

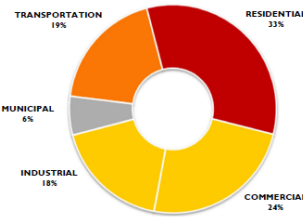
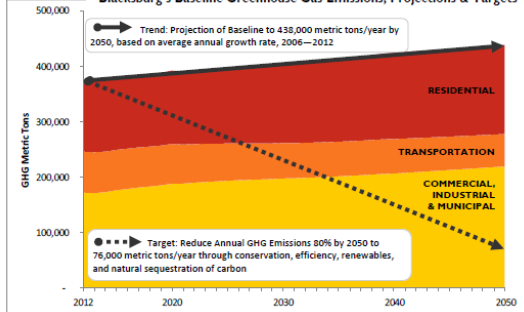


Blacksburg Climate Action Plan Draft – Citizen Feedback

Note: During their July meeting, the Climate Action Plan Working Group had an opportunity to review and consider all of the feedback submitted by citizens during the public comment period. (May 10 – June 30, 2016).


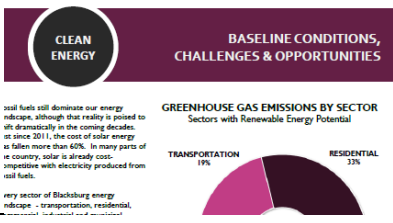
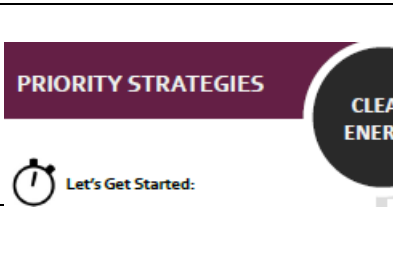
The comments below provide a complete listing of all the feedback received, with identifying information removed.

Please note that the comments and statements below are those of individual citizens and have not been independently verified. The top part of the table includes comments in light yellow boxes – these were provided on post-it notes at one of the three public input sessions held in May and June and are shown adjacent to the part of the plan they appeared to be referencing. The additional comments are a summary of the key points from a set of emails – the full text of these emails is also available on pages 5-12 of this document.

Theme/Chapter	Feedback - Suggested Changes and/or Additions
<p>Introduction & Background page vii</p>	<p>A business-as-usual pattern of carbon emissions is likely to create 4°C of warming, and could lock in enough sea level rise to submerge land currently home to 470 to 760 million people, with unstoppable rise unfolding over centuries. By contrast, significant carbon cuts limiting warming to 2° C could bring the number as low as 130 million people. Foreign policy experts increasingly warn that people internally displaced from sea level rise, droughts, and super storms are considered a risk to domestic stability within their own countries and international security more broadly.</p>  <p>Most of the v</p> <div data-bbox="1044 730 1507 871" style="border: 1px solid black; background-color: #ffffcc; padding: 5px;"> <p>If major positive feedbacks occur, which seems likely, the temperature rise by 2100 might be 6 degrees C!</p> </div>
<p>Introduction & Background page ix</p>	 <p>Any planning process is rooted in a handful of key questions: Where are we today? Where are we heading? Where do we want to end up?</p> <div data-bbox="987 1125 1321 1249" style="border: 1px solid black; background-color: #ffffcc; padding: 5px;"> <p>Maybe something about “business as usual” here?</p> </div>
<p>Introduction & Background page ix</p>	<p>Blacksburg's Emissions by Sector</p>  <p>The diagram at left shows the relative share of each major contributing sector for which data was readily available. Other contributing sectors: food, waste, recycling, and changing land uses lack concrete local data sets and were therefore not included in this inventory of baseline conditions.</p> <p>Nevertheless, these additional sectors were included in the planning process since it is clear from national data sets that food production and delivery, consumer choices, disposal decisions, the growth of renewable energy, and community design all significantly contribute to greenhouse gas emissions and are therefore key factors in meaningful climate mitigation planning.</p> <div data-bbox="1081 1333 1474 1570" style="border: 1px solid black; background-color: #ffffcc; padding: 5px;"> <p>Recent analyses show that methane gas is a large a contributor to global warming as coal, mainly because of fugitive emissions.</p> </div>
<p>Introduction & Background page x</p>	<p>Blacksburg's Baseline Greenhouse Gas Emissions, Projections & Targets</p>  <p>Trend: Projection of Baseline to 438,000 metric tons/year by 2050, based on average annual growth rate, 2006–2012</p> <p>Target: Reduce Annual GHG Emissions 90% by 2050 to 76,000 metric tons/year through conservation, efficiency, renewables, and natural sequestration of carbon</p> <div data-bbox="1081 1654 1416 1801" style="border: 1px solid black; background-color: #ffffcc; padding: 5px;"> <p>How about a parabolic fit to the CO2 emissions instead of a linear fit?</p> </div>

<p>Introduction & Background page xiii - xiv</p>		<p>“We want baseline info.”</p> <p><i>CD Note: This was a response left at one of the public meeting poster sessions. The commenter may have been viewing the posters out of order.</i></p>						
<p>Residential page 5</p>	<p>PACE Financing: Consider establishing a low-interest public revolving loan fund, on-bill or PACE-model financing options, or establish a public “loan loss” reserve agreement with local lenders to help local residents and businesses finance energy efficiency upgrades and solar projects.</p>	<p>PACE financing likely to see grant money available as FHA finalizes Fannie/Freddie lien issue guidance.</p> <p>On-bill financing option too for some that don’t have property tax base.</p>						
<p>Transportation page 10</p>	<p>PRIORITY STRATEGIES</p> <p>Let's Get Started:</p> <p>Bike Master Plan: Work toward full integration of the Town of Blacksburg's Bicycle Master Plan into other Town policy documents.</p>	<p>Appropriately engineered bike lanes</p>						
<p>Commercial Industrial page 16</p>	<p>PRIORITY STRATEGIES</p> <p>Let's Get Started:</p> <p>COMMERCE & INDUSTRY</p>	<p>Identifying optimal sites for stand-alone solar gardens and/or larger arrays (or even wind)...can be deemed a “permitted use” under city zoning and/or permitting will be fast-tracked.</p>						
<p>Commercial Industrial page 16</p>	<p>PRIORITY STRATEGIES</p> <p>Let's Get Started:</p> <p>COMMERCE & INDUSTRY</p>	<p>Community PACE (not just residential). Texas as example.</p>						
<p>Food, Waste & Recycling page 21</p>	<p>FOOD, WASTE & RECYCLING</p> <p>INDIVIDUAL ACTIONS</p> <table border="1"> <thead> <tr> <th>TAKE ACTION TODAY!</th> <th>NEXT STEPS...</th> <th>BIGGER CHANGES</th> </tr> </thead> <tbody> <tr> <td>Next time you are wrapping a gift, try newspaper comics or reusable gift bags or boxes? Paper off-sets.</td> <td>Most of us have too much “stuff” already. What about spending the same amount of money on a...</td> <td>What about the holidays? Many families have shifted their approach: become more mindful on the topic.</td> </tr> </tbody> </table>	TAKE ACTION TODAY!	NEXT STEPS...	BIGGER CHANGES	Next time you are wrapping a gift, try newspaper comics or reusable gift bags or boxes? Paper off-sets.	Most of us have too much “stuff” already. What about spending the same amount of money on a...	What about the holidays? Many families have shifted their approach: become more mindful on the topic.	<p>Find a way to incorporate other “stewardship” products (e.g. seafood, chocolate, coffee) that link to biodiversity conservation. There are many choices for “certified products that support sustainability.</p>
TAKE ACTION TODAY!	NEXT STEPS...	BIGGER CHANGES						
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<p>Food, Waste & Recycling Page 21</p>	<p>FOOD, WASTE & RECYCLING</p> <p>INDIVIDUAL ACTIONS</p> <table border="1"> <thead> <tr> <th>TAKE ACTION TODAY!</th> <th>NEXT STEPS...</th> <th>BIGGER CHANGES</th> </tr> </thead> <tbody> <tr> <td>Next time you are wrapping a gift, try newspaper comics or reusable gift bags or boxes? Paper off-sets.</td> <td>Most of us have too much “stuff” already. What about spending the same amount of money on a...</td> <td>What about the holidays? Many families have shifted their approach: become more mindful on the topic.</td> </tr> </tbody> </table>	TAKE ACTION TODAY!	NEXT STEPS...	BIGGER CHANGES	Next time you are wrapping a gift, try newspaper comics or reusable gift bags or boxes? Paper off-sets.	Most of us have too much “stuff” already. What about spending the same amount of money on a...	What about the holidays? Many families have shifted their approach: become more mindful on the topic.	<p>Work to quantify and expand residential food production – gardens, fruit trees, berries, etc – to motivate residents to produce and harvest this very local food source.</p>
TAKE ACTION TODAY!	NEXT STEPS...	BIGGER CHANGES						
Next time you are wrapping a gift, try newspaper comics or reusable gift bags or boxes? Paper off-sets.	Most of us have too much “stuff” already. What about spending the same amount of money on a...	What about the holidays? Many families have shifted their approach: become more mindful on the topic.						

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<p>Land Use page 29</p>		<p>All new development require sidewalks</p> <p>Increase density with accessory apartments</p>
<p>Clean Energy page 32</p>		<p>Do Bburg industries & commercial businesses have rigorous CO2 emissions reductions in their future plans?</p>
<p>Clean Energy page 34</p>		<p>Solar rights ordinance usually uncontroversial</p> <p>Methane capture from landfill/wastewater treatment is low-hanging fruit.</p>
<p>Clean Energy page 35</p>	<p>Financing Municipal Solar: Investigate the array of options (and degree of public support) for funding or financing to subsidize municipal solar projects.</p>	<p>Getting APCo to change its PPA policy and/or confirming state law allows PPAs is key to municipal financing.</p>
<p>In addition to in-person comments received at the Climate Action Plan open house meetings, we received several emails with more lengthy feedback. The full text for each of these follows this table, but the key points of each one are summarized below.</p>		
<p>Residential and/or Clean Energy</p>	<p>Email from RESPONDENT A</p> <ul style="list-style-type: none"> Blacksburg should offer an incentive to citizens with solar arrays to offset the \$8.35 monthly charge from VT Electric, perhaps in the form of a tax break of equal value. Offer incentives, financing tools and other resources to enable homeowners to afford energy efficiency upgrades on their homes These suggestions would support three of the identified priority strategies already within the plan. 	
<p>Transportation</p>	<p>Email from RESPONDENT B</p> <ul style="list-style-type: none"> Full cost comparison of two vehicles (one BEV, one ICE) with the same 5-year lease cost and same travel profile over 5 years. Factors considered: tax credits, fuel efficiency ICE, cost of gasoline, fuel efficiency BEV, cost of electricity, maintenance costs for both vehicles Summary: BEV is \$3,550 less expensive for the user over a 5-year period than ICE. 	
<p>Food</p>	<p>Email from RESPONDENT C</p> <ul style="list-style-type: none"> Average American throws out 20 pounds of food per month. Methane from food waste amounts to around 7% of global methane emissions Methane has a global warming potential that is 20x higher than CO2 Respondent suggested adding additional items to the “individual actions” section specifically related to food waste and composting 	
<p>Food</p>	<p>Email from RESPONDENTS D, E, AND F</p>	

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	<p><u>Suggested Addition to Narrative:</u> Community and home gardens can have an important impact on our climate.</p> <ul style="list-style-type: none"> • Greatly reduces food transportation impact. • Eliminates food packaging creation and waste. • Encourages the consumption of vegetables versus higher impact foods such as processed foods and beef. • Promotes a connection with the environment which can raise awareness of other climate impacts.
Food	<p>Email from RESPONDENTS D, E, AND F</p> <p><u>Suggested Addition to Individual Actions:</u></p> <ul style="list-style-type: none"> • Take Action Today – Join community garden or create home garden. • Next Steps.... – Learn and implement food preservation techniques, such as, canning, dehydrating, freezing. • Bigger Changes – 1) Donate produce to Share the Spare or grow an extra row of vegetables for food banks. 2) Increase number of community gardens (develop tax incentives for owners of donating land for community garden use)
Food	<p>Email from RESPONDENTS D, E, AND F</p> <p><u>Suggested Addition to Technical Report and/or Supporting Data on TOB website:</u> Suggest adding data from community and home gardens (dollar value of food produced per square foot/year, climate impacts from avoided transportation costs, avoided packaging).</p>
Land Use	<p>Email from RESPONDENT G</p> <ul style="list-style-type: none"> • The Town continues to develop in a car-dependent matter despite the direction of our Comprehensive Plan, the UDAs, and several mixed-use areas on our Future Land Use Map. • Developers are not heeding the message and town planning policies are discounting the letter of spirit of these land use intentions. • Perhaps in the section, "<i>Meeting Our Land Use Goals:</i>" we need to say something more strongly like - "Our zoning code needs to be adjusted and to more explicitly address/stipulate what high quality, denser, commercial -residential density will look like. • We really need to prioritize our preferences clearly in our zoning code and by the directives of town staff, planning commission, and town council.
Land Use	<p>Email from RESPONDENT H</p> <ul style="list-style-type: none"> • There are many opportunities for individuals to take steps to protect the environment – many of these having to do with lower-impact land management/landscaping methods. • The climate has always been changing – it's the ability to adapt to a changing climate that matters
Other	<p>Emails from RESPONDENTS I, J, and K (Preserve Montgomery Group)</p> <ul style="list-style-type: none"> • Even if the Mountain Valley Pipeline is not proposed to go through the Town limits, it should be referenced in this plan because of its multiple environmental and quality of life impacts. • Air quality concerns – particularly those associated with compressor stations and scheduled blow-downs releasing methane as well as other hydrocarbons. • Tree canopy removal concerns – and loss of carbon sequestration potential and watershed and drinking water impacts. • Concerns about Karst topography and impact to watersheds that flow through the Town. • Concerns about diminished property values • Concern about agricultural impacts if surface and ground water is impacted • Public safety concerns if there is a pipeline failure/explosion and the capacity of local EMS to manage the response; fiscal impact if public resources are diverted for these purposes.
Other	<p>Email from RESPONDENT L</p> <ul style="list-style-type: none"> • Climate impacts of water consumption are not included in the plan and should be.

Emails Received as Feedback (Full Text):

#1 Subject: One Stat About How Much Good Food Gets Thrown Away Will Inspire You To Act

Received: Fri 5/27/2016 7:31 AM

From: RESPONDENT M

CD Note: *This individual came to one of the public comment meetings and mentioned that he would be forwarding an article to me on the climate impacts of food waste. He indicated that he would like greater attention paid in the plan to this topic in the food, waste & recycling chapter. Here are the salient points of the article he sent along:*

The average American throws out 20 pounds of food per month. And if we multiply that number by the current American population (currently about 323,839,532 people) ... that's 6,476,790,640 pounds per month. Of course, the amounts that people throw away vary, but you get the idea. We throw away **a lot** of food.

There is also a huge environmental impact of food waste. When organic waste breaks down, it releases methane – a potent greenhouse gas – and amounts to around [seven percent](#) of global methane emissions. Given the fact that methane has a global warming potential [20 times higher](#) than carbon dioxide, we should be doing everything we can to reduce the impact of [food waste](#) emissions.

But let's bring it back to that smaller, fathomable number: [20 pounds](#) per month. If we each make a conscious effort to remember that statistic every time we're about to toss our leftovers – or better yet, while we're going grocery shopping and assessing what we really need to buy – perhaps we'll be able to [divert](#) as much of that waste as possible.

[Check out these six ways](#) you can cut down on food waste, [ten ideas](#) to adopt a zero-waste lifestyle, and [these simple ways](#) to minimize waste in cooking. If you can't stop waste at the source, you can always try composting! Check out this guide to [composting 101](#) to get started. Together we can keep more food out of landfills – a win for people, animals, and the planet all around!

#2 Subject: Cost Comparison Between a BEV and an ICE

Received: Sat 5/28/2016 10:10 AM

From: RESPONDENT B

CD Note: *This individual came to one of the public comment meetings and mentioned that he would be forwarding his cost comparison calculations between a BEV (Battery Electric Vehicle) and a typical ICE (Internal Combustion Engine Vehicle). He indicated that he would like greater attention paid in the plan to this topic within the transportation chapter or as an addendum in the supporting data provided on the Town's website.*

Contents

- Introduction
- [Internal-Combustion-Engine Car \(ICE\)](#)
 - Assumptions
 - Therefore
- [Battery-Electric-Car \(BEV\)](#)
 - Assumptions
 - Therefore
- [Comparison of BEV and ICE Costs](#)
 - Fuel Cost Only
 - Fuel and Maintenance Cost
 - Fuel, Maintenance and Carbon-Dioxide-Emissions Reparation Cost
- [BEV battery replacement cost](#)

Introduction

Consider two cars that have the same 5-years lease cost and travel the same 60,000 miles in 5 years, one a BEV (Battery-Electric-Vehicle) and one an ICE (Internal-Combustion-Engine car). Subtract all [federal, state and local tax credits](#) from the cost of the BEV. The purpose of this web page is to compare the cost of leasing these two cars under specific reasonable assumptions. It is assumed that insurance costs are the same for both cars.

The [Chevrolet Bolt EV](#) is a good example for a BEV. It has a 60-kWh battery, a range of >200 miles and an MSRP of \$37,500 and up.

Internal-Combustion-Engine Car (ICE)

Assumptions

- Efficiency is 30 mpg
- Cost of gasoline is \$3/gallon

Therefore

- Gasoline consumption is 60,000-miles/(30-miles/gallon) = 2,000 gallons
- Fuel cost is $\sim(2,000 \text{ gal.}) \times \$3/\text{gal.} = \mathbf{\$6,000}$

Battery Electric Car (BEV)

Assumptions

- Efficiency is 3.8 miles/kWh
- Cost of electricity is \$0.12/kWh
- The electricity is supplied by renewable energy

Therefore

- Energy consumption is 60,000-miles/(3.8-miles/kWh) = $\sim 16,000$ kWh (rounded up)
- Fuel cost is $\sim 16,000 \times \$0.12 = \mathbf{\sim \$2,000}$ (rounded up)

Comparison of BEV and ICE Costs

Fuel Cost Only

Without accounting for the cost to repair the damage done to the environment and maintenance cost, the difference in cost for the BEV and the ICE cars is:

$$(\text{ICE cost}) - (\text{BEV cost}) = \$6,000 - \$2,000 = \mathbf{\$4,000}$$

Fuel and Maintenance Cost

Assume that the 60,000 miles is accumulated over 5 years at 12,000-miles/year.

- [ICE maintenance cost](#): $\sim \$1200/\text{year}$ or $\mathbf{\$6,000}$ for the 5 years.
- BEV maintenance cost: $\sim \$100/\text{year}$ or $\mathbf{\$500}$ for the 5 years. Mainly tire rotation and interior-air filter changes.

These costs do not include tires. [BEVs may need tire replacements sooner](#) than ICEs because acceleration of BEVs can be considerably larger than for ICEs and special low-rolling-resistance tires are needed. So, assume that a BEV will need two tire changes and a ICE will need one tire change in 60,000 miles @ \$600/change

- ICE maintenance cost: $\sim \$6,000 + \$600 = \$6,600$ for the 5 years.
- BEV maintenance cost: $\sim \$500 + \$1,200 = \$1,700$ for the 5 years

Thus, the total costs are:

- ICE cost: $\sim \$6,000 + \$6,600 = \sim \$12,600$ for the 5 years.
- BEV cost: $\sim \$2,000 + \$1,700 = \sim \$3,700$ for the 5 years

Without accounting for the cost to repair the damage done to the environment, the difference in cost for the BEV and the ICE cars is:

$$(\text{ICE cost}) - (\text{BEV cost}) = \$12,600 - \$3,700 = \mathbf{\$8,900}$$

[Go to top.](#)

Fuel, Maintenance and Carbon-Dioxide-Emissions Reparation Cost

A BEV using renewable energy for fuel emits no carbon-dioxide. However, usually more carbon-dioxide is emitted manufacturing a BEV than for an ICE. Assume that a BEV must be driven 15,000 miles before that difference is accounted for. Then the carbon-dioxide emissions for the ICE should only be calculated for 60,000 - 15,000 = 45,000 miles. At 30 miles/gallon, this corresponds to 1,500 gallons.

Of course, if the electricity for the BEV is not supplied by renewable energy, the BEV will also have a carbon-dioxide-mitigation cost.

[Burning gasoline](#) emits 19.64 lbs carbon-dioxide per gallon. (Diesel emits 22.38 lbs per gallon.)

The question is what will it cost to repair the damage done by global warming and what discount rate should be used. A [recent detailed study of social cost of global warming](#) calculates the reparation cost at \$220/ton of carbon dioxide emitted.

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For the ICE: 1,500 gal. x 19.64 lbs/gal. / 2000 lbs/ton = ~14.7 tons carbon dioxide emitted.

Without using a discount rate, the reparation cost for the ICE is ~14.7 tons x \$220/ton = ~\$3,200

Assume that the discount period is 100 years and the discount rate is 4%: then the reparation cost for 5 years is ~\$650

The total difference in cost for the BEV and the ICE cars for 5 years is:

$$(\text{ICE cost}) - (\text{BEV cost}) = (\$12,600 + \$650) - \$3,700 = \mathbf{\$9,550}$$

BEV Battery Replacement Cost

BEV large traction batteries lose capacity with use. [Assume that the capacity loss is 0.035% per charging cycle.](#)

For calculational purposes:

- Assume a 60-kWh battery, such as in the [Chevrolet Bolt EV](#).
- Assume one charging cycle per week, or >200 mile/week.

Then, after 5 years, or 260 charging cycles, the battery will have lost $260 * 0.035\% = \sim 9\%$ of its original capacity.

This corresponds to an original 200-miles range being reduced to $0.91 * 200 \text{ miles} = \sim 182 \text{ miles}$ in 5 years.

Would the lessee of the BEV want to replace the battery before the 5-year lease expires? My guess is "No". If the

answer is "Yes", then what would the battery cost to replace? The [2015 Nissan LEAF's battery replacement cost is](#)

~\$6,000. Assume that would be cost for the battery replacement. Then the difference in cost for the BEV and the ICE cars for 5 years is:

$$(\text{ICE cost}) - (\text{BEV cost}) = (\$12,600 + \$650) - (\$3,700 + \$6,000) = \mathbf{\$3,550}$$

Subject: Climate Action Plan - Public Comment Meetings

Received: Sun 5/29/2016 11:32 AM

From: RESPONDENT G

Perhaps, the topic of "Land Use" with regard to climate action can be discussed a bit more specifically.

"Car dependency results from transportation investments and land use patterns that favor automobile access while offering limited and fragmented alternatives to other modes of transportation."

This comment is certainly true and I really appreciate the description of Compact & Complete Centers (CCCs). However, we continue to develop in a car-dependent manner despite the direction of our comprehensive plan. As this report indicates we have designated three state-mandated Urban Development Areas (UDA) and several Mixed Use Areas on our future land use map. However, developers are not heeding the message and town planning policies are discounting the letter and spirit of these land use intentions.

For example, our zoning code calls for buildings in commercial zones to be built to the sidewalk with parking behind the front building line only. As exhibited by the new Prices Fork project, loopholes are created to ignore that directive. Only one side of a new hotel is built to the sidewalk, thus creating another primarily car-centric strip mall. Blacksburg talks the talk but still doesn't really want to walk it.

Perhaps in the section, "*Meeting Our Land Use Goals:*" we need to say something more strongly like - "Our zoning code needs to be adjusted and to more explicitly address/stipulate what high quality, denser, commercial -residential density will look like.

(a friend) and I very recently toured this [good example of quality infill development](#) in Athens, GA. Interestingly, it was built by the Landmark developers who are responsible for the Retreat, a much less than sustainability-friendly project.

We really need to prioritize our preferences clearly in our zoning code and by the directives of town staff, planning commission, and town council.

#3 Subject: Climate Action Plan Comment

Received: Sun 5/29/2016 1:47 PM

From: RESPONDENT A

CD Note: *This individual came to one of the public comment meetings and spoke to me about the need for greater local incentives for Blacksburg residents who pursue solar or other emissions-reducing activities. He indicated that he would like greater attention paid to this topic within the residential and clean energy chapters and later sent me more detailed comments.*

As per our discussion this morning.....The power to tax is the power to destroy. Conversely, the power to subsidize is the power to promote.

The town's 'Climate Action Plan 2016' is well thought out. You are 'talking the talk'; but now comes the time to 'walk the walk'.

In order to promote 'clean energy' for residents the town must incentivize and subsidize such action – for both those who have already instituted 'clean energy' operations, as well those who might in the future.

I just got a letter from VT Electric stating I'm being charged \$8.35 [I think that's the correct amount] a month despite the fact that I have solar power for my house and am decreasing my carbon footprint. Additionally, when I'm efficient in my electricity use, I contribute to the decreasing of the town's carbon footprint by adding solar-generated electricity back onto the grid for my neighbors to use.

Why am I being charged money for helping with this Climate Action Plan?

- Blacksburg must subsidize these charges to incentivize and promote solar power among our citizens.
- My Town Council provides tax breaks, subsidies, and infrastructure support to attract businesses to build within the town limits. You must do the same for residents.
- Support our solar power generation with subsidies ---- at the very least, give us a break on our residential property taxes equal to the amount VT Electric is charging me.
- Provide for tax breaks each year for our power generation.
- You've 'Talked the Talk,' now 'Walk the Walk.'
- Such actions would fall under the following sections of the Plan:

AT HOME PRIORITY STRATEGIES

- Efficiency Incentives: Establish incentives, financing tools, and other resources that enable homeowners to afford energy efficiency upgrades on their homes.

CLEAN ENERGY PRIORITY STRATEGIES

- Local Solar Policy: Create a local policy environment and promote existing (and emerging) resources that will foster the expansion of solar PV and solar water heating.
- Financing Municipal Solar: Investigate the array of options (and degree of public support) for funding or financing to subsidize municipal solar projects.

#4 Subject: Book Chapter - Carbon Footprint of Water Consumption

Received: Thu 6/16/2016 7:12 AM

From: RESPONDENT L

CD Note: This individual came to one of the public comment meetings and spoke to me about the climate impacts of water consumption. He indicated that he would like greater attention paid to this topic and later sent along a chapter in a book he had written on the topic entitled: ***Carbon Footprint of Water Consumption in Urban Environments: Mitigation Strategies.*** *I have a copy of this chapter (24 pages) if anyone on the CAP working group would like to see it, but due to copyright issues, I cannot post it for public viewing on the Town's website.*

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Attached is copy of the book chapter I wrote on carbon footprint of water consumption. Something which is missing from the BB Climate Action. The chapter includes some data for BB. This publication cannot be posted on the web because of copyright. It was good to see you. Keep up the good job.

#5 Subject: Comments on Town of Blacksburg Climate Action Plan 2016

Received: Mon 6/27/2016 11:06 PM

From: RESPONDENT I (Preserve Montgomery Group)

CD Note: *Two members of the Preserve Montgomery group came to one of the public comment meetings to speak with me about the proposed Mountain Valley Pipeline. They felt that the proposed pipeline should be explicitly addressed within the Climate Action Plan. Later, they followed up with me and invited me to attend one of their meetings to hear their collective feedback. I attended that meeting on June 23, but had to leave after about an hour. Later, several of the group members emailed additional comments to me (RESPONDENTS I, J, AND K).*

As RESPONDENT K has pointed out, if the Mountain Valley pipeline goes through Montgomery county, this will open the way up for more pipelines to be routed through this beautiful landscape of mountains, karst and free flowing rivers and mountain streams.

Compressor stations will be built to push the gas up and over the mountains. With their periodic blow-downs and release of toxic fracking chemicals, the air quality will be affected for many miles depending on the winds. Trees will be raised in a path at least 125 feet wide through the length of the pipelines. So pollution of our water supply will happen if not through fuel spills, then by sedimentation and erosion.

None of this is factored into the Climate Action Plan for Blacksburg, as if what happens in the county does not affect Blacksburg's sustainability and quality of life. It's great that Blacksburg has a plan for sustainability but it is part of a greater whole, especially if the pipelines are built.

Obtaining natural gas and then shipping it to a destination is a highly polluting process that cannot be overlooked just because it is not destined for use in Blacksburg.

I don't know how you factor in the huge threat that the pipelines pose to sustainability and quality of life in Blacksburg, but it should not be ignored.

Thanks for giving us the opportunity to have input.

#6 Subject: Town of Blacksburg Climate Action Plan 2016

Received: Tue 6/28/2016 6:55 AM

From: RESPONDENT J (Preserve Montgomery Group)

Thank you and many, many other people for all the work in creating the Town of Blacksburg Climate Action Plan 2016. It contains many great ideas.

However, I sincerely believe there should be an additional section on community involvement and the importance thereof.

A plan should always include provisions for the collection of data for future revisions. There is no mention of how people can have input into the government regarding policies, projects, sources of gas emissions, etc.

Also, a plan should mention known proposed projects and how any could impact the area. Such projects would impact how quickly the current action plan could become obsolete and, thus, deserve mention.

A major omission, for example, is there is no mention of such proposed projects as the Mountain Valley Pipeline. If this project is built, it is impossible to imagine it without a compressor station spewing noxious fumes, both visible and invisible into the atmosphere. Wherever it would be constructed the plume of smoke from the gas it will burn to run the compressors will be very visible from just about every high vantage point in Blacksburg. It is very conceivable that fumes

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will affect people residing in Blacksburg or drinking water tainted with run-off from such sites. It could be as close to the Blacksburg Town Line as the Ellett or Mount Tabor Valleys or, possibly, in Elliston which would impact other taxpayers in Montgomery County. Contamination from this pipeline likely will influence locally grown produce sold in Blacksburg and the people who come to Blacksburg to work and study residing near its path.

Also, such a project would cause much pollution to the area, certainly during its construction phase and more likely forever afterwards. There are no plans that I know of as to how to deal with the 42" pipe once it is abandoned. Also, if there is a break, for example during the very likely sometime earthquake, or just because of pipeline failure, there will be pollution from methane and the cornucopia of other pollutants introduced during fracking as well as the results of a major fire. Certainly all these chemicals released into the atmosphere and ground will impact the climate.

Just the threat of it has caused much fuel consumption as people travel to meet, protest, speak their minds at meetings, etc. as well as running their computers, and lighting much of the night as they endeavor to battle such an attack to our community, with no benefit to our community.

The removal of trees alone will impact our air quality and the quality of our water, both what is consumed from wells and from municipal water supplies. Trees also influence the temperature and provide habitat for countless critters, all of which impact the climate in their own way. Such a huge project would definitely impact the local ecology and climate.

The impact that the LLC will leave on the community will also be felt in our ability to maintain the infrastructures. Worn out roads need to be repaired. Taxpayer funds will be directed towards repairing what MVP, LLC wore out instead of more energy efficient construction techniques or more financially expensive supplies. Plus, repairs to roads definitely release climate influencing fumes into the atmosphere.

Yes, community involvement is needed not only to protect our environment from our own local transgressions against our ecology, but also to be prepared to influence what others might inflict upon us. Also, community involvement is needed to influence our government at state and federal levels as well as to keep our local officials informed of what is known about each neighborhood.

Personal participation in government is essential to being able to assist our governing bodies to have sufficient information to make informed decisions.

Thank you again for all your efforts,

#7 Subject: Climate Action Plan Draft – Public Comment

Received: Tue 6/28/2016 10:530 AM

From: RESPONDENT H

Submitting my Public comments to the "Climate Action Plan Draft". I encourage the following Individual actions that benefit our environment.

1. Reduce grass lawns size.
Mulch/mow grass lawns.
Plant native trees, scrubs, perennials, plants, etc..
2. Bring back native landscapes.
3. Have a Homeowner program that educates homeowners about how to design, install, and maintain healthy landscapes that use a minimum of water, fertilizer, and pesticides.
4. Reduce or eliminate storm-water runoff.
5. Apply Gypsum to yards to increase clay soil water permeability.
6. Provide native flowering and fruiting plants to attract birds and butterflies into your yard - and your view.
7. Trees and grass - are not compatible. Plant ground covers in shaded areas where grass is difficult to establish and maintain.

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8. Earth Shaping: Swales (small dips in the ground) and berms (raised earthen areas) can help divert runoff that is rushing from your yard. Look at the Fairfax County "Solving Drainage and Erosion Problems: A Guide for Homeowners "
9. Plant a living fence or screen. Hedgerows increase wildlife numbers and serve as windbreaks for your home or increase your privacy.
10. Protect stream corridors. A vegetated buffer along streams and rivers decreases bank erosion, keeps water temperatures cooler, traps and removes sediment and nutrients, and provides food and cover for wildlife.
11. Create a "Virginia Yards Recognition Program" similar to the other States/University's/Audubon/etc. "Habitat at Home" & Backyard Habitat Recognition Programs.
12. Compost

One final comment to the climate change issues. There has never been a time in geologic history when there hasn't been climate change. It's the ability to adapt to the inevitable change that matters.

Respectfully submitted: RESPONDENT H

#8 Subject: Blacksburg Climate Action Plan

Received: Thu 6/30/2016 1:00 AM

From: RESPONDENT K (Preserve Montgomery Group)

I am sorry that I could not be at the meeting last Thursday. I heard that you were unwell and had to leave. Our group did not have time to discuss with you concerns about the impact on the town of Blacksburg of a polluting pipeline and compressor station so close to the town. We hope that, even though it is a climate action plan for the town, you can focus a small portion of it on the negative effects of pollution from outside the town and how it can make it more difficult for any political entity to accomplish their goals. Listed below are some issues that clean air and water:

1. Air pollution from pipeline leaks but especially, from a compressor station - consists not only of methane that is 86% more polluting than CO2 in the short term, but also, volatile organic compounds that pollute the air and can travel miles due to the updrafts created by the mountains including traveling into the town of Blacksburg.
2. There are regular compressor blow-downs that release an average of 15,000 cubic feet of methane each time they occur. In addition, other pollutants such as propane, butane, isobutene, and pentanes are hydrocarbons that impact children with asthma. Unfortunately, Blacksburg may be affected by these pollutants as they are carried by the wind, perhaps into the town.
3. The pipeline is being placed along the karst topography that at times may collapse resulting in leaks or ruptures that can release chemicals that poison aquifers from which we obtain drinking water.

Thanks again for attending our meeting.

#9 Subject: Climate Action Report – Community and Home Gardens

Received: Sun 7/3/2016 12:26 PM

From: RESPONDENTS D, E, AND F

CD Note: *These individuals are involved with the YMCA Community Gardens, came to one of the public comment meetings and also visited with me in my office to provide additional feedback on the potential for community and home gardens to serve an important role in a climate change mitigation plan. They indicated that they would like greater attention paid to this topic within the land use and food, waste & recycling chapters or possibly as an addendum to the*

supporting data posted on the Town's website. They later sent me these more detailed comments in an email with an additional attachment:

Community Gardens in Blacksburg:

- Hale Y Community Garden – established 2009
- Airport Acres – neighborhood garden established ~ 2005
- That Place – group gardening featuring first nations gardening techniques and permaculture ideas on VT's Turfgrass Farm established ~2014
- Nellies Cave Park – 8 plots by the tennis courts, started 2012
- Lee Street Garden – fenced area on Lee Street, started 2012
- Church of the Latter Day Saints – donation garden, started 2012
- Sustainable Food Corps Garden at Smithfield – VT student run, started 2009

Community and home gardens can have an important impact on our climate.

- Greatly reduce food transportation impact.
- Eliminate food packaging creation and waste.
- Encourage the consumption of vegetables versus higher impact foods such as processed foods and beef.
- Promotes a connection with the environment which can raise awareness of other climate impacts.

(Suggested Addition) Individual Actions

- Take Action Today – Join community garden or create home garden.
- Next Steps.... – Learn and implement food preservation techniques, such as, canning, dehydrating, freezing.
- Bigger Changes – 1) Donate produce to Share the Spare or grow an extra row of vegetables for food banks. 2) Increase number of community gardens (develop tax incentives for owners of donating land for community garden use)

Data

- I have records for over 7 years of my home garden vegetable and fruit production. I have kept the square footage of the garden largely the same. From my observation of the Y community garden, I would consider my gardens average in their production capacity. Some gardeners can squeeze way more out than me, others, because of less time or less experience do not produce as much.
- In my data spreadsheets, I have taken pounds or cups or pints produced multiplied by farmer's market prices to obtain a \$ value. The \$ value I have grown over the 7 years on average is \$1,150. The square footage that I have gardened is 632 sq ft. or \$1.82 per sq ft.
- Once we have all of the existing square foot community garden space determined we can use the \$1.82 figure. The difficulty with just using the pound factor is that many items are better measured as volume such as pea pods. Also, there can be a mismatch when comparing potatoes to lettuce as far as environmental impact because of their yield's weight differential. Finding some data which can link how much transport impact cost to climate for produce could provide a great link but it should be assumed that a home garden is less impactful than shipping from California and South America.
- I can complete a census of the other gardens over the next two weeks to obtain their square footage. I'd also like to get # of gardeners.
- the Y garden current capacity at 1 acre which is 43,560 square feet.
- I believe we can get some numbers on gleaning pretty easy. I think farmer's markets and CSAs might take some time given that it is their busy season and schools are out of session.
- Hopefully, we can get a more comprehensive picture of local food produced for Sustainability Week.