

# DCNR Climate and Sustainability Initiative:

Reducing Our Carbon Footprint and  
Building Climate Resiliency



**pennsylvania**  
DEPARTMENT OF CONSERVATION  
AND NATURAL RESOURCES

# Message from Secretary Cindy Adams Dunn

With the impacts of climate change being felt in many aspects of our work and lives, my role as Secretary of Pennsylvania's conservation agency takes on increasing urgency with each passing year. It's clear we face no greater threat to our future than climate change, and it's incumbent on each of us to make climate a top priority.

The Pennsylvania Constitution presents us with an incredible responsibility to serve as stewards of our natural resources—not just for today, but for “generations yet to come”. With that charge in mind, we developed a multi-year plan to reduce our carbon footprint, increase energy efficiency, save money for the taxpayers, and share the importance of this work with all who visit our public lands.

I am proud of the work done over the last eight years by our scientists, administrators, managers, and front line staff to make sure DCNR is doing its part to mitigate the effects of climate change. As the state's largest land manager, we have made significant changes in our practices, implementing sustainable features and programs and educating the public about our best path forward to protect ourselves and our resources.

The next several pages outline the progress and success we have had and the journey we are on. We hope you join us as we create a more sustainable Pennsylvania.

Sincerely,



Cindy Adams Dunn



# SUSTAINABILITY

## Introduction

DCNR's commitment to sustainability is in direct response to the reality of the climate crisis. Sustainability efforts have existed in some capacity since the Department's inception in 1995 and have been inherent to the mission of the Department to conserve and sustain Pennsylvania's natural resources for generations to come. It was later, however, that the sustainability work became fully imbedded into the day-to-day operations of DCNR. Sustainability was pushed with new vigor during the Wolf administration beginning in 2015 and Secretary Cindy Adams Dunn ensured that Sustainability and Climate work would become a key pillar in the strategic initiatives laid out from the beginning of her tenure.

Pennsylvania has already seen significant changes in temperature, precipitation, and storm intensity, with the average temperature increasing 1.8F and very heavy rain events increasing more than 70% over the last 100 years. Projections from the 2021 Pennsylvania Climate Impacts Assessment are for these trends to continue and accelerate along with significant increases in extreme heat events, floods, and an altered growing season.

These changes have already resulted in significant impacts on DCNR's lands and mission. Wildfires now occur year-round, economically important trees such as black cherry and sugar maple are in decline, forest pests like the hemlock wooly adelgid are threatening forest health, invasive species like kudzu are spreading, and vector-borne diseases such as Lyme disease are on the increase.

DCNR's interest and investments in renewable energy dates to 1979 with solar installation at Mt. Pisgah State Park commissioned by DER Secretary Cliff Jones. From 1979 to 2016, the department made small investments in solar and wind technology as a means of educating visitors through demonstrations on DCNR lands, however, beginning in 2016, DCNR has been taking meaningful action to reduce the carbon footprint of its operations. This has been done through substantial investments in solar energy, electric and hybrid vehicles in the agency fleet, high performance buildings, and more.

DCNR has worked with the GreenGov Council as a major partner to help the agency achieve goals and collaborate on initiatives. The GreenGov Council – co-chaired by the Secretaries of the departments of General Services, Environmental Protection, and Conservation and Natural Resources-- was created by Executive Order and signed by Governor Wolf in 2019. Governor Wolf established a goal for Pennsylvania to strive to achieve a 26% reduction of net greenhouse gas emissions statewide by 2025, and an 80% reduction of net greenhouse gas emissions by 2050 from 2005 levels. The GreenGov Council's goal is to help agencies reduce overall energy consumption by 3-percent per year by 2025 from 2017 levels, replace 25-percent of the state passenger fleet with Battery Electric Vehicles (BEVs) and Plug-In Hybrid Electric Vehicles (PHEVs) by 2025, procure renewable energy to offset at least 40-percent of the commonwealth's annual electricity, and/or directly purchase renewable power generation sited within PA, and build any new buildings, major renovations, and build-to-suit leased buildings to high-performance building standards.

DCNR is in the process of adopting a suite of sustainability policies that will codify best practices within the Department related to waste reduction, energy efficiency, best siting practices for renewable energy, landscape management, green infrastructure, and climate resiliency. These policies will ensure that sustainability measures are embedded into staff's everyday tasks and procedures and that DCNR is serving as a leader in every aspect of this work.

## PENNSYLVANIA IS FACING



Higher temperatures



Increased precipitation



Higher number of large storms events



Decreased snow cover



Changing distributions of some plants and animals



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# Climate Adaptation and Mitigation

Secretary Dunn has made climate change a central pillar of the strategic work of DCNR. Her tenure has elevated climate change to a top priority and the agency's sustainability work was born out of the need to reduce emissions, and to set an example from within state government to other state agencies, municipalities, and the general public. Strategic planning has centered around reducing greenhouse gas emissions and adapting to climate change. A Director of Applied Climate Science was appointed to the department's executive staff to manage and direct this work.

In 2017, over 70 staff members from across all DCNR's bureaus participated in a rigorous process to determine and prioritize the department's greatest climate change vulnerabilities and identify strategies to address them. The resulting climate change adaptation and mitigation plan is anchored by DCNR's climate change position statement:

"Climate change is real and is impacting the commonwealth's ecological and recreational resources. As the state's leading conservation agency, DCNR will use the best available science to develop and implement climate change adaptation and mitigation strategies within each of its bureaus to minimize these impacts and serve as a role model for the citizens of Pennsylvania."

The plan includes 123 actions to prepare for and mitigate the risks associated with potential climate impacts to Pennsylvania, including higher temperatures and more extreme weather events, range shifts for wildlife and plant species, and an increase in invasive species. This plan also outlined the need for DCNR to cut its own emissions through solar installations, electric vehicle fleets, and energy efficiency.

The plan has been widely used as a model by other natural resource agencies, including the U.S. Forest Service, and was awarded the National Climate Adaptation award by the Association of Fish and Wildlife Agencies. Since the plan was implemented, climate change has been integrated into all the department's operating and strategic plans, and the department's bureaus have made considerable progress adapting to and mitigating climate change. These are just a few examples of some of the department's climate change adaptation work:

- Infrastructure, including trails, culverts, roads, and dams, are being modified or built to withstand heavier stream flows and flooding.
- Climate change and habitat connectivity are being considered in grant decisions and guidance is being developed to help counties integrate climate change into their open space plans.
- The Bureau of Geological Survey has been involved with carbon capture, use, and storage research and technical work, including participating in multiple national collaboratives, and conducting surface and sub-surface geologic mapping.
- Forests are being managed to increase climate resilience as well as carbon sequestration and we are working with stakeholders to plant tens of thousands of trees in urban areas, along riparian corridors, and as part of a new lawn conversion program.
- Climate change is the focus of many of the department's educational programs.
- Natural climate solutions such as living shorelines, beach dune restoration, and dynamic forest restoration are being implemented in state parks and state forests.



*Pennsylvania is expected to experience more frequent flooding events*

**“Climate change is real and is impacting the commonwealth's ecological and recreational resources. As the state's leading conservation agency, DCNR will use the best available science to develop and implement climate change adaptation and mitigation strategies within each of its bureaus to minimize these impacts and serve as a role model for the citizens of Pennsylvania.”**

*DCNR's Climate Policy Statement*



Rooftop solar array at Mt. Pisgah State

## Solar

Since 2016, DCNR has been deploying small to mid-sized solar projects in order to decrease its dependency on fossil fuels with a goal of producing or procuring 100% of the agency's energy from renewable sources. An assessment of DCNR's park and forestry facilities with the highest kilowatt usage laid the groundwork for transitioning to solar power in the highest need areas of the agency. Considerations for siting considered DCNR sites with adequate terrain and sites without the need to fell trees. Currently, DCNR has 23 solar arrays with a total capacity of 1.2 MW. These arrays will save \$215,000 on electricity and reduce GHG emissions by about 443 metric tons (equal to 1 million passenger car miles) annually.

The sustainability initiative saw the completion of solar installations at 16 state parks and 2 forest districts. Fort Washington State Park became the first net-zero park within the state park system, and shortly after, the solar canopy arrays installed at Ryerson Station's new swimming pool parking lot became the second. This creates a foundation from which to build future solar projects in successive parks throughout the Commonwealth.

At the time of publication there are 18 additional solar projects in development. The ground mount solar being constructed at Prince Gallitzin will be DCNR's largest solar array sized at 0.74MW. Partnerships with programs such as Think Outside have added value with students under faculty guidance conducting feasibility projects. One such project completed at Francis Slocum State Park provides a roadmap for sustainability within state parks.

Large-scale solar farms are rapidly accelerating across the Commonwealth with solar companies targeting private landowners for utility-scale solar power plant systems. DCNR supports the advancement of utility-scale solar while proactively seeking opportunities to avoid unnecessary forest conversions, keeping mature forests intact, supporting wildlife habitat and corridors, ensuring the integrity of our water resources, and defending against degradation of our environment. Utility-scale solar is not permissible on DCNR-managed lands or on lands acquired using DCNR funds.

DCNR co-authored a commonwealth-level policy statement that ensures state agencies are working together to advance long-term sustainable development practices, informed community-based planning, and environmental and climate justice goals. DCNR also released guidance entitled "Conservation Considerations for Siting, Planning, and Maintaining Grid-Scale Solar Systems in Pennsylvania" to support informed decision-making and promote conservation and sustainable best practices in the planning, siting and construction of grid-scale solar systems. This guidance was developed with input from state agencies, municipal and county partners, conservation organizations, industry stakeholders and other interested parties to support best practices for solar siting on private lands

DCNR is committed to incorporating these best practices into the siting and development of small to mid-sized solar projects on park and forest lands. In addition, DCNR will actively work with our sibling agencies and stakeholders to advance broader policy goals that establish Pennsylvania as a leader in the sustainable build-out of utility-scale solar on private lands to ensure the Commonwealth reaches the maximum potential for emission reduction and carbon sequestration.

## Electric Vehicles

DCNR's EV program has focused on the department's vehicle fleet and building charging station infrastructure within state parks and forest districts. The inception of the work began with a feasibility study and analysis conducted by Carnegie Mellon outlining how DCNR can reach its sustainability goals. Given that vehicle emissions are a top contributor of greenhouse gas, the transition of the vehicle fleet became a top priority.

As of 2016, DCNR operated a fleet of 1,176 passenger vehicles and 354 non-passenger vehicles throughout its six bureaus. Most of these vehicles – 95% – are stationed in state park and forest locations around the state. The department added its first eight plug-in battery electric (BEV) and hybrid electric vehicles (PHEVs) to the agency's central office pool vehicle fleet in 2017. This was facilitated through a collaborative project with the Harrisburg Parking Authority to reserve eight parking spaces in Harrisburg's 5th Street Garage location for DCNR EV fleet vehicles, while PPL Electric donated the Level 2 charging units. These EV fleet efforts have since expanded to include a total of 34 electric vehicles statewide (8 BEVs and 28 PHEVs). The agency is working to replace 25% of its passenger vehicle fleet with BEVs and PHEVs in the next several years.

DCNR is also providing Level 2 electric vehicle charging stations in select state park and forest locations free-of-charge to visitors. To date, DCNR has received over \$155,000 in funding towards these installations utilizing the Pennsylvania Department of Environmental Protection's "Driving PA Forward" Program (i.e. VW Settlement Fund). An initial goal of 42 charging stations was set in 2016. At the conclusion of 2022, the agency has installed 41 charging stations and has an additional 12 charging stations in development.

DCNR's public EV charging stations are significant not only because of the emission decreases, but also because they add to the public infrastructure in rural PA. Careful consideration has been given to siting them in parks and forests near major arteries such as Interstate 80 and the Pennsylvania Turnpike. This makes it more feasible for residents of the Commonwealth to utilize electric vehicles and compliments installation of charging stations by the private sector. The agency also prioritized locations that aren't near major population areas—although there are a number also planned for high-volume locations in the southeast.

Fleet	Annual Average VMT	Number of Vehicles	NO <sub>x</sub>	PM <sub>2.5</sub>	VOCs	SO <sub>2</sub>	CO <sub>2</sub>
Passenger Vehicles	10,959,392	1,268	1.80	0.27	1.17	0.11	5,899
Non-passenger Vehicles	1,121,723	359	3.05	0.08	0.57	0.02	1,078

*DCNR fleet emissions prior to adoption of EVs*

## Guaranteed Energy Savings Act

The Guaranteed Energy Savings Act (GESA) was passed in 2010 to decrease growing utility costs by enabling upgrades to building components such as lighting, mechanical, and plumbing to be performed through a budget neutral process. The traditional GESA process guarantees energy savings by replacing only the equipment that will yield the highest savings at minimal cost regardless of the age or condition of the systems. The Governor's executive order in 2019 set a goal of decreasing statewide energy consumption 21% by 2025. The Department anticipates reducing energy consumption by 24% by 2025 thanks to the success of DCNR's GESA program.



*Secretary Dunn with a plug-in EV in DCNR's fleet*

**“ Since implementing EnergyCAP in 2019, DCNR has been able to identify and monitor over 2,000 electric and natural gas accounts through a streamlined and tailored dashboard for users. DCNR has administered training to over 200 staff members. ”**



Secretary Dunn signing DCNR's High Performance Green Buildings policy

GESA projects are bank-financed and paid over the course of a 20-year period using the utility cost savings. The GESA Phase 1 project, which was completed in April 2020 and included parks in Parks Region 2, as well as four Forest Districts, cost \$5.6 million for energy efficiency improvements (including upgraded lighting, HVAC, weatherization, and more) with a guaranteed utility cost savings of \$7.5 million over 20 years. Construction of the Phase 2 GESA Project began in September 2020 and is anticipated to conclude in January 2023. Parks in Regions 1 and 3, as well as twelve Forest Districts, received energy-focused building system upgrades. It cost \$16.5 million and will yield a guaranteed utility cost savings of \$23.2 million over 20 years

In November 2022, the McClure Company was selected as the contractor to perform the Investment Grade Audit (IGA) to begin the Phase 3 GESA Project. This will encompass Parks in Region 4 and five Forest Districts in the Eastern Region of the Commonwealth

## EnergyCAP

EnergyCAP is a web-based software platform developed and maintained by an award-winning firm from State College. In 2019, DGS implemented EnergyCAP software across all state agencies to track and manage utilities. Electric and natural gas bills are paid centrally but each forest and park monitors their utilities using the software. Three main improved benefits are energy management, building operations and utility bill accounting. Since implementing EnergyCAP in 2019, DCNR has been able to identify and monitor over 2,000 electric and natural gas accounts through a streamlined and tailored dashboard for users. DCNR has administered training to over 200 staff members. .

## High-performance buildings

DCNR's investments in high performance buildings dates back to 2004 with the completion of the Sproul State Forest resource management center. Since then, LEED has become the most common building certification within DCNR since LEED is the most widely known and the most used and respected. It has become the standard for new buildings. As of 2022, DCNR has 17 LEED certified facilities (five being Gold LEED certified), with six more in the pipeline. It is the department's policy to ensure all newly constructed or renovated facilities utilize sustainable design practices and products where feasible. DCNR LEED facilities' utility costs are over 40% lower than the national average.

The high-performance Hickory Run State Park Visitor Center and Office was dedicated in October 2020. The center now serves as the main contact point for visitors who have been rushing to the park for a recreational escape from the challenges of the pandemic. The facility is well on its way to achieving LEED certification. In addition to the Hickory Run Visitor Center and Office, future high-performance projects that will be seeking LEED certification include the Delaware State Forest Resource Management Center (RMC), the Hills Creek State Park Office, and the Marsh Creek State Park Office. The Delaware State Forest RMC project is anticipated to begin construction in 2021. The office projects at Hills Creek and Marsh Creek State Parks are in the early stages of design, so expected construction dates are a few years away.

# Sustainable Concessions

Beginning in 2021, all new state park concession contracts were updated to require vendors to improve the sustainability of their operations. Provisions in the new contracts focus on the reduction of single-use plastics (use of polystyrene foam is already prohibited), waste reduction, and composting. Concessionaires are required to eliminate the use of plastic straws, plastic utensils and plastic bags replacing each of these items with their plant fiber, wooden and compostable alternatives. Additionally, concessionaires are required to work with the department to compost all food waste and products as opportunities become available.

# Sustainability Mini-grants

Funding was provided for a wide variety of projects and programs including small scale solar installations, battery powered maintenance equipment, deployment of new sustainable building materials for park rehab, biosolid sewage treatment equipment, e-bikes, electric utility task vehicles (UTV's) and educational equipment. In all, this program provided nearly \$100,000 in funding for employee driven sustainability projects.

# Sustainability Tours

“Driving Towards Sustainability” tours have been a way for DCNR to unveil and highlight some of the climate and sustainability efforts that the agency has undertaken each year. These events serve as an opportunity to share knowledge and spread information among our staff and the public about the actions we are taking to make our operations more sustainable.

- 2016 – Announcing the addition of Point State Park as part of the Pittsburgh 2030 District, dedication of a 10kW solar installation at the Tom Ridge Environmental Center at Presque Isle State Park, and the dedication of the LEED Silver certified office and visitors center at Kinzua Bridge State Park.
- 2017 – Dedication of LEED Silver certified Resource Management Center at Buchanan State Forest, announcement of the first eight plug-in hybrid and fully electric vehicles added to DCNR's fleet, and the dedication of a 1.74kW off-grid solar installation at Caledonia State Park.
- 2018 – (Spring) Ribbon cutting for DCNR's first solar shingle installation at Mt. Pisgah State Park, dedication of a 25.5kW net-zero solar installation at Fort Washington State Park, and a riparian forest buffer planting of 400 trees at Neshaminy State Park.
- 2018 - (Fall) Announcement of DCNR's first GESA encompassing 22 state parks and four state forests saving DCNR \$7.5 million over the life of the project, dedication of a 230kW net-zero solar installation at the new sewage treatment plant at Moraine State Park, dedication of the first free public electric vehicle charging stations at Prince Gallitzin State Park.
- 2019 – Dedication of a 65.1kW net-zero solar installation at the LEED Silver certified Resource Management Center at Buchanan State Forest, dedication of the free public electric vehicle charging stations at Greenwood Furnace State Park, announcement of DCNR's second GESA project encompassing 50 state parks and 12 state forests and saving DCNR \$22 million over the life of the project.



*The Sustainability Initiative was launched in 2015 and includes staff from across the agency*



*Bottomless culverts are one strategy DCNR has adopted to prepare for increased weather events due to climate change*

- 2021 – Announcement of the Climate and Sustainability Plan for Presque Isle State Park, demonstration of new battery powered maintenance equipment at Colonel Denning State Park, and a riparian buffer and native meadow planting in conjunction with Non Profit Organization and private organizations.

## In Summary

DCNR's lands and infrastructure, encompassing more than 2.5 million acres of state parks and forests, over 4500 buildings, numerous bridges and dams, and 200 plus public water and wastewater systems, have served as proving grounds for the agency's efforts to reduce its carbon footprint, strengthen resiliency, increase energy efficiency, and save taxpayer dollars.

The DCNR climate and sustainability team has produced significant results across all areas of sustainability, demonstrating how this work impacts the millions who visit Pennsylvania's public lands each year and serving as an educational platform in the process.

A climate mitigation and adaption plan was developed and implementation is underway; solar installations are taking state parks to net zero; electric vehicles and motorcycles are greening DCNR's vehicle fleet, along with battery powered maintenance equipment that is helping the Department to reduce daily emissions across the system; and more than \$30 million in infrastructure improvements and energy performance upgrades have taken place through the Guaranteed Energy Savings program. The visitors are benefitting too. When currently planned projects are completed, Pennsylvania will have 50 state parks with no-cost EV charging stations installed—the most significant build-out among all state park systems nationally.

This would not have been possible without the commitment of Governor Tom Wolf to lead Pennsylvania in this direction, and certainly would not have been achieved without the leadership and vision of Secretary Cindy Adams Dunn. The DCNR Climate and Sustainability Team expresses its appreciation to them for making this work possible, and we look forward to expanding this work by developing a comprehensive Climate Action Plan built on our successes and the latest scientific findings to further reduce our carbon footprint and increase the resiliency of our parks and forests.

### Secretary **Cindy Adams Dunn**

Deputy Secretary **John Norbeck**, Co-Chair, DCNR Climate and Sustainability Initiative

Deputy Secretary **Michael Walsh**, Co-Chair, DCNR Climate and Sustainability Initiative

**Alfred Uzokwe**, Co-Chair, Director DCNR Bureau of Facility Design and Construction

**Ali Bowling**, Executive Policy Specialist

**Greg Czarnecki**, Director of Applied Climate Science

**Paula Devore**, Program Specialist for Sustainability, Recreation and Trails

**Nicole Faraguna**, Director of Policy and Planning

**Jacob Newton**, Executive Energy Project Coordinator

**Justin Royer**, Executive Assistant

**Meredith Seltzer**, Forest Program Specialist

**Peter Spadaro**, Executive Recreation and Sustainability Coordinator

**Jarod West**, Architectural Consultant

**Lori Yeich**, Recreation and Conservation Manager

*Thank you to all DCNR staff participating in the Climate and Sustainability Initiative*

## Accomplishments:

- -41 EV charging stations built
- -Solar Decreased emissions equal to 1 million passenger car miles
- -Energy consumption down 24% by 2025
- -Utility cost savings of \$23.2 million over 20 years

