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From: [Debbie Tarry](#)

Sent: Friday, July 31, 2020 10:05:39 AM

To: [Will Hall](#); [John Norris](#)

Cc: [Pollie McCloskey](#); [Heidi Costello](#); [Autumn Salamack](#)

Subject: RE: Climate

Sensitivity: Normal

Will –

Here is a response to your questions from staff. Please let me know if you have additional questions. We'll put this in the Green Folder for Monday night.

RESPONSE

A carbon footprint analysis for new households was not included in the Climate Impacts & Resiliency Study as that study was focused solely on preparing for current and future impacts of climate change vs. mitigating future GHG emissions. Our climate action strategy needs to employ actions that both mitigate GHG emissions and ensure we are prepared for climate change impacts that are here now and coming in the future.

A [2011 report from the EPA](#) suggests that multi-family housing with transit oriented development does use less energy – in terms of both home energy use and transportation – and would have a lower carbon footprint compared to a single family home with conventional suburban development.



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From the EPA report: This study illustrates two key points about the effect of compact, location efficient development on energy consumption:

1. A home's location relative to transportation choices has a large impact on energy consumption. People who live in a more compact, transit-accessible area have more housing and transportation choices compared to those who live in spread-out developments where few or no transportation options exist besides driving. Choosing to live in an area with transportation options not only reduces energy consumption, it also can result in significant savings on home energy and transportation costs.
2. Housing type is also a very significant determinant of energy consumption. Fairly substantial differences are seen in detached versus attached homes, but the most striking difference is the variation in energy use between single-family detached homes and multifamily homes, due to the inherent efficiencies from more compact size and shared walls among units. Moderate energy-efficient building technologies, such as those qualifying for Energy Star performance, also generate household energy savings that are notable but not as significant as the housing location and type.

In the City of Shoreline, we require that construction in MUR zones – such as those high-density developments located near future light rail stations – achieve green building certification. That provides additional benefits for reducing household energy use, per a [report from Built Green](#) that compared the average annual electricity consumption of all-electric non-Built Green homes to all-electric Built Green homes of different star-levels. That report observed the following regarding energy consumption:

- A 25% improvement in 3-Star Built Green homes;
- A 33% improvement for 4-Star Built Green homes; and
- A 40% improvement for 5-Star Built Green homes.

High density development may also provide benefits in terms of tree loss. Per a discussion with staff in PCD, many of the high-density, multi-family developments built recently in MB and CB zoned sites contain little to no trees (note: this will be different for MUR-70' near light rail stations). In comparison, a typical single family R-6 zoned lot that has trees and has never been developed, or is replacing a smaller house with a larger house, would require additional tree removal.

While there is some carbon sequestration loss due to tree removal, we know that our primary sources of GHG emissions in the Shoreline community are

transportation and home energy use. Roughly 75% of the GHG emissions measured for the Shoreline community in 2016 came from gasoline use for transportation and residential energy use from natural gas, heating oil and electricity. Reducing those sources of GHG emissions is a priority action for taking bold climate action in the Shoreline community. An update to the City's 2013 Climate Action Plan is planned for 2021-22 and can dive into these topics in more detail.

Debbie Tarry

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From: Will Hall <whall@shorelinewa.gov>
Sent: Wednesday, July 29, 2020 10:59 AM
To: Debbie Tarry <dtarry@shorelinewa.gov>; John Norris <jnorriss@shorelinewa.gov>
Cc: Pollie McCloskey <pmccloskey@shorelinewa.gov>
Subject: Climate

Did the climate work include, or can we find from other sources, the typical climate impact of a new household of the type we expect most in Shoreline (a unit in a multi-family building close to all day transit and walkable neighborhood) compared to the typical climate impact of a new household in a rapidly growing single family suburb many miles from transit and jobs (Maple Valley, Covington, Black Diamond, Snoqualmie are a few examples)?

Last I heard, which was a few years ago, was that the carbon footprint of a household in a unit in a multi family building close to transit was one-third of the carbon footprint of the same size household in a detached single family home that does not have access to transit. I don't know if that's still true, but all the data exists to confirm or update that estimate (energy consumption of new homes, energy consumption of new apartments, VMT for remote suburbs, VMT for close-in TOD, etc.).

I think this information is vitally important for council to understand and discuss. There may be a perception by some that the loss of trees here is a negative on climate. However, the analysis I looked at a few years ago found that a typical new apartment building in Shoreline loses about 1 tree for every 10 units but the typical new detached home loses about 10 trees for every one unit. So if regional growth is the same under both scenarios, allowing 100 households to live in an apartment building here saves about 1,000 trees. And the other climate impacts, from things like energy and transportation, are even greater than from trees. Maybe someone in Shoreline doesn't care about saving trees anywhere else, but the climate impacts we will suffer (and pay for) can be more effectively and cheaply mitigated through land use, including promoting density in Shoreline, than any other strategy. Obviously the land use everywhere else has the same issue, so if we lead by example and others follow we can dramatically reduce carbon emissions through increasing density, or we can lead by example and others will follow to increase emissions through continued sprawl.

Will Hall, Mayor
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