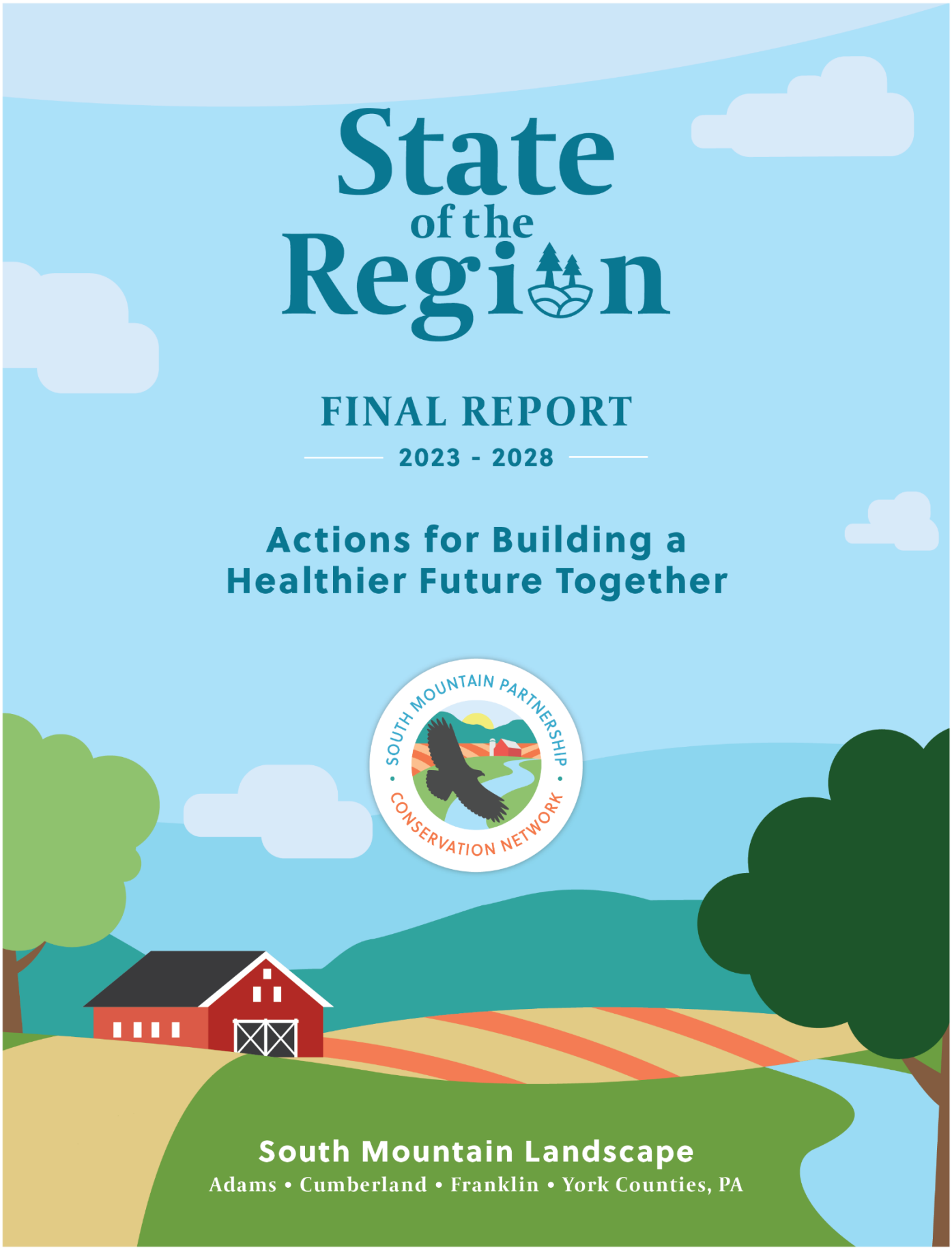
State of the Region

FINAL REPORT

2023 - 2028

Actions for Building a Healthier Future Together



South Mountain Landscape

Adams • Cumberland • Franklin • York Counties, PA

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Foreword

This region is our home. Working farms and woods, creeks and groundwater, fish and wildlife, natural areas, historic downtowns, and an impressive amount of beautiful parks and forests are the backdrop to our lives. Our home is facing change. The loss of working farms, woods and wildlife, runaway development, water pollution, air pollution, less active lifestyles, flooding, and new pest problems are picking up speed. Despite the different opinions, perspectives, and worldviews that each of us carry, we all share a common trait: we call the South Mountain landscape home. We believe in the power of this common ground to build conversation around the future of this landscape - and our future while living within this landscape.

South Mountain Partnership and Partners are thrilled to share this State of the Region Final Report with the community. This document will be a living document that will be updated as we learn more and make progress. Please check our website often for updated versions. We are excited about the opportunity to engage new partners and existing partners.

We hope you will join us in this effort. Please read the following report and let us know how you see yourself or your organization joining the Partnership in improving the health of our home.

All the Best,

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CHAPTER 1: Introduction to South Mountain

Introduction to the Project and This Report

Over the last few decades, the South Mountain region in south-central Pennsylvania (Adams, Cumberland, Franklin, and York counties) has seen significant growth and land development. The South Mountain Partnership (SMP), recognizing these impacts of growth, has determined through the State of the Region project to measure and report on how the region's many resources are being affected by it and to work with its partners to respond to it. The project was designed with a locally led, bottom-up approach and provided opportunities for collective impact on conservation and environmental topics that often overlap with public health. The project developed tools that provide observations about the current conditions of our landscape and how to stabilize and improve health while realizing the SMP vision of a landscape of conserved resources and vibrant communities sharing a common sense of place and collaborating on well-planned growth and sustainable economic development. This effort is the first time since the creation of the SMP that such a multi-county project has been undertaken.

Connecting portions of Adams, Cumberland, Franklin, and York Counties and covering approximately half a million acres, the South Mountain Conservation Landscape is one of Pennsylvania's most unique regions as it is the northern terminus of the Blue Ridge Mountains where the Piedmont and Great Valley regions also converge. The region's most prominent geographic feature is the forested uplands of the South Mountain ridgeline, but fertile agricultural valleys shape this landscape as well. No single element or feature defines this region of south-central Pennsylvania, but rather it's the unique convergence of diverse natural, cultural, agricultural, and recreational elements that makes this landscape so special. The South Mountain Conservation Landscape is one of eight Conservation Landscapes, an innovative approach that the Pennsylvania Department of Conservation and Natural Resources (DCNR) has developed to work with partners on conservation, sustainability, and recreation outside of traditional state park and forest boundaries. The South Mountain Partnership is a network of partners guiding the efforts to protect and promote the region's agricultural, natural, cultural, and recreational. Our work is made possible by a public-private partnership between DCNR, the Appalachian Trail Conservancy and many local partners.

This Final Report is one of three deliverables of the SOTR. It includes a presentation of the measurements (or "metrics") that have been collected and evaluated to quantitatively evaluate how the region is doing across five topics:

- nature
- agriculture and food
- history and culture
- recreation
- public health

This Report also includes how those measurements were identified and evaluated, a discussion of the regional challenges that have been identified, and a presentation of recommendations for how to

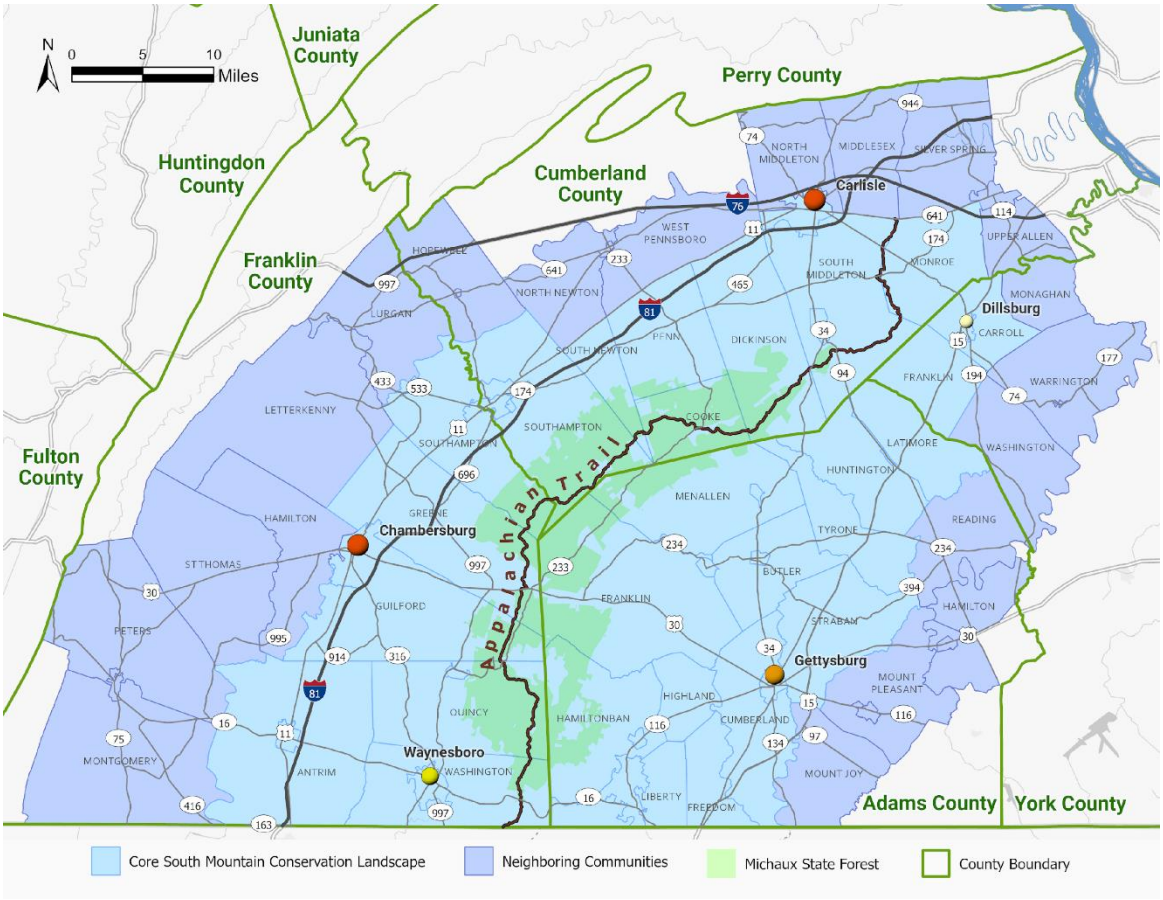
address those challenges for decision-makers across the region. The other products of this effort are a Report Card that presents the measurements and their evaluation and a set of interactive maps that show the metrics and other data on the regional challenges. A State of the Region website has also been developed as part of the South Mountain Partnership website – https://www.southmountainpartnership.org/ that will include this Final Report, the Report Card, and the interactive maps.

The entire project was financed in part by a grant from the Community Conservation Partnership Program and the Environmental Stewardship Fund under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.

Introduction to the Region

The core of the landscape is a distinct area of south-central Pennsylvania that is nearly a half-million acres in size and includes portions of Adams, Cumberland, Franklin, and York counties. South Mountain, the prominent topographic feature of the region, is the northernmost extension of the Blue Ridge Mountains, a main geologic province of the Appalachian Mountains that originates in northern Georgia and ends here. The folds of forested uplands that form the South Mountain ridgeline run generally north-south and reach elevations of nearly two thousand feet.

Adjoining this core area are the neighboring communities consisting of another half-million acres, and thus, the region known as South Mountain totals over one million acres (1,048,413 acres, to be exact), larger than the state of Rhode Island. The map below shows the South Mountain region, including the core area, neighboring communities, Michaux State Forest, and the Appalachian Trail.



This report presents information about both the South Mountain region and the larger 4-county area that it lies within. The South Mountain footprint, including the core and neighboring communities, is shown on the map above and includes 74 municipalities. The larger 4-county area includes 161 municipalities.

The South Mountain landscape's natural resources are complex. The forested uplands are surrounded by lower-laying, fertile valleys inhabited and used as an essential source of natural resources since the Native American era. The Cumberland Valley west of the ridge is part of the "Great Valley," a series of valley lowlands within the Appalachian Mountains system stretching from northern Alabama to southern Canada.

Agriculture has always been an important part of the South Mountain landscape and remains so to this day. It is estimated that there are over 858,000 acres of working farmland in the 4-county area that provide a rich bounty of food and other crops (source: USDA, Census of Agriculture). Within this agricultural resource lies the Adams County Fruit Belt, which has an economic impact in Adams County of $580 million annually and has an overall economic impact of $1.16 – $2.32 billion on the Commonwealth's economy. Adams County is the 6th largest producer of apples in the United States and accounts for 70% of the apples grown in Pennsylvania. (source: Economic Impact Model for the Historic South Mountain Fruit Belt in Adams County, Pennsylvania, 2016)

The South Mountain region has a rich human history that predates European contact in the 17th century, beginning with the Paleoindian period nearly 10,000 years ago. While many visitors may be aware of the

region for its Civil War history or its 18th and 19th century iron industry period, fewer visitors are aware of the great antiquity of use by Native American populations.

> *Physical remnants of many of these indigenous histories abound on the landscape today, and include archaeological sites such as hunting camps, stone tool debris, and stone quarries mined for the native rock metarhyolite, a sturdy material that was very popular for stone tool manufacture for thousands of millennia. The material remnants of these histories continue to shape the landscape today, and a knowledge of these resources is critical to the region's sense of place, as well as stewardship of the ancient landscape. (source: Indiana University of Pennsylvania, Department of Archeology)*

Additional information on the history of some of the Native American people's activities in South Mountain can be found in a variety of studies, such as this study done by Indiana University of Pennsylvania's Department of Archeology.[1]

The region is dotted with historic towns and villages, the larger ones being Gettysburg, Chambersburg, Carlisle, Mechanicsburg, Shippensburg, and Waynesboro. Crossed by historic transportation routes dating back to pre-colonial times and including the Lincoln Highway, the nation's first cross-country improved road, the region has an abundance of historic places, buildings, and objects. Nevertheless, only 38 municipalities of the 161 within the 4-county area have historic preservation ordinances, either through the Historic Districts Act, the Municipalities Planning Code, or both (source: Inventory and Analysis of Historic Preservation Ordinances in Pennsylvania Municipalities, Center for Rural Pennsylvania, 2018).

The South Mountain region also has incomparable outdoor recreational resources. With the Appalachian National Scenic Trail, known locally as Appalachian Trail, one of the premier hiking trails and one of eleven National Scenic Trails in the nation, running through it, the region also boasts hundreds of miles of other trails, four state parks, a state forest (Michaux State Forest, the first in the Commonwealth), trout streams, game lands, state-designated bike routes, streams and lakes to boat on, snowmobile and ATV trails, mountain biking and horseback riding trails.

Recognizing the significance of this landscape and these resources, DCNR, in partnership with the Appalachian Trail Conservancy, created the South Mountain Conservation Landscape in 2006, one of eight conservation landscapes in the Commonwealth.

Demographics and Housing Summary

There are over 406,000 people living in the 74 municipalities that constitute the South Mountain region (core and neighboring communities), which has seen a growth rate of 8% from 2010-2021. This exceeded the growth rate of Pennsylvania and that of three of the four counties that the region lies in. Cumberland County is currently the fastest-growing county in the Commonwealth.

In the region, there has been an increase in diversity of the population, with increases in persons who identify as Black, Hispanic, and Asian-American. However, the majority of the population (nearly 90%) identifies as white. The number of people under the age of 18 has only slightly increased over this time

[1] Lara Homsey-Messer, "Prehistoric Use and Facilitating Modern Stewardship of the South Mountain Metarhyolite Quarries Through Geochemical Fingerprinting," (2019) https://www.academia.edu/40226902/INTERPRETING_PREHISTORIC_USE_AND_FACILITATING_MODERN_STEWARDSHIP_OF_THE_SOUTH_MOUNTAIN_METARHYOLITE_QUARRIES_THROUGH_GEOCHEMICAL_FINGERPRINTING).

period, while the population over 65 years has seen very significant increases. There are over 170,000 housing units located in the South Mountain region, mostly owner-occupied. Of all the households, about 5% do not have access to a car.

The tables below provide more demographic and housing details.

South Mountain Region: Demographic and Housing Data

Topic	2010	2021	% Change
Total Population	376,354	406,293	8.0%
Population under 18 years of age	84,428	85,945	1.8%
Population over 65 years of age	57,713	79,805	38.3%
White population	350,998	364,426	3.8%
Black population	9,607	13,922	44.9%
Asian population	4,467	7,807	74.8%
Other Population	5,031	5,423	7.8%
2 or more races	5,852	13,671	133.6%
Hispanic population	14,766	21,682	46.8%
Total Housing Units	155,472	170,248	9.5%
Number of Households with no car	7,588	7,983	5.2%

Topic	2010	2021
% under 18	22.4%	21.2%
% over 65	15.3%	19.6%
% White	93.3%	89.7%
% Black	2.6%	3.4%
% Asian	1.2%	1.9%
% Other	1.3%	1.3%
% 2 or more races	1.6%	3.4%
% Hispanic	3.9%	5.3%
% Owner-Occupied Units	74.9%	73.7%

Development Trends

Over the last few decades, this population growth and proximity to I-81 have resulted in significant land development and resultant growth pressure on the region's resources. Over the time period of 2011-2019, it is estimated that there have been over 17,000 acres converted to developed land from undeveloped and farmland (source: USGS, National Land Cover Dataset, 2019). As shown in the table above, there has been a 9.5% growth in the number of housing units in the region, outpacing population growth during this same time. Most recently, significant numbers of large warehouses have been

constructed, particularly along I-81, reflecting changes in retail shopping and distribution, as well as the development of utility-scale solar facilities.

CHAPTER 2: Project Overview and Process

SMP in collaboration with the four local county planning agencies in Adams, Cumberland, Franklin, and York counties, undertook this project to develop tools that provide observations about the current conditions of the landscape and recommendations on how to stabilize and improve its health while realizing the SMP vision: *a landscape of conserved resources and vibrant communities sharing a common sense of place and collaborating on well-planned growth and sustainable economic development.* This State of the Region project is the first-ever attempt in the South Mountain region to measure how the region is faring across a variety of environmental-related topics, using quantitative analysis of measurements ("metrics"). Moreover, it is the first time such an effort has been taken in Pennsylvania that includes multiple counties. While it is modeled on the State of the Environment Report Card by Berks Nature, this project reflects the unique landscape that is South Mountain and is informed by trends, challenges, and issues facing this region.

Goals and Objectives

There were five goals and five objectives established for this project. These goals and objectives were the results of a consensus discussion with the project Steering Committee, which consisted of representatives from the four county planning agencies and SMP and DCNR staff (a list is included in the Appendix). The goals and objective are listed below:

Goal #1: Realize South Mountain Partnership vision

Goal #2: Communicate key regional observations, trends, and challenges

Objective: Identify key trends and challenges

Objective: Apply reproducible metrics to evaluate the status of conditions over time

Goal #3: Engage a variety of stakeholders and grow the Partnership constituency

Objective: Use Report Card and interactive maps to engage the public to support actions and identify funding opportunities

Objective: Build a community that understands trends and challenges

Objective: Provide stakeholders with data and context necessary to take action to protect and enhance public health, recreation, conservation, and quality of life

Goal #4: Develop recommendations and tools

Goal #5: Facilitate collective and collaborative actions to impact identified challenges

Outcomes

Four key outcomes were identified in the early stages of the project. They are:

Outcome #1: A snapshot of current public health and environmental health conditions that shape the South Mountain quality of life and quality of place.

Outcome #2: Presentations to the various constituencies.

Outcome #3: Tools and strategies to protect and leverage natural resources and outdoor recreation to support the economy through sustainable development.

Outcome #4: Collaboration with county agencies, partners, and staff to identify and implement actions (projects, programs, policies, funding) using the Report Card and interactive maps as a foundation.

The constituencies mentioned in Outcome #2 include local, county, and state officials (elected, appointed, and staff), SMP partners (a group of over 50 organizations), other environmentally focused interest groups, and the general public.

Components of Project

There are four major components in the State of the Region project: A Report Card, five interactive maps, a Final Report with recommendations to address regional challenges, and a project website.

- The Report Card is intended to be a summation and evaluation of the current state of the region based on key topics and metrics to measure those topics The monitoring of select topics and metrics allows the region's stakeholders to gauge progress on identified issues and provides motivation to take action that can lead to a better future for the region. It has been printed for distribution across the region, and an online version is available on the South Mountain Partnership website: https://www.southmountainpartnership.org/state-of-the-region. More details on the metrics is found in Chapter 3.
- The five interactive maps are online presentations of geospatial data related to natural resources, agriculture resources, high-priority conservation areas, historic and cultural resources, and recreation resources. More detail is found in Chapter 4. All of these maps are also available on the South Mountain Partnership website.
- The Final Report with recommendations for action addresses the significant challenges that face the region. As part of these recommendations, to move forward on implementing actions, an "action plan" is also included that identifies actions, suggested lead entities, suggested partner entities, potential funding sources, next steps, targeted audience(s), existing resources, and measurements.
- The project website, https://www.southmountainpartnership.org/state-of-the-region/ houses all the deliverables mentioned above. It is also a resource for residents and other interested parties with information on how they might be able to help individually address the regional challenges facing the region.

Summary of Process

This project has been the result of a collaborative, consensus-driven process that has involved a steering committee, SMP staff, DCNR staff, SMP committees, and SMP partners over a sixteen-month process.

Steering Committee Formation and Initial Identification of Topics

A steering committee was formed in August 2022 and consisted of a representative and alternates of the four county planning agencies, SMP staff, and DCNR staff. The Steering Committee provided insight,

oversight, professional expertise, and data and was invaluable in producing this State of the Region project. The Steering Committee met monthly throughout this process.

As a tool to provide observations on the environmental health of the South Mountain, specific measurements ("metrics") needed to be identified, collected, and analyzed. Presenting these metrics in a meaningful way, with some context, suggested organizing them into topics.

An initial discussion of topics and metrics took place during a kickoff meeting held on August 24, 2022. This meeting allowed for the initial discussion of topics and metrics and provided an opportunity to further understand regional issues, gather names for the subject matter advisor group (see below), and explore the opportunities for public engagement and outreach. Five topics - broad categories of areas that should be measured and evaluated - were identified: nature, recreation, history and culture, agriculture and food, and public health. These topics align with the SMP's mission.

Initial Questionnaire and Survey

An initial questionnaire was developed and distributed to the Steering Committee and all of the SMP committees to provide additional public engagement related to issues and concerns to be addressed. After the questionnaire was completed, a survey was developed and sent to Partners, Research Corps members, and other key stakeholders to ensure a robust amount of public input.

Plan Review

To ensure that relevant county policies and planning initiatives were included in the identification of issues and challenges to be measured and evaluated, all the county comprehensive plans and greenway/park plans were reviewed, as well as other relevant plans. This extensive plan review also revealed that this State of the Region project was supported by and supports the goals in the county comprehensive plans. A list of plans reviewed is included in the Appendix.

Tourism Forum

The important role that tourism plays in the region (including visitor attractions such as a national military history park, four state parks, a state forest, the Appalachian Trail, and agritourism) was also considered, as was the recognition that many visitor experiences depend on the quality of natural assets, including outdoor recreation, farm products, and seasonal events. A tourism forum with the convention and visitors' bureaus was held, with three of the four bureaus participating to discuss which topics and regional resources might potentially improve the quality of visitor experience.

Subject Matter Advisor Meetings and Recommendations for Metrics

To further help inform the selection of metrics to be used to measure the environmental health of the South Mountain Region and to specifically recommend potential metrics to include, local subject matter advisors were recruited across all the topics. These volunteer advisors came from county planning agencies, historical societies, public health advocates, watershed associations, land conservancies, and other interest groups.

All the public input efforts mentioned previously were compiled and made available to the panel of Subject Matter Advisors prior to their first meeting held on October 28, 2022. The first meeting discussed the scope and purpose of the work, the process of topic determination and metric selection, and likely data sets available for metrics. Five breakout groups were formed based on the five topics:

Nature, Agriculture/ Food, Historic/ Cultural, Recreation, and Public Health. Facilitated discussions of these topics and possible metrics to be used to measure them led to robust discussions of the value of different metrics, the availability of data to measure metrics, and the format of such data for reporting. Over 80 potential metrics were identified at this first meeting.

The results of this meeting were shared with the project Steering Committee. The Steering Committee recommended that these potential metrics be compared to the issues that had been identified in various relevant plans (such as county comprehensive plans) during the plan review phase of the project to ensure that all these issues could be aligned with the potential metrics. This analysis of the alignment of issues and potential metrics was performed, and it found that all of the issues in relevant plans were able to be addressed by the potential metrics. The Steering Committee further refined the potential metrics for further consideration by the Subject Matter Advisors. The Subject Matter Advisors were asked to comment virtually, and the Steering Committee further considered topics and metrics during the month of November.

In order to be included in the final set of metrics, all data had to be currently collected (i.e., no new data sets were to be created), the data had to be available either at the larger 4-county area or, the smaller South Mountain footprint, and the data needed to have some comparative data available (e.g., historical data). During this period, the Eastwick Team investigated the availability of different sets of data associated with identified potential metrics.

A second series of five breakout group meetings, one per topic, were held virtually with the Subject Matter Advisors during the week of December 12, 2022. These meetings provided an opportunity for further review and discussion based on a data matrix the graphically depicted data availability, the ability of a metric to measure change over time, whether a particular metric is of value to the intended audience, whether a particular metric should be reported on in a special report, and whether a particular metric is aspirational for the future (given the availability of current data). The matrix used for these discussions and notes from the discussion is included in the Appendix. Based upon the experience that Berks Nature had when it developed its Report Card, the maximum number of final metrics selected for inclusion in this Report Card will be no more than twenty-five so as not to overwhelm the reader.

The Historic & Cultural category required more in-depth discussion to eliminate possible ambiguous metrics and determine availability of other data sets. A meeting with Pennsylvania Historical and Museum Commission (PHMC) staff was held with Eastwick and SMP staff. PHMC staff recommended a metric of historic resources be used that would also include cultural resources. One of the potential metrics – visitor counts – is not collected by PHMC or any other single entity and thus is not viable for inclusion.

It was recognized that to provide context for each metric, some comparative data needed to be found and used. For example, the metric of preserved land in and of itself was less informative to the audience than comparing it to historical data (i.e., how much preserved land existed in the region in 2010) or comparing it to the total land area of South Mountain. Potential comparative data sets were then determined by the Eastwick Team and the Steering Committee.

Preliminary Recommended Metrics

Based upon all of this work, further investigation of current data availability, availability of historical data, and the geographic scale of the available data was performed by the Eastwick Solutions team. The

results of this investigation and additional discussion with the Steering Committee led to the following preliminary recommended metrics, grouped by topics:

Nature

- Acres of preserved land
- Acres of forest land
- Miles of impaired streams
- Acres of wetlands
- Miles of riparian buffers

Agriculture/ Food

- Acres of farmland
- Acres preserved farmland
- Access to fresh food
- Crop production
- Food deserts/swamps

Historic/ Cultural

- Number of existing/potential historic sites
- Number of cultural resources

Recreation

- Acres of public parkland
- Miles of trails
- Proximity to trails & parks (walking and driving)

Public Health

- # of bad air days
- Access to public transportation
- Extreme heat/rain/flood events

At the January 2023 Partners Meeting, attendees were asked for their input into the selection of metrics. The fifty attendees ranked their top three metrics in an interactive poll. This coincided with the time period that the Steering Committee was discussing which metrics should be included, so there was an overlap between the two groups.

Refinement of Metrics

Multiple meetings of the Steering Committee were held to discuss metrics, data sources, values to be used (e.g., total acres, % of wetlands preserved, number of persons, etc.), and comparative data sets for those metrics (e.g., trend data, % of total data, etc.). The Steering Committee added several metrics, including acres of forested land, acres of preserved wetlands, walking proximity to trails and parks, driving proximity to parks, driving proximity to water, acres of parkland (later renamed acres of public open space), access to fresh food and access to public transportation. They also requested the removal of one metric – crop production – and replace it with an alternative metric to better measure food.

After some research, data on acres of vegetable crops was selected by the Eastwick Team. However, after analyzing the data available, it was clear that it was not a full representation of acres of vegetable crops, and it was removed. Some of the metrics initially identified were the same data sets (access to

fresh food and food desert), while others did not provide useful information (access to public transportation), and these were not used in the final list.

In addition, two metrics that were combined to reflect climate change (extreme heat and extreme rain events) were split apart to provide more specific measurements.

Additional research by the Eastwick Solutions team and additional discussion with the Steering Committee after reviewing the initial analysis of metrics resulted in a final list of seventeen metrics to be analyzed, mapped, and included in the State of the Region Report Card. Some of the terminology for the metrics was revised, and the final list of metrics is as follows:

Nature

- Streams and Creeks
- Riparian Buffers
- Wetlands
- Preserved Land
- Forested Land

Agriculture and Food

- Farmland
- Preserved Farmland
- Orchards

History and Culture

- Historic Places

Recreation

- Public Open Space
- Trails and Bike Routes
- Walking Proximity to Trails and Parks
- Driving Proximity to Trails
- Driving Proximity to Water Access

Public Health

- Air Quality
- Extreme Heat Days
- Extreme Rain Days

More details on the metrics is included in the next Chapter.

Final Metrics Data Collection, Analysis and Mapping

Following this metrics identification, data was collected from a variety of data sources. The most recent data available (typically 2023) was compared to historic data (typically 2010 data) whenever possible. Information specific to the South Mountain region of one million acres was used where available, but some data was only available at the 4-county level and was presented at that geographic scale.

These data sets were mapped, and the tabular data was analyzed. The details of each metric and analysis are presented in the next chapter. Data sources for all metrics are provided in the Appendix.

Evaluation of Metrics

To produce an easily understood evaluation of these metrics that would help provide observations on the state of the region, a three-category ratings typology was created. If the metric was evaluated as trending in a positive direction, it was given a "thumbs up" rating. If it was trending in a negative direction, it was given a "thumbs down" rating. If there was insufficient data to evaluate, or if additional information was needed and unavailable, the metric was given a "thumbs sideways." After a robust discussion and polling that included the Steering Committee and a presentation to partners at the Spring Partnership Meeting, the Steering Committee came to a consensus on the ratings.

The State of the Region Report Card

To present these metrics, their evaluation, and how individuals and households might help address the issues represented here in a graphically engaging way, a Report Card document was produced. Intended for the general public and for widespread distribution, the Report Card was formatted as an 8-panel pocket brochure.

Future Report Cards

The SMP intends to update the Report Card on a regular basis, perhaps every 5-8 years. Future Report Cards may use some or all of the metrics included in this inaugural one, but it is likely that improved data collection and improved technology will allow future Report Cards to present additional information to inform future actions. Furthermore, the aspirational metrics identified by the Subject Matter Advisors will also be considered for inclusion and are attached in the Appendix as part of the memo summarizing the Subject Matter Advisors deliberations.

Interactive Map Development

During and after the identification, collection, and analysis of the metrics data, GIS data was also collected to be presented in a series of interactive maps. These maps are further described in Chapter 4.

Regional Challenges

Identification of high-priority regional challenges was an essential part of this project. Based on the robust public input, plan review, and determinations of the Steering Committee, high-priority regional challenges were identified and then addressed by recommended actions. Chapter 5 describes the process and results of this regional challenge identification.

Recommended Actions and Action Plan

Following the identification of the high-priority regional challenges, a series of recommendations to address these challenges were developed. Chapter 6 describes in detail how these recommendations were initially developed and then vetted to arrive at the highest priority recommended actions. These actions will be the blueprint that SMP will follow in upcoming years, collaboration and cooperation with partners, local, county, and state governments, and other stakeholders.

Chapter 7 presents these highest priority recommendations that SMP will shepherd in a summary table – an “Action Plan” - with details for implementing the actions. The Action Table identifies which organization or agency might lead the action, which organization might support the action, the timeframe within which the action might be taken, potential funding sources, existing resources to assist in implementation, the intended audience for the action, and next steps to take for implementation.

CHAPTER 3 Metrics Details and Analysis

This chapter presents the seventeen metrics that have been identified for evaluation and inclusion in the Report Card. Each metric is grouped into one of five topics – Nature, Agriculture and Food, History and Culture, Recreation, and Public Health. In addition, a short definition of the metric is presented, as well as a description of why each particular metric is important in determining the health of the region. A table summarizing the analysis of the metrics is presented at the end of this chapter. The data sources for all of the metrics are included in the Appendix.

Nature

Streams and Creeks: Clean water is crucial for both wildlife and people's health. The South Mountain region is home to the starting points of many streams; keeping local waters clean helps everyone downstream. The specific metric used here is streams failing to meet one or more of the PA Department of Environmental Protection (DEP) water quality standards. It should be noted that streams are determined to be impaired only after water sampling is done and that there is no universal sampling in all streams, and it can be difficult to remove a stream from this list once it is listed. In the South Mountain region, there are nearly 2,400 miles of impaired streams, about 48% of the approximately 5,000 miles of streams in the region.

Riparian Buffer: Riparian buffers are protective zones alongside streams that keep the water clean and cool. They offer shade, filter rainwater, and stormwater runoff, and stop stream banks from eroding. Following PA DCNR protocol, this metric only includes buffers with a minimum buffer of 35 feet. There has been a loss of about 1 mile of riparian buffer from 2013 to 2018.

Wetlands: Wetlands act like sponges, soaking up rainwater and stormwater and preventing folds. They are also important homes for wildlife. Wetlands are identified by the existence of certain soils, vegetation and hydrologic conditions. There have been approximately 2,240 acres of wetlands preserved to date. There are approximately 25 million acres of wetlands in the region, so slightly less than 9% of all wetlands have been preserved. It should be noted that there may be additional wetlands existing that can only be identified through field investigation.

Preserved Land: Preserved land provides permanently protected places for wildlife, allows for groundwater recharge for clean water, and provides places for people to enjoy the outdoors. This metric is defined as non-farmland that has been preserved by local, county, state, and federal governments and nonprofits. There have been over 155,000 acres of non-farmland preserved as of 2023, an increase of 5.9% from 2010. It should be noted that not all preserved land is available for public access; some are privately held, while other preserved land may be environmentally sensitive land or habitat that does not allow public access.

Forested Land: Forests provide habitat for wildlife and plants, provide cool shade for streams, keep water clean, take in carbon emissions, and can be used for sustainable timber harvesting. Forests are defined as all contiguous patches of trees greater than 1 acre in extent with a patch width greater than 240 feet somewhere in the patch. There are over 350,000 acres of forested land in the South Mountain region. This is a decline of about 1,600 acres since 2010.

Agriculture & Food

Farmland: Farmland provides a lot of food, both in the region and nationally. It is important for our economy and is also a cultural resource that residents can enjoy. In addition, farmland provides beautiful views and agritourism opportunities for the many visitors that come to the region and thus supports the tourism economy. A farm is defined by the US Department of Agriculture (USDA) as a place from which $1,000 or more in agricultural products are produced and sold. There are over 858,000 acres of farmland across the 4-county area, a decrease of 9,000 acres from 2007-2017. It should be noted that because of improvements in how the USDA collected farmland data for the 2017 Census of Agriculture, the 2007 figure may not be a useful comparison.

Preserved Farmland: Saving farmland ensures that we will have a place to grow food in the future and provides the land for future generations of farmers. Preserved farmland is land that has been preserved under state, county, or local programs or by nonprofits. Over 114,000 acres of farmland have been preserved as of 2023, an increase of 16% from 2010. This is largely due to the robust efforts of the four counties' agricultural land preservation programs, funded by the counties and the state.

Orchards: Orchards in the South Mountain region support a thriving agricultural industry and provide agritourism opportunities through pick-your-own operations, farm markets, and farm stands. These orchards support a $580 million industry in Adams County alone. Orchards are a type of farmland and typically produce fruits, berries, or nuts. There are over 19,500 acres of orchards in the 4-county region (note: this figure is included in acres of farmland presented above). This is a decrease of about 400 acres from 2007-2017.

History & Culture

Historic Places: The South Mountain's rich history is seen in the buildings, objects, and places throughout the region. They help connect residents to the past and contribute to our tourism economy. This metric encompasses above-ground buildings, districts, objects, and structures that are included in the PA Historical and Museum Commission's database. There are over 6,000 historic buildings, districts, objects, and structures that have been identified within the South Mountain region. While this is an increase over the number identified in 2010, this is due to an improvement in how these resources are cataloged and from additional historical surveys, not an increase in the actual number of resources. There are likely many more historic resources that exist in the region but have not been surveyed yet.

Recreation

Public Open Space: Parks and open spaces are important for fun and for taking care of the environment. They provide outdoor recreation, hunting, and fishing opportunities, attract visitors, and promote physical and mental well-being. Public open space includes state, county, and local parks, state forests, game lands, or other lands that are open to the public for any type of recreation. There are over 135,000 acres of publicly accessible open space in the South Mountain region.

Trails & Bike Routes: The South Mountain region includes premiere hiking trails and many others for hiking, biking, and water activities. These trails contribute to physical and mental health and connect workplaces, homes, parks, and schools. Included in this metric are hiking trails, multi-use trails, water trails, and on-road state-designated bike routes. There are over 1,050 miles of these trails and on-road bike routes in the region. This is an increase of about 22 miles from 2013.

Walking Proximity to Parks and Trails: Having parks and trails within a short walk is important because it makes it easy and convenient for people to use. This proximity is defined as the number of people who are within a 10-minute walk of a park or trailhead; the PA DCNR has set a state-wide goal for every Pennsylvanian to be within 10 minutes of a park. Over 133,00 people in the South Mountain region, about 33% of the total population, are within a 10-minute walk.

Driving Proximity to Hiking/Multi-Use Trails: Although not as desirable as walking proximity, being a short drive from a trailhead does allow convenience for many residents, and the physical and mental benefits are the same. Defined as the number of people who are within a 10-minute drive of a trailhead, there are over 775,000 people in the 4-county area, nearly 80% of the total population, that is within a 10-minute drive. It should be noted that within the South Mountain region, there are approximately 8,000 households that do not have access to a car.

Driving Proximity to Water Access. As with driving proximity to a trail, driving proximity to water access does allow many residents convenient access to water-related recreation and an opportunity for outdoor activity. This metric is defined as the population within a 10-minute drive of water access (e.g., a boat ramp or public fishing area). Approximately 445,000 people in the 4-county area live within a 10-minute drive of water access, about 45% of the total population.

Public Health

Air Quality: Poor air quality from tiny particles of pollution ("particulate matter") affects how we live and makes breathing hard, both indoors and outdoors. It can cause health problems like respiratory illnesses and lower our quality of life. The specific metric chosen was the number of days that air quality at US Environmental Protection Agency (EPA) monitors exceeded EPA standards for particulate matter (PM) measuring 2.5 microns or less (PM 2.5). In 2022, there were ten days where PM 2.5 standards were exceeded in the 4-county region, a drop of 2 days from 2010. It should be noted that there are limited EPA air quality monitoring stations in the region; some of them are located outside of the South Mountain footprint, and county-level estimates are based upon modeling from nearby monitoring stations.

Extreme Heat Days: Extreme heat can cause negative health outcomes, including heat stroke and respiratory problems. This metric is defined as a temperature over 90 degrees in a 24-hour period. To better measure longer-term climate change and not yearly weather patterns, two 10-year time periods were measured, 2001-2010 and 2011-2020. In the 4-county region, the number of extreme heat days in the 2011-2020 decade totaled 459 days, an increase of 37 days from 2001-2010.

Extreme Rain Days: Extreme rain can cause flooding and result in negative health outcomes, infrastructure damage, and property damage. This metric is defined as rainfall exceeding 2" in a 24-hour period. As with the Extreme Heat Days metric, to better measure longer-term climate change and not yearly weather patterns, two 10-year time periods were measured, 2001-2010 and 2011-2020. In the 4-

county region, the number of extreme rain days in the 2011-2020 decade totaled 78 days, more than doubling the number of extreme rain days in the 2001-2010 decade.

The tables below present all of the metrics that have been used in the Report Card, current and historical data or other comparative data (where available), and the results of the analysis. As noted previously, data for the South Mountain region, including core and neighboring communities, is used wherever the data permits. Otherwise, the data presented is for the larger 4-county region of Adams, Cumberland, Franklin, and York Counties. Data from 2023 and 2010 is used where it is available; if these years' data is not available, it is noted.

South Mountain State of the Region Metrics Analysis Summary

Metric	2023 data (except where noted)	2010 data (except as noted)	% change (except as noted)
Streams and Creeks	2,391 miles of impaired streams	*no historical data is available*	47.8% of streams
Riparian buffers	5,630.77 miles (2018)	5,631.06 Miles (2013)	-0.02%
Wetlands	2,239.5 acres preserved	*no historical data is available*	8.8% of all wetlands
Preserved land	155,420 acres	146,814 acres	5.9%
Forested land	350,211 acres	351,869 acres	-0.5%
Farmland (4-county area)	858,124 acres (2017)	867,124 acres (2007)	-1.0%
Preserved farmland (4-county area)	114,628 acres	92,746 acres	16%
Orchards (4-county area)	19,505 acres (2017)	19,945 acres (2007)	-2.2%
Historic places	6,096	2,981	104.9%
Public open space	135,074.6 acres	*no historical data is available*	N/A
Trails & bike routes	1,058 miles	1,033 miles (2013)	2.4%
Walking proximity to trails & parks	133,464 persons (2019)	*no historical data is available*	32.8% of population
Driving proximity to trails (4-county area)	775,782 persons (2019)	*no historical data is available*	79.9% of population
Driving proximity to water (4-county area)	435,132 persons (2019)	*no historical data is available*	44.8% of population
Air quality (4-county area)	10 days exceeding PM 2.5 standards (2019)	12 days exceeding PM 2.5 standards	-16.7%
Extreme heat days (4-county area)	459 days (2011-2020)	422 days (2001-2010)	8.8%
Extreme rain days (4-county area)	78 days (2011-2020,)	34 days (2001-2010)	129.4%

CHAPTER 4 Interactive Map Summary

The deliverables of the SOTR project included a dynamic visual summary of landscape measurements and patterns in the form of interactive GIS mapping. Mapping allows everyone to see the measurement data visually and to learn more about the trends happening across the landscape in different communities and geographic areas. Mapping helps to identify key regional landscape issues, specific geographic areas of opportunity or concern, and will assist during implementing the final recommendations.

The metrics discussed in the previous chapter and five additional data sets have been created as interactive maps for this project to provide a visual representation of data and allow observation of possible interrelationships. Each map has a set of data layers that can be toggled on and off for display and intersection analysis of the layers. The maps are available for viewing on the South Mountain website: https://www.southmountainpartnership.org/.

County planning agencies, as well as other planners, and any SMP Partner or conservation and outdoor recreation-adjacent organization(s) can use the mapping to develop specific actions and strategies. Five maps were developed and are described below. The mapping currently identifies priority conservation and preservation areas, the locations of key agricultural and historical resources and "hot spot" areas, and areas in need of equitable outdoor recreation opportunity. In the future, the mapping is to be used, along with the recommendations in this report and the Report Card, to identify geographically-specific collaborative projects and to analyze possible interrelationships between different maps and datasets.

Each map is listed below, with the data layers contained within them. More information on data sources is contained in the Appendix.

High Priority Conservation Areas

- 100-year floodplain
- Forested land
- Slopes over 25%
- Natural Heritage Inventory sites
- Wetlands
- The Nature Conservancy terrestrial resiliency layers (Resilient Site, Recognized Biodiversity and Connectivity and Climate Flow)

Natural Resources

- High Quality and Exceptional Value Streams
- Forested land
- Preserved land (farmland and non-farmland)
- Farmland
- Wetlands
- Number of days exceeding EPA standards for PM 2.5
- Extreme heat days
- Extreme rain days

- Riparian buffers
- The Nature Conservancy terrestrial resiliency layers (Resilient Site, Recognized Biodiversity and Connectivity and Climate Flow)

Agriculture Resources

- Prime agricultural soils
- Preserved farmland
- Farmland
- Orchards

Historic and Cultural Resources

- Rail Lines/Trolleys/Travel
- Recreation and Health
- Forest/Forestry/Conservation
- Civilian Conservation Corps
- Mineral Extraction and Industry
- Historic Paths
- Buildings/Landscapes/Objects/Sites/Structures

Recreational Resources

- Public Open Space
- Trails
- Ten Minute Walk Access to Parks
- Ten Minute Drive Trails Access
- Ten Minute Drive Water Access
- Appalachian Trail Conservancy Visual Resource Inventory

CHAPTER 5. Regional Challenges

The region is facing several environmental and recreational challenges. From the extensive public input of the survey and questionnaire, partner input at partnership meetings, and plan review, thirty-six challenges were initially identified, from very broad (e.g., quality of life, public safety) to very specific (e.g., invasive insects, funding for land preservation).

To produce a manageable number of challenges that aligned with the SMP's regional role and mission of conserving landscape resources to enrich the quality of life and sense of place of the South Mountain region's citizens and communities and could be manageably addressed in recommended actions, the Steering Committee determined that this project would address the top 3-5 regional challenges. The thirty-six initial challenges were examined, vetted for alignment with SMP's mission, and aggregated where appropriate, and a list of seven potential regional challenges was developed. A round of polling and discussion resulted in a final list of 5 regional challenges that would be addressed. Some of the original challenges identified, such as climate change, are woven throughout these challenges.

The Steering Committee identified the five top regional challenges at its April 2023 meeting. A crosswalk analysis was performed to ensure that each regional challenge could be measured with the final list of metrics.

The regional challenges are:

- Sustainable Development – balancing growth with preservation of resources and quality of life
- Water Quality and Quantity – including water quality for consumption and habitat and stormwater management
- Loss of resources – including farmland, forest, history and culture, and habitat
- Public health – including physical and mental health
- Recreation – including location, access, demand/supply, maintenance, and sustainability

A brief description of each regional challenge is presented below, along with the associated metrics that have been used to help quantify the challenge.

Sustainable Development Challenge

The challenges associated with sustainable development, the balancing of growth and preservation to ensure the South Mountain region's exceptionally high quality of life is maintained, are myriad and often presented in more detail in county-specific plans such as comprehensive plans. For this State of the Region, we focus on actions that align clearly with SMP's mission.

Sustainable development, even in its limited definition used in this report, is a broad topic, and the metrics that measure it are more numerous than those measuring other challenges. Within South Mountain, the analysis of these metrics shows a mix of trends; some are going well, some need work,

and others need more information before an evaluation can be made, thus demonstrating the complexity and difficulties associated with this challenge.

For this State of the Region report, the Report Card, and the interactive maps, metrics for land permanently preserved from development have been grouped into two categories – preserved land (including parks, forest, and open space, and excluding farmland) and preserved farmland. Much of this preserved non-farm land is located in Michaux State Forest, which has about 85,500 acres.

The preserved land metric trend is positive, up approximately 6% from 2010, and got a "thumbs up" in the Report Card. Preserved farmland is also trending in a positive direction, increasing from 2010 and thus also receiving a "thumbs up."

However, forested land, both a natural resource and a cultural one as views of the forested uplands of South Mountain are a hallmark of the region, has seen a decrease of about 1,650 acres from 2010. Since any loss of forested land may represent lost habitat, less shade, less carbon sequestration, and fewer water quality improvement opportunities, this metric's trend received a "thumbs down" rating. It is also recognized that Michaux State Forest, as with all state forests, is managed as "working forests" and that a certain amount of sustainable timbering will occur.

Like forested land, farmland is another critical resource in South Mountain as both a natural resource and a historical/cultural resource. The vistas across farm fields and the farms themselves are a noted amenity in the South Mountain landscape and attract agritourism visitors. Farmland is particularly vulnerable to land development due to its good soil quality and flatness. The nearly 1% loss in farmland may be due to better reporting of the data, and some of the farmland that was lost may have been located in designated growth areas. Due to these factors, this metric was given a "thumbs sideways" rating, awaiting updated data and better data on land conversion.

A specific type of farmland – orchards – is presented as a separate metric in this project due to their regional and national significance. Losing about 440 acres over these ten years is not a positive trend. This metric was rated as a "thumbs down." An analysis of the Agricultural Resources map reveals that most of the orchards have not participated in any farmland preservation program.

An associated impact of development is traffic and increased particulate matter in the air from that traffic. The decrease in the number of days across all four counties where the air quality for PM 2.5 exceeded EPA standards warranted a "thumbs up."

Impaired streams can also result from land development, but it is discussed in the Water Quality/Quantity challenge section because of the direct correlation between contaminated water and water quality.

The South Mountain Region has experienced significant land development in recent years and continues to experience development pressure. Proximity to East Coast markets, Interstate 81, the Pennsylvania Turnpike, and available land contribute to this pressure. An analysis of land cover was performed using the National Land Cover Database (NLCD) to quantify this development. The NLCD has been developed by the US Geological Survey, uses aerial photography, and is described as the "definitive land cover database in the United States" (source: USGS NLCD). Data was gathered from 2011-2019 for land converted to developed land (excluding developed open space) from various land covers (e.g., forest, pasture, crop, wetlands, etc.) within the South Mountain region, and this data is presented in an

interactive map. This analysis found that there were 17,088 acres converted to developed land in this period. Although this dataset was considered for inclusion as a metric, it was determined that due to the resolution of the data (at 30 meters) and the uncertainty of the validity of some of the components (specifically acres of wetlands converted), it was of limited value. Future Report Cards should re-examine this data or other data sources in more detail to quantify land development (and improved technology resulting in a finer resolution may allow higher confidence in the NLCD data).

Development proposal data from selected counties in the South Mountain region also indicate the region's strong growth pressures. In Cumberland County, there were nearly 6,000 acres proposed for subdivision or development in 2022, while in York County, in the same year, there were over 10,000 acres proposed. Balancing these proposals for development with the need to preserve land creates this sustainable development challenge to the entire landscape.

Development puts a strain on many of the resources in the South Mountain region. However, stopping development is not an option for several reasons. This region is growing because it is a desirable place to live and locate a business; the presence of I-81, the PA Turnpike, and developable land will continue to drive development and development pressure. State law does not allow local governments to stop growth, nor does case law support a growth moratorium. Well-planned growth, with thoughtful consideration of the development type, design, and location, in a way that adds to a region's sense of place and strengths while balancing impacts on natural and recreational resources is the goal but is challenging to achieve.

Water Quality/Quantity Challenge

This challenge is two-fold – water quality and water quantity. Water quality is self-descriptive; water quantity refers to both the availability of water and how rainfall and stormwater are managed.

Some of the challenges of stormwater management are related to climate change and the increase in extreme precipitation. Extreme precipitation results in negative impacts on water quantity and quality (from soil erosion) and public health.

In addition, weather patterns affect both water quality and quantity and are affected by climate change. Severe drought in the South Mountain region, as recently as 1999, has resulted in declared emergencies and caused water usage restrictions and crop damage. Conversely, flooding from storms has caused property damage, road closures, and required water rescues. Stormwater is a particularly harmful aspect of flooding because it may contain and transport chemicals such as fertilizers or pesticides that are found in agricultural runoff, bacteria from livestock and pet waste, oil from parking lots and roadways, and other pollutants. These contaminants represent a significant public health threat if they infiltrate drinking water supply or swimming areas. Additionally, when flushed into surface water, fertilizers can cause algal blooms, which degrade living conditions for fish and other organisms. (source: Cumberland County Hazard Mitigation Plan). Recent intense storms such as Hurricane Ida have impacted water quantity and have caused significant flooding in the region.

Pollution events, including spills, stream discharges, and increased fertilizer use, impact water quality. Recent train derailments in other parts of the country have highlighted this threat. Emerging

contaminants such as pharmaceuticals and Personal Care Products (PPCPs) and so-called "forever chemicals" like per- and polyfluoroalkyl substances (PFAS) are additional areas of concern for water quality.

Impaired streams are a key metric for water quality (and are also tied to the challenge of sustainable development). The South Mountain region has about 5,000 miles of streams; the PA Department of Environmental Protection (DEP) has determined that nearly 2,400 miles, about 48% of all streams, are impaired. This significant percentage of streams in the region is why this metric of impaired streams has been rated with a "thumbs down" in the Report Card.

Impairment may be due to development and the stormwater runoff from paved surfaces or may be due to poor erosion control and/or nutrient loading. The entire South Mountain landscape is within the Chesapeake Bay watershed, which suffers from nutrient loading and sediment pollution, and a goal for the watershed is the reduction of phosphorus, nitrogen, and sediment. South Mountain's recommended actions should align with these goals.

It should also be noted that removing a stream from DEP's list of impaired streams after it has been cleaned and is no longer impaired is not an easy process, and so some of these streams listed as impaired in this report may no longer be impaired, and the data may overstate actual miles of impaired streams.

Wetlands are a natural resource that impacts both water quality and water quantity. Wetlands filter and clean water, decreasing the costs of drinking water filtration. Water flow slows down when it enters a wetland, allowing sediment to settle out of the water. Some pesticides and other pollutants can be broken down by light and bacteria. Plants and microorganisms absorb excess nutrients from sources such as fertilizers, manure, municipal sewage, and runoff from urban areas. (source: WeConservePA.org). Wetlands also reduce the frequency and intensity of floods by absorbing and storing significant amounts of floodwater. A one-acre wetland can typically store about three acre feet of water (one acre of land covered by three feet of water) or one million gallons. (source: WeConservePA)

This report measured acres of wetlands preserved and found that in 2023, about 2,340 acres of wetland were preserved in the South Mountain region, less than 9% of all the wetlands identified. This figure is included as part of the preserved land data. Due to wetlands' critical role in water quality and quantity, this metric received a "thumbs down" rating.

Another metric for this challenge is also a natural tool for water quality (and habitat) - riparian buffers. Riparian buffers are defined as: "The area bordering a river, stream, or other waterway which is biologically important for the healthy functioning of the stream's biology. Riparian vegetation creates shade, bank stability, and provides a food source and habitat for organisms living in or along the stream." (source: Greenways Land Trust) Thus, riparian buffers can also help with sediment pollution of streams. Riparian buffers can exist naturally or can be created. An analysis of the miles of riparian buffers (defined as a buffer of at least thirty-five feet wide) for this report found 5,630 miles of riparian buffers in the South Mountain region, a loss of approximately 1 mile from 2013-2018. While this is not a significant loss due to the vital role that these buffers play in the environment, this metric received a "thumbs down" rating.

The final metric is perhaps the most visible example of water quantity - extreme precipitation days, including hurricanes, tropical storms, and intense rainfall. Extreme precipitation can cause flooding, loss of life, crop damage, increased soil erosion, and property and infrastructure damage. The US Center for Disease Control keeps track of such days; the data is collected at a county scale. The total number of days with extreme rain across the four counties from 2011-2020 was 78 days, more than doubling the number of days from 2001-2010. This metric received a “thumbs down” rating.

Loss of Farmland, Habitat, Historic/Cultural, Open Space, Forest Resources Challenge

While this challenge is closely linked to the sustainable development challenge, the SMP desired to highlight these specific resources in a separate challenge to the landscape. All of them impact the South Mountain region and quality of life. The South Mountain's farmland, forested land, and historic resources all contribute to the heritage and culture of the region, and the metrics that measure farmland and forested land are also metrics that measure the loss of historic and cultural resources. While climate change will impact habitats, farmland, and forests, development will add to the impacts on these resources.

In some instances, the loss of farmland is a result of the need to balance growth with preservation. In at least two of the four counties that constitute the South Mountain, the county and/or the municipalities in them have designated a small portion of farmland as being appropriate for development while at the same time preserving farmland in other parts of the county. This is a difficult balance to hold, with no easy answers.

Development has significantly impacted these resources over time, as mentioned in the Sustainable development challenge section. In addition, a concern has been noted about the fragmentation of in-holdings and adjacent land to Michaux State Forest. This may lead to further loss of forested land.

Preserving these resources is a key part of SMP's work, and this project presents an opportunity to collaborate on developing and tracking goals at a landscape scale. Some counties have established goals for farmland preservation in the short term (e.g., Cumberland County’s goal of 30,000 acres preserved by 2030), but there has not been an analysis to define or determine adequate amounts of farmland over the long term. Similarly, targets for open space preservation are also lacking.

Most of the metrics used as a foundation for these recommendations - impaired streams, preserved land, preserved wetlands, preserved farmland, forested land, and orchards – are described previously. As mentioned, farmland and forested land are considered both natural resources and cultural resources, as the landscape is defined by both of these land uses. In addition, it appears that forested land that was lost between 2010-2023 was widely scattered across the South Mountain region, suggesting that it is occurring on individual properties and not concentrated in any one area.

Two other metrics are also related to this challenge: public open space and the number of historic places.

Public open space includes any land that is publicly accessible, generally parks and forests. Although preserved farmland can be considered open space, they are it is not publicly accessible and not included in this metric. These farms remain as operating farms, and the public is not permitted on them without permission. No historical data exists to compare to this figure, consequently it was given a "thumbs sideways" rating. Future Report Cards can use this figure as a baseline and evaluate progress at that time.

The nearly 6,100 above-ground historic places, buildings, structures, and objects (referred to in this report as historic places) that have been surveyed and identified by the State Historic Preservation Office database in the South Mountain region reflect the region's heritage. This includes historic districts (e.g., Northern Adams County Fruit Belt), historic paths like the Raystown Path and Virginia Path, dams, bridges, individual buildings, and structures. There were about 2,900 such resources identified in 2010 in this same database. However, the increase in number is due to improved record keeping and not to an actual increase in historical resources. It should also be noted that there are historic resources that have not been surveyed or identified and, thus, are not included in this metric. For these reasons, this metric was rated as "thumbs sideways" and will serve as a baseline figure for future Report Cards.

A review of the Historic Resources interactive map reveals an apparent concentration of historic resources in Adams County. However, this may be due to more historic surveys being conducted in the county than in other locations across the region.

Public Health Challenge

The challenge to public health includes both physical and mental health challenges.

Several recently completed Community Health Assessments (CHA) across the region show that residents' health issues are strongly associated with obesity and associated topics such as a lack of physical activity. The surveys that were performed found that significant percentages (35-39%) of residents did not participate in physical activities or exercise in the past month (sources: Adams County Community Health Needs Assessment, 2022; Franklin County Community Health Needs Assessment, 2022; South Central Community Health Needs Assessment, 2020). The recent pandemic has had a particularly significant impact on mental health, and the CHAs cited above also noted poor mental health as a concern.

Reflecting the cross-cutting nature of the challenges to the landscape and the recommendations to address those challenges, both physical and mental health can be improved by increased recreation, which is addressed in the next section.

In addition, this report recognizes the impact that climate change has and will continue to have on public health from increasing extreme heat and rain events. The public health consequences of climate change include heat-related illnesses, vector-borne diseases, and threats to human life from flooding. Consequently, a number of these recommended actions are focused on mitigating and adapting to climate change's impact on human health.

The air quality metric used in this report (days exceeding US EPA's standards for PM 2.5) has trended down; while this was rated as a "thumbs up," the limited number of EPA air quality monitors in the region, with none in Franklin County, and the location of the York County monitor (just east of York city) and the Cumberland County monitor (just outside of the South Mountain footprint), is a concern. Future Report Cards might benefit from more robust cooperation with the Clean Air Board of Central Pennsylvania and its citizen-scientist volunteers.

Moreover, other air quality data provides less positive observations. As stated in the Cumberland County Climate Action Plan: "Due to agriculture, industry, interstate highways, and surrounding mountains, the Harrisburg-Carlisle metropolitan area has the second worst air quality in the commonwealth with 114 days when half or more of the monitoring locations reported elevated ozone and/or particulate matter pollution" (source: Green Up the Footprint: Cumberland County's Climate Change Action Plan, 2022). The summer of 2023, with numerous Code Orange and Code Red days due to poor air quality, is a recent example of the challenge to public health in the region.

Two other metrics to measure public health used in this report - extreme heat days and extreme precipitation days – both show increases when comparing the first decade of the 21st century with the second decade, resulting in both metrics receiving a "thumbs down" in the Report Card. Extreme precipitation can cause flooding, with threats to human life, property, and infrastructure. Flooding can also be a cause of vector-borne diseases and contaminated water.

Extreme heat can cause serious health issues, exacerbating existing health problems, and can cause death. These issues include heat exhaustion, heat rash, heat stroke, and dehydration. The availability of air conditioning can mitigate many heat-related health concerns. Nonetheless, certain segments of the population, including those who work outdoors and older people, still have increased risks.

Recreation Challenge

While the South Mountain region has many exceptional recreational resources, there are still challenges. This includes the location of those resources and access to them, connecting them together and to communities, the supply of those resources keeping up with the increasing demand for them, the sustainability of those resources, and maintenance of them.

Location and access to recreation include equity issues, ensuring that everyone has access to nearby recreation. Sustainability includes environmental concerns related to those resources' use (and sometimes overuse).

With the Appalachian Trail, perhaps the most iconic hiking trail in the country, located in the middle of the South Mountain landscape, and other significant trails like the Mason-Dixon Trail and state bicycle routes J, S, and JS, a key metric for recreation is miles of trails and bike routes. There has only been a slight increase in mileage since 2013 , resulting in a rating of "thumbs sideways."

It has been noted from public input that the trails in Michaux State Forest include social/informal/unofficial trails that may degrade nearby natural resources and decrease the overall trail

user experience. A review of the existing trails found on the Recreation Resources interactive map reveals many trails in some areas of Michaux that may be redundant.

One of the region's multi-use trails – the Cumberland Valley Rail Trail – currently terminates in Shippensburg and Newville. There are efforts to extend it to the south and north, but no definitive plans to extend it to Chambersburg or Carlisle and connecting other communities that lack a 10-minute walking or driving access to trails. A review of the Recreation Resources interactive maps also reveals opportunities to connect other PA DCNR-identified high-priority communities with nearby open space.

Public open space is another metric associated with this challenge and is addressed in the loss of resources section. Within the recreation challenge, while Michaux State Forest and adjacent state parks form a very significant amount of connected open space, beyond this spine, there is limited connectivity of public open space, as shown on the Recreation Resources interactive map.

There are three metrics related to people's proximity to recreation: one for walking proximity and two for driving proximity. These metrics were all developed by DCNR as part of the most recent State Comprehensive Outdoor Recreation Plan (SCORP) to help it define where state investments in parks and trails might occur. As part of the SCORP, PA DCNR has set a goal for every Pennsylvanian to be within ten minutes of a park or trail.

The fact that only 33% of the people in the South Mountain landscape are within a 10-minute walk to a trail or park resulted in a "thumbs-down" rating. The second metric, driving proximity to a trailhead, revealed that nearly 80% of the 4-county population has such proximity, and it received a "thumbs up" since it is well on its way to meeting the 100% goal set by PA DCNR. However, the other driving proximity metric -population within a 10-minute drive of water access (which includes streams and rivers) is not as positive. About 435,000 people in the four-county region meet this criterion, about 45% of the area's population. Since this figure is far below the PA DCNR goal, this metric received a "thumbs down" rating.

As stated in the public health challenge section, recreation also impacts other challenges, and meeting the recreation challenges can result in co-benefits such as increased resident recreation activity.

The following chapter presents recommendations to address the challenges noted above and details how the 70-plus initial recommendations were vetted and the final five highest-priority recommendations were selected. Some of the actions address multiple challenges.

CHAPTER 6. Recommendations

The recommended actions that follow were developed through an intensive and extensive collaborative effort that included many groups, agencies, and individuals. The project was led by the South Mountain Partnership Conservation Network and required extensive collaboration among county planning agencies and SMP staff, as well as tourism, economic development, health, historical, outdoor recreation, agriculture, private business, and faith-based groups. The final recommendations to be moved forward by South Mountain Partnership were developed in partnership with Adams, Cumberland, Franklin, and York County planning agencies and approved by the Leadership Committee of South Mountain Partnership. The implementation of these highest-priority and other recommendations will also involve many participants and require collaboration, coordination, and communication to ensure success.

This document is intended for decision-makers and policymakers in the South Mountain region. There are two sets of recommendations - highest priority recommendations and other recommendations. The highest priority recommendations are presented with some detail in the narrative and are included in the Action Plan that follows this chapter. The Action Plan is a summary table that presents the recommended action, lists the lead organization and potential partner organizations that should be involved, the length of time that frame within which the action is likely to take should occur, potential funding sources (with hyperlinks to each), initial next steps to implement the action, the intended audience, existing resources available to assist in the implementation, and measurements to use to evaluate the success of the action.

Additional recommendations, referred to as “other recommendations”, are considered important for the region and we hope that all agricultural, cultural/historical, natural, and outdoor recreation groups and other interested groups and individuals will incorporate these recommendations into their strategic planning and programming but are not the highest priority at this time. A noted advantage to these groups when aligning their organizational priorities with this report is that it makes their grant funding applications more competitive. All these other recommendations were given serious consideration in the recommendations analysis and vetting process. As the highest-priority recommendations are accomplished, or circumstances change, some of these other recommendations should be considered for action.

Some recommended actions are already underway in some of the counties and municipalities within the South Mountain landscape; however, since this State of the Region initiative is focused on the entire landscape and all the governments and organizations within it, the recommended actions remain valid for those places that have not undertaken them yet. The entities who have already taken these actions may be able to provide insight into how that action could be undertaken by other governments and organizations across the region.

All recommendations focus on the entire South Mountain region as a large geographic area, or landscape, to be better preserved and enhanced. While some of the recommendations are directed at individual municipalities, the cumulative and coordinated actions of municipalities and others are needed to address these challenges at the landscape scale.

Implementation of Recommendations

A larger implementation strategy and plan of action is discussed below. It details how the SMP and its partners intend to incorporate and use the State of the Region (SOTR) document, both internally and externally. The section was originally developed by Tyler Semder, DCNR, the external lead for the South Mountain Partnership.

SMP Implementation Strategies

- **Integrate State of the Region initiative with strategic planning efforts/document** - SMP's strategic planning should be adjusted as appropriate based on the State of the Region initiative. The SMP strategic plan could be updated to a more public-facing and broadened into SMP's very first conservation landscape plan. Likewise, as projects, ideas, and opportunities arise, the State of the Region initiative should be considered when deciding what the SMP does and does not get involved with and when planning and assessing sub-committee work, such as the Research Corps.
- **Align with core partner priorities** – Assess that State of the Region initiative work also aligns with core partner priorities and timelines as much as possible.
- **Assess organizational accomplishment metrics side by side with State of the Region initiative accomplishments** – SMP's project tracking and metrics collection systems should be modified to make sure they sync up with the State of the Region initiative.
- **Use to secure additional funding/grant sources** – When applying for grants, the STATE OF THE REGION INITIATIVE should be used in the application process as a basis for the funding requests.
- **Build communications and public participation strategy for maximizing awareness and reach of State of the Region initiative** – Leverage existing communications channels and active partners to implement the State of the Region initiative communications plan.
- **Take State of the Region initiative on a "road show"** – Presentations on the State of the Region initiative should be prepared and delivered to key elected officials, decision-makers, and organizations like counties and selected municipalities.
- **Prioritize SMP Mini-Grant awards to projects that advance State of the Region Initiative**
- **Create standing State of the Region initiative agenda item for future SMP meetings** – Future SMP meetings should be used to provide a State of the Region initiative update to SMP's core partners, attendees, and stakeholders and also allow for continued input/feedback.

How SMP Partners and other organizations can help to implement this plan

- Use your organization's communications channels to help spread awareness, information, and updates about the project.

- Incorporate State of the Region initiative goals, recommendations, and actions into your own strategic planning processes and documents when updating or using (ex., County comprehensive plans, non-profit strategic plans)
- Leverage State of the Region initiative results and information when providing technical assistance to your audience (ex., Counties assisting municipalities with updates to local codes or policies, non-profits delivering content to their audiences).

Best Practices

-Build a phased approach for implementing over five years.

-Build momentum by focusing on easy, accomplishable actions early on.

-Continue to build awareness, educate, and develop buy-in from the public and stakeholders.

-Create open feedback loops and opportunities for active, interested, and motivated organizations and people to get involved and help further implement.

Recommendations and Sustainable Development Principles

Sustainable development can be defined a set of cohesive urban and regional planning principles that can be blended together and melded with unique local and regional conditions to achieve a better development pattern. Sustainable development is an approach to achieving communities that are socially, economically, and environmentally sustainable. Sustainable development provides choices — in housing, transportation, jobs, and amenities (including cultural, social services, recreational, and educational, among others) — using comprehensive planning to guide, design, develop, manage, revitalize, and build inclusive communities and region" (source: American Planning Association)

The principles of sustainable development are:

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development towards existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost-effective
- Encourage community and stakeholder collaboration in development decisions

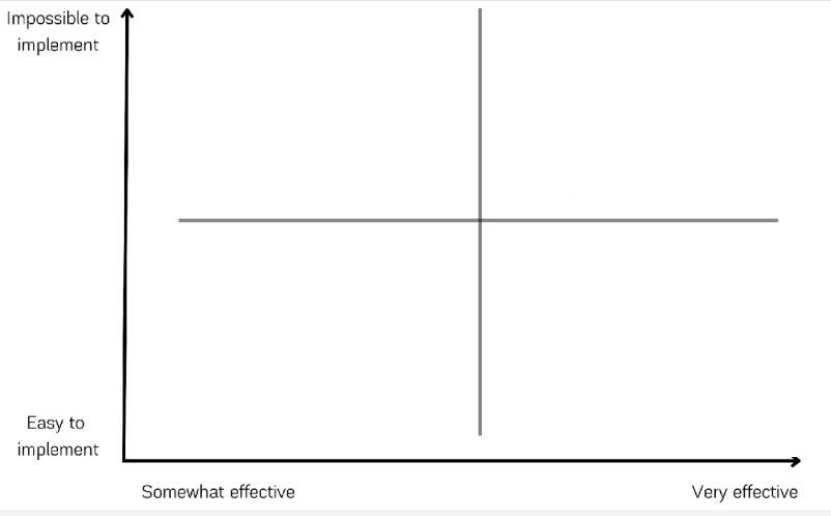
It should be noted that these principles are flexible and adaptable and have been successfully applied in rural areas, small towns, suburbs, and cities, throughout the United States. As this report was being prepared, the Steering Committee felt that any recommendations made should be viewed through the lens of these principles, where they are relevant. Not all of these principles are relevant to this report; for example, there are no recommendations related to housing. Nonetheless, there are principles that are very relevant, such as preserving open space, farmland, natural beauty, and critical environmental areas. These principles match up well with the regional challenge of the Loss of Farmland, Habitat, Historic/Cultural, Open Space, and Forest.

As a future undertaking, reviewing these principles and adapting them to respond to South Mountain's needs and SMP's goals and mission may be helpful.

Recommendations Development, Analysis, and Vetting

Previous chapters of this Report have provided background and context for the regional challenges that face the South Mountain region. Recommended actions were developed to address these challenges using a number of sources, including relevant county planning documents, the questionnaire and survey performed early in the process, input from local subject matter advisors, the Steering Committee, the SMP Leadership Committee, participants at several SMP Partnership events, and analysis of the metrics and the interactive map.

As might be expected in a region as diverse and dynamic as South Mountain, there were many recommendations generated through the process – totaling over seventy potential recommendations. It was clear that there was a need to vet these potential recommendations. This vetting began with the Steering Committee's input. The Steering Committee reviewed all potential recommendations, sorted by regional challenge, against two criteria: ease of implementation and effectiveness. This review was done using a template developed by SMP staff and a staff-facilitated ranking using the Jam Board tool in Google (see graphic below) that resulted in the sorting of recommendations into four areas: easier to implement/very effective, easier to implement/not as effective, harder to implement/very effective, and harder to implement/not as effective. Those recommendations that were easier to implement and very effective were seen as higher-priority recommendations.



Example of Jam Board Tool developed by SMP staff

Through this process, the Steering Committee also suggested aggregating individual recommendations that addressed a common topic (e.g., trail development) to reduce the overall number of recommendations and make further analysis more manageable.

The recommendations were aggregated, and this resulted in approximately twenty top candidate recommendations. To further prioritize the top candidate recommendations, a SMART analysis was then performed. SMART is an acronym for Specific, Measurable, Achievable, Relevant and Time-bound. While typically used to analyze goals and objectives, this framework was useful for analyzing the recommended actions with some modifications. For example, when reviewing the aggregated recommendations under the Achievable criteria, each recommendation was evaluated by how many of the five regional challenges were met by that recommendation. In addition, none of the recommendations had timelines associated with them; these would be developed later. A table presenting the results of this SMART analysis is attached in the Appendix.

The results of this SMART analysis were shared with the Steering Committee, the SMP Leadership Committee, and the local subject matter advisors who had previously participated in Report Card measurement development and evaluation for their comments and input. All comments were synthesized and presented back to the Steering Committee for review. Seven recommendations emerged as candidate highest priority recommendations: update natural areas inventories; expand the regional trail system & connectivity to parks and towns; plan for a wildlife corridor to connect South Mountain and Kittatinny Ridge, and expand/strengthen greenways;, undertake an inventory of South Mountain historic resources; create growth areas in plans; track land conversion; and encourage multi-municipal planning.

A meeting was held in late October with SMP staff, three of the four-county planning directors, and planning agency staff from all four counties to discuss these seven recommendations. The purpose was to get input from the directors and narrow these seven down to 2 - 5 highest-priority recommendations that matched SMP's capacity, vision, and goals. Following a robust discussion of the recommendations,

five recommendations emerged as being the highest priority for SMP to work on and with the most benefit to county planning agencies.

The final five highest priority recommendations are:

- Update Natural Heritage Areas inventories
- Expand regional trail system & connectivity to parks and towns
- Plan for a wildlife corridor to connect South Mountain and Kittatinny Ridge and expand/strengthen greenways
- Inventory South Mountain's historic resources
- Track land conversion

The highest priority recommendations will be discussed in more detail, followed by a short discussion of the other recommendations.

Highest Priority Recommendations:

Update Natural Heritage Inventories for Adams, Cumberland, Franklin, and York counties

A Natural Heritage Inventory (previously called natural areas inventory) is an inventory that is done at county geography. It provides ecological information about each county and all the Natural Heritage Areas (NHAs) that occur in that county. As defined by the Pennsylvania Natural Heritage Program, "Natural Heritage Areas (NHAs) are sites that have been identified as areas that support rare plants or animals, exemplary ecological communities, and Pennsylvania's native species biodiversity." Each NHA in an inventory includes the site name, site ranking, site description, species table, threats and recommendations, general location, and a map.

These inventories provide critical information about the biological resources in the region and are used by state agencies, county departments, land developers, conservation-oriented organizations, and others. These inventories can also provide critical information when future preservation and conservation efforts are being planned. For this report, natural heritage inventories are especially important when considering the recommended wildlife corridor and expanded greenway action in this report.

County natural heritage inventories have previously been performed for all four counties within the South Mountain region. However, all were done in the 2004-2005 time period. Since that time, there has been tremendous growth and land development in the region, and there is a need to update these inventories.

This recommendation should occur within the next year or two; in fact, the South Mountain Partnership has already begun the process to assist in updating these inventories, having recently received a PA DCNR grant. SMP has requested funds from each county to provide the needed matching funds to the grant.

A coordinated regional approach facilitated by SMP makes sense as ecological resources such as watersheds and animal habitats cross county boundaries. The Western PA Conservancy will provide

technical assistance using their widely-accepted methodology. Each of the four counties will need to participate as close partners in this effort. There are many partners that can assist in developing the inventory, including DCNR staff, local colleges, watershed organizations, the PA Game Commission, the PA Fish and Boat Commission, and land conservancies. In particular, Shippensburg University is a key partner, as its staff has participated in other Natural Heritage Inventories in the state.

While SMP has requested funding from each county to match the DCNR grant, other funding sources may be available if county funding does not come through.

The four existing county Natural Heritage/Area Inventories provide extensive resource material. The Climate Change Vulnerability Index that has been developed by the Pennsylvania Natural Heritage Program should be used as these inventories are developed. In addition, it may be productive to perform additional spatial analysis of high ecological value areas that are near areas of growth.

Once completed, these updated inventories will provide useful data that can be incorporated into SMP mapping, partner work, PNDIs and DEP permitting.

This recommendation addresses the Sustainable development and the Loss of Farmland, Habitat, Historic/Cultural, Open Space, and Forest regional challenges by further documenting ecological conditions and making recommendations for their preservation and conservation.

Expand regional trail system and connections to parks and communities

As mentioned previously, the South Mountain region has the Appalachian Trail, a premier hiking trail and the Cumberland Valley Rail Trail (CVRT), a significant multi-use trail within its boundaries, and both can serve as spines for a regional trail system. This recommendation focuses on multi-use trails that can be used by cyclists, hikers, joggers, and walkers. Such a system would create physical connections between parks, other regional recreation areas and towns; and contribute to the region's public open space system and to economic development by making the region more of an outdoor recreation destination.

Creating multi-use trails is often a long process, and a key first step would be the creation of a regional coalition to support and advocate for more trails. The coalition can also be the driver of planning for a cross-county trail and also for other trail development recommendations that are contained in the "Other Recommendations" section of this report.

Create a regional multi-use trail coalition – There are several organizations in South Mountain that build or manage trails or advocate for them – non-profits, parks departments, and county-related entities. Creating a regional coalition that includes these groups and other partners can provide several benefits, including information sharing, identifying regional trail priorities, collective grant seeking, technical assistance, and education of cyclists and drivers. The scope for this regional coalition might include aggregating planning & construction projects in South Mountain, determining future needs, exploring opportunities for funding, and advocating for new regional trails. There are examples of these types of coalitions in other parts of Pennsylvania – The Circuit in Southeast Pennsylvania and The Link in the Lehigh Valley are nearby examples.

Creating a coalition can be an effective foundation for building a more robust trail-building network and can be accomplished in the short term. Initially, research into how other regional coalitions should be undertaken. A regional trails "summit" could be convened after that, with invitations sent to all four counties' planning agencies and parks departments, regional trail-building organizations such as the York Rail Trail Authority, the Healthy Adams Bicycle/Pedestrian Inc. (HABPI), and the Shippensburg Area Park and Recreation Authority, cycling groups like Bicycle South Central PA and the Susquehanna Mountain Bike Association, hiking groups like the Keystone Trail Alliance, health care providers/advocates and state agencies such as DCNR. This would be an opportunity to present information on the current state of multi-use trails in South Mountain and any planned expansions of them, to discuss the feasibility of creating a regional coalition and what its scope might be, and an opportunity for networking by participants.

While administering such a coalition would not necessarily be expensive, WeConservePA has a grant program – the Regional Trail Workshop Grant - that could be used for costs associated with an initial regional trails summit. The deadline for applications is January 25, 2024. Funding to create a more formal plan for the coalition might be eligible under DCNR's Peer Grant Program. Local corporate funding from companies like Target or Walmart should also be explored by contacting regional managers from each company.

The coalition, after being formed, could provide support for the planning of a regional, cross-county trail(s), an extension of the Cumberland Valley Rail Trail from Shippensburg to Chambersburg and from Newville to Carlisle, for on-road bicycle facilities and advocate for the use of the official map to provide rights-of-way for future trails.

This recommendation addresses the Public Health and Recreation regional challenges by supporting the creation of more places for people to exercise and recreate.

Plan for additional cross-county multi-use trail(s) - A multi-use trail that stretches across the South Mountain can serve as a spine for the region. Such a cross-county trail would complement the CVRT and might run through Cumberland, York, and Adams Counties, but the exact alignment would need to be determined by a feasibility study. The topography that makes South Mountain such an identifiable place also presents challenges to a direct east/west corridor. There has been some initial planning for the Grand History Trail, linking Gettysburg with other historic areas in Pennsylvania and Maryland, and for the South Mountain Trolley Trail from Dillsburg to Mechanicsburg that might be relevant for this recommendation. In addition, the trails layer of the interactive map of metrics created for this State of the Region project and county greenway/trail plans should also be researched to narrow likely candidate corridors.

Because of the multi-county footprint of a cross-county trail, SMP could take the initial lead in securing funding for a feasibility study to determine the best route(s). Partners would need to include the Counties and municipalities along any identified corridors. The expertise of the Cumberland Valley Rails-to-Trails Council and the York County Rail Trail Authority should also be solicited. This plan should then be presented to local governments along the proposed r-o-w for resolutions of support.

The timing for this recommendation is long-term, but initial steps can be taken sooner, such as prioritizing potential corridors and securing funding for a feasibility study.

Plan for a wildlife corridor to connect to Kittatinny Ridge, Highlands, & support greenways

This recommendation is a combination of two earlier recommendations and contemplates a planned wildlife corridor using greenways (and other lands) to connect the South Mountain region to the Kittatinny Ridge across the Cumberland Valley and to the Highlands across York County. Wildlife corridors and greenways can serve as habitat for wildlife and can also serve as outdoor recreation for people if the land is public land. As stated by the Endangered Species Coalition, wildlife corridors can be formed by public and private lands and provide an "area of habitat connecting wildlife populations separated by fragmentation." Fragmentation occurs due to land development removing habitat, such as streets and buildings, cutting open spaces off.

Moreover, with the ongoing development pressure on the west side of South Mountain, where I-81 is, wildlife habitat is being lost, and there are more hazards to wildlife from increased vehicular traffic. New types of development, such as utility-scale solar facilities increase fragmentation by constructed fencing around their developments that do not allow larger wildlife to move past them.

Such corridors are beneficial because:

> "[H]abitat loss and fragmentation are the biggest drivers of species decline and extinction worldwide. Fragmentation reduces the ability of wildlife to migrate, find mates, disperse (establish new territories), and may limit their access to food and water. Fragmentation also limits wildlife's ability to adapt to climate change." (source: Endangered Species Coalition)

A wildlife corridor connects ecosystems and enhances biodiversity. While there has been significant open space protection in South Mountain, it has not been planned or executed in a manner that creates passageways for wildlife and allows those spaces to thrive. A strategy and physical plan for deliberately preserving land that will create wildlife corridors is needed.

Corridors can take many forms. For example,

- A parcel of private woodland that connects two state parks, allowing species of greatest conservation need like small mammals, native trout, birds, salamanders, frogs, hellbenders, lizards, turtles, and others to roam to find wild food sources.
- A stream culvert designed to allow animals and fish to pass under a road.
- A small wetland strip in a suburban area that allows a box turtle to move to a favorite wet meadow.
- A trail of milkweed along a utility right-of-way supports monarch butterflies and the movement of many other field and forest creatures.
- An under or overpass crossing a multilane highway, offering a safe passageway for both small and large wildlife species and reducing wildlife road collisions with vehicles.

(source: Pennsylvania Conservation Corridor Fact Sheet)

Another beneficiary of wildlife corridors is motorists; each year, Pennsylvania ranks among the top five states for wildlife-vehicle collisions. In 2020–2021, there were 66,000 animal collisions reported to insurance agencies in the state (source: bayjournal.com).

Using existing or proposed greenways, as shown in county greenway plans, should be considered in the planning process.

As the regional land conservation organization for South Mountain, SMP can lead in planning for such a wildlife corridor or corridors.

Partners for crafting a plan should include the county planning agencies, the PA Game Commission, PA DCNR, as well as experts from local colleges and partners in the Appalachian Trail Landscape Partnership. The state House of Representatives has recently approved a study of the status, management, and benefits of wildlife corridors (HR 87) that is scheduled to be completed by November 2024. This study may also provide helpful information for a South Mountain study.

Creating a plan will take some time and completing it should probably await the completion of the state's study. The Federal Highway Administration's new $300 million program for states to add wildlife crossings may be a good funding source for implementing recommendations from the South Mountain plan. There are several wildlife infrastructure funding opportunities emerging within the Infrastructure Investment & Jobs Act. In addition, Federal Emergency Management Agency's recently developed pre-disaster program, Building Resilient Infrastructure and Communities (BRIC), should also be considered as a funding source, as these corridors might contain floodplains that should be preserved for disaster prevention reasons.

This recommendation will address the regional challenge of Loss of Farmland, Habitat, Historic/Cultural, Open Space, and Forest by preserving habitat and open space. It addresses the Sustainable development challenge by aiding in the preservation of critical environmental areas, and it addresses the Water Quality/Quantity regional challenge by preserving previous land coverage and forest resources.

Undertake an inventory of South Mountain's historic resources.

As documented elsewhere in this report, South Mountain has an abundance of historic and cultural resources; over 6000 resources have been documented by the Pennsylvania Historical Museum Commission (PHMC). However, there has never been a comprehensive inventory performed at a regional scale and different geographic areas have never been surveyed or not since the 1980's. There have been inventories performed at the county and municipal scale, but these do not cover the entirety of the region. A South Mountain-wide inventory will document historic resources that represent the historical contexts presented in the Cultural Landscape Assessment for Michaux State Forest prepared by South Mountain Partnership, plus other contexts deemed a priority. This will provide the basis for additional preservation efforts, increase appreciation of those resources by residents, and enhance heritage tourism.

A region-wide inventory can provide a narrative framework for historical themes and context upon which applications for nominations for National Historic Landmark status or for listing on the National Register of Historic Places can be based. The Cultural Landscape Assessment provides five themes and

is an excellent basis for an inventory based upon these themes throughout the region, and additional themes can be brought into the inventory as well.

SMP is a logical candidate to lead this effort, as the geographic scale is at the conservation landscape level. Strong partnerships with county and local historical societies, local residents and communities will be necessary to ensure a thorough inventory. This may also be an opportunity to highlight historically underserved populations. Partnership with the counties might provide some of the funding necessary to undertake such an inventory in addition to PHMC funding.

The cost of an inventory covering the million acres of land and the likely tens of thousands of historic resources present may be substantial. It may take some time to secure this funding and may need to be phased; this recommendation, if undertaken by SMP, must be balanced with other priority projects. Therefore, the timing for this recommendation is mid-term, over the next 2-5 years.

This recommendation addresses the regional challenge of Loss of Farmland, Habitat, Historic/Cultural, Open Space, and Forest by taking the necessary first step of fully documenting the historic/cultural resources. It addresses the Sustainable development challenge by fostering distinctive, attractive communities with a strong sense of place.

Track Land Conversion

The South Mountain region has experienced decades of land development, converting farmland, woodland, and vacant land into houses, shops, offices, parking lots, industrial parks, utility-scale solar facilities, and warehouses. Tracking this development at a regional scale would help better understand the pace, location and quality of this conversion.

However, this recommendation is seen as having many complicating factors. Each county has its own database of land use/land cover and its own method for tracking conversion. How conversion should be defined is also unsettled – is it at the point of a subdivision or land development approval, or is it when a building permit is issued? Moreover, it is acknowledged that some land is planned for conversion (e.g., land within growth areas), and therefore, measuring all land conversion would not provide a nuanced enough picture of land development in the region. Nevertheless, the SMP should still undertake this recommendation and begin to explore if a region-wide tracking system could be established.

Partners for this effort would include county planning agencies and Boards of Assessment or Property Assessment Offices. An initial step would be to convene a meeting of these entities to understand better how each county tracks conversion and seek a common basis for tracking. As an alternative to using county-generated data, there may be third-party GIS data providers that could provide a set of region-wide land use/cover data (and perhaps even historic data to do trend analysis).

This recommendation is a mid-to-long-term recommendation, recognizing the complexities present with it. It addresses the Sustainable development challenge by providing data on how well the region is directing development toward existing communities, and it addresses the Loss of Farmland, Habitat, Historic/Cultural, Open Space, and Forest regional challenge by quantifying and geospatially locating loss of farmland, open space, and forest.

Other Recommendations

RECOMMENDED ACTION
Build more EV charging stations at appropriate sites like municipal facilities and shopping areas
Build more multi-use trails and connect public open space
Build more on-road bicycle facilities to connect parks and multi-use trails
Build more sidewalks
Build more waterway accesses
Build parks in those areas that are outside of the 10-minute walk or drive
Prioritize CVRT extension to Chambersburg and Carlisle
Review existing Michaux Trails to identify any redundant trails
Plan for wildlife corridors to connect South Mountain landscape with Kittatinny Ridge
Plan trails/public open space with habitat impacts in mind
Update Natural Heritage Inventories
Create Climate Change Action Plans at local and County level
Create county-wide trail plans that connect public open spaces
Set targets for land preservation at county or landscape level
Source Water Protection Plan
Rivers Conservation Plan
Update Act 167 plans
Create Growth Areas within County and municipal comprehensive plans
Encourage multi-municipal planning
Prioritize preservation of orchards through farmland preservation programs
Acquire and preserve more forest land through fee simple or easement
Acquire more habitat-rich land through fee simple or easement
Create a region-wide tree planting program and promote to individual property owners
Create farmland linking program to connect young farmers with retiring land owners
Do more programming/public education on importance of these resources and their loss
Provide assistance/support to conservancies
Support agribusiness through promotion of agri-tourism
Undertake a South Mountain inventory of historic resources
Create local Shade Tree Commissions
Provide more programming on trails
Adopt/encourage Best Practices for working in heat
Create C-PACE Programs
Designate Cooling centers across region in public buildings
Encourage solar panels on top of houses, warehouses and other large commercial buildings
Raise public awareness of air quality issues
Promote outdoor recreation
Promote trails other than the AT
Create regional park commissions

Coordinate/ information sharing meetings and events for multi-municipal, non-profits, county, regional and state agencies to include such topics as: road salt applications, water resources, stormwater, water quality data, etc.
Create more municipal Environmental Advisory Councils
Expand creation of greenways
Focus farmland preservation in areas adjacent to other preserved land such as Michaux State Forest
Prioritize farmland preservation to create larger clusters of preserved farmland
Encourage BMPs for soil erosion and nutrient runoff
Encourage participation in NRCS Wetlands Reserve Program
Encourage soil conservation plans for non-preserved farms
Monitor water quality at local, watershed, landscape and county levels, using Field Doc and CAST
Participate in FEMA Community Rating System program
Adopt density bonus zoning for preservation of natural resource land
Adopt Effective Agricultural Zoning
Adopt sustainable landscaping ordinance
Adopt Tree Preservation Ordinance
Adopt zoning & subdivision regulations that support alternative energy
Protect Appalachian Trail through local land use ordinances
Revise Subdivision and Land Development Ordinances to require dedication of parkland or fee-in-lieu-of
Use official maps for parks and trails
Adopt Complete streets standards
Adopt Traditional Neighborhood Development ordinances
Adopt Transfer of Development Rights
Adopt riparian buffer standards
Adopt enhanced floodplain protection ordinances
Adopt Conservation subdivision ordinance
Adopt green stormwater infrastructure practices and BMPs for operation and maintenance, inspections
Adopt on-lot septic maintenance (pumping) standards
Adopt steep slope regulations to include 15-25% slopes
Adopt wellhead protection standards
Adopt impervious cover reduction options and standards
Support Historic Preservation through Historic District Act (Act 167) or through zoning
Support woodlot management/ Adopt Timber Harvesting Ordinance

Revise Subdivision and Land Development Ordinances to require parkland dedication or fee-in-lieu-of dedication

Providing additional parkland within easily accessible distances for residents is articulated as a need in the State of the Region Report Card. Pennsylvania land development law, the Municipalities Planning Code, provides municipalities with the ability to require developers to provide a certain portion of their development to be dedicated as public parkland or to pay a fee that allows the municipality to buy or build parkland elsewhere (note: parkland also includes trails). This is a very effective way for

municipalities to partner with developers in providing needed parkland. An adopted park or open space plan must be in place before a municipality can adopt a parkland dedication/fee-in-lieu-of ordinance.

Set a target for land conservation/preservation goals

The loss of farmland, woodland, and other important resource land and the need to preserve this land has been documented in the report previously. However, the issue of how much of this land across the South Mountain region should be preserved has not been addressed at a regional scale. For example, while there has been an increase in preserved farmland, there has been no analysis as to how much farmland is needed to maintain South Mountain's agricultural economy. Similarly, this report documents that there are over 135,00 acres of preserved land available for public use, but there has not been an analysis of parkland adequacy across the region. There have been some county-level targets set - York County has set a goal of preserving 2,500 acres annually, and Cumberland County has a goal of 30,000 acres of farmland preserved by 2030 – but a region-wide target has not been considered, nor has a target been set within this broader conservation/preservation goal for the various types of land (which might include farmland, woodland, and environmentally-sensitive land). Consideration of setting a target might involve studies evaluating how much farmland is needed to maintain a viable agricultural economy and how much woodland is needed to maintain a viable habitat for wildlife. A solid public engagement component would also serve as an opportunity to educate the public on why each type of land should be preserved.

Focus and prioritize farmland to establish clusters

South Mountain's strong agricultural economy is a benefit for a number of reasons, as noted previously, and there is a region-wide desire to maintain it. Focusing farmland preservation efforts to achieve clustering of farms will allow more efficiencies of operations as farmers will not need to travel longer distances with their equipment, and support services can be more efficiently provided. In addition, clustering farm preservation efforts near other preserved land (such as Michaux State Forest) aids in wildlife corridor efforts.

Promote agricultural preservation programs to orchard owners

Orchards are a vital part of South Mountain’s agricultural industry and provide agri-tourism opportunities. However, a small percentage of orchards have been preserved to date through each county’s agricultural preservation program. This threatens the viability of long-term operations as orchards could be sold for non-agricultural development. Actively targeting orchard owners and recruiting them to participate in the agricultural preservation program can help long-term preservation efforts. This may require counties to use their own funds to preserve these orchards rather than state funds, as orchards tend not to have the high-quality soils that the state program prioritizes.

Acquire and preserve more forest land

Michaux State Forest is a significant forest resource within the region, but providing more wildlife habitat, enhancing stormwater management, and sequestering carbon requires more forest preservation. This can be accomplished through individual landowner actions donating easements, or by government and land conservancy actions to acquire the land. Larger areas of forested land will also implement the wildlife corridor recommendation.

Provide more programming on the importance of South Mountain Resources

This is a wide-ranging recommendation, as the resources in South Mountain include ecological/biological, historical, cultural, farmland, and recreational resources. All these resources are vital to South Mountain and provide significant benefits to residents. While there are programs now occurring across the region, additional programming can provide engaging and educational opportunities for residents of all ages through adult programs, in-school programs, online programs, and events.

Encourage soil conservation plans for non-preserved farms

All of the South Mountain lies within the Chesapeake Bay watershed, with thousands of miles of streams and rivers. As noted by the Chesapeake Bay Foundation, "[the] three major contributors to the poor health of our streams, rivers, and the Chesapeake Bay [are]nitrogen, phosphorus, and sediment." All of these can be more effectively controlled by better soil conservation. While farms preserved under the state agricultural preservation program must have soil conservation plans, and some non-preserved farms also have these plans, water quality in our region and downstream can be improved if more non-preserved farms develop and implement soil conservation plans.

Identify and build more waterway accesses

As noted previously, additional places for South Mountain residents and visitors to access the water for swimming, boating, and fishing are needed. A systematic effort to identify and build more places for waterway access will benefit the region.

Adopt wellhead protection standards

Almost half of Pennsylvanians rely on groundwater from wells as their source of drinking water. Standards that protect water supply wells from contamination will improve the region's water quality and public health. While some municipalities have wellhead protection ordinances in place, they do not cover the entire region.

Protect the Appalachian Trail landscape

South Mountain contains a significant portion of the Appalachian Trail in Pennsylvania. Thousands of hikers enjoy it annually, and a major draw is the views of the adjoining natural and agricultural landscape. Maintaining these viewsheds will enhance the hikers' experience.

Encourage Multi-Municipal Planning

The region's 74 municipalities can better address the regional challenges facing South Mountain with a regional approach to planning. These challenges do not respect municipal boundaries, and the solutions should also overlap them. Intentional regional cooperation will provide landscape-scaled actions. While some multi-municipal planning is occurring now in some parts of South Mountain, more joint planning would be beneficial.

Extend the Cumberland Valley Rail Trail

The CVRT is owned by the Cumberland Valley Rails-to-Trails Council, an all-volunteer non-profit, and is built on a portion of the historic Cumberland Railroad. While the long-term goal is to extend a trail from Harrisburg to Hagerstown, MD, the recommendation in this report is to extend the existing trail south from Shippensburg to Chambersburg and connect to the existing Chambersburg Rail Trail and to extend and link existing sections north from Newville to Carlisle. This nearly 40-mile off-road multi-use trail would be a tremendous asset for the region. It would provide a safe transportation route, a recreational asset for cyclists and walkers, and it could be an economic development driver to assist in downtown revitalization for the boroughs and villages along it. It would also serve as a central spine for other multi-use trails to connect to.

Completing a Carlisle to Chambersburg trail will require a dedicated effort, adequate funding, appropriate design and engineering, and political support. Feasibility studies, followed by engineering and design studies, right-of-way acquisition, and construction, will need to be done. Concurrent with these technical tasks, a robust outreach and communication effort will be needed to inform residents, landowners, and local officials of the benefits of such a regional trail. Fortunately, there have been thousands of miles of off-road trails that have been developed that can be used as case studies for quantifying the economic, health, and quality of life benefits and for countering myths that persist about impacts on property values and crime. This provision of relevant case studies and lessons learned is an area where a regional trail coalition can play a significant role. In addition, the Rails-to-Trails Conservancy has a very robust library of studies and reports that can be accessed for free.

Experience from other regional trails suggests that a steady, step-by-step, mile-by-mile is an effective way to transform an idea for a regional trail into reality. While these efforts may take time, experience also shows that as trails are built and are used by residents and visitors, opposition erodes as the community sees the great value that trails have on their quality of life.

Use the official map to reserve r-o-w for trails & use the subdivision and land development ordinance process to build trails

One powerful tool that municipalities have that can be a significant assistance in developing trails (and other public facilities) is the use of an official map. Official maps are authorized in the PA Municipalities Planning Code (MPC), the statutory basis for most land development regulations in Pennsylvania. As stated in PennDOT's Official Map Fact Sheet for Local Officials: "*The official map shows the locations of planned future public lands and facilities such as transportation, recreational parks and trails, and open space. The official map expresses a municipality's interest in acquiring these lands for public purposes sometime in the future."* It need not show every future location of public facilities, nor the entire municipality; it can just include future trail r-o-w locations. After adoption, if a landowner wishes to develop on land that contains the future trail, the municipality has a year to confirm its interest in acquiring the trail r-o-w and negotiate its acquisition.

Benefits of using an official map include focusing limited financial resources, saving time and money by informing property owners and developers of municipal goals and intentions, being an effective negotiating tool, addressing public land and easement acquisition needs that can't be dealt with solely through zoning or subdivision/land development and giving the municipality a competitive advantage in securing grants.

Due to the historical misperception that adopting an official map is the same as initiating acquisition through eminent domain (it is not), the official map remains an under-used tool. Consequently, the first step for this recommendation is to undertake an information/education campaign of municipal officials (elected and staff) on the benefits of having an official map. SMP can serve in this role, and it might include a webinar for officials and in-person meetings for interested municipalities. Another idea would be to have a forum/workshop for municipal officials to present this material.

A related recommendation is for municipalities to use their subdivision and land development process to either acquire land for trails or request that the land developer build them as part of the subdivision or land development. In either case, best planning practices suggest that a municipality should have an adopted comprehensive plan with future trails or an adopted trail plan that would serve as a guide to developers and an expression of a municipality's intentions.

Build more on-road facilities

A corollary recommendation for creating more multi-use trails is to create more on-road bicycle facilities. These on-road facilities include bike lanes, sharrows or protected bike lanes and can provide safer access to the multi-use trails and can encourage increased use of bicycles for transportation and recreation. There are several basic types of facilities:

Prior to establishing any on-road facilities, a study should be conducted that identifies which roads should get the facilities. Several municipalities have various plans that would be relevant. Coordination with PennDOT will be required if a municipality wishes to create an on-road facility on a road under PennDOT's jurisdiction.

CHAPTER 7 Action Plan

The following is a list of highest priority recommended actions based on SMP's capacity, mission, and vision. These were chosen from over 70 recommendations through extensive collaboration among county planning agencies and SMP staff, as well as tourism, economic development, health, historical, outdoor recreation, agriculture, private business, and faith-based groups. Each recommended action has a lead entity, potential partners, timeframe (Short term = 1-2 years, Mid-term = 2-5 years, Long-Term = 5-10 years), potential funding sources, audience(s), resources available to assist with implementation, measurements to use to evaluate progress on action, and next steps for implementation. Other recommendations that currently fall outside of SMP's capacity, mission, and vision are found … and all people and groups are encouraged to act on the recommendations and incorporate them into their strategic plans.

Recommended Action: Update Natural Heritage Inventories for Adams, Cumberland, Franklin, and York counties

Lead Entity: SMP, with Counties as close partners and Western PA Conservancy providing technical assistance

Potential Partners: Watershed organizations, Shippensburg University., other local colleges/universities, PA Game Commission, PA Fish & Boat Commission, land conservancies, and DCNR staff

Timeframe: Short term- anticipated two years

Potential Funding Sources: DCNR (C2P2, Wild Resource Conservation Program), Counties, PA Fish & Boat Commission (State Wildlife Grants Program, York Co Habitat Improvement Grant, Coldwater Heritage Partnership), PennDOT (see Lehigh-Northampton inventory); HDR Foundation

Audience: Municipalities, Counties, land conservancies, landowners, developers, civil engineering firms, PennDOT, utilities, local watershed groups, academic researchers, funders of conservation/preservation efforts

Resources Available: Existing Natural Heritage/Area Inventories, Western PA Conservancy

Measurements: # of NHIs completed; percent of Natural Heritage Areas that are within preserved land. Updated NHIs are completed and made available to mapping and review projects through Pennsylvania Natural Heritage Program.

Next Steps:

1. Confirm funding
2. Execute contract with Western PA Conservancy
3. Hold kick-off meeting with consultant and all Counties
4. Perform inventory
5. Effectively communicate and celebrate completion

Recommended Action: Expand regional trail system that connects parks and communities by creating regional multi-use trail coalition

Lead Entity: SMP

Potential Partners: County planning agencies, County parks departments, municipal parks departments/parks and recreation committees, Healthy Franklin County, Healthy York County, Pennsylvania Environmental Council, 9/11 Memorial Trail, Cumberland Valley Rail Trail Coalition (CVRTC), York County Rail Trail authority, Healthy Adams Bicycle/Pedestrian (HABPI), Susquehanna Mountain Bike Association, Bicycle South Central PA, York County Rail Trail Authority, PA Rails to Trails Conservancy, Keystone Trail Alliance, Partnership for Better Health, WellSpring, PA DCNR Bureau of Recreation and Conservation Regional Advisor, DCNR Office of Outdoor Recreation, County tourism bureaus, county and local economic development agencies

Timeframe: Short term for creation of coalition, long term for ongoing support

Potential Funding Sources: WeConservePA (Regional Trails Workshop Grant); Rails-to-Trails Conservancy Trail Grants; DCNR (Peer Grant)? Target Community Engagement or Key Market Grants (NOTE: by invitation only); Walmart Local Community Grants (NOTE: through individual locations)

Audience: Counties; municipalities that have planned trails; cyclists; hikers/walkers; residents

Resources Available: State of the Region Metrics Map trail layer; county and non-profit trail plans; Intersections Initiative; US DOT Navigator; Rails-to-Trails Federal Funding Tool; CVRTC, York Rail Trail Authority

Measurements: Coalition created/not created; coalition charter/MOU created, # of partners participating in summit; # of partners participating in coalition; creation of aggregated list & map of planned trails; annotated list of funding sources

Next Steps:

1. Research other regional multi-use trail coalitions (e.g., The LINK, The Circuit, NEPA Trails Forum)
2. Map existing trails
3. Inventory local and regional outdoor recreation groups
4. Hold regional summit & invite stakeholders/partners
5. Prepare charter/Memorandum of Understanding for members of coalition to execute with goals/purpose/roles

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Recommended Action: Expand regional trail system that connects parks and community – Plan for a cross-county multi-use trail(s)

Lead Entity: SMP

Potential Partners: County planning agencies, County Parks Departments, CVRTC, York County Rail Trail, PEC, BRC Regional Advisor, municipalities

Timeframe Long term

Potential Funding Sources: PennDOT, DCNR, Commonwealth Finance Authority (GTRP, LSA), Franklin County, WellSpring Summit Endowment Grant , Walk Works PA; US Department of Transportation (various); Rails-to-Trails Conservancy Trail Grants

Audience: Counties, municipalities along potential corridors, cyclists, hikers/walkers, landowners along potential corridors, funders

Resources Available: State of the Region Metrics Map trail layer; county trail plans; Intersections Initiative; US DOT Navigator; Rails-to-Trails Federal Funding Tool**;** Pennsylvania Environmental Council trail inventory GIS data; Other initiatives: Eastern Sierra Towns to Trails;

Measurements: # of corridors identified; plan created/not created

Next Steps:

1. Use State of the Region Metrics map trails layer to identify corridors with places/parks to connect
2. Review municipal and county trail plans to identify potential corridors
3. Prioritize a corridor
4. Secure funding for feasibility study

5. Prepare RFP for feasibility study
6. Hire consultant for feasibility study
7. Undertake public outreach/advocacy

Recommended Action: Plan for a wildlife corridor to connect to Kittatinny Ridge & support greenways

Lead Entity: SMP

Potential Partners: Appalachian Trail Landscape Partnership, County planning agencies, DCNR, PA Game Commission, Research Corps, Shippensburg University., The Nature Conservancy, Highlands Coalition

Timeframe: Mid-term

Potential Funding Sources: DCNR, PA Fish & Boat (State Wildlife Grants Program); CFA (GTRP, LSA); HDR Foundation; USDOT (Wildlife Crossings Pilot Program); USDA NRCS (Wetland Reserve Easement Program); US FWS (North American Wetlands Conservation Act Small Grants Program); NFWF Chesapeake Bay Stewardship Fund (SWG or WILD grant programs; Lawrence Foundation); Dr. Scholl Foundation; DCED (LSA); PEMA (BRIC); US FWS (Candidate Species Conservation); Infrastructure Investment and Jobs Act

Audience: Counties, municipalities along potential corridors, PA Game Commission, landowners along potential corridors, PA Highlands and Appalachian Trail Landscape Partnership

Resources Available: High Priority Conservation Area map; County Greenway Plans, PA Game Commission Wildlife Action Plan; Natural Area Inventories; state legislative report (expected Nov. 2024)

Measurements: Corridor(s) defined/not defined; plan written/not written; # of endangered species targeted for corridor use

Next Steps:

1. Use County greenway maps and State of the Region High Priority Conservation map and prioritize general areas to focus on
2. Secure funding
3. Prepare RFP
4. Hire consultant to delineate corridor

5. Undertake public outreach/advocacy

Recommended Action: Undertake a South Mountain Inventory of Historic Resources

Lead Entity: SMP

Potential Partners: PHMC, County planning agencies, County historical societies, local historical societies and groups, National Park Service, DCNR, Preservation PA

Timeframe: Mid-term

Potential Funding Sources: PHMC (Keystone Historic Preservation Planning Grants);

Audience: Counties, municipalities, historical societies, landowners with historic resources, developers, civil engineering firms

Resources Available: STATE OF THE REGION INITIATIVE Metrics Map historic resources layer; Existing historic resource inventories/plans; County historical societies; municipal historical societies; South Mountain Partnership Cultural Landscape Assessment for Michaux State Forest

Measurements: # of resources; % of resources preserved/historically designated

Next Steps:

1. Convene a meeting of key stakeholders
2. Secure funding
3. Develop RFP
4. Hire consultant

Recommended Action: Track Land Conversion

Lead Entity: SMP

Potential Partners: County planning agencies, County Boards of Assessment

Timeframe: Mid- to long-term

Potential Funding Sources:

Audience: Counties; municipal officials; residents

Resources Available:

Measurements: Acres outside designated/desired growth areas; acres of development by land use (residential, commercial, industrial, institutional, # of residential units built outside of designated/desired growth area

Next Steps:

1. Convene meeting of planning agencies to determine scope
2. Assess current county protocols/methods for determining land use

APPENDICES

Appendix A - List of Steering Committee Members

Appendix B - List of Plans Reviewed

Appendix C - List of Subject Matter Advisors

Appendix D – Summary of Subject Matter Advisor Discussion (memo)

Appendix E - List of Metrics Data Sources

Appendix F - SMART Analysis of Recommendations

Appendix A – List of Steering Committee Members

We are incredibly grateful to this team of professionals for leading the process of our first State of the Region Project.

Rob Thaeler, Adams County Department of Planning and Development

Stephanie Williams, Cumberland County Planning Department

Cody Barnhart, Franklin County Planning Department

Quentin Clapper, Franklin County Planning Department

Steven Thomas, Franklin County Planning Department

Anne Walko, York County Planning Commission

Pam Shellenberger, York County Planning Commission

Tyler Semder, Internal Lead of South Mountain Partnership, Department of Conservation and Natural Resources

Patricia Newdeck, Department of Conservation and Natural Resources

Julia Chain, Appalachian Trail Conservancy, South Mountain Partnership

Katie Hess, External Lead of South Mountain Partnership, Director of Pennsylvania Landscape Conservation, Appalachian Trail Conservancy

Appendix B – Plans Reviewed

County	Plan Name	Year
Adams	Comprehensive Plan	1991
Adams	Vision for Parks/Open Space/Recreation	1997
Adams	Greenways Plan	2010
Cumberland	Climate Change Action Plan	2022
Cumberland	Countywide Action Plan/Watershed Implement Plan	2020
Cumberland	Comprehensive Plan	2017
Cumberland	Land Partnership Plan	2013
Franklin	Franklin Forward (comprehensive plan)	2012
Franklin	Greenway and Open Space Plan	2007
York	York County Growth Management Plan - Envision York 2040	2017
York	Open Space & Greenway Plan	2006
York	Integrated Water Resources Plan	2011
York	Agricultural Land Protection Plan	2008
York	Environmental Resources Inventory	2018
York	Heritage Preservation Plan	2016

Appendix C – List of Subject Matter Advisors

Name	Affiliation
Austin Cohrs	PA State University
Andrea Crouse	Borough of Carlisle
Autumn Karper	Tri-County Community Action Program
Adam McClain	Adams Co. Conservation District
Shani Shenk	Newville Food Bank
Caitlin Lucas	Franklin Co. Conservation District
Charles Heberling	Cumberland Co. Conservation District
Cheryl Burns	Capital RC&D
Brain Gish	Chesapeake Bay Foundation
Cody Barnhart	Franklin County
Daniel Weber	PA State University
Diana Dellinger	USDA
Eric Saunders	New Hope Ministries
Gwen Loose	York County Trails
Elizabeth Grant	Cumberland County
Frank Grumbine	PA Historic Preservation Office
Gail Witwer	Partnership for Better Health
David Maclay	Historic Gettysburg
Jim Mader	Cumberland Valley Rail Trail
Jason Andrew Beale	Central PA Conservancy
Jay Eury	PA State University
Julia Klint	Family Health Council of Central PA
Julia Fitzpatrick	PA Downtown Center
Karen Deshong	Shippensburg Produce and Outreach

Kathy Gaskin	Healthy Adams County
Lori Glace	Cumberland Co. Conservation District
Lindsey Bream	USDA NRCS District Office
Jill Sellers	Mainstreet Gettysburg
Mindy Crawford	Preservation PA
Manal Harrak	Sadler Health
Marci Mowery	PA Parks and Forests Foundation
Meagan Shreve	South Central Community Action Program
Nickie Fickel	WellSpan Health
Noelle Purdy	WellSpan Health
Patrick Andrew	PA Dept. of Agriculture
Ricki Horne	Leadership Education and Farming (LEAF)
Rob Thaeler	Adams County
Bob Weed	Project Share PA
Sarah Bay Nawa	PA Association for Sustainable Agriculture (PASA)
Sean Kenny	Farm and Natural Lands Trust of York County
Shawn Gladden	Cumberland Co. Historical Society
Stephanie Williams	Cumberland County
Sarah Kipp	Adams County
Holly Smith	PA State University
Sonya Payne	Shippensburg Community Resource Coalition (SCRC)
Susan Richards	Capital RC&D
Kirk Stoner	Cumberland County
Trinette Ream	The Salvation Army
Natalie Williams	Healthy York County Coalition
Will Lane	Gettysburg College

Appendix D – Summary of Subject Matter Advisor Discussion (memo)

South Mountain Partnership State of the Region, Summary Report, January 12, 2023

Introduction

The South Mountain Partnership (SMP) and Appalachian Trail Conservancy engaged the Eastwick Team (Eastwick Solutions, Gaadt Perspectives, LLC and Cedarville Engineering Group, LLC) in summer 2022 to develop a State of the Region Report Card and associated materials (including interactive mapping). The intent of this project is to provide guidance to residents, businesses, county and local government, along with other stakeholders, to stabilize and improve the health of the region. The monitoring of select indicators and metrics allows the region's stakeholders to gage progress on identified issues and provides motivation to take action that can lead to a better future for the region.

The South Mountain Partnership landscape contains four counties, numerous municipalities, nearly a million people, and many stakeholders and constituencies. The work undertaken for this project required a collaborative and iterative approach that included networking and partnership building; through a series of meetings and coordination, the process was consensus driven, involving Subject Matter Advisors made up of professionals and citizens from a variety of local, county, and state government agencies, non-profits, and for-profit organizations. At the same time, the process recognized the unique regional cultural dynamic of local landowners and respected a collaborative and non-adversarial approach to a creative and productive outcome.

The purpose of this Summary Report is to describe the process undertaken to select indicators and metrics for the State of the Region Report Card. Indicators, as defined for this project, are identified categories within which measurements or assessments will be made. Metrics are the specific measurements within each indicator that will measure progress (positive of negative) over time. For example, an indicator for nature might include measurements of acres of preserved land, miles of streams, pollutants in streams, etc.

Process

The Eastwick Team and SMP created a multi-pronged approach that engaged a variety of constituencies. A Steering Committee was formed, and initial discussion of indicators and metrics took place during a kickoff meeting held August 24, 2022. This meeting not only allowed for the initial discussion of indicators and metrics but provided an opportunity to further understand regional issues, gather names for the subject matter advisor group, and explore the need for public engagement and outreach. Five indicators were identified: nature, recreation, history and culture, agriculture and food, and public health. To provide additional public engagement, an initial questionnaire was developed and distributed to the Steering Committee and all the Partnership committees. Subsequent to the questionnaire, a survey was developed and sent to Partners, Research Corps members, and other key stakeholders.

The Eastwick Team also recognized the important role that tourism has in the region (including a national park, 3 state parks, a state forest, the Appalachian Trail and agritourism), and recognized that many visitor experiences depend on the quality of natural assets, including outdoor recreation, farm products, and seasonal events. As such, the Eastwick Team coordinated a convention and visitors'

bureau forum with all four bureaus participating to discuss which indicators and regional resources might potentially improve the quality of visitor experience or conversely, which of the indicators and resources if not addressed will diminish a visitor experience.

All of these efforts were compiled and made available to the panel of Subject Matter Advisors prior to their first meeting held October 28, 2022. The first meeting discussed the scope and purpose of the work, the process of indicator determination and metric selection, and likely data sets available for metrics. Five breakout groups were formed to discuss the following indicators: Nature, Agriculture/ Food, Historic/ Cultural, Recreation, and Public Health. Facilitated discussions of these indicators, and possible metrics to be used to measure them, led to robust discussions of the value of different metrics, the availability of data to measure metrics, and the format of such data for reporting. Over 80 potential metrics were identified at this first meeting.

The results of this meeting were shared with the project Steering Committee. The Steering Committee recommended that these potential metrics be compared to the issues that had been identified in various relevant plans (such as county comprehensive plans) during the plan review phase of the project, to ensure that all these issues could be aligned with the potential metrics. This analysis of the alignment of issues and potential metrics was performed by the Eastwick Team and found that all of the issues in relevant plans were able to be addressed by the potential metrics. The Steering Committee further refined the potential metrics for further consideration. The Subject Matter Advisors were asked to comment virtually, and the Steering Committee further considered indicators and metrics during the month of November. During this period, the Eastwick Team investigated the availability of different sets of data associated with identified potential metrics.

A second series of five breakout group meetings, one per indicator, were held virtually with the Subject Matter Advisors during the week of December 12, 2022. These meetings provided an opportunity for further review and discussion based on a data matrix the graphically depicted data availability, the ability of a metric to measure change over time, whether a particular metric is of value to the intended audience, whether a particular metric should be reported on in a special report, and whether a particular metric is aspirational for the future (given availability of current data). The matrix used for these discussions and notes from the discussion follows below:

South Mountain Partnership State of the Region Draft Indicators and Metrics					
Indicator/Metric	**Data Available**	**Measures change over time (1)**	**Value to intended audience (2)**	**Report on in a special report (3)**	**Aspirational Metric (4)**
Nature					
Acres of preserved land*	Yes	Modest	High	No	No
Acres of high priority land preserved	Effort needed	Modest	Minimal	Yes, part of process	Yes, designating over time
Acres of developed land	Effort needed	Modest	High	Yes, helpful for inaugural report	No
Acres/% of forest land*	Effort needed	Modest	Modest	No	No
Climate change – rainfall variations?	No	Modest	High	Yes	Yes
Nitrate loading or WQ measurement	Effort needed	Modest	Modest	Yes	Yes
Miles of streams	Yes	No	Modest	Yes, helpful for inaugural report	No
Miles of streams w/in protected lands	Effort needed	Minimal	Minimal	Yes	No
Miles of impaired streams*	Yes	Modest	High	No	No
Miles of fishable streams; consider trout fisheries	Yes	Minimal	Modest	Yes, as recreational and background	No
EV/HQ streams	Yes	Minimal	Modest	Yes, helpful for inaugural report	No
Wildlife measures	Effort needed	Unknown	Modest	Yes	Yes, rare/threatened
Munic. w/ natural resource protection regs.	Effort needed	Minimal	Minimal	Yes, should also address enforcement	No, unless updates measured
Munic. w/ EACs	Effort needed	Minimal	Minimal	Yes, work of active EAC's	No

Development in floodplains	Yes	Minimal	Minimal	No	No
Acres dev. on steep slopes	Yes	Minimal	Minimal	No	No
Acres of wetlands*	Yes	Minimal	Modest	Yes, as background	No
Economic value of nature	Effort needed	Minimal	High	Yes	Yes
Rare/threatened plants/animals	Effort needed	Modest	High	Yes	Yes, see also wildlife
Miles of riparian buffers*	Yes	Modest	Modest	No	No
E&S/ siltation issues	Effort needed	Modest	Minimal	Yes	Yes
GW elevations	Effort needed	Minimal	Modest	Yes	Yes
Sustainable GW withdrawals	Effort needed	Modest	Modest	Yes	Yes
#/% of water supplier SWPP	Effort needed	Minimal	Modest	Yes	No
Agriculture/ Food					
Acres of farmland*	Yes	Modest	High	No	No
Acres preserved farmland*	Yes	Modest	High	No	No
Acres of actively farmed land	Yes	Modest	Modest	No	No
Munic. w/ effective ag. Zoning	Effort needed	Minimal	Minimal	Yes	Yes
Access to fresh food*	Yes	Modest	High	No	No

Indicator/Metric	Data Available	Measures change over time (1)	Value to intended audience (2)	Report on in a special report (3)	Aspirational Metric (4)
Agriculture/ Food cont.					
Number of farmers markets – subset of Access to fresh food	Yes	Modest	High	Yes	Yes
Crop production*	Yes	Yes	Modest	No	Yes
Farms w/ conservation plans or E&S plans	Effort needed	Minimal	Modest	No	Yes
Farms w/ manure management plans	Effort needed	Minimal	Modest	No	Yes
Farms w/ nutrient man. Plans	Effort needed	Minimal	Modest	No	Yes
Average age of farmers	Yes	Modest	Minimal	Yes – "crisis mode"	Yes
Food banks	Yes	Minimal	Modest	Yes	Yes
Food deserts/swamps*	Yes	Modest	HIgh	Yes	Yes
CAFOs	Effort needed	Minimal	Minimal	Yes	Yes
Acres managed private forest land	Yes	Minimal	Minimal	No	No
Ag. economic impacts	Effort needed	Yes	Modest	Yes	Yes
Acres cover crop/no till	Yes	Modest	Minimal	No	No
Historic/ Cultural					
# of outlets for culture	Effort needed	Minimal	Modest	Yes	No
# of existing/potential historic sites*	Yes	Minimal	Modest	Yes	No

# of threatened historic sites	Effort needed	Minimal	Modest	Yes	Yes
# of artifacts	Effort needed	Minimal	Modest	Yes	Yes
Visitor counts (parks, historic sites, museums)*	Effort needed	Yes	Modest	Yes, to enlighten the public	Yes, review methodology
# of permits for events and cultural festivals	Effort needed	Yes	Minimal	No	No
# of HARBs	Effort needed	Minimal	Minimal	Yes	yes
# of historic districts	Effort needed	Minimal	Modest	Yes	Yes
Munic. w/ historic ord.	Effort needed	Minimal	Modest	Yes	Yes
Grants for historic work	Effort needed	Minimal	Minimal	Yes	No
# of museum memberships	Effort needed	Minimal	Minimal	Yes	No
Resource demolitions eligible for NR	Effort needed	Minimal	Modest	Yes	No
Recreation					
%/acres of public parkland v. total land*	Yes	Minimal	Modest	No	Yes, can report on now but should consider locational aspects; as population grows, so does need for parkland

Indicator/Metric	Data Available	Measures change over time (1)	Value to intended audience (2)	Report on in a special report (3)	Aspirational Metric (4)
Recreation cont.					
Miles of trails*	Yes	Modest	High	Yes	No
Proximity to trails, OS/parks*	Yes	Modest	High	No	No
Staffing of public lands	Effort needed	Minimal	Minimal	Yes	Possible
Munic. w/ park/rec. boards	Effort needed	Minimal	Modest	Yes	Possible
# of active rec. facilities	Yes	Modest	Modest	No	No
Nature Score	Effort needed	Modest	Modest	Yes	Yes
Miles of fishable streams	Yes	Minimal	Modest	Yes	No
Miles of child-oriented streams	Effort needed	Minimal	Modest	Yes	No
Accessible fishable streams	Yes	Minimal	Modest	Yes	No
# of fish stocked	Effort needed	Yes	Modest	Yes	No
# of jobs in rec. industries	Effort needed	Minimal	Minimal	Yes	Yes
Economic contrib. of recreation	Effort needed	Modest	Modest	Yes	Yes
Munic. w/ dedication/ fee in lieu OS	Effort needed	Minimal	Modest	Yes	Yes, data may not be consistent
Public Health					
# of bad air days*	Yes	Yes	High	No	No
Light pollution	Effort needed	Modest	Modest	Yes	Yes

PM 2.5 data	Effort needed	Modest	Modest	Yes	Yes
VMT	Effort needed	Minimal	Modest	Yes	Yes
Households w/ cars	Yes	Modest	Minimal	No	No
Commute transport. Mode – subset of access	Yes	Modest	Modest	No	No
Access/use to public transportation*	Yes	Modest	Modest	No	No
Extreme heat events/ rain/flood events*	Yes	Modest	High	Yes	No
Prediabetes	Effort needed	Modest	Modest	Yes	Yes
Obesity	Effort needed	Modest	Modest	Yes	Yes
Heart disease	Effort needed	Modest	Modest	Yes	Yes
Access to health care	Effort needed	Yes	High	Yes	Yes

Notes:

(1) Data collected on a periodic basis (monthly, yearly, etc.) that is reliable and can show meaningful progress (improve, worsen; positive or negative; good or bad; red, yellow, or green; thumbs up, down or neutral, etc.)

(2) Elected officials, public, identified stakeholders

(3) Data not available on periodic basis or doesn't change much, but metric important to discuss

(4) Data not readily available or collection requires significant effort outside scope of current project; consider for the future

* Metrics recommended by Subject Matter Advisors for 1st publication

Color coding indicates metric prioritization - green were preferred/high priority, yellow were next priority (based on data availability and measurability over time). Uncoded currently lack reliable data.

The virtual meetings held to discuss the metrics listed above resulted in recommended metrics for the first State of the Region Report Card (identified with asterisks in the table). The results of the discussions also included specific notes for further consideration in the future:

Notes from Meetings held with Subject Matter Advisor's week of December 12, 2022:

Nature

- Miles of Impaired Streams: assessments take time and land use impacts must be stable; DEP assessments will not show periodic change often
- Climate Change – DCNR collecting some information; design alternatives, measures important to consider in the future
- Consider acres/% of forest land in preserved land category; consider using "tree cover" as metric, rather than forest cover – will indicate areas outside of forested land that contribute to broader societal goals
- Economic Value of Nature – Important to consider in the future; tie in "Return on Environment" reports for higher level data (Franklin and Cumberland have done) and start strategizing data needs for representative metrics.
- Wildlife measures/ rare-threatened plants/animals – consider measurements of ecosystem function and health through representative plant/animal species; habitat health & needs for such health; consider profiles of representative regional species and monitor over time; options for engaging local college students to help monitor.

Agriculture/Food

- Data on Farmers Markets readily available through PA Extension (Patrick Andrews)
- Acres of farmland – not as important as amount of food produced or another type of hunger measure. A useful metric nonetheless.
- Acres of actively farmed land does not address agribusiness vs. independent farmer owned land or agricultural farm labor – these are issues that should be addressed in the future in special reports or as aspirational metrics.
- Municipalities with effective agricultural zoning – a subjective measure; what constitutes "effective".
- PA Food Network – great source for food needs assessments.
- Crop production – for humans, not for feed. Need to make distinction.
- "Agricultural water sources for producers" – consider as a metric for the future; huge issue out west and will become an issue in east. (Patrick Andrews)
- Food banks – how many?, people served?; big issue is hunger needs assessments and unequal geographic representation of food banks. More is better is not a measure of progress – days open, location, etc. are better measures.

- Food deserts – USDA data available; SNAP food assistance benefits; Number of people living in a food desert – better metric
- Acres of farmland – consider making the following subsets: acres of preserved farmland and acres of actively farmed land.
- Access to fresh food – consider making number of farmers markets a subset.

Historic/Cultural

- # of outlets for culture – hard to quantify, not a good indicator
- # of existing/ potential historic sites – consider adding "cultural resources (includes archeological resources) – SHPO has data on these.
- "Cultural setting" as important as # of threatened sites; sldo issues worth considering
- Artifacts – difference between inventories of collections and larger scale resources lost; not too helpful as a metric unless looking at saved resources that can be reported on.
- Visitor counts – can be a useful metric and type of counts and methodology should be considered over time. Try to use what data we can assemble for now; evolve metric over time. Heritage tourism is important to report on for several reasons, including economic. Compared visitor counts to museum memberships – conclusion: visitation more important.
- Consider combining # of HARBs, # of historic districts, and municipalities with historic ordinances to show local level protection (all agreed we need to measure preservation at the local level) – make these three aspirational metrics for further consideration.
- Grants – not that useful as a metric; can get data on PHMC grants but data regarding types of grants, what kinds of work being done, is more important.
- Data source for evaluation of local historic preservation ordinances (can use as baseline to build on in the future). – "Inventory and Analysis of Historic Preservation Ordinances in Pennsylvania Municipalities", Nov. 2018, Steven Burg et. Al., Shippensburg and Millersville Universities.

Recreation

- %/ acres of public parkland – would be helpful over time to look at park and recreation as a measure of community health; also consider tying in service area data and parkland needs per population; do we want to measure parkland or greenspace? (greenspace is broader) Also, % or acres doesn't measure usefulness - trails do not represent large acreages but serve a lot of people.

- Miles of trails - distinguish between types of trails, public vs. private?
- Consider miles of Water Trails as a metric (and accessibility) – PA Water Trail Program (Fish and Boat Commission). In addition to "miles of trails" or subset. Miles and access will expand over time.
- Proximity to trails – referencing DCNR data
- Municipalities with Park Boards – just as important, how active are they.
- Consider linking staffing of public lands and staffing of local parks/ park board data; also, should report on $ available for parks. The Outdoor Recreation Association reports on jobs. Report on these issues but likely not metrics.
- # of active recreation facilities – data really exist? This metric is not seen as providing great value at present.
- Miles of fishable streams – not of great value unless we can develop data on accessibility.
- Consider broadening child-oriented streams to child recreational offerings – possibly something to report on.
- Economic value and/or contributions of open space/ recreation – York and Cumberland Counties collect some data; trail groups collect data – could start as special reports and become metrics over time.
- Reconsider: %/# of hunting and fishing licenses; may not indicate locational interest but does measure population intertest in hunting and fishing.
- Work towards adding metrics over time.

<u>Public Health</u>

- PM 2.5 data – particulate matter thresholds are available in "County Health Rankings", data collected yearly, most recent report is 2018. Lag in data collection – attributable to COVID? Aspirational for now pending resolution of data availability.
- Households with cars not seen as great metric. What does this show? Higher standard of living?
- Consider combining "Access/ use of public transportation" with "Commute transportation mode." Make commute a subset of access – collect data for both, if possible. Note: access to public transportation does not necessarily imply use.
- Prediabetes (or diabetes), obesity, heart disease have some associated data but its use as metrics needs to be further considered. Value as metrics needs to be established given intended audience.

- Need to rethink “Access to healthcare.” Too broad a category to use as a metric. All hospitals undertake Community Health Needs Assessments (CHNA’s) on a periodic basis (3-year average). These reports tie together indicators of health – existing providers, proximity to hospitals, proximity to primary care providers, specialty care and acute care services, etc. Need to narrow down and coordinate with health providers to determine appropriate metrics. Consensus is to coordinate with health providers in the years to come to collect new data and adequately report on data already collected. Aspirational but need is great, and providers would like data they collect to reach a broader audience. Also see the need to tie metrics of health to other indicators and metrics – exercise, food availability, etc. – could be part of special reports showing the interconnectedness of indicators and metrics.

This selection process led to a further investigation of data availability, the geographic scale of the data, availability of historic data, and who manages the collection of such data. Additional discussion with the Steering Committee led to the selection of seventeen (17) metrics across a broad set of indicator topics that will provide a useful baseline and trend information about the state of the region. Following is the final list of metrics for recommendation to the Steering Committee.

METRIC	**DETAILS**	**Data Source**	**Value**	**Comparison Data set**
Acres of preserved land	Non-farmland land that has been preserved by a gov't or non-profit	Counties	% of total land	2010
Acres of forested land	All contiguous patches of trees ≥1 acre in extent with a patch width ≥240-ft somewhere in the patch.	Chesapeake Conservancy	% of total land	2010
Miles of impaired streams	Streams failing to meet 1 or more water quality standards	DEP	% of total stream miles	2010
Acres of wetlands in preserved land	As identified by NWI – soils, vegetation & hydrologic conditions	National Wetlands Inventory	# of acres of wetlands	2010
Miles of riparian buffers	Buffer of 35' to be used	Chesapeake Conservancy	% of total stream miles	2010
Acres of farmland	Any place from which $1,000 or more of agricultural products were produced and sold	Census of Ag	# of acres of farmland	2007
Acres preserved farmland	Preserved under state/county/local program	Counties	% of farmland	2010
Access to fresh food	Population living farther than 10 miles from supermarket	USDA	# of persons OR % of population	2010 (TBD)
Crop production	*Acres that have crop production*	Census of Ag	# of acres	2007
Number of historic resources	Above-ground buildings, districts, objects, and structures.	PA SHARE	# of resources	2010
Acres of public parkland	Publicly accessible open space	DCNR	# of acres OR acres/1000 persons	2010
Miles of trails	As provided by DCNR, Rails to Trails, Fish & Boat, Keystone Trail Alliance,	PASDA	# of miles	2010

Walking proximity to trails & parks	10 min. walk to trails or parks.	DCNR	# of people OR % of population	# of people OR % of population
Driving proximity to trails	10 min. drive from trail head	DCNR	# of people OR % of population	DCNR goal (10 min. drive)
Driving proximity to water	10 min drive to water recreation	DCNR	# of people OR % of population	DCNR goal (10 min. drive)
# of days exceeding PM 2.5 standards	% of days that exceed EPA standards for PM of 2.5 or larger	CDC	# of days	2010
Extreme heat/rain events	Heat over 90 degrees, rain over 2”	CDC	# of days of either	2010

Conclusions

Arriving at the final list above necessitated numerous additional conversations, Steering Committee Meetings, data research and assessment of data availability. The scale of data (local, county, regional, national), data collection methodology (who and how frequent), and the desire to make the selected metrics meaningful to the broader community, all shaped the selection of the final metrics. Several challenges to data availability and the final selection of the project service area resulted in additional meetings among the Steering Committee and Eastwick Team. The selection process, while protracted, led to the selection of metrics deemed most appropriate at this time. While some of the original metrics considered remain aspirational for now, it is certainly viable to consider adding metrics over time as data becomes available.

It should be noted again that numerous individuals contributed to the selection of metrics, including Subject Matter Advisors, local citizens, non-governmental organizations, and all levels of government. This project would not have been possible without them.

Appendix E – List of Metrics Data Sources

METRIC	Recent data set date	Comparison data set date	Data Source
Air quality	2023	2010	CDC
Driving proximity to trails	2019	NONE	DCNR
Driving proximity to water access	2019	NONE	DCNR
Extreme heat days	2011-2020	2001-2010	CDC
Extreme rain days	2011-2020	2011-2020	CDC
Farmland	2017	2007	USDA Census of Agriculture
Forested land	2023	2010	Multi-Resolution Land Characteristics Consortium
Historic Places	2023	NONE	PA SHARE
Orchards	2017	2007	USDA Census of Agriculture
Preserved farmland	2023	2010	WeConservePA & Individual County-provided GIS Data
Preserved land	2023	2010	Individual County-provided GIS Data
Public open space	2023	NONE	Individual County provided GIS Data & DCNR
Riparian buffers	2018	2013	Chesapeake Conservancy
Streams and creeks	2023	NONE	PA DEP
Trails & bike routes	2023	2013	DCNR
Walking proximity to trails & parks	2019	NONE	DCNR
Wetlands	2023	2010	US Fish & Wildlife Services

Appendix F – All Recommendations

RECOMMENDED ACTION	TYPE	Smart Growth	Water Quality/ Quantity	Loss of Ag/Habitat/OS/ Historic_Cultural/ ForestResources	Recreation	Public Health
Build more EV charging stations at appropriate sites like municipal facilities and shopping areas	Capital Project					x
Build more multi-use trails and connect public open space	Capital Project	x			x	x
Build more on-road bicycle facilities to connect parks and multi-use trails	Capital Project	x			x	x
Build more sidewalks	Capital Project	x			x	x
Build more waterway accesses	Capital Project				x	x
Build parks in those areas that are outside of the 10-minute walk or drive	Capital Project				x	x
Prioritize CVRT extension to Chambersburg and Carlisle	Capital Project				x	x
Review existing Michaux Trails to identify any redundant trails	Capital Project				x	
Plan for wildlife corridors to connect South Mountain landscape with Kittatinny Ridge	Planning			x		
Plan trails/public open space with habitat impacts in mind	Planning			x		
Update Natural Area/Heritage Inventories	Planning			x		
Create Climate Change Action Plans at local and County level	Planning					x
Create county-wide trail plans that connect public open spaces	Planning	x			x	x
Set targets for land preservation at county or landscape level	planning	x		x		
Source Water Protection Plan	Planning		x			x
Rivers Conservation Plan	Planning		x			
Update Act 167 plans	Planning		x			
Create Growth Areas within County and municipal comprehensive plans	planning	x		x		
Encourage multi-municipal planning	planning	x				
Prioritize preservation of orchards through farmland preservation programs	Policy/ Programming	x		x		x

Acquire and preserve more forest land through fee simple or easement	Policy/ Programming	x	x	x		
Acquire more habitat-rich land through fee simple or easement	Policy/ Programming	x		x		
Create a region-wide tree planting program and promote to individual property owners	Policy/ Programming		x	x		
Create farmland linking program to connect young farmers with retiring land owners	Policy/ Programming			x		x
Do more programming/public education on importance of these resources and their loss	Policy/ Programming			x		
Provide assistance/support to conservancies	Policy/ Programming			x		
Support agribusiness through promotion of agri-tourism	Policy/ Programming			x	x	
Undertake a South Mountain inventory of historic resources	Policy/ Programming			x		
Create local Shade Tree Commissions	Policy/ Programming			x		x
Provide more programming on trails	Policy/ Programming				x	x
Adopt/encourage Best Practices for working in heat	Policy/ Programming					x
Create C-PACE Programs	Policy/ Programming					x
Designate Cooling centers across region in public buildings	Policy/ Programming					x
Encourage solar panels on top of houses, warehouses and other large commercial buildings	Policy/ Programming					x
Raise public awareness of air quality issues	Policy/ Programming					x
Promote outdoor recreation	Policy/ Programming				x	x
Promote trails other than the AT	Policy/ Programming				x	x
Create regional park commissions	Policy/ Programming				x	x
Coordinate/ information sharing meetings and events for multi-municipal, non-profits, county, regional and state agencies to include such topics as: road salt applications, water resources, stormwater, water quality data, etc.	Policy/ Programming		x			

Create more municipal Environmental Advisory Councils	Policy/ Programming	x		x		x
Expand creation of greenways	Policy/ Programming	x	x	x	x	
Focus farmland preservation in areas adjacent to other preserved land such as Michaux State Forest	Policy/ Programming	x		x		
Prioritize farmland preservation to create larger clusters of preserved farmland	Policy/ Programming	x		x		x
Encourage BMPs for soil erosion and nutrient runoff	Policy/ Programming		x	x		x
Encourage participation in NRCS Wetlands Reserve Program	Policy/ Programming		x	x		
Encourage soil conservation plans for non-preserved farms	Policy/ Programming		x			x
Monitor water quality at local, watershed, landscape and county levels, using Field Doc and CAST	Policy/ Programming		x			x
Participate in FEMA Community Rating System program	Policy/ Programming		x			
Adopt density bonus zoning for preservation of natural resource land	Regulatory	x		x		
Adopt Effective Agricultural Zoning	Regulatory	x		x		x
Adopt sustainable landscaping ordinance	Regulatory	x		x		
Adopt Tree Preservation Ordinance	Regulatory		x	x		x
Adopt zoning & subdivision regulations that support alternative energy	Regulatory					x
Protect Appalachian Trail through local land use ordinances	Regulatory				x	x
Revise Subdivision and Land Development Ordinances to require dedication of parkland or fee-in-lieu-of	Regulatory	x		x	x	x
Use official maps for parks and trails	regulatory	x		x	x	x
Adopt Complete streets standards	regulatory	x				x
Adopt Traditional Neighborhood Development ordinances	regulatory	x				
Adopt Transfer of Development Rights	regulatory	x		x		
Adopt riparian buffer standards	Regulatory	x	x	x		x
Adopt enhanced floodplain protection ordinances	Regulatory		x			x

Adopt Conservation subdivision ordinance	Regulatory	x	x	x		
Adopt green stormwater infrastructure practices and BMPs for operation and maintenance, inspections	Regulatory	x	x			x
Adopt on-lot septic maintenance (pumping) standards	Regulatory		x			x
Adopt steep slope regulations to include 15-25% slopes	Regulatory	x	x			
Adopt wellhead protection standards	Regulatory		x			x
Adopt impervious cover reduction options and standards	Regulatory		x			
Support Historic Preservation through Historic District Act (Act 167) or through zoning	Regulatory			x		
Support woodlot management/ Adopt Timber Harvesting Ordinance	Regulatory		x	x		

Appendix G – SMART Analysis of Recommendations

SMART Analysis of Top Recommendations

NOTES:

For Specific/Achievable, am using a range of values to describe how well a recommendations meets it: Very, Somewhat, Little

For "Measurable, all recommendations can be measured, suggested measures are

For "Relevant", I used how many regional challenges are addressed by that

For "Timebound", none of the recommendation have a timeframe, so have provided

DEFINITIONS

Specific = Targets a specific area for improvement

Measurable = Can quantify or suggest an indicator of progress

Attainable = Results can realistically be achieved given available resources and political landscape

Relevant = Recommendation is in alignment with values & long term objectives

Time-Bound = Can specify when result can be achieved

Green highlight denotes potential to be in our top 5 for SMP to do

Reccomended deletion

Recommendation	Specific	Measurable	Achievable	Relevant	Time-bound
Acquire and preserve more forest land through fee simple or easement	Little, no geographic focus	Acres of forest land preserved	Very, requires adequate funding	4	short
Adopt riparian buffer standards	Somewhat, no specific	miles of riparian buffers	Very, requires local gov't support	3	short
Adopt wellhead protection standards	Somewhat, no specific	# or % of municipalities with standards	uncertain, how many have them now?	1	short
Build more multi-use and hiking/walking trails and connect public open	Somewhat, specifies	miles of trails built, # of parks connected	Somewhat, landowner resistant,	3	mid to long
Build more on-road bicycle facilities to connect parks and multi-use trails	Somewhat, specifies	miles of on-road bike facilities, # of parks	somewhat, need PADOT and/or municipa	3	mid
Build parks in those areas that are outside of the 10-minute walk or drive	Very	# of parks within 10-minutes, acres of	Somewhat, likely landowner resistant, ne	2	long
Create county-wide trail plans that connect public open spaces	Very	# of county plans adopted	very but may engender landower resistar	3	short
Create Growth Areas within County and municipal comprehensive plans	very	growth areas created or not	little, local gov't resistance	2	mid to long
Create regional park commissions	somewhat, no geographic	# of regional commissions, # of	little, local gov't resistance	2	mid to long
Develop a four county trail coalition tasked with planning, coordinating, and creating a cross-county, SM landscape regional trail system	very	governments/trail manager involved; cross county trail developed	very for creating coaltion, could use exar	3	short for coaltion, long for trail development
Do more programming/public education on importance of these resources and their	somewhat, no audience	# of programs, # of attendees, geographic	very, need partners to provide	1	short
Encourage BMPs for soil erosion and nutrient runoff	very	# of farms that adopt BMPs, water quality	somewhat, requires strong incentives	1	short
Encourage multi-muncipal planning	very	# of municipalities in multi-muni plans, sq.	somewhat, local gov't resistance, but	1	mid to long
Encourage soil conservation plans for non-preserved farms	very	# or % of non-preserved farms with plans,	somewhat, requires strong incentives	1	short
Establish and strengthen greenways	somewhat, no geographic	# of miles of greenways, sq. miles of land	Somewhat, landowner resistant,	3	short to mid
Focus farmland preservation in areas adjacent to other preserved land such as	very	acres of preserved farmland adjacent to	somewhat, may require counties to	2	short
Identify and build more waterway accesses	somewhat, no geographic	# of waterway access points, # or % of	little, likely landowner resistance	2	mid
Implement Smart Growth Principles	somewhat, but need to	numerous measures, depends on which	somewhat, requires local gov't support	5	short to long, depending on principle
Monitor water quality at local, watershed, landscape and county levels, using Field	very	# of water quality test locations, location	very, can use partners to staff	2	short
NEW incorporating rec/trails in SLDO, land development process	somewhat, no specific	miles of trails built, acres of parkland	somewhat, requires local gov't support	3	short to mid
Plan for wildlife corridors to connect South Mountain landscape with Kittatinny Ridge,	somewhat, no geographic	is plan completed and	little, likely landowner resistance, may	2	mid for plan
Prioritize CVRT extension to Chambersburg and Carlisle	very	# of miles of CVRT extended	Somewhat, varies by locality, landowner	3	mid to long
Prioritize farmland preservation scoring to support clustering and other landscape	very	acres of farmland preserved adjacent to	very, may require Counties to revise ag	1	short
Promote outdoor recreation economy	somewhat, no details or	# of people participating, $$ spending, jobs	very, Office of Outdoor Rec has been	3	short
Protect Appalachian Trail landscape through local actions; leverage A.T. Communities	somewhat, no specific local	AT viewshed land protected, # of acres	somewhat, requires local gov't support	2	short to mid
Revise Subdivision and Land Development Ordinances to require dedication of	very, need to follow state	# of SALDOs that have provision, acres of	somewhat, requires local gov't support	4	mid
Set Target for land conservation, preservation goals at county or landscape level	somewhat, no target	target set/not set; target met/not met	very, requires regional cooperation	2	short
Undertake a South Mountain inventory of historic resources	very	inventory done/not done, # of resources	very, some inventories have already	2	short to mid
Update Natural Area/Heritage Inventories	Very, NAIs are recognized	Very, either it will be done or it won't be	Very, process is well-documented, may	1	short
Use official maps for parks and trails	very	# of municipalities with official maps that	somewhat, use is growing, requires	4	mid