



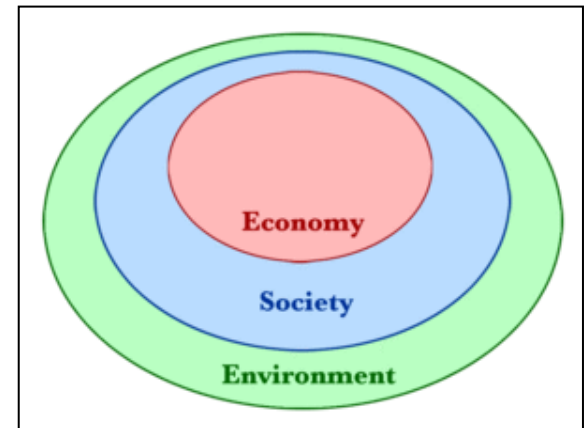
SUSTAINABLE COMMUNITIES ASSESSMENT FOR ELIZABETH TOWNSHIP, LANCASTER COUNTY

8/20/2012

Overview. Between May and late July of 2012, staff from the Brandywine Conservancy's Environmental Management Center (EMC) conducted a focused assessment of Elizabeth Township's ordinances, plans, and policies (collectively, the "framework") as these pertain to community sustainability. Using the focused assessment approach allowed EMC staff to investigate Elizabeth's broad and complex framework given limited time and resources, while yielding clear recommendations for future action.

It may also be helpful to define the term "sustainability" (or "sustain" plus "ability"). Sustainability is widely accepted to refer to: *an approach that meets the needs of the existing generation while not compromising the needs of future generations, while protecting the rights of both.* It is also commonly understood to mean *the responsible use of natural resources such that renewable ones are not drawn down beyond their ability to regenerate, and non-renewable ones are used to the minimum possible extent.* For example, applying this definition to the natural resource protection component of Elizabeth Township's environmental framework would mean an approach which *furtheres protection of the Township's agricultural lands by developing a preservation program; develops specific protections for riparian areas; and enhances protections of existing woodlands.*

Sustainability is often represented by the graphic shown here, at the center of the three nested circles "environment," "society," and "economy." In Elizabeth's case, at the municipal level; within its broad regulatory, planning, and policy-making framework; and applied principally, though not entirely, to environmental matters. Specifically, we evaluated the following facets of sustainability: (1) Natural Resource Protection; (2) Water Quality & Quantity; (3) Land Use & Community Character; (4) Global Warming; (5) Renewable Energy & Energy Conservation; (6) Mobility & Transportation; (7) Community Health & Safety; and (8) Food Production & Security. Given the assessment's focus on ordinances, plans, and policies, we did not evaluate any of the Township's *operations* as they relate to sustainability (e.g., municipal vehicle types and fuels used; procurement of supplies). Nor did we address the major components of the societal and economic circles (e.g., local economies), since we believe these issues may better be addressed through the comprehensive planning process per se. However, that being said, it would be impossible to entirely disentangle so-called "environmental impacts" from the social and economic dimensions.





Methodology. EMC staff attended two meetings in support of the focused assessment, held at the start of the process to gather information and perspective, on June 13th; and another on August 8th to discuss this draft assessment. Present at both meetings were staff and consultants from Elizabeth Township and Lititz Borough. The final report will be made public August 16th, at the monthly meeting of the IMPACT 2017 Steering Committee, in support of regional planning efforts. The intent is that this be an iterative process involving the interplay of multiple knowledgeable stakeholders. Extensive research and analysis was conducted to perform the actual assessment, using either the electronic or paper versions of the following documents:

- ✓ Comprehensive Plan (2003)
- ✓ Elizabeth Township Ordinances, Chapter 61: Burning, Outdoor (1998)
- ✓ Elizabeth Township Ordinances, Chapter 140: Sewers (1994)
- ✓ Elizabeth Township Ordinances, Chapter 150: Stormwater Management (2004)
- ✓ Elizabeth Township Ordinances, Chapter 155: Streets & Sidewalks (1997)
- ✓ Elizabeth Township Ordinances, Chapter 181: Water (2003)
- ✓ Elizabeth Township Ordinances, Chapter 185: Zoning (2009)
- ✓ Elizabeth Township Zoning Map (2003)
- ✓ Elizabeth Township Act 537 Official Wastewater Facilities Plan (1992)
- ✓ Lancaster County Subdivision and Land Development Ordinance (1991)
- ✓ Warwick Regional Recreation Commission Plan (2010)
- ✓ Warwick Region Carbon Audit (2012)

Results and Recommendations. The results of the rapid assessment of Elizabeth Township’s efforts are provided in the charts that start on this page. These charts are organized according to the issues evaluated, while the symbols “+” and “x” are used to indicate the strengths and weaknesses, respectively, of the Township’s current regulations, plans, and policies as they relate to environmental sustainability. For the same criteria, the letter “n” is used to note a neutral, or adequate, evaluation; i.e., the Township’s efforts are neither significantly strong nor notably weak. To consider improvements to noted gaps, each chart is followed by recommendations developed through consultation with Township staff and consultants, EMC staff expertise, and/or EMC staff knowledge of other municipal successes.

Each recommendation is characterized in two ways; first, according to its implementation priority as determined by EMC and Township staff — i.e., short-term (**ST** – within the next two years); long-term (**LT** – beyond two years); and/or **Ongoing** (recommendations currently underway, should continue as such). A recommendation may be placed in the **ST** category either because it is relatively simple to implement, or deemed particularly important, or both. **LT** recommendations are typically more challenging or somewhat less pressing. The second characterization is whether the recommendation removes obstacles to, creates incentives for, or sets standards for achieving sustainability. It is notable that there are a number of recommendations that could fit under more than one of these latter three categories. For example, “Land-Use and Community Character” includes a recommendation to consider working with Warwick Township on a multi-municipal TDR program, with Elizabeth Township acting as an additional receiving area. While this recommendation was placed under the “Create Incentives” category, regulations will be needed to create the actual incentives. Finally, a clear vision for Elizabeth’s sustainable future should directly inform prioritization, implementation, and/or continuation of any of these recommendations along with broad participation from other Township officials, residents, businesses, and other key stakeholders.

A final note on the recommendations below. A number of them begin with “Amend the SALDO....” Elizabeth Township has pointed out that they are in the midst of a process to develop their own SALDO, instead of relying on the county’s, but have temporarily halted that work while they work through the regional comprehensive planning process with Lititz and Warwick. Therefore, all of the recommendations calling for an amendment to the SALDO should be understood to mean that we are recommending Elizabeth Township to consider these ideas when they re-start their process.

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Natural Resource Protection

Key Ordinance Short-Cuts	Key Zoning District Abbreviations (from Zoning Map, 11/08)		
537 Plan: Act 537 Official Wastewater Facilities Plan	C: Conservation Zone (§185-23)	A: Agricultural Zone (§185-14)	R: Rural Zone (§185-15)
Comp Plan: Elizabeth Township 2003 Comprehensive Plan	R-1: Suburban Residential Zone (§185-16)	R-2: Village Residential Zone (§185-17)	
SALDO: Subdivision and Land Development Ordinance	VC: Village Commercial Zone (§185-18)	HC: Highway Commercial Zone (§185-19)	BC: Business Campus Zone (§185-22)
SWMO: Stormwater Management Ordinance	LI: Limited Industrial Zone (§185-21)	I: Industrial Zone (§185-20)	
WRRC Plan: Warwick Region Comprehensive Recreation, Park, and Open Space Plan			
ZO: Zoning Ordinance (§185)			

<p>Protect: floodplains</p> <p>Floodplain protection serves both to protect private property and conserve valuable ecological resources, and should consider downstream users.</p>	<p>Zoning Map: + it is evident that much of the Township, including floodplains, are protected through conservation zoning x however, the floodplain is not, itself, mapped ZO: + floodplain includes alluvial soils + intensive ag operations prohibited + stream restoration work permitted by right + parking lots, etc., only permitted (by special exception) if surfaced in a permeable material + nonconforming structures may not be expanded or improved if an increase in the 100-year flood elevation would result x floodplains defined in 2005, but we should expect them to expand as hydrological cycle intensifies with climate change x today's 100-year storm will be tomorrow's 20-year storm</p>
<p>Protect: riparian buffers</p> <p>Riparian buffers provide multiple benefits, from stormwater mitigation to wildlife habitat to aesthetics and more. Research has shown that benefits grow as the width of the buffer grows.</p>	<p>Zoning Map: + it is evident that much of the Township, including some riparian corridors, are protected through conservation zoning ZO: x no specific riparian protections anywhere else in the township</p>



<p>Protect: woodlands & hedgerows</p> <p>It is hard to overstate the value of mature woodlands, which include wildlife habitat, stormwater mitigation, soil conservation, carbon sequestration, mitigation of temperature extremes, improved property values, and much more.</p>	<p>Zoning Map: + it is evident that much of the Township, including sensitive woodlands, are protected through conservation zoning</p> <p>SALDO: x only 25% existing woodlands required to be protected</p> <p>ZO (forestry activities): + must have E&S plan</p> <p>x no other substantive requirements, such as forest management plan</p> <p>Comp Plan: + Goal: Promote a vision for the future by directing growth away from sensitive environmental resources</p>
<p>Protect: prime agricultural soils</p> <p>Prime agricultural soils, essentially a non-renewable resource, produce an extensive array of crops with minimal energy input, and provide other significant benefits, such as infiltration, when left undisturbed.</p>	<p>Zoning Map: + a significant portion of the Township is zoned for agriculture, which helps to preserve Lancaster County's prime agricultural soils</p> <p>ZO: + structures to be built on non-prime soils</p> <p>+ Conservation Plans required</p> <p>+ every zone permits some level of agricultural activity</p> <p>+ minimum lot size in Ag zone is 10ac</p> <p>+ density in Ag zone is 1 per 25ac</p>
<p>Protect: wetlands & hydric soils</p> <p>Wetlands have been called "the kidneys of the Earth" for their ability to filter pollutants and maintain water quality. They also provide important wildlife habitat and can be a source of beauty.</p>	<p>ZO: x no specific protections</p>
<p>Protect: steep slopes</p> <p>Steep slopes require protection primarily to prevent soil erosion and to protect downslope areas from flooding, but also provide valuable habitat.</p>	<p>ZO:</p> <p>+ mapping of areas with slopes >15% required</p> <p>+ required to minimize grading</p> <p>+ must minimize construction/site improvements</p> <p>+ must protect/preserve habitats that coincide with steep slopes</p> <p>+ must protect water quality from intended use of site</p> <p>x no specific limits on development other than the above broad, general statements</p> <p>537 Plan: + prevents use of OLDS on steep slopes, thereby protecting them</p>
<p>Protect: rare species</p> <p>No one wants to be a party to extinction, which famed wildlife biologist E.O. Wilson refers to as "the death of birth."</p>	<p>Zoning Map: + much of Township is zoned for Conservation, which helps to preserve habitat</p> <p>ZO: n relies on state protections</p>



<p>Protect: air quality</p> <p>From the municipal perspective, the primary means of protecting air quality are, (1) to provide for dense, mixed-use development that promotes human-scale transportation choices; and (2) to provide for green infrastructure, which cleanses the air of pollutants.</p>	<p>Ch 61—Burning, Outdoor: + burning of trash or industrial materials prohibited + using gasoline to start a fire is prohibited ZO: x zoning regulations encourage suburban-type development, which is typically associated with increased per capita air pollution</p>
<p>Identify, map and protect greenways</p> <p>Greenways represent a unique opportunity to connect disparate areas into one single whole, while also providing a showcase of a place's ecological wealth. They provide opportunities for recreation and non-vehicular mobility, and also provide wildlife with vital connections between natural areas.</p>	<p>Primary and Secondary Conservation Corridor Delineation Map: + identifies conservation corridors WRRC Plan: + includes map of primary and secondary conservation corridors Pennsylvania Highlands: + Elizabeth Township is included in the state-defined Pennsylvania Highlands, a greenway corridor of statewide significance</p>

Natural Resource Protection Recommendations

Remove Obstacles

- ✓ Develop a map of the Township's floodplains. **ST**
- ✓ Amend zoning ordinance to include an expanded definition of floodplains that recognizes that storms will become increasingly intense, due to the changing climate. **LT**

Enact Standards

- ✓ Add a definition for the word "riparian" to the ZO, and incorporate protection standards for riparian areas. **ST**
- ✓ Amend SALDO to require retention of existing wooded areas based on their ecological function, and require replacement of trees removed due to construction activities. **ST**
- ✓ Amend ZO to define timber harvesting and establish standards for such operations, including submittal of a forest management plan. **LT**
- ✓ Amend ZO or SALDO to incorporate protection of wetlands and wetland fringes. **ST**
- ✓ Amend ZO or SALDO to incorporate more specific standards for the disturbance of steeply-sloped areas. **ST**
- ✓ Amend ZO or SALDO to require a PNDI search for development of more than a few units, so as to protect rare and endangered species. **ST**
- ✓ During comprehensive planning process, consider the potential of the Township's developed areas having more of a "village" feel (with denser development, possibly served by public water and sewer), which would have a number of benefits. **ST**



Water Quality and Quantity

Water Conservation

Ordinance prevents depletion of groundwater and surface water supplies It is important to ensure that water resources are not used at an unsustainable rate, both to protect ecological integrity and to ensure a sustainable water supply for human use.	Primary and Secondary Conservation Corridor Delineation Map: + identifies wellhead protection area
Permit/promote harvested/recycled water (e.g., greywater systems, rain barrels) use Such measures reduce water consumption and save money and energy.	n no specific standards Well ordinance: + requires cistern
Identify native and drought-tolerant plants for use in required landscaping plans Native plants are already adapted to the existing hydrologic conditions, and so do not require the extensive watering typical of introduced species.	ZO: x no landscaping requirements SALDO: x buffer plantings not required to use native species

Water and Sewer Infrastructure

Utilize existing public water/sewer lines before expanding or increasing capacity Controlling expansion of sewage capacity & water supply is a key element in growth management.	537 Plan: n Elizabeth Township is determined to remain rural and not develop extensive public water or sewer lines
Has a maintenance program for on-lot disposal systems (OLDS) The maintenance of OLDS is essential to protect public and environmental health, and ensure the	537 Plan: + promotes development of a district approach to manage the maintenance of OLDS facilities + takes maintenance needs seriously n package treatment systems prohibited except in cases where existing OLDS suffer failure and



continued viability of rural areas that are not served by public sewer infrastructure.	no alternatives exist Ch 140—Sewers: + identification of location for replacement system required + septage to be hauled at least once per three years (more if necessary) + reporting of malfunctioning OLDS required + septage hauler required to file report with Township for all maintenance
Ensure the future land-use plan directs any expansion of water, sewer, stormwater capacities Proper growth management links the expansion of public utilities to community-created plans.	n a future land-use plan will be developed during the ongoing plan update with Lititz Borough and Warwick Township with appropriate infrastructure planning
Update the community's Act 537 plan based on the future land-use plan Since the future land-use plan represents the community's vision, the sewage plan (Act 537 Plan) should be consistent with it.	537 Plan: x discusses possibility of revisiting 537 Plan after 1998, when new conveyance facilities were to be completed in Clay Township, but this has not happened
Encourage spray/drip irrigation where use of existing treatment is not an option Spray/drip irrigation ensures the integrity of the local hydrologic cycle better than stream discharge plants, which send water and nutrients downstream, often requiring costly system design, operation, and upgrades.	537 Plan: + considers land application to support high-density development Comp Plan: + calls for the development of alternative wastewater systems that make use of lagoon treatment and spray irrigation disposal as a way to accommodate higher-density development in Brickerville, Poplar Grove, Elm, and Spring Lake Park

Stormwater Management

Implement stormwater BMPs / green infrastructure BMPs, aka "green infrastructure," represent low-cost, environmentally-integrated techniques for stormwater management, and can also create community amenities.	Ch 150—Stormwater Management: + use of BMPs encouraged x use of BMPs should be required for new developments + riparian corridors to be used whenever possible n regional stormwater management permitted x relies on models of storms that don't incorporate climate change and the intensification of the hydrologic cycle
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	x in particular, § 150-16.B(2) relies on a publication from 1986; more accurate data should be available
Require Low Impact Development techniques Low Impact Development (LID) is a design approach that focuses on conservation and use of natural features to protect water quality on-site.	Ch 150—Stormwater Management: + emphasis on maintaining natural flows + predevelopment groundwater recharge rates to be maintained + water quality to be maintained SALDO: x lack of LID techniques or standards for use by developers
Require routine maintenance of stormwater management facilities Like all infrastructure, stormwater management facilities are subject to degradation over time, and therefore benefit from ongoing maintenance.	Ch 150—Stormwater Management: + operations & maintenance plan required

Water Quality and Quantity Recommendations

Remove Obstacles

- ✓ Amend 537 Plan, as planned, to be consistent with the updated regional strategic plan, and to consider the impacts of regional wastewater systems. **LT**
- ✓ Update stormwater management ordinance to consider impacts of climate change on local hydrologic cycle. **ST**

Create Incentives

- ✓ Consider ways to educate residents in the benefits of rain barrels and greywater systems for water conservation. **LT**

Enact Standards

- ✓ Amend SALDO to only permit the planting of native species and their cultivars, with exceptions made for non-native non-invasive species, when deemed appropriate. **ST**
- ✓ Require BMPs for new development. **ST**

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Land Use and Community Character

Land-Use Planning

<p>Steer growth and new development to the most appropriate places within community/region</p> <p>Steering growth to existing population centers, such as villages, towns and cities preserves open space and helps to ensure more efficient use of existing infrastructure, while also promoting a sustainable local economy.</p>	<p>+ both Elizabeth Township and Lititz Borough have expressed an openness to allocating more intense uses to Lititz Borough & Warwick Township, and thereby maintaining the predominantly rural/agricultural character of Elizabeth Township</p> <p>Zoning Map: + commercial development is targeted near population centers and heavily-trafficked corridors (Rts 500 and 322)</p> <p>Comp Plan: + Elizabeth Township's focus on remaining a rural community is in sync with regional goals of concentrating development within the Lititz-Warwick UGB</p> <p>n nevertheless, there are several village areas within the Township that would be appropriate places to concentrate development; while the Comp Plan recognizes this, Elizabeth has yet to provide the infrastructure (some form of public water & sewer) that would be necessary to accommodate it</p>
<p>Participate in multi-municipal/regional land use planning</p> <p>Many issues are best dealt with on a regional rather than municipal basis, and efficiencies of scale can reduce burden on local budgets.</p>	<p>+ Elizabeth Township, for the first time, will be officially participating with Lititz Borough and Warwick Township in their regional comprehensive plan</p> <p>WRRP Plan: + Elizabeth Township is part of the WRRP, which plans for parks and recreation in the Warwick Region</p>
<p>Ensure planning policies and regulations are consistent with regional growth management plans</p> <p>A municipality's policies and regulations are the tools which implement the local plan, and it only makes sense for them all to work in concert.</p>	<p>Comp Plan: n calls for "small-scale, locally-oriented commercial retail and office space in a village setting within Brickerville," the provision of "incentives for the creation of livable communities via the implementation of a village development district," and an "emphasis on reviewing and upgrading existing public services and providing additional public services." These goals will be difficult to meet so long as the township relies almost solely on OLDS, which require large lots</p>
<p>Increase density/intensity in urban and village areas where appropriate</p> <p>Greater intensity of use and density of population can reduce the per capita cost of infrastructure, helping a municipality's dollars to go farther, while also promoting a sustainable local economy.</p>	<p>ZO (more than one principal use per lot): x zoning allows only one principal use per lot which, depending on lot size, can inefficiently use land</p> <p>ZO (cluster development): + max net density ranges from 6.8 DU/ac (single-family) to 9.0 DU/ac (townhomes and multi-family), which is relatively high for a rural area</p> <p>+ 40% common open space requirement</p> <p>+ public water & sewer required</p>



	x prohibits mixed-use
Encourage and/or incentivize infill development and redevelopment of previously-disturbed lands Open space is a resource with limited capacity for regeneration, so it makes sense to encourage infill development and redevelopment of previously-disturbed lands.	n no specific provisions, but may not be relevant for the Township
Adopt and implement Smart Growth principles Smart growth principles encourage the concentration of development in existing walkable & bikeable communities; transit-oriented development; mixing of uses; a range of housing & transportation options; a sense of place; distinct community boundaries; the preservation of open space and critical environmental resources; and community involvement in land-use decisions.	ZO: n while much of the Township is zoned for agriculture and low-density rural development (1 DU / 2 acres), zoning of those portions of the Township reserved for higher density (R-1 and R-2 Zones) is not designed to encourage the growth of traditional town or village centers; this seems at least in part due to the Township's preference for on-lot septic systems, its general prohibition of package treatment systems, and limited public utility availability to support such development patterns + the Village Commercial and Highway Commercial Zones permit mixed uses (commercial with accessory residential)
Allow for Traditional Neighborhood Development TNDs aim to be complete neighborhoods, with a mix of housing types, a network of well-connected streets and blocks, humane public spaces, and have amenities such as stores, schools, and places of worship within walking distance of residences.	ZO: x no specific provisions SALDO: x no specific provisions
Adopt Transferable Development Rights ordinance TDRs are a market-based tool, often used for the preservation of farmland and natural areas, by transferring the "development rights" from these areas to areas with the infrastructure to support	n TDRs are not employed in Elizabeth Township, but the Township has expressed an interest in exploring a regional TDR program with Lititz and Warwick



more intense/dense development.	
Update municipal comprehensive plan to promote sustainability Municipal sustainability begins with the comprehensive plan, which can help to set the vision and subsequent priorities for sustainability.	Joint Plan: + the new joint comprehensive plan with Lititz and Warwick will have sustainability as a focus area

Character and Aesthetics

Preserve, through zoning and other means, the community's significant historical resources A community's historical resources are its connection to its past and help to define it as a unique place, worthy of respect and stewardship.	SALDO: + subdivisions and land developments shall preserve Lancaster's heritage, including historic views, but it is unclear how this is enforced + demolition of historic properties can only occur with approval of the Lancaster County Planning Commission
Encourage and promote, through zoning, the adaptive reuse of historic buildings A key element in historic preservation is the preservation of the usefulness of the historic structure, which often relies on creative reuse opportunities.	+ Elizabeth Township has participated, along with Warwick Township and Lititz Borough, in Lancaster County's first comprehensive survey of historic structures ZO: x no specific provisions SALDO: + subdivisions and land developments shall preserve Lancaster's heritage, including historic views, but it is unclear how this is enforced
Preserve through ordinance incentives significant cultural and scenic resources In some cases, historic preservation is best achieved through other parts of the Code.	SALDO: + subdivisions and land developments shall preserve Lancaster's heritage, including historic views, but it is unclear how this is enforced
Enact ordinances limiting both noise and light pollution The livability of a place can be dramatically affected, for good or ill, by noise and lighting.	SALDO: x lighting standards do not require full cut-off luminaires ZO (outdoor signs): x does not prohibit uplighting of signs x permits interior lighting without limiting size (animated billboards) + "intermittent flashing" and "rotating" signs only permitted in Industrial Zone ZO (billboards): x failure to adequately regulate animated billboards + billboards prohibited in residential districts

Land Use and Community Character Recommendations

Remove Obstacles

- ✓ Develop regional comprehensive plan with Lititz and Warwick. **Ongoing**
- ✓ Once regional plan is complete with Lititz and Warwick Township, begin implementation. **ST**
- ✓ Amend ZO to allow for more flexible use of land (such as multiple principle uses per site) and mitigate against sprawl. **ST**
- ✓ Amend cluster development provision of ZO to allow for appropriate mix of uses. **ST**
- ✓ Enter into discussion with Warwick Township and Lititz Borough about the possibility of developing an intermunicipal implementation agreement that would allow Lititz and Warwick to provide for higher-density and more intense uses. **ST**

Create Incentives

- ✓ Consider developing a TDR sending area, similar to Warwick's, to help preserve farmland. Could use either existing commercial / industrial zones as receiving areas, or work with Lititz as a potential receiving area. **LT**
- ✓ Amend ZO to allow for the adaptive reuse of historic structures, as a means of helping to preserve the Township's distinctive character. **ST**

Enact Standards

- ✓ To accommodate expected future growth in the most environmentally responsible way, consider formally adopting smart growth principles into the ZO and SALDO and require development to conform to traditional patterns that foster more humane environments (with stronger neighborhoods, reduced auto dependence, a mix of uses, and affordable infrastructure). **LT**
- ✓ Amend ZO to more fully regulate outdoor signs and billboards; in particular, prohibit uplighting and strictly limit the size of internally-lighted signs. **ST**
- ✓ Amend SALDO to require outdoor lighting to only consist of full cutoff fixtures, which prevent light trespass and glare, increases safety, and protect the night sky. **ST**

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Global Warming & Climate Change

Greenhouse Gas Pollution Reduction

<p>Enact ordinances to encourage mixed use/Transit-Oriented Developments (TODs)</p> <p>Mixed-use and transit-oriented development is the hallmark of strong, well-planned communities. By reducing reliance on fossil fuels, they also have a positive impact on climate change.</p>	<p>ZO: + the Village Commercial and Highway Commercial Zones permit a mix of uses x other provisions, however, encourage a spreading out of uses rather than their concentration</p>
<p>Enact ordinances to allow live-work units and home-based businesses in residential zoning districts</p> <p>In existing residential districts, a certain degree of “mixed-ness” may be achieved by permitting and encouraging live-work units and home-based businesses. In an economy struggling to provide full employment, opportunities to work at home may allow a person to remain in his/her home.</p>	<p>ZO: + home occupations and businesses permitted in nearly every zone + the VC and HC Zones both permit commercial with accessory residential</p>
<p>Incentivize green building techniques for new developments and redevelopment projects</p> <p>“Green” buildings have been shown to have greater value, be more affordable to maintain, be more attractive to certain demographics, and to have a high return-on-investment in terms of local employment.</p>	<p>ZO: x no specific provisions SALDO: x no specific provisions</p>
<p>Promote and incentivize reforestation on open space</p>	<p>ZO: x no specific provisions SALDO: x no specific provisions</p>



<p>Reforestation provides greater habitat, variety of landscape, stormwater mitigation, and a sink for atmospheric carbon dioxide, the primary greenhouse gas pollutant.</p>	
<p>Encourage use of human-scale transportation (public transit, biking, walking)</p> <p>Studies have shown that communities which provide opportunities for non-motorized transport are healthier, happier, and have more disposable income. Such communities also emit fewer greenhouse gas pollutants through their reduced reliance on fossil fuels.</p>	<p>WRRC Plan: + inventories, and promotes the expansion of, a regional trails network</p> <p>SALDO:</p> <ul style="list-style-type: none"> + design standards for bicycle and buggy lanes specified + bicycle parking required in non-residential parking lots + street trees required + curvilinear streets not to be used adjacent to existing grid system + drainage grates to be bike-safe n sidewalk width 4' minimum (ITE recommends 5') n cul-de-sacs discouraged, not prohibited x residential blocks have a maximum length of 2000', and a minimum length of 300' (long blocks discourage walking) x blocks along arterials have a minimum length of 800' x local streets to be arranged so as to minimize through-traffic, which also minimizes pedestrian traffic and can increase congestion on arterials <p>ZO: x Elizabeth Township's dominant development pattern is not such as to encourage non-motorized forms of transportation</p>
<p>Develop, adopt and implement a Climate Action Plan to reduce greenhouse gas emissions</p> <p>A Climate Action Plan (CAP) is one way a community can consciously reduce its negative impact on the global climate, while also saving energy, reducing per capita infrastructure costs, and saving money.</p>	<p>WRCA: + Lititz Borough, and Warwick and Elizabeth Townships have participated in Lancaster County's first and, to date, only Carbon Audit, an assessment of the region's municipal greenhouse gas pollution emissions, and the cost of same</p> <p>n Elizabeth Township, as part of the region, has not yet moved on to the next step of developing a Climate Action Plan</p>
<p>Climate Change Adaptation</p>	
<p>Build resilience by developing, adopting and implementing an adaptation component to Climate Action Plan in the face of present, and</p>	<p>x No specific efforts have yet been made to adapt to anticipated future climatic conditions</p>



<p>projected future, impacts of climate change</p> <p>By many measures, climate change has already occurred and is already intensifying local weather patterns; this may be expected to continue.</p>	
<p>Adopt zoning and other provisions proactively to prepare for predictable impacts of climate change</p> <p>One impact that is already starting to be observed is an intensification of the water cycle, which will likely lead to periods of drought broken by periods of intense precipitation.</p>	<p>ZO:</p> <ul style="list-style-type: none"> ✗ floodplains defined in 2005, but we should expect them to expand as hydrological cycle intensifies with climate change ✗ today's 100-year storm will be tomorrow's 20-year storm <p>Ch 150—Stormwater Management:</p> <ul style="list-style-type: none"> ✗ relies on models of storms that don't incorporate climate change and the intensification of the hydrologic cycle ✗ in particular, § 150-16.B(2) relies on a publication from 1986; more recent data should be available

Global Warming / Climate Change Recommendations

Remove Obstacles

- ✓ Begin development of a regional Climate Action Plan, built on the Carbon Audit. This plan should include climate change adaptation as a major topic area. **ST**
- ✓ Work with knowledgeable institutions to take a new look at list of appropriate plant species, with consideration for projected northward shift of hardiness zones. Such a shift will make the continuance of certain species in the Township untenable over the long run, while also providing habitat for species typically found far to the south, now. **LT**
- ✓ Amend SALDO to require sidewalks have a minimum width of 5', when appropriate. **LT**
- ✓ Amend SALDO to prohibit the construction of new cul-de-sacs, which discourage walking. **LT**

Create Incentives

- ✓ Consider ways to incentivize, rather than prohibit, an increased mix and concentration of uses. **LT**
- ✓ Offer an expedited permitting process and waiver of some or all permit fees for "green" construction. **ST**
- ✓ Offer density bonuses, or other credits, to developers who offer to reforest the open space portions of their developments, or publicly-owned land. **ST**

Enact Standards

- ✓ Consider requiring an energy audit for all structures at point-of-sale. **ST**
- ✓ Reduce maximum block width in SALDO from 2,000' to 250'–500'. Shorter block lengths encourage walking, while longer lengths discourage it. **ST**

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Renewable Energy and Energy Conservation

Renewable Energy

Allow solar panels by-right when accessory to a principal use As the most accessible distributed, renewable energy technology for private property owners, it is important to reduce barriers to their installation whenever possible.	ZO: n no specific provisions
Establish a minimum percentage of solar-oriented lots or buildings in new developments One major barrier to installation of solar systems on roofs is the orientation of the building. In the northern hemisphere, solar works best on south-facing slopes.	ZO: x no such provisions SALDO: x no such provisions
Permit small wind energy conversion systems (WECS) in all zoning districts Small wind energy systems have minimal impacts, and are an important part of the overall energy mix.	ZO: n no specific provisions

Energy Efficiency and Conservation

Encourage new & renovated residential/commercial buildings to achieve LEED, Energy Star, or comparable standards In the U.S., buildings are responsible nearly half of all energy consumed. Any effort to reduce total	ZO: x no such provisions
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energy consumption, therefore, must include building energy efficiency as a crucial element. Energy-efficient buildings also tend to be more attractive investments and therefore have more stable real estate value.	
Add an energy element to the comprehensive plan Energy is the most crucial input to the economy, and it is arguable that comprehensive plans which do not consider energy are not truly comprehensive.	x ongoing Comprehensive Plan update with Lititz and Warwick includes no plans to incorporate an energy element

Renewable Energy and Energy Conservation Recommendations

Remove Obstacles

- ✓ Adopt an energy element in the comprehensive plan. **ST**

Create Incentives

- ✓ Offer an expedited permitting process and waiver of some or all permit fees for “green” construction. **ST**

Enact Standards

- ✓ Amend ZO or SALDO to require consideration of sun angles to permit structures to make beneficial use of solar energy. **ST**
- ✓ Either amend ZO or adopt a stand-alone renewable energy ordinance. **LT**

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Mobility and Transportation

Non-vehicular Transportation

Encourage Transit-Oriented Development (TOD) Mixed-use and transit-oriented development is the hallmark of strong, well-planned communities. By reducing reliance on fossil fuels, they also have a	ZO: + the Village Commercial and Highway Commercial Zones permit a mix of uses x other provisions, however, encourage a spreading out of uses rather than their concentration Comp Plan: + Goal: Promote alternative modes of transportation, including carpooling, biking, and walking, to reduce traffic congestion, conserve energy, and encourage a sense of community
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positive impact on climate change.	
Establish sidewalks in residential, village, downtown areas Sidewalks are the key element in safe, walkable, livable neighborhoods.	SALDO: n sidewalk width 4' minimum Ch 155—Streets and Sidewalks: n sidewalk width 4' minimum (ITE recommends a minimum sidewalk width of 5')
Require bike racks at appropriate locations in new/infill developments Appropriately-located bike racks can make cycling significantly easier and more attractive, while also protecting landscaping and infrastructure, which otherwise becomes the default bike “rack.”	SALDO: + bicycle parking required in non-residential parking lots

Roads and Streets

Codify “complete streets” principles in the SALDO and embrace PennDOT’s new Smart Transportation design standards which emphasize context-sensitive design Complete streets designed and maintained to ensure accessibility to all users, including motorized and non-motorized traffic and public transit. Such streets would include sidewalks, crosswalks, medians and raised crosswalks where necessary, pedestrian signals, bulb-outs, staggered parking, street trees, pervious paving and other green infrastructure measures, etc.	SALDO: x street hierarchy related solely to function and ADT, not to surrounding land-use Ch 155—Streets and Sidewalks: x no provision for pervious streets, even in low-use areas
Eliminate the creation of new cul-de-sacs Cul-de-sacs discourage connectivity, thus fostering more driving (and fossil fuel consumption) than otherwise would be necessary. Traditional neighborhoods only rarely incorporate these	SALDO: n cul-de-sacs discouraged, not prohibited Ch 155—Streets and Sidewalks: x permits cul-de-sacs



elements.	
Use future land-use plan to direct expansion of road capacities A well-planned community is one in which the land-use plan and the street plan are coordinated to create the community's vision for itself.	✗ Elizabeth Township presently has no future land-use plan
Maximize existing road capacity (e.g., traffic calming, travel demand management [TDM], etc.) before constructing new roads Often, much can be done to use existing road capacity more efficiently, reducing or eliminating the need for new roads. This reduces capital construction costs and ongoing maintenance costs, which can be considerable.	SALDO: ✗ local streets to be arranged so as to minimize through-traffic
Plan road improvements to prioritize safety and pedestrian/bike uses A road that has been designed with pedestrians and cyclists in mind is one which attracts such users, which promotes public health, a sense of community, saves energy and money, and can promote and support a human-scale business district.	SALDO: + drainage grates to be bike-safe + design standards for bicycle and buggy lanes specified

Parking

Establish a range of parking standards for commercial uses Appropriate parking standards can have far-reaching impacts on a community's development pattern. Often, maximum parking standards are warranted, rather than minimum (which	ZO: ✗ minimum standards set, which increase the cost of development and often lead to unnecessarily large parking areas
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unnecessarily increases the cost of development).	
Ordinances should require porous pavement, shade trees, landscape buffers in parking lots Such “green infrastructure” elements can result in a vastly superior built environment, from an aesthetic as well as a functional point-of-view.	SALDO: x trees not required in parking lots ZO and SALDO: x no requirement for permeable surfaces
Permit on-street parking wherever possible and appropriate The benefits of on-street parking are many: it provides a natural buffer between traffic and pedestrians, it reduces impervious surface, it reduces the cost of development, it reduces the urban heat island effect, it results in a more pleasing built environment, etc.	SALDO: n no standards for on-street parking ZO: x off-street parking required for all new buildings and uses, and altered or expanded uses.
Permit shared parking in non-residential zoning districts Shared parking, like on-street parking, has multiple benefits, such as the reduction of impervious surface, the reduced cost of development, and the reduced consumption of land.	SALDO: + some shared parking permitted ZO: n joint parking permitted, but severely limited (minimum commercial lot size of 3ac; 20% max shared parking)
Promote parking demand management techniques Parking Demand Management involves the efficient use of parking facilities through motorist information and enforcement. There are two major components to parking management: pricing and supply management. Benefits may include increased throughput, efficient use of the system, reduced demand and increased roadway capacity.	n no specific provisions, but also little need at present



Trails

Require the establishment and maintenance of pedestrian/bike trails that connect to public facilities, parks, open space, schools, business/shopping

Multi-use trails are a crucial element in a region's transportation network, and encourage walking and cycling for work, play and shopping. Trails have also been shown to significantly increase adjacent real estate values.

WRRC Plan: + this detailed plan includes discussion of the region's intricate trails network
ZO: n no requirement for establishment of trails in new subdivisions, but the Township's largely rural nature makes it attractive for cyclists and relatively safe to ride on the public street network

Mobility and Transportation Recommendations

Remove Obstacles

- ✓ Amend Chapter 155 to require sidewalks to be 5' in width when appropriate. **ST**
- ✓ Amend Chapter 155 to prohibit new cul-de-sacs. **ST**
- ✓ Adopt an Official Map to help implement WRRC Plan and ensure recreation needs of residents are met; to provide for trails and regional connections; and to ensure development occurs where Township officials deem most appropriate. **ST**
- ✓ Amend ZO or SALDO to require sidewalks in R-2 and VC Zones, at a minimum. **ST**
- ✓ Amend SALDO to allow through-traffic on local streets. **ST**
- ✓ Amend ZO to set maximum parking standards in addition to, or instead of, minimum standards. **ST**
- ✓ Amend ZO or SALDO to set on-street parking guidelines, for example in the R-2 and VC Zones. **LT**
- ✓ Amend ZO to loosen limitations on use of joint parking. **ST**
- ✓ Amend SALDO to require construction of public trails for subdivisions over a certain size. **ST**

Enact Standards

- ✓ Amend SALDO to permit or require (in certain circumstances) the use of pervious paving materials for streets and sidewalks. **ST**
- ✓ Adopt a "complete streets" policy that considers adjacent land-use in design decisions. **LT**
- ✓ Amend SALDO to require trees in parking lots. **ST**



Community Health and Safety

Public Health and Safety

<p>Require street trees and sidewalks in residential areas and village/downtown areas</p> <p>In addition to making for a more inviting environment for pedestrians, such amenities have been shown to improve public health.</p>	<p>SALDO: + street trees required x while there are design standards for sidewalks, there appear to be no requirements for them</p>
<p>Provide adequate active and passive recreational opportunities</p> <p>Exercise is a key element in an individual's health, and it has been shown that people exercise more regularly when given opportunity's to do so close to home and work.</p>	<p>WRRC Plan: + detailed plan for the future of recreation in the region encompassed by the Warwick School District</p>

Solid Waste and Recycling

<p>Require recycling centers/stations in new developments over a certain size</p> <p>In our modern society, the production of waste is nearly unavoidable, but there are many ways in which it can be minimized and, in some instances, eliminated. Recycling permits the more efficient use of natural resources, while also encouraging a more beautiful, livable environment.</p>	<p>+ Elizabeth Township hosts a recycling day, staffed by volunteers, on a monthly basis at the Township building ZO: x no such provisions</p>
<p>Adopt a construction debris demolition ordinance or require construction waste management plan</p> <p>A great deal of the waste generated by our modern society comes from development and</p>	<p>ZO: x no such provisions</p>



redevelopment. A municipality can significantly reduce this waste stream by requiring construction waste to be reused or recycled.	
Require salvage/material recycling in demolition permit or land development approval Much of the waste generated from development and redevelopment isn't waste at all, and can be recycled back into productive use.	ZO: x no such provisions

Housing Diversity and Accessibility

Create incentives to promote a diverse housing supply that includes affordable housing A diverse community is a much more robust community, both economically and socially.	ZO: + R-2 Zone permits a range of housing types
Locate housing within walking distance of businesses, services, employment centers, public transportation Such a development pattern encourages walking and cycling, which can greatly improve the public's health, rather than driving, which reduces it.	Zoning Map: + R-1 and R-2 Zones are located near commercial and industrial zones
Permit smaller lot sizes in appropriate residential zoning districts Smaller lot sizes can promote greater diversity of uses, which a complete neighborhood must have and which promotes walking and cycling.	ZO: x the R-2 Zone permits lots as small as 10,000sf, but only with public water and sewer. Since there are neither of these anywhere in the Township, and no plans to install any, the effective lot size is 1 ac
Permit accessory dwelling units (in addition to primary residence) on residential lots One way to provide affordable housing is to permit accessory dwelling units. Often called "in-law quarters," they may also allow extended families to	ZO: n ECHO housing and accessory apartments permitted uses in many residential districts, but only relatives may occupy these units n elder cottage to be demolished within 12 months after a relative no longer occupies it + both the Village Commercial and Highway Commercial Zones permit housing accessory to commercial uses

live close together, which has numerous public and private benefits.	
Permit second-story (and greater) residential uses in commercial and mixed-use zoning districts Perhaps the one element which most simply distinguishes towns and villages from residential areas is the existence of vertical mixing of uses, with retail/offices/etc. on the ground floor and homes above. Such patterns also promote walking and cycling, which improves the public health.	ZO: n no such provisions

Community Health and Safety Recommendations

Remove Obstacles

- ✓ Amend SALDO to require sidewalks in appropriate cases, or a fee-in-lieu. ST
- ✓ Consider appropriate locations for public water and sewer, to permit the R-2 Zone to develop at a higher density. LT
- ✓ Amend ZO to permit non-family to reside in accessory apartments and remove elder cottage demolition requirements. ST

Create Incentives

- ✓ Consider ways to institutionalize municipal recycling, as volunteers may one day lose energy or interest. LT

Enact Standards

- ✓ Amend ZO to require recycling centers in the R-2 Zone, when higher densities are used. LT
- ✓ Adopt an ordinance to require a construction waste management plan, and maximum recycling of construction materials. LT

Food Production and Security

Incentivize through ordinances the permanent	Zoning Map: + large areas of contiguous farmland are zoned for agriculture, which will help to preserve the critical mass necessary to maintain these lands for farming
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<p>preservation of agricultural lands</p> <p>Agricultural lands are a non-renewable resource that, in a world of ever-increasing population, warrant protection.</p>	<p>n no provision for the use of Transferable Development Rights as an incentive for permanent preservation</p>
<p>Permit a broad range of agricultural uses by right in rural and semi-rural areas</p> <p>One way to steward the agricultural economy is to permit it to diversify by allowing complementary uses.</p>	<p>ZO: + permits a broad range of agricultural uses in appropriate zones</p>
<p>Permit farmers' markets, farm stands, community gardens in public/open spaces, residential vegetable gardens</p> <p>These are all key elements in the agricultural economy, and in particular help to promote the <i>culture</i> of agriculture.</p>	<p>ZO: + the A, R, R-1 and R-2 Zones all permit roadside stands n no specific provisions for farmers' markets, community gardens or residential vegetable gardens</p>
<p>Permit small-scale farming uses (e.g., egg production) w/ complementary structures in all residential or mixed-residential zoning districts</p> <p>Small plots and micro-animal operations are capable of producing a great deal of food for families and their neighbors, thus representing an important element of food security.</p>	<p>ZO: + agriculture (of some scale or other) is permitting in nearly every zone</p>
<p>Permit small-scale manufacture of food products within appropriate zoning districts</p> <p>Such operations help to promote local foods and support a local economy, while also providing food security.</p>	<p>ZO: n food processing is only permitted in the Industrial Zone n however, most "small-scale" food manufacturing, such as canning and baking, is regulated by the state health department and would fit under "farm occupation," "home occupation" or "home business"</p>
<p>Allow composting as part of gardening and small-scale farming uses</p> <p>Composting is a way to divert one of the primary</p>	<p>ZO: x importing materials for composting prohibited + spent mushroom composting permitted in A Zone n otherwise, no specific provisions</p>

sources of municipal waste away from the waste stream and back into productive use: soil. All sustainable agricultural operations, as well as home gardens, much incorporate composting.	
Require or encourage fruit and nut trees as part of landscaping requirements Another important piece of the food security puzzle is “edible landscaping.” Native fruit and nut trees can provide a food source for humans as well as birds and other wildlife.	ZO: n no specific provisions SALDO: n no specific provisions

Food Production and Security Recommendations

Remove Obstacles

- ✓ Amend ZO to permit the importation of materials for composting, at least into the Agricultural Zone. ST
- ✓ Amend ZO to specifically permit composting in all districts, and to prevent homeowners’ associations from prohibiting same. ST

Enact Standards

- ✓ Amend ZO or SALDO to permit or require a portion of landscaping to be fruit and nut trees edible to humans. ST
- ✓ Adopt multi-municipal TDR ordinance provisions to add another landowner incentive to preserve agriculture and create a land preservation finance tool. LT

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Conclusions and Summary. Elizabeth Township has taken great strides to achieving greater sustainability at the municipal level, within the framework of its policies, plans, and regulations as they relate to environmental, social, and economic issues. Specifically, the Township has a strong vision of itself as a rural and agricultural area, and has developed policies and ordinances which promote the furtherance of this vision. Elizabeth Township has achieved high marks in the categories of natural resource protection, water quantity and quality, land-use and community character, and food production and security.

Yet, there is room for improvement on the Township’s path to sustainability. Specifically, Elizabeth lacks any regulatory guidance on appropriate standards for renewable energy systems, which ought to be encouraged to the extent that such systems support the Township’s vision for itself. Perhaps the largest stumbling block for achieving sustainability is that Elizabeth Township, at present, lacks a comprehensive plan; fortunately, this impediment will soon be



removed. EMC staff believe that the ongoing planning process is a crucial first step in crafting a comprehensive vision for the Township's future, and then making that vision a reality.

Seeking sustainability requires both continued vigilance and extensive patience. Accordingly, the recommendations made in this report are intended to *broadly* guide efforts to achieve sustainability, above and beyond the Township's existing efforts. It is notable that many of the recommendations are interrelated both within their own subject area and under the broader umbrella of sustainability. For example, expanding resource protection regulations can reduce greenhouse gas emissions while also providing protection from flooding, as well as having wildlife habitat benefits. Decisions regarding which of the recommendations to implement, or which are even feasible, should be considered first by the Planning Commission in consultation with Township staff and consultants, appointed and advisory officials, and the public, with recommendations provided to the Board of Supervisors. Ultimately, final approval for any recommendation rests with the Elizabeth Township Board of Supervisors. EMC staff is ready to answer questions, provide additional information, and otherwise assist as the Township proceeds forward with implementation.