Delaware Climate Change and Community Resiliency Planning Toolkit

Planning for climate-ready communities across Delaware

Delaware Office of State Planning Coordination

Written in coordination with DNREC, DSHA, DDA, DelDOT, and DEMA

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About This Toolkit

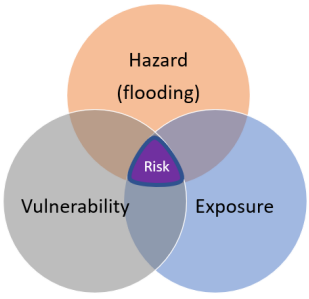
This toolkit provides guidance for Delaware communities developing the climate change and resiliency element of their comprehensive plans. It is designed to complement—not replace—the Climate Change and Resiliency Element requirement in the comprehensive plan checklist.

Senate Bill 237 requires that comprehensive plans adopted after November 15, 2026 include climate change and resiliency policies, statements, goals, and planning components. Strategies selected should aim to reduce vulnerabilities likely exacerbated by impacts of climate change, such as extreme weather events.

For municipalities, this requirement calls for policies, statements, goals, and planning components that can be addressed in a dedicated climate section or integrated throughout the plan. For counties, climate considerations are integrated directly into required plan elements including Future Land Use, Mobility, Conservation, and Housing. Both approaches are supported by this toolkit.

Communities should select strategies based on their local climate vulnerabilities, priorities, and available capacity. All strategies must be informed by Delaware's Climate Action Plan and coordinated with relevant state agencies.

Key Terms
Resilience is the ability to prepare for, absorb, recover, and more successfully adapt to adverse events. **Risk** is a measure of the exposure and vulnerability of a place, person, or system to a particular hazard, where **exposure** is defined by the proximity of persons, a place, or system to that hazard — the closer the proximity, the greater the exposure. **Vulnerability** is the degree of sensitivity and adaptive capacity to a hazard, where sensitivity refers to a predisposition to feeling impacts and adaptive capacity refers to the ability to change and evolve so that impacts are lessened**.**
Definitions adapted from NOAA planning guidance



Adapted from FEMA, IS-393.A
Introduction to Hazard Mitigation

How Does This Fit into Your Comprehensive Plan?

The statutory requirement calls for policies, statements, goals, and planning components for climate change and resiliency. These four components complement each other to create a comprehensive approach:

- **Statements =** Declarations about your community's approach and recognition of climate issues
- **Goals =** What you want to achieve with measurable targets and timelines
- **Policies =** Potential/proposed new or revised zoning, ordinances, or protocols to address specific climate change related challenges
- **Planning Components** = The analysis, maps, and strategies that support your statements, goals, and policies

Example of How These Work Together:

(This example pertains to flooding. Other considerations like heat vulnerability or alternatives to auto-centric development patterns would follow a similar format.)

Statement:

[Town name] recognizes that sea level rise and heavy precipitation increase flood risk and threaten properties, critical infrastructure, and community safety. This plan prioritizes avoidance of future risk, nature-based solutions, and strategic infrastructure investments to build resilience.

Goal:

Reduce flood risk to critical municipal infrastructure by 2035

Strengthen floodplain ordinance to account for increasing flood risk by 2030

Policies:

- New water and wastewater treatment facilities are prohibited in the 100-year floodplain and areas vulnerable to permanent inundation from sea level rise.
- Development in Special Flood Hazard Areas is discouraged and requires case-by-case review with enhanced resilience standards including elevation and flood-resistant materials.
- Construction of new homes or businesses in areas within 3' of mean higher high water (MHHW) is prohibited.

Planning Components:

- Map showing FEMA flood zones (100-year, 500-year, and LIMWA — Limit of Moderate Wave Action)
- Map of 2' inundation (near-term, ~2050) and 4–5' inundation (late century)
- Map of locally known drainage problem areas
- Flood vulnerability assessment identifying at-risk properties and infrastructure with estimated impacts
- Timeline for infrastructure upgrades, fortifications, and funding strategies
- List of priority flood abatement projects including green infrastructure opportunities, wetland conservation areas, and properties for potential acquisition or conversion to open space
- Attestation that the plan has been informed by the 2025 Delaware Climate Action Plan. Note: This is a certification requirement for consistency with Delaware Law.

Note on maps: All comprehensive plans must contain various maps. These maps must include the most up to date data available and should be created with Geographic Information System (GIS) software if possible. FirstMAP can be a resource if GIS is to be used. This toolkit lists the maps that should be created for each topic area. Be sure to include maps showing the area(s) affected by the selected risks and vulnerabilities. See Appendix A: Mapping Guidance for specific guidance and resources.

Developing Your Climate Change and Resiliency Element

This section provides strategies organized by category. For each category, you'll find strategies to consider, example goals, example policies and statements, and planning components that support implementation. Select the approaches that fit your community's vulnerabilities and capacity, while also addressing your community's particular vulnerabilities to those risks. The strategies, goals, policies, and statements provided throughout this toolkit are examples meant to illustrate the kinds of approaches communities may take — they are not an exhaustive list, and communities are encouraged to identify additional strategies appropriate to their local context.

Strategies and goals marked ***(larger jurisdiction/county scale)*** reflect approaches that typically require greater staff capacity, land area, or regulatory authority than most municipalities possess. Counties and larger municipalities should consider these in addition to the core strategies.

Step 1: Understand Your Risks and Vulnerabilities

Before selecting strategies, understand which climate risks pose the greatest threat to your community and which populations, places, and systems are most vulnerable to those risks. Climate impacts vary across Delaware based on geography and land use patterns:

- **Coastal areas:** Sea level rise, storm surge, saltwater intrusion, wave action, erosion
- **Inland waterways and floodplains:** Increased flooding frequency and severity, changing rainfall patterns, infrastructure vulnerability
- **Urban and developed areas:** Heat Island effects, stormwater management challenges, infrastructure stress
- **Rural and agricultural areas:** Water availability issues, impacts to crop production, changes to growing seasons

Hazard	Coastal	Tidal river	Inland river / floodplain	Urbanized	Rural / ag
Sea level rise / Inundation	●	●		○	○
Heavy rainfall / Flooding	●	●	●	●	●
Coastal storm surge	●	○			
Stormwater /Drainage problems	○	○	●	●	●
Saltwater intrusion	●	●			
Erosion / wave action	●				
Extreme heat	○	○	○	●	●
Drought / water availability				○	●

● Primary hazard ○ Possible / secondary

For illustrative purposes — verify local conditions using the Delaware Flood Planning Tool, county Hazard Mitigation Plan, and DNREC resources.

Understanding Local Flood and Sea Level Rise Conditions

Communities should identify flood and sea level rise risks relevant to their area and assess which people, places, and systems are most vulnerable. This is not a formal vulnerability assessment — it is a practical exercise to understand where the hazards exist and who is most at risk. For communities in coastal areas, flood risk often results from the combination of sea level rise, storm surge, tidal conditions, and inland drainage backup acting together – plan for these compound events, not just individual hazards in isolation.

Note on FEMA Flood and Sea Level Rise Data: FEMA flood maps are regulatory maps that govern federal flood insurance program and used for regulatory purposes. They reflect historical flood risk and do not account for future sea level rise or the accelerating effects of climate change. For planning purposes, FEMA flood zones should be treated as a baseline — not the full picture of future risk. The Delaware Flood Planning Tool is the recommended starting point for sea level rise scenario mapping. The NOAA Sea Level Rise Viewer provides current local SLR scenarios and should be used alongside state data. Note that the Flood Planning Tool's sea level rise layer and FEMA maps use different methodologies and should be compared side by side, not combined on the same map

- ☐ Identify local climate risks: these may include flooding, sea level rise, saltwater intrusion, extreme heat, drought, storms, and erosion from wind/wave action. Note: mapping data is not available for all risks; saltwater intrusion and erosion may need to be identified through other sources such as well monitoring records, drainage complaints, and local knowledge
- ☐ Identify populations most vulnerable to climate impacts including elderly residents, low-income households, those with mobility limitations, and communities with language barriers – using Census/ACS data and the DNREC EJ Area Viewer
- ☐ Assess how these impacts may affect property, agriculture, infrastructure, cultural resources, and natural resources in your area
- ☐ Describe how flooding may affect community goals, safety, infrastructure, and quality of life.
- ☐ Map FEMA flood zones (100-year, 500-year, LIMWA) — see Appendix A
- ☐ Map 2’ inundation (near-term ~2050) – the most relevant scenario for most planning decisions and 4–5’ inundation (late century) for long-lived infrastructure and capital investments, using the Delaware Flood Planning Tool
- ☐ Identify locally known drainage problem areas not captured on FEMA maps — consult with DNREC Watershed Stewardship for stormwater issues not on FEMA maps (note: DNREC may have limitations on what mapping resources it can share due to sensitivities around drainage complaints)
- ☐ Map critical facilities, homes, businesses, and vulnerable populations within flood-prone areas
- ☐ Map vulnerable areas and critical infrastructure within local government control — including water/wastewater facilities, emergency response facilities, and municipal buildings — and evaluate their vulnerability to flooding. See Appendix A for mapping guidance and data sources.
- ☐ Consider compound and cascading impacts — for example, how flooding may affect evacuation routes and access to critical services.
- ☐ Collaborate with DEMA to obtain risk assessment data and to identify and assess priorities — state this collaboration within the comprehensive plan

Understanding Local Heat Conditions

Not all communities face the same heat risk. Understanding where heat vulnerability exists helps focus strategies where they matter most. If heat is identified as a risk, maps showing heat-vulnerable areas are expected and should be included.

- ☐ Identify heat-vulnerable areas — such areas typically have high percentages of impervious surface, low tree canopy coverage, and populations most vulnerable to the effects of high temperatures
- ☐ Identify populations at greatest heat risk — elderly residents, those without air conditioning, and communities with language barriers — using Census/ACS
- ☐ Map areas with high impervious surface and low tree canopy coverage
- ☐ Overlay critical services for vulnerable populations (bus stops, senior centers, medical facilities)
- ☐ Identify key areas with elevated heat exposure risk
- ☐ Assess potential implications for public safety and quality of life

Other Climate Considerations

Flooding and extreme heat are the most common and pressing climate concerns for Delaware communities, but other hazards may be relevant depending on your location and land use. Communities should also consider drought and water availability, saltwater intrusion affecting wells and wastewater systems, erosion and wave action in coastal areas, and emerging threats including more frequent severe storms. The Delaware Climate Action Plan and your county's Hazard Mitigation Plan are good starting points for understanding the full range of hazards that may affect your community.

Step 2: Climate Resilience Strategies

Communities should select strategies based on local needs and priorities. Strategies must be informed by Delaware's Climate Action Plan, in accordance with Delaware Law — particularly Chapter 2 (Delaware's Changing Climate) and Chapter 5 (Land Use Intersections). The strategies below are illustrative examples, not an exhaustive list. Not all strategies will be appropriate for every community — choose those that address your specific risks and vulnerabilities and match your capacity. However, flooding and excess heat are likely to affect all Delaware communities and should be key considerations when developing your plan.

Many of the strategies in this section also contribute to reducing greenhouse gas emissions, which is an important goal of the Climate Action Plan. Communities are not expected to benchmark or track emissions, but should be aware that land use, transportation, energy, and natural resource decisions all have emissions implications and can move the community in a positive direction.

In selecting strategies, the first question should always be: does this avoid making things worse? Prioritize preventing new exposure to climate hazards before addressing existing vulnerability. Avoid land use decisions, infrastructure investments, or development approvals that increase community risk. Near-term adaptation measures can reduce risk but may not address underlying long-term vulnerabilities. Plans should reflect this rather than treating short-term fixes as permanent solutions.

Flood and Sea Level Rise

Strategies to Consider:

- ☐ Identify vulnerabilities to critical infrastructure (roadways, emergency services, water/wastewater, municipal buildings), describe impacts, identify needed upgrades, and set a timeline — coordinate with DelDOT on roadways
- ☐ Prohibit new water utilities and wastewater plants in areas vulnerable to permanent inundation or 1% annual flood zones
- ☐ Establish policy on development in hazard zones (prohibited, allowed with standards, or case-by-case)
- ☐ Prohibit new permanent development and subdivision of land in Special Flood Hazard Areas, particularly for residential uses and critical infrastructure — including Zone AE (high-risk areas with detailed flood elevation data) and Zone A (high-risk areas without detailed flood elevation data)
- ☐ Prohibit new development in coastal high-hazard areas subject to wave action (Zone VE)
- ☐ Create requirements for appropriate development in flood-prone areas that increase green infrastructure use — parks, walkways, active recreation, natural areas
- ☐ Prohibit new development in areas vulnerable to permanent inundation within 5-foot sea level rise scenario
- ☐ Require structural modification and nature-based flood protection for new development near flood hazard areas
- ☐ Restrict development and subdivision of tidal and non-tidal wetlands
- ☐ Require vegetated riparian buffers (at least 100 feet) along waterways, wetlands, and floodplains in new development
- ☐ Require stormwater designs to account for more intense rainfall
- ☐ Use buffers between waterbodies and impervious surfaces to infiltrate, filter, and cool stormwater
- ☐ Promote natural shorelines and vegetated buffers
- ☐ Preserve upland areas adjacent to low-lying areas for buffer migration as seas rise
- ☐ Identify degraded wetlands or coastal areas where restoration would provide flood storage or habitat benefits
- ☐ Consider impacts to transportation access — reference the DelDOT Frequently Flooded Roadways tool when identifying flood-prone areas where development should be restricted
- ☐ Consider acquisition of flood-prone properties and conversion to open space **(larger jurisdiction/county scale)**
- ☐ Examine condition and appropriateness of existing flood control structures (berms, floodwalls, levees) relative to future conditions - note that hard infrastructure can exacerbate flooding in neighboring areas and may prevent coastal ecosystems from migrating inland, and may provide a temporary solution under accelerating sea level rise scenarios **(larger jurisdiction/county scale)**

- ☐ The anticipated growth scenario in the housing element must encourage development of new housing growth away from areas vulnerable to inland and coastal flooding **(larger jurisdiction/county scale)**

Example Goals:

- Strengthen floodplain ordinance to account for increasing flood risk by 2030
- Eliminate new development approvals in Special Flood Hazard Areas for residential uses by 2028
- Set an overall wetland protection and restoration goal with a specified timeline — identify priority wetland areas based on flood storage capacity **(larger jurisdiction/county scale)**
- Set a stream corridor buffer goal and adopt ordinances requiring vegetated riparian buffers along waterways, wetlands, and floodplains **(larger jurisdiction/county scale)**

Example Policies:

- New water and wastewater treatment facilities shall be prohibited in the 100-year floodplain and areas mapped as vulnerable to permanent inundation from sea level rise
- All new development within 200 feet of tidal waters must preserve existing wetlands and establish minimum 100-foot vegetated riparian buffers
- Stormwater management systems shall be designed to account for more intense rainfall events

Example Statements:

- [Community name] recognizes that sea level rise and increased flooding threaten waterfront properties, historic resources, and critical infrastructure
- This plan prioritizes avoidance of future flood risk and nature-based flood protection including wetland preservation, living shorelines, and expanded riparian buffers

Planning Components:

- Flood Risk and Sea Level Rise Map (see Appendix A)
- Inventory of at-risk infrastructure with estimated impacts
- List of priority flood abatement projects including green infrastructure opportunities, wetland conservation areas, and properties for potential acquisition or conversion to open space
- Timeline for infrastructure improvements and natural infrastructure projects

Heat Resilience

Strategies to Consider:

- ☐ Identify heat-vulnerable areas — such areas typically have low tree cover, large impervious surfaces, and populations most vulnerable to the effects of high temperatures
- ☐ Set tree canopy goal with percentage target and timeline
- ☐ Increase minimum landscape requirements for new development and encourage use of native plants
- ☐ Minimize impervious pavement and encourage pervious materials in new construction and redevelopment
- ☐ Designate cooling centers at accessible municipal facilities, map locations, and describe conditions under which they will be open
- ☐ Invest in shade along active transportation corridors connecting residential areas to employment and services

- ☐ Plant trees in walkable areas and along transit routes
- ☐ Adopt tree protection ordinances preserving mature trees during development
- ☐ Require or incentivize green roofs or cool roofs to have a minimum solar reflectance on commercial buildings and municipal facilities

Example Goals:

- Establish a street tree planting program in heat-vulnerable neighborhoods with annual planting targets
- Set an overall tree canopy goal for lands within the jurisdiction with a target percentage and a timeline for achieving this goal — prioritize regreening in heat-vulnerable areas
- Designate cooling centers at accessible municipal facilities and ensure all residents are aware of locations

Example Policies:

- The [Town/County] establishes a goal of 35% tree canopy coverage by 2035, with interim targets reviewed every five years
- Parking lot landscaping shall include canopy trees providing shade over at least 50% of parking area within 15 years
- "The [Community] designates [list facilities] as public cooling centers available during heat emergencies when temperatures exceed 95°F for two consecutive days"

Example Statements:

- [Community name] recognizes that extreme heat events are increasing in frequency and intensity, posing particular risk to elderly residents and households without air conditioning
- Strategic tree planting provides multiple benefits including cooling, stormwater management, and air quality improvement

Planning Components:

- Heat Vulnerability Map showing areas with high impervious surface and low tree canopy (see Appendix A)
- Tree canopy assessment showing current coverage — Delaware Urban and Community Forestry Program (Dept. of Agriculture) can assist where data is available
- Inventory of designated cooling centers with accessibility analysis
- Regreening priority areas identified based on heat vulnerability

Emergency Preparedness

Strategies to Consider:

- ☐ Coordinate with the County Emergency Manager and DEMA to confirm consistency with the applicable County Hazard Mitigation Plan, County Emergency Operations Plan, PrepareDE evacuation zones, DelDOT evacuation routes, and current state hazard/risk assessment data
- ☐ Coordinate emergency communications and operations with other local jurisdictions
- ☐ Identify primary evacuation routes and any segments vulnerable to flooding under current or future conditions

- ☐ Consider vulnerable communities in planning decisions, including overburdened communities, environmental justice communities, financial constraints, language barriers, households without vehicle access, and residents of long-term care facilities
- ☐ Include a statement or policy to establish protocols for communicating emergency information in multiple languages and through multiple channels, including the Delaware Emergency Notification System (DENS), NOAA Weather Radio, EAS/local broadcast media, and municipal websites or social media – with backup methods identified for situations involving power or cell service outages
- ☐ Identify potential emergency shelters located outside flood-prone areas with adequate cooling, backup power, and battery storage to maintain operations during extended outages — reference PrepareDE, Delaware's disaster-preparedness hub — it helps residents find their evacuation zone, build an emergency plan, and access other preparedness resources — to understand which areas of your community may need to evacuate: https://preparede.org/know-your-zone/
- ☐ Identify critical facilities exposed to flood, sea level rise, extreme heat, or power outage, and consider mitigation or continuity actions needed to maintain operations
- ☐ Engage residents and businesses in identifying resilience opportunities — this may include evacuation plans, designated shelter locations, cooling centers, enhanced protections along waterways, and increased tree canopy
- ☐ Partner with community organizations, faith-based groups, neighborhood associations to build resilience and support disaster outreach and recovery

Example Goals:

- Develop multilingual emergency communication system reaching 95% of residents by 2028
- Establish mutual aid agreements with neighboring jurisdictions by 2028

Example Policies:

- Emergency communications shall be provided in English, Spanish, and [other languages] through multiple channels including text alerts, social media, and radio
- Emergency shelters must be located outside Special Flood Hazard Areas with backup power, cooling capacity, and ADA accessibility

Example Statements:

- [Community name] is committed to protecting all residents during climate emergencies, with particular attention to vulnerable populations
- Effective emergency preparedness requires coordination across boundaries and partnership with community organizations

Planning Components:

- Inventory of vulnerable populations, emergency shelters, and cooling centers with proximity and accessibility analysis
- Critical facilities inventory and vulnerability map (see Appendix A for guidance)
- Evacuation route analysis identifying areas where access may be limited by flooding
- Community engagement summary documenting outreach and resilience workshops
- Implementation timeline with responsible parties and funding sources

Transportation and Land Use

For counties: The mobility element shall include recommendations for land use regulations that promote a range of sustainable transportation choices and consider alternatives to auto-centric development patterns, including transit services, where applicable. The mobility element shall be consistent with the State Implementation Plan (SIP) for air quality attainment and consider the designated evacuation routes as set forth by the appropriate state agencies.

Note that municipalities also use these strategies, see Ch. 5 of Delaware CAP

Strategies to Consider:

- ☐ Assess land use policies concerning flood-prone areas and areas vulnerable to sea level rise, limiting or redirecting growth away from these areas
- ☐ Promote compact development, multimodal design, and mixed uses in State Investment Levels 1 and 2 — compact development can also be deployed in Level 3 - to support a range of sustainable transportation choices and help reduce locally generated greenhouse gas emissions
- ☐ Consider impacts to designated evacuation routes when making land use decisions – avoid directing growth to areas where new development would impair evacuation capacity, particularly in flood-prone areas. Reference DelDOT evacuation route GIS layers
- ☐ Coordinate with DelDOT on Complete Streets improvements — including bump-outs, separated bicycle lanes, protected intersections, and other design elements that prioritize pedestrian and cyclist safety
- ☐ Assess bicycle, pedestrian, and transit networks and identify gaps, prioritizing improvements that create connected, safe, and accessible routes
- ☐ Set goals for public EV charging stations and government fleet conversion to help encourage the use of zero emission vehicles and improve local air quality
- ☐ Remove parking minimums in appropriate areas such as downtowns or transit-served areas
- ☐ Consider maximum parking limits in certain areas to prevent excessive land consumption
- ☐ Plant trees in walkable areas and along transit routes
- ☐ Encourage EV charging in commercial development

Note: EV charging infrastructure is already required in all new residential buildings constructed after January 2025 under state law.

Example Goals:

- Complete sidewalk connections between neighborhoods and key destinations by 2030
- Install public EV charging stations on municipal property by 2028
- Establish a municipal fleet electrification plan with conversion targets and a timeline

Example Policies:

- Parking minimums are eliminated in downtown and within 1/4 mile of transit stops
- Complete Streets design principles shall be applied to all road reconstruction projects

- The [Town/County] commits to installing at least two public EV charging stations annually through 2030

Example Statements:

- Compact, walkable development patterns reduce vehicle trips, lower greenhouse gas emissions, and provide transportation choices for all ages and abilities
- Transitioning municipal fleet and expanding EV infrastructure demonstrates leadership and supports residents' adoption of electric vehicles

Planning Components:

- Bicycle and Pedestrian Network Map showing existing facilities and priority gaps (see Appendix A)
- EV charging station inventory and site plan with installation timeline
- Municipal fleet inventory and electrification timeline
- Transportation mode split analysis showing current and target percentages **(larger jurisdiction/county scale)**

Natural Resources

Strategies to Consider:

- ☐ Limit farmland development by directing growth to developed areas to help preserve carbon sequestration and agricultural productivity
- ☐ Coordinate with the Delaware Agricultural Lands Preservation Program to help encourage farmland preservation within the town/county
- ☐ Require retention of existing forest cover in new development, to help infiltrate stormwater and retain carbon sequestration, with greater protection for mature forest or ecologically sensitive areas
- ☐ Identify and map significant forest patches and interior habitat
- ☐ Establish policies protecting priority forest areas from fragmentation **(larger jurisdiction/county scale)**
- ☐ Encourage reforestation of previously cleared lands to increase local carbon sequestration
- ☐ Conserve wetlands from development to retain flood absorption and carbon sequestration
- ☐ Protect stream corridors through buffer requirements
- ☐ Coordination summary with Department of Agriculture and conservation organizations
- ☐ Identify and invest in restoration opportunities — wetlands, forests, and streams
- ☐ Promote the conservation of wildlife corridors by leveraging cluster development codes to connect open space between communities **(larger jurisdiction/county scale)**

Example Goals:

- Achieve no net loss of forest cover and restore degraded natural areas where opportunities exist
- Protect wetlands from development and restore degraded wetland areas where opportunities exist
- Set an overall forest protection goal with a specified number of acres, potential funding sources, and a timeline **(larger jurisdiction/county scale)**

- Set an overall farmland preservation goal with a specified number of acres and a timeline, in coordination with the Delaware Agricultural Lands Preservation Program **(larger jurisdiction/county scale)**

Example Policies:

- Developments on forested sites shall retain at least 50% of existing tree cover
- New residential development on prime farmland soils is limited to one dwelling unit per 10 acres unless in designated growth areas **(larger jurisdiction/county scale)**
- Development adjacent to mapped wildlife corridors must demonstrate how habitat connectivity will be maintained **(larger jurisdiction/county scale)**

Example Statements:

- [Community name] recognizes that farmland, forests, and wetlands provide essential climate benefits including carbon storage, flood mitigation, and water quality protection

Planning Components:

- Environmental Features Map showing wetlands, forests, streams, prime soils, and habitat corridors (see Appendix A)
- Restoration opportunity areas identified based on climate and flood risk reduction benefits
- Inventory of natural area classifications within the planning area including but not limited to wetlands, forests, uplands, habitat areas and wildlife corridors, geological areas, hydrological areas, floodplains, aquifer recharge areas, ocean beaches, soils and slopes – see Appendix A for mapping guidance and data sources **(larger jurisdiction/county scale)**
- Prime farmland inventory with preservation program enrollment **(larger jurisdiction/county scale)**

Additional Strategies

The following topics are not core requirements of the climate change and resiliency section but may be relevant to some communities. Consider addressing these in other chapters of the comprehensive plan or as supplementary strategies where local capacity allows.

Building Energy

Note: Adopt State Code for Energy Conservation (Title 16, Chapter 76) as the minimum energy code for new construction. While not a certification issue for comprehensive plans, local adoption of the State Code for Energy Conservation is required by state law.

- ☐ Consider stretch energy codes or incentives for buildings exceeding minimum requirements
- ☐ Establish goal for reducing non-renewable energy use, with a target percentage and timeline
- ☐ Identify actions to reduce government facility greenhouse gas emissions, set timeline
- ☐ Conduct energy audits of municipal buildings to identify efficiency improvements
- ☐ Consider renewable energy installations on municipal buildings or parking structures
- ☐ Adopt green building standards for new municipal construction

Waste Management

- ☐ Describe existing waste collection, recycling, composting, and waste recovery strategies to document current baseline
- ☐ Promote material recovery from the waste stream through ordinances or programs that support material conservation, including organics, to reduce end-of-life emissions
- ☐ Consider pay-as-you-throw programs that charge based on waste generated
- ☐ Offer or support community composting programs or yard waste collection to reduce end-of-life emissions
- ☐ Support reuse, repair, and sharing economy businesses through zoning
- ☐ Educate residents and businesses about waste reduction opportunities to reduce end-of-life emissions

Step 3: Create an Implementation Timeline

Organize selected strategies into timeframes:

- **Near-term (1–3 years):** Policy adoption, mapping, program development
- **Medium-term (3–7 years):** Infrastructure improvements, major program implementation, restoration projects
- **Long-term (7–10+ years):** Capital projects, facility relocations, systematic transformations

Identify responsible parties, estimated costs, and potential funding sources for each priority action.

Step 4: Track Progress

Establish metrics to measure implementation:

- Acres of wetlands/forest protected or restored
- Miles of sidewalk/shared-use path/low-stress bicycle lanes completed - tied to safe, connected active transportation routes
- Tree canopy percentage increase
- Number of vulnerable properties addressed
- Greenhouse gas emission reductions
- Percentage of new development in lower-risk areas

Plan for regular progress reports to your governing body and the public.

State Resources and Support

Delaware state agencies provide technical assistance, financial support, and planning tools to help communities incorporate climate resilience into their comprehensive plans.

State Data and Planning Tools

- **Delaware Climate Action Plan (DNREC):** State-level goals and strategies — particularly Chapter 2 and Chapter 5
- **Delaware Flood Planning Tool (DNREC):** Sea level rise scenarios, flood risk mapping — note: SLR and FEMA layers use different methodologies and should be compared side-by-side, not combined
- **Natural Resource Data and Maps (DNREC):** Wetlands, forests, habitat, watershed information
- **State of Delaware Hazard Mitigation Plan (SHMP)**: Statewide hazard assessment and mitigation strategy
- **Flood Insurance Rate Maps (FEMA):** Federal flood risk zones
- **NOAA Sea Level Rise Viewer:** Best available tool for SLR scenario mapping — select the Local Scenarios tab
- **Watershed Stewardship Program (DNREC):** May be able to assist with identifying stormwater and drainage issues not captured on FEMA maps — contact to discuss your community's specific conditions
- **Delaware Population Consortium:** Population projections referenced in Delaware Code for comprehensive plan data
- **DNREC EJ Area Viewer**: Map-based tool developed by DNREC that leverages state and partner data to identify communities disproportionately impacted by environmental issues — useful for understanding environmental justice context and vulnerability in your planning area. See the data guide for details on what's included : DNREC EJ Data Cheat Sheet
- **DE-PLANS (Planning for Local Adaption Needs):** Interactive maps including Aging Population and Flood Risk, Transportation and Flood Risk, and Aging Population with Health Conditions and Flood Risk; select your municipality to zoom to local data.
- **Risk Assessment Data (DEMA):** Hazard vulnerability assessments — county Hazard Mitigation Plans are also a valuable resource
- **Evacuation Route GIS Layers (DelDOT):** Evacuation routes and capacity analysis
- **Frequently Flooded Roadways Map (DelDOT):** Identifies roads with recurring flood issues
- **Bicycle/Pedestrian Networks (DelDOT):** Existing and planned active transportation
- **Complete Streets Guidance (DelDOT):** Design templates and best practices
- **State Code for Energy Conservation (DNREC Energy Office):** Building energy standards (Title 16, Chapter 76)
- **Tree for Every Delawarean Initiative (TEDI) (DNREC)**: Tree planting resources, funding opportunities, and species selection guides
- **Urban and Community Forestry Program (Delaware Department of Agriculture)**: Technical assistance, tree canopy goals, and urban forestry grants for municipalities
- **Wilmington Area Planning Council (WILMAPCO)**: Regional transportation and land use planning for New Castle County and Cecil County, Maryland — bicycle, pedestrian, and transit data

- **Dover/Kent County Metropolitan Planning Organization (D/K MPO)**: Regional transportation planning for Kent County — bicycle, pedestrian, and transit network data

Guidance, training, and additional resources:

- **Complete Communities Planning Toolbox (IPA)**: Strategies, case studies, and resources for building walkable, connected, and resilient communities in Delaware
- **Coastal Training Program (DNREC)**: Training and technical assistance for coastal planners and local officials on sea level rise, flooding, and coastal resilience
- **Climate-Conscious Comprehensive Planning in Delaware — Milford Pilot (University of Delaware IPA, 2017):** Practical guide to integrating climate change throughout a comprehensive plan, developed and piloted with the City of Milford
- **Delaware RASCL (Resilient and Sustainable Communities League)**: Reports, guides, toolkits, and funding resources focused on resilience and sustainability for Delaware communities
- **SR1 Coastal Corridor Resiliency Study (DelDOT)**: Planning study examining climate change and sea level rise impacts on the Route 1 corridor between Dewey Beach and the Maryland state line — useful model for transportation resilience planning in coastal communities
- **American Planning Association Climate Adaptation Guidance**: National planning resources, case studies, and policy guidance for integrating climate adaptation into comprehensive plans

State Agency Contacts

- **Office of State Planning Coordination (OSPC)** — Comprehensive planning coordination. Phone: 302-739-3090
- **Delaware Department of Natural Resources and Environmental Control (DNREC)** — Climate action, energy codes, water resources. Phone: 302-739-9000
- **Delaware Department of Transportation (DelDOT)** — Evacuation routes, complete streets, transit planning. Phone: 302-760-2080
- **Delaware State Housing Authority (DSHA)** — Housing planning, community development, and affordable housing resources. Phone: 302-739-4263
- **Delaware Emergency Management Agency (DEMA)** — Hazard mitigation, emergency preparedness. Phone: 302-659-3362
- **Department of Agriculture** — Agricultural preservation, farmland protection. Phone: 302-698-4500

Questions? Contact the Office of State Planning Coordination | Phone: 302-739-3090

Appendix A: Mapping Guidance

Maps help visualize climate risks and inform land use decisions. The following are best practice maps commonly used to identify vulnerable areas and guide climate resilience strategies. Select the maps that best illustrate your community's risks and vulnerabilities and support your selected strategies.

Flood Risk and Sea Level Rise Map

What to Show:

- FEMA Special Flood Hazard Areas (zones AE, A, VE)
- Sea level rise inundation at 2' (~2050, near-term) and 4–5' (late century)
- Limit of Moderate Wave Action (LIMWA) where applicable
- Locally known drainage and flood problem areas — local public works staff and community members are good sources

Note: The Delaware Flood Planning Tool SLR layer and FEMA flood maps use different methodologies. Compare them side-by-side but do not combine them on the same map. For SLR scenarios, the NOAA Sea Level Rise Viewer (coast.noaa.gov/slr — select Local Scenarios tab) is the recommended resource.

Data Sources:

- Delaware Flood Planning Tool (DNREC): User-friendly web map for identifying flood zones, sea level rise scenarios, and LIMWA data — recommended starting point for most communities. Planners and consultants working in GIS software can access the underlying data directly through FirstMAP: https://enterprise.firstmap.delaware.gov/arcgis/rest/services/Environmental/DE_Coastal_Inundation_2017/FeatureServer
- FEMA Flood Insurance Rate Maps: https://msc.fema.gov/
- NOAA Sea Level Rise Viewer: https://coast.noaa.gov/slr/

Heat Vulnerability Map

What to Show:

- Areas with high percentage of impervious surface
- Areas with low tree canopy coverage
- Areas where high percentage of impervious surface and low tree canopy overlap with the most heat-vulnerable populations (elderly, low-income, very young children)
- Temperature variation across community (optional, if data available)

Data Sources:

- Delaware Urban and Community Forestry Program (Delaware Department of Agriculture): Online web map showing tree canopy coverage by municipality, along with tree planting resources, species guidance, and grant opportunities for communities
- DE Impervious Surface (FirstMAP): GIS layer showing impervious surface coverage statewide — useful for identifying areas of high runoff and heat vulnerability. Data current through 2022.
- Census demographic data (U.S. Census Bureau)

Critical Infrastructure Vulnerability Map

What to Show:

- Emergency response facilities, water/wastewater treatment plants, municipal buildings
- Schools and healthcare facilities
- Roadways in flood-prone areas — reference DelDOT Frequently Flooded Roadways Map
- Optional: Identify facilities vulnerable to flooding and note opportunities for relocation or fortification
- Optional: Power substations and critical utilities **(larger jurisdiction/county scale)**

Data Sources:

- Local municipal facility locations — public works, town hall, emergency services
- Water/wastewater utility infrastructure maps (contact local utility provider or municipal public works department)
- School locations (local school districts)
- Frequently Flooded Roadways Map (DelDOT): Interactive web map identifying roadways in Delaware that experience recurring flooding — useful for identifying transportation vulnerabilities and areas where development should avoid increasing flood exposure.

Environmental Features Map

What to Show:

- Wetlands (tidal and non-tidal)
- Forests and significant tree cover
- Streams and riparian corridors
- Floodplains
- Prime agricultural soils
- Wildlife habitat corridors
- Sensitive coastal and estuarine areas

Data Sources:

- **Delaware's FirstMAP Hub (State of Delaware)** : Central repository for Delaware GIS data — for natural resource layers search under the Environmental tab for state-provided and updated data
- **Delaware Wetlands 2017 (DNREC)**: Statewide wetland mapping — tidal, non-tidal, and coastal wetland boundaries. Note: an updated version is in development
- **National Wetlands Inventory (US Fish and Wildlife Service)** : Nationwide wetland mapping dataset showing wetland type, location, and extent — useful complement to state wetland data
- **Delaware Urban and Community Forestry Program (Delaware Department of Agriculture)**: Online web map showing tree canopy coverage by municipality, along with tree planting resources, species guidance, and grant opportunities for communities
- **Delaware Flood Planning Tool (DNREC)**: Includes watershed boundaries and major stream centerlines useful for identifying floodplains and riparian corridors
- **Prime farmland soils (USDA Natural Resources Conservation Service)** : Identifies prime agricultural soils by parcel — useful for directing growth away from productive farmland

- **Delaware Wildlife Action Plan Habitat Explorer (DNREC Division of Fish and Wildlife)**: Interactive map showing wildlife habitats, corridors, and priority conservation areas statewide — regularly updated as habitat mapping improves through 2035
- **Delaware Protected Natural Resources (DNREC)** : Protected lands, nature preserves, conservation easements, wildlife area boundaries, natural areas inventory, and coastal building line
- **Delaware Coastal Zone Map (DNREC)**: Shows coastal zone boundaries and facilities subject to coastal zone regulations — useful for identifying development constraints in coastal areas
- **Coastal habitat maps (Delaware National Estuarine Research Reserve)** : Mapping of tidal and coastal habitats including marshes, beaches, and estuarine areas along Delaware's coast

Climate-Informed Future Land Use Map

What to Show:

- Future land use designations
- State Investment Level boundaries
- Overlay of climate vulnerability (flood zones, sea level rise, wave action line)
- Areas where growth is encouraged (lower risk, adequate infrastructure)
- Areas where growth is discouraged (high flood risk, environmental sensitivity)

Data Sources:

- State Investment Level maps (OSPC): https://stateplanning.delaware.gov/
- Existing land use maps – available from your municipality planning office or county GIS
- **Delaware Coastal Zone Map (DNREC)**: Shows coastal zone boundaries and facilities subject to coastal zone regulations — useful for identifying development constraints in coastal areas
- **Delaware Flood Planning Tool (DNREC)**: Includes watershed boundaries and major stream centerlines useful for identifying floodplains and riparian corridors

Evacuation Route Map

What to Show:

- Designated evacuation routes from DelDOT
- PrepareDE evacuation zones
- Areas where evacuation access may be limited by current or future flooding

Data Sources:

- PrepareDE evacuation zones (DEMA): Delaware's disaster-preparedness hub — helps residents find their evacuation zone, build an emergency plan, and access other preparedness information
- Evacuation route GIS layers (DelDOT)
- Frequently flooded roadways (DelDOT) – coming May 2026

Existing and Planned Bicycle/Pedestrian Network Map

What to Show:

- Existing sidewalks, shared-use paths, low-stress bicycle lanes, and trails connecting neighborhoods to key destinations
- Planned expansions and improvements

- Priority gaps where new connections are needed
- Connections to schools, parks, employment centers, transit
- Areas with frequent pedestrian/bicycle crashes

Data Sources:

- **Delaware Public Crash Data Dashboard (DelDOT)** : Interactive dashboard showing crash locations and details statewide — filter by pedestrian and bicycle involvement to identify high-risk areas
- **Delaware Sidewalks 2.0, Delaware Bus Routes 2.0, Delaware Bus Stops 2.0 :** Statewide inventory
- **Transit Stop Locations and Route Maps (DART)**: Online interactive map
- WILMAPCO/Dover-Kent MPO bicycle and pedestrian plans – For communities in New Castle County contact WILMAPCO, and for Kent County contact the Dover/Kent County MPO, as potential sources of local bicycle and pedestrian network data and planning documents
- School Walk Zones - Contact local school district for walking zone boundaries

Need mapping assistance? Contact OSPC for technical support and coordination with state agencies: 302-739-3090