Draft Scoping Plan Comments:

Thanks to the many people who have brought this draft scoping plan to life. This plan is comprehensive and far reaching.

My suggestions fit into multiple places in this draft scoping plan and are focused on simultaneously: increasing community resiliency, health and safety, decreasing GHGs, and promoting building/purchase/use of: EVs, energy storage, microgrids, DER, electrifying buildings, and more. The mechanism suggested to simultaneously accomplish these numerous CLCPA goals is statewide build out of multi-faceted Resiliency Zones.

I am submitting three multi-faceted Resiliency Zones concepts - a complex seven Component Resiliency Zones concept and two additional Resiliency Zones concepts that have fewer components with more narrowly defined CLCPA relevant goals.

One of the simpler Resiliency Zones concepts, The First Responder EV Resiliency Zones concept, can be built without ever mentioning climate or GHG reductions, thus allowing this concept to reach across political divides and increasing its appeal to municipalities, agencies, and stakeholders. When built as intended, First Responder EV Resiliency Zones will lower GHGs, but the fact they can be built without discussing GHGs, or climate, can provide an advantage in our politically divided era. I will present this Resiliency Zones concept, plus two others, in more detail later in these comments, but I would first like to address funding and mapping.

Funding: Because we have to do a lot of work in a short amount of time, NY State should support multi-faceted projects that accomplish many CLCPA goals at the same time. To facilitate projects like these, we ask NY State to institute a new grant category specifically for multi-faceted projects. In this new multi-faceted project grant category, selected recipients would receive grants for all parts of their projects at the same time. This will help facilitate projects with multiple co-benefits, will encourage stacking of solutions, and can bring efficiencies into preliminary studies, purchasing and construction.

Mapping: An additional way NY State can speed up the transition to renewable energy, especially for existing built environment locations, is to create an on-line, publicly available, comprehensive, interactive map of the solar generation potential of all existing parking lots in NY State that are over a certain size (85 – 100 parking spots and higher). NY State has huge potential for local DER parking lot solar energy generation, as do other states. The State of Connecticut already has an interactive map of solar generation potential of parking lots for the entire state. Long Island also has a parking lot solar generation potential map developed using different tech and different parameters than Connecticut. Both data sets/maps are very good and useful. As can be seen from the different approaches taken by CT and LI, the tech for this map project exists in various configurations and forms. There are decisions/parameters to set in the process of developing the map, but it doesn’t require new tech and there are experts to help. It’s time for NY State to do a statewide interactive map of the solar generation potential of parking lots. Here are links to existing maps and related web pages:

Long Island Solar Roadmap, Parking Lot Solar Map Layer (Click on a parcel for potential generation): <https://tnc.maps.arcgis.com/apps/webappviewer/index.html?id=d61dfb3bad544dbea16397e08f084ff1>

General doc with info about the LI solar parking lot map and the entire LI Solar Roadmap: <http://solarroadmap.org/>

Connecticut Parking Lot Potential Map:

<https://pace4ct.maps.arcgis.com/apps/webappviewer/index.html?id=c752690fa4d14505b9e0bc51efd3bee6>

Doc with some info about the CT map with additional links to more info on the CT map:

<https://pacecleanenergy.org/solar-canopies/>

For more information on the potential for solar parking lot electricity generation in NY please see Laura Burkhardt’s study at this link:

<https://docs.google.com/presentation/d/1lPnei6yRqjz43q8Ccr1Hci1gwNbewTkq/edit?usp=sharing&ouid=102633851781100053035&rtpof=true&sd=true>

Resiliency Zones:

Multifaceted Resiliency Zones can address numerous CLCPA goals at the same time. I am submitting three Resiliency Zones concepts. The most comprehensive Resiliency Zone concept has seven components (parking lot solar, energy storage/islanding (microgrid) capability, precipitation collection, EV charging, heat pumps/energy efficiency for associated buildings, housing for LMI essential workers, and roof top agriculture/green spaces). Two other Resiliency Zones concepts have fewer components, but they still address multiple CLCPA goas at the same time. Of the two Resiliency Zones concepts with fewer components, one pairs local DER solar with geothermal building electrification in order to speed up local solar and building electrification without needing to wait for the local distribution grid to be upgraded. The other concept, the First Responder EV Resiliency Zones concept, aims to increase community health and safety when the grid is down and also aims to appeal across political aisles.

Resiliency Zones #1: First Responder EV Resiliency Zones:

When the electric grid is down many gas stations are unable to dispense fuel. This can make it difficult for first responders (including health care workers) to power the personal gas/diesel vehicles that they use to get to their volunteer stations and to their community health and safety employment. This problem with fueling ICE vehicles when the grid is down endangers the lives of community residents. Switching to electric vehicles (EVs) and building multiple off-grid capable First Responder EV Resiliency Zones powered by hyper-local DER/energy storage can give communities resilient systems to recharge First Responder electric vehicles when the grid is down. This allows First Responders to get to their volunteer stations or their jobs in hospitals and other necessary places of employment. EVs can increase community safety and health in many ways and First Responder EV Resiliency Zones are one example.

First Responder Vehicle Resiliency Zone start with **extensive** local solar arrays, (or wind power in some parts of NY State). The solar arrays can be parking lot canopies, roof top installations, and/or ground mount systems. To create Resiliency Zones we add energy storage, EV charging stations for many types of vehicles, and islanding capability so the system works when the grid is down.

Many communities will need multiple Resiliency Zone installations. There are a few reasons for this:

1. Depending on the size of a community, when the grid is down it will likely take a lot of local DER solar/wind plus energy storage to recharge all the community’s first responder EVs.

1. We never know what part of a community will be hardest hit by a storm. A tornado, flooding or large hail could temporarily sideline one or two First Responder EV charging solar arrays or windmills. Because of this, it could be in the best interest of communities to build multiple First Responder Vehicle Resiliency Zones scattered around the local county. Then, if a storm damages a solar array or windmill in one place, Resiliency Zones in other locations can pick up the slack.

For the purpose of these Resiliency Zones, a first responder is anyone who needs to get to work, or to their volunteer station, to assist with community health and safety after weather events or other disasters take down the transmission and/or distribution grids. In addition to police, fire, ambulance, paramedics and municipal emergency coordinators, this definition of first responders also includes all who work in hospitals, nursing/rehab facilities, group homes, medical supply and medical testing manufacture, pharmacies, animal shelters, USPS, and more.

Communities are encouraged to develop one master plan outlining all Resiliency Zones that a community is anticipating needing to recharge all of its first responder’s vehicles. This can help communities take advantage of economies of scale and test multiple potential sites at once. Communities are also encouraged to use existing parking lots and existing buildings for the solar sites. Examples of potential existing built environment sites include: medical facilities, colleges and universities, public schools, malls, fair grounds, park and ride lots and other areas with extensive existing parking lots.

One of great things about this Resiliency Zone concept is that grants, and other funding, can be applied for under a wide variety of programs. Possibilities include: community storm resilience, community health and safety, greenhouse gas reduction, community job training, and possibly economic development. Importantly, when the grid is up and running, First Responder EV Resiliency Zones EV chargers that are located on public property can be for general public use.

Resiliency Zones #2: Fully electric buildings with wiring for two independent electric sources - off grid DER solar plus the local distribution grid, plus energy storage for the DER solar and special tech to facilitate two sources of power.

Goal: a) widespread construction of local distributed solar immediately, even before the local distribution grid is upgraded and b) Speed up conversion of buildings to geothermal electric heat pumps.

Components: Parking lot/roof top/ground mount solar, adjacent building electrification, energy storage, islanding, tech to toggle the electric needs of the building back and forth between the off-grid solar and the local distribution grid (the solar via storage).

Even before we upgrade the distribution grid, we can build off grid capable solar on thousands of existing parking lots and other built environment locations in NY State if we pair the solar with concurrent conversion of associated buildings to geothermal heating/cooling/hot water and install special tech to let the energy needs of the geothermal system toggle back and forth between two independent electric supplies - off grid solar and the distribution grid. This could speed up building of DER on existing parking lots/buildings and speed up conversions to geothermal. NY State would likely need to offer incentives and possibly tech assistance for the first few pilot projects. In these projects, the off-grid solar could be sized to absorb most, if not all, of the increase in electric demand due to the conversion to geothermal. There will need to be additional special switches that prevent the solar DER from entering the grid via the buildings’ wires, and extra storage or grounding in case of rare times when the solar outpaces the buildings’ electric needs, but there will not be any grid interconnection fees or time needed for grid interconnection.

We need to rapidly convert to geothermal and rapidly build out solar. I suggest that NY State offers incentives for this kind of integrated system.

Full Resiliency Zones concept:

All three Resiliency Zones concepts that I am presenting are based on solar parking lot designs by sustainability architect Laurence Mackler. Here is the full size, original Resiliency Zones concept that I officially publicly introduced at an in-person program in 2019. This concept aims to maximize the climate solution potential of existing built environment locations, specifically locations with existing parking lots. This multi-component concept includes GHG lowering techplusmany additional community climate adaptation and resiliency needs.

Every parking lot and its associated building (if there is an associated building – sometimes there is not) will be individually studied to determine technical/geological feasibility as well as environmental justice and overall community needs and type of ownership and financing. Some parking lots will be a good fit for just a few of these components, other parking lots and associated buildings will be a good fit for all of them.

1. Solar parking canopies built over the parking lots of sustainability/resiliency facilities (aka essential facilities and businesses), ex: hospitals/health care facilities, grocery stores, home supply stores, schools/college, public libraries, municipal buildings, commuter hubs, Post Offices, etc. The solar parking canopies may, or may not, be attached to the local grid.
2. Electric vehicle charging stations for the parking spaces under the solar carports.
3. Energy storage plus micro grid/islanding capability for the solar carports to facilitate off grid solar generation and off grid solar EV charging.
4. Precipitation collection systems to collect precipitation that falls on top of the carports and stores it underground for collection for future use or to slowly percolate into the ground. This can serve many functions including removing water load from the local storm water system.
5. Buildings associated with the Resiliency Zone solar parking lots are retrofitted to be all electric with low carbon/clean heating and cooling, efficiency, and healthy insulation. The associated buildings may or may not be the primary off-taker of the solar electricity generated by the parking lot when the grid is up. The associated buildings may or may not be the primary off taker when the grid is down. To assist with community resiliency/health/safety, the electric vehicle charging stations may be the priority for off grid electric use.
6. Flat roofs on buildings associated with Resiliency Zones have roof top agriculture to assist with community food security due to climate (or pandemic) related food system disruptions. As per Jodi Smits Anderson, the Director of Sustainability for the Dormitory Authority of NY, roof top agriculture and root top solar can be combined in ways that actually increase the efficiency of the solar arrays.
7. Commercial/retail buildings associated with the Resiliency Zones are built up two or three stories with new housing for: Lower and Middle Income (LMI) residents who work in sustainability and resiliency fields (aka, essential workers), LMI Seniors, and residents who are forced to move due to environmental disruption. These new residential communities are located next to, and are connected to, existing communities via elevated walkways/elevated parks and improved walking/biking access on local streets. All residents have access to personal EV charging as well as public transportation when possible. When there is a housing component the roof top agriculture/solar is on top of the housing units.

See next page for simple illustration to help individuals conceptualize multi-faceted projects with numerous stacked benefits fitting into many of the CLCPA categories.

Diagram

Description automatically generated