

MARYLAND CLEAN ENERGY RESILIENCE TOOLKIT

Clean Energy Resilience Implementation Guidebook

A practical companion for Maryland local governments and community partners

ABOUT THIS GUIDEBOOK

This Guidebook is a mid-length companion to the Maryland Clean Energy Resilience Toolkit. It distills the full Main Report into a concise implementation guide that local government practitioners can use to scope, design, and adopt clean energy and resilience actions through a structured, four-phase, ten-step procedure. It is intended to be read alongside the Planning Workbook and the Energy Resilience Action Catalog.

Use this Guidebook to:

- Walk through the planning and assessment process at sufficient depth to brief leadership, structure a project team, and decide where to invest analytical effort.
- Identify the highest-value external resources for each step, including Maryland-specific data, programs, and technical assistance.
- Connect local efforts to the Resilient Maryland Strategy (the State Resilience Strategy, published April 2026 under Executive Order 01.01.2024.31) and the energy policy direction of Executive Order 01.01.2025.27.

CONTENTS

- [1. Purpose, Audience, and How to Use the Toolkit](#)
- [2. The Framework: Four Phases, Ten Steps](#)
- [3. Phase 1 - Scoping](#)
- [4. Phase 2 - Problem Assessment](#)
- [5. Phase 3 - Solution Development](#)
- [6. Phase 4 - Implementation & Learning](#)
- [7. Public Engagement Through the Process](#)
- [8. Maryland Programs and Partners at a Glance](#)
- [Appendix. Hyperlinked External Resources by Step](#)

1. Purpose, Audience, and How to Use the Toolkit

Purpose

The Maryland Clean Energy Resilience Toolkit provides a practical, comprehensive planning and assessment procedure for local government representatives and community partners to evaluate and advance clean energy actions. The Toolkit is designed to deliver energy, economic, and environmental benefits with a specific focus on improved resilience, reliability, affordability, health, and economic gain.

It expands local skills and capacities to:

- Identify critical changes in energy, economic, and environmental conditions
- Assess exposure and consequences of high-priority risk and vulnerability areas
- Develop targeted, multi-objective clean energy response strategies and actions
- Conduct expert scoping of local issues, audiences, and implementation pathways
- Use effective public engagement through collaboration and shared decision-making

Audience

This Guidebook is written for local government staff (planning, sustainability, emergency management, public works, energy and economic development), elected and appointed officials, community-based organizations, and the technical assistance and utility partners who work alongside them. The depth of analysis at each step should be calibrated to the team's capacity and the size of the decision at hand.

How to use the toolkit components together

Each step of the framework cross-references the right component to use at that point in the process. The components are designed to work together:

- Use the **Main Report** for full procedural detail, theory, and worked examples.
- Use this **Guidebook** as the day-to-day implementation companion.
- Use the **Planning Workbook** to capture decisions, evidence, and stakeholder input as you work through each step.
- Use the **Energy Resilience Action Catalog** at Step 7 to build a comprehensive list of potential response measures before independent brainstorming.
- Use the **Maryland State Programs Guide (Appendix A)** at Steps 7 and 10 to identify program eligibility and assemble application data.
- Use the **Maryland Clean Energy & Resilience Landscape (Appendix B)** at Steps 1, 2, and 9-10 for state plans, agency partners, and coordination context.

WHEN TO ENGAGE TECHNICAL ASSISTANCE

Reach the [Maryland Clean Energy Center](#) early when:

- Process design needs facilitation or regulatory navigation (Step 3).
- Options under review are technically complex (microgrids, solar+storage, large-scale efficiency).
- A funding pathway requires a feasibility study or specific application data.

Reach the **Maryland Office of Resilience** through [MDEM](#) to connect to the statewide resilience strategy and Agency Resilience Liaisons.

Key terms used throughout

Hazard is an event or condition that can cause harm. **Risk** is its likelihood and severity. **Exposure** is whether the community, assets, or activities are in the path of the hazard. **Sensitivity** is how badly affected they are when the hazard occurs. **Vulnerability** reflects how poorly positioned a community is to absorb those consequences, given its adaptive capacity. **Resilience** is the overall goal: the ability to anticipate, withstand, and recover from disruptions.

2. The Framework: Four Phases, Ten Steps

The Toolkit organizes clean energy and resilience planning into four phases and ten steps. The phases are sequential but allow parallel activity and iteration; analysis can and should be revisited as conditions change.

PHASE 1 Scoping	PHASE 2 Problem Assessment	PHASE 3 Solution Development	PHASE 4 Implementation & Learning
1. Problem & need 2. Audience 3. Process design	4. Scenarios 5. Risk analysis 6. Vulnerability analysis	7. Identify & prioritize options 8. Design & evaluate 9. Update iteratively	10. Plan, implement, monitor (MERU)

Reading the framework

Phase 1 (Scoping) is about setup, not data collection. The goal is a shared understanding of the problem, the affected audiences, and the process the community will use to act.

Phase 2 (Problem Assessment) builds the evidence base. It answers three increasingly specific questions: What could happen? How bad could it be? And who is least equipped to handle it? The outputs feed directly into solution development.

Phase 3 (Solution Development) turns analysis into action. The Energy Resilience Action Catalog is the working tool for building and screening a comprehensive option menu against the vulnerability gaps identified in Phase 2.

Phase 4 (Implementation & Learning) is where adoption, monitoring, and updating live. A Monitoring, Evaluation, Reporting, and Updating (MERU) system, combined with explicit review triggers tied to PJM forecasts and PSC orders, is what keeps the plan alive after adoption.

PUBLIC ENGAGEMENT IS A THROUGH-LINE

Engagement is not a single phase. It runs through every step, with the level of involvement (inform, consult, involve, collaborate, empower) calibrated to the decision and the audience. See [IAP2 Public Participation Spectrum](#) for vocabulary that prevents misunderstanding later.

Six priority areas to monitor across the framework

Decisions throughout the framework are made against a small set of multi-objective criteria. Maryland communities typically evaluate measures and outcomes against:

- **Clean Energy** — production and consumption of electricity and fuels with low impact on health and environment
- **Resilience** — capability to identify and respond to risks and vulnerabilities
- **Reliability** — uninterrupted availability of electricity and fuels at the times and places needed
- **Affordability** — price and volume of energy goods and services available in the market
- **Health** — wellness and viability of human and natural populations
- **Economic Gain** — retention or expansion of local jobs, income, and net economic growth

3. Phase 1 - Scoping

Phase 1 is about setup. The deliverables are a problem statement, an audience map, and a written engagement and decision-making plan. Phase 1 is the cheapest place to fix a mis-framed problem; later rework is expensive.

Step 1 - Define the problem and need

Clarify what is changing, why, and why it matters. Produce a one-page problem statement that elected officials, residents, and technical advisors all recognize as accurate. For Maryland policy context, start with [Executive Order 01.01.2025.27 \(Affordable & Reliable Energy\)](#), a two-page document that establishes the state's current priority framing. The [OPC Consumer Learning resources](#) provide plain-language summaries of state energy policy and rate trends useful for problem framing. For energy burden specifically, [PSE Healthy Energy Maryland](#) is a published, citable analysis of energy burden across Maryland. Resist solving the problem at this stage; Phase 3 is where solutions belong.

Step 2 - Identify and understand the audience

Map who is affected and who must be involved, including residents, businesses, large-load customers, agency partners, and the local utility. Use [MDEnviroScreen](#) and the [DOE LEAD Tool](#) to establish a defensible equity baseline (overburdened tracts and energy burden) before engagement begins; together they take about an hour. Identify decision authority for each audience — which decisions sit with state actors, the utility, or federal partners rather than with local government — so the engagement plan targets actions actually within reach. The [IAP2 Public Participation Spectrum](#) provides the vocabulary for specifying engagement levels per audience.

Step 3 - Design the engagement and solution process

Specify goals and objectives, decision-making procedures, roles and responsibilities, technical and facilitative assistance needs, decision rules, tasks and deliverables, and budget. The [FEMA Local Mitigation Planning Handbook \(Tasks 1-3\)](#) provides ready-to-use checklists and worksheets that are directly adaptable for clean energy resilience planning, even when the effort is not pursuing FEMA HMA funding. Note that MEA's L-GEM program (formerly MSEC) produces deliverables that are program outcomes (gas/diesel use, building energy, renewables deployment), not a structured planning framework; for framework structure, [ICLEI ClearPath 2.0](#) or the FEMA Handbook above is the right reference. Approve the process design before approving content work.

PHASE 1 OUTPUTS

- One-page problem statement and short list of indicators
- Stakeholder map and equity profile (residents, large customers, regulators, agencies)
- Roles-and-responsibilities table distinguishing local from state and regional authority
- Engagement-to-decision matrix showing audiences, IAP2 participation level, decision points, timing, and responsible parties
- Process charter or memo enabling leadership action on startup

Tip

Where Maryland-specific decisions are imminent (an MEA grant application window, a county zoning revision, an HMP update, a utility resource plan update), tie the engagement plan to those real decision triggers. Engagement that arrives after a major decision has limited influence. For tracking state energy policy and program performance that affect local conditions, [OPC Consumer Learning resources](#) provide plain-language summaries.

4. Phase 2 - Problem Assessment

Phase 2 builds the evidence base. The outputs feed directly into solution development; the more specific the evidence, the better targeted the solutions. Document assumptions clearly and build in checkpoints to update as better data becomes available.

Step 4 - Develop baseline and future scenarios

Build a shared picture of current conditions and a small set of plausible futures. Three scenarios (baseline, moderate stress, high stress) are almost always sufficient. For energy and grid scenarios in Maryland, useful starting points include the local utility's published planning forecasts and reliability reporting, along with Maryland-zone energy demand context. The gap between projected demand and planned infrastructure is usually the most important number in the energy scenario. For coastal Maryland, the [Maryland DNR Coastal Flood Explorer](#) and [Maryland Coastal Atlas](#) anchor climate scenarios; [NOAA Climate Data Online](#) provides historical baselines statewide. For economic conditions, [Maryland Labor Market Information](#) and the [DOE SLOPE Platform](#) together cover the workforce and building-stock dimensions.

Step 5 - Conduct risk analysis

Identify and rank risks by likelihood and consequence. Start with structure, not data: the [FEMA Local Mitigation Planning Handbook \(Task 4\)](#) provides ready-to-use worksheets that require no prior expertise. Check the team's ranking against the [FEMA National Risk Index](#) for an external county-level reference. For energy-specific risk, the LBNL [PRESTO](#) outage simulator and the [ICE Calculator](#) together translate reliability risk into the dollar values that make the cost of inaction concrete in stakeholder workshops. For Maryland-specific hazard data, the [NOAA Storm Events Database](#) and [MDEM Power Outages Data Portal](#) provide historical event records.

Step 6 - Conduct vulnerability analysis

Overlay risk exposure with adaptive capacity to find where projected impacts exceed local ability to cope. Begin with two free tools: [MDEnviroScreen](#) provides the official Maryland definition of overburdened and underserved communities and is required or scored in most MEA equity programs. The [CDC Social Vulnerability Index](#) provides a nationally standardized score for federal grant applications. Where they agree, you have high-confidence vulnerable areas; where they diverge, investigate further. Add [DOE LEAD](#) for energy burden and [HUD CHAS](#) for combined housing-plus-energy cost burden. The [FEMA Community Lifelines toolkit](#) identifies which community services (healthcare, water, emergency response, communications) depend most on reliable energy — often the most actionable vulnerability findings.

PHASE 2 OUTPUTS

- Scenario workbook with documented data sources, methods, and assumptions (baseline, moderate, high-stress)
- Priority risk table (likelihood and consequence) with hazard drivers and affected systems and geographies
- Vulnerability gap chart showing where projected demand or hazard exceeds local coping capacity
- Map of priority vulnerability hotspots (e.g., high energy-burden census tracts near projected infrastructure expansion)
- Database of adaptive capacities (programs, technologies, planning authority) and effectiveness ratings

Tip - Use [DOE LEAD](#) alongside MDEnviroScreen for energy burden, and the [FEMA Community Lifelines toolkit](#) to identify critical community services dependent on reliable energy. The Frederick County [Hazard Mitigation and Climate Adaptation Plan](#) is a useful Maryland example of how risk and vulnerability outputs feed into solution development.

5. Phase 3 - Solution Development

Phase 3 turns analysis into action. The Energy Resilience Action Catalog is the working tool throughout the phase. Appendix A identifies which MEA programs can fund the options under consideration.

Step 7 - Identify and prioritize response options

Build the option menu using the Energy Resilience Action Catalog before independent brainstorming, to ensure a complete and comparable list of potential actions organized by the type of vulnerability gap each measure addresses. Cross-reference with the [MEA All Programs and Incentives](#) portal and [DSIRE Maryland](#) to identify funding pathways for each option. Key MEA programs include the [Resilient Maryland Program](#) (microgrids, resiliency hubs, solar+storage), [Community Solar LMI-PPA](#), [L-GEM for local government](#), [EmPOWER Maryland](#), and [Maryland C-PACE](#). The [Climate Catalytic Capital \(C3\) Fund](#) administered by MCEC provides complementary financing for clean energy and resilience-hub projects across three current investment windows: bridge loans for geothermal, solar, and resiliency hub projects; lines of credit for solar developers and installers; and project feasibility grants for underserved market actors. At least 40% of C3 investments serve low-income households and communities. For additional federally-eligible mitigation measures, the [FEMA HMA Mitigation Portfolio](#) provides an inventory by hazard type. The active [FEMA Building Resilient Infrastructure and Communities \(BRIC\) program](#) is the principal federal pre-disaster mitigation funding stream for resilience measures, with the current cycle emphasizing infrastructure resilience and building code adoption; subapplications flow through MDEM as State Hazard Mitigation Officer and pair well with measures already scoped to FEMA HMP standards. Screen on a multi-criteria basis: feasibility, effectiveness, cost, equity, time-to-impact, and authority.

Useful screening criteria include technical and programmatic feasibility, political feasibility and institutional authority, effectiveness, net cost and revenue, alignment with current policy, urgency, equity, and time-to-impact. Score options collaboratively (low/medium/high or 1-3) and document rationale.

Step 8 - Design and evaluate top options

Translate priority options into specific, evaluable designs. Match analytical depth to the decision: early screening can be qualitative; funding applications usually require quantified design parameters, performance projections, and cost estimates.

- For solar and storage, use [NREL System Advisor Model \(SAM\)](#) with site-specific Maryland weather data for production, bill savings, and payback estimates that are directly usable in grant applications.
- For storage cost calibration, use the [PNNL Energy Storage Cost and Performance Database](#).
- For heat pumps and electrification, see [RMI: Heat Pumps Can Lower Energy Bills in Maryland Today](#) for performance and cost data tuned to Maryland conditions.
- For projects pursuing FEMA Hazard Mitigation Assistance, run the [FEMA Benefit-Cost Analysis Toolkit](#) early; results often point to design changes that materially improve cost-effectiveness.

Step 9 - Update options iteratively

Review the analysis with the team and stakeholders, incorporate feedback, and refine the shortlist. Build explicit review triggers into the process: MEA program update cycles, rate-case dispositions affecting bills, the OPC EmPOWER Performance Review, and relevant utility resource-plan updates should prompt re-evaluation. For broader Maryland energy policy context that affects local conditions, [OPC Consumer Learning resources](#) provide plain-language summaries. Use FEMA Task 7 Worksheets 9 and 10 for plan-maintenance documentation when HMA funding is involved.

PHASE 3 OUTPUTS

- Multi-criteria scoring matrix with options and 1-2 sentence justifications per score
- One-page measure worksheets for each top option (description, lead, timeline, cost/benefits, equity notes, dependencies)
- Aggregate impact analysis of combined measures, with sensitivity analysis
- Documented record of stakeholder review, voting, and any record of decision (ROD)
- Final recommendations for adoption, with implementation readiness checklist

6. Phase 4 - Implementation & Learning

Phase 4 is where adopted measures move into the world and stay there. The deliverables are an implementation plan and a working monitoring, evaluation, reporting, and updating (MERU) system.

Step 10 - Design and implement the action plan

Name a lead entity, timeline, funding source, and performance metric for every adopted measure. Align timelines with regulatory and budgeting cycles. Build the MERU system around a small set of public-facing indicators that track whether adopted measures are closing identified vulnerability gaps. The [FEMA Local Mitigation Planning Handbook Task 8](#) defines specific milestones for formal plan adoption; build them into the implementation roadmap from day one. Where MEA grants are involved, design the MERU system to be compatible with [Resilient Maryland](#) reporting requirements from the start.

For monitoring system design, the [C40 Cities Monitoring, Evaluation, and Reporting Guidance](#) is the most comprehensive available framework, scalable from small municipalities to large county programs. The [ICLEI Adaptation Milestone 5](#) framework links monitoring metrics back to the goals set in Step 3. The [Montgomery County Climate Action Progress Dashboard](#) and the [MDOT Climate Action Status Report](#) are useful Maryland references for realistic metric choices and reporting cadence. The [MDEM Power Outages Data Portal](#) provides public outage data to incorporate into annual reliability reviews.

PHASE 4 OUTPUTS

- Implementation plan with timelines, mechanisms, roles, funding sources, and communications
- Functioning MERU system with defined performance metrics and reporting cadence
- Annual public performance review process tied to PSC and PJM update cycles
- Documented agreement on final timelines, responsibilities, and monitoring metrics

7. Public Engagement Through the Process

Engagement runs through every phase; only the level of involvement and the venue change. Match engagement intensity to the decision under consideration, using the [IAP2 Public Participation Spectrum](#) vocabulary (inform, consult, involve, collaborate, empower) so expectations are explicit and durable.

- **Phase 1:** listening sessions, stakeholder interviews, problem-statement reviews, charters
- **Phase 2:** joint fact-finding, scenario workshops, multi-criteria risk and vulnerability ranking
- **Phase 3:** option-generation workshops, public scoring sessions, design charrettes, tradeoff visualizations
- **Phase 4:** community implementation councils, open houses at construction milestones, annual public performance reviews

8. Maryland Programs and Partners at a Glance

The table below summarizes the principal MEA grant and loan programs cross-referenced in this Toolkit. For detailed eligibility, application data, and timing, see **Appendix A - Maryland State Programs Guide**. Use this view at Step 7 (option screening) to identify which measures have available funding, and at Step 10 (implementation) to align reporting structure to MEA requirements.

MEA Program	Type	Solution Focus	Eligible Applicants
EmPOWER MD C&I Grant Program	Grant	Energy efficiency upgrades for non-residential buildings	Commercial, industrial, nonprofit, multifamily (5+ units)
Commercial & Canopy Solar Program	Grant	Solar PV for LMI and overburdened communities	Businesses, nonprofits, agricultural, multifamily
Community Solar LMI-PPA Grant Program	Grant	Community solar projects serving LMI subscribers via PPA	Subscriber Organizations
Resilient Maryland Program	Grant	Microgrids, resiliency hubs, and DERs	Local governments, nonprofits, businesses, critical facilities
Residential Energy Equity Program	Grant	Home efficiency, electrification, and solar PV for LMI residents	Nonprofits and local governments serving LMI households
Jane E. Lawton Conservation Loan Program	Loan	Energy efficiency, renewables, fuel-switching	Local governments, nonprofits, businesses
Local Government Energy Modernization (L-GEM)	Grant	Local government energy planning and projects	Local governments
Maryland C-PACE	Loan	Property-assessed financing for commercial projects	Commercial property owners

Key state agency partners

- **Maryland Energy Administration (MEA)** – administers the grant and loan programs above and the [Resilient Maryland](#) portal.
- **Maryland Clean Energy Center (MCEC)** – provides [technical assistance, feasibility services, and facilitation](#). Administers the [Climate Catalytic Capital \(C3\) Fund](#), which currently offers bridge loans for geothermal, solar, and resiliency hub projects; lines of credit for solar developers and installers; and project feasibility grants for underserved market actors. A minimum of 40% of C3 investments serve low-income households and communities.
- **Maryland Department of Emergency Management (MDEM) and Maryland Office of Resilience (MOR)** – coordinate the Resilient Maryland Strategy (the State Resilience Strategy, published April 2026) under [Executive Order 01.01.2024.31](#) and convene Agency Resilience Liaisons across all 22 principal departments.
- **FEMA (MDEM) Building Resilient Infrastructure and Communities (BRIC)** – the principal federal pre-disaster mitigation grant program for resilience measures. The active cycle emphasizes infrastructure resilience and

building code adoption. Subapplications flow through MDEM as State Hazard Mitigation Officer; coordinate early in Phase 3 if the resilience measure is BRIC-eligible.

- **Maryland Department of the Environment (MDE)** — maintains [MDEnviroScreen](#) and the [MDE GHG Inventory](#).
- **Maryland Public Service Commission (PSC)** — administers CPCN reviews, utility tariffs, and large-load regulations under PC 72.
- **Maryland Office of People's Counsel (OPC)** — provides consumer-side analysis of [resource adequacy and data-center cost impacts](#).

Appendix. Hyperlinked External Resources by Step

This appendix consolidates the highest-value external resources referenced throughout the Maryland Clean Energy Resilience Toolkit, organized by phase and step. Resources marked **(MD)** are Maryland-specific. Click any title to access the source. Some links are draft and may require periodic verification; see **Notes on links** at the end of this appendix.

Phase 1 - Scoping (Steps 1-3)

Process design and stakeholder structure

- [FEMA Local Mitigation Planning Handbook \(Tasks 1-3\)](#) — Worksheets for planning team formation, process design, and stakeholder involvement
- [IAP2 Public Participation Spectrum](#) — Vocabulary for specifying participation levels (inform, consult, involve, collaborate, empower)
- [ICLEI - Adaptation in Climate Planning and Implementation](#) — Milestones 1-3 for process design
- [NOAA Climate Resilience Toolkit - Community Resilience Case Studies](#) — Peer community examples for calibrating scope and timeline
- [Community Resilience Building \(CRB\) Workshop Guide](#) — Structured community kickoff process
- [National Academies - Public Participation in Environmental Assessment and Decision Making](#) — Joint fact-finding and collaborative decision-making

Maryland process design references

- [Maryland Clean Energy Center - Programs and Technical Assistance \(MD\)](#) — Facilitation, regulatory guidance, and project development support
- [MDEM Hazard Mitigation Planning \(MD\)](#) — Engagement point if plan must satisfy FEMA HMA requirements
- [Montgomery County Climate Action Plan \(MD\)](#) — Comprehensive Maryland process design example
- [Frederick County/City Climate and Energy Action Plan \(MD\)](#) — Most relevant for communities facing significant load growth pressures
- [Baltimore City Climate Action Plan, 2024 Update \(MD\)](#) — Equity-centered engagement design example
- [Maryland EO 01.01.2025.27 - Building an Affordable and Reliable Energy Future \(MD\)](#) — State energy policy framing
- [Maryland EO 01.01.2024.31 - Strengthening Resilience Strategy \(Resilient Maryland Strategy now published, April 2026\) \(MD\)](#) — Statewide resilience coordination framework and Agency Resilience Liaisons

Phase 2 - Problem Assessment (Steps 4-6)

Step 4 - Scenarios and baseline data

- [PJM Long-Term Load Forecast](#) — Annual load forecast by Maryland utility zone; primary source for energy demand scenarios
- [Maryland PSC Ten-Year Electric Plan \(MD\)](#) — Utility infrastructure plans and planned additions
- [Maryland PSC Electric Reliability Performance Reports \(MD\)](#) — Annual SAIDI, SAIFI, and CAIDI data by utility
- [NOAA Climate Data Online](#) — Historical temperature, precipitation, and storm records by Maryland location
- [NOAA Sea Level Rise Viewer](#) — Projected coastal inundation at 1-10 ft increments
- [Maryland DNR Coastal Atlas \(MD\)](#) — GIS layers for sea level rise, coastal flood vulnerability, storm surge
- [Maryland DNR Coastal Flood Explorer \(MD\)](#) — Maryland-specific high-tide flood projections and storm surge scenarios
- [DOE State and Local Planning for Energy \(SLOPE\) Platform](#) — County-level renewable potential, building stock, LMI energy savings

Step 5 - Risk analysis

- [FEMA Local Mitigation Planning Handbook - Task 4 \(Risk Assessment\)](#) — Step-by-step worksheets for hazard probability and consequence scoring

- [LBNL Power Reliability Event Simulation Tool \(PRESTO\)](#) — County-level outage simulation
- [LBNL Interruption Cost Estimate \(ICE\) Calculator](#) — Translates outage statistics to dollar cost by sector
- [FEMA National Risk Index \(NRI\)](#) — Independent county and census-tract risk score for 18 natural hazards
- [NOAA Storm Events Database](#) — Historical Maryland weather events with economic damage and casualty data
- [Maryland MDEM Power Outages Data Portal \(MD\)](#) — Statewide outage history and reliability hotspots
- [Maryland DNR Coastal Resiliency Assessment \(MD\)](#) — Coastal hazard risk and nature-based mitigation potential

Step 6 - Vulnerability analysis

- [MDEnviroScreen \(MD\)](#) — Official Maryland tool for overburdened and underserved community designation
- [CDC Social Vulnerability Index \(SVI\)](#) — Nationally standardized vulnerability score
- [DOE LEAD Tool - Energy Burden Mapping](#) — Census-tract energy burden and income data
- [HUD CHAS - Housing Affordability Strategy Data](#) — Housing cost burden data; cross-reference with LEAD
- [FEMA Community Lifelines Toolkit](#) — Critical infrastructure framework
- [Maryland Department of Labor - LMI Data \(MD\)](#) — County-level employment and wage data

Phase 3 - Solution Development (Steps 7-9)

Step 7 - Option identification and prioritization

- [MEA All Programs and Incentives \(MD\)](#) — Comprehensive listing of MEA grant, loan, and incentive programs
- [DSIRE Maryland](#) — Database of state, local, utility, and federal clean energy incentives
- [NOAA Climate Resilience Toolkit - Investigate Options](#) — Multi-criteria approach for option identification
- [NOAA Climate Resilience Toolkit - Prioritize and Plan](#) — Multi-criteria prioritization framework
- [FEMA Mitigation Action Portfolio](#) — Federally eligible mitigation measures by hazard type
- [FEMA Building Resilient Infrastructure and Communities \(BRIC\)](#) — Active federal pre-disaster mitigation grant cycle; subapplications flow through MDEM as State Hazard Mitigation Officer
- [MCEC Climate Catalytic Capital \(C3\) Fund \(MD\)](#) — Bridge loans, lines of credit, and feasibility grants for clean energy and resilience-hub projects; minimum 40% of investments serve low-income households and communities
- [CESA - How States Can Address Load Growth While Decarbonizing](#) — Case studies for load-growth response strategies
- [Georgetown Climate Center - State and Local Adaptation Clearinghouse](#) — Local government clean energy and resilience case studies

Step 8 - Design and evaluation

- [NREL System Advisor Model \(SAM\)](#) — Industry-standard free tool for solar and storage modeling
- [PNNL Energy Storage Cost and Performance Database \(2024\)](#) — Current battery storage cost benchmarks
- [RMI - Heat Pumps Can Lower Energy Bills in Maryland Today \(MD\)](#) — Heat pump performance and cost in Maryland conditions
- [CESA - Expanding Resilient Power in Maryland \(MD\)](#) — Maryland resiliency hub and solar+storage case studies
- [FEMA Benefit-Cost Analysis Toolkit](#) — Required methodology for FEMA HMA applications

Step 9 - Iterative review and triggers

- [Maryland PSC Docket Search and Public Filings \(MD\)](#) — Monitor dockets in your utility territory
- [Maryland OPC EmPOWER Maryland Performance Reviews \(MD\)](#) — Annual analysis of utility efficiency program cost-effectiveness
- [PJM Inside Lines - Planning Updates](#) — PJM's public channel for load forecast and capacity market updates
- [Maryland Commission on Climate Change \(MCCC\) \(MD\)](#) — Annual statewide GHG progress reports

Phase 4 - Implementation & Learning (Step 10)

- [FEMA Local Mitigation Planning Handbook - Tasks 7 and 8](#) — Plan adoption, maintenance, and update worksheets
- [C40 Cities - Monitoring, Evaluation, and Reporting Guidance](#) — Comprehensive framework for monitoring system design

-
- [ICLEI - Adaptation in Climate Planning and Implementation \(Milestone 5\)](#) — Trigger-based plan updates and adaptive management
 - [MEA Resilient Maryland Program Reporting \(MD\)](#) — Project-level monitoring and reimbursement model
 - [FEMA BRIC Reporting and Performance Standards](#) — Subapplicant performance reporting expectations for BRIC-funded resilience projects, coordinated through MDEM
 - [Montgomery County Climate Action Progress Dashboard \(MD\)](#) — Maryland public dashboard reference
 - [Maryland Climate Action Status Reports - MDOT, MDE \(MD\)](#) — Annual state-level progress reports