



VISION 2022

CAC'S ENVIRONMENTAL POLICY GOALS FOR GOVERNOR WOLF'S SECOND TERM

**Prepared by the Citizens Advisory Council
to the Department of Environmental Protection**

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Introduction

On November 18, 2014, the Citizens Advisory Council (CAC) to the Department of Environmental Protection (DEP) adopted its *Vision 2020* transition report to provide then-incoming Governor Wolf with CAC's perspective on ongoing environmental and administrative issues as he came into office in 2015. *Vision 2020* included discussions on DEP's leadership, organizational, and budgetary challenges along with several policy papers that focused on particularized issues—such as climate change and water resources management—to provide an overview of the environmental issues the new administration would face on Day 1.

In this *Vision 2022* report, CAC aims to revisit some of these issues and provide new policy goals as Governor Wolf begins his second term in office. Progress has certainly been made since 2015, but DEP is still faced with administrative and regulatory challenges that must be addressed to ensure the future success of the agency, protection of our natural resources, and promotion of sustainable economic development. The Commonwealth of Pennsylvania is rich with natural resources and has all the tools to be a continuing example of how environmental stewardship can not only coexist with but indeed promote economic development. It is with that mindset that CAC provides the following analysis of and goals that DEP should strive to reach over the next four years.

1. Consensus Building

As a key step in the process, DEP should increase its efforts to bring people together from all political perspectives and sectors of the Commonwealth to debate, critically analyze, and offer solutions to common understandings of specific environmental issues. Historically, environmental conservation and stewardship have enjoyed bipartisan support and leadership. As expressed by Pennsylvania's iconic environmental leaders, such as Maurice Goddard, our environment and natural resources are shared by all, irrespective of locale, party, or persuasion. We all have a stake in sound environmental policy and effective, common sense regulatory programs that both protect the common good and provide a predictable pathway for economic investment and prosperity.

CAC applauds Secretary Patrick McDonnell for the leadership shown in this direction. Secretary McDonnell has stressed the importance of not only CAC but all DEP advisory committees and takes seriously the need for DEP to hear from those committees and the public to meaningfully inform DEP's policies. DEP's recent work with DCNR to plug abandoned oil and gas wells and with the Environmental Justice Advisory Board to conduct listening sessions throughout the Commonwealth, respectively, should also be highlighted as successful collaborative efforts that ensure citizens are being involved in agency initiatives. CAC hopes DEP can build on this success and apply these principles on a larger scale to build consensus across sectors.

Ultimately, increased public involvement—from the regulated community to environmental advocates to the general public—in policy making will lead to more workable policies and more effective execution of those policies. Employing a cooperative process will provide a structured framework to ensure all voices are heard and a provide mechanism for building consensus and transforming interests. This type of consensus building will also improve DEP's public

credibility and enhance the public's trust in DEP's actions—another topic which was raised in our *Vision 2020* report. Opportunities to leverage consensus building will be highlighted throughout this report.

Agreement among stakeholders is important as it will build trust and lead to progress that is inclusive of all interests, including generations yet to come. We can think of no better way for DEP to act as a trustee of the Commonwealth's natural resources as contemplated by Article I, Section 27 of our state constitution. CAC is committed to doing its part to assist DEP in its consensus-building efforts.

1.1 Success in Consensus Building

DEP's work on the Chesapeake Bay TMDL Phase III WIP is one example of such a process. DEP convened work groups comprised of a diverse set of stakeholders that were tasked with brainstorming policy and technical solutions to assist DEP in meeting its regulatory obligations. Importantly, these potential solutions include action not only by DEP but by stakeholders themselves. There will assuredly be more buy-in necessary in the months and years ahead to complete and implement the Phase III WIP; and in that process stakeholders will see their input reflected in the final plan, including actions they have agreed to take voluntarily.

Another example is the Act 101 Workgroup of the Solid Waste Advisory Committee and the Recycling Fund Advisory Committee. This workgroup was comprised of members of the recycling industry, local government, and the public. The Act 101 Workgroup and DEP, after several rounds of discussion and debate, produced a spreadsheet with various policy options that noted which stakeholder group (DEP, industry, or local government) supported each policy. The group reached consensus on several key points that will serve as the basis for a broader discussion with DEP and the General Assembly to improve Act 101.

1.2 Consensus Building Tools

The successes discussed above did not come without a lot of work by a diverse group of people. CAC believes it would be helpful for DEP and the public to have a guide that describes how to create and implement a successful consensus-building process. This document should include topics like identifying stakeholders, defining the issue, discourse paradigms, and final work product examples. CAC, in coordination with our Public Participation Committee, will work on drafting this document over the coming months and will engage DEP to take part in this endeavor.

2. Addressing DEP's Internal Challenges

2.1 Leadership

In our *Vision 2020* report, we stressed that DEP should be led by someone who is a skillful administrator who has positive communication skills and a vision for the future of the agency. Secretary McDonnell has been just that and has effectively established a similar culture within

DEP's executive staff. As the Wolf Administration proceeds through the next four years, CAC looks forward to building on that progress and spirit.

Evidence of that leadership have been efforts to improve the advisory committee process by implementing several recommendations from our *Vision 2020* report on this topic. First, DEP now publishes a non-regulatory agenda to keep the public apprised of current and planned policy updates. Second, DEP, in consultation with CAC and all advisory committees, sought public comment on and finalized a policy document on the process of developing and publishing technical guidance documents. Lastly, DEP's advisory committee guidelines are also in the process of being updated. These updates increase transparency, foster public involvement, and help build relationships between DEP staff and advisory committees. CAC is eager to work with DEP over the next four years to build on the progress that has been made.

2.2 Intergenerational Excellence and Professional Development

DEP still faces many of the same issues as it did four years ago with regards to looming retirements, intergenerational transition, and professional development. As indicated in the table below, 28% of DEP staff members will be eligible to retire over the next four years. Training, mentoring, and investment in the professional development of younger technical and administrative staff is vital to ensure institutional knowledge is transferred and programs operate consistently during times of transition. DEP has made strides in this area, but it is important to remain focused on this issue as it is not going away anytime soon.

DEP Potential for Retirement Projections

Information is based on filled salaried positions as of December 7, 2018

DEP Summary

Organization	Total Employees	Current Eligibles	Eligible Within 1 Year	Eligible Within 2 Years	Eligible Within 3 Years	Eligible Within 4 Years	Total
Secretary-Executive Staff	38	7	0	0	0	1	8
		18%	0%	0%	0%	3%	21%
Executive Deputy Secretary for Programs	2014	260	75	66	67	62	560
		13%	4%	4%	3%	3%	27%
Executive Deputy Secretary for Administration & Management	187	25	10	5	9	7	56
		13%	5%	3%	5%	4%	30%
Chief Counsel	91	20	3	5	0	3	31
		22%	3%	5%	0%	3%	34%
DEP Total	2330	312	88	96	79	73	645
		13%	4%	4%	3%	3%	28%

2.3 Budget and Resources

The budgetary picture is much the same today as it was as four years ago. DEP remains strained for funding and lacks the resources to pursue effective environmental planning initiatives. Since 2015, seven rulemakings have been either finalized or introduced to increase fees in various DEP programs. While these fee increases will help cover the costs of implementing current programs, increased resources are needed to address coming environmental challenges. The current agency executives and staff have worked hard at improving the efficiency of the agency including

several e-permitting and other digital initiatives and have been working with CAC's ad hoc budget committee to enlist CAC's help with understanding the big picture budgetary issues facing the agency. CAC looks forward to continuing these efforts over the next four years, but it is important to recognize that the legal mandates and fiscal resources of DEP remain unbalanced. The administration should prioritize restoring that balance over the next four years.

3. Long-term Programmatic Policy Goals

3.1 Climate Change

Background: Pennsylvania is a bellwether with respect to the challenges and opportunities associated with climate change. As a state heavily reliant on fossil fuels for energy generation, coupled with exponential growth in natural gas production over the past several years, the transition to low emission and renewable energy sources will require a seismic shift in policies and practices. It will also have considerable commercial consequence, but failure to act carries equal risk, given anticipated impacts to Pennsylvania's environment and economy.

Pennsylvania's Challenges: With uncertainty on the federal level, commitments to address climate change have fallen to states, local governments, and the private sector. Philadelphia and Pittsburgh have been leaders in adopting policies that address climate change, and Pennsylvania companies continue to implement sustainable business practices. It is time for DEP and the entire Commonwealth government to step up and be a leader on tackling climate change.

CAC is encouraged by the Commonwealth's agreement to participate in the Transportation and Climate Initiative of the Northeast and Mid-Atlantic States as well as Governor Wolf's first executive order of 2019 establishing greenhouse gas emissions reduction targets and the Green Government Council. Additionally, CAC recognizes that DEP has made progress on and will soon finalize, in coordination with the Climate Change Advisory Committee, its revised Climate Action Plan. The Climate Action Plan will include a robust list of potential strategies and actions to address climate change in the Commonwealth. DEP and all Commonwealth agencies must now be leaders in implementing those policies.

Policy Considerations and *Opportunity for Consensus Building*: CAC believes that the Commonwealth should employ the consensus-building paradigms discussed above to begin implementing the Climate Action Plan. While climate change is indeed a global issue, the Commonwealth's response must fit the realities we face as a state. It is important that the process is inclusive of all Commonwealth citizens as climate change will change Pennsylvanian's lives in many ways as industries change and job opportunities shift. Additionally, CAC would welcome the opportunity to participate in Governor Wolf's Green Government Council to offer this new council the public's perspective on green government issues.

3.2 The State-Federal Relationship in Environmental Protection

Background: Since the creation of the Environmental Protection Agency and the passage of the major federal environmental statutes in the early 1970's, the federal government and the Commonwealth of Pennsylvania have shared a complex, layered, and frequently confusing partnership in protecting and restoring the environment in Pennsylvania. Managing the relationship with the U.S. EPA and the other federal agencies involved in environmental programs has been a key responsibility and at times a significant challenge for past administrations and the leadership team at DEP. The CAC believes that many issues on the near-term and long-term horizons will again make this relationship a central feature in the successful implementation of environmental programs and recommends that the Administration place an early focus on establishing and maintaining an effective working relationship with EPA and the other federal partners, as well as with other states that often share the concerns and challenges of Pennsylvania.

Most program elements of the Clean Air Act, Clean Water Act and other major federal statutes are designed to be delegated to the states for implementation, and DEP has over the years received and maintained "primacy" or "authorization" to implement almost all of them. The program implementation grants that come from the federal government pay for staff and other expenses, but often not the entire cost of implementing the programs. Pennsylvania and other states have often sought greater flexibility in the use of these federal grants to try to meet the requirements of the federal program in ways that are cost effective and appropriate for conditions in each state. "Unfunded mandates," or new requirements imposed without additional federal funding, are a long-standing bone of contention among the states.

Permitting and enforcement are areas where friction often arises in the relationship. Some permits issued by the Commonwealth are subject to review by EPA, and applicants may get conflicting answers from EPA and DEP. The timeliness and appropriateness of enforcement actions by the state pursuant to federal requirements is also reviewed by EPA and can lead to conflicts among the regulators and confusion among the regulated community.

Given the current federal administrative goal to minimize federal regulation of streams and wetlands, DEP is likely to be faced with increased responsibility for aquatic resource identification and assessment. The existing shortage of technical staff capabilities in the regional offices will be exacerbated and require additional financial support as the Army Corps of Engineers withdraws from making jurisdictional determinations if aquatic resources in the Commonwealth are to be protected.

Pennsylvania's Challenges: In addition to these on-going program management challenges, several specific issues loom in which DEP must comply with federal requirements or face various sanctions.

The Chesapeake Bay Watershed Implementation Plan requires that Pennsylvania meet specific targets for reductions of nutrient and sediment loadings to the Chesapeake Bay by way of the Susquehanna River. Meeting these targets will be very challenging, and disagreements about the appropriate reduction credits for various measures have been on-going. In its most recent

assessment of states' progress in meeting the goals, the U.S. EPA put Pennsylvania in the "Backstop Action Level" category for Agricultural and Urban/Suburban discharges reflecting "substantial concerns" with Pennsylvania's efforts to achieve the pollution reduction targets. EPA can require new offsets, condition or re-direct grants, extend permit coverage to currently unregulated sources and take other actions in Pennsylvania if reduction targets remain unmet.

EPA has warned Pennsylvania that it must increase the number of inspectors and inspections in the Safe Drinking Water Program or face possible loss of program delegation. Recent fee increases in the program aid to address this shortfall, but continued management effort is needed to avert the possibility of sanctions.

The funding of federal environmental grants to the states has been proposed for significant reductions in recent federal budget cycles. Though funding has essentially remained level, this will continue to be a looming threat in the coming years.

New regulations for contaminants known as "PFAS," often found in drinking water near certain types of industrial activity will also require careful coordination between Pennsylvania and the EPA.

Policy Considerations: In addressing these and the host of other important challenges in which state and federal responsibilities overlap, the CAC urges the Administration to assure open and candid communication both inside DEP in raising potential federal compliance issues to senior management early, and in discussing possible alternative approaches that make sense for Pennsylvania with EPA. Flexibility is not always easily agreed to but becomes even harder to achieve when deadlines are imminent. Regular personal contact between the state and federal leadership teams goes a long way to improve trust and cooperation.

Not infrequently, DEP may believe that some federal requirements are not necessary for effective environmental protection, or that appropriate flexibility is not being offered, or that a "one-size-fits-all" solution is not right for Pennsylvania. The CAC urges that the Administration's leadership continue and expand efforts at fostering regional cooperation with other states to share solutions to common problems, to develop cooperative solutions, and to strengthen our hand in negotiations with EPA and the other federal partners. CAC applauds the Secretary's personal engagement in the Environmental Council of the States because it is one very effective avenue for leveraging the power of Pennsylvania's voice in discussions and negotiations with EPA.

Pennsylvania's environment will benefit from both a strong voice and a cooperative spirit in the state-federal relationship, but challenges will multiply if we are ineffective advocates or unnecessarily hostile parties. The CAC recommends that careful attention to this relationship be included among DEP's key priorities.

3.3 Sewage Facilities Planning and Regulation

Background: Pennsylvania’s approach to sewage facilities planning and regulation are long overdue for comprehensive review, updating and modernization. Adopted more than 40 years ago, the Sewage Facilities Act (Act 537) is built upon an outdated and cumbersome approach for both planning and permitting.

Pennsylvania’s Challenges: The cornerstone of Act 537, the adoption of sewage facilities plans by each of Pennsylvania’s more than 2,560 municipalities, has become one of the Commonwealth’s weakest links in the sewage facilities planning and permitting process. The process is poorly, if at all, integrated into broader water resources and other environmental protection efforts. Most municipal plans have gone without updating for decades, with planning largely devolved to development of specific “modules” guided by often outdated system suitability criteria and other requirements. Existing municipal ordinance requirements often go unenforced. With state funding for sewage planning dropped from the state budget and municipalities largely relying upon part-time sewage enforcement officers, in many parts of the Commonwealth, the sewage facilities program lacks a cohesive and reliable approach to the long-term management and maintenance of these systems.

Policy Considerations: In the short-term, the CAC recommends that DEP examine its regulations to facilitate the use of well-tested and proven alternate technologies in the on-lot sewage planning phase of development. Since DEP did not act on repeated requests from the Sewage Advisory Committee and the Citizen’s Advisory Council to allow alternate on-lot technologies to be used for new land development, Act 26 of 2017 has provided legislative relief for the use of “alternate” on-lot systems in on-lot sewage planning. However, the proposed guidance to implement the Act has demonstrated a tendency by the DEP to overstep legislative intent and introduce additional requirements in the “planning” process not contemplated by the legislation. The CAC believes, with the continued cuts in funding for environmental issues, that it is critical for DEP to follow legislative intent and avoid overreaching in the regulatory process. This could reduce the burden on the regulated community and allow DEP to streamline the review process, thereby increasing efficiency. Continued efforts in collaboration with the Sewage Advisory Committee are recommended with an eye to simplification and compliance with the legislation.

Opportunity for Consensus Building: Like climate change and the Chesapeake Bay program, sewage facilities planning is a program that is ripe for cooperative environmental stewardship. As a long-term goal, the CAC encourages DEP to work with appropriate stakeholders to complete a comprehensive review of the Act 537 program and planning process to identify programmatic improvements.

Act 537 rests on a framework developed in the 1960’s and its associated regulations have not been updated in nearly 20 years. The CAC believes that the time has come for the DEP to step back to review the overall effectiveness and direction of the sewage facilities planning program and process, and to reexamine and update the regulations found at 25 Pa Code Chapters 71 – 73.

The 1966 passage of Act 537 more than 50 years ago predates many of the current environmental laws, court decisions, planning processes, infrastructure improvements and other scientific developments. Many municipal sewage plans are old and outdated, and the funding and resources available for updating such plans are limited. The entire Act 537 process is inefficient for both the regulated and regulating communities and does not serve the needs of the public. Moreover, continued pursuit of sewage facilities planning in separate planning processes from other water resource planning activities is no longer justified. The CAC notes, for example, the recommendations made by the Pennsylvania State Water Plan calling for the development of an “integrated” planning process addressing sewage, water resources, stormwater and other issues, as the many aspects of water and wastewater management are closely related.

Considering the limited resources available to most of the municipalities now charged with Act 537 planning and administration, and the fact that wastewater, stormwater and other water functions present challenges that are fundamentally watershed-based (crossing many municipal boundaries), the time has come to rethink how such functions might be most efficiently and effectively implemented. Certainly, consideration should be given to shifting the sewage planning function to coincide with the stormwater planning function, which is now being performed at the county level under Act 67.

The CAC urges DEP to convene knowledgeable stakeholders, the Sewage Advisory Committee, and the General Assembly to examine the effectiveness and direction of the entire sewage planning and permitting program in Pennsylvania. Particular attention should be devoted to measures for assuring accurate environmental inventory and assessment during performance of Act 537 reviews. MS4 stormwater requirements remain a mystery to many municipalities and to the general public resulting in limited actual water quality protection.

3.4 Compensatory Environmental Mitigation

Background: DEP is charged with environmental protection, which properly should focus on resource protection with impact avoidance and minimization. Thus, its permit programs should focus on resource protection. Nevertheless, economic development is an engine that drives civilization, providing the goods and services Pennsylvanians need to thrive, the pathways of transportation to supply them, and the energy needed to move them. Pennsylvania is also blessed with an abundance of natural wonders, from tree-cloaked mountains and verdant fields, to free-flowing streams and bountiful lakes. As economic development occurs, whether it be a new home, a road widening, a utility corridor, or brownfield re-development, it will likely have some genuinely unavoidable impact to the natural environment. Rigorous regulatory oversight and successful ecological offsets (or mitigation) are critical to unleash the healthy power of economic development, while protecting the natural environment to the extent possible. No such oversight can be effective, however, unless accurate inventory of potentially affected resources is required during the permit process for significant projects. The unchecked economic development of our forefathers has left some of the natural environment scarred to this day, so as we continue to attempt regulating and offsetting the impact of today’s development, we also must strive to fix those areas marred by others in the past.

The core principles needed to create a healthy balance of development and ecological offsets include:

- Regulatory transparency (provide a clear, consistent methodology whereby an applicant knows process and what to expect);
- Accurate and complete inventory of affected environmental resources;
- Equivalency (everyone is treated the same, whether a single-family homebuilder, a coal mine, or a church building a parking lot), and
- Consistency (the process shouldn't change permit to permit, with different reviewers, or between township/county boundaries).

While these core principles apply to all aspects of regulatory oversight, they are especially crucial with respect to ecological offsets or mitigation.

Compensatory mitigation, in the permitting context, includes the strategies, policies, programs, actions, and activities that regulators and applicants go through to first identify, then avoid, minimize, or as a last resort compensate for (by replacing or providing substitute resources) the impacts to the natural environment associated with economic development activities. Federal guidelines from the U.S. Army Corps of Engineers (USACE) and EPA provide a framework prioritizing impact avoidance and minimization when permits are sought that damage aquatic resources. For the remaining impacts they have laid out guidance for satisfying mitigation, with a preference hierarchy that includes:

1. Mitigation Banks (MB) – Enables permittee to purchase credits from a third-party, private mitigation bank provider
 - a. The mitigation bank performs all restoration and assumes all ongoing mitigation liability
2. In-lieu Fee (ILF) Program – Pay a fee into an approved state agency or non-profit instead of buying credits or performing mitigation oneself
 - a. The ILF uses the funds to restore regional areas after-the-fact
 - b. Some hurdles with ILF programs are that they often face challenges in implementing projects in a timely fashion, are not always guaranteed to be available to offset especially large projects, and typically lead to a 3-5 (or more) year delay between impacts occurring and restoration taking place. These challenges have led to situations in the recent past where ILF were unable to accept funds and applicants had to pursue other approaches.
3. Permittee Responsible Mitigation (PRM) (onsite and offsite) – Perform own restoration either at the site of impact or offsite from the impact, but within the same watershed.
 - a. Permittee still holds liability
 - b. See note below regarding development of the “turnkey” or “full-delivery” PRM market

The prioritization of MBs and ILFs in concept provides some key benefits to agencies, the public, and the regulated community, as well as to the environment as a whole. These programs allow for more proactive aquatic resource restoration, at larger (watershed vs piecemeal) scale, by more qualified practitioners (both public and private) that can focus on top-quality restoration. Well-developed mitigation industries in principle can thrive, possibly becoming another part of that economic community, with improved products and lower long-term costs in a competitive

market. This also allows the regulated community to reduce their risk and liability, so they can invest more in their core businesses (building roads, factories, houses, etc.) and not dabble in ecological restoration. There might also be more accountability throughout the supply chain.

Turnkey or Full-delivery PRM: A movement across the country, including within PA is the growth of a PRM-approach where qualified third-party specialists acquire land, complete a “design/build” type mitigation project on behalf of the permittee, and assume the responsibility of a successful project. The mitigation is authorized along with the impact, and the applicant is still technically liable, however these projects may be able to meet higher level ecological offset goals (higher accountability, bigger/better restoration, etc.) and allow for increased financial assurances to both the agencies and applicants. These financial assurances can include performance bonding and surety bonding, as well as endowments for long-term stewardship and management. Meanwhile, there is a continuing need for monitoring efforts at site restoration and other mitigation activities given the long timeframes necessary to reconstruct functional ecosystems such as forested wetlands.

Pennsylvania’s Challenges: Pennsylvania has over 86,000 miles of streams and rivers. Of these streams and waterways, approximately 19,900 miles are classified as impaired for at least one of their designated uses based on the 2016 Draft Integrated Water Quality Monitoring and Assessment Report. Common sources of degradation include sedimentation from agricultural and logging activities, acid mine drainage from legacy mining activities, ever increasing stream dewatering from current longwall coal mining operations, sedimentation and nutrients from poor stormwater management practices, and combined sewer overflows (CSOs) in urban areas. The two largest stressors leading to degradation are siltation and metals. A breakdown of the primary identified sources of degradation are as follows:

- Aquatic Life Use (20,149 miles of non-supporting stream)
 - Of the impaired miles, 9,821 miles require the development of a TMDL.
 - Of the impaired miles, 7,283 miles have an approved TMDL.
- Fish Consumption Use (2,347 miles of non-supporting stream)
 - Of the impaired miles, there are 2,052 miles of fish consumption advisories that require the development of a TMDL.
 - Of the impaired miles, there are 676 miles with an approved TMDL.
- Recreational Use (7,565 miles of non-supporting streams)
 - Of the impaired miles, 7,398 require a TMDL.
 - Of the impaired miles, 155 have an approved TMDL.
- Potable Water Supply Use (56 miles of non-supporting streams)
 - 50 miles require a TMDL.
 - 12 miles have an approved TMDL.

The cost of addressing the acid mine drainage from abandoned mines alone is estimated to exceed several billion dollars, and it is unlikely that public funds can adequately address this restoration. It has been estimated that the Growing Greener grant has resulted in 6,500 acres of abandoned mine reclamation and over 600 miles of stream improvements. The cost associated with addressing the other forms of degradation would be even higher, with again a limited pool of state or federal funding available to implement projects.

Development of robust private mitigation markets can help address the funding challenges that PA (and all states) face with improving water quality and natural environments.

Based upon review of published data from the USACE, from 2012 to 2016 (3Q), there were approximately 219 projects that required stream mitigation. These projects, which include impacts from several industries (oil and gas, transportation, mining, and commercial/ industrial development), required approximately 296,900 linear feet of stream mitigation to offset unavoidable stream impacts. Typically, the linear feet of mitigation provided is more than the amount impacted. For example, a recent large transportation project impacted approximately 30,000 feet of stream channel, with a mix of culverts, bridges, and relocations of natural stream features. The mitigation included over 40,000 feet of restored stream channel and adjacent riparian corridors under permanent protection. Such "premiums" of mitigation versus impact clearly are warranted, and should be required, especially when there is a time-lag between impact and mitigation or if mitigation is provided elsewhere within a watershed. As the example of acid mine drainage from coal mines has so well demonstrated, it is possible to avoid this kind of environmental damage during present-day mining, and it is far cheaper to do so than to incur stream devastation for extended periods and then try to clean up the streams.

Functional vs Ratio Methodologies: Historically, PA and most other states have used a "ratio" basis to assess stream impacts and mitigation. In simple terms, a single linear foot of impact could be mitigated with a single linear foot of restored stream. The restoration efforts varied, but typically include a mix of full channel reconstruction, streambank grading, riparian buffer enhancement, or other restoration approaches based upon what was needed to repair the streams at the mitigation project. The amount of work proposed dictated the amount of "credit" gained with full channel reconstruction providing a 1:1 ratio of impact to mitigation with less intensive forms of restoration providing less credit.

While some projects (and regulatory managers at the state and federal level) would analyze projects based upon the size or relative quality of the stream resources (because not all streams have the same function and value), there was not a standardized approach in PA to establish a common currency for assessing impacts and then mitigation. To address this shortcoming of the ratio method, PA and many states around the country have already, or are looking to develop, functional assessment methodologies to better balance the actual functions and values of stream resources (and corresponding mitigation). Common functions and values of streams include their ability to support aquatic life, position in the landscape relative to water supply, value to local/regional fishing and other forms of eco-tourism, habitats for rare/threatened species, etc. DEP introduced a Functional Compensation Protocol (FCP) in 2014 to better identify and quantify these functions and values and has been working to finalize this approach to this day. The FCP also acknowledges and incorporates the critical value of the floodplain and riparian corridors along stream channels, assessing the impact to these components of the larger stream resource. Although some refinement and adjustment may be required to assure that the mitigation evaluation leads to predicable, practicable and implementable results, when fully adopted and implemented, the FCP may become an important tool to assist regulators and applicants (and their consultants) in better balancing the residual, unavoidable impacts to stream resources across the state, with appropriate forms and levels of mitigation.

West Virginia Case Study: While having a much smaller population (with fewer/smaller population centers) and less agricultural development, WV also has a wealth of streams and natural resources that are like PA. Portions of WV, like PA as well, also have a history of human-caused degradation and a need to address these problems while maintaining economic development. In the early to mid-2000's, mitigation bank sponsors started working with the state and federal agencies in WV to develop private, commercial mitigation banks to support the offset needs of both public and private development across the state. After a slow start, this industry blossomed to include more than 7 approved bank sponsors (with more likely in the works). These approved bank sponsors have already restored over 200 miles of stream channel around the state, along with hundreds of acres of land under permanent conservation.

While this restoration has been pursued to offset impacts to streams, the restoration has been completed years in advance of most of the impacts occurring and may provide stream restoration amounts in significant excess of actual impacts. The availability of bank credits has saved countless hours of regulatory review time when compared to the use of PRM. In conjunction with a healthy MB program, WV also has a successful ILF program that is run by the state's DEP. The ILF program provides the regulatory community a great outlet for satisfying small (and large) amounts of mitigation in the absence of MBs, and the ILF program in turn facilitates the implementation of stream restoration efforts as money in the ILF is accrued. The focus of both the MB and ILF programs is on larger, more ecologically-significant restoration projects, ideally on those which tie into other conservation goals for the state, whether that be habitats for rare or threatened aquatic or terrestrial species, protection of critical watersheds, etc. Both programs are also underpinned by a standardized functional assessment methodology (the WV Stream and Wetland Valuation Metric) that seeks to assure an appropriate balance of impacts to restoration and provides transparency and equivalency to all applicants developing projects across the state. The opportunity for a turnkey PRM also exists in WV, which might alleviate concerns about the ILF programs capacity, as well as provide a faster restoration project (concurrent with impacts) at a lower cost than the ILF.

Policy Considerations: Our Commonwealth is blessed with a wealth of natural resources, and individuals and organizations that are passionate about conserving and restoring these critical environments today and into the future. These efforts can, and must, work hand in hand with regulators and project developers to balance the needs of the environment with healthy economic development. Critical to this balance are the four tenets outlined above; regulatory transparency, complete and credible resource inventory, equivalency, and consistency. Progress with these tenets will encourage and grow a robust ecological restoration market, including the best restoration practitioners from around the region and nation. Finalization and adoption of DEP's proposed FCP can potentially be a great step in this direction, and should be completed, with adequate training for regulators and the regulated community of applicants and their consultants.

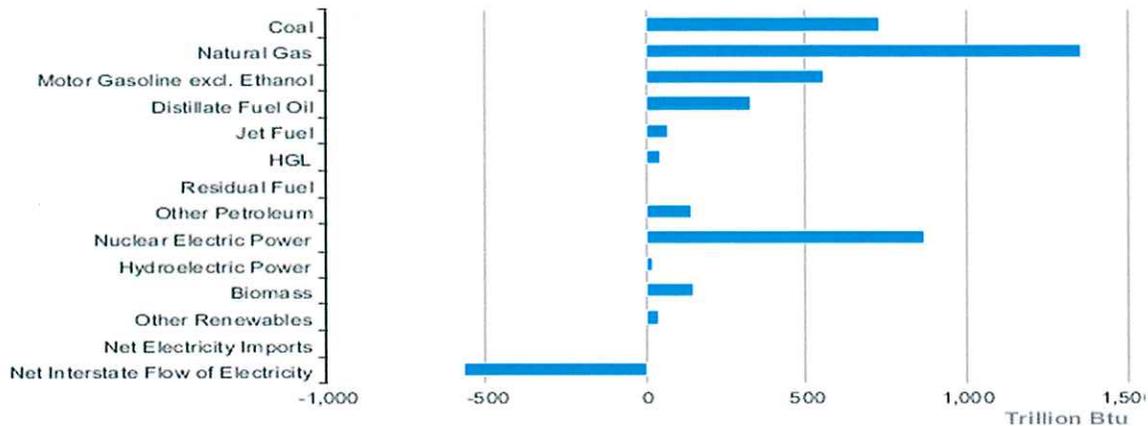
3.5 Preparing Pennsylvania for the Evolving Energy Future

Background: Since the first Marcellus Shale Lateral Well (Renz Well in Washington County, PA) came on-line in 2007, Pennsylvania's energy capabilities have changed the energy markets in a drastic way for all Pennsylvanians. Coupled with an increase in "alternative" fuels such as solar and wind power generation, the Commonwealth is now experiencing the cleanest air quality since the height of our industrial revolution.

The move away from mainly coal and nuclear to natural gas has resulted in the most economical fuel source Pennsylvanians have ever experienced, down from the 2008 high of \$13/MMBTU to less than \$3/MMBTU, a decrease of 77%, enabling vast savings for households, manufacturers and consumers, as shown below.



Pennsylvania Energy Consumption Estimates, 2016

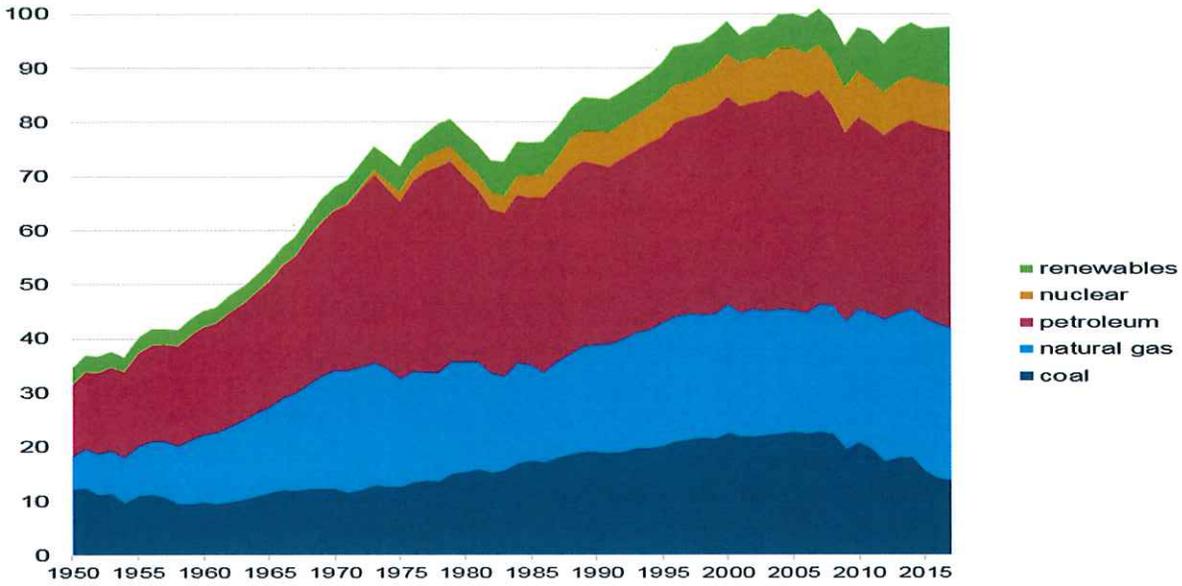


Source: Energy Information Administration, State Energy Data System

QUICK FACTS – BY THE U.S. ENERGY INFORMATION ADMINISTRATION (EIA)

- Pennsylvania's gross natural gas production, primarily from the Marcellus Shale, reached nearly 5.5 trillion cubic feet in 2017, and the state was the nation's second-largest natural gas producer after Texas.
- Pennsylvania was the third-largest coal-producing state in the nation in 2017 and the only state mining anthracite, which has a higher heat value than other types of coal.
- About 51% of Pennsylvania households use natural gas as their primary home heating fuel, 22% rely on electricity, 17% use fuel oil, 4% use propane, and nearly 3% burn wood.
- Pennsylvania requires that 18% of the electricity sold by 2021 come from renewable sources, including at least 0.5% solar photovoltaic power. In 2017, renewable energy accounted for 4.5% of the state's net electricity generation.

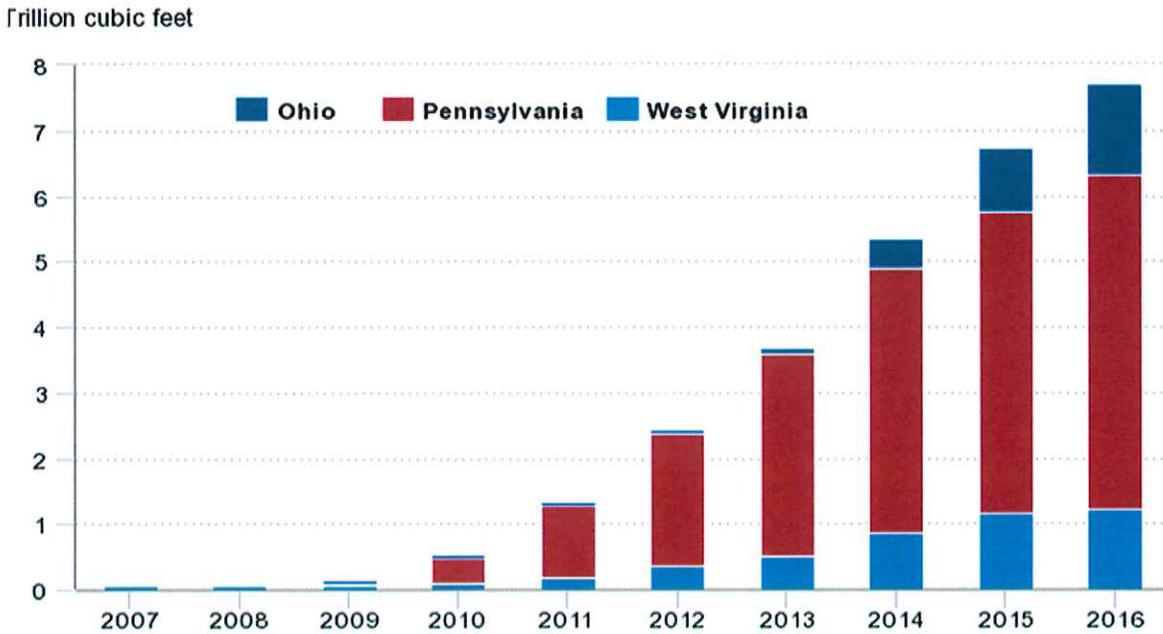
U.S. primary energy consumption by major sources, 1950–2017
quadrillion British thermal units



Note: Petroleum is petroleum products excluding biofuels, biofuels are included in renewables.
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3, April 2018



Marcellus–Utica state-level shale gas production, 2007 through 2016 (in trillion cubic feet)



Sources: U.S. Energy Information Administration, Pennsylvania Department of Environmental Protection, West Virginia Department of Environmental Protection, and Ohio Department of Natural Resources.

Pennsylvania's Challenges: With the decline of coal and nuclear, and with renewables making up less than 10% of Pennsylvania's energy needs, natural gas continues to increase, mainly from the change from coal fired to natural gas power plants, here, nationwide and globally. By 2018, Pennsylvania was the second leading state in energy production, behind only Texas. Pennsylvania produced natural gas, however, is still a neglected source of severance taxes.

Pennsylvania already has a drilling impact fee adopted in 2012 based on the number of wells drilled which yields about \$225 million annually with about \$102 million annually going for funding to local communities to deal with a variety of environmental, infrastructure and social issues resulting from increased drilling activities.

The remainder of the impact fee revenue-- about \$122 million-- provides funding for water and wastewater systems, abandoned mine drainage abatement, watershed restoration, water quality testing, greenways and recreation, oil and gas well plugging, flood mitigation as well as funding for county conservation districts, DEP oil and gas regulation and several others.

Policy Considerations: As the 2nd most productive state in natural gas extraction, it would be foolish to ignore the economics and vast availability of natural gas and even more foolish not to encourage the upscaling of wind and solar sources of energy. However, with climate change at the forefront worldwide, the demand for renewables will continue to rise. The nuclear industry is also feeling the impacts of natural gas and may see further declines in the total shares of Pennsylvania fuel sources in the future. The nuclear industry, however, is working hard to ensure that they are not phased out quickly, as was the experience of coal fired electrical plants.

All told, Pennsylvania, with its complex electrical grid, will continue to need all sources of energy as more homes and businesses demand additional power. It is important to understand that renewable energy is only about 10% of the total, with goals to make it higher. In reality, renewables and the infrastructure needed to make it viable are quite a few years into the future.

For the long term, the Penn State Department of Architectural Engineering in September 2018, submitted a report to the PA DEP titled: CHP-Enabled Renewable Energy Microgrids in Pennsylvania: A Guidance Document for Conceiving Feasible Systems. The report stresses smaller energy systems that use natural gas and renewables as opposed to the multi-billion-dollar nuclear projects that have been prevalent since the 1970's. Overall, we foresee a nice mix of natural gas and renewables for the future of Pennsylvania's energy demands. Yet Pennsylvania still lags well behind neighboring states in its support for renewables.

Conclusion

The Citizens Advisory Council is excited to work with the Wolf Administration and the dedicated staff at DEP over the next four years to accomplish the goals set forth above. We believe that through cooperation and consensus building Pennsylvania can be a leader in both environmental protection and economic development.