Codes and Ordinances for Clean Energy

Highland Park Pathways to Power

Due Diligence Resources, Microgrid Case Studies, Master Plan Review, Code Review, and Draft Solar Ordinance Review

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Notice

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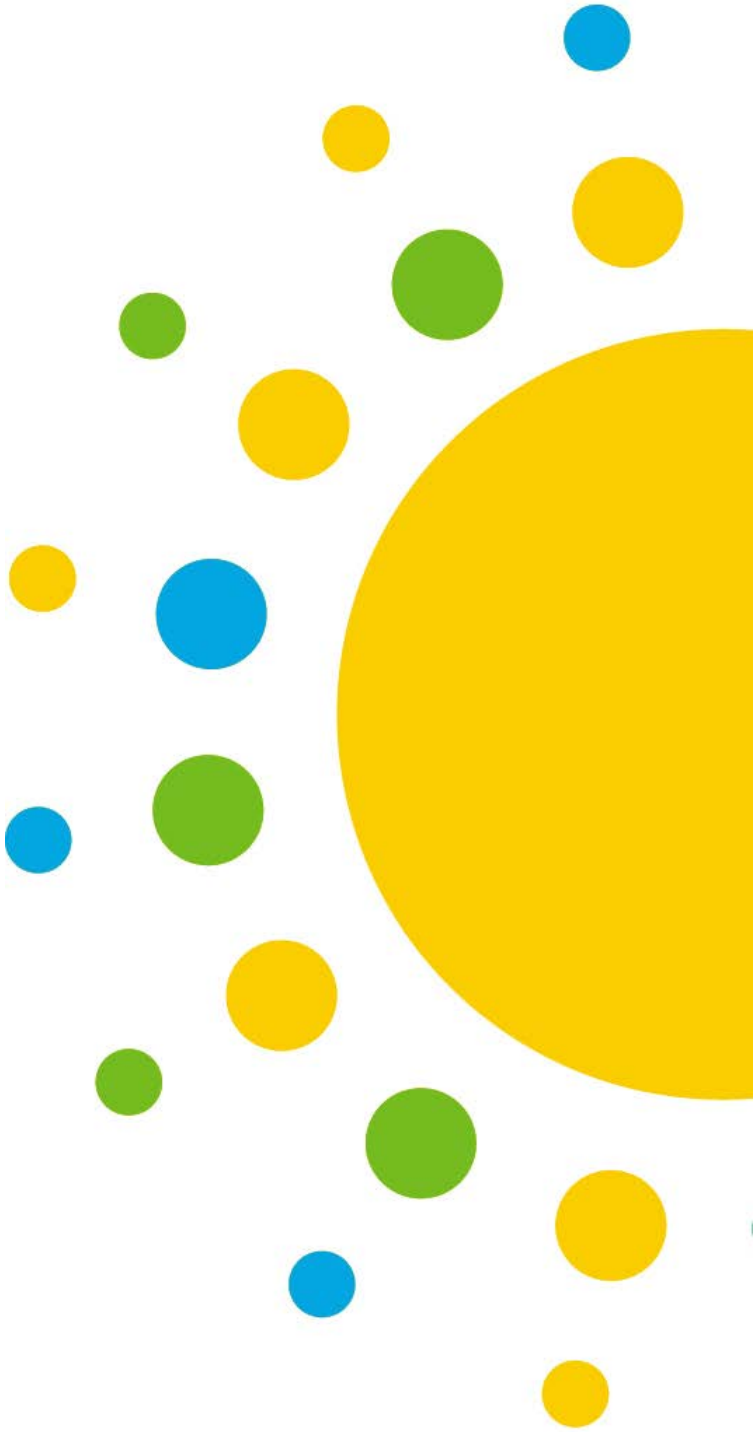


Communities LEAP Scoping Context

Through the Communities Local Energy Action Program (LEAP) Pilot, the National Renewable Energy Laboratory (NREL) engaged the Highland Park Stakeholder Coalition to scope four technical assistance work areas to address their energy needs and goals.

This slide deck addresses the highlighted tasks under Work Area "A."

A . City-wide Solar Street Lighting and Policy Analysis	B. Grid Analysis	C. Community Choice: Home Energy Improvements	D. Bonus Bucket! Transportation and Mobility with Michigan Clean Cities
• Task 1: Solar Street Lighting Financial Model Review • Task 2: Due Diligence References • Task 3: Case Studies for Implementation • Task 4: Master Plan Gap Analysis • Task 5: Zoning Code + Applications Gap Analysis • Task 6: Review Proposed Solar Ordinance.	• Task 1: Determine Existing Load Profile + Feeder Model (reference case) • Task 2: Grid Analysis (limitations and capacity under three growth scenarios) • Task 3: Feasibility Analysis 3 Actionable Behind Meter Projects (within city's authority under current grid configuration).	• Task 1: Support a coalition-facilitated selection process • Task 2: Housing Characteristics and Energy Burden Analysis.	• Task 1: Coordinate with Michigan Clean Cities on feasibility study for Perimeter Loop micro-mobility utilizing electric shuttles.

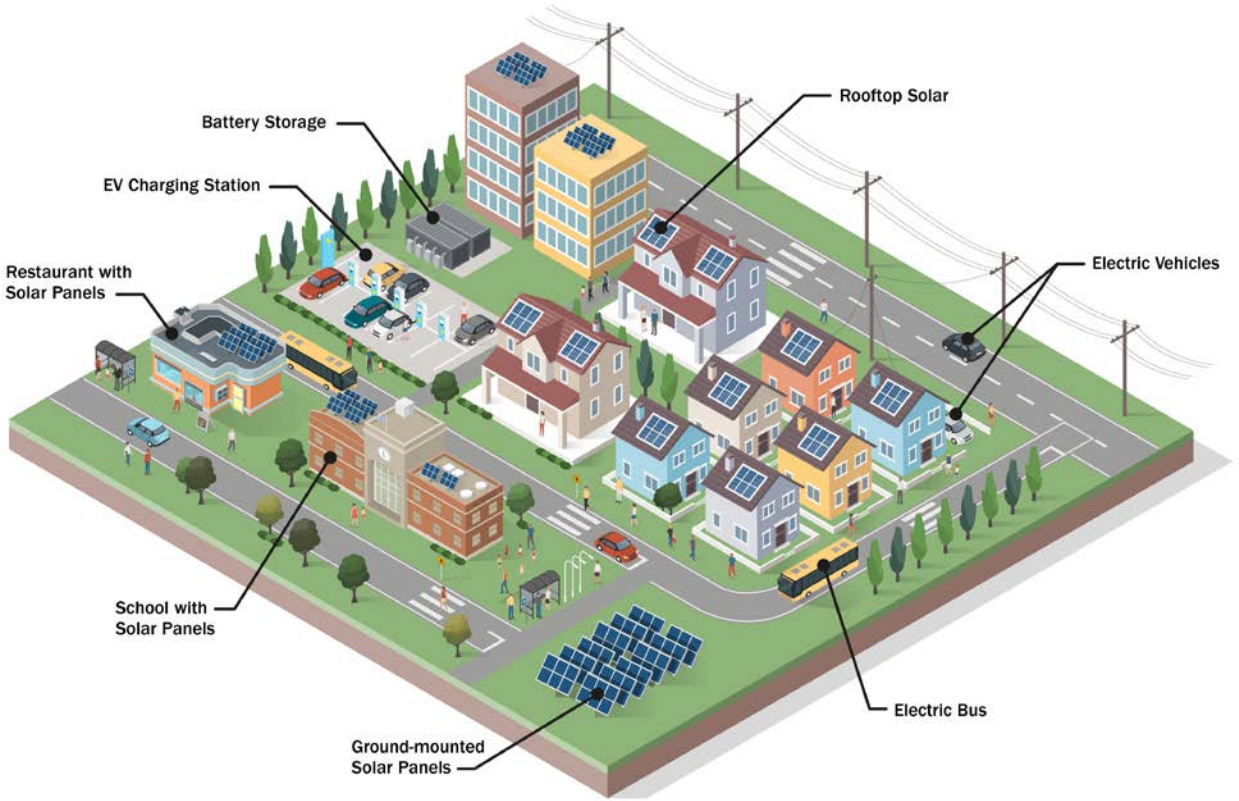
Project Context

Highland Park Coalition members asked NREL to assess the policy landscape for gaps, barriers, and opportunities for deploying clean energy projects in the city.

NREL staff reviewed best practices, state statutes and regulations, the city's Master Plan and city code, and compiled a list of resources and considerations to help the community answer key research questions about local government authority to implement and permit clean energy projects.

The Coalition was particularly interested in learning from other communities who have implemented microgrids. NREL identified case studies about microgrids to understand the various roles of city government and project developers in the project development process.

Opportunities were identified for the city to expand clean energy deployment—for example, through adoption of model code ordinances, development of financing districts, and automated permitting platforms. Finally, Highland Park city representatives drafted a solar PV ordinance that would guide rooftop and ground-mounted solar PV development. NREL provided peer review feedback.



Graphic by Nicole Leon, NREL

Task A2: Due Diligence References

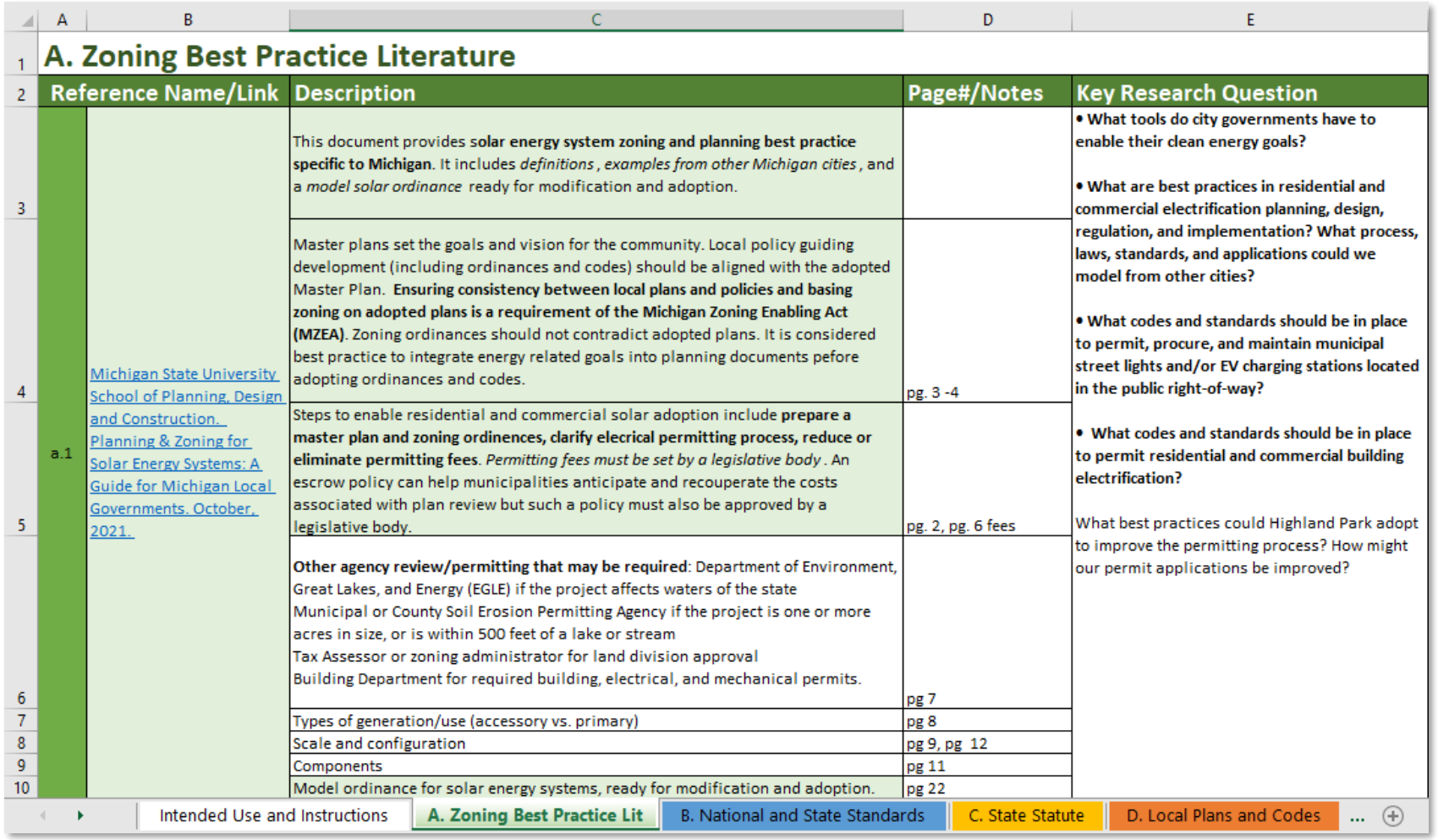
Approach: References for answering questions regarding city's jurisdiction and authority to implement and permit clean energy projects.

Content

- Intended Use and Instructions
- Zoning Best Practice Literature
- National and State Standards
- State Statutes
- Local Plans and Codes.

Energy Technology Topics:

Solar streetlights, electric vehicles, ground source heat pumps, battery energy storage systems, microgrids, agrivoltaics, solar PV.



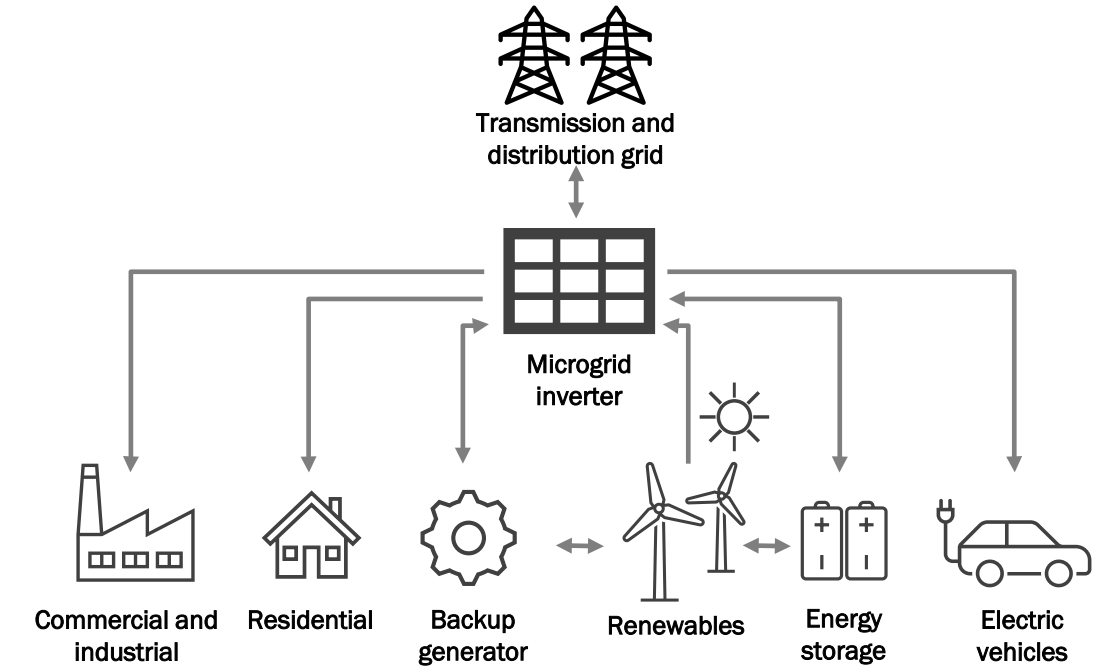
A. Zoning Best Practice Literature

	Reference Name/Link	Description	Page#/Notes	Key Research Question
a.1	Michigan State University School of Planning, Design and Construction. Planning & Zoning for Solar Energy Systems: A Guide for Michigan Local Governments. October, 2021.	This document provides **solar energy system zoning and planning best practice specific to Michigan**. It includes *definitions*, *examples from other Michigan cities*, and a *model solar ordinance* ready for modification and adoption.		• **What tools do city governments have to enable their clean energy goals?** • **What are best practices in residential and commercial electrification planning, design, regulation, and implementation? What process, laws, standards, and applications could we model from other cities?** • **What codes and standards should be in place to permit, procure, and maintain municipal street lights and/or EV charging stations located in the public right-of-way?** • **What codes and standards should be in place to permit residential and commercial building electrification?** What best practices could Highland Park adopt to improve the permitting process? How might our permit applications be improved?
		Master plans set the goals and vision for the community. Local policy guiding development (including ordinances and codes) should be aligned with the adopted Master Plan. **Ensuring consistency between local plans and policies and basing zoning on adopted plans is a requirement of the Michigan Zoning Enabling Act (MZEA)**. Zoning ordinances should not contradict adopted plans. It is considered best practice to integrate energy related goals into planning documents pefore adopting ordinances and codes.	pg. 3 -4	
		Steps to enable residential and commercial solar adoption include **prepare a master plan and zoning ordinences, clarify elecrical permitting process, reduce or eliminate permitting fees**. *Permitting fees must be set by a legislative body*. An escrow policy can help municipalities anticipate and recouperate the costs associated with plan review but such a policy must also be approved by a legislative body.	pg. 2, pg. 6 fees	
		Other agency review/permitting that may be required: Department of Environment, Great Lakes, and Energy (EGLE) if the project affects waters of the state Municipal or County Soil Erosion Permitting Agency if the project is one or more acres in size, or is within 500 feet of a lake or stream Tax Assessor or zoning administrator for land division approval Building Department for required building, electrical, and mechanical permits.	pg 7	
		Types of generation/use (accessory vs. primary)	pg 8	
		Scale and configuration	pg 9, pg 12	
		Components	pg 11	
		Model ordinance for solar energy systems, ready for modification and adoption.	pg 22	

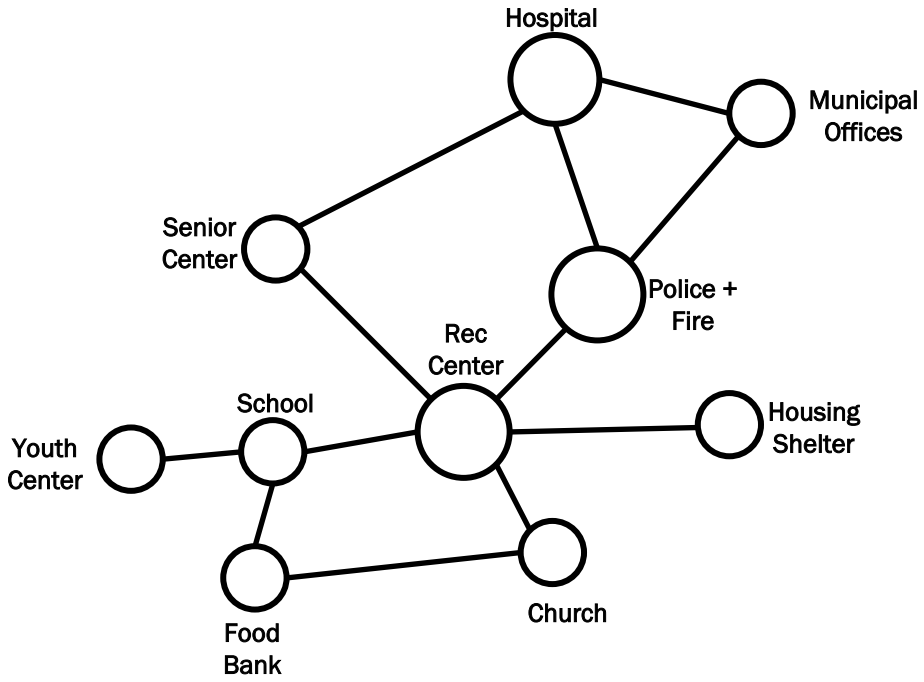
Intended Use and Instructions | A. Zoning Best Practice Lit | B. National and State Standards | C. State Statute | D. Local Plans and Codes

NREL compiled a list of resources to help the community answer key research questions about local government regulatory authority for implementing clean energy projects.

Task A3: Implemented Case Studies – Microgrid Concepts



Conceptual microgrid inputs and outputs.



Conceptual resilience hub network.

Microgrid

- The Department of Energy defines microgrids as "'a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid."
- Microgrids can be configured to operate in both grid-connected or islanded mode.
- Microgrids can provide backup power and resilience benefits in disaster events and grid outages.

Resilience Hub

- Washington D.C. Department of Energy & Environment defines resilience hubs as "a community facility that connects residents to resources and services to help a community be prepared for disruptions, including chronic stressors and acute emergencies."
- Resilience hubs meet daily community needs but are equipped with backup power supply to support critical services during emergencies or grid disruptions.

Task A3: Implemented Case Studies - Microgrids

Summary of Example Microgrid Installations

- Over 20 microgrid examples identified at various stages of development
- AZ, **CA***, CO, CT, FL, GA, HI, IL, **MD***, **MI***, MN, NY, OR, TX, VT
- Use cases: Metropolitan cities, rural towns, campuses, corporate, planned new development, military, resilience hub
- Resilience benefits and services provided: Designed to provide power for emergency response, public services, shelter, food, senior centers, recreation, and Wi-Fi in the event of disasters and power outages
- Community-scale projects are mostly mixed ownership/public-private partnerships. Smaller-scale projects leverage "resilience hub" approach
- The Department of Energy, Federal Emergency Management Agency and the Housing and Urban Development (HUD) agency offer guidance and fund resilience programs.

*Case studies were developed for the following communities:

- **Borrego Springs, CA** : A city-utility partnership that sheds light on the success that can result from close collaboration with a utility.
- **Baltimore, MD**: A city-wide resilience hub network illustrating a successful grassroots effort that grew into a city-wide network of microgrids.
- **Detroit, MI**: An emerging resilience hub network in that sheds light on funding resources and process locally available to Highland Park.

- Some developers/implementing partners doing relevant work:
  - EcoWorks (Detroit), resilience hub planning
  - Clean Energy Group, feasibility analysis, funding support (Detroit)
  - Groundswell (Maryland), microgrid design, developer
  - Elevate Energy (Chicago), fundraising
  - American Microgrid Solutions, feasibility analysis, design
  - SolarRise, crowd sourcing platform.

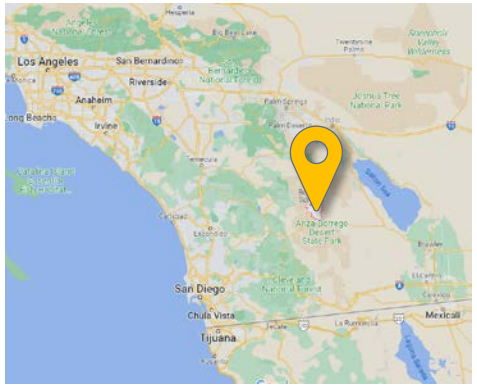
Task A3: Implemented Case Studies: Microgrid Lessons Learned

- **Collaboration with utilities is key.** Particularly on medium-to-large projects requiring interconnection to distribution grid.
- **Community engagement is key.** Determine where and what services are priority/critical through community engagement.
- **Resilience hub strategies are increasingly being adopted.** Bottom-up approaches leverage established CBO operations, local champions, and community-led planning and outreach. Memoranda of understanding establish agreed-upon roles and services for hub buildout.
- **Techno-economic feasibility helps justify implementation funding.** Match generation to demand to optimize cost.
- **Cost can be a major barrier.** Leverage "resilience hub" approach, memoranda of understanding, and partnerships.
- **Utilities may seek cost recovery** through rates from regulators if mandates for resilient infrastructure are adopted.
- **Funding is rarely available for O&M.** Funding is most commonly provided for planning, analysis, engineering/design, procurement, and capital expenses. Leverage existing sustainably funded CBOs for O&M.
- **Diverse funding sources span funding gaps.** Resources are available from federal (DOE, ARPA, FEMA), state, city (Strategic Neighborhood Fund), corporate (GMCEF), utilities, nonprofits (USDN), developers, and manufacturers.
- **Optimized funding and ownership models** maximize tax incentives and reinvestment of savings, reduce liability and maintenance costs.
- **Local government permitting can be a bottleneck.** Involve officials early in the process.
- **Roof condition and structure may limit solar PV feasibility.**
- There is an opportunity for regulators to align developer and utility interests.

Task A3: Implemented Case Studies: Microgrids

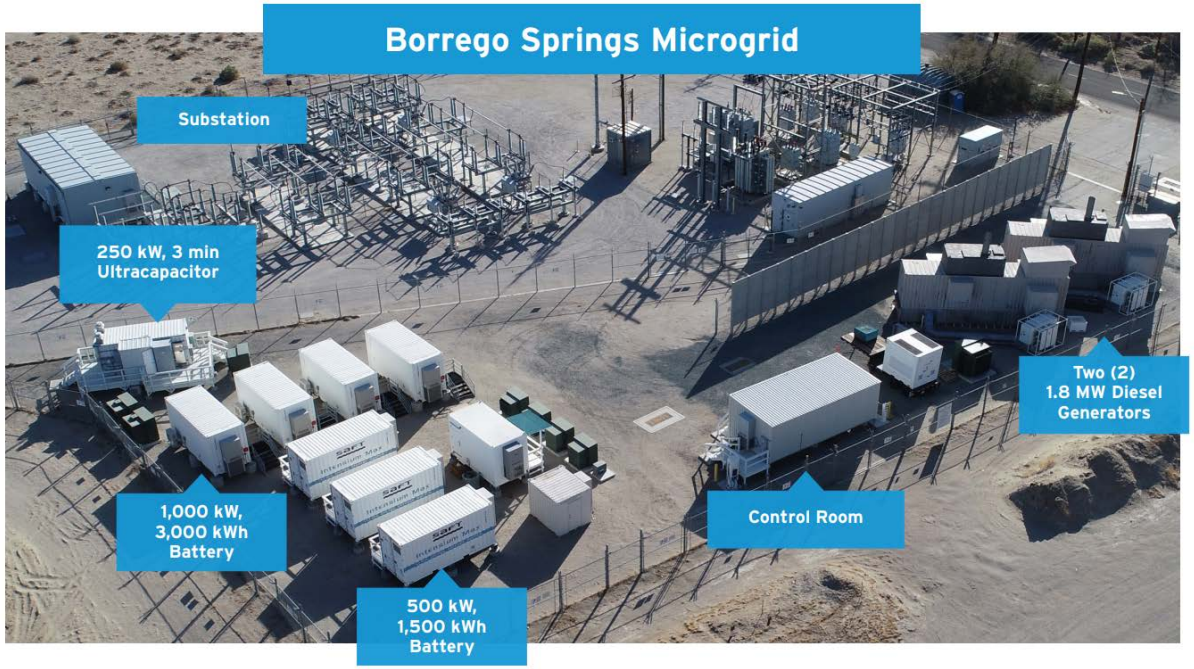
Borrego Springs, California: City-Utility Partnership

- **Population:** Approx. 3,000, inland San Diego County
- **Scale:** Single substation with 2,500 residential, 300 commercial and industrial customers [1]
- **Status:** Won grant 2012, survived outages 2013, expanded 2015 [2]
- **Issues addressed:** Remote, single transmission line, vulnerable to severe weather, history of weather-related power outages [1]
- **Configuration:** [1]
  - 69-kV to 12-kV air-insulated substation.
  - 26 MW utility PV, 3 MW customer-owned rooftop PV.
  - Two 1.8-MW generators.
  - Two substation batteries, three community batteries.
  - Under normal conditions, power from solar arrays is sent through the grid and keeps batteries charged.
  - During outages, the microgrid can restore power to the entire community or prioritize power to critical loads.
- **Process:** Pilot, scaling, studies for 100% renewable energy upgrades
- **Cost/Funding:** Funded by U.S. Department of Energy (DOE), California Energy Commission, utility cost recovery through rates, and National Lab technical assistance
- **Ownership, operations, maintenance:** Utility, customer, and third-party generation assets connected to utility substation and transmission and distribution infrastructure [1].



Borrego Springs is located in southern California. *Picture from Google Maps*

San Diego Gas and Electric (SDDGE) considers this to be the first utility-owned, community scale microgrid in the country. *Photo by SDGE [10]*



The configuration provides backup power to the remote community which was vulnerable to outages. *Photo by SDGE [10]*

Task A3: Implemented Case Studies: Microgrids

Borrego Springs, California: City-Utility Partnership

Organization chart of team members that participated in the Borrego Springs Microgrid Project. *Image by SDG&E [1]*

Lessons Learned

- **Lack of uniform energy flow** of privately-owned customer PV presented challenges for microgrid control during operations.
- **Mixed ownership** presents challenges. Controlling third-party access is difficult when owners are not obligated to comply.
- **Utilities stand to benefit** when microgrids are configured to stabilize energy to communities.

Task A3: Implemented Case Studies: Microgrids

Baltimore Maryland: City-Wide Resilience Hub Network

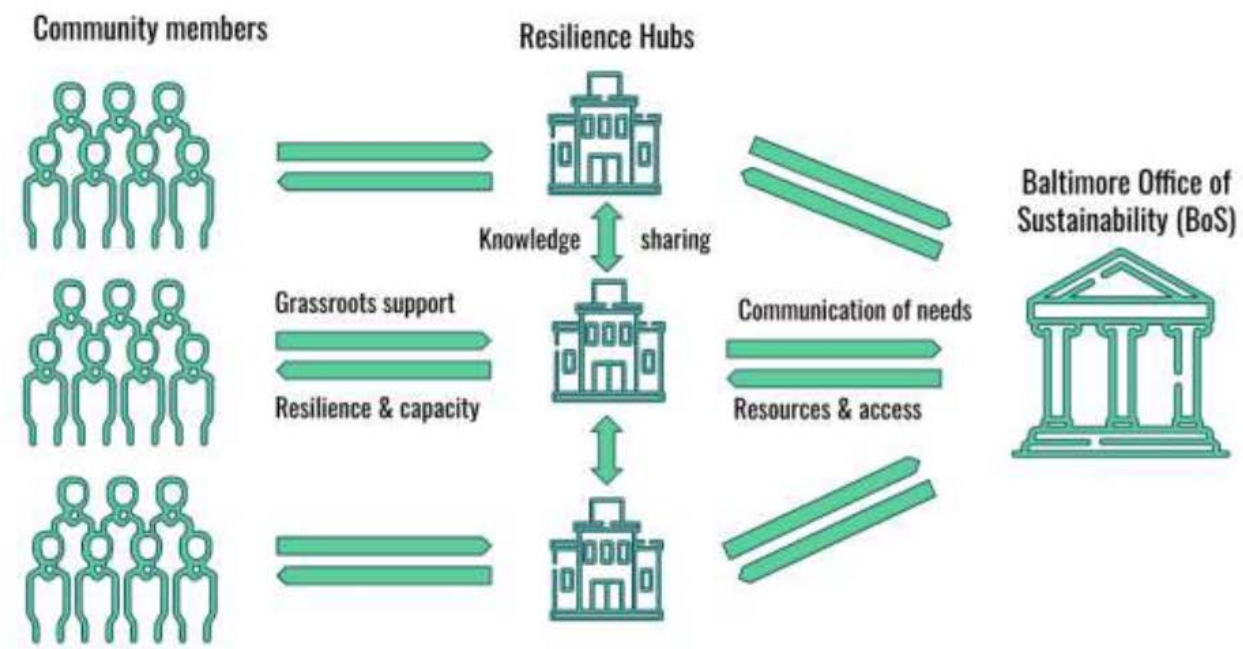
- **Population:** Baltimore (585,708), Refuge (approx. 15,000)
- **Scale:**
  - 15 independently operated hubs – resident services [3]
  - Located in safe and frequented spaces, operated by trusted grassroots community-based organizations (CBOs)
  - Municipally managed network through city's Office of Sustainability (BoS) (Community Resilience Hub Program)
  - As of 2021, only 4 of 15 equipped with solar + storage
  - One of these is City of Refuge Baltimore's Level Up Youth Center, 36 kW solar developed by Groundswell [4].
- **Status:** Planning began in 2016.
- **Issues addressed:** Community resilience, basic services, adaptive capacity, mistrust due to discrimination, provide resources in areas of historic disinvestment and discrimination.
- **Process:** Grassroots, scaling to city-wide network.
- **Cost/Funding:** Unknown, State, and Federal Emergency Management Agency (FEMA).
- **Ownership, operations, maintenance:** Unknown.

36-kW rooftop solar PV array installed at Baltimore's Level Up Youth Center. *Image by Google Streetview*

Map of Baltimore's resilience hubs. *Image by BoS*

Task A3: Implemented Case Studies: Microgrids

Baltimore Maryland: City-Wide Resilience Hub Network



Organizational structure of Baltimore's resilience hub network. *Graphic by Jamie Pew [3]*

Lessons Learned

- Deliberately **seek to overcome mistrust** of municipal government (through consistent two-way communication) and **place decision-making and control in the hands of trusted community leaders.**
- Design memoranda of understanding (MOU) **to formalize roles and standardize expectations** yet **allow flexibility** to account for the variation across hubs.
- Keep the **barrier to entry/cost low.**
- Establish and maintain a **knowledge-sharing network** between resilience hubs and city.
- Hubs require **sustainable funding streams; partnerships** are common and key. Commonly arise from **existing organizations with preexisting fundraising strategies**.
- Funders may require documentation of **quantifiable impact**.
- Leverage city funding and **fund reallocation for emergency response** to deliver unique community services.
- Use local, minority-owned consultants when possible.

Task A3: Implemented Case Studies: Microgrids

Detroit, Michigan: Emerging Resilience Hub Network

- **Population:** Detroit (639,111), Highland Park (8,977)
- **At least three resilience hubs identified**:

1. **Stoudamire Wellness Hub:**

   Scale: neighborhood

   Status: hub established in 2021. Funding for pv + battery storage obtained [5].

   Ownership: non-profit (Eastside Community Network)

   Funding/Support: Kresge Foundation [6], General Motors Climate Equity Fund (GM)[5], Urban Sustainable Directors Network (USDN), and Clean Energy Group; support from Elevate Energy

2. **Bailey Park Neighborhood Development Corporation (BPNDC) Community Resilience Hub:**

   Scale: neighborhood

   Status: hub established in 2021, no funding for pv + battery storage obtained [5].

   Ownership: non-profit (BPNDC)

   Funding/Support: Ford Foundation

3. **Community Center at AB Ford Park (formerly Lenox Recreation Center):**

   Scale: 8,116-square-foot solar-powered community center slated to open in 2023, is part of the city's emerging "Resilience Hub Network“ [6]. Includes funding for a hybrid 70kW solar, 125 kW/220 kWh battery and generator power system [7].

   Status: Currently under construction

   Ownership: City of Detroit

   Funding: General Motors Climate Equity Fund[6], Urban Sustainability Directors Network, Penske Corporation Strategic Neighborhood Fund[7] and City; support from Elevate. Microgrid design by American Microgrid Solutions.

Bailey Park NDC Community Resilience Hub (left) and Amanda Paige, Director of Programs (right). *Images by Steve Koss*

A rendering of the Community Center at AB Ford Park, currently under construction. *Rendering by INFORM Studio*

Task A3: Implemented Case Studies: Microgrids

Detroit, Michigan: Emerging Resilience Hub Network

Process:

- Grassroots hubs process: Two CBOs already providing services gained support for establishing and operating resilience hubs, gained support from existing hubs or neighborhood networks, and conducted feasibility and fundraising with partners.
- City-driven hub process: The city led a city-wide hub planning process involving community organizers, then conducted fundraising, feasibility studies, design, procurement, and construction.

Funding:

- Grassroots: BPNDC obtained funding from General Motors Climate Equity Fund (GMCEF) and Urban Sustainability Directors Network (USDN). As of 2021, Stoudamire had not.
- Public: $6.6M, plus O&M. ARPA, City of Detroit, Penske Strategic Neighborhood Fund, Kresge Foundation, General Motors Climate Equity Fund, Urban Sustainability Directors Network grant, Ford Foundation, and FEMA.
- Specifically, **solar + storage** equipment at AB Ford Park supported by $650,000 in grants from **GMCEF and USDN** [8].
- **The Ford Foundation and FEMA** may support **hub establishment.**

Opportunity to leverage **Investment Tax Credit** for renewable energy — set at 30% for the next 10 years — **"direct pay" option** for municipalities and other nonprofit organizations. **Can avoid complexity of public-private partnership.** Consult legal/tax advice [9].

Task A4 and A5: Zoning Code and Master Plan Gap Analysis

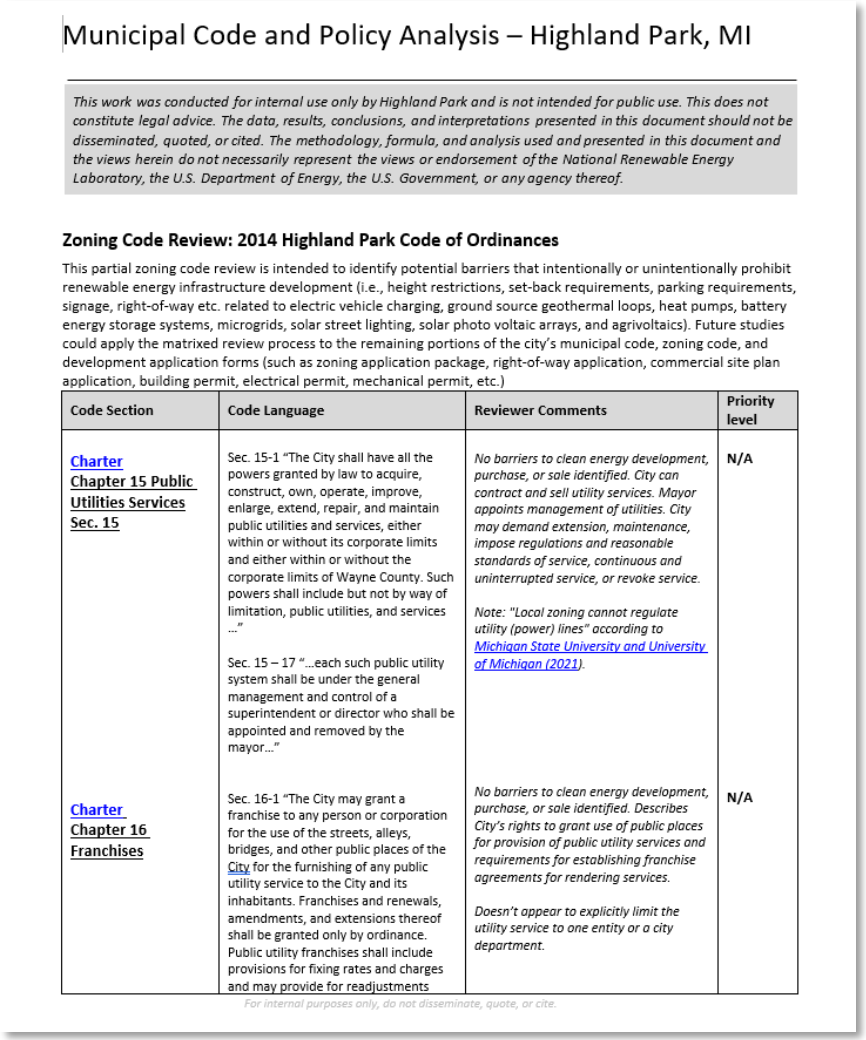
Approach: Reviewed City Code for gaps, barriers, and opportunities for creating an enabling regulatory environment for clean energy technologies at the local government level.

Energy Technology Topics:

Solar streetlights, electric vehicles, ground source heat pumps, battery energy storage systems, microgrids, agrivoltaics, solar PV.

Key Takeaways:

- Michigan municipalities are limited in their authority to implement and regulate certain energy technologies.
- Opportunities exist for municipalities and residents to deploy clean energy solutions.
- Zoning code does not address energy technologies, leaving gaps and exposing risk. Updates and new ordinances could improve transparency and outcomes.



Municipal Code and Policy Analysis – Highland Park, MI

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Zoning Code Review: 2014 Highland Park Code of Ordinances

This partial zoning code review is intended to identify potential barriers that intentionally or unintentionally prohibit renewable energy infrastructure development (i.e., height restrictions, set-back requirements, parking requirements, signage, right-of-way etc. related to electric vehicle charging, ground source geothermal loops, heat pumps, battery energy storage systems, microgrids, solar street lighting, solar photo voltaic arrays, and agrivoltaics). Future studies could apply the matrixed review process to the remaining portions of the city's municipal code, zoning code, and development application forms (such as zoning application package, right-of-way application, commercial site plan application, building permit, electrical permit, mechanical permit, etc.)

Code Section	Code Language	Reviewer Comments	Priority level
Charter Chapter 15 Public Utilities Services Sec. 15	Sec. 15-1 "The City shall have all the powers granted by law to acquire, construct, own, operate, improve, enlarge, extend, repair, and maintain public utilities and services, either within or without its corporate limits and either within or without the corporate limits of Wayne County. Such powers shall include but not by way of limitation, public utilities, and services ..." Sec. 15 – 17 "...each such public utility system shall be under the general management and control of a superintendent or director who shall be appointed and removed by the mayor..."	*No barriers to clean energy development, purchase, or sale identified. City can contract and sell utility services. Mayor appoints management of utilities. City may demand extension, maintenance, impose regulations and reasonable standards of service, continuous and uninterrupted service, or revoke service.* *Note: "Local zoning cannot regulate utility (power) lines" according to Michigan State University and University of Michigan (2021).*	N/A
Charter Chapter 16 Franchises	Sec. 16-1 "The City may grant a franchise to any person or corporation for the use of the streets, alleys, bridges, and other public places of the City for the furnishing of any public utility service to the City and its inhabitants. Franchises and renewals, amendments, and extensions thereof shall be granted only by ordinance. Public utility franchises shall include provisions for fixing rates and charges and may provide for readjustments	*No barriers to clean energy development, purchase, or sale identified. Describes City's rights to grant use of public places for provision of public utility services and requirements for establishing franchise agreements for rendering services.* *Doesn't appear to explicitly limit the utility service to one entity or a city department.*	N/A

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Menu of Model Ordinances:

The following menu of model ordinances, laws, stretch codes, and standards by topic, can guide ordinance and standard adoption in Highland Park. Search engines include DOE's Stretch Codes; DOE Alternative Fuels Data Center; New Buildings Institute; and Columbia School of Law Legal Pathways to Deep Decarbonization.

Solar Lighting
City of Dania Beach, Florida Invitation to Bid on CDBG Solar Lights. March 14, 2022
City of Dania Beach, Florida Invitation to Bid on Solar Light Replacement Fixtures. March, 2022

Electric Vehicles
Plug-In-Ready Michigan provides sample master plan language (pg.101), and sample zoning language (pg. 102), including definitions (pg.103), permitted locates, "readiness" recommendations, ordinances for traffic and vehicle regulations (pg110), suggested PEV parking tables (pg.114), siting considerations, conceptual charging station installations (pg. 117), regulatory signage (pg. 124)
Auburn Hills, Michigan Electric Vehicle Infrastructure Amendment to the Zoning Ordinance. 2011
Ann Arbor, Michigan EV Readiness Draft Ordinance and Parking Tables. 2021
Electric Vehicle Charging for Residential and Commercial Energy Codes. Pacific Northwest National Laboratory. 2021
LPDD Model Law: EV Ready Building Code for Commercial, Industrial and Multiple-Family Residential Buildings
LPDD Model Law: EV Ready Building Code for One- and Two-Family Homes.

Geothermal
Model Code for Geothermal Permitting on Long Island
Wyandotte Michigan Municipal Code: Chapter 180: Geothermal Systems
Geothermal Heating Systems Model Ordinance for Pennsylvania Municipalities Planning Code
Delaware Valley Regional Planning Commission. Renewable Energy Ordinance Framework - Geothermal
RFP Design Build Services for a Shared Loop Residential Geothermal Heating and Cooling Systems at Glenwood Village, Riverhead, NY
RFP Geo Micro District Feasibility Study. Boston, MA
Requirements for Geothermal Permit. Peekskill, NY

Battery Storage
New York Battery Energy Storage Model Law. See also, Energy Storage Guidebook, Energy Storage System Model Permit, and other resources on the NYSERDA website. New York City, New York: SECTION FC 608: STATIONARY ENERGY STORAGE SYSTEMS. Fairly restrictive in support of safety.
A Local Law Enacting Battery Storage System. Town of Somerset, NY. 2021
Battery Energy Storage Systems. Town of Caledonia, NY municipal code – includes schedule of zoning districts.
City of Yolo County, CA municipal code. Energy Storage System Ordinance
Proposed Battery Energy Storage System Amendments to the Whatcom County, WA Code. June 2021
Prince George County, Virginia. Proposed Ordinance Amendment for Batter Energy Storage Facilities. March 2022
Marana, AZ: 17-6-11 Solar energy systems and energy storage facilities.
Will County, IL: § 155-9.220 BATTERY ENERGY STORAGE FACILITIES. (2022)

Microgrids
Chicago, IL: 14E-7-712 Direct current microgrids. Adopts Article 712 of NFPA 70v which provides definitions.

Agrivoltaics
Linn County, IA – Amended Development Code requires solar farms be planted with native grasses and wildflowers and prohibits application of insecticides.
Stearns County, MN – Land Use and Zoning Ordinance requires solar farm ground cover meet state statute.
Broadview and Bedford, Chicago area suburbs, IL – § 155.114 PRINCIPAL USES and 10-10-5: PRINCIPAL USES: "Principle use solar" provisions protect agricultural soils but provides exception for co-location/agrivoltaics. Allows for alternative fencing for agrivoltaics. Definition provided: "A solar energy system co-located on the same parcel of land as agricultural production, including crop production, grazing, apiaries, or other agricultural products or services."
Montgomery County, Maryland's Solar Collection System code subsection 3.7.2 allows solar collection systems in "agricultural reserve zones" and provides requirements for this use. Solar collection is prohibited if on agriculturally classified soil, but conditional use is permitted if the area is "actively used for farming or agricultural purposes" including pollinator friendly planting, grazing, or crops.

NREL reviewed the Highland Park City Code for gaps, barriers, and opportunities, drawing from the due diligence resources previously compiled. The 2030 Master Plan was reviewed for consistency with potential energy technologies. A document was produced for Highland Park for internal purposes detailing analysis and a menu of example ordonnances by clean energy element.

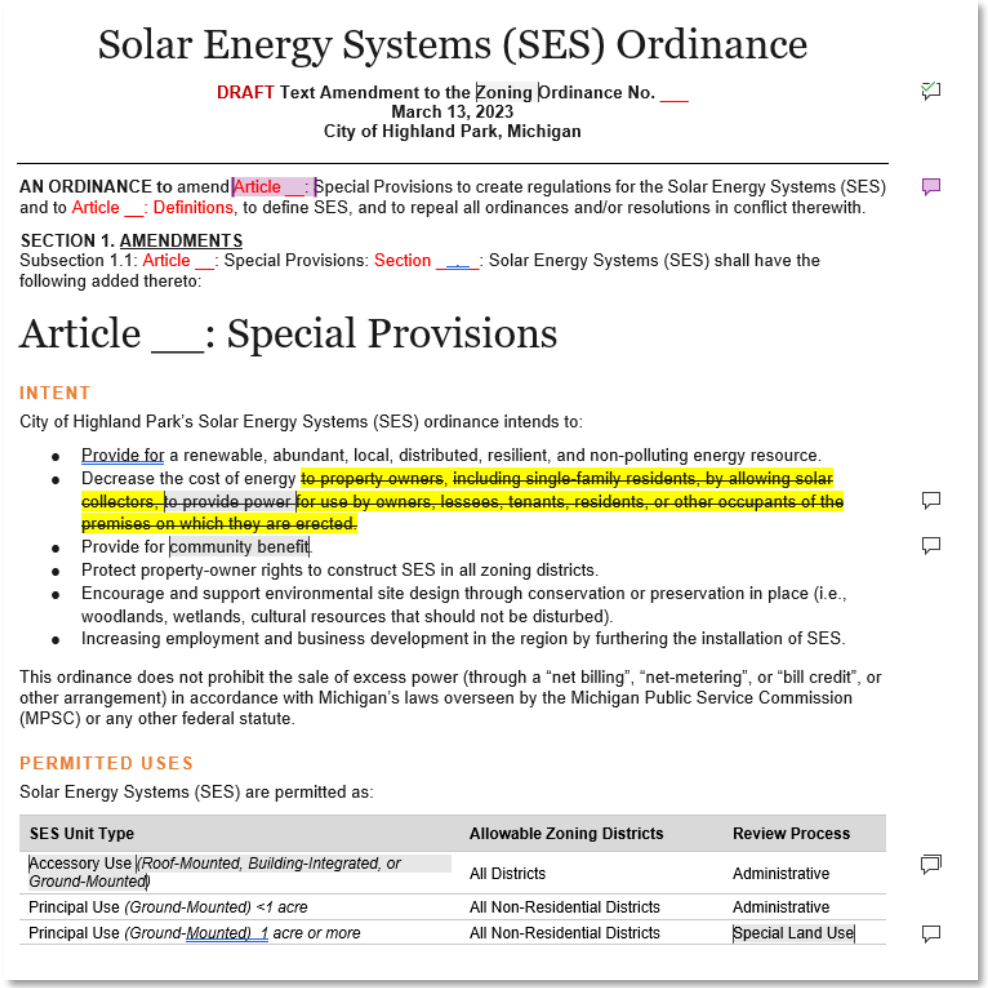
Task A6: Draft Solar Ordinance Review

Approach: Review of the city's proposed solar ordinance for gaps, barriers, and opportunities utilizing SolSmart Best Practices.

Energy Technology Topics: Solar PV.

Content areas addressed:

- Intent/purpose
- Definitions
- Use-by-right
- Height
- Lot coverage
- Setbacks and safety access
- Aesthetic requirements
- Historic district guidance
- Principal use vs. accessory use
- Solar rights.



Solar Energy Systems (SES) Ordinance

DRAFT Text Amendment to the Zoning Ordinance No. ___
March 13, 2023
City of Highland Park, Michigan

AN ORDINANCE to amend Article __: Special Provisions to create regulations for the Solar Energy Systems (SES) and to Article __: Definitions, to define SES, and to repeal all ordinances and/or resolutions in conflict therewith.

SECTION 1. AMENDMENTS
Subsection 1.1: Article __: Special Provisions: Section ___: Solar Energy Systems (SES) shall have the following added thereto:

Article ___: Special Provisions

INTENT

City of Highland Park's Solar Energy Systems (SES) ordinance intends to:

- Provide for a renewable, abundant, local, distributed, resilient, and non-polluting energy resource.
- Decrease the cost of energy ~~to property owners, including single-family residents, by allowing solar collectors, to provide power for use by owners, lessees, tenants, residents, or other occupants of the premises on which they are erected.~~
- Provide for community benefit
- Protect property-owner rights to construct SES in all zoning districts.
- Encourage and support environmental site design through conservation or preservation in place (i.e., woodlands, wetlands, cultural resources that should not be disturbed).
- Increasing employment and business development in the region by furthering the installation of SES.

This ordinance does not prohibit the sale of excess power (through a "net billing", "net-metering", or "bill credit", or other arrangement) in accordance with Michigan's laws overseen by the Michigan Public Service Commission (MPSC) or any other federal statute.

PERMITTED USES

Solar Energy Systems (SES) are permitted as:

SES Unit Type	Allowable Zoning Districts	Review Process
Accessory Use *(Roof-Mounted, Building-Integrated, or Ground-Mounted)*	All Districts	Administrative
Principal Use *(Ground-Mounted) <1 acre*	All Non-Residential Districts	Administrative
Principal Use *(Ground-Mounted) 1 acre or more*	All Non-Residential Districts	Special Land Use

NREL reviewed the Highland Park's draft Solar Ordinance for gaps, barriers, and opportunities, drawing from SolSmart best practices. NREL provided review comments and considerations in response to Highland Park's draft solar energy systems ordinance for internal purposes.

References

[1] Katmale, Hilal, Sean Clark, Thomas Bialek, and Laurence Abcede. 2019. *Borrego Springs: California's First Renewable EnergyBased Community Microgrid.* Sacramento, CA: California Energy Commission. CEC-500-2019-013. https://www.energy.ca.gov/sites/default/files/2021-05/CEC-500-2019-013.pdf.

[2] Climate Interactive. 2019. "Borrego Springs Microgrid." https://www.multisolving.org/wp-content/uploads/2022/04/BorregoSpringsMicrogrid_updated.pdf

[3] BoS. N.d. "The Baltimore City Community Resiliency Hub Program." https://www.baltimoresustainability.org/baltimore-resiliency-hub-program/.

[4] Groundswell. "Level Up Youth Center at the City of Refuge Baltimore." https://groundswell.org/level-up-youth-center-at-the-city-of-refuge-baltimore/

[5] Sands, David. 2021. "Climate Resilience hubs find a foothold on Detroit's East Side by helping residents face disasters." *Planet Detroit.* December 9, 2021. https://planetdetroit.org/2021/12/climate-resilience-hubs-find-a-foothold-on-detroits-east-side-by-helping-residents-face-disasters/.

[6] The Kresge Foundation. May 30, 2023. "New solar-powered centers to serve Detroit's east side during flooding and other emergencies." https://kresge.org/news-views/new-solar-powered-centers-to-serve-detroits-east-side-during-flooding-and-other-emergencies/

[7] American Microgrid Solutions. N.D. "Projects." Web page. https://www.americanmicrogridsolutions.com/projects

[8] Francklyn, Lili. Microgrid News. December 1, 2022. "'Resilience Hubs' arise in neighborhoods nationwide to provide renewable power and disaster support during power outages. https://microgridnews.com/resilience-hubs-disaster-support-during-power-outages/

[9] Francklyn, Lili. 2022. "'Resilience Hubs' arise in neighborhoods nationwide to provide renewable power and disaster support during outages." *Homer Microgrid News*. December 1, 2022. https://microgridnews.com/resilience-hubs-disaster-support-during-power-outages/.

[10] SDGE. "Borrego Springs Microgrid." https://www.sdge.com/sites/default/files/documents/2021%20Borrego%20Springs%20Microgrid%20Green%20Hydrogen%20FINAL.pdf?nid=2.

Resources

Borrego Springs

Pratt, Annabelle, and Tom Bialek. 2019. "Borrego Springs Community Microgrid." https://www.nrel.gov/docs/fy19osti/74477.pdf.

Baltimore

Point of Contact: Aubrey Germ, Climate and Resilience Planner for the Baltimore Office of Sustainability (aubrey.germ@baltimorecity.gov; 410-396-5917)

BoS. "The Baltimore City Community Resiliency Hub Program. https://www.baltimoresustainability.org/baltimore-resiliency-hub-program/.

Detroit

Muir, Maegan, Meghan Oesterle, James Pew, and Amber George. "Detroit Resilience Hub Framework." https://deepblue.lib.umich.edu/bitstream/handle/2027.42/172183/EcoWorks%20Detroit%20Resilience%20Hub_399.pdf?sequence=1&isAllowed=y.

University of Michigan. Potential contact: Justin Schott, University of Michigan School for Environment and Sustainability, faculty advisor, former EcoWorks director.

City of Detroit. https://detroitmi.gov/ABFord#:~:text=The%20architecture%20firm%20Inform%20Studio,assisted%20with%20community%20engagement.

Thank You

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