

Spotlight

A publication of Spotts, Stevens and McCoy



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SPOTTS | STEVENS | MCCOY

Our work touches everyday life.

From the water you drink to the air you breathe to the buildings and communities where you live, work and play.

Spotts, Stevens and McCoy is a family-owned regional engineering, environmental, and surveying firm serving local and global clients. We engineer solutions for a better world. Our work touches everyday life; from the water you drink, to the air you breathe, to the buildings and communities where you live, work and play.

EXPERTISE

- Building Engineering
- Site and Civil Engineering
- Survey, Data Capture and Modeling
- Water and Wastewater Engineering
- Construction Phase Services

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Focusing on Education

This month, schools across the country participated in American Education Week. The week promotes collaboration between parents and educators. This tradition began in 1921 when members of the American Legion, the U.S. Office of Education, and the National Education Association joined efforts to improve literacy and physical education across the country. This month we celebrate the educators and administrators that are inspiring the next generation of engineers, artists, innovators, and creators.

From helping students to understand how their school is heated and cooled to developing educational materials for outreach activities, to reaching out to the community to facilitate success we are engaged in providing educational opportunities.

We're here to help. We understand what institutions of learning need, and we deliver cost-effective, sustainable services. The specifics vary, but one course is always part of the program: ensuring a safe and healthy environment for students and staff to learn, live, and work.

PROFILE- Renovating Existing Building Systems

Marymount University | Berg Hall and Rowley Hall HVAC Upgrade

Berg Hall and Rowley Hall are both dormitory buildings located at Marymount University in Arlington, VA. The existing dorm rooms in each building were served by fan coil units supplied by a two-pipe heating and cooling system. The scope of the project was to replace the existing fan coil units, greater than 270 individual units, and upgrade the existing two-pipe system to a four-pipe system in each building. Work in Berg Hall also included replacement of the existing air-cooled chiller with two new 35-ton water-cooled heat recovery chillers, and the addition of a dry cooler. The existing boilers were also replaced with a new 600 MBH boiler, and new pumps were provided for the heating system as well as the cooling system. SSM performed a detailed field survey of each building. The existing fan coil units were located in extremely tight spaces above the ceiling. Converting the system from a two-pipe system to a four-pipe system required detailed coordination with existing architecture and other utilities. SSM conducted the field survey over the Winter break while students were not on campus, and then quickly completed the design to meet the aggressive permit submission deadline.

PROFILE- Improving Wastewater Treatment Plant Performance

High Strength Waste Review | Lincoln University

SSM performed a High Strength Wastes Review of the Lincoln University facilities and its Wastewater Treatment Plant which included a detailed review of potential discharges from disinfectants and cleaning chemicals and materials, boiler blowdown chemicals such as corrosion control inhibitors and Biocides, and other chemicals including the use of Quaternary Ammonia products and their effects and toxicity to the treatment plant biomass. SSM also performed treatment process troubleshooting and developed solutions for mitigating the effects from these harmful and toxic discharges.

Reaching out to the community to facilitate success.



Upper Providence Township Comprehensive Plan Addendum
SSM prepared an addendum to the Upper Providence Township Comprehensive Plan focusing on the Goals and Objectives and Actions of the Plan for purposes of updating and making them more actionable by the Township. In conjunction with those items, a survey was administered to the citizenry to receive public input and an analysis of the results was prepared. Facilitated in conjunction with the Comprehensive Plan Task Force, five (5) public meetings to include a presentation of the survey results, presentation of the draft plan to the Planning Commission and a pending public meeting with the Township Council.

Source Water Technical Assistance Program (SWPTAP) Pennsylvania Department of Environmental Protection

Providing protection for water supplies. Source Water Protection has been a growing concern for many municipalities and community water systems. To help protect Pennsylvania's drinking water, the Department of Environmental Protection created the Source Water Protection Technical Assistance Program (SWPTAP).

This program provides funding and expertise to develop a Source Water Protection Plan. Community water systems that participate receive free assistance in delineating protection zones, developing strategies for managing the protection areas, and planning for the future. It is a voluntary program that benefits water systems with groundwater wells, springs, reservoirs, river intakes, or any combination of these water sources. All types of community water systems are eligible to participate in SWPTAP including municipal, authority, water associations, and investor-owned (private) systems throughout the Commonwealth.

Communication Tools
As part of the planning process, the SSM Team develops printed and digital educational materials for ongoing outreach activities by the water system.

In conjunction with PADEP, SSM assists water systems in developing source water protection plans using GIS. Our professionals delineate protective zones around each well or surface water intake to show the areas that contribute to the drinking water supply, working closely with the water supplier and community representatives to identify ways of protecting these areas. Our team identifies potential sources of contamination, develops protective management strategies, plans for emergencies, and identifies new water supply options. Our ultimate goal is to protect the source for future generations.

City of Lewes Board of Public Works Strategic Plan

Facilitated a strategic plan for the Board of Public Works of the City of Lewes, Delaware. The project included aiding the Board in aligning their vision of the future with an effective plan that is sustainable and responsive to the needs of the community.

The plan involved providing a forum for all stake holders – allowing them to collectively come to decisions for the future and addressed issues related to infrastructure, operations, growth, and environmental stewardship.

SUMMARY: Discovery Sessions

#	Topic	Who	Staff	Engage	Plan	Follow	Other
1	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
2	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
3	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
4	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
5	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
6	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
7	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
8	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
9	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council
10	City of Lewes Strategic Plan	City Council	City Manager	City Council	City Council	City Council	City Council

Engaging Students in Conservation Program Proves Successful

Our Energy and Sustainability Services group introduced its first *Energy + Resource Conservation Program* over a decade ago to the West Chester Area School District. The program focused on conserving energy through behavior changes and it consisted of 3 primary elements:

1. Motivational presentations to all faculty, outlining the reasons to save energy and concrete ideas for saving energy in the school.
2. Monitoring & Validating (M+V) Tracking, including posters delivered to all schools each month, with savings tracked by kWh, cost and CO2 emissions
3. Teacher/student club support for any teacher and/or student group expressing interest in working on the conservation program.

The result— in West Chester's 16 schools, we achieved a 13% district-wide reduction in electricity consumption and greenhouse gas emission and a 7.3% reduction in utility costs during the first 6 months of the program. At Henderson High School where students supplemented the program with their own "Power Down Friday" campaign, we achieved a 21% reduction in electricity use and Greenhouse Gas emissions and a 9/.4% reduction in utility costs. The lesson - student engagement contributed greatly to program success.

The overall success of the program laid the foundation to secure a \$150,000 EPA *Climate Showcase Communities* grant, which enabled the creation of the *West Chester Student Conservation Corps* with the District's facilities Department. Our team continued to work for 4 years, thanks to a second, follow-on *Environmental Education* grant from the PA Department of Education written and secured by our firm. Overall, the program reduced electricity consumption 17%, eliminated 21 million pounds of CO2 emissions, and saved \$1.3 million in electricity costs.

The Educational Program

Structuring an Educational Program specifically to your school community is critical to the program's success.

Key Elements for Success

- **Research-based motivational techniques.** Human behavior can be challenging to influence, since behaviors derive from ingrained habits, subcortical processes, and basic biological make-up—all subconscious activities. Fortunately, there is a vast library of scientific research exposing how the brain works on this subconscious level, and many researchers have applied this understanding to behavior change techniques. To maximize the effectiveness of the educational program, we integrate specific, scientifically grounded motivational techniques.
- **M+V Tracking.** A core component of a successful behavior change program is continual feedback to building occupants so that they can realize the results of their efforts. Developing a normalization methodology to accurately account for changes in weather and building use is especially important to educational-based programs.
- **Identifying impactful opportunities upfront.** Over the past decade many schools have undergone various forms of energy efficiency improvements. As a result, opportunities for student and teacher behaviors to impact energy consumption may be less apparent. In schools that have undergone upgrades, it's important to focus efforts on meaningful behavioral changes that remain like additional plug loads or operational refinements. For those schools that have not undergone upgrades, the opportunities are readily apparent and can begin with simple efforts like turning out lights and shutting down computers.
- **Inter-Departmental Participation.** We have found that participation from various departments helps create a cultural shift and helps the school community affect real and lasting change.
- **Structured curricular component.** An increasing number of districts recognize that energy and sustainability is a key challenge for our future citizens. As a result, we have added a more structured curricular component to our program that aligns with the Pennsylvania Academic Standards—namely, *Environment and Ecology* and *S.T.E.M.* The alignment with these standards not only supports many districts' desire to better educate students about sustainability, it also aligns with the programming teachers are already utilizing in their classrooms.
- **Add a resource component.** Many school districts want to expand their sustainability initiatives beyond energy. Therefore expanding focus to such areas as recycling or paper conservation increases opportunities for programming and savings.
- **Incentives.** It's important to remember that an incentive is all it takes to increase participation. When appropriate, we facilitate incentives for top-performing schools. Sometimes it's the ice cream party at the end of the school year that fosters energy savings.



City of Philadelphia Building Energy Performance Regulation



The City of Philadelphia recently implemented regulations pertaining to the Building Energy Performance Policy. The goal of the Policy is to increase tenant comfort while decreasing energy costs and carbon emissions. The City anticipates implementation of the Policy will reduce carbon pollution by nearly 200,000 metric tons. The policy focuses on improving building performance by identifying non-capital improvements to the operations and maintenance of existing systems. Industrial processes or specialized equipment are excluded.

IMPACTED: Owners of any non-residential building with at least 50,000 SF of floor space.

- Mixed-use buildings in any mixed-use zoning classification with non-residential use greater than 50,000 SF.
- Industrial and manufacturing facilities.
- Temporary lodgings including hotels, motels, and short-term rental.

HOW TO COMPLY: Buildings must comply every 5 years from their compliance date.

- Conduct a tune-up or apply for an exemption

WHAT IS A BUILDING TUNE-UP? An assessment of existing base building systems and corrective actions to bring the systems up to a state of good repair.

- Billing Analysis
- Assessment of Elements: HVAC Operations and Controls, Lighting System Assessment, Building System Maintenance and Repairs, Domestic Hot Water and Water Usage, Building Envelope
- Determination and implementation of corrective actions
- Post-implementation Assessment
- Final Tune-up Report

WHO CAN PERFORM THE INSPECTION? A qualified tune-up specialist is a licensed Professional Engineer (PE) or Certified Energy Manager (CEM) with at least 7 years experience. This specialist must be a third-party to the building unless a large portfolio, then in-house or contracted service providers may complete the corrective actions, however, the final tune-up report must be verified and signed by the qualified tune-up specialist.

TIMELINE: BUILDING SIZE AND COMPLIANCE DATE

- **Large Portfolios** January 4, 2021
Large portfolios include 20 or more covered buildings or cumulative floor area in covered buildings of 5,000,000 SF or more. Building owner qualifying as a Large Portfolio has options to submit a compliance plan that details when buildings will comply across the cycle.
- **> 200,000 SF** September 30, 2021 (COVID-19 extension available)
- **100,000-200,000 SF** September 30, 2022
- **70,000-100,000 SF** September 30, 2023
- **50,000-70,000 SF** September 30, 2024

HERE TO HELP: Energy & Sustainability Services

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Benefits to the Building Owner: Energy Savings. Extend the life of equipment. No disruption to tenants' comfort.

Things You Should Know....

Check Out Our New Wall Art

In recognition of STEM/STEAM day we challenged our SSMKids to share their artwork with us. Our art challenge was dedicated to all things science, technology, engineering, art, and math. STEM (and STEAM) day is all about inspiring the next generation of engineers, artists, innovators, and creators! To meet the theme our artists were challenged to use creativity to design any picture that relates to STEM/STEAM or, color in one of our STEM/STEAM themed coloring pages.



Kent Morey, PE, CBLP Achieves Chesapeake Bay Landscape Professional Status

Spotts, Stevens and McCoy is pleased to announce that Kent Morey, PE has earned the Chesapeake Bay Landscape Professional (CBLP) designation. The achievement of the CBLP Level 1 designation demonstrates an advanced level of professionalism and knowledge of sustainable landscaping practices for a healthier Chesapeake Bay.



Certification is voluntary and candidates must pass a comprehensive exam that assesses an individual's command of sustainable practices in the design, installation, and maintenance of landscapes. CBLP-certified professionals have in-depth knowledge of sustainable landscape best practices and a focus on maintenance of stormwater best management practices. Advanced, Level 2 credentials are also available for highly experienced design (CBLP-D) and installation (CBLP-I) professionals.

Morey is a Senior Engineer in the Municipal Engineering and Planning department at Spotts, Stevens and McCoy. With more than 30 years of experience in the industry, Kent regularly performs engineering studies and designs for the construction, improvement, or installation of stormwater management facilities. He prepares contract documents and provides bidding assistance; performs site evaluation and detailed engineering design of storm drainage, erosion and sedimentation control, in addition to preparing PaDEP permit applications for public and private clients. In addition, Kent serves as a municipal client representative, stormwater management engineer, and provides assistance to MS4 communities. Morey is a 1985 graduate of The Pennsylvania State University with a BS in Civil Engineering. He is a registered Professional Engineer in Pennsylvania.

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KIDS CORNER

This time of year is a great time to create engineering masterpieces by designing and building some unique and edible Gingerbread Houses. Kits are available at local grocery or craft stores. Or for a simple structure just a few key ingredients are necessary: graham crackers for the walls/base and store-bought icing for the 'glue' to hold your structure together.

As for decorations, take a walk through your kitchen cabinets and see what you find . . . gumdrops, candy canes, marshmallows, pretzels, cereal, chocolate chips . . .



Free Coloring Sheet!

Download the free *Gingerbread House* coloring sheet!

[DOWNLOAD HERE](#)