ARTICLE 5.17 Solar & Battery Energy Systems

SECTION 5.17.1: PURPOSE

The purpose of this section is to permit and regulate the installation, maintenance, and decommissioning of Solar Energy Systems (SES) and Battery Energy Storage Systems (BESS) in a manner that promotes sustainability, protects public health and safety, and preserves the aesthetic and architectural character of Lathrup Village.

SECTION 5.17.2: DEFINITIONS

For the purposes of this ordinance, the following definitions apply:

1. Battery Energy Storage System (BESS): One or more permanently installed devices, assembled together, capable of storing and discharging electricity primarily intended to supply electricity to a building or to the electrical grid.
2. Building-Integrated Solar Energy System: A solar energy system that is an integral part of a principal or accessory building or structure (rather than a separate mechanical device), replacing or substituting for an architectural or structural component of the building or structure. Building-integrated systems include, but are not limited to, photovoltaic or hot water solar energy systems that are contained within roofing materials, windows, skylights, and awnings.
3. Commercial Property: Property used for commercial purposes, including retail, office, industrial, and mixed-use zones.
4. Decommissioning: The process of removing and disposing of the solar energy system and associated components, including panels and batteries, at the end of their operational life or when the system is no longer in use.
5. Maximum Tilt: The maximum angle of a solar array (i.e., most vertical position) for capturing solar radiation as compared to the horizon line.
6. Minimum Tilt: The minimal angle of a solar array (i.e., most horizontal position) for capturing solar radiation as compared to the horizon line.
7. Principal-Use Solar Energy System: A commercial solar energy system that converts sunlight into electricity for the primary purpose of off-site use through the electrical grid or export to the wholesale market
8. Repowering: the process of upgrading or replacing components of an existing SES to restore or enhance its capacity, performance, or efficiency. This may include, but is not limited to, the replacement of solar panels, inverters, mounting systems, or other associated equipment.

9. Residential Property: A property used for Residential Purposes, including homes, apartments and other dwellings as permitted by the Zoning Ordinance.

10. Roof-Mounted Solar Energy System: A solar energy system mounted on a racking that is attached to or ballasted on the roof of a building or structure.

11. Solar Carport: A solar energy system of any size that is installed on a structure that is accessory to a parking area, and which may include electric vehicle supply equipment or energy storage facilities. Solar panels affixed on the roof of an existing carport structure are considered a Roof-Mounted SES.

12. Solar Energy System (SES): A photovoltaic system or solar thermal system for generating and/or storing electricity or heat, including all above and below ground equipment or components required for the system to operate properly and to be secured to a roof surface or the ground. This includes any necessary operations and maintenance building(s), but does not include any temporary construction offices, substation(s) or other transmission facilities between the SES and the point of interconnection to the electric grid.

13. Solar Panel: A device or system that captures solar energy and converts it into electricity, including photovoltaic panels installed on roofs, walls, or ground-mounted systems.

SECTION 5.17.3: GENERAL PROVISIONS

1. SES and BESS are permitted in all zoning districts, subject to the requirements of this section.

2. All systems must comply with applicable federal, state, and local laws, including the Michigan Building Code, National Electrical Code, and NFPA standards.

3. All installations require building and electrical permits.

4. BESS installations must be inspected every one to two years and proof submitted to the City. Inspectors shall inspect for:

    a. Emergency Shutdown access;

    b. Setbacks and fire access;

    c. Ensuring all solar panels have micro inverters to allow for panels to operate individually and shut down individually if one has an issue;

    d. Mechanical Ventilation (If applicable- BESS and ventilation standards required)

    e. Compliance with grounding, overcurrent protection and disconnects;
    f. NEC Article 706 (Energy Storage Systems) and 690 (Photovoltaic Systems).

5. Inspections can be performed by:

   a. State-Licensed Electrical inspector, certified under the Michigan Electrical Code (based on the National Electrical Code 2023).

   b. Local Building Official/Building Department, provided an inspection can be scheduled in an adequate timeline.

SECTION 5.17.4: PERMITTED SYSTEMS

1. Roof-Mounted SES

   a. Rooftop Solar Energy Systems (RSES) are permitted as accessory uses in all zoning districts, provided they meet the standards outlined below.

   b. Residential-Use Roof-Mounted Solar Panels may be installed on the roof of a residential primary structure, provided the panels do not extend beyond the edge of the roof surface and do not exceed the height of the existing structure.

   c. Residential Accessory Building RSES Panels may be mounted parallel to the roof surface and not project more than 12 inches above the roof surface, and must not extend beyond the edge of the roof surface.

   d. Commercial-Use Roof-Mounted Solar panels may be installed on the roof of a commercial primary structure, provided the panels do not extend more than 24 inches beyond the edge of the roof surface and comply with building code height limitations.

   e. Commercial Accessory Building RSES: Panels may be mounted at an angle on flat roofs but must be screened from public view with parapet walls or similar architectural features, where feasible. The system may not exceed 10-feet in height above the roof deck.

   f. If located over required parking (i.e., a solar carport), there is no maximum lot coverage. These systems shall not count toward the maximum number or square footage of accessory structures or maximum impervious surface limits if the ground beneath remains impervious.

   g. Front-facing roofs permitted with administrative approval only when side/rear placement is not viable.

2. Wall-Mounted SES
    a. Must be flush with building walls.
    b. Considered accessory uses and do not increase nonconformity.

3. Ground-Mounted SES
    1. Principal-Use Ground-Mounted SES – All Districts: Accessory ground-mounted solar panels are not permitted.

4. Battery Energy Storage Systems (BESS)
    a. BESS must be located in a detached accessory structure and is:
        i. Not visible from the public right-of-way,
        ii. Set back at least 10 feet from all property lines,
        iii. Properly enclosed and ventilated for safety.

5. If installation in a detached structure is not feasible due to site constraints, the BESS may be installed within an attached garage, provided it:
    a. Is mounted on an exterior wall,
    b. Includes appropriate air filtration and ventilation systems,
    c. Is reviewed and approved by the Building Official for safety compliance.

6. Outdoor BESS may be permitted if:
    a. Located at least 10 feet from any property line,
    b. Properly screened from neighboring properties and public view with landscaping or fencing,
    c. Clearly marked as containing electrical equipment,
    d. Compliant with applicable setbacks and fire safety codes.

7. Not permitted in basements or below-grade areas.

SECTION 5.17.5: SAFETY AND STRUCTURAL STANDARDS

1. All systems must be designed per engineering standards and applicable codes.
2. All SES and BESS installations must comply with the Michigan Building Code, including, but not limited to:
    a. Structural load requirements (wind, snow, seismic),
    b. Anchorage and uplift resistance,

c. Frost protection and foundation standards.

3. Rooftop solar systems shall not compromise the structural integrity of the roof and may require certification by a licensed structural engineer, as determined by the Building Official. Structural certification may be required at Building Official's discretion.

4. Emergency Services Application

   a. All rooftop solar energy systems shall be installed in compliance with NFPA 1, IFC, and the Michigan Residential Code, which require:

      i. Minimum clearances from roof edges and ridgelines of 36 inches.

      ii. Pathways for firefighter movement, minimum 36-inch-wide unobstructed walking paths.

      iii. No panels shall be installed over roof vents, skylights, or access hatches.

2. Systems installed on townhouses, multifamily buildings, or commercial structures require review and approval of the Fire Department.

3. All SES and BESS installations must be labeled at main service entrances and disconnects with durable placards stating:

   a. Presence of solar and/or battery systems,

   b. System voltage and shutoff locations,

   c. Name and emergency contact of the installer or system owner.

   d. Placards shall be weather-resistant, at least 6 inches by 6 inches, and located in accordance with NFPA 70 and NEC Article 690 requirements.

SECTION 5.17.6: AESTHETIC AND VISUAL INTEGRITY

1. Visible system components must match the color of roof/building.

2. Rear or side roof installations required for residential use, unless otherwise approved pursuant to section 5.20.4.3.

SECTION 5.17.7: HISTORIC AND DESIGN DISTRICTS

1. Any SES or BESS installation within a historic or design review district shall be subject to review and approval by the Historic District Commission (HDC) or Design Review Board, as applicable.

2. Applicants must submit:

   a. A site plan or roof layout showing proposed system placement,

b. System specifications (color, mounting style, panel finish),

c. Photographic documentation of the existing conditions,

d. A visibility analysis, where requested.

3. The Commission or Board shall review applications for conformance with:

   a. The City's Historic District ordinance,

   b. Design guidelines or overlay standards,

   c. The Secretary of the Interior's Standards for Rehabilitation, where applicable.

4. Design Compatibility Standards

   a. Systems should be installed in locations that minimize visibility from the public right-of-way.

5. Preferred placement includes:

   a. Rear-facing roof planes,

   b. Detached accessory structures.

6. Where front-facing or highly visible installations are proposed due to site constraints, systems must:

   a. Be integrated into the building form or roofline,

   b. Use low-profile panels with matte or non-reflective finishes,

   c. Match or complement existing materials and colors.

SECTION 5.17.8: DECOMMISSIONING AND REPOWERING

1. SES and BESS must be removed at the end of life or when no longer in use.

   a. Abandonment of Use

      i. The system fails to produce energy or demonstrate regular use for a continuous period of 12 consecutive months, unless the property owner provides documentation of an ongoing maintenance or repair plan approved by the City.

2. Zoning or Site Use Changes

a. The property undergoes a change in zoning, use, or ownership that renders the system noncompliant with applicable regulations, and no variance or special land use approval is granted.

3. A decommissioning plan is required for all principal-use systems.
    a. Component Removal Plan
        i. Description of how all SES and BESS components will be dismantled and removed, including panels, mounting hardware, foundations, underground wiring, fencing, and battery systems.
4. Site Restoration Plan must include:
    a. Removal of concrete or gravel pads unless repurposed,
    b. Grading and backfilling where needed,
    c. Topsoil replacement and revegetation with native or approved ground cover.
    d. Name and contact information of the party responsible for carrying out the decommissioning.
5. Removal and Restoration Standards

Upon decommissioning, the following components shall be fully removed from the site unless otherwise approved by the City:

a. Above-Ground Equipment
    i. Solar panels, racking, support structures, fencing, inverters, batteries, and accessory electrical components.
b. Below-Ground Infrastructure
    i. Foundations, mounting poles, and underground conduit or wiring must be removed to a depth of at least three feet below grade, unless the City permits otherwise due to safety, environmental, or reuse considerations.
c. Utility Connections
    i. All utility connections shall be disconnected and removed in accordance with utility company and electrical code requirements.

6. Permitting Requirements
    a. Repowering activities that involve changes to the physical footprint, system height, location, or visual impact (e.g., panel relocation, racking changes) shall require submission of updated site plans and a zoning review.

b. If repowering includes only internal component swaps (e.g., inverter replacement, panel-for-panel upgrades of the same size and placement), a building and/or electrical permit may be required, but zoning approval is not unless specified by the Building Official.

c. In all cases, repowered systems must comply with the current Michigan Building Code, NEC, and NFPA safety standards