

Examples of Climate Resilient, Green, and Sustainable Best Management Practices (BMP's)

The Bureau of Recreation and Conservation has been a proponent of green and sustainable parks, trails and open space for over a decade. Grantees have demonstrated the ability to incorporate green and sustainable best practices in their projects; however, due to impacts caused by a changing climate the need for increased attention to sustainable systems and recreational resources is warranted.

Sustainable recreation is one created by balancing visitor needs, management capacity and ecological capacity. The Department is a strong proponent of sustainable recreation and conservation projects that facilitate the planning, acquisition, development and educational outreach activities that mitigate the effects of climate change. In Pennsylvania, climate change impacts include, higher average temperatures, increased annual precipitation, significantly higher numbers of large storm events, changes in peak stream flows, decreased snow cover, changes in recreational use patterns, and the movement of some species to the north and higher elevations. The Bureau of Recreation and Conservation is committed to funding projects that create green sustainable systems, climate resilient communities, natural areas, and sustainable parks through best management practices.

Where applicable; here are examples of how to address sustainability and climate change in the types of projects funded through DCNR's Community Conservation Partnership Program's (C2P2)

Note: Some of these practices have the potential to support the pollution reduction goals of local and federal water quality mandates with co-benefits of improved public health, economic revitalization, reduced energy use and costs, and diversified and increased access to recreation opportunities for all.

- [Recreation and Conservation Planning](#)
- [Land Acquisitions](#)
- [Recreation Rehabilitation and Development](#)
- [State and Regional Partnerships](#)

Recreation and Conservation Planning - Master site development plans, trail and feasibility studies, open space and greenway plans, rivers conservation plans, land conservation and stewardship plans, network analysis etc.

- Evaluate climate change impacts on the study area such as flooding, drought, changes in recreation seasons, etc. and determine how BMPs including green infrastructure can address them
<https://www.dcnr.pa.gov/Communities/GreenCommunityParks/Pages/default.aspx>
- Recommend types of native landscaping best suited to adapt to changing local climate conditions
- Identify underutilized areas including vacant lots and brownfields that could be repurposed to functioning ecosystems for stormwater infiltration, habitat improvement, flooding mitigation and public recreation areas
- Develop management strategies for invasive species control in high profile areas, for example within a pollinator meadow or other sensitive habitat areas
- Develop and implement recreational opportunities that adapt with changing site conditions
- Consider a site's propensity to flood when designing and locating infrastructure improvements
- Identify waterways on site for future enhancement and protection
- Use appropriate professional consultant services when planning and designing trails
- Create walkable and bikeable links between parks and neighborhoods
- Consider providing shaded areas to protect park and trail users from warming temperatures

- Consider water-based recreation facilities such as pools, spray parks, and waterway access
- Consider prescribed burn and carbon sequestration in stewardship plans as an option for forest and habitat management
- Review the [Pennsylvania Climate Action Plan](#)
- When performing trail studies and network analyses, consider the impact of developing the trail on climate change as well as the trail's ability to handle severe storm events and identify areas of high risk into future implementation strategy.

Land Acquisitions – Park and recreation areas, trails right-of-way's and greenways, critical habitat areas and open space, conservation easements

- Protect interior forests, ridgetops and woodlots
- Protect lands with varying elevation
- Protect geologic features that promote biodiversity, such as lands with limestone bedrock
- Ensure future stewardship plans include climate change adaptation strategies, such as prescribed burn and carbon sequestration
- Protect areas prone to flooding and ridges of varying elevation
- Convert underutilized areas including vacant lots and brownfields into parks with functioning ecosystems that improves water quality and mitigate flooding
- Focus acquisition efforts towards landscape connectivity with greenways, open space, and close to home recreation
- Protecting sensitive habitats, migratory corridors, and areas of high native biodiversity
- Provide access to water resources
- Acquire land to protect sensitive water resources, river access points, and connectivity between streams and surrounding landscapes
- In areas prone to sea level rise, incorporate sea level rise projections into acquisition strategy
- Review the [PA Conservation Explorer Map](#) to determine if a property has climate change connectivity
- Acquire land for wider trail corridors

Recreation Rehabilitation and Development – Park Rehabilitation and Development, Small Community Development, Rivers Development, Trails

- Introduce native tree species or tree species that are better adapted to future conditions
<https://forestadaptation.org/learn/resource-finder/climate-change-tree-atlas-results-regions-pennsylvania>
- Protect and restore floodplain and riparian wetlands to maximize floodwater storage and groundwater recharge
- Develop close to home recreation opportunities
- Provide access to water-based recreation to escape warming temperatures for example, pools, splash pads and waterway access points
- Implement energy reduction and solar conservation strategies such as automated lighting controls, energy waste reductions, roof overhangs, tinted glazing, highly insulated windows, low-heat absorbing materials, and expanded landscaping to help control glare, limit thermal gain/loss, and moderate the impact of temperature extremes on indoor environment
- Implement sustainable design and construction techniques based on site vulnerabilities and context that adapts to these vulnerabilities
- Consider the impacts of flooding and steep slopes and incorporate resilient infrastructure and materials

- Plant vegetated buffers along trail corridors to help reduce erosion of trails and act as buffers to adjacent tributaries
- Remove invasive species along streams and plant diverse natives, including conifers for thermal cooling and species that survive hotter temperatures and changing soil conditions
- Expand shaded areas for park and trail users, for example sunshades and trees
- Develop wider trail corridors and encourage greening of the corridors
- Repurpose and/or reuse historic bridges or infrastructure versus new construction

State and Regional Partnerships – Education, training, studies, implementation, mini-grants, etc.

- Educate about climate change impacts and feasible local solutions to reduce air pollution, carbon emissions, and water temperature, and increase connected ecosystems and habitats.
- Develop communication materials for the public about flooding issues and why we don't rebuild in flood-prone areas
- Provide mini-grants to implement best management practices to mitigate the impacts of flooding, invasive species and other climate related issues.
- Provide education on invasive species and the importance of native plants and their pollinators
- Promote and develop strategies for land conservation within regionally significant landscapes, especially contiguous parcels, properties containing significant natural resources, and parcels easily accessible to the public
- Develop local climate action plans, or strategically integrate climate considerations in other planning efforts
- Engage stakeholders to collaboratively plan for climate change impacts in their region
- Develop interpretive signage on properties with high visitor use to explain climate resiliency and green and sustainable practices
- Review the [Pennsylvania Climate Action Plan](#) and consider joining the [Local Climate Action Program](#)
- Create a unified vision and implementation plan for climate resiliency and green and sustainable practices