Vermont eBike Incentive Program

PRESENTATION FOR HOUSE TRANSPORTATION COMMITTEE, FEBRUARY 15, 2023

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CAP – Pathway 1 – Light Duty Electrification Strategies

1) **Technology Forcing ZEV Regulation (100% by 2035)**
2) **EV Purchase Incentives**
    a) New & used EVs and electric bicycles, designed for equity
    b) Expand to fleets
    c) Continue MileageSmart and Replace Your Ride
    d) Vehicle Efficiency Purchase and Use Tax Adjustment
3) **EV Charging Investment**
    a) Continue support for DCFC and Level 2
    b) Public, workplace and multifamily priorities
    c) Direct the PUC to consider EV charging rates
4) **Transportation Climate Initiative (TCI)**
5) **EV and VMT reduction Outreach and Education**

Electrify **27,000** vehicles by 2025 (cars)
126,000 by 2030

Vermont Investments in Electrification

SFY2023 Funding:

- Incentives for New PEVs, $12 million
- MileageSmart, $3 million
- Replace Your Ride, $3 million
- **eBike Incentive Program, $50k**
- Drive Electric Vermont, $2 million
- Corridor fast-charging, $6.25 million
- Community charging, $10 million

583 New Plug-in Electric Vehicles Incentivized, FFY22	228 Used Fuel-Efficent Vehicles Incentivized, FFY22	279 Electric Bikes Incentivized, FFY22	$2.67M Total Incentive Funds Issued, FFY22	81% Total Incentive Funding Directed Towards Households with Lower Incomes, FFY22

eBike Incentive Program

Vermont launched first statewide e-bike incentive program in the nation, July 2022

$105,000 total authorized in SFY2022 and SFY2023 (Acts 55 & 184)

- Program mirrored Incentive Program for New PEVs with two pathways:
  1. Point of Sale rebate at participating Vermont retail shops
  2. Consumer direct rebate post purchase to allow purchases online

- Incentive could be stacked on existing utility incentives (such as those offered by GMP, BED, Stowe Electric, etc)

Clean Transportation Incentive Programs

- Incentive Program for New Plug-in Electric Vehicles (PEVs)
- MileageSmart (Used EVs/PHEVs/hybrids)
- Replace Your Ride
- **eBike Incentive Program**
- Drive Electric Vermont partnership

Incentive Program for Electric Bicycles

Table 1. Incentive Amounts by Tax Filing Status, Adjusted Gross Income, and eBike Cost

Enhanced Rebate Eligibility and Incentive Amount		
Adjusted Gross Income	***State Incentive Amount***	
	New eBike Cost: less than $800.00*	New eBike Cost: greater than $800.00*
• **$50,000 or less** for an Individual filing as **single** or **head of household** • **$50,000 or less** for a **Married couple** filing **separately** • **$75,000 or less** for a **Married couple** filing **jointly** • **$75,000 or less** for an **Individual** filing as a qualifying **widower**	50% of sale price	$400
Standard Rebate Eligibility and Incentive Amount		
Adjusted Gross Income	***State Incentive Amount***	
	New eBike Cost: less than $833.33*	New eBike Cost: greater than $833.33*
• **$50,001 to $100,000** for an **Individual** filing as **single** or **head of household** • **$50,001 to $100,000** for a **Married couple** filing **separately** • **$75,001 to $125,000** for a **Married couple** filing **jointly** • **$75,001 up to $125,000** for an **Individual** filing as qualifying **widower**	30% of sale price	$250

*The Purchase Price does not include sales tax.

Clean Transportation Incentive Programs

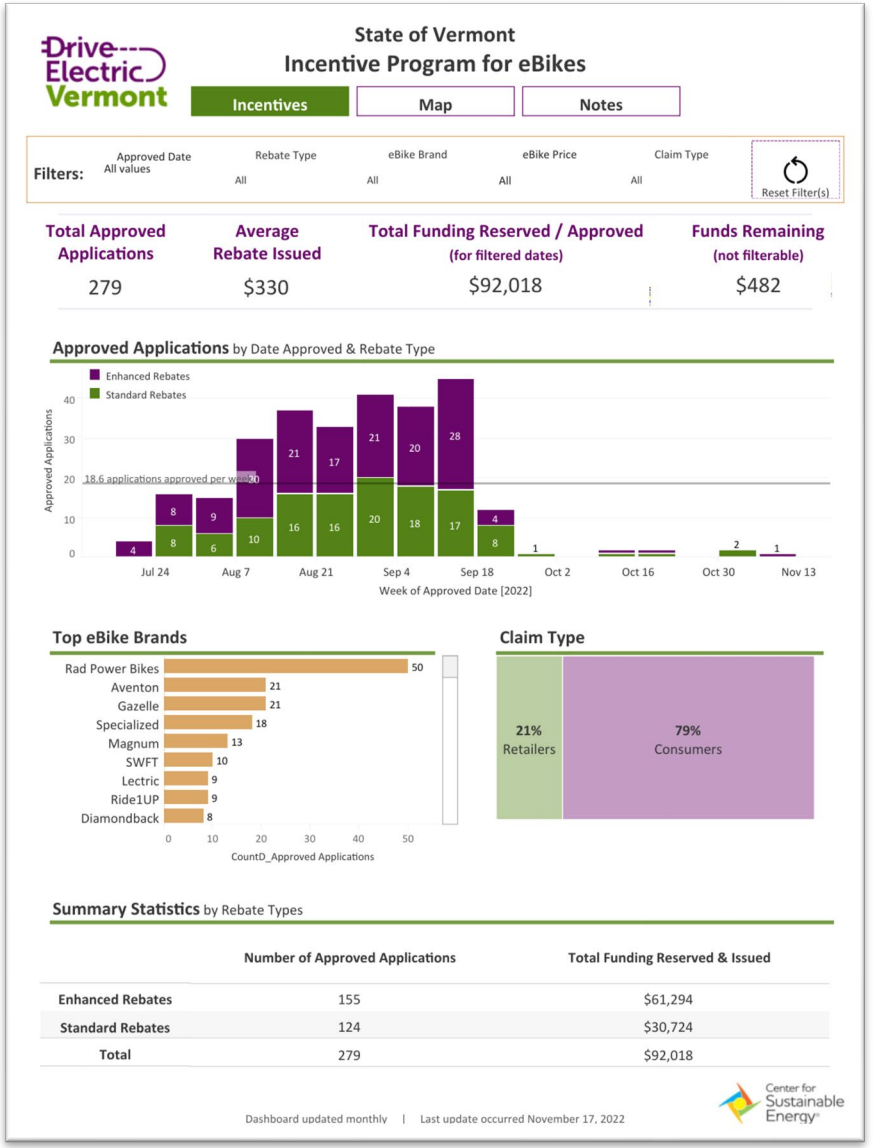
- Incentive Program for New Plug-in Electric Vehicles (PEVs)
- MileageSmart (Used EVs/PHEVs/hybrids)
- Replace Your Ride
- **eBike Incentive Program**
- Drive Electric Vermont partnership

Incentive Program for Electric Bicycles

Key Stats:

- **279** incentives issued
- **$330** average incentive
- **70%** of funding for enhanced incentives to households with lower incomes
- **21%** purchases at local shops; 79% online

Center for Sustainable Energy is currently conducting survey of participants this month



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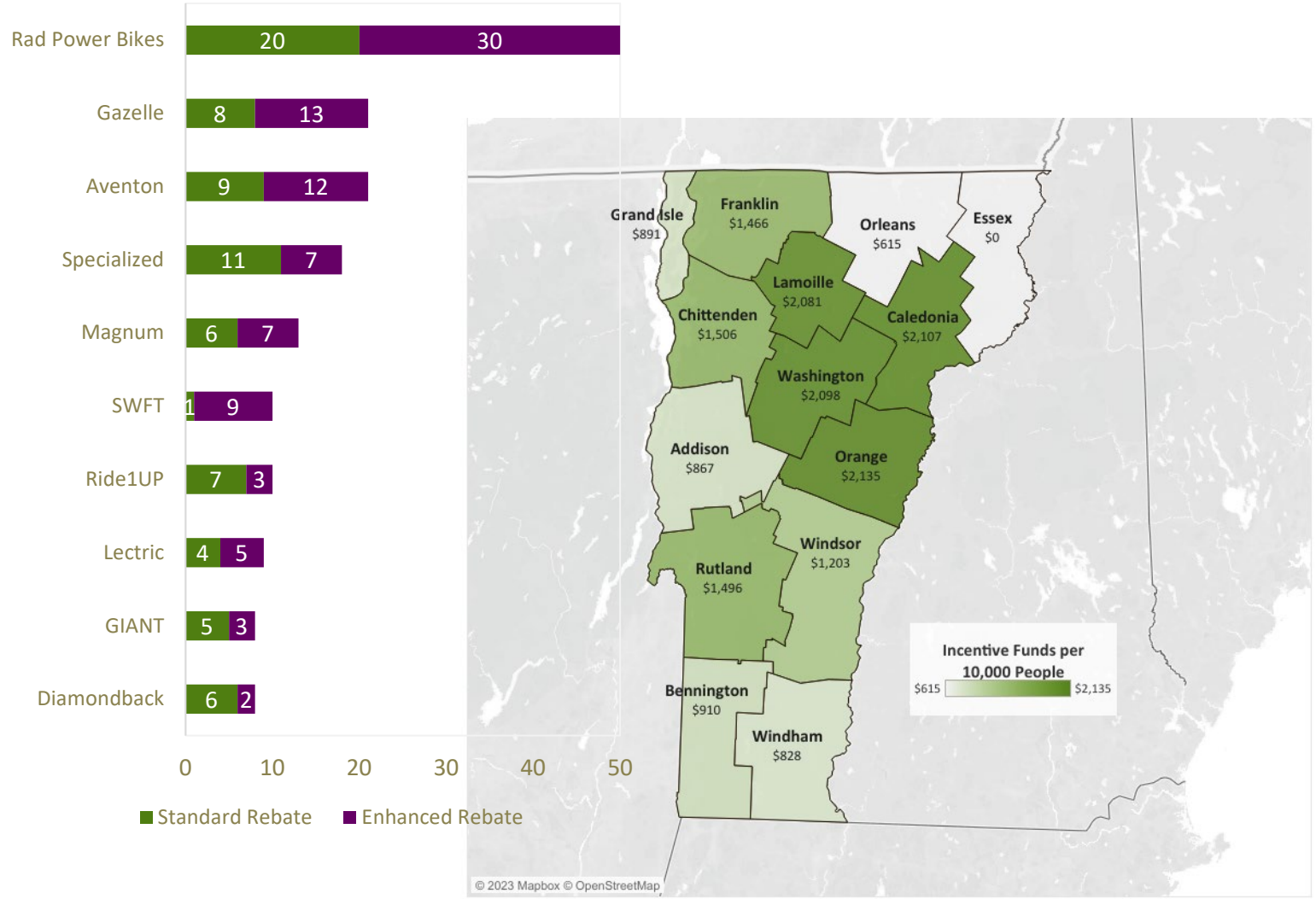
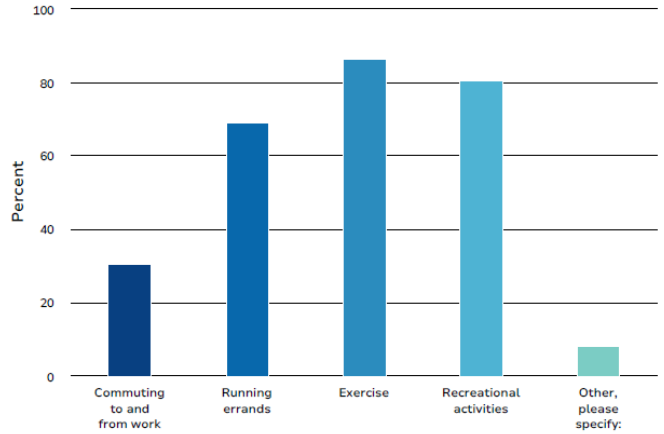
Incentive Program for Electric Bicycles



eBike Incentive Survey – initial results

4. What do you use your incentivized eBike for? (select all that apply)



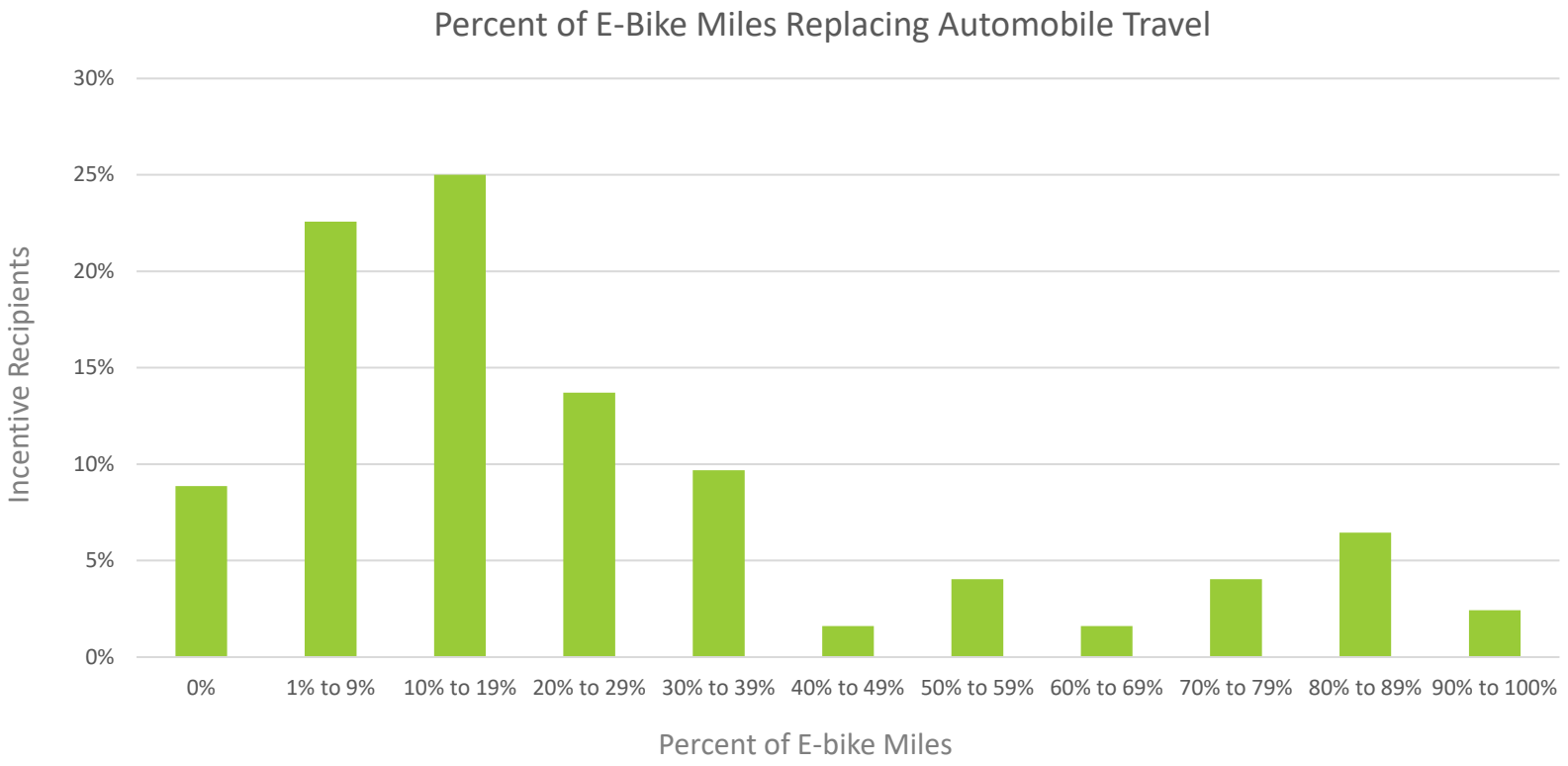
Value	Percent	Responses
Commuting to and from work	30.6%	41
Running errands	69.4%	93
Exercise	86.6%	116
Recreational activities	80.6%	108
Other, please specify:	8.2%	11

<u>Top Four Trip Purposes</u>:

1. Exercise
2. Recreational Activities
3. Running Errands
4. Commuting

eBike Incentive Survey – VMT reductions

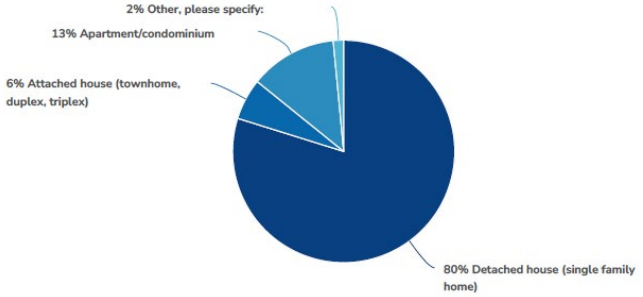
Question: Approximately what percent of the miles you are riding on your incentivized eBike replaces driving in your car/truck/van?



80% of respondents expect less than **40%** of their e-bike miles will replace car trips

eBike Incentive Survey - Participants

12. What type of residence do you live in?

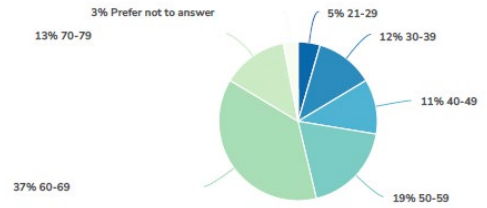


Value	Percent	Responses
Detached house (single family home)	79.9%	107
Attached house (townhome, duplex, triplex)	6.0%	8
Apartment/condominium	12.7%	17
Other, please specify:	1.5%	2
		Totals: 134

Other, please specify:	Count
Mobile home	1

Over 50% of respondents over the age of 60 years old

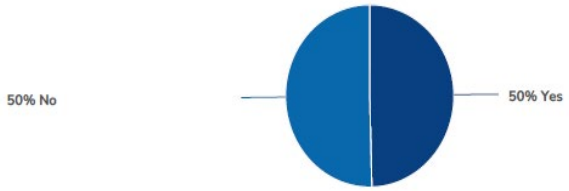
16. What is your age?



Value	Percent	Responses
21-29	4.5%	6
30-39	11.9%	16
40-49	11.2%	15
50-59	18.7%	25
60-69	37.3%	50
70-79	13.4%	18
Prefer not to answer	3.0%	4
		Totals: 134

eBike Incentive Survey - Impact

10. Would you have purchased your incentivized eBike without the State of Vermont eBike incentive?

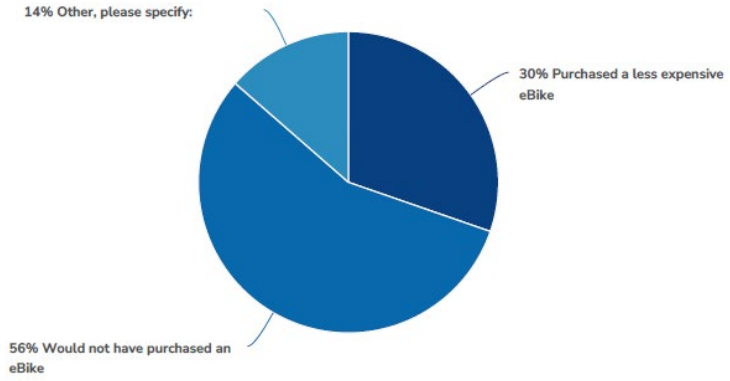


Value	Percent	Responses
Yes	49.6%	65
No	50.4%	66

Totals: 131

65% of respondents would still have purchased an e-bike

11. If the State of Vermont eBike incentive did not exist, what do you think you would have done?



Value	Percent	Responses
Purchased a less expensive eBike	30.3%	20
Would not have purchased an eBike	56.1%	37
Other, please specify:	13.6%	9

Totals: 66

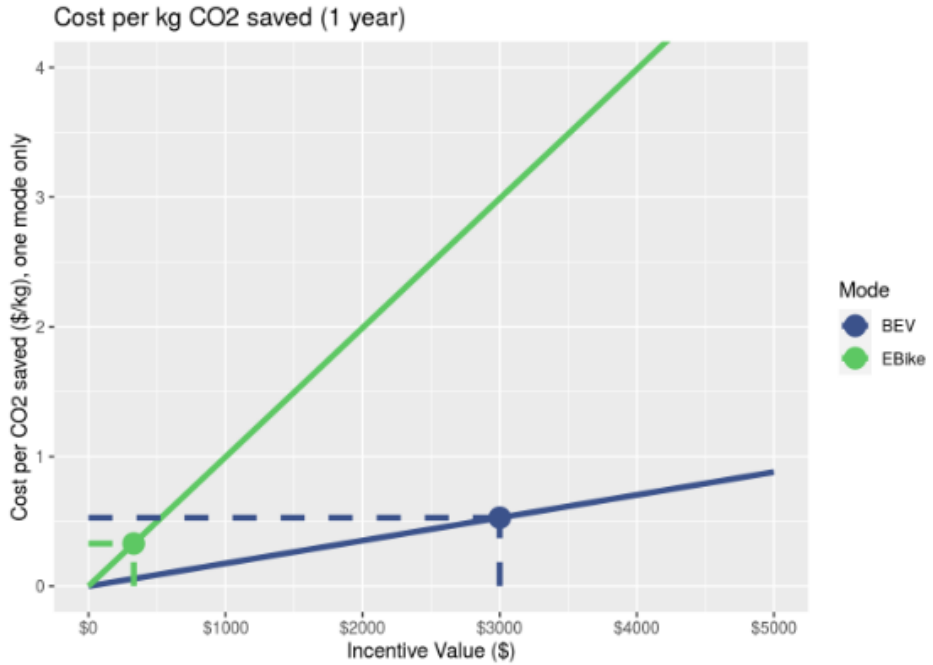
E-Vehicle Incentive Impact Tool Report

02-14-23

Introduction

The E-Vehicle Incentive Impact Tool allows users to better understand the cost, carbon emissions reduction, and carbon emissions reduction cost efficiency given a specific e-vehicle incentive program and local emissions profiles.

Results



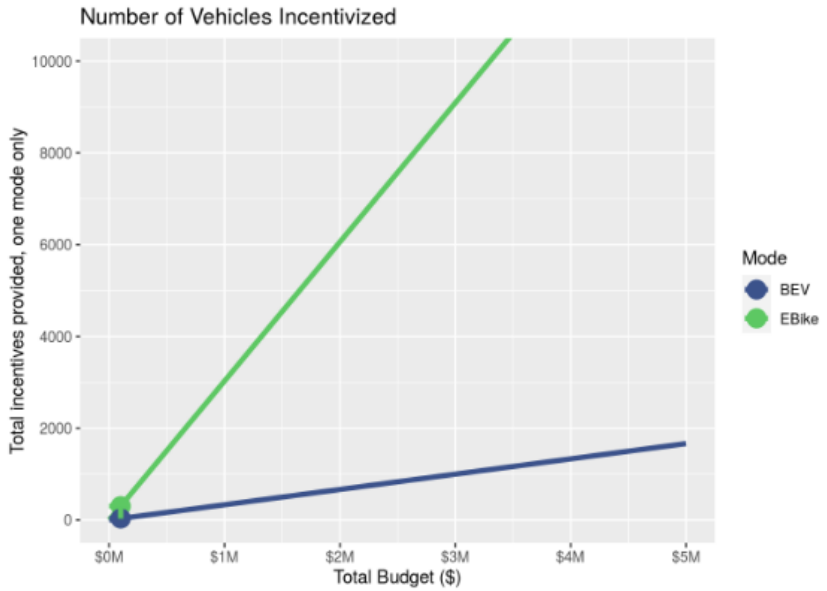
Mode	Incentive Amount	CO2 saved per vehicle, per year	Cost per kg CO2 Saved
E-Bike	$ 330.00	1003.66 kg	$ 0.33
BEV	$ 3000.00	5681.69 kg	$ 0.53

Incentive Impacts

In some locations (urban areas like Portland, Oregon), electric bikes have been shown to provide cost-effective GHG reductions relative to car incentive programs

*However, key input/assumption is **15%** mode share by e-bikes

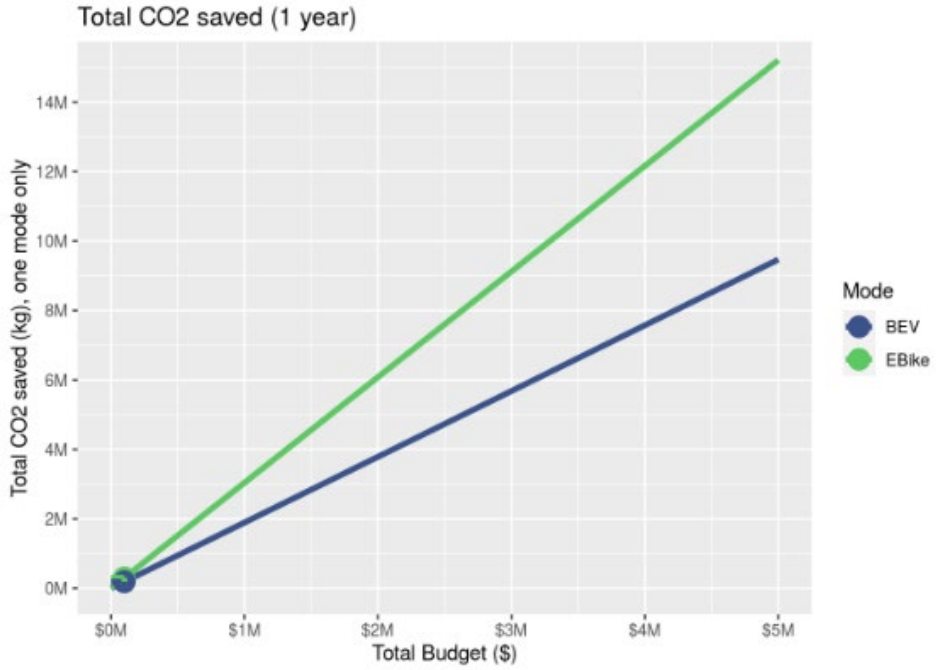
E-bike Potential with 15% mode share



Mode	Total Budget	Number of Incentives
E-Bike	$ 0.1M	303
BEV	$ 0.1M	33

The number of vehicles incentivized results show the number of vehicles that the total budget is able to accomodate, assuming only one type of e-vehicle is incentivized at a time.

For this plot, **higher is better**.



Mode	Total Budget	Total CO2 Saved, per year
E-Bike	$ 0.1M	0.3M kg
BEV	$ 0.1M	0.2M kg

Incentive Impacts

Questions:

- Is an average e-bike mode share of 10% or greater a reasonable assumption in the State of Vermont?
- Are participants likely to achieve these GHG emissions reductions within the current set of guidelines?

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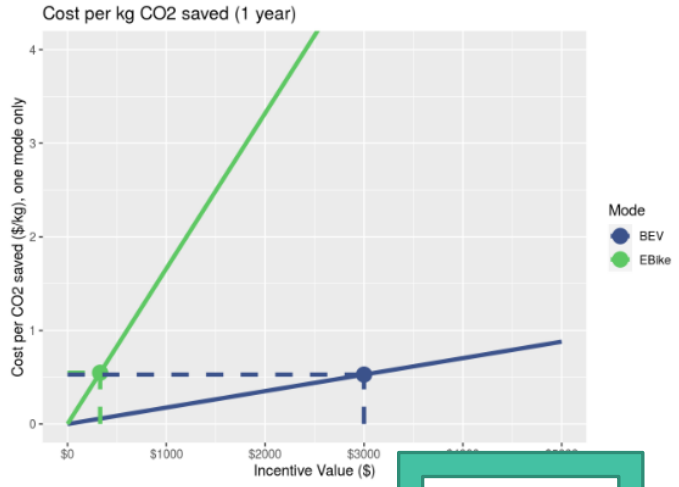


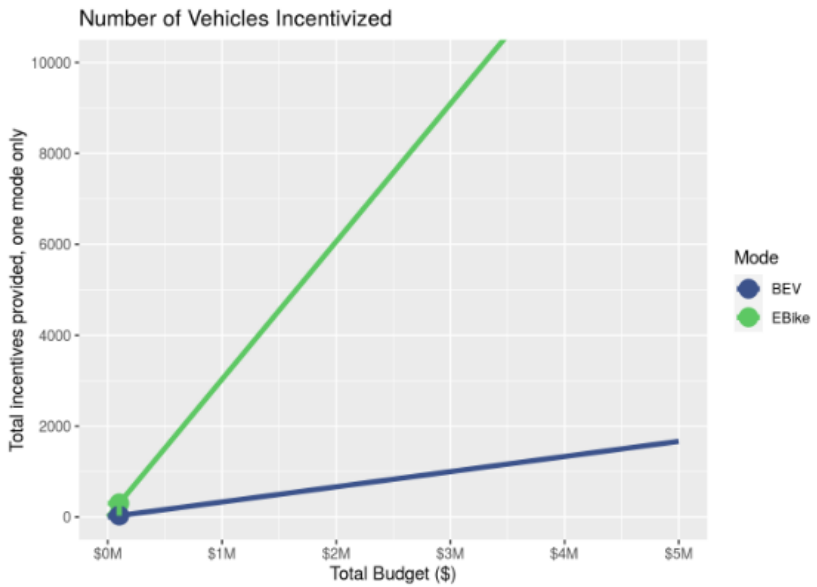
Mode	Incentive Amount	CO2 saved per vehicle, per y	Cost per kg CO2 Saved
E-Bike	$ 330.00	602.20 kg	$ 0.55
BEV	$ 3000.00	5681.69 kg	$ 0.53

The Cost per kg CO2 saved results show the dollar amount pe the incentive program. It is calculated by subtracting emissions of the e-vehicle from the average ICE vehicle using the given average travel day behavior. In the case of e-bikes, the total CO2 remissions is the sum of the miles replaced by e-bike and the remaining unreplaced miles traveled by ICE automobile. In this case, the test points assume that the entire budget is spent on that e-vehicle type. This is done in order to demonstrate the cost efficiency of each e-vehicle type.

For this plot, **lower is better**.

As e-bike mode share decreases below **10%,** current incentive levels become relatively less cost-effective than BEV incentives

E-bike Potential - <10% mode share



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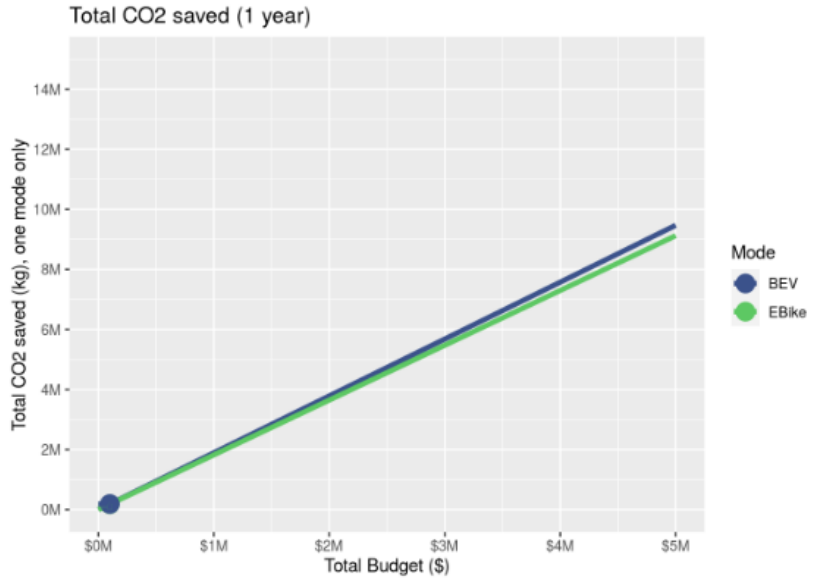


Mode	Total Budget	Total CO2 Saved, per year
E-Bike	$ 0.1M	0.2M kg
BEV	$ 0.1M	0.2M kg

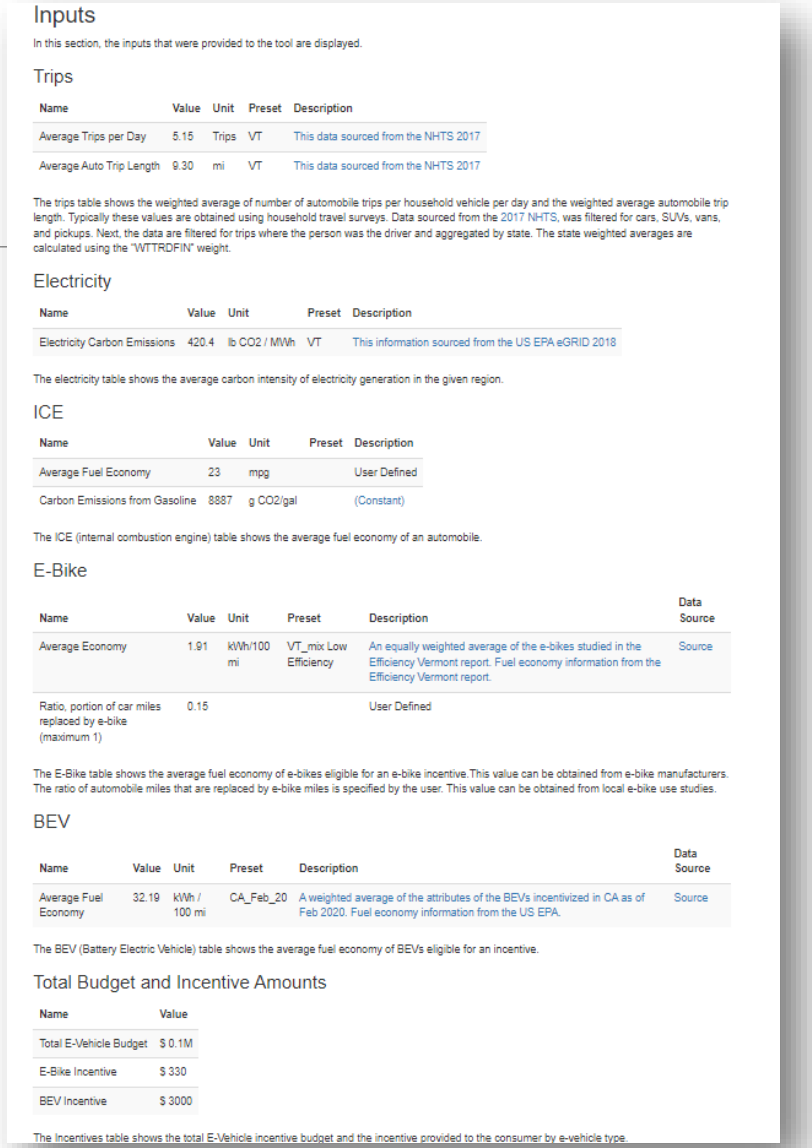
The CO2 saved results demonstrate the potential total kg CO2 saved given a specific budget and incentive amount. This assumes only one type of e-vehicle is incentivized at a time.

For this plot, **higher is better**.

E-bike Potential - assumptions

Given current program guidelines, the cost-effectiveness of e-bike spending would depend, in part, on the average mode share possible in VT

- More information is needed to understand whether it is reasonable to assume a 10% or greater mode share
- More information is needed to understand the level of free-ridership, i.e. whether the State would be investing in purchases that would have otherwise happened



Inputs

In this section, the inputs that were provided to the tool are displayed.

Trips

Name	Value	Unit	Preset	Description
Average Trips per Day	5.15	Trips	VT	This data sourced from the NHTS 2017
Average Auto Trip Length	9.30	mi	VT	This data sourced from the NHTS 2017

The trips table shows the weighted average of number of automobile trips per household vehicle per day and the weighted average automobile trip length. Typically these values are obtained using household travel surveys. Data sourced from the 2017 NHTS, was filtered for cars, SUVs, vans, and pickups. Next, the data are filtered for trips where the person was the driver and aggregated by state. The state weighted averages are calculated using the "WTTRDFIN" weight.

Electricity

Name	Value	Unit	Preset	Description
Electricity Carbon Emissions	420.4	lb CO2 / MWh	VT	This information sourced from the US EPA eGRID 2018

The electricity table shows the average carbon intensity of electricity generation in the given region.

ICE

Name	Value	Unit	Preset	Description
Average Fuel Economy	23	mpg		User Defined
Carbon Emissions from Gasoline	8887	g CO2/gal		(Constant)

The ICE (internal combustion engine) table shows the average fuel economy of an automobile.

E-Bike

Name	Value	Unit	Preset	Description	Data Source
Average Economy	1.91	kWh/100 mi	VT_mix Low Efficiency	An equally weighted average of the e-bikes studied in the Efficiency Vermont report. Fuel economy information from the Efficiency Vermont report.	Source
Ratio, portion of car miles replaced by e-bike (maximum 1)	0.15			User Defined	

The E-Bike table shows the average fuel economy of e-bikes eligible for an e-bike incentive.This value can be obtained from e-bike manufacturers. The ratio of automobile miles that are replaced by e-bike miles is specified by the user. This value can be obtained from local e-bike use studies.

BEV

Name	Value	Unit	Preset	Description	Data Source
Average Fuel Economy	32.19	kWh / 100 mi	CA_Feb_20	A weighted average of the attributes of the BEVs incentivized in CA as of Feb 2020. Fuel economy information from the US EPA.	Source

The BEV (Battery Electric Vehicle) table shows the average fuel economy of BEVs eligible for an incentive.

Total Budget and Incentive Amounts

Name	Value
Total E-Vehicle Budget	$ 0.1M
E-Bike Incentive	$ 330
BEV Incentive	$ 3000

The Incentives table shows the total E-Vehicle incentive budget and the incentive provided to the consumer by e-vehicle type.

eBike Considerations

- Learn more from survey work and HTC-proposed additional funding round
- Focus on greater greenhouse gas emissions reductions potential (lower incomes, e-cargo bikes, fleets)
  - Align income guidelines with FY2024 proposal, fund only households with lower incomes, increase outreach efforts to deepen impact
  - Provide additional incentive amount for e-cargo bikes (up to $200 + $400 = $600 total)
  - Increase Replace Your Ride incentive (as proposed) to encourage adoption of e-bikes as a vehicle replacement
  - Create Electrify Your Fleet incentive program (as proposed) to allow for e-cargo bike fleet applications
  - Continue to provide resources for the public on e-bikes and ongoing incentive programs through Drive Electric Vermont partnership

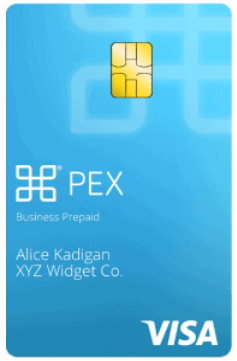
Replace Your Ride

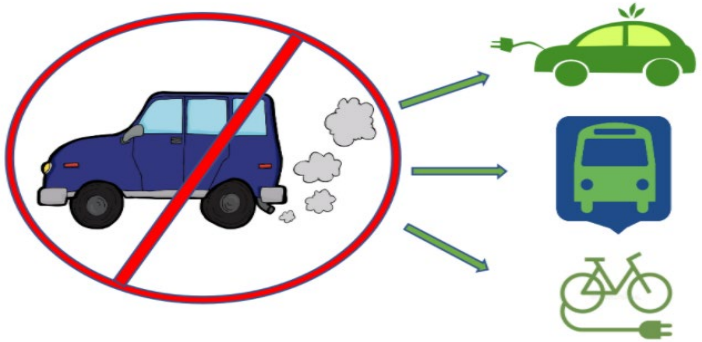
Recommendation: Build upon existing program to understand e-bike potential in VT:

- $3000 affords limited opportunities for applicants with older cars to benefit financially from program
- Majority of mobility vendors signed up are local bike shops
- Time needed to whitelist more mobility vendors in PEX card system and actively promote program to reduce vehicle ownership where possible

Center for Sustainable Energy launched program in Fall 2022

$3,000 voucher for Vermonters to replace 10+ year-old less efficient vehicles with cleaner transportation options (PEVs, bikes, bike safety equipment, e-bikes, e-motorcycles, shared mobility)





Participants must qualify for either MileageSmart or lower income bracket for New PEV Incentives

Electrify Your Fleet

Recommendation: Using $500,000 from existing Replace Your Ride funds, create new fleet incentive to encourage faster pace of adoption and expand used PEV market in nearer term as fleets turn over

- Up to $2,500 for Businesses, municipalities, tax-exempt organizations to stack with IRA credits
- Base MSRP of $60,000 to allow for electric light-duty trucks and utility vehicles
- Demonstrate fossil-fuel replacement and GHG reductions
- Like Replace Your Ride, allow for other cleaner options like e-bikes/e-cargo bikes, electric motorcycles, snowmobiles, etc.

Photo credit: CleanTechnica.com

Proposed Household Eligibility

Filing Status	Income Brackets	Low (50% up to $400)	Moderate (30% up to $250)	Totals	Percent in Lower-income Bracket	Percent of Whole
Current		202,441	80,808	283,249	71%	75%
Married Filing Jointly	75k; 75-125k	46,626	37,648	84,274		
Head of Household	50k; 50-100k	19,053	6,932	25,985		
All others	50k; 50-100k	136,762	36,228	172,990		
		+$200 for e-cargo				
Proposed		231,576	63,052	294,628	79%	78%
Married Filing Jointly	<$90k	56,626	38,277	94,903		
Head of Household	<$75k	24,058	2,677	26,735		
All others	<$60k	150,892	22,098	172,990		

Based on 2020 State of Vermont tax data

Contact

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