Household travel accounts for three-quarters of the CO2 emissions from 'on-road' sources.

The transportation sector is the largest sector contributor of Vermont’s CO2 emissions at 57% and largest end use sector of energy use at 33%

Single occupancy vehicle travel is the second highest energy dependent modes of transportation, second only to demand response travel.
We are in a Transitional Era
  Transitioning to what?
  How long will era last?
  How can we minimize impact on those most vulnerable
Four Key Factors Shaping our Future

• Energy Costs
• Climate Change
• Demographics
• Funding
Vermonters and Americans responded to increased transportation energy costs by reducing vehicles miles traveled (VMT), including a 2 percent decrease in miles traveled by school buses between 2004 and 2008, and decreasing gasoline purchases to pre-2002 levels.

While VMT has dropped both in Vermont and nationally, it is not clear whether this means people are making fewer trips, or whether they are meeting their mobility needs through other means such as walking, biking, public transit and/or car pooling.

Vermonters find themselves quite dependent on the automobile, with limited alternative options to the single occupancy vehicle in Vermont—41.5 percent of municipalities report providing sidewalks (on average 4.1 miles of length), 8.1 percent report providing bicycle lanes (average length of .4 miles) and 21.5 percent report off-road bicycle/pedestrian paths (average length of 1.9 miles).
Annual spending for the purchase of petroleum in Vermont is up 30 percent from 2004 to 2008. In this same five year period Vermont witnessed a nearly 30 percent increase in total pupil transportation spending, a 30% increase in municipal expenditures on transportation and a 28 percent increase in expenditures by the Vermont Agency of Transportation. Total highway transportation spending in Vermont by public sector entities in 2008 was over $500 million.
Increases in public expenditures on transportation seem to follow the same trend line as energy costs. In this same five year period Vermont witnessed a nearly 30 percent increase in total pupil transportation spending, a 30% increase in municipal expenditures on transportation and a 28 percent increase in expenditures by the Vermont Agency of Transportation. Total highway transportation spending in Vermont by public sector entities in 2008 was over $500 million.
The average number of miles traveled alone was 37.6 miles, which compares to only 28 miles in June 2000—a 34 percent increase in mileage traveled alone.

Vermont NHTS add-on data will be available this fall/winter.
Presence of Sidewalks Encourages Walking

Percentage of trips by walking vs. Percent of route with a sidewalk.
Vermonters find themselves quite dependent on the automobile, with limited alternative options to the single occupancy vehicle in Vermont—41.5 percent of municipalities report providing sidewalks (on average 4.1 miles of length), 8.1 percent report providing bicycle lanes (average length of .4 miles) and 21.5 percent report off-road bicycle/pedestrian paths (average length of 1.9 miles).
<table>
<thead>
<tr>
<th>Amenity Type</th>
<th>Does Jericho have regulations as a permit process that requires new residential or commercial developments to include this amenity?</th>
<th>List all towns with the same answer</th>
<th>Has this requirement been applied to any new developments yet? (2005)</th>
<th>Percent of Towns/Cities with a similar requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalks adjacent to roads</td>
<td>No</td>
<td>view &quot;No&quot; list</td>
<td></td>
<td>11.4%</td>
</tr>
<tr>
<td>Bicycle lanes</td>
<td>No</td>
<td>view &quot;No&quot; list</td>
<td></td>
<td>4.1%</td>
</tr>
<tr>
<td>Off-road bicycle/pedestrian paths</td>
<td>No</td>
<td>view &quot;No&quot; list</td>
<td></td>
<td>3.7%</td>
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<tr>
<td>Pedestrian paths connecting cul-de-sacs</td>
<td>No</td>
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<tr>
<td><strong>Other Policies, Regulations and Practices</strong></td>
<td><strong>List all towns with the same answer</strong></td>
<td></td>
<td><strong>Has this requirement been applied to any new developments yet? (2005)</strong></td>
<td><strong>Percent of Towns/Cities with a similar requirement</strong></td>
</tr>
<tr>
<td>Does Jericho have a policy that requires bikeways or pedestrian walkways in new public infrastructure projects?</td>
<td>No</td>
<td>view &quot;No&quot; list</td>
<td></td>
<td>5.7%</td>
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<tr>
<td>Does Jericho regularly clear snow from sidewalks?</td>
<td>Yes</td>
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<td>34.1%</td>
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<tr>
<td>Does Jericho have any “Walk to School” programs to encourage children to walk or bike to school?</td>
<td>Unknown</td>
<td>view &quot;Unknown&quot; list</td>
<td></td>
<td>4.5%</td>
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<tr>
<td>Do the public schools in Jericho allow public access to their recreation facilities after school hours?</td>
<td>Yes</td>
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<td>71.5%</td>
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<tr>
<td>Street / Trail Resource</td>
<td>Does Jericho provide this resource?</td>
<td>List all towns with the same answer</td>
<td>In 2004, were any additions or improvements made?</td>
<td>Were any additions or improvements planned for 2005?</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>Yes</td>
<td>View Yes or No list</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Crosswalks</td>
<td>Yes</td>
<td>View Yes or No list</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Speed bumps</td>
<td>No</td>
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<td>No</td>
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<td>Reduced speed zones</td>
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<td>View Yes or No list</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Pedestrian safety related signage</td>
<td>Yes</td>
<td>View Yes or No list</td>
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<tr>
<td>Pedestrian safety related stop lights</td>
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<tr>
<td>Bicycle lanes</td>
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<tr>
<td>Bicycle racks</td>
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<tr>
<td>Off-road bicycle/pedestrian paths</td>
<td>No</td>
<td>View No list</td>
<td>No</td>
<td>Unknown</td>
</tr>
<tr>
<td>Foot paths (Biking and walking trails)</td>
<td>Yes</td>
<td>View Yes or No list</td>
<td>Yes</td>
<td>Unknown</td>
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<tr>
<td>Other paths and trails</td>
<td>–</td>
<td></td>
<td></td>
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</tbody>
</table>
Individual Contributions to Transportation Energy Use

- What we drive
- How we drive
- Why we drive
Fuel inefficient
High rates of speed
Because it’s fun
Single Occupancy Vehicle Use

- Fossil Fuel Use:
  - Greenhouse Gas Emissions
  - Air Pollution/Particulate Emissions
  - Dependence on Oil (foreign and domestic)
  - Expensive
- It’s Isolating, Stressful, and Sedentary
  = bad for your health

There was a time when SOV were frowned on by government regulation....
When you ride ALONE you ride with Hitler!

Join a Car-Sharing Club TODAY!
Dependence on Oil

• The U.S. uses over 20 million barrels of oil daily.
• 2/3 of that oil is used for transportation.
• More than ½ the oil used to produce our gasoline is imported.
• The U.S. (pop. 299 million) uses about 385 million gallons of gasoline daily, averaging more than a gallon of gasoline per person per day.

Sources: 
• Only 1% of fuel energy is used to move the driver of the vehicle.

• 80% of fuel energy is lost through heat and friction, and 19% is used to move the vehicle.

2. Steve Belitsos, Diesel Power Technology, VTC
Greenhouse Gases (GHG)

The increasing concentration of greenhouse gases in the atmosphere is contributing to climate change.

In 2005, transportation accounted for 28% of GHG emissions nationally, and 44% in Vermont.

The three major GHG emitted by motor vehicles are:

- $\text{CO}_2$—Carbon Dioxide
- $\text{N}_2\text{O}$—Nitrous Oxide (“laughing gas”)
- $\text{CH}_4$—Methane

Sources:
2. http://www.epa.gov/greenvehicles/Aboutratings.do#aboutgreenhouse
Economics

The U.S. imports about 5.7 billion dollars’ worth of petroleum each week.¹

But What Does this Mean to You?

• U.S. passenger cars get 22.4 mpg on average.²
• Average yearly vehicle miles traveled (VMT) for each Vermonter: 14,721³
• So... the average Vermonter, with an average passenger car, paying $2.05/gal. will use 657 gallons of gasoline, and spend $1,347 a year.

If you drive an SUV or a truck...

Sources:
<table>
<thead>
<tr>
<th>Residence</th>
<th>Count</th>
<th>Residence</th>
<th>Count</th>
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<tbody>
<tr>
<td>Plattsburgh</td>
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<td>Underhill</td>
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<tr>
<td>Hardwick</td>
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<td>Westford</td>
<td>17</td>
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<tr>
<td>Bolton</td>
<td>10</td>
<td>Williston</td>
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<td>Burlington</td>
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<td>Winooski</td>
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<td>Charlotte</td>
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<td>Fletcher</td>
<td>15</td>
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<td>Georgia</td>
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<td>Johnson</td>
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<td>Jericho</td>
<td>347</td>
<td>Newport</td>
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<td>Milton</td>
<td>13</td>
<td>Barre town</td>
<td>9</td>
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<tr>
<td>Richmond</td>
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<td>Waterbury</td>
<td>5</td>
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<tr>
<td>S. Burlington</td>
<td>24</td>
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</table>

Census 2000
Vermont Worker Flow Data
<table>
<thead>
<tr>
<th>Jericho Major Employment Centers</th>
<th>Number of Employees</th>
</tr>
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<tbody>
<tr>
<td>Underhill ID</td>
<td>29</td>
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<tr>
<td>Browns River Middle School</td>
<td>70</td>
</tr>
<tr>
<td>Mount Mansfield High School</td>
<td>154</td>
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<tr>
<td>Town of Jericho – Town Hall</td>
<td>10</td>
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<tr>
<td>Jericho Elementary School</td>
<td>62</td>
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</tbody>
</table>
Transportation System Efficiency

- Reduce personal VMT by transferring trips to public transportation, van-pools and non-motorized modes
- Increase vehicle occupancy rates
- Increase efficient driving
  - Reduce idling
  - Eco-Driving

We have research projects in the efficiency area somewhere including looking at transit in rural areas, that we produced a report on that and also driver efficiency, etc.
The Vermont vehicle fleet composition continues to grow more fuel efficient with a 202 percent increase (from 2005 to 2008) in hybrid vehicles registered in the state of Vermont. New vehicle purchases of full-size pick-up and sport utility vehicles each saw a 34 percent decrease from 2004 to 2008.

In 2008, the number of vehicles per capita in Vermont was less than one per person, the lowest since the Vermont Clean Cities Coalition began keeping track in 2004.
Seniors today are 80,000. Over 65 population doubles
Total increases by 20%
Working age pop rises by 15% over 15 years, then falls.
School age pop is big change
What Can We Do?
How can we reduce problems associated with driving personal vehicles?

• Drive Less:
  – Live close to work, school, and other places you need to go regularly.
  – Walk, bike, use public transit, carpool, combine trips, telecommute.

• Buy an electric vehicle (EV), a plug-in hybrid electric vehicle (PHEV), or a hybrid.

• Become an *eco*-driver!
Eco Driving is

• A set of simple driving habits that result in using less fuel, generating fewer emissions, and increasing safety.
• Eco driving is economical and better for the environment/ecosystem.
• The typical eco driver can increase fuel efficiency 15-33%. ¹

What are the benefits of Eco Driving?

- Reduced Fuel Use
  - Reduced Greenhouse Gas Emissions
  - Reduced Air Pollution/Particulate Emissions
  - Reduced Dependence on Oil (foreign and domestic)
  - Saving Money
- Increased Safety
- Less Stress
- It Works for Any Vehicle
- Most of the Techniques are Free
- You Can Start Today!
Avoid Idling

• Idling is Dangerous:
  – It causes air pollution and contributes to health problems such as asthma.
  – An unattended child or pet could put the car into gear and crash into something, or someone!
  – Your car could be stolen.
  – It’s illegal under many circumstances:\(^1\)
    1. Vermont’s Unattended MV Law
    2. VT School Bus/Property Idling Law
    3. Nine Vermont communities have Anti-Idling ordinances
    4. Laws in other states and Canada

Avoid Idling

• Idling is Wasteful:
  – Idling gets 0 mpg
  – You waste over ½ a gallon of gas for every hour spent idling.
  – If you idle 15 minutes each time you drop off & pick up your kids at school or daycare, that’s 2½ hours of idling per week!
  – There is no need to keep your car turned on while you while you wait in line at drive-thrus. The best bet is to park and walk inside, but if you must use a drive-thru, turn off the car while you are waiting. Your starter and motor battery will not wear out prematurely when you start your vehicle up to 6 times a day.

Sources:
What can a Town Energy Committee do?

• Analyze your town’s destinations
• Analyze how access to these destinations is provided
  • Do these destinations encourage SOV?
  • Do they charge for parking?
  • How much is spent maintaining parking lots?
  • Special parking for car pools?
• Pass an idle-free ordinance and conduct an awareness campaign about idling