The following is taken from the current AP Environment Science course currently taught to high schoolers. I'm copying it here for my testimony on the County's Forestry bill because I believe it's relevant to two things.

Firstly, I'm an assistant teacher and believe this is a simple, brief, breakdown of the science that is relevant to understanding the importance and relevance of this bill to many systemic county issues such as public health, traffic, flooding/erosion, and pedestrian safety and mortality rates.

Secondly, the topic of mental health of youth: "For teens everywhere, this is the reality as they come of age during a time of climate crisis. In a recent 10-country survey of 10,000 young people ages 16 to 25 published in The Lancet, 45% of respondents said their feelings about climate change had "negatively affected their daily life and functioning."[1]

The relevant snippet is as follows:

Impacts of Urbanization

Today, more than 50% of the world's population lives in a city, and this percentage grows every year because of something called urbanization.

Urbanization is the creation and growth of cities, human settlements with higher population densities than rural areas. The high population density in cities has a lot of advantages. Because people are closer together, it's easier to coordinate community efforts like recycling, public education, and public transportation. Urban residents also tend to have better access to things like medical care and family planning.

However, the high population density of cities also can have a negative impact on the environment. You can imagine, with so many people living close together in one space, it can cause a strain on the natural resources of the area and generate more air and water pollution. Cities can use sustainable planning to counter these effects.

Urban planners often talk about the ratio between green space and gray space in a city, where the green spaces are vegetation and the gray spaces are things like buildings and

[1] Eco-anxiety among teenagers is growing. ABC News. April 22, 2022

paved surfaces, like roads and sidewalks and parking lots. These gray spaces may be necessary, but cities should be planned thoughtfully to add some green spaces too. When gray spaces dominate a cityscape too much, the paved surfaces prevent water from seeping into the ground, so when it rains, it creates large amounts of runoff. Having nowhere to go, the water travels across paved surfaces, picking up pollutants along the way. All this runoff can lead to flash flooding. Adding more green spaces can help prevent this from happening because plants soak up water.

There are many creative ways that urban planners can add green spaces to our environment. Some buildings in cities grow plants on their roofs. They're called green roofs. The plants soak up the rain and snow melt that hits the roof and prevents it from going into the street. Also, plants create shade and help cool things down, so buildings with green roofs wouldn't have to spend as much energy on air conditioning.

Green spaces can also help the environment by allowing for groundwater recharge, which is allowing more water to sink back into the ground and replenish the aquifer. Some cities do this by building rain gardens, which are gardens specifically designed to filter water back into the ground, the plants and the rain gardens help filter pollutants in the runoff and prevent the pollutants from contaminating water ecosystems.

Cities can also help with groundwater recharge by building permeable surfaces in their cities. Parking lots can be constructed with permeable paving to reduce runoff. Groundwater recharge can help prevent something that happens in coastal cities called saltwater intrusion. Let's say that this city right here is a city on the coast, so it's really close to the ocean. And let's say this city decides to build a pump right here to access the freshwater in the aquifer below it. But the city has a lot of people in it and it needs a lot of water. The city might end up taking more and more freshwater at a rate too fast for the freshwater in the aquifer to replenish itself. Pulling up so much fresh water can create a space for the saltwater in the nearby ocean to come and take its place. The saltwater from the ocean would contaminate the freshwater supply, making it unpotable.

But if this city decided to increase the amount of permeable surfaces and green spaces, then when it rains, the water will be able to seep back into the ground and it would refill the empty space the pump has created with freshwater. This would mean that freshwater would continually be replacing the water that was taken out by the pump, so saltwater intrusion couldn't happen. Adding more green spaces could also help with air pollution because plants absorb carbon dioxide and produce oxygen. Cities produce most of the

world's air pollution. Part of this is because of urban sprawl. As cities become more populated, they expand into suburban areas and even exurban areas, the areas past the suburbs. All of that expansion leads people to live farther away from their jobs. This causes people to spend a lot more time in their cars on their long commutes to work. And these long lines of cars of people traveling to work emit a lot of carbon dioxide.

Carbon dioxide is a greenhouse gas, which means it retains heat from the sun, and it contributes to climate change. But carbon dioxide isn't the only kind of air pollution that cities produce. Emissions from motor vehicles and industrial facilities in cities can create something called photochemical smog. This is the kind of hazy, smoky pollution that you can sometimes see in the horizon line of cities and it can be really harmful to eyes and lungs. So, how could urban planners solve this problem? Cities could cluster grocery stores, offices, and homes closer together, building up rather than out, making buildings taller rather than wider. This would mean that people wouldn't have to travel as far to get where they need, so people could rely on walking or biking rather than fossil-fuel-consuming vehicles.

Cities can reduce vehicle emissions by making public transportation more convenient and affordable. This would mean that fewer people would need to use their own cars to get around and it would cut down on traffic. Also, cities could build more paths, sidewalks, and bike lanes so people wouldn't have to rely on fossil-fuel-consuming vehicles to get around. Encouraging walking and biking could also improve the health of city residents. Cities can use clean forms of energy, like solar or wind power, to reduce air pollution. They could also use fossil fuels more effectively through energy co-generation, which is a way of using the heat given off by the burning of fossil fuels, not just the electricity. By creating goals and sustainable plans, cities can help reduce air and water pollution and increase the wellbeing of their residents.

The city of Espoo in Finland, for example, was recognized as a world leader in energy sustainability for its goal to become carbon neutral by the year 2030. Cities are centers for economic development, innovation, social and cultural diversity, and jobs. With some urban planning, cities can become centers for sustainability too.

End of snippet