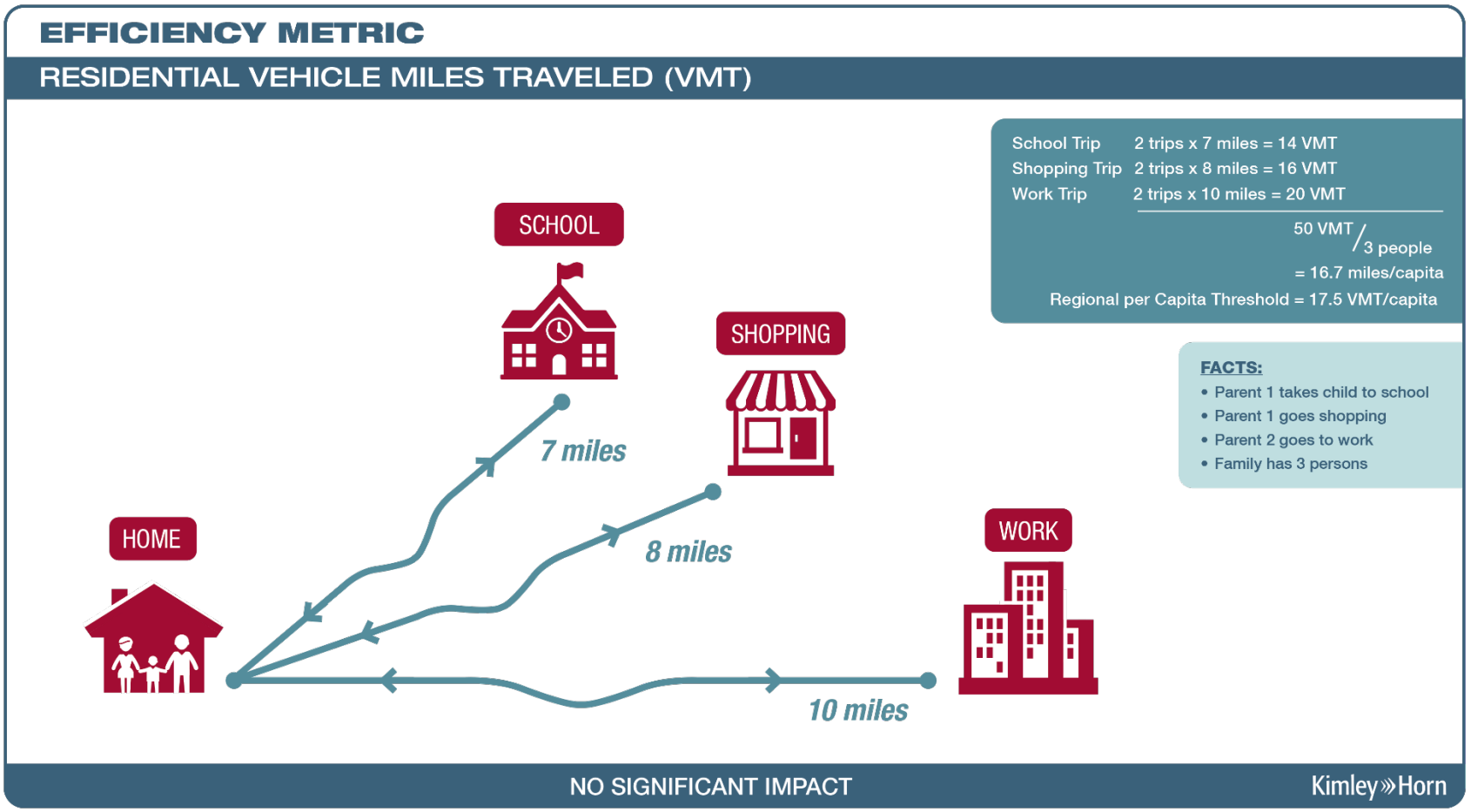
**Exhibit 5 - VMT Thresholds of Significance**

| Land Use | VMT Threshold | Basis |
|---|---|---|
| **Residential** | 9.7 VMT/capita[10] | 15% below existing county-wide average VMT per capita. |
| **Office** | 6.6 Work VMT/Employee[11] | 15% below existing county-wide average Work VMT per employee |
| **Retail** | Net regional change | Using the county as the basis |
| **Other Employment** | Work VMT/Employee[12] | 15% below existing county-wide average Work VMT per employee for similar land uses |
| **Other Customer** | Net regional change | Using the county as the basis |

When determining if a project results in an impact, the project must be compared to a threshold determined by the jurisdiction it is constructed in. The thresholds are determined by looking collectively at all similar land uses within a jurisdiction and calculating an average. Guidance from the State of California states that thresholds for each land use should be set at 15-percent below the jurisdictional average as a way to reverse the current development trends of building further and further away from the core of a City or County.

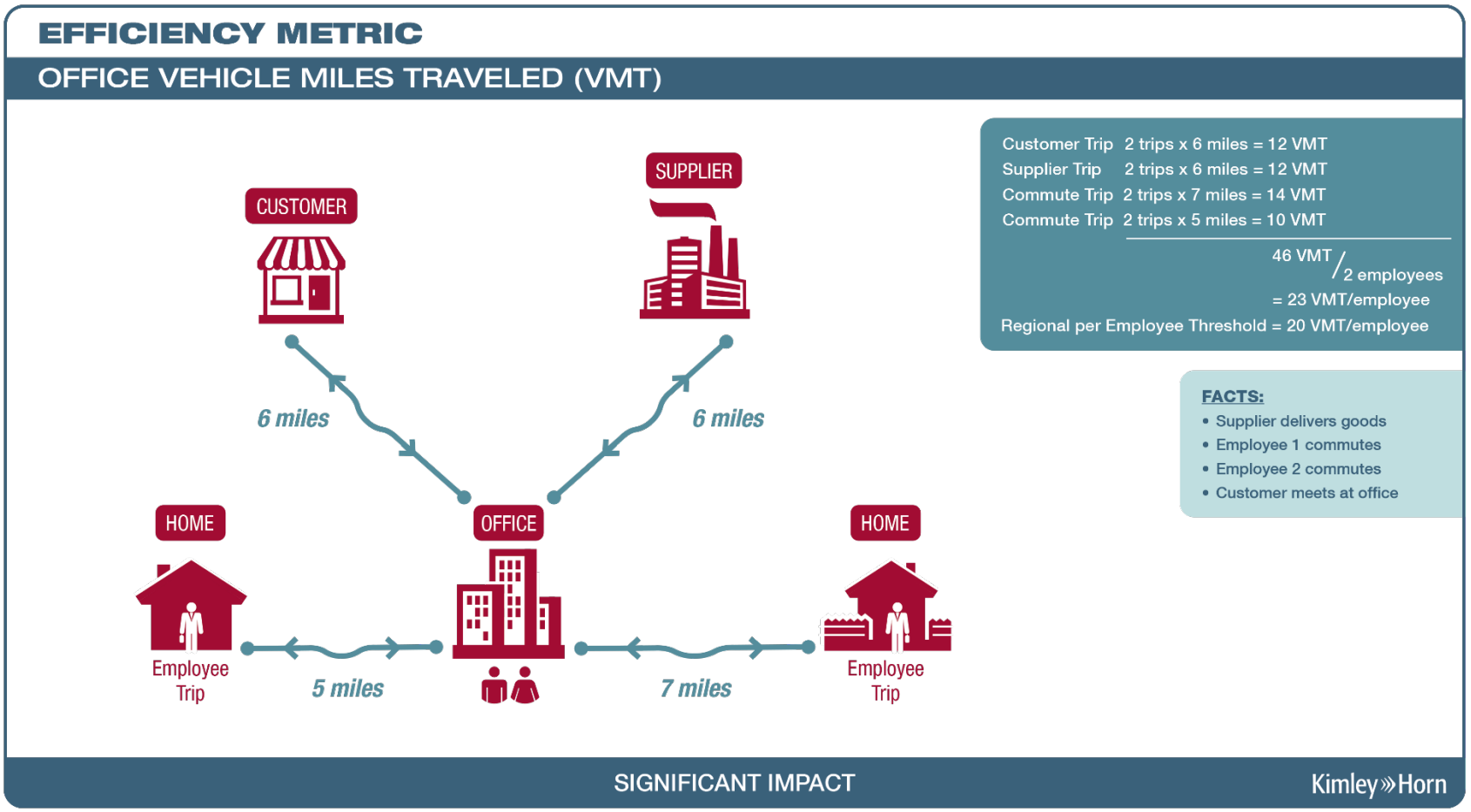
As shown in the table above, two types of thresholds exist, an efficiency threshold - VMT per capita for residential projects or VMT per employee for office projects- and a net change threshold. As residential and office projects primarily introduce new trips into an area their impact is compared to how comparable land use types operate currently within a jurisdiction. Also, residential and office projects can vary in size so using an efficiency metric allows the projects to be compared at an even level.

Alternatively, most trips generated by retail projects are related to customers who have a pre-existing need such as grocery shopping. These trips already exist on a network, so the impact of a new retail store is the change in length of those trips rather than the length of the newly generated trips. Therefore, a net change metric is used to see how regional VMT changes as a result of introducing a new retail store into the region.



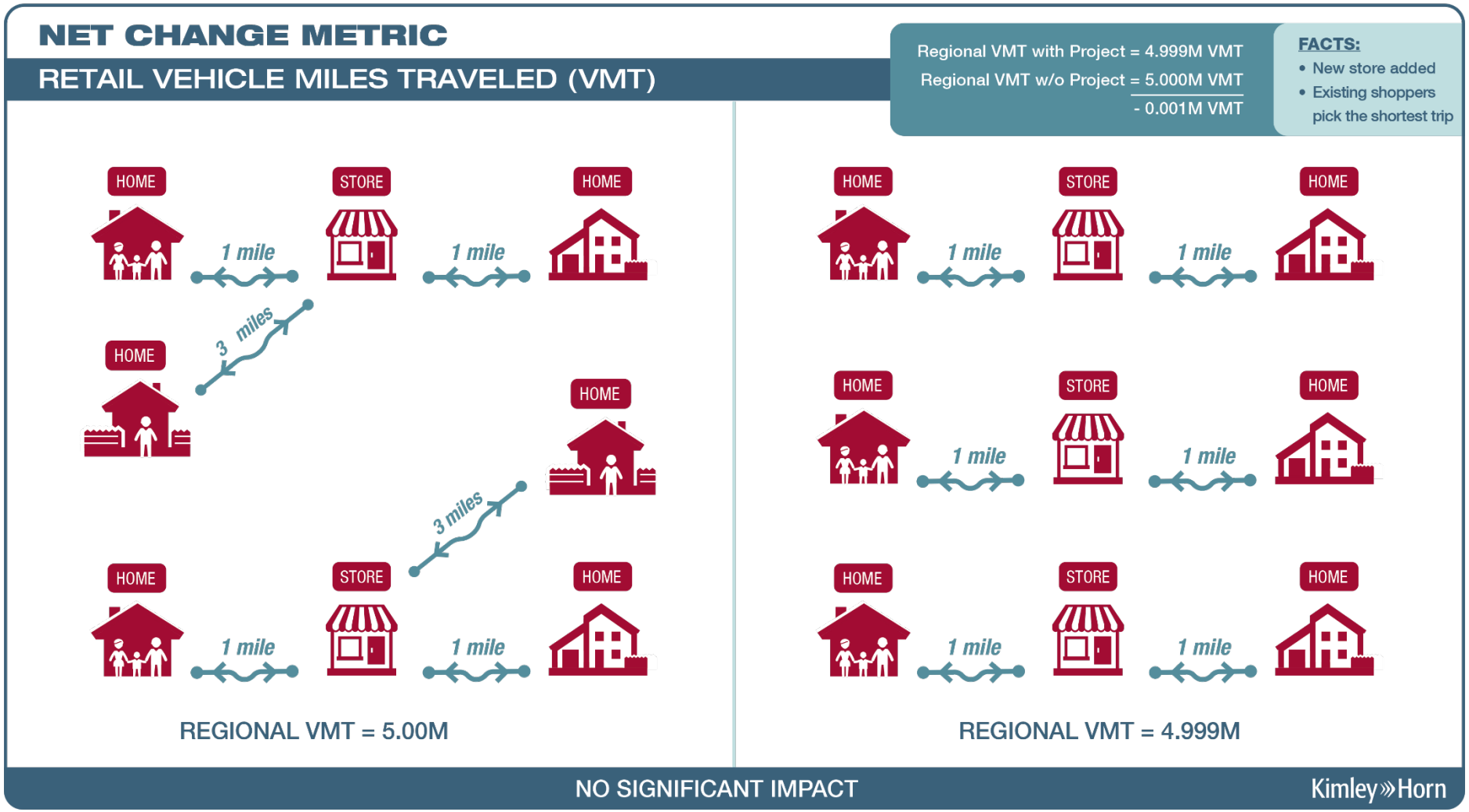

One of the three primary land use types that are evaluated using VMT are residential projects. The graphic above summarizes how a residential project is evaluated using VMT. Each household has every trip measured, both those to and from a location, to determine the total VMT. The graphic above shows how trips to the child's school is 7 miles each way (14 miles total), the trip to work is 10 miles each way (20 miles total), and the trip to the store is 8 miles each way (16 miles total). When adding the total length of all trips together, the household has 50 daily VMT.

As noted above, to determine whether the project results in an environmental impact, the project's VMT per capita must be compared to the regional threshold. In the example above, the household contains 3 people, so the VMT per capita is determined by dividing the household's total VMT (50) by the household size (3) resulting in a household VMT per capita of 16.7. If the regional threshold is 17.5 VMT per capita, the project would not result in an impact as it is more efficient (less than) the threshold.




The second primary land use type that is evaluated using VMT is an office project. The graphic above summarizes how an office project is evaluated using VMT. Just like residential projects, office projects have every trip measured, both those to and from a location, to determine the total VMT. The graphic above shows how Employee 1's trip from their home is 5 miles each way (10 miles total), Employee 1's trip from their home is 7 miles each way (14 miles total), a customer's trip to the office building is 6 miles each way (12 miles total), and a supplier's trip to the office building is also 6 miles each way (12 miles total). When adding the total length of all trips together, the office building has 46 daily VMT.

Again, like residential developments, to determine whether the project results in an environmental impact, the project's VMT per employee must be compared to the regional threshold. In the example above, the office building contains 2 employees, so the VMT per employee is determined by dividing the office building's total VMT (46) by the total number of employees (2) resulting in a VMT per employee of 23. If the regional threshold is 20 VMT per employee, the project would result in an impact as it is less efficient (greater than) the threshold. This would require the project to mitigate its VMT-related environmental impact. Mitigating a project's impact is discussed later.




The final primary land use type evaluated using VMT are retail projects. These can include gas stations, pharmacies, grocery stores, home improvement stores, big box stores, and other places that primarily serve customers. However, unlike residential and office projects, retail projects are evaluated based on how they affect regional travel. As retail projects primarily serve customers who have a pre-existing need such as grocery shopping, the trips associated with the retail stores exist on a network, so the impact of a new retail store is the change in length of those trips rather than measuring the newly generated trips.

The graphic above provides an example of how the introduction of a new store can affect regional VMT. The existing scenario is shown on the left where the households on the left and right travel to the two stores that currently exist. The households on the second row must travel three miles to the nearest store. Once a new store is constructed one mile away from the households on the second row, as shown in the scenario on the right, the households that previously traveled 3 miles only have to travel 1 mile while the households on the first and second row have no impact on their travel. The result is an overall decrease in regional VMT.

## EVALUATION

### MIXED USE

| | RESIDENTIAL | OFFICE | RETAIL |
|---|---|---|---|
| |  |  |  |
| Analysis | 16.7 VMT/Capita | 23 VMT/Employee | 4.99M VMT |
| Threshold | 17.5 VMT/Capita | 20 VMT/Employee | 5M VMT |
| Impact? | No | Yes | No |

SIGNIFICANT IMPACT

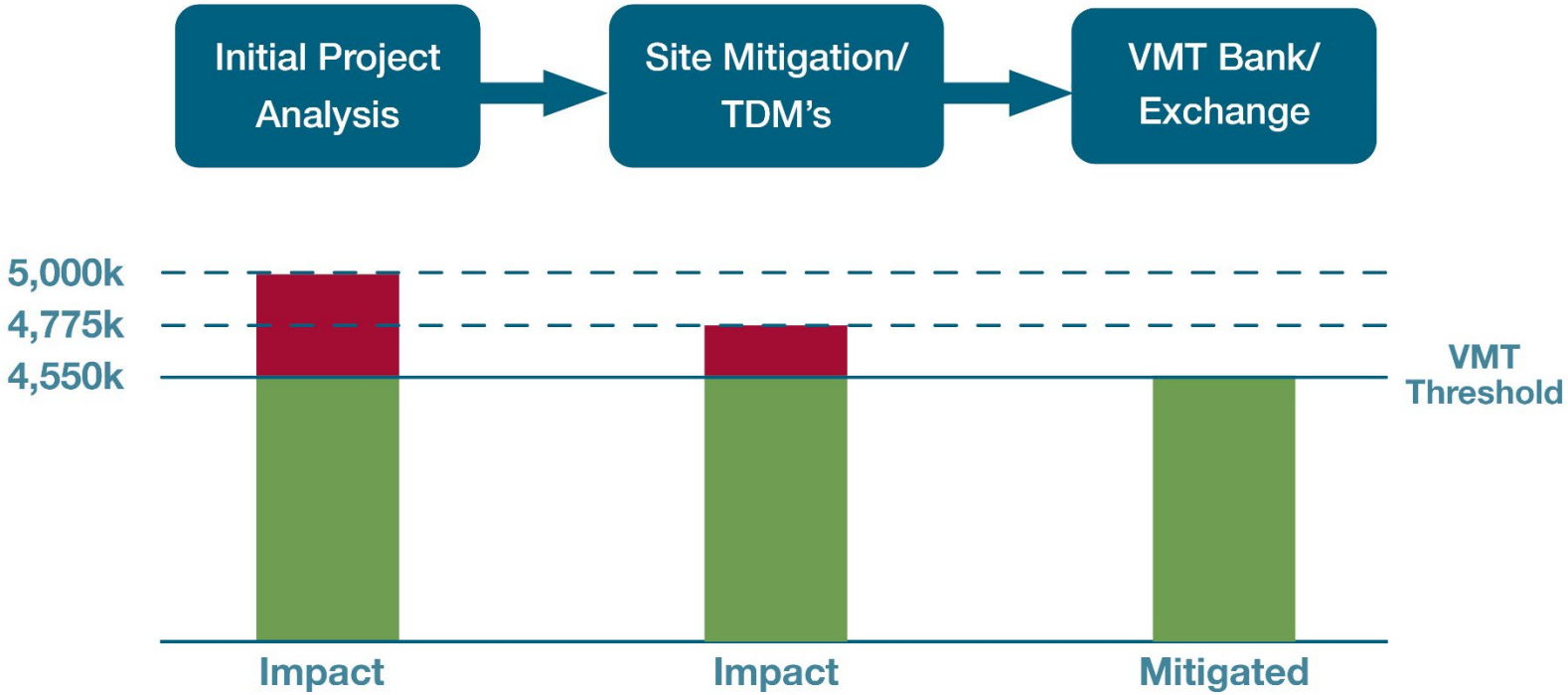
Kimley»Horn

As noted in the three previous examples, a transportation environmental impact occurs if the land use project produces VMT that exceeds the regional threshold. The graphic above uses the three examples we just discussed to summarize their impact. As we noted, the office project exceeds the threshold while the residential and retail projects do not. That means that the office project will have to mitigate its impact while the residential and retail projects do not.

| | | |
|---|---|---|
|  | **Bike/Ped** | New lane miles or filling in gaps |
|  | **Transit** | New lanes miles, service types, or filing in gaps |
|  | **Land Use** | Examples include Affordable Housing, Transit Oriented Development, or other Intuitional Needs |
| TDM | **TDM** | Transportation Demand Measures (CAPCOA) |
| M<br>$ | **VMT Pricing Solutions** | Toll Lanes, Cordon Pricing, Pricing per Mile |
|  | **Reduced Demand** | Road Diets, Lane Restrictions, Traffic Calming |

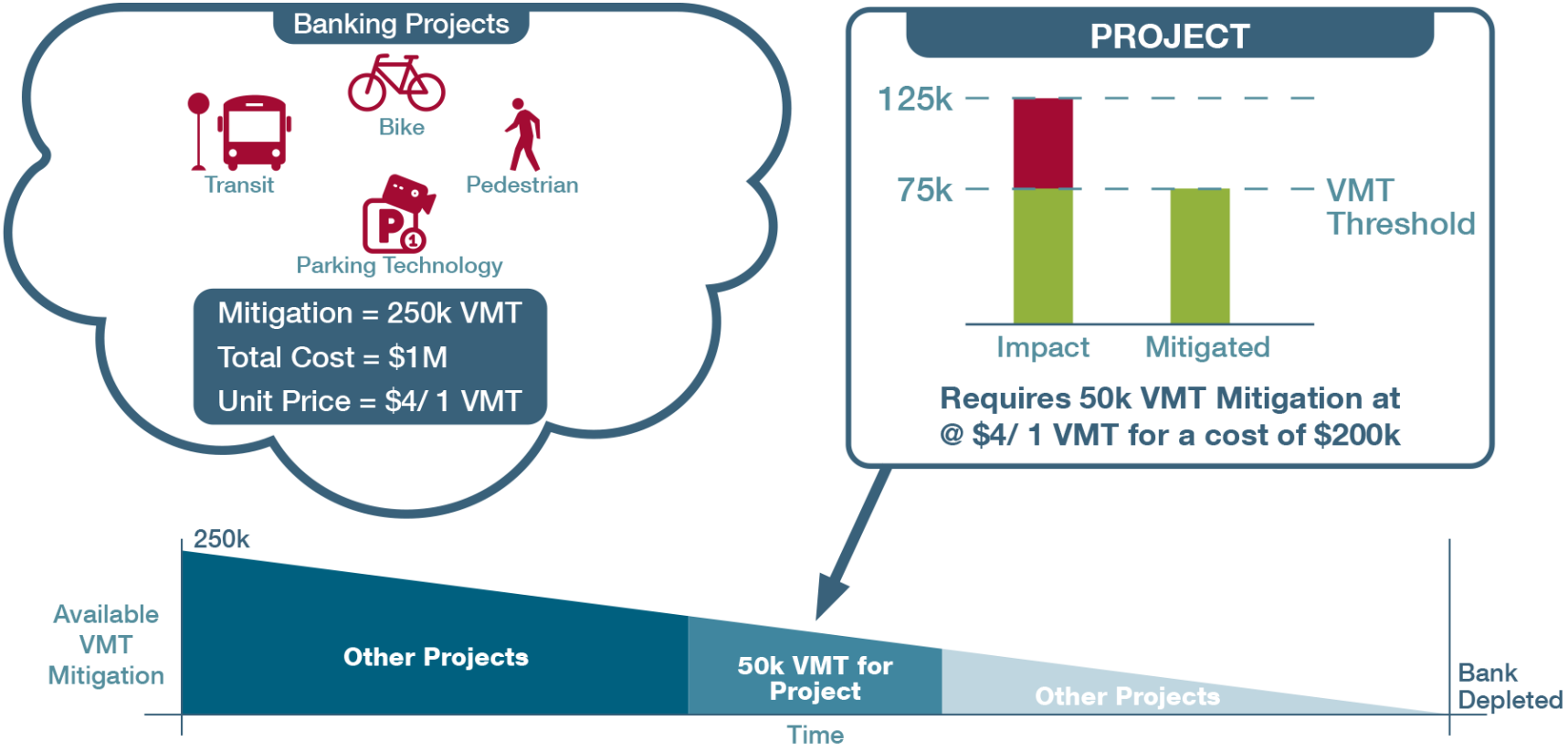
If a project needs to mitigate its VMT impact, such as the office project presented above, there are several different options available to the project applicant. The table above provides examples of the types of projects that will reduce VMT in the region. Today, due to the cost of constructing mitigations like a new bike lane, expanding a transit network by adding new stops, increasing the frequency of buses along existing bus lines by purchasing new buses and hiring more drivers, the primary way of mitigating an impact is using transportation demand management (TDM) measures. TDM measures include the implementation of a telecommute program or carpooling program at an employer and requires the project to provide on-going monitoring to measure the effectiveness of each measure and report it to the jurisdiction the project is located in such as Santa Cruz County. TDM measures have several limitations in that there are few that exist for residential projects, they have limited effectiveness outside of dense urban areas such as big cities, and few projects want to agree to on-going monitoring if it would go on forever.

In an effort to help with these issues, VMT mitigation programs are being developed to help construct some of the larger VMT reducing projects that can have a bigger overall impact in reducing regional VMT than TDMs. Since many of these measures can cost millions of dollars, it would be impossible for any one project to fund the construction of these projects so instead VMT mitigation programs allow several projects to pool their money together to fund one large VMT reducing project. This allows all the projects that pooled their money together to apply the VMT reductions achieved to their individual projects and mitigate their impacts this way instead of using TDMs.




This graphic provides a brief overview of how a project would go about mitigating their transportation impact in an area where a VMT fee program, such as a VMT Bank, exists. It is important to note that even where a VMT fee program exists, a project can still elect to introduce TDM measures if they choose to partially mitigate their impact and use the VMT fee program to fully mitigate their impact.

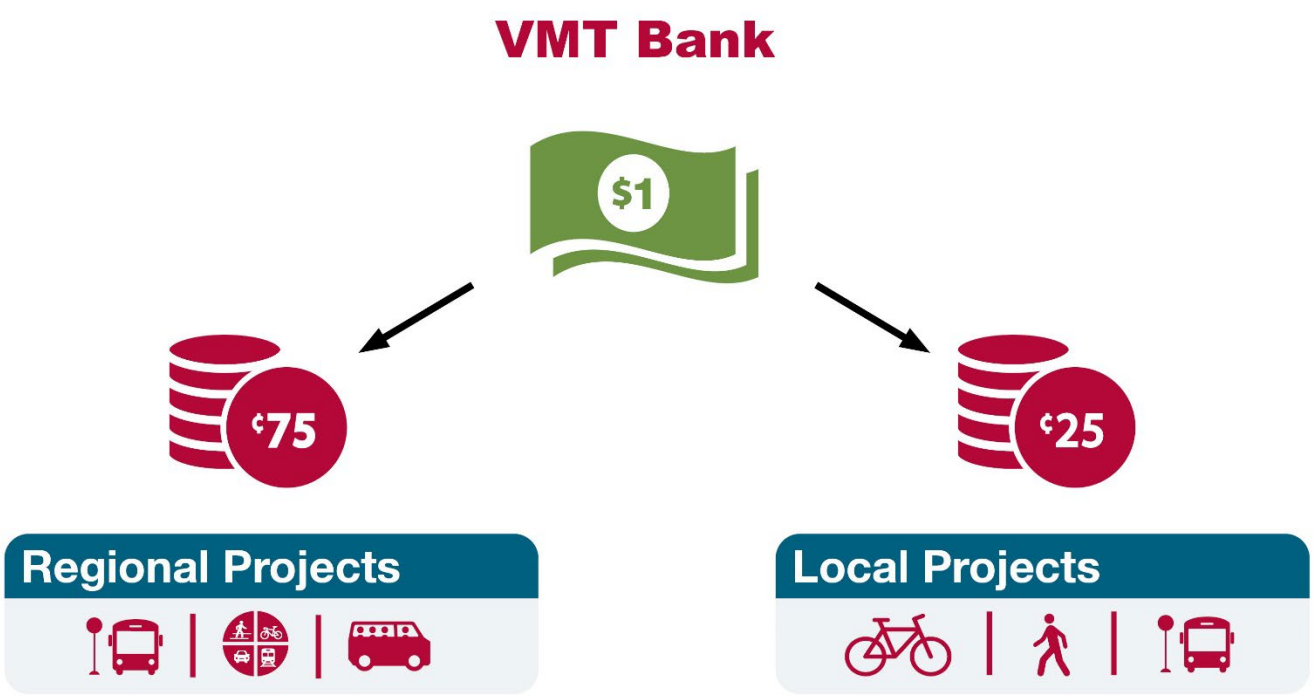
The example above shows that a project is 450 VMT above their threshold (5,000 VMT – 4,550 VMT = 450 VMT). The project uses various TDM measures to reduce their VMT by 225 (5,000 – 4,775 = 225) and then pays into the fee program to reduce the final 225 VMT (450 – 225 = 225).




The graphic above shows how a VMT Bank program works. The following steps are carried out during the implementation of a VMT:

1. VMT reducing projects such as bike, pedestrian, and transit projects are identified by Santa Cruz County
2. These projects are evaluated to determine how much VMT they reduce within the County
3. The total VMT that is mitigated by all projects is summed. In this example the total VMT reduced is 250,000
4. The cost for each project is also summed. In this example the total cost of all projects that reduce VMT is $1 million
5. The cost per VMT reduced is calculated by dividing the total cost of all the projects by the total VMT reduced. In this example, the cost to mitigate 1 VMT is $4

Once the cost per VMT is determined and the VMT Bank is implemented, a project can mitigate its VMT impact by paying into the Bank. In the graphic above, an example project is shown that needs 50,000 VMT reduced to achieve the threshold. Therefore, the total cost for the project would be $200,000 by multiplying the cost of each VMT reduced, $4, by the total VMT needing to be reduced, 50,000. Note that once the available VMT is used up by development projects purchasing VMT from the VMT Bank, no other development would be able to use this. The Bank would need to add new projects and recalculate the cost per VMT in order for new development projects to use the VMT Bank.

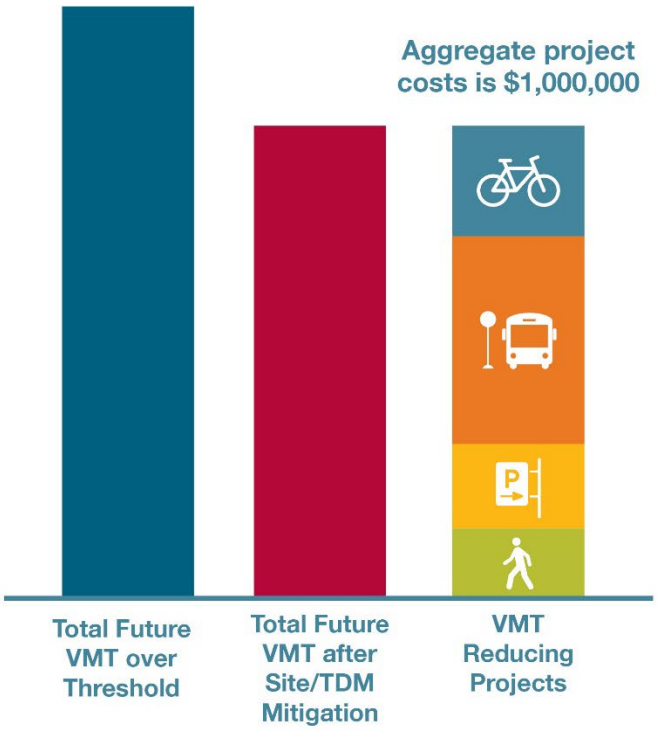


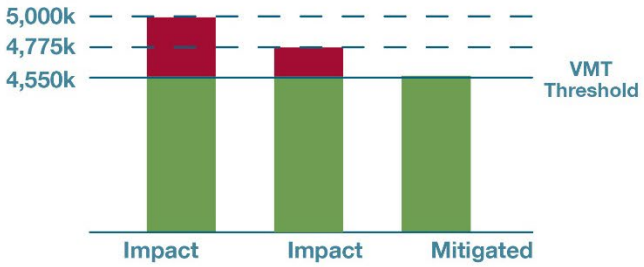

Unlike Level of Service which determines impacts in the general vicinity of a new development, VMT considers the entirety of a trip and looks at impacts regionally. Therefore, when a development project is constructed its VMT impact can be mitigated by a VMT reducing project anywhere in the region. This can create equity concerns where new development projects are concentrated in a few communities while the VMT reducing projects are constructed elsewhere in the region. This means some communities bear the impact of new development without seeing the benefits of VMT reducing projects funded by the VMT Bank.

To address this issue a VMT Bank can be structured such that a portion of each fee paid into the VMT Bank is set aside to fund projects in the general vicinity of the development project paying into the VMT Bank. This is called a Hybrid Regional/Local VMT Bank. The graphic above illustrates how a Hybrid Regional/Local VMT Bank functions. In this example, for every dollar that is taken into the VMT Bank, 25 cents are allocated towards projects that are located close to the project paying into the VMT Bank.

In comparison, if a VMT Bank is structured without regards for the location of a development project (Regional only), then the VMT reducing projects that are closest to being ready to be constructed can be constructed first, regardless of where they are located within the region. The operators of the VMT Bank, such as Santa Cruz County, can also optimize the way that funds are spent so that projects with the biggest VMT reductions are constructed first.

However, if a VMT Bank is Hybrid Regional/Local then there can be a more even spread of VMT reductions throughout the region. This type of program is also more equitable and the communities in which a new development project is located would also see the benefits of VMT reducing projects being constructed in their community.




Requires $2,000 payment/house for a total cost of $200k.

## VMT Impact Fee Schedule

| Land Use Type | Amount | Units | Fee/Unit | Total |
|---|---|---|---|---|
| Residential | 250 | Houses | $2,000 | $500,000 |
| Industrial | 2,500,000 | S.F. | $0.10 | $250,000 |
| Office | 1,000,000 | S.F. | $0.13 | $125,000 |
| Regional Commercial | 250,000 | S.F. | $0.20 | $125,000 |
| | | | Total | $1,000,000 |

Instead of a VMT Bank, Santa Cruz County's VMT fee program could be structured similar to existing development fee programs. Currently, when a new development project moves forward it must pay a fee based on the total number of houses planned to be constructed or the total size of the building in square-feet planned to be constructed. A fee is determined by land use type and regardless of whether the development project is determined to impact the surrounding area or not it must pay this fee.

A VMT Impact Fee program would be structured such that every development project would pay a fee, regardless of whether it is determined to have a VMT impact or not. As shown in the graphic above, the fees are determined based on how much future VMT will be generated by planned developments over the next 10 years and how much of that VMT needs to be mitigated. Similar to the VMT Bank, the fees are determined by dividing the total VMT less VMT site reductions by the total cost of additional VMT reducing projects. However, unlike a VMT Bank, this is done for each land use rather than collectively.

The fee for each land use type is determined by first determining the amount of VMT that needs to be mitigated for each land use, calculating the share of the total VMT needing to be mitigated, multiplying that percent share by the total cost of the VMT reducing projects, and then dividing the land-use specific cost by the growth for each land use (either houses or square-feet), as shown above. For example, if the residential land use accounts for 50% of all future VMT needing to be mitigated and the total cost of all VMT reducing projects is $1 million, then the residential land use would have a total mitigation cost of $500,000 (50% of $1 million). If the total number of houses expected to be constructed in the future is 250, then the fee would be calculated by dividing $500,000 by 250, resulting in a fee of $2,000 per home. However, this fee is charged per home regardless of whether it has a VMT impact or not.