Forces of Change

Environment

Exploratory Scenario Report

Southwestern Pennsylvania Commission

Forces of Change Exploratory Scenario Reports
January 2019
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What Are Forces of Change?
Forces of Change are a wide range of global and national trends that could affect Southwestern Pennsylvania now and in the future.

What Are Forces of Change?
The Southwestern Pennsylvania Commission (SPC) is creating a new regional plan in which it will consider major Forces of Change and how we can best take advantage of opportunities they may create and mitigate the disruptions they may cause. Forces of Change are high level external forces (global, national, regional) that could have significant regional impacts (both positive and/or negative) now and in the future.

A Force of Change Scenario Report for each category has been developed by SPC. The reports will be used, along with input from the public, to establish a range of potential strategies related to each Force of Change. These strategies were reviewed and discussed at a Regional Plan Workshop held in September 2018. The resulting list of strategies will be used to gather further public input and ultimately to update the long range plan for the Southwestern Pennsylvania region.

SPC has identified forces that have effects on transportation and development in five broad categories: Demographics, Technology, Economy, Environment, and Funding.

Why and How Were Forces of Change Identified?
Every four years, SPC is required by federal law to update the region’s long range transportation plan. This plan lays out the vision and strategies for transportation investments in the Southwestern Pennsylvania region over the next 25 years. The current plan was adopted in June 2015.

In 2017, SPC staff began working with the region’s planning directors to develop a Task Force to help develop a process for the new long range plan.

SPC began by reviewing publications from the National Cooperative Highway Research Program on “Dynamic Forces of Change.” Next, peer Metropolitan Planning Organizations (MPOs) along with national and regional thought leaders were interviewed to get different perspectives. Common themes emerged, which drove the formation of Expert Resource Panels for each of the five categories to identify the Forces of Change that will impact them.
Expert Resource Panels and Exploratory Scenarios

Expert Resource Panels were formed to provide expertise on the potential effects of Forces of Change on the region. The Expert Resource Panels identified the Forces of Change within each category that are likely to impact the region. Panelists discussed potential opportunities and challenges, the relative probability of occurrence, and whether the impacts will be positive or negative.

The panel activities were designed to help answer the following questions:

What significant trends or disruptions are occurring now, or are foreseen to occur, with potential impact for the region?

Will the impacts be positive or negative for the region?

What specific challenges and opportunities for the region are generated by these occurrences?

What is the anticipated magnitude of the identified challenges and opportunities?

Participants were asked to focus on events, trends, and factors within each category and to identify possible impacts, potential challenges, and opportunities for each Force of Change.

Based on that discussion, exploratory scenarios were developed. Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. These were developed to aid in discussions related to impacts and strategies for moving forward successfully.

Below are some of the topics that were explored by the Expert Resource Panels. Panelists considered the regional impacts of the topics and identified additional avenues for investigation.

Demographics
Aging Population and Labor Force; Immigration (regional); Urban and Suburban Development Patterns; National/Regional Shifts; Household Size; Diversity; Education; and, Opioid Addiction.

Technology
Connected & Autonomous Vehicles; Mobility as a Service; Automation; Additive Manufacturing; Modal Impacts; Broadband; and, Artificial Intelligence.

Economy
Emerging Industries; Housing Affordability; Economic Growth; Household Income; Employment Types; Shared Economy; Online Economy vs. Brick and Mortar Retail; and, Decaying Infrastructure.

Environment
Energy Supply and Demand; Fossil Fuel/Renewable Balance; Security; Environmental Attitudes; Climate Change and Resilience; and, Water Quality.

Funding
Role of Public & Private Sectors; Investment Levels; National/State/Local Government Roles; and, Finance (how to pay).
What Are The Environmental Forces of Change?
Environmental Forces of Change

Climate Change

Volume II of the *Fourth National Climate Assessment* says that in 2050, the average global warming since preindustrial levels could be about twice what it is in 2018 (U.S. Global Change Research Program); which can lead to increased precipitation, landslides, flooding, and water quality concerns. The region and world are less resilient as human and natural systems continue to be negatively impacted. Climate change can lead to increased precipitation, landslides, flooding, and water quality concerns.

While this is a global problem, there are steps that the region can take to help mitigate future problems as a result of climate change. These actions include adopting a regional energy policy, investing in strategies to be better prepared for extreme weather patterns and natural disasters, and raising the general public's knowledge of the issue.

![Summary of Americans' Views on Global Warming](chart)

Source: Gallup.com

*Environmental Forces of Change*
Southwestern Pennsylvania Commission *Forces of Change Exploratory Scenario Reports*
Land Use

The way land is used and developed could impact open space, active transportation, and natural resources. Southwestern Pennsylvania’s natural resources are the region’s most important asset.

As land development and land use changes are directly impacted by transportation patterns, SPC’s “Livability Through Smart Transportation Program” encourages sponsors to plan and implement strategies consistent with the policies of the region’s adopted Long Range Transportation and Development Plan as well as municipal and county comprehensive plans. A “Smart Transportation” project links transportation investments and land use planning to decision-making, creating transportation facilities that are safe, sustainable, responsive of the needs of all users, and support community planning goals.

### Land Use Table

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>MUNICIPAL COMPREHENSIVE PLANS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Allegheny</td>
<td>111</td>
</tr>
<tr>
<td>Armstrong</td>
<td>19</td>
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<tr>
<td>Beaver</td>
<td>36</td>
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<td>Butler</td>
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<td>Fayette</td>
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<td>Greene</td>
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<tr>
<td>Indiana</td>
<td>10</td>
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<td>Lawrence</td>
<td>14</td>
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<tr>
<td>Washington</td>
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<tr>
<td>Westmoreland</td>
<td>36</td>
</tr>
<tr>
<td>Region</td>
<td>365</td>
</tr>
</tbody>
</table>

Source: Pennsylvania Department of Community and Economic Development
Energy

Electric vehicles, renewable energy, and natural gas are playing a growing role in the energy sector. The Southwestern Pennsylvania region continues to be a net exporter of energy assets, which makes it subject to outside markets and boom/bust cycles. A focus on renewable energy sources could provide a sustainable energy source and have a positive impact on the environment. Additionally, a Regional Energy Plan could be developed to promote cleaner electricity generation. Incentives could be a strategy in which to promote the research and development of sustainable forms of energy. Local educational institutions could provide support in developing ways to produce “cleaner” electricity, such as wind turbines, solar panels, and hydroelectric systems.

The U.S. Energy Information Administration (EIA) provides annual electricity generating capacity over the past ten years as well as projections through 2050. The projections show a large increase in solar power. Additionally, the EIA and State Energy Data System provide information on how different states are generating non-carbon electric power; while California has transitioned to a balanced mix of energy sources and Washington produces large quantities of hydropower, Pennsylvania is still very reliant on nuclear power as its chief non-carbon source of energy.

Pennsylvania 2016 Energy Consumption

<table>
<thead>
<tr>
<th>Category</th>
<th>Consumption (Trillion BTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Interstate Flow of Electricity</td>
<td>-568</td>
</tr>
<tr>
<td>Net Electricity Imports</td>
<td>1</td>
</tr>
<tr>
<td>Biomass and Other Renewables</td>
<td>189</td>
</tr>
<tr>
<td>Hydroelectric Power</td>
<td>22</td>
</tr>
<tr>
<td>Nuclear Electric Power</td>
<td>142</td>
</tr>
<tr>
<td>Other Petroleum</td>
<td>50</td>
</tr>
<tr>
<td>Residual Fuel and HGL</td>
<td>397</td>
</tr>
<tr>
<td>Distillate Fuel Oil and Jet Fuel</td>
<td>557</td>
</tr>
<tr>
<td>Motor Gasoline excl. Ethanol</td>
<td>735</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>1364</td>
</tr>
<tr>
<td>Coal</td>
<td>0</td>
</tr>
</tbody>
</table>

SOURCE: EIA & State Energy Data System
Water

The region continues to see increased stormwater, flooding, water quality, and water quantity impacts. Within the Southwestern Pennsylvania region, there are 15,076 miles of streams, of which 138.3 miles are designated as Exceptional Value streams and 2,913 miles designated as High Quality by Pennsylvania Code Chapter 93: Water Quality Standards. These major river systems and their tributaries provide aquatic habitat, ecological benefits, recreational opportunities, drinking water supply, transportation, and economic benefits to the region. SPC and its regional partners must support the integration of better stormwater management decisions into local planning, municipal operations and budgeting decisions, data and information sharing, and transportation planning and programming in the region.

Local municipalities and regional COGs should prepare a Regional Integrated Water Plan to address floodplain restoration, stormwater management, and flooding mitigation and prevention. These plans can promote the use of best practices, identify previous lessons learned, and stress the importance of upstream responsibilities. Watershed Plans should be prepared within the context of that Regional Integrated Water Plan.

Local municipalities can take a step further and incentivize individuals and business property owners to minimize and manage stormwater management. A standalone Stormwater Tax or a property tax increase can be used, as well as discounts for green infrastructure, etc. SPC and its partners should look into developing a regional flood susceptibility index (FSI) to help prioritize areas susceptible to flooding for planning and mitigation investments.
Natural Resources and Air Quality

Southwestern Pennsylvania’s natural resources are the region’s most important asset, but the region has a long history of air quality issues with health and pollution at the forefront.

Our forests are a critical natural resource that is essential to the overall ecological functions and environmental health of the region. These areas are home to an abundance of wildlife, some of which are threatened and endangered. They provide goods such as timber and food, ecological functions such as carbon storage, nutrient cycling, water and air purification, and also serve as recreational areas.

While air quality has been an issue in the past, the region’s partners have made substantial progress in setting and enforcing air quality standards. According to the Allegheny County Health Department, the number of “good days” in Allegheny County is trending upwards, increasing from 123 “good days” in 2001 to 177 in 2016. In contrast, the number of “unhealthy days” has decreased, with five unhealthy days in 2001 and just one in 2016.

![Number of Air Quality “Good Days”](image)

**SOURCE:** Allegheny County Health Department

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**Environmental Forces of Change**
Southwestern Pennsylvania Commission Forces of Change Exploratory Scenario Reports
How can we adapt to the Forces of Change underway and take full advantage of the opportunities they create?

Climate Change
Climate change can lead to increased precipitation, landslides, flooding and water quality concerns.

Land Use
The way land is used and developed could impact open space, active transportation, and natural resources.

Energy
Electric vehicles, renewable energy, and natural gas are playing a growing role in the energy sector.

Water
The region continues to see increased stormwater, flooding, water quality, and water quantity impacts.

Natural Resources / Air
Southwestern Pennsylvania’s natural resources are the region’s most important asset.
Creating Strategies
To Address Environmental Forces of Change

The Environmental Expert Resource Panel identified strategies for each Force of Change to address potential impacts and mitigate risks. Panelists identified the importance of stemming climate change and better preparing for severe weather events and natural disasters. Central strategies include:

• Support local planning efforts to support sustainable growth and walkable communities.
• Prioritize efficient and sustainable energy sources.
• Plan for increases in stormwater runoff and take a collaborative approach with regional partners when taking steps to address water issues.
• Support existing recreational opportunities and develop strategies to mitigate emissions and other pollutants.

Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. These were developed to aid in developing strategies to address impacts and mitigate risks.
Climate Change Strategies
*That Impact the Environment*

**Exploratory Scenario**

*What If...the effects of climate change worsen. The region experiences extreme temperatures and high-intensity precipitation that leads to flooding, erosion, landslides, mine subsidence, and disease. The region and world are less resilient as human and natural systems continue to be negatively impacted.*

*Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. It is not suggested that these scenarios will occur, only that a region may consider them as a “What If...” scenario.*
Strategy 1: Invest in Strategies That Help the Region Adapt to the Impacts of Climate Change

Since 2006, over $140 million of emergency funds have been obligated on the federal aid system in Pennsylvania. Communities must invest in strategies to better prepare for the impacts of climate change. Local municipalities and/or county governments should coordinate to actively pursue SPC’s Congestion Management and Air Quality Improvement Program funding.

Partners for Implementation
PennDOT, local municipalities, SPC

Strategy 2: Increase the Capacity of Storm Water Collection and Retention Systems

Increase the capacity of storm water collection and retention systems to accommodate future projected increases in extreme precipitation events. Encourage a long-term focus on activities that impact waterways. According to a downscaled climate model produced by the National Oceanic and atmospheric Administration and U.S. Army Corps of Engineers, Institute for Water Resources, the SPC region is forecasted to experience a 15-20 percent increase in annual mean streamflow between 2040 and 2070. Further, according to the National Climate Assessment issued in May, 2014, in the period 1958-2012, there was a 71 percent increase in the frequency of the heaviest 1-percent precipitation events in the Northeast United States, including Pennsylvania.

Counties and municipalities need to identify ways that they can prioritize areas for flood response and infrastructure management. It is predicted that the region will be handling more water in the future and it is crucial that stormwater systems be expanded in order to prevent flooding during extreme participation events.

Partners for Implementation
Municipalities, floodplain managers, U.S. Army Corps of Engineers, counties, federal and state agencies, SPC
Strategy 3: Invest in Disaster Preparedness, Response, and Recovery

According to the National Oceanic and Atmosphere Administration (NOAA), which is under the U.S. Department of Commerce, the number of billion-dollar disaster event types have grown over the past thirty-plus years. The frequency of such disasters has risen from one in 1980 to five in 2003 to 12 in 2016. Because greater frequency of environmental disasters and greater severity of storms are a result of climate change, we must continue to invest in disaster preparedness, response, and recovery.

Plans should be created at the county and/or watershed level to state processes to follow in the event of severe weather and to better facilitate rapid communication among municipalities.

Partners for Implementation
SPC, municipalities, floodplain managers, U.S. Army Corps of Engineers, counties

Strategy 4: Invest in Strategies That Help to Decelerate the Rate of Climate Change

Encouraging investment in renewable energy sources that produce less emissions can help to slow the rate of climate change. According to the Intergovernmental Panel on Climate Change (IPCC), despite a growing number of climate change mitigation policies, annual greenhouse gases (GHG) emissions grew 2.2% per year from 2000 to 2010 compared to 1.3% per year from 1970 to 2000. Decarbonizing (i.e. reducing the carbon intensity of) electricity generation is a key component of cost effective mitigation strategies in achieving low-stabilization levels. Decarbonization happens more rapidly in electricity generation than in other sectors.

Partners for Implementation
SPC, PennDOT, local municipalities, state legislature, private industry, chambers of commerce, nonprofits, foundations, general public
Strategy 5: Raise Awareness and Educate the Public, Government Officials, and Businesses About Climate Change

Undertake strategies that raise awareness and educate the public, government officials, and businesses about climate change, its projected impacts, and region’s strategies in response.

The nation-wide belief in global warming is increasing at a steady pace as more information is found and shared. However, a Gallup poll shows a significant percentage of Americans remain skeptical of climate change science. The percentage of Americans who worry a great deal about global warming increased from 32% (2001-2014 average) to 45% in 2017.

Partners for Implementation
SPC, local municipalities, counties, educational institutions
Land Use Strategies
That Impact the Environment

**Exploratory Scenario***

What If...land use and development regulations and control are fragmented. Where there are efforts to establish sustainable development requirements, multimodal improvements, and redevelopment, they are unevenly distributed and non-contiguous.

*Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. It is not suggested that these scenarios will occur, only that a region may consider them as a “What If...” scenario.*
Strategy 1: Create Livable Communities at the Local and Neighborhood Level
Local planning efforts should establish sustainable development requirements and multimodal improvements. Comprehensive plans, zoning, and subdivision ordinances can ensure that best practices are followed at the local and neighborhood levels.

Smart growth principles and traditional neighborhood development concepts that encourage mixed-use, walkable communities can create a more livable environment and reduce energy consumption. Policies should be adopted that encourage and/or mandate best practices.

An example of a successful program is SPC’s Livability Through Smart Transportation Program. The program encourages project sponsors to plan and implement strategies consistent with the policies of the region’s adopted Long Range Transportation and Development Plan as well as municipal and county comprehensive plans. A participating transportation project links transportation investments and land use planning to decision-making, creating transportation facilities that are safe, sustainable, responsive to the needs of all users, and support community planning goals. The program is designed to provide multimodal connections and community livability enhancements beyond traditional asset management-focused projects.

Partners for Implementation
SPC, county planning agencies, municipalities, private developers

Strategy 2: Promote Land Use Best Practices, Community Development, and Transportation Planning
Provide municipal education on land use best practices, community development, and transportation planning. Provide information on best practices to all SPC members and encourage collaboration on local and regional transportation planning. Information on best practices and the sharing of successful development and conservation tools among SPC members will yield both more successful localities and a stronger region as a whole.

SPC has partnered with PennDOT to conduct workshops throughout the region to educate local governments on the value of community planning and its importance as it relates to future transportation projects.

Partners for Implementation
SPC, counties, municipalities, PennDOT
Energy Strategies
That Impact the Environment

Exploratory Scenario*

What If...the region continues to be a net exporter of energy assets and is subject to outside markets and boom/bust cycles. There is little to no development or adoption of renewable energy resources, and there continues to be a reliance on fossil fuels. This has a negative impact on the environment.

*Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. It is not suggested that these scenarios will occur, only that a region may consider them as a “What If...” scenario.
Strategy 1: Pursue Strategies to Diversity the Region’s Energy Sources and Promote Cleaner Electricity Generation

The region should develop a Regional Energy Plan to promote cleaner electricity generation. Focus research, development and transportation projects, and educational institutions on electrical energy and ways to produce cleaner electricity. Such sources may include wind turbines, solar panels, and hydroelectric systems.

Partners for Implementation
Municipalities, coalition of public and private entities

Strategy 2: Incentivize the Development and Deployment of Alternative Fuels and Renewable Sources of Energy

Based on 2016 data from the U.S. Energy Information Administration Pennsylvania ranks 40th among the states for renewable energy consumption as a share of the state consumption. Renewable energy represents only 5.6% of Pennsylvania’s energy consumption.

Encourage the development of alternative sources of energy, in particular local water and sewer authorities, as well as transit authorities. The SPC region continues to be a net exporter of energy assets, which makes it subject to outside markets and boom/bust cycles. A focus on renewable energy sources could provide a sustainable energy source and have a positive impact on the environment.

Partners for Implementation
Water authorities, sewer authorities, transit authorities
Strategy 3: Improve Efficiency in the Energy Sector (Generating, Transmission, and End User)

Promote alternative and renewable energy sources in the Southwestern Pennsylvania region. Across the region, the age of the building stock presents a challenge to energy efficiency. For example, within the City of Pittsburgh, over 76% of homes were built prior to 1960, with 53% constructed before 1940. Eleven of the current energy efficiency standards were not integrated into national building codes until the 1970s, and therefore only a quarter of homes within the city meet the newer codes. Similar challenges exist throughout the Southwestern Pennsylvania region. To date, energy efficiency has proven beneficial for Pennsylvania’s overall energy portfolio while saving money for end uses. For example, between 2009 and 2012 electricity savings and demand reduction produced an annual savings of approximately $278 million for electric ratepayers. Further, in a national survey, only 4% of respondents had awareness of energy audits. Of the rest, 29% had “never heard of it.”

Partners for Implementation

SPC, utilities, nonprofits, foundations, municipalities, counties
Water Strategies
That Impact the Environment

Exploratory Scenario*

What If...utility legacy problems worsen, exacerbating stormwater, flooding, property loss and water quality issues throughout the region. Water availability continues to be good and the region’s rivers and riverfronts remain a source of economic opportunity. This results in disinvestment and reduced livability in older urban areas and a continuing demographic shift as the region’s more affluent populations relocate.

*Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. It is not suggested that these scenarios will occur, only that a region may consider them as a “What If...” scenario.

Prepare a Regional Integrated Water Plan to address floodplain restoration, stormwater management, and flooding mitigation and prevention. In this plan, promote the use of best practices, lessons learned, and upstream responsibilities. Watershed Plans should be prepared within the context of the Regional Integrated Water Plan.

Water issues such as sewage, water quality, water quantity, stormwater drainage, flooding, and watershed protection are closely interrelated and should be examined holistically. Support the integration of better stormwater management decisions into local planning, municipal operations and budgeting decisions, data and information sharing, and transportation planning and programming in the region.

Partners for Implementation

Municipalities, counties, watershed associations, municipal planning agencies, ALCOSAN

Strategy 2: Collaborate on Regional Water Topics

Local and regional municipalities must be aware of how local decisions can affect access for other users and ensure the region’s water remains a vital environmental, economic, and recreational asset.

Develop a study for a Regional Stormwater Utility/Authority. Representatives from each member county can ensure representation and a coordinated approach. The SPC region should take an Integrated Water Resources Management (IWRM) approach, which has been defined by the Technical Committee of the Global Water Partnership (GWP) as "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems."

Partners for Implementation

SPC, counties
Strategy 3: Support Efforts to Manage Water Quantity and Storm Water/Flooding

Incentivize individuals and business owners to minimize and manage stormwater. A standalone stormwater tax or a property tax increase could be used, while implementing discounts for green infrastructure. SPC and its partners should consider developing a regional flood susceptibility index (FSI) to help prioritize areas susceptible to flooding for planning and mitigation investments.

The Stormwater Management Act (Act 167) of 1978 requires that each county prepare and adopt a watershed stormwater management plan (SWMP) for each watershed located in the county as designated by the Pennsylvania Department of Environmental Protection. After adoption of a watershed stormwater plan, all design and construction of stormwater management systems, as well as subdivisions, highway projects, and subdivisions/major land developments, must be conducted in a manner consistent with the watershed stormwater plan.

The status of SWMPs within the 10-county SPC region varies. One county has minimal to no Phase I or Phase II SWMP work completed (Greene County); three counties that have a completed Phase I SWMP (Beaver, Indiana, and Armstrong Counties); one county is in the process of completing the Phase II plan (Westmoreland); five counties have an adopted SWMP (Allegheny, Butler, Fayette, Lawrence, Washington Counties). Encourage and support the completion of SWMPs throughout the region.

Partners for Implementation
SPC, counties, municipalities

Strategy 4: Fund Sustainable Infrastructure Systems

Encourage and/or incentivize the greater use of sustainable infrastructure systems. Such incentives can be the implementation of a stormwater fee, either administered through an authority or by a municipality.

A stormwater fee is one example of how local municipalities can take a proactive stance on protecting communities from flooding and harmful pollution. Although green infrastructure techniques are more cost-effective than their alternatives in the long-term, they can require larger up-front investment (Funding Stormwater Management in Pennsylvania Municipalities, PennFuture). A stormwater fee, instead of relying on general tax revenue, ensures that all members of the community who contribute to stormwater runoff will contribute to paying for the solution. As the funding will not be diverted to other uses, the fee will be used solely for stormwater management every year.

Partners for Implementation
Local planning organizations, local taxing bodies
Strategy 5: Develop and Provide Tools for Regional Water Quality Improvement

The region should ensure best practices for stormwater management are followed whether through ordinances or permitting processes. Within the SPC region, there are 15,076 miles of streams, of which 138.3 miles are designated as Exceptional Value streams and 2,913 miles designated as High Quality by Pennsylvania Code Chapter 93: Water Quality Standards.

Pollution from stormwater runoff, acid mine drainage, brownfields, combined sewer overflows, and frequent localized flooding are the primary water-related concerns in the region. Chapter 1 of the Pennsylvania Stormwater Best Management Practice (BMP) Manual “Describes a stormwater management approach to the land development process that strives to prevent or minimize stormwater problems through comprehensive planning and development techniques.”

However, the Pennsylvania Stormwater BMP Manual has no independent regulatory authority. Therefore, the strategies, practices, recommendations, and control guidelines presented in the manual can become binding requirements only through ordinances and rules established by local municipalities, or permits and other authorizations issued by local, state, and federal agencies.

Partners for Implementation
Municipalities, local stormwater management agencies, local water authorities
Natural Resources and Air Quality Strategies That Impact the Environment

**Exploratory Scenario***

*What If...the region takes advantage of its abundant natural resources by conserving/preserving critical open space and biological diversity areas. The beauty of the region is maintained, recreational opportunities increase, and public health and competitiveness is improved.*

*Each exploratory scenario describes uncertain, but comprehensible, potential futures that may occur. It is not suggested that these scenarios will occur, only that a region may consider them as a “What If...” scenario.*
Strategy 1: Conserve and Preserve Existing Natural Resources
Encourage counties to continue planning and management efforts to conserve and preserve existing natural resources and sensitive ecosystems. With 2.2 million acres of state forest land, the planning and management by the PA Bureau of Forestry benefits Pennsylvania’s extensive forest habitat and aquatic ecosystem resources, including nearly 5,000 miles of streams located within state forest land.

Since 2014, all counties in the SPC region have adopted an open space greenway plan. These plans include the consideration of sensitive ecological areas in the development of future greenways.

Partners for Implementation
County governments

Strategy 2: Support Conservation of Key Tracts of Land
Local and county governments should continue to support conservation efforts to enhance environmental quality, natural lands connectivity, habitat corridors, and agricultural lands preservation. The conservation of key tracts of land could be completed through acquisitions and easements. According to the 2018 National Conservation Easement Database, there are 34,790 reported acres within some type of a conservation easement in the SPC region.

Partners for Implementation
Local and county governments

Strategy 3: Support, Promote, Develop, and Adapt Recreational Opportunities
Support, promote, develop, and adapt recreational opportunities for residents and tourists that are based on the region's non-ski/snow-related natural resource assets. The Pittsburgh region reported the third highest share of traveler dollars spent on recreation among Pennsylvania’s tourism regions in 2016 (Tourism Economic/Visit PA). The region’s natural resource assets must be protected to maintain their economic and environmental value. However, Pennsylvania’s downhill ski and snowboard resorts are not expected to remain economically viable past mid-century. Snow cover to support cross country skiing and snowmobiling has been declining in Pennsylvania, and is expected to further decline in the near future.

Partners for Implementation
Local tourism boards, local and county governments
Strategy 4: Support and Develop Coordinated Mitigation Planning Efforts

Support and develop mitigation planning efforts that identify the highest quality mitigation projects for natural and cultural resources in the region. The importance of mitigation projects for natural and cultural resources will be of paramount importance in the future. Coordination and the sharing of best practices among local and regional municipalities should be encouraged to ensure the most efficient mitigation planning efforts are undertaken.

Partners for Implementation
SPC, counties, municipalities

Strategy 5: Support and Encourage Transportation Projects or Programs That Enhance Air Quality

Support and encourage transportation projects or programs that will contribute to attainment and maintenance of the national ambient air quality standards (NAAQS) for ozone, carbon monoxide, and particulate matter.

Southwestern Pennsylvania’s natural resources are the region’s most important asset, but the region has a long history of air quality issues with health and pollution at the forefront.

While air quality has been an issue in the past, SPC’s partners have made substantial progress in setting and enforcing air quality standards. According to the Allegheny County Health Department, the number of “good days” in Allegheny County is trending upwards, increasing from 123 “good days” in 2001 to 177 in 2016. In contrast, the number of “unhealthy days” has decreased, with five unhealthy days in 2001 and just one in 2016.

Partners for Implementation
Local municipalities, energy producers, county health departments
Investing in our Future

Environment Strategies for Investment

During the Regional Plan Workshop, participants were asked to discuss potential draft strategies for the Forces of Change and identify investment levels for each of the draft strategies. This exercise helped to create a framework that could be used to evaluate and drive future evaluation of projects and investments.

Below are the investment strategy results for the Environment Forces of Change.

<table>
<thead>
<tr>
<th>Environment Forces of Change</th>
<th>Percent Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate Change Strategies</strong></td>
<td>25.0%</td>
</tr>
<tr>
<td>Invest in strategies that help the region adapt to the impacts of climate change.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Increase capacity of storm water collection and retention systems to accommodate future projected increases in extreme precipitation events.</td>
<td>7.1%</td>
</tr>
<tr>
<td>Invest in disaster preparedness, response, and recovery.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Invest in strategies that help to decelerate the rate of climate change.</td>
<td>5.7%</td>
</tr>
<tr>
<td>Strategies that raise awareness and educate the public, government officials, and business about climate change, its projected impacts, and region’s strategies in response.</td>
<td>5.0%</td>
</tr>
<tr>
<td><strong>Land Use/Development Density Strategies</strong></td>
<td>17.1%</td>
</tr>
<tr>
<td>“Smart Growth” principles and “traditional neighborhood development” concepts to create “livable” communities on the local and neighborhood level.</td>
<td>8.4%</td>
</tr>
<tr>
<td>Provide municipal education on land use best practices, community development, and transportation planning.</td>
<td>8.4%</td>
</tr>
<tr>
<td><strong>Energy Strategies</strong></td>
<td>13.6%</td>
</tr>
<tr>
<td>Pursue strategies to diversify the region’s energy sources and promote cleaner electricity generation.</td>
<td>4.3%</td>
</tr>
<tr>
<td>Incentivize the development and deployment of alternative fuels and renewable sources of energy.</td>
<td>5.7%</td>
</tr>
<tr>
<td>Strategies to improve the efficiency in the energy sector (generating, transmission, and end use).</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Water Strategies</strong></td>
<td>13.6%</td>
</tr>
<tr>
<td>Promote sustainable regional water resource management and planning.</td>
<td>5.7%</td>
</tr>
<tr>
<td>Regional collaboration for water topics.</td>
<td>0.7%</td>
</tr>
<tr>
<td>Support efforts to manage water quantity and storm water/flooding.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Sustainable Infrastructure systems (funding).</td>
<td>2.1%</td>
</tr>
<tr>
<td>Develop and provide tools for regional water quality improvement.</td>
<td>1.4%</td>
</tr>
<tr>
<td><strong>Natural Resources Strategies</strong></td>
<td>15.7%</td>
</tr>
<tr>
<td>Comprehensive planning and management of sensitive ecosystems to conserve and preserve existing natural resources.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Support conservation of key tracts of land through acquisitions and easements that enhance environmental quality, natural lands connectivity, habitat corridors, and agricultural lands preservation.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Support, promote, develop, and adapt recreational opportunities for residents and tourists that are based on the region’s natural resource assets.</td>
<td>5.0%</td>
</tr>
<tr>
<td>Support and develop mitigation planning efforts that identify where to get the highest quality mitigation projects for natural and cultural resources in the region.</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Air Quality Strategies</strong></td>
<td>7.1%</td>
</tr>
<tr>
<td>Support and encourage transportation projects or programs that will contribute to attainment or maintenance of the national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), and particulate matter (PM).</td>
<td>7.1%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>7.9%</td>
</tr>
<tr>
<td>Not allocated or reserved for other</td>
<td>7.9%</td>
</tr>
</tbody>
</table>
Building the Vision

Environment
Building the Vision

As discussed in this report, in developing Smart Moves for a Changing Region, SPC convened a series of Expert Resource Panel meetings to identify Forces of Change, weigh their potential impacts, and develop strategies to mitigate and/or optimize the forces. This information, coupled with public and partner input and feedback from SPC leadership, was organized into a set of three emerging themes that capture the most positive aspects of each strategy and focus them in a way that will result in a holistic long range plan for the region.

SPC is developing a plan that both provides a framework and makes significant investment to advance the most critical issues and projects facing the region. The emerging themes will be used in conjunction with performance metrics and other public input to evaluate the program of proposed projects and programs to be contained in the plan. This will ensure the projects and programs contained in the plan will work in concert to assist the Southwestern Pennsylvania region achieve its desired vision for the future.

The emerging regional vision is a world-class, well maintained, integrated transportation system that provides connected mobility for all, enables resilient communities and supports a globally competitive economy.

This vision means taking advantage of our considerable existing assets and developing, supporting and implementing projects that advance our progress. It means investing in regionally connected seamless public transportation that includes new transit investments in key corridors and networks. It means developing modern support infrastructure that prepares the region not just for current technological advances, but also strives to put the region years and decades ahead, by developing the next technology here in this region because we have the expertise in the region to make this happen. It means tackling climate change and taking care of our air and our water. This will allow us to work with many partners and dovetail this plan with other related plans and regional efforts of both public and private sector to advance the region.

The vision means working with partners in identifying and using the types of proven funding and financing arrangements that we will need to make that happen.

The vision will focus on the workforce needs of the region. It means attracting and growing our population by making the region a place where people want to come and stay. It means training our population not just for the jobs that exist but for the jobs we create through innovation and entrepreneurship, and making this region a leader in technology and innovation.

Technology and innovation can be much more than self-driving cars and artificial intelligence and it can work in rural as well as urban parts of the region. It will include innovative new farming techniques and technology deployment that will connect our entire region with high speed access to the internet to afford all our residents the opportunity to work from anywhere and connecting them to the global economic opportunities. The vision will recognize our assets and putting them to the best use for this region, and our residents.

The vision also means taking stewardship and care of the communities that are the foundation of this region, and environment that sustains us. This plan will focus community investment that both sustains our past and protects our future, while elevating the status of our communities throughout the region as desirable places to live and work.

Environmental Forces of Change
Southwestern Pennsylvania Commission Forces of Change Exploratory Scenario Reports
Acknowledgements

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Ephraim Zimmerman, Western Pennsylvania Conservancy
Forces of Change

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Exploratory Scenario Report

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January 2019