Estimating policy effects on reduced vehicle travel in Hawaii

A technical guide

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Primary authors:
Chris McCahill, Eric Sundquist and Beth Osborne
State Smart Transportation Initiative and Smart Growth America
With Rhodium Group

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Background

This report describes methods for estimating future vehicle miles traveled (VMT) in Hawaii under two conditions: 1) business as usual, and 2) a policy scenario, developed by our team as a framework for the State of Hawaii to meet its ambitious climate goal of 100 percent clean energy by 2045.

The overarching strategy for reducing transportation emissions from ground transportation in Hawaii includes a major shift toward zero emissions vehicles—namely, electric vehicles powered by clean energy. The slow pace of this transition paired with increasing travel demand, however, will likely pose a major challenge to meeting the state's climate goals. This report focuses on policies for managing and reducing travel demand—land use regulations, increased transportation options, and transportation pricing mechanisms—and ties those policies to their likely impact on VMT, based on current trends and knowledge from related research. This ambitious policy scenario reduces vehicle travel demand by an estimated 7.3 percent by 2045, even after accounting for population growth.

Overview

Using current VMT estimates from Hawaii DOT and other sources of data, we allocate total VMT among different counties and sources (e.g., households, transit, and freight), then develop VMT forecasts based on the following key components (described in more detail below):

1. Analysis of existing land use patterns and estimated household VMT production.
2. Adjustments to account for additional VMT from transit, commercial, and fleet vehicles.
3. Assumptions about possible changes in land use, infrastructure, and transportation policy over a 30-year period, under business as usual and policy scenario conditions.
4. Estimates of the effects of those changes on VMT production based on knowledge from existing literature.

Based on our analysis, VMT is expected to increase from 11,132 million in 2016 to 12,978 million in 2045 (a 16.6 percent increase) under business as usual conditions. Under our policy scenario assumptions, which include bold changes in land use, non-auto transportation options, and transportation pricing, VMT could be reduced by 7.3 percent below current levels by 2045, a 20.5 percent reduction from business as usual. These forecasts are depicted in Figure 1, along with historical estimates from Hawaii DOT and adjusted estimates from USDOT. Final estimates of VMT by county and source are shown in Appendix A under business as usual and policy scenario conditions.

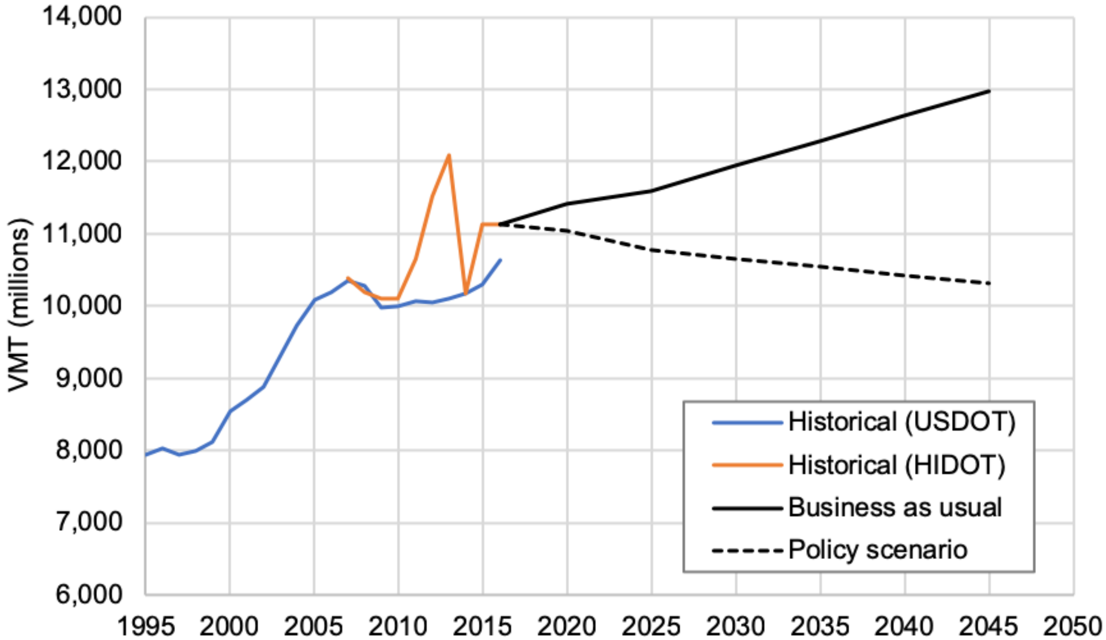

Figure 1. Total VMT forecasts under business as usual and policy scenario conditions

Allocation of VMT

The total statewide VMT estimate from Hawaii DOT is 11,132 million in 2016. Our team broke this down by source and county as follows:

- Household VMT, representing personal travel, is estimated at the block-group level using data and methods described below, then aggregated up to the county level.
- Statewide transit VMT (bus and paratransit) is based on estimates from U.S. DOT.[1]
- Statewide truck VMT is based on the ratio of registered trucks to registered non-bus/non-truck vehicles (passenger cars, light trucks, fleet vehicles and motorcycles), assuming each truck travels twice as many miles as other vehicles, on average.[2]
- The remaining unaccounted for VMT is classified as "other," comprised mainly of light- to medium-duty fleet and commercial vehicles.
- Total non-household VMT is distributed among the counties in proportion to household VMT (except for those related specifically to Honolulu rail).

Household VMT estimates and adjustments

To estimate household VMT under current and future conditions, we rely on several data sources:

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[1] Federal Transit Administration, 2016 service data, https://www.transit.dot.gov/ntd/data-product/2016-service

[2] State of Hawaii Data Book, 2015, Section 18 – Transportation, http://dbedt.hawaii.gov/economic/databook/2015-individual/_18/

- The Hawaii Department of Business, Economic Development and Tourism (DBEDT) for forecasts of residents and de facto population by county.[3]
- The U.S. Census for the current number of households by block group.
- The Center for Neighborhood Technology (CNT) H+T Index for estimates of average household VMT by block group, developed estimating household transportation costs.

We first derive a *population factor* and 30-year growth rate for each county using data provided by DBEDT. Population factors are used to inflate the number of households reported by the Census to account for visitors and part-time residents, based on the ratio of de facto population to residents over the 30-year growth period. For example, a population factor of 107 percent for Honolulu County indicates that the number of households reported in the Census must be multiplied by a factor of 1.07 to estimate the de facto number of households. The 30-year growth rate lets us estimate the number of households in the forecast year and allocate that growth among different area types.

We identified three area types for classifying each block group based on the average VMT per household, reported by CNT, as follows:

- A: Low-VMT areas (<17,500 vehicle miles per year).
- B: Medium-VMT areas (17,500 to 22,500 vehicle miles per year).
- C: High-VMT areas (> 22,500 vehicle miles per year).

Using current Census data and population factors from DBEDT, we estimate the number of households in each area type, as shown in Table 1. These numbers form the foundation of our scenario forecasts, for which we assume that population growth occurs within certain area types, without linking that growth to specific block groups.

Table 1. Current household distribution by land use type and county, with population factors and 30-year growth rates

County	Total households (de facto)			Population factor	30-year growth
	A	B	C		
Hawaii	482	6,433	62,609	107%	52%
Honolulu	80,715	101,078	140,066	104%	12%
Kauai	0	372	27,381	124%	32%
Maui	0	11,854	53,442	122%	37%

VMT forecast: Business as usual

Under business as usual conditions, our analysis assumes that future growth in each county will occur in similar patterns to the growth over the last 15 years (
Table 2), and that all households experience an average four percent decrease in VMT by 2045, based on the 1.4 percent average decrease experienced between 2007 and 2016.

[3] DBEDT, Population and Economic Projections for the State of Hawaii to 2045, http://dbedt.hawaii.gov/economic/economic-forecast/2045-long-range-forecast

Table 2. Future growth patterns under business as usual conditions

County	Total households (de facto)			Share of new growth[a]		
	A	B	C	A	B	C
Hawaii	482	6,334	98,930	0%	0%	100%
Honolulu	102,494	115,923	143,419	54%	37%	8%
Kauai	0	372	36,187	0%	0%	100%
Maui	0	23,762	65,783	0%	49%	51%

a. 30-year growth rates are based on density classes (0 to 4, 4 to 12, and 12 or more households per acre) rather than VMT classes, due to the available historical data and the close relationship between density and household VMT.

This growth also contributes to density increases, which lower VMT in certain areas. To estimate density increases, our analysis assumes all new households in area type A would be infill development, resulting in a proportional density increase, and one-in-four households in area type B would infill development. These assumptions are based on the relative difficulty of greenfield development in denser area type A, compared area type B, where more undeveloped land exists.

Our business as usual forecast assumes that non-household VMT increases in proportion to household VMT, within each county. It also assumes Honolulu's high capacity rail project reduces VMT by 158 million each year beginning in 2025. This value is the difference between the no-build scenario and the fixed guideway alternative in the HHTCP Final EIS, multiplied by 365 to convert from daily to annual VMT. We use the more conservative (low-end) VMT reduction.

VMT forecast: Policy scenario

Policies and programs

Our recommendations are aimed at reducing total VMT across Hawaii through a three-pronged approach involving:

- Limiting outward growth in high-VMT areas;
- Improving opportunities for compact mixed-use growth in low-VMT areas;
- Improving non-auto transportation options and incentives.

This aim can be achieved by pursuing the following specific programs and policies.

Transportation demand management

The term transportation demand management (TDM) often refers to employer-based programs that encourage employees to carpool, use transit, walk, bike, and occasionally work from home. These programs are important for reducing VMT and, with it, energy consumption and demand. TDM should be an overarching suite of policies and programs that goes beyond the traditional employer-based approach to include a larger group of stakeholders through the establishment of a transportation management association (TMA), an organization of employers, businesses and local governments. Citywide, TDM can include anything that reduces the overall length and frequency of vehicle trips—land use changes, more direct connections, transit enhancements, bicycle and pedestrian facilities, parking constraints and pricing mechanisms.

Land conservation

The last 15 years of growth in Hawaii and Kauai Counties has occurred mainly at densities below four units per acre, where each household contributes around 25,000 vehicle-miles per year. In contrast, half of the growth in Maui County and one-third of the growth in Honolulu County were at densities between four and 12 units per acre, where each household contributes around 20,000 vehicle-miles per year, and half of the growth in Honolulu County was at densities above 12 units per acre, where each household contributes only around 15,000 vehicle-miles per year.

Urban growth boundaries (like those in Oregon) and other land conservation policies can limit the amount of low-density, outward growth, minimizing the amount of new VMT added, while simultaneously concentrating growth in already-developed areas where densities will gradually increase.

To achieve the VMT reductions needed to support a clean energy future, our policy scenario assumes no new homes be added in area type C (high-VMT) and that 70 percent of growth in Honolulu County will be in area type A (low-VMT). These policies, alone, account for roughly 16 percent of our total estimated VMT reduction.

Compact, mixed use planning and zoning

Compact, mixed use development patterns put people closer to destinations and opportunities, often giving them the options of driving shorter distances, walking or biking. Compact areas also support transit use. Zoning policies (e.g., form-based codes or “SmartCodes”) can both enable and encourage denser, mixed-use development in suburban areas throughout the state. Moreover, without the appropriate zoning policies in place, concentrated inward growth may not be possible or it might take place in more segregated land use patterns that still require longer trips, usually by automobile.

To achieve the VMT reductions needed to support a clean energy future, our policy scenario assumes that all new growth will occur in pockets of compact, mixed-use development. In Hawaii and Kauai Counties, very little of this development style currently exists so it should grow around existing medium density centers (area type B). In Honolulu and Maui Counties, density and land use mixing will increase in area type B and to a limited extent in Downtown Honolulu (area type A).

Parking management

Parking reform is an essential component of compact, mixed use growth, and travel demand management. Research shows the parking is consistently oversupplied (typically by around 30-50 percent for residential parking). These excess parking spaces take up considerable amounts of space and drive up construction costs by $15,000 to $60,000 per space, making compact development more difficult. Research also shows that parking is one of the most important factors affecting people’s decision to drive, particularly when there are other reasonable travel options available. Parking management strategies typically fall into two related categories: 1) reforming zoning codes to eliminate excessive minimum parking requirements and 2) ensuring that users pay parking costs directly.

Local governments can eliminate or reduce parking requirements for new developments, price public parking accordingly and regulate existing parking through transportation demand management programs. They can also implement policies that encourage employers and private building owners to “unbundle” parking costs from wages, rents, and the prices they charge for goods and services.

To achieve the VMT reductions needed to support a clean energy future, our policy assumes aggressive parking management policies are implemented in Downtown Honolulu (area type A), restricting its availability and roughly doubling direct user costs in monetized terms. Moderate parking management policies should also be implemented across all of area type B. Parking policies, alone, account for roughly 29 percent of our total estimated VMT reduction.

Subdivision ordinance reform

Newer subdivisions often lead to disconnected streets characterized by cul-de-sacs and hierarchal, tree-like patterns. These layouts increase travel distances between homes and key destinations, which lengthens drives, makes make walking and biking unrealistic travel options and increases energy consumption. In contrast, dense, highly connected street networks typically provide more direct routes, make walking and biking safer and more convenient, and provide better access to transit. Existing street networks can sometimes be reconnected through capital investment programs (as in Charlotte, North Carolina) but a less expensive and often more politically viable option can be ensuring that new roads are highly connected through subdivision ordinances specifying maximum block lengths.

Our policy scenario assumes that, through such programs, street connectivity increases by 20 percent in existing area type B of Honolulu and Maui Counties and by 10 percent in Downtown Honolulu (area type A). These policies account for roughly four percent of our total estimated VMT reduction.

Non-auto transportation improvements

People often drive even short distances because they do not have access to quality transit or sufficient walking and biking facilities. Sidewalks, protected bike lanes, and safer more frequent road crossings can make walking and biking more attractive options for people who are interested in walking or biking but concerned about safety. These people make up about 60 percent of the population with regard to bicycling. These kinds of improvements overlap considerably with network improvements described above. They can become part of a Complete Streets program, Safe Routes to Schools program, general road maintenance and roadway design standards or development review.

Transit enhancements can include new service, more frequent service, more efficient routes, better first- and last-mile connections to transit, more comfortable waiting areas, real-time arrival information, and fare reductions.

To achieve the VMT reductions needed to support a clean energy future, our policy scenario assumes that people’s access to transit increases by 40 percent in area type B of Hawaii and Kauai Counties and by 10 percent area types A and B of Honolulu and Maui Counties (in addition to Honolulu’s planned high capacity rail project). This additional transit service account for roughly two percent of our total estimated VMT reduction.

Road or mileage pricing

Governments can manage vehicle travel demand through pricing mechanisms like congestion charges in urban areas, mileage-based road pricing, increased taxes on gasoline, and other road user fees. Private entities can also play some role through programs like pay as you drive insurance. Pricing mechanisms are most effective when the costs are incurred directly, as with congestion pricing or tolling, rather than being rolled into weekly, monthly or annual fees. Government could also help people understand transportation cost by unveiling those costs through real-time tracking tools—much like how people today use applications to track and compare travel time options or car dashboards that show real-time fuel use.

To achieve the VMT reductions needed to support a clean energy future, our policy scenario assumes that road or mileage pricing increases the cost of driving by 50 percent statewide. That increase is in addition to offsets for any potential decreases in the cost of driving due to lower gas prices, more fuel-efficient vehicles, or less expensive alternative energy sources. This level of pricing accounts for nearly half of our total estimated VMT reduction.

Estimating impacts from policies and programs

We quantify the potential impacts of each of the policies and programs described above by estimating their effect on specific related impacts, based on knowledge of their relationship to VMT from research and literature. For example, we know that a ten percent increase in density is associated with a one percent decrease in average household VMT. Each of the policies and programs is related to specific impacts described in Table 3. These impacts were chosen because we can associate them with specific changes in VMT, described as elasticities below.

Table 3. Related impacts associated with policies and programs

Policy or program	Related impacts
Land use preservation	Inward growth (+ density)
Compact, mixed use planning and zoning	Inward growth (+ density); land use mixing
Parking reform	Parking cost
Subdivision ordinance reform	Street design/connectivity
Non-auto transportation improvements	Street design/connectivity; Access to transit
Road or mileage pricing	Road/mileage cost
Traffic impact assessments	Inward growth (+ density); Street design/connectivity; Access to transit

In developing our policy scenario, we made assumptions about: 1) where future growth would occur by area type, and 2) what kinds of changes would occur within each area type. For instance, we assume that all new growth in Hawaii County will occur in area type B (compared to zero percent under the business as usual conditions). Given the limited size of area type B under current conditions, this requires approximately 20 percent of the current area type C to become area type B (representing densification and other changes to the built environment). That leaves approximately 55,000 existing households in area type C and 50,000 new households in area type B. Growth patterns for each county are shown in Table 4.

Table 4. Future growth patterns under policy scenario assumptions

County	Total households (de facto)			Share of new growth		
	A	B	C	A	B	C
Hawaii	482	49,899	55,365	0%	120%	-20%
Honolulu	108,699	113,072	140,066	70%	30%	0%
Kauai	0	10,938	25,620	0%	120%	-20%
Maui	0	38,528	51,017	0%	110%	-10%

In Hawaii County, where area type B grows considerably, we do not assume any other changes occur within either existing area type. The same is true for Kauai County.

In Honolulu and Maui counties, however, we assume changes occur within each area type: densification, land use mixing, street design and connectivity changes, and increased parking costs due to changes in the availability of parking. As in the business as usual case, our analysis assumes all new households in area type A would be infill development, resulting in a proportional density increase, and one-in-four households in area type B would infill development.

We also assume there will be increased access to transit, particularly in Hawaii and Kauai (area type B), and increased road or mileage costs across the state. These changes are summarized in Table 5 and Table 6.

Table 5. Assumed changes in related impacts (part 1)

County	Density			Land use mixing			Street design / connectivity		
	A	B	C	A	B	C	A	B	C
Hawaii	–	0%	0%	–	0%	0%	–	0%	0%
Honolulu	35%	3%	0%	5%	20%	0%	10%	20%	0%
Kauai	–	0%	0%	–	0%	0%	–	0%	0%
Maui	–	56%	0%	–	20%	0%	–	20%	0%

Table 6. Assumed changes in related impacts (part 2)

County	Parking cost			Access to transit			Road or mileage cost		
	A	B	C	A	B	C	A	B	C
Hawaii	–	25%	0%	–	40%	0%	X	50%	50%
Honolulu	100%	25%	0%	10%	10%	0%	50%	50%	50%
Kauai	–	25%	0%	–	40%	0%	–	50%	50%
Maui	–	10%	0%	–	10%	0%	–	50%	50%

Elasticities

To estimate the effects of these changes on VMT, we rely on elasticities from literature, shown in Table 7. As in *Moving Cooler*, we use multiplicative elasticities to avoid double-counting the effects of bundled strategies—i.e., density increases, land use mixing, street design and connectivity, and parking costs. Other strategies—transit improvements and pricing—are considered as additive effects.

Table 7. Elasticities from literature

Policy effect	Source	Elasticity	
Density	Stevens 2017	-0.10	-0.47
Land use mixing	Stevens 2017	-0.03	
Street design/connectivity	Stevens 2017	-0.14	
Parking cost	Kuzmyak et al. 2003	-0.30	
Access to transit	Stevens 2017	-0.05	
Road/mileage cost	Hymel & Small 2015	-0.20	

For several effects, Stevens (2017) lists separate elasticities based on studies that control for self-selection. In the case of density increases, this elasticity is twice as large (-0.22). For land use mixing, however, the elasticity actually becomes positive (0.11). To be conservative and to rely on estimates based on a larger number of studies, we use elasticities as reported without controlling for self-selection.

Sources

- Hymel, K. M., & Small, K. A. (2015). The rebound effect for automobile travel: Asymmetric response to price changes and novel features of the 2000s. *Energy Economics*, *49*, 93–103.
- Kuzmyak, J. R., Weinberger, R., Pratt, R. H., & Levinson, H. S. (2003). Parking Management and Supply. In *TCRP Report 95: Traveler Response to Transportation System Changes*. Washington, DC: Transportation Research Board.
- Stevens, M. R. (2017). Does Compact Development Make People Drive Less? *Journal of the American Planning Association*, *83*(1), 7–18.

Final VMT estimate

These assumptions result in estimates of total household VMT by county. Total VMT was estimated as in the business as usual estimate, but with some variations:

- Non-household, non-transit VMT changes in proportion to household VMT;
- Bus and paratransit VMT increase by 25% due to increased service;
- Truck VMT increases at the same rate as in the business as usual case;
- Honolulu's high capacity rail project reduces VMT by 158 million each year beginning in 2025.

As a result, we calculate that total VMT in Hawaii can be reduced by 7.3 percent over 30 years, a 20.5 percent reduction from the business as usual growth trend.

Individual policies and programs

Disregarding any of the individual policies or programs above limits the overall impact of our policy recommendations. Without land use, parking, and street design impacts, for example, the reduction from BAU is only estimated to be 11.1 percent (an overall increase of 3.6 percent over

30 years). Similarly, the reduction from BAU without road or mileage pricing is only 10.5 percent. The sensitivity of our estimates to different impacts are shown in Table 8.

Table 8. Resulting VMT reductions under various conditions

Conditions	**VMT**	**Change from current**	**Change from BAU**	**Share of total change**
Current	11,132	0.0%	–	–
Business as usual (BAU)	12,978	16.6%	0.0%	–
Policy scenario	10,316	-7.3%	-20.5%	100.0%
No inward growth	10,748	-3.4%	-17.2%	83.8%
No land use mixing	10,335	-7.2%	-20.4%	99.3%
No street design/connectivity	10,415	-6.4%	-19.7%	96.3%
No parking cost	11,078	-0.5%	-14.6%	71.4%
No land use, parking, or design	11,535	3.6%	-11.1%	54.2%
No new transit	10,362	-6.9%	-20.2%	98.3%
No road/mileage cost	11,614	4.3%	-10.5%	51.2%

Some factors like land use mixing and transit have small overall impacts on their own, but should be considered important for meeting these goals, nonetheless. New transit, for example, will likely be essential for meeting increased density and parking management goals and potentially just as important for justifying road and mileage pricing, from a political standpoint.

Appendix A. VMT forecasts by county, vehicle type and year

Table A-1. VMT forecast (in millions) by county and source under business as usual conditions

Year	County	Bus	Paratransit	Trucks	Household	Other	HART	Total
2016	Hawaii	4.601	1.970	5.593	2116.101	75.703	0.000	2203.967
2020	Hawaii	4.712	2.018	7.119	2167.307	77.535	0.000	2258.690
2025	Hawaii	4.852	2.077	9.026	2231.315	79.825	0.000	2327.094
2030	Hawaii	4.991	2.137	10.933	2295.322	82.114	0.000	2395.498
2035	Hawaii	5.130	2.196	12.841	2359.330	84.404	0.000	2463.902
2040	Hawaii	5.269	2.256	14.748	2423.338	86.694	0.000	2532.306
2045	Hawaii	5.408	2.316	16.656	2487.346	88.984	0.000	2600.709
2016	Honolulu	13.160	5.634	15.996	6052.503	216.526	0.000	6303.820
2020	Honolulu	13.478	5.771	20.361	6198.964	221.766	0.000	6460.340
2025	Honolulu	13.877	5.941	25.816	6382.040	228.315	-157.680	6498.309
2030	Honolulu	14.275	6.112	31.272	6565.116	234.865	-157.680	6693.959
2035	Honolulu	14.673	6.282	36.728	6748.192	241.414	-157.680	6889.609
2040	Honolulu	15.071	6.453	42.183	6931.268	247.964	-157.680	7085.258
2045	Honolulu	15.469	6.623	47.639	7114.344	254.513	-157.680	7280.908
2016	Kauai	1.651	0.707	2.007	759.320	27.164	0.000	790.849
2020	Kauai	1.691	0.724	2.554	777.694	27.822	0.000	810.485
2025	Kauai	1.741	0.745	3.239	800.662	28.643	0.000	835.030
2030	Kauai	1.791	0.767	3.923	823.630	29.465	0.000	859.576
2035	Kauai	1.841	0.788	4.608	846.598	30.287	0.000	884.121
2040	Kauai	1.891	0.810	5.292	869.565	31.108	0.000	908.666
2045	Kauai	1.941	0.831	5.977	892.533	31.930	0.000	933.212
2016	Maui	3.827	1.639	4.652	1760.177	62.970	0.000	1833.264
2020	Maui	3.920	1.678	5.921	1802.770	64.493	0.000	1878.783
2025	Maui	4.036	1.728	7.508	1856.012	66.398	0.000	1935.681
2030	Maui	4.151	1.777	9.094	1909.254	68.303	0.000	1992.580
2035	Maui	4.267	1.827	10.681	1962.495	70.208	0.000	2049.478
2040	Maui	4.383	1.877	12.268	2015.737	72.112	0.000	2106.377
2045	Maui	4.499	1.926	13.854	2068.979	74.017	0.000	2163.275

Table A-2. VMT forecast (in millions) by county and source under policy scenario conditions

Year	County	Bus	Paratransit	Trucks	Household	Other	HART	Total
2016	Hawaii	4.601	1.970	5.593	2116.101	75.703	0.000	2203.967
2020	Hawaii	4.760	2.038	7.106	2097.069	75.022	0.000	2185.994
2025	Hawaii	4.958	2.123	8.997	2073.280	74.171	0.000	2163.529
2030	Hawaii	5.156	2.208	10.888	2049.491	73.320	0.000	2141.063
2035	Hawaii	5.355	2.293	12.779	2025.701	72.469	0.000	2118.597
2040	Hawaii	5.553	2.378	14.671	2001.912	71.618	0.000	2096.131
2045	Hawaii	5.751	2.462	16.562	1978.123	70.767	0.000	2073.665
2016	Honolulu	13.160	5.634	15.996	6052.503	216.526	0.000	6303.820
2020	Honolulu	13.614	5.829	20.324	5998.069	214.579	0.000	6252.414
2025	Honolulu	14.181	6.072	25.733	5930.027	212.145	-157.680	6030.477
2030	Honolulu	14.748	6.315	31.142	5861.984	209.710	-157.680	5966.220
2035	Honolulu	15.316	6.557	36.552	5793.942	207.276	-157.680	5901.962
2040	Honolulu	15.883	6.800	41.961	5725.899	204.842	-157.680	5837.705
2045	Honolulu	16.450	7.043	47.370	5657.857	202.408	-157.680	5773.448
2016	Kauai	1.651	0.707	2.007	759.320	27.164	0.000	790.849
2020	Kauai	1.708	0.731	2.550	752.491	26.920	0.000	784.400
2025	Kauai	1.779	0.762	3.228	743.954	26.615	0.000	776.338
2030	Kauai	1.850	0.792	3.907	735.418	26.309	0.000	768.277
2035	Kauai	1.921	0.823	4.586	726.882	26.004	0.000	760.215
2040	Kauai	1.993	0.853	5.264	718.345	25.699	0.000	752.154
2045	Kauai	2.064	0.884	5.943	709.809	25.393	0.000	744.092
2016	Maui	3.827	1.639	4.652	1760.177	62.970	0.000	1833.264
2020	Maui	3.959	1.695	5.910	1744.346	62.403	0.000	1818.314
2025	Maui	4.124	1.766	7.484	1724.558	61.695	0.000	1799.627
2030	Maui	4.289	1.836	9.057	1704.770	60.988	0.000	1780.940
2035	Maui	4.454	1.907	10.630	1684.982	60.280	0.000	1762.253
2040	Maui	4.619	1.978	12.203	1665.194	59.572	0.000	1743.566
2045	Maui	4.784	2.048	13.776	1645.406	58.864	0.000	1724.878

Note: These county-level estimates were revised slightly from earlier estimates that attributed a fractional share of total VMT to Kalawao County.