PLANNING AND POLICY-MAKING PHASE

The goal of this guide is to help communities identify and engage the staff who can play a role in building resilience with nature-based solutions. Planning and carrying out nature-based solutions requires an integrated approach that works across agencies and departments. This section provides tips for adding nature-based solutions to traditional community planning processes and programs. For each program area, this section recommends which officials to engage (ENGAGE); which types of nature-based solutions to consider (ASSESS); and how to update plans, policies, and ordinances to drive those solutions (UPDATE).

LAND USE PLANNING

The Land Use Element of a community's Comprehensive Plan (sometimes called a Master or General Plan) typically guides land use planning. It sets goals for where and how land will be developed and preserved over the next 20 to 30 years. It also identifies strategies to support these goals. The Land Use Element provides the basis for the community's land use regulations, including zoning ordinances and subdivision and land development ordinances (SALDOs).

ENGAGE: Planning staff typically develop the Comprehensive Plan in coordination with other government and public stakeholders. For coordinated investments in nature-based solutions, planning staff should invite other departments to help develop the Land Use Element. Include staff with roles in parks and recreation planning, public works, environmental protection, utilities planning, transportation planning, floodplain management, and emergency management.

Like any other project, nature-based solutions must follow local, state, and federal regulations and permit requirements. This usually includes environmental and historic preservation (EHP) review. Reaching out to EHP authorities early in project design can help communities identify potential benefits and limitations of the proposed solution, and avoid delays in implementation.

ASSESS: The land use planning process can help drive investments in nearly every type of nature-based solution. To prioritize nature-based solutions, consider the community's most pressing issues, including development or hazards and risks. For communities approaching build-out, for example, preserving parks and greenways before all remaining land is developed may be most important.

Communities may choose to restore natural ecosystems like wetlands, and reconnect natural areas. This can help native plants and animals compete against invasive species and resist other stressors.

UPDATE: The land use planning process should begin with the goals and principles in the Land Use Element. This will provide the rationale and stimulus for ordinance improvements, policy and procedure changes, and training. Once the Land Use Element is updated, make more detailed updates to zoning ordinances and subdivision and land development ordinances. Depending on the type of nature-based solutions prioritized by the community, update ordinances and procedures to:

- Establish riparian buffers and protect stream corridors;
- Direct development to previously developed areas and areas with existing infrastructure;
- Promote compact (e.g., mixed-use and transit-oriented) development;
- Reduce impervious cover; and
- Modify landscape requirements, including tree protection requirements.

HAZARD MITIGATION PLANNING

Hazard mitigation activities are typically guided by a Hazard Mitigation Plan (HMP), which is updated on a five-year cycle. The HMP identifies specific risk reduction projects as mitigation actions. Each action is linked to a plan that describes how and when the project will be completed.

ENGAGE: A Steering Committee typically leads the development of the HMP. The committee often includes planners, emergency managers, and other local officials. To enable joint investments in nature-based solutions, invite other departments to help define the HMP's goals and mitigation actions. Include staff with roles in parks and recreation, public works, planning, environmental protection, utilities management, and transportation planning. They can participate in both the five-year plan update process and the annual reviews and updates.

ASSESS: Hazard mitigation planning can drive investments in nearly every type of nature-based solution. To prioritize nature-based solutions, consider the community's most pressing hazards. For example, addressing droughts may be most important for communities in arid environments with high water demand. FEMA's Local Mitigation Planning Handbook specifically identifies projects that protect natural systems as important mitigation activities. These actions minimize losses and preserve or restore the functions of natural systems.

UPDATE: Nature-based solutions can be integrated into HMPs through both long-term goals and specific mitigation actions. Mitigation actions may include nature-based projects, but they should also promote nature-based solutions more broadly. Consider policies and regulations, education and outreach, and incentive-based programs. Develop these projects, policies, and incentives with relevant departmental staff so that they can also integrate nature-based solutions into their programs and planning processes.

The Capital Region Council of Governments in Connecticut established the following goal in its 2019-2024 HMP: Increase the use of natural, "green," or "soft" hazard mitigation measures such as open space preservation and green infrastructure. Specific mitigation actions encouraged adopting regulations to promote low impact development and nature-based techniques. They also supported education initiatives to help municipal staff and elected officials understand nature-based solutions practices.

STORMWATER MANAGEMENT

Stormwater management programs typically aim to reduce water pollution, preserve aquatic ecosystems, and protect the public from stormwater flooding. Many must also comply with federal and state stormwater management regulations. These regulations are designed to reduce pollutant discharges from Municipal Separate Storm Sewer Systems (MS4s) and CSOs. Communities with MS4s typically base their program on a Stormwater Management Program Plan (SMPP). Those with CSOs typically use a local Long-Term Control Plan (LTCP). These plans are carried out by various local programs, ordinances, and development procedures.

ENGAGE: Stormwater or public works departments typically develop the SMPP or LTCP. To coordinate investments in nature-based solutions, invite others to help develop the plan and put it into action. Include staff with roles in parks and recreation planning, environmental protection, utilities planning, transportation planning, floodplain management, and emergency management.

ASSESS: Stormwater management programs are best suited to drive investments in neighborhood- or site-scale nature-based solutions that retain and treat stormwater onsite. To choose which nature-based solutions to emphasize, consider the community's most pressing stormwater issues and priorities. Communities with a lot of existing development and limited new development might emphasize tree trenches, green roofs, and rainwater harvesting. These nature-based practices have smaller footprints and are easily integrated into tighter spaces. If that community also had limited water supplies, it might prioritize rainwater harvesting; if it did not have enough tree cover, it might prioritize tree trenches.

UPDATE: Updating a community's stormwater management program should begin with its SMPP or LTCP. To encourage the use of nature-based solutions, many communities are adding stormwater retention standards to their post-construction stormwater programs. According to an EPA summary, 28 states and two territories have post-construction retention standards. This type of standard requires some runoff volume to be managed onsite. This reduces both pollutant loads and erosive peak flows. Communities can also develop a hierarchy of acceptable nature-based solutions. For example, the Philadelphia Water Department divides these practices into three preference levels: Highest, Medium, and Low.

Once the SMPP or LTCP is updated, make more detailed updates to stormwater management ordinances and procedures. Depending on the type of nature-based solutions prioritized by the community, update ordinances and procedures to:

- Include nature-based solutions in proposed capital projects for stormwater management for public projects;

- Make nature-based solutions legal and preferred for managing stormwater runoff for private projects;

- Have stormwater management plan reviews take place early in the development review process for private projects;

- Provide other ways for developers to meet stormwater requirements when onsite alternatives are not feasible, such as "payment-in-lieu of" programs for private projects;

- Emphasize collaboration between the stormwater management department, streets department, and private developers to build green streets;

- Ensure that local building and plumbing codes allow harvested rainwater for exterior and non-potable uses; and

- Include effective monitoring, tracking, and maintenance requirements for stormwater management.

Rain Garden — Greenbriar Middle School in Parma, OH

TRANSPORTATION PLANNING

The Transportation Element of the local Comprehensive Plan, the regional Long-Range Transportation Plan, and the Transportation Improvement Program typically guide transportation planning. These plans set goals for a community's transportation system over the next 20 to 30 years. They also identify strategies and projects to support these goals. The plans provide the basis for local codes related to transportation and for local investments in transportation infrastructure.

ENGAGE: Planning staff typically develop the Comprehensive Plan, with input from local staff and the public. To coordinate investments in nature-based solutions, planning staff should invite other departments to help develop the Transportation Element. Include those with roles in parks and recreation planning, public works, environmental protection, utilities planning, floodplain management, and emergency management.

ASSESS: Transportation and land use planning are closely linked and often interdependent. As with the land use planning process, the transportation planning process can help drive investments in nearly every type of nature-based solution. To prioritize nature-based solutions, consider the community's most pressing issues. For communities with limited options for pedestrians, retrofitting streetscapes to increase walkability may be most important.

For an excellent model of how to systematically incorporate nature-based solutions into the transportation planning process, communities should review the "Eco-Logical" Approach promoted by the Federal Highway Administration.

UPDATE: Updating the transportation planning process should begin with the goals and principles in the Transportation Element. These provide the rationale and stimulus for ordinance improvements, policy and procedure changes, and training. Once the Transportation Element is updated, make more detailed updates to the policies, procedures, and ordinances on street and parking design. Communities can update their street design standards to provide clear direction on the appropriate installation of nature-based solutions. They can adopt a complete streets policy that encourages designs including nature-based solutions. And they can create a green streets manual that provides guidance on designing nature-based solutions.

Local ordinances and procedures related to street design and parking can also be updated. Use this process to minimize impervious cover and promote nature-based solutions. Depending on the type of nature-based solutions prioritized by the community, update ordinances and procedures to encourage or require:

- Adding nature-based solutions to proposed transportation projects in the Transportation Improvement Plan and capital improvement plan;

- Making street trees a part of public capital improvement projects;

- Making streets no wider than is necessary to move traffic effectively;

- Using pervious materials for lower-traffic paving areas, including alleys, streets, sidewalks, driveways, and parking lots;

- Providing alternative parking requirements (e.g., shared or offsite parking), and varying requirements by zone to reflect places where more trips are by foot or transit;

- Using alternative measures to reduce required parking, such as transportation demand management; and

- Using nature-based solutions to strengthen the resilience of transportation infrastructure to natural hazards.

OPEN SPACE PLANNING

The Open Space and Recreation Element of a community's Comprehensive Plan typically guides open space planning. This element establishes a policy framework and action program. These are used for maintaining, improving, and expanding the community's open space and recreational facilities.

ENGAGE: Planning staff typically develop the Comprehensive Plan with government and public stakeholders. To coordinate investments in nature-based solutions, invite other departments to help develop this element. Include staff with roles in hazard mitigation, public works, environmental protection, utilities planning, floodplain management, and emergency management.

ASSESS: The open space planning process can help drive investments in nearly every type of nature-based solution. At the watershed scale, it can support interconnected systems of greenways and parks. These mitigate natural hazards and provide co-benefits to the community. At the neighborhood scale, open space planning can incorporate nature-based solutions into local parks and recreational facilities. This helps reduce and treat neighborhood stormwater runoff. In coastal areas, open space planning can drive investments in living shorelines, waterfront parks, and other coastal nature-based practices.

UPDATE: Updating the open space planning process should begin with the Open Space and Recreation Element of the Comprehensive Plan. Once the plan is updated, consider more detailed updates to facilities management programs, park planning and design, and local ordinances.

Facilities management programs can add neighborhood-scale nature-based solutions to existing parks and playgrounds. As local governments retrofit existing facilities, they can incorporate nature-based solutions to reduce impervious cover, enhance tree cover, and treat and soak up stormwater runoff. Park planning and design are also opportunities. Communities can apply nature-based practices and principles as they expand their network of parks and trails and design each park site. Using nature-based solutions for retrofitting existing parks or acquiring and designing new parks can mobilize new partners and funding sources. Finally, updating local ordinances can help to preserve watershed-scale nature-based solutions. Based on the needs of the community, ordinances can be updated to:

- Protect natural resource areas and critical habitat;

- Establish no-development buffer zones and other protections around wetlands, riparian area, and floodplains; and

- Limit development and land disturbance in source water protection areas.

Folly Beach, SC

FEMA's Community Rating System (CRS) allows participating communities to earn lower flood insurance rates for property owners, renters, and businesses. They get credit for actions that reduce risk under the National Flood Insurance Program. FEMA recently elevated the potential CRS credit values for nature-based solutions. Credit is given for actions such as preserving open space, restoring wetlands, and developing a living shoreline. The number of points awarded for preserving open space is now among the highest given in the program. Credits are awarded according to the percentage of preserved open space in a community's floodplain. The larger the percentage, the more credit is awarded, accompanied by potentially higher insurance discounts. Folly Beach, South Carolina incorporated nature-based solutions into their CRS program and received a 30-percent reduction in premiums.