

Recommended Changes to the Zoning Ordinance

To the Environmental Advisory Committee: SustainLV has worked tirelessly all summer to provide guidance and assistance to leadership throughout Bethlehem in how to prioritize and implement sustainable practices. At the end of the summer internship term, our team published three guide documents, one for [developers](#), one for [educators](#), and one for [municipal leaders](#), referring heavily to Bethlehem's [Climate Action Plan](#), an ambitious and forward-thinking document that serves as a roadmap for local action to address climate change.

The following document provides specific guidance on zoning ordinances in order to assist the EAC and Office of Planning and Zoning make our Zoning Ordinance more eco-friendly. We hope that this will help, and thank you for reaching out to us.

If you have any questions, please be in touch.

Isaac Weber, Intern, Earth Science & Government double major at Dartmouth college
(Isaac.t.weber.22@dartmouth.edu)

Climate Action Team climate-action@sustainlv.org

Ordinances Included

- 1306.01.a: Max impervious coverage added for RR and RS Zones
- 1316: Steep Slope Regulations
- 1317: Floodway and Flood Fringe Districts
- 1318.22: General Performance Standards
- 1318.27: Green Incentives
- 1318.28: Tree Conservation
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- 1319.02 (b): Modifications to parking requirements if transit is used, etc
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- 1322.03 (ii) Mineral Extraction
- 1322.03 (ddd/eee) Wind Turbines

Recommendations

1306.01.a: Max impervious coverage added for RR and RS Zones

Summary: Regulations on impervious coverage area within residential zones. The current max impervious coverage area for RR (single family detached dwelling, non-residential and other allowed uses, agricultural uses) is 50%. The current max impervious coverage area for RS (single family detached dwelling, non-residential and other allowed uses) is 75%.

Action: Increasing the pervious area will be beneficial in extreme precipitation events. The city should consider reducing “max impervious coverage %” for each zone to prioritize best practices, and recommend that developers strive for an ideal impervious coverage percentage of 0%.

1316: Steep Slope Regulations

Summary: Regulations on steep slope development. Any land with a gradient greater than 15% is deemed a steep slope. This ordinance is intended to steer development away from steep slopes, to avoid severe erosion and flooding, avoid the creation and use of steep roads and driveways, conserve forested areas, and recognize important drainage channels.

Action: Amend to prohibit development on steep slopes except when unavoidable. Where development is unavoidable, require pervious coverage throughout the development, and lower the maximum impervious coverage % to a minimum.

- *Related CAP strategy L6.3: Create and Expand Permeable Parking Lots and Driveways*

Related Action: Require pervious pavement in downstream floodways and flood fringe districts where development is unavoidable. See: [1317: Floodway and Flood Fringe Districts](#)

Action: Amend to stipulate that soil stabilization should prioritize anti-erosion plants instead of plastic mesh or fabric. This will help keep micro-plastics out of soils, which is especially important in areas of high slope as water runs through them in higher volume.

Related Action: Amend the [Stormwater Collection and Management User Fee ordinance](#) to require developments on steep slopes to contribute a higher amount to the stormwater management fund based on the flood risk for downhill floodplains created by clearing and then building on steep ground.

1317: Floodway and Flood Fringe Districts

Summary: Regulations to minimize flood damage in the future, protect water supply and natural drainage, prevent excessive development in flood-prone areas, and comply with federal and state floodplain management requirements.

Action: Amend to prohibit development on any flood plain (based on 500-year flood).

- *Related CAP strategy L3.1: Review New Developments Through the Lens of Sustainability via Recommending Body*

Action: Amend to require developments in Flood Fringe districts to invest in flood-mitigation practices like rain gardens, retention ponds, pervious pavement, etc. This must be a requirement. The city should, however, create a flood-resilience fund for low-income, at risk developments that would need help financing such development. This should come from the Stormwater Management Fund itself, because these measures will minimize flood risk.

- *Related CAP strategy L6.1: Develop a Green Infrastructure Plan to Manage Stormwater, Filter Pollutants, and Improve Public Health*

Related Action: Require developers to submit a flood safety plan to the Planning and Zoning Bureau within [Ordinance 1322.02: Site Plan Review and Review Criteria](#)

1318.22: General Performance Standards

Summary: Regulations on development performance standards. All users must comply with the standards limiting noise pollution, light pollution, solid waste storage, and air pollution in the form of smoke, dust, fumes, gases, odors, mists, vapors, and pollens within the city limits.

Action: Amend to put a penalty system in place for infractions in order to make enforcement of the ordinance enforceable.

Action: Create an air quality monitoring system to hold violators of general performance standards accountable.

1318.27: Green Incentives

Summary: Regulations on green incentives for development. Vegetated roofing and walkways designed to absorb significant runoff shall not count as impervious area for the purpose of impervious area coverage. Areas above underground parking structures covered by vegetation shall not be counted as building coverage for the purposes of calculating building coverage under this ordinance. For each 1,000 square feet of building floor area that achieves LEED certification or higher, an additional 300 square feet of gross building floor area shall be allowed beyond the maximum building coverage, up to a maximum building coverage of 20% beyond the percent that would otherwise be allowed.

Action: Eliminate benefits for any certification standard below LEED Gold, as lower standards are easy to hit and do not do enough to cut down on building GHG emissions.

Action: Create positive incentives for green buildings beyond base LEED Certification. This expansion should include incentives which already exist, i.e. increasing maximum building coverage allotment for LEED gold + certification and Living Building Challenge.

Related Action: The city should put pressure on both Lehigh County and Northampton County to enact this sort of abatement in keeping with [regional climate action goals](#).

1318.28: Tree Conservation

Summary: Regulations on tree conservation in new and existing developments. When existing healthy trees are removed from a site for a development project, 1 new tree shall be planted for each tree removed meeting City species requirements and working with the City forester. If there is mutual consent between the city and applicant, some or all of the replacement trees may be planted on City owned land. When the planting of a new street tree on site is not feasible, the city can allow the tree to be planted on a different site. In RR and CM districts, 2 new trees must be planted for each tree that is removed.

Action: Update to include asthma considerations, as some native species can harm people with allergies.

Action: The ordinance has a provision stipulating that, if a tree must be cut down for a development and cannot be replanted on site, then another one must be planted by the developer elsewhere in the community. The ordinance should be updated to direct displaced trees to urban heat islands and areas that lack green spaces. These displaced trees must still abide by street tree standards laid out in Ordinance 1319.02 (j) Street Trees and Parking Lot Trees.

Action: Amend to require an environmental impact assessment of development driven tree displacement, taking into account urban heat island effect and equitable access to green space. Where possible, include the Climate justice council on such decisions, especially with large multi-family developments in South Bethlehem (at-risk area).

- The above action all relate to: *CAP Article L3.1: Update tree ordinances and other applicable regulations/zoning ordinances to prioritize and preserve native species of plants and trees, as well as climate-resistant species.*

1318.29: Solar Energy Collection Systems

Summary: Regulations on the use of Solar Energy Systems (SES) for the generation of energy and for heating or cooling, and is intended to promote safe, effective, efficient, and attractive construction and use of SES throughout the city.

Action: Streamline permitting for solar installations.

Action: Create a preferred treatment program for rooftop solar to make sure that forest and grassland are not being cleared to create solar power fields by making permitting process for rooftop solar the most streamlined process.

Related Action: Use the Delaware Valley Planning Commission's '[Renewable Energy Ordinance Framework](#)' to draft future solar power amendments within the Bethlehem Zoning Ordinance, as it provides strong rationale and guidelines for Pennsylvania municipalities to zone for solar power.

Related Action: Publicize the Federal Solar Investment Tax Credit, which is a 26% tax credit. For more information about renewable energy tax credits: energystar.gov

Related Action: Publicize Pennsylvania's Solar Renewable Energy Credit Program, which allow operators of Solar Energy Collection Systems to sell surplus energy to utility companies so that they can hit their alternative-energy sourcing quota. This will incentivize investment in solar power by providing passive income. For more information: DSIREUSA.org

Also see: [Delaware Valley Planning Commission Renewable Energy Ordinance Frameworks – Solar](#)

1319.02 (b): Modifications to parking requirements if transit is used, etc

Summary: Regulations on parking requirement variances. The zoning hearing board may authorize a reduction in number of off-street parking spaces if applicant agrees to make a long-term commitment to a shuttle service for residents and employees and/ or subsidizes public transit. Variances are granted on a case-to-case basis.

Action: Amend to include a clause which grants a variance reducing minimum parking spaces if the developer agrees in writing to hiring or creating a car-share program.

Action: Amend to include a clause which grants a variance reducing minimum parking spaces if the developer earmarks parking spaces for car-pooling.

Related Action: Create car-pool permit program with local businesses. The city would merely provide the space and ticket those without permits: the business would have to issue the permits and ensure that its employees were not abusing the permit. This could be spearheaded by the Parking Authority, and would require a change to [Ordinance 533: Parking Meters](#). This was done successfully in [Ithaca, NY](#)

Action: Require developers to account for the walkability / bikeability of a development. Amend to increase bicycle parking from 5% of off-street parking requirement to 15-25%, depending on zone.

- *Related CAP strategy T1.2: Improve bike mobility and safety*

Action: Amend to require bike parking to be in the form of sheltered bike racks.

Action: Require sheltered bike racks around every multi-use, commercial, residential, and industrial building in Bethlehem

- *Related CAP strategy T1.9: Revise Building Codes and Development Zoning*

Related Action: Look into eliminating minimum parking requirements for residential and commercial developments located within half a mile of bus stations in dense population zones with easy access to public transportation([example in California](#)). Conduct a city-wide study with the city engineer and the LANTA metro system to locate zones where this would be feasible and not place undue burden on residents. Ideally, this program would lower rents for residents as it would lower operating costs of multi-family residential buildings and increase residential use of the extensive LANTA metro system already in place, reducing overall carbon emissions from car commuting.

1319.02 (j): Street Trees and Parking Lot Trees

Summary: Regulations on public trees on streets and in parking lots. Street trees must be on each side of every public and private street every 30 to 50 feet, depending on canopy cover. Deciduous shade trees must be planted for every 15 surface parking areas, and meet street tree requirements. No more than 20 consecutive parking spaces shall be located in a straight row.

Action: These trees should be climate-resistant, non-allergenic, non-invasive and flood resistant. The city should include parking lots in the tree inventory, and prioritize planting trees in the most vulnerable areas.

- *Related CAP strategy L2.2: Develop an Urban Forest Master Plan*

Action: The city should create a street-tree fund for low-income homeowners and businesses who cannot afford to plant and take care of shade trees

- *Related CAP strategy L2.5: Update Tree Ordinances to Protect Tree Root Systems and Large Legacy Trees*

Action: Amend to require planting of large, at risk tree species in parking lots as a stormwater user fee credit.

- *Related CAP strategy L2.7: Engage and incentivize residents and businesses about the options and benefits of conserving their own land*

1319.03 Design Standards for Parking and Driveways

Summary: Regulates parking lot and driveway dimensions in order to ensure traffic safety and access to car-commuters.

Action: Amend to require pervious parking and driveway surfaces in order to promote groundwater recharge and mitigate flooding danger as part of a general green infrastructure plan to manage stormwater, filter pollutants and improve general health.

- *Related CAP strategy L6.1: Create and Expand Permeable Parking Lots and Driveways*

Action: Amend to require charging stations in multi-family development parking lots and buildings.

Related Action: The city should publicize federal and residential utility rebate programs to help developers save money.

- Federal government offers a tax credit for EV charger hardware and installation costs with up to \$30,000 credit for commercial installs. [Alternative Fuel Infrastructure Tax Credit](#)
- Look to see if local utility will provide EV rebate through the [EV Rebate Checker](#)

1322.02: Site Plan Review and Review Criteria

Summary: Regulates development planning and review. A site plan shall be submitted to Planning and Zoning Bureau for review. They review the plan and attempt to preserve natural features, arrange the buildings elegantly, make the buildings accessible for pedestrians, keep utilities underground where practical, and minimize the visual effect of special features.

Action: Amend to require developers to prepare and submit a comprehensive sustainability impact assessment on all submissions to the City Planning Commission.

Action: Amend to require the City Planning Commission to review developers' assessment and ensure that it is in line with all of Bethlehem's CAP goals and GHG-reduction targets.

Action: Amend to require all developments to be net-zero.

Action: Amend to require developers to abide by net zero building standards in compliance with the "Zero Building Code". The [Zero Building Code](#) should be linked as a resource for developers.

1322.03 (t) Forestry

Summary: Regulates forestry within the city limits. A soil and erosion conservation plan must be prepared and submitted if forestry involves removal of over 50% of trees on area greater than one acre. If forestry involves more than one acre, maximum of 50 percent of total tree canopy can be removed over 3 years (city can approve exemptions). Forestry within 100 feet from perennial creek or on slopes greater than 25% will be limited to maximum removal of 25% of tree canopy within a 3-year period.

Action: Amend to require the city to conduct an ecosystem services assessment in city owned green areas before selling the land to developers to ensure that the sale of this land is not at odds with CAP goals. Use the ecosystem services assessment conducted throughout the Lehigh Valley in: [Lehigh Valley Return on Environment](#) as a framework for this project.

Action: Amend to require developers to replant trees in urban-heat island areas and marginalized areas of the city when on-site planting is not an option.

Related Action: The assessment itself should be conducted by the [Bureau of Urban Forestry](#).

- *Related CAP strategy L2.9: Prior to sales of existing green spaces, open spaces, and urban forest owned by the City of Bethlehem, evaluate and align impacts of sale with the goals of Bethlehem's CAP*

1322.03 (ii) Mineral Extraction

Summary: Regulates mineral extraction within city limits. Requires users to produce a land reclamation and reuse plan of the area to be excavated along with their zoning application. Details minimum setbacks and vegetation requirements in order to ensure public safety and health.

Action: Prohibit fossil fuel extraction within the city limits.

1322.03 (ddd/eee) Wind Turbines

Summary: Regulates wind turbine development and use within city limits. Turbine must be set back from nearest principal building no less than two times the maximum height to the top of the extended blade. Audible sound of wind turbine cannot exceed 45 A-weighted decibels. Wind turbine shall include safety features such as proper fencing, high speed wind fail-safes, a ground/blade clearance of at least 12 feet and un-climeability for the first 12 feet above ground level. The maximum height of any wind turbine will be 250 feet.

Action: Require developer to conduct full sustainability impact assessment of wind turbine construction before submitting a development plan to the City Planning Commission for review.

Action: Prohibit wind turbine construction along migratory routes of raptors and bats. Migratory routes are the routes certain animals take every year with the changing of the seasons, either to mate or in pursuit of richer feeding grounds. See the [Pennsylvania Game Commission](#) for more information on raptor migration.

Related Action: Raise publicity about how wind turbines can lead to habitat fragmentation through the Office of Sustainability, and about the varied strategies that attempt to mitigate habitat fragmentation.

Also see: [Delaware Valley Planning Commission Renewable Energy Ordinance Frameworks – Wind](#)