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Solar Model Ordinance and Guide

Contents

Introduction

This Solar Model Ordinance and Guide is intended to assist local planning authorities (LPAs) with the development of their own ordinances and regulations for land use for ground-mounted utility-scale solar energy systems. This ordinance is provided as a template for LPAs to adapt based on their local processes and requirements and does not substitute for zoning regulations that identify the proper locations and regulations that address solar energy systems from a land use perspective. There is no obligation for any LPA to adopt the solar ordinance as written.

Projects will still require local approvals, including but not limited to construction permits from fire code officials and construction permits from local building departments. Additional approvals — such as a Coastal Development Permit — may also be necessary depending on the project location. Jurisdictions are encouraged to involve relevant local authorities and stakeholders when tailoring this ordinance for adoption.

The rest of this section provides background on the following: 1) an overview of the solar permitting process; 2) an overview of the code adoption cycles related to solar; 3) the code adoption process, and; 4) using the Solar Model Ordinance and Guide. This background is provided to provide context for topics that come up throughout the solar ordinance template, which addresses the installation, operation, maintenance, and decommissioning of a solar energy system (a definition of solar energy system is provided in the "Applicability" section).

Overview of Local Ordinance Adoption Process

The adoption of a land use ordinance is guided by specific procedural requirements managed by LPAs in compliance with relevant California laws and regulations. A brief summary of common steps in the code adoption process is outlined below:

1. Formal initiation process: The process for developing and adopting an ordinance is often initiated through a resolution of intention issued by the local planning department or a request from the local Board of Supervisors, City Council, or other similar governing body
2. Staff proposal: The planning department issues a proposal for an ordinance
3. CEQA compliance: Any discretionary action or permit is required to submit an Environmental Impact Report (EIR) as defined by the California Environmental Quality Act (CEQA). Ordinance adoption is a discretionary action and therefore must undergo a CEQA-compliant EIR process. A full environmental review under CEQA may not be needed if the relevant local planning authorities issue a Negative Declaration or Mitigated Negative Declaration of significant impacts
4. Public hearings: A minimum of two public hearings must be held during the ordinance adoption process
    a. Planning level public hearing: The planning department makes its recommendation regarding ordinance adoption and discusses the EIR findings
    b. Board of Supervisors/City Council public hearing: The Board of Supervisors, City Council, or other similar governing body considers the environmental findings and approves (or rejects) the ordinance

LPAs may have additional processes, such as meetings or additional public hearings, that are included or required as part of the ordinance adoption process.

Using the Solar Model Ordinance and Guide

Sections of this document in ***'italics'*** may be adopted into a local ordinance. Specific names, titles, or selected values that should be tailored to the adopting jurisdiction are indicated in brackets (e.g., [County/City/Town]). Sections in blue call-out boxes provide informational background and context for use by LPAs as they develop a solar ordinance. Ordinance regulations and additional context were developed in consultation with local planning authorities, developers, state agencies, and permitting lawyers through a series of one-on-one interviews, focus groups, and written comments. However, regulations provided within this document may not be comprehensive enough to meet all needs of an LPA. Local officials should solicit legal and regulatory advice from their own teams to ensure compatibility with local laws and regulations.

Acronym Table

BANC	Balancing Authority of Northern California
BESS	Battery Energy Storage System
BTM	Behind-the-meter
CAISO	California Independent System Operator
CEQA	California Environmental Quality Act
COD	Commercial Operation Date
EIR	Environmental Impact Report
ESS	Energy Storage System
IID	Imperial Irrigation District
LADWP	Los Angeles Department of Water and Power
LGIP	Large Generator Interconnection Procedures
LPA	Local Planning Authority
NFPA	National Fire Protection Association
OEM	Original Equipment Manufacturers
PV	Photovoltaics
ROW	Right-of-way
SES	Solar Energy System
SGMA	Sustainable Groundwater Management Act
SMUD	Sacramento Municipal Utility District
TID	Turlock Irrigation District
WAPA	Western Area Power Administration

Definitions

Note: Definitions should be reviewed for applicability to local use as well as changing solar technology.

Agricultural land: as defined by the California Land Conservation Act ("Williamson Act"), agricultural land is "land that is used for the purpose of producing an agricultural commodity for commercial purposes, including but not limited to food, fiber, or fuel".

Authority Having Jurisdiction: government agencies, departments, or officials that are legally empowered to review, approve, and enforce compliance with applicable laws, codes, and regulations. In the renewable permitting process, this may include local planning departments, local building departments, local and state fire officials, and/or state agencies.

Battery energy storage system (BESS): See Energy Storage System (ESS). BESS refers specifically to chemical energy storage systems utilizing electrochemical cells to store and discharge electrical energy.

By-Right Permit: A permit that is issued based on existing zoning code and fixed standards or objective measurements. Public officials cannot use personal, subjective judgment in deciding whether or how the project should be carried out. Similar to "Ministerial Permit" in that both have a fixed process for issuance.

Conditional Use Permit: A type of discretionary permit that requires review and approval from the applicable local jurisdiction, such as planning commission or zoning board.

Construction Period: Period during which project has issued Notice to Proceed to start construction on the solar energy system, but prior to the start of the Operating Period.

Energy Storage System (ESS): One or more devices, assembled together, capable of storing energy to supply electrical energy at a future time. ESS may include batteries, control systems, inverters, safety systems, metering, and other associated components.

Ground-mounted solar energy system: A solar energy system designed to generate electricity that is mounted to the ground using a pole, ballast, or other support structure and is not attached to any building or structure.

Kilowatt (kW): A unit of power used to measure energy equal to 1,000 watts.

Local Planning Authority: The local government agencies, departments, or officials that are legally empowered to review, approve, and enforce land use-specific laws, codes, and regulations.

Megawatt (MW): A unit of power used to measure energy equal to 1,000,000 watts.

Nameplate capacity: The maximum electric power output of an energy system. Nameplate capacity can be output under optimal conditions, but may not reflect real-time output when operating in sub-optimal conditions.

Nonparticipating property: Property in which the owner has not entered a written agreement with the solar energy system facility owner to allow the facility owner to lease or purchase part or all of their property.

Operating Period: Period following the SES Facility's [Commissioning Date / In-Service Date], as determined by CAISO.

Participating property: Property in which the owner has entered a written agreement with the facility owner to allow the facility owner to lease or purchase part or all of their property.

Roof-mounted solar energy system: A solar energy system designed to generate electricity that is installed on the roof of a legally permitted building or structure.

Setback: The minimum required distance that a solar energy system must be installed from a specified boundary.

Solar energy system (SES): A system that converts sunlight into electrical energy.

Solar panel: A device used in solar energy systems to convert sunlight into electrical energy.

Solar photovoltaic (PV) system: A solar energy system that uses photovoltaic cells to convert sunlight into electrical energy.

System height: The height of a solar energy system as measured from the ground to the top of the solar equipment.

Applicability

Requirements of this Ordinance are to apply to commercial or utility-scale Solar Energy Systems ("Facilities") with a rated nameplate capacity greater than or equal to 20 MWac, permitted, constructed, or commissioned in [County/City/Town] after the effective date of this Ordinance.

A single Facility shall include any infrastructure included, but not limited to, electricity-generating equipment, mounting structures (piles), transformers, inverters, trackers, collection systems, operating and maintenance buildings including SCADA systems and control towers, substations, and access roads designed to support delivery of electricity across a single gen-tie route to a single point of interconnection within California on the CAISO, LADWP, WAPA, BANC, SMUD, PacifiCorp, TID or IID network.

This ordinance does not apply to the maintenance or repair of Facilities permitted and/or installed prior to the effective date. This ordinance does not apply to repowerings within the existing footprint of the project site. Facilities may be repaired and/or repowered without obtaining a new or amended use permit, provided that the repair and/or repowering is substantially conformant, as defined in [local General Plan], to the intent of the original permit.

This ordinance applies to ground-mounted solar energy systems only. This ordinance does not apply to roof-mounted solar energy systems. This ordinance does not apply to any battery energy storage systems that are paired with solar energy systems, but does apply to any solar components of a hybrid system. This ordinance does not apply to behind-the-meter (BTM) solar energy systems. This ordinance does not apply to the maintenance or repair of facilities permitted and/or installed prior to the effective date.

[County/City/Town Planning Department] must provide public notice, published on the [County/City/Town website or other form of notification], at least [180] days in advance of any changes to use permit requirements. The notice does not need to include specific details of the upcoming changes, only that the requirements will be changing.

Applicability Threshold Commentary: This ordinance is intended to be applicable to all solar energy systems greater than or equal to 20 MWac. The 20 MWac size minimum was selected to align with the threshold at which solar projects are required to submit interconnection application requests through the CAISO Large Generator Interconnection Procedures (LGIP).

Existing Requirements in Local Code/Ordinances Commentary: It is possible that local code/ordinances already address thresholds and processes for modifications. If this threshold for modifications is already covered, that language may not be needed in the solar ordinance.

Notice of Upcoming Code Changes Commentary: By providing public notice of upcoming code changes (suggested 180 day notice above), LPAs will give developers advanced warning that projects under review will be subject to revised regulations. This may be covered through the formal initiation process that is outlined in the "Overview of Local Ordinance Adoption" section above. Based on this notice, developers may wait to submit an application to avoid encountering regulations that have changed after application submission. Developers are still encouraged to engage early with LPAs even if a notice of upcoming code changes has not been issued to align the preparation of a permit application with any anticipated code revisions and avoid time-consuming or costly design changes.

Substantial Conformance Commentary: Both during the development phase prior to construction and during any repairs or major maintenance periods after construction, it is common for solar developers to make small modifications to the project area and footprint to accommodate situations including (but not limited to) changes in equipment supply, title insurance requirements, any applicable environmental mitigation measures, and access road needs. In many cases, solar developers are required to submit revised land use permit applications when undergoing these minor modifications. To improve the efficiency of permitting and minimize iteration between planning staff and developers, LPAs should use a definition of substantial conformance that would allow for minor deviations that do not materially change the intent of the original land use permit approval. Examples of substantial conformance may include:

- An increase in the site footprint by up to [10%], provided the project remains compliant with the setback conditions of the underlying zoning district and the expanded site does not contain sensitive receptors
- An increase in the height of structures by up to [10%], provided the project remains compliant with the height restrictions of the underlying zoning district
- Changes in the layout and orientation of equipment, provided the project remains compliant with the setback conditions of the underlying zoning district
- Any other change that reduces the overall environmental impact of the project

Local General Plans may already include a definition of substantial conformance that is applicable to solar. If such definition is not already included or a modified definition is needed for solar, LPAs can add one to the above ordinance language.

Permit Types and Application Requirements

Discretionary vs. Ministerial Permit by Land Use Classification

Solar permits may be awarded on a discretionary or ministerial basis through an application for a Use Permit, depending on the existing land use designation of the project site footprint. The table below outlines the permit type (discretionary or ministerial) by land use classification.

Table 1. Permit Type by Land Use Classification

Land Use	Permit Type
Residential	Discretionary
Commercial (Neighborhood Commercial and General Commercial)	Discretionary
Commercial (Regional Commercial and Planned Commercial)	Ministerial (Permitted / Zoning Clearance)
Industrial	Ministerial (Permitted / Zoning Clearance)
Degraded or nonproductive agricultural lands	Ministerial (Permitted / Zoning Clearance)
Agricultural (other than degraded or nonproductive lands)	Discretionary
Mixed-Use	Discretionary
Public Lands / Open Space / Recreation	Discretionary

If projects sited across multiple parcels with different land use designations include any parcels that require a discretionary permit, the project must pursue a discretionary use permit; if all parcels are eligible for a ministerial permit, then the project may pursue a ministerial permit.

Permit Terminology Commentary: The terminology "Discretionary" is used above but LPAs may adjust to use the terms "Conditional" or "Special Use" depending on the terminology preferred in their jurisdiction. The terminology "Ministerial" is used above but LPAs may adjust to use the term "By-Right" depending on the terminology preferred in their jurisdiction.

Some California jurisdictions divide ministerial permits into two categories - "Permitted Uses," referring to structures that can be constructed outright, and "Zoning Clearance," referring to structures that must go through an administrative review process to confirm alignment with existing land use regulations. Either one may be appropriate for solar under certain land use classifications, depending on LPA preferences around site plan review.

Overview of Rationale for Discretionary and Ministerial Permitting for Solar Commentary: Both ministerial and discretionary permits require compliance with existing codes and regulations. Both permit types can require environmental review, aesthetic guidelines, and additional safety requirements, depending on criteria outlined for each permit type.

Discretionary permits require projects to go through the California Environmental Quality Act (CEQA) process for determining environmental impact. Projects may not require a full Environmental Impact Report (EIR) under CEQA if the project is issued a Negative Declaration or Mitigated Negative Declaration of significant impacts, meaning the project would undergo a relatively simpler environmental review process. Discretionary permits also require approval from a predesignated local approval body, often a County Board of Supervisors, for projects requiring a full EIR. Discretionary permits may be required in areas where LPAs want to exercise discretion in allowing a solar project to be built.

Ministerial permits offer a streamlined permitting process that is insulated from discretion and that does not go through the CEQA process.[1] Ministerial permits are issued by-right if the project satisfies all pre-defined criteria for permit application completeness. Pre-defined criteria can include environmental, safety, and aesthetic requirements and require LPA review of the project application to deem whether the permit application meets all criteria and is "complete." Ministerial permits may be appropriate for zones in which LPAs are comfortable with land use compatibility with the project type. Allowing by-right construction of solar predesignated regions can help LPAs direct developers towards selecting project locations viewed as most amenable for solar development. Although CEQA is not required for ministerial permits, a thorough environmental review process can still be required as a base condition and conducted on a programmatic basis across any tracts eligible for a ministerial permitting designation.

Rooftop solar installations are eligible for ministerial permits, even in residential zones. This guide, however, focuses on large-scale renewables that may not be as well-suited for ministerial permits in all land use zones.

Examples of Ministerial Permitting for Energy and Industrial Infrastructure Commentary: Permitting standards for solar and other clean energy infrastructure should generally align with existing standards for public utility or other energy infrastructure. Ministerial permitting already exists for energy and industrial infrastructure in many zoning districts across California. For example:

- Kings County allows the development and construction of oil and gas wells by-right in industrial and agricultural zones.
- Sacramento County allows major utility uses by-right in commercial, industrial, agricultural, and recreation zones (see Table 3.1-F). These are defined in Chapter 7 of the Zoning Code as "generating plants, electrical substations, above ground electrical transmission lines, refuse collection or disposal facilities, water reservoirs, water or wastewater treatment plants, and similar facilities of public agencies or public utilities."
- Los Angeles County allows electric generating stations with a "ministerial site plan review" in industrial zones M-1.5, M-2, and M-2.5 (see Table 22.22.030-B), meaning these projects can be approved by-right after the completion of a defined set of pre-application criteria is verified.

It is important to note that some energy-related uses retain discretionary elements in the approval process despite their ministerial classification in the zoning code. For example, the CEC retains exclusive discretionary permitting authority for thermal generating stations larger than 50 MW. That said, there is clear precedent for classifying energy uses as ministerial at the land use level.

[1] Ministerial permits do not have to go through the CEQA process, unless any environmental impacts are identified as part of the pre-application process that would trigger discretionary review at the state level (in which case, the project would go through the discretionary permitting process) (CA Code of Regulations Tit. 14, § 15268).

Alternative Pathways to Ministerial Permitting for Sola Commentary: An alternative solution to establishing an entire land use type as eligible for ministerial permits that would also provide LPAs with the ability to classify particular tracts as suitable for solar development is the creation of a solar overlay or combining district, which would sit on top of existing zoning designations and create special allowances for solar construction that abides by certain development standards included in the ordinance.

There is some precedent for using overlay or combining districts to streamline renewable energy development in California. Kern County's Wind Energy Combining District, for example, allows for the by-right construction of wind energy systems that comply with a defined set of base conditions. The county retains discretion over the boundaries of the district, which ensures that new developments comply with these conditions.

Industrial Land Use Permits Commentary: Industrial zones are generally well-suited to accommodate utility-scale infrastructure due to their existing land use designations and supporting infrastructure, although many industrial zones may lack the contiguous area coverage required to support utility-scale solar energy facilities. Industrial zones are also likely to be in areas with less sensitive habitat and wildlife, therefore making it appropriate to conduct an environmental review at the local level rather than through CEQA.

Residential Land Use Permits Commentary: In contrast to industrial land uses, residential areas are primarily intended for housing and different types of dwellings, meaning that siting solar facilities in these areas may warrant a greater degree of discretion to ensure compatibility with existing uses.

Commercial Land Use Permits Commentary: Commercial zones can vary in terms of density and allowable uses, with many LPAs differentiating between high-density commercial areas in city centers or adjacent to residential uses and lower-density commercial areas located off of freeways or arterial roads. LPAs should consider the underlying land use designations governing commercial development to determine the correct approach for permitting solar in these zones. For example, a project located in a central neighborhood with proximity to residential and mixed-use spaces may warrant discretionary review, while a project located in a freeway-adjacent industrial park in proximity to a utility substation may be better suited for ministerial review.

It is worth noting that AB 130 and SB 131, which were signed into law in June 2025, require the California Office of Land Use and Climate Innovation to develop a map of urban sites that will be eligible for streamlined CEQA review for infill housing by no later than July 1, 2027. In any industrial or commercial zones where ministerial permitting may be appropriate for solar development, LPAs should ensure that appropriate setbacks from residential uses are incorporated as base conditions for land use permit applications.

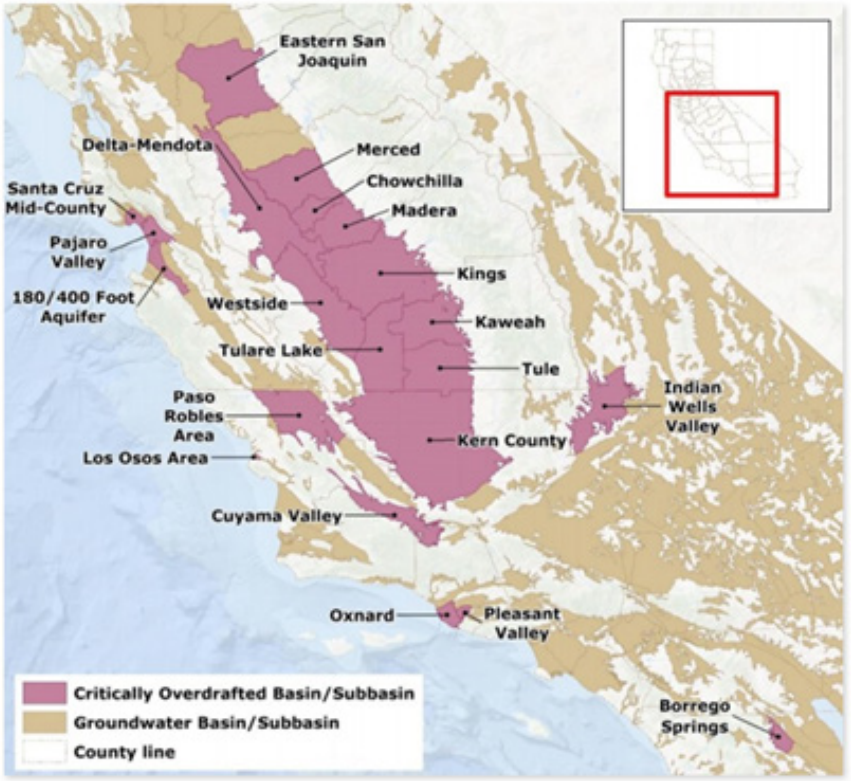
Agricultural Land Uses Permits Commentary: The table above recommends making degraded or nonproductive agricultural lands eligible for ministerial permits; because these lands are degraded or nonproductive, there are reduced opportunities for agricultural activities and renewables may be deemed as compatible uses. Clean energy projects, unlike other types of commercial or industrial developments, are temporary installations and lands used for these projects can be reverted back to their pre-project state at the end of the project's useful lifetime, typically 25-35 years. This may, in some cases, allow for the degraded or nonproductive land to recover and be used again for agricultural activities after the useful life of the project. Renewables may also be favorable for degraded or nonproductive lands to allow landowners an alternative means of income while their land cannot be used for agricultural activities.

The definition of "degraded or nonproductive" should be determined by each LPA based on their familiarity with the local land types and uses. For example, Kings County developed its own definitions of priority agricultural land to provide guidance to solar developers on preferred site locations (See Sec. 1112). Several options for agricultural land types that could be eligible for ministerial permits are discussed below.

Options for Agricultural Lands Eligible for Ministerial Permits - SGMA Lands

One option that LPAs could reference in defining "degraded or nonproductive lands" eligible for ministerial permits is the Sustainable Groundwater Management Act (SGMA) of 2014. These lands, which have typically been identified as critically overdrafted basins by the California Department of Water Resources, may be well-suited for solar development given reduced opportunities for irrigation and agricultural uses and the temporary nature of solar installations to enable resuming agricultural activities after the useful lifetime of the solar project if water levels have been restored. The figure below provides a map of basins that are designated as critically overdrafted in California.

Figure 1. SGMA Critically Overdrafted Basins[2]

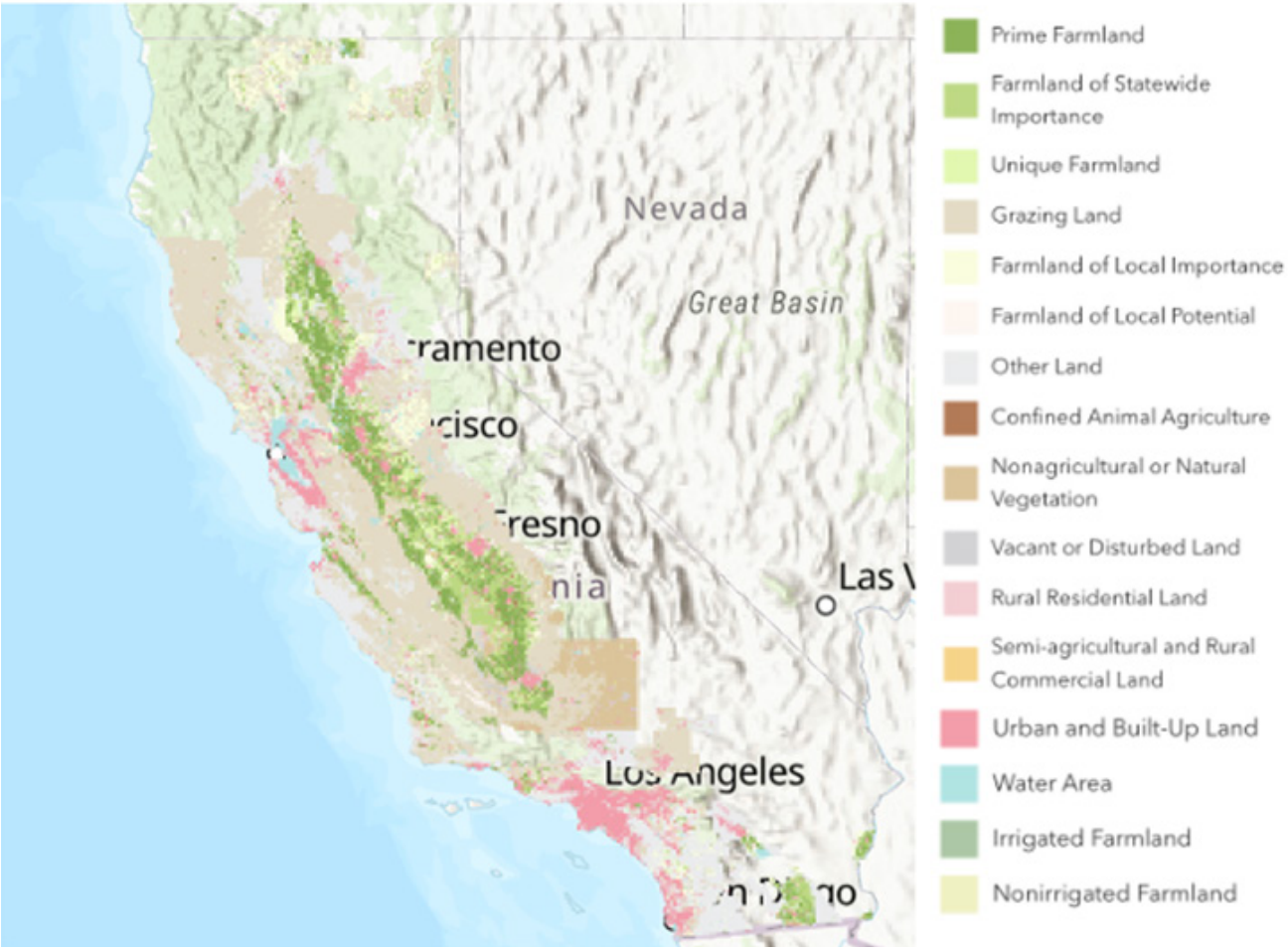


[2] California Department of Water Resources. Critically Overdrafted Basins. https://water.ca.gov/programs/groundwater-management/bulletin-118/critically-overdrafted-basins.

Options for Agricultural Lands Eligible for Ministerial Permits – CA Department of Conservation Agricultural Land Classifications

Another option that LPAs could reference in determining agricultural lands eligible for ministerial permits are the agricultural land classifications from the California Department of Conservation.[3] Prime Agricultural Land, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are deemed particularly well-suited for agricultural activities and therefore may warrant a discretionary permit to ensure compatibility between solar and existing land uses. If LPAs determine that other agricultural lands beyond those listed are compatible with solar, those projects could be made eligible for ministerial permits. The map below illustrates agricultural land use classifications as defined by the California Department of Conservation, as of the 2022 Farmland Conservation Report.

Figure 2. California Department of Conservation Land Use Classifications



Mixed and Public Land Use Permits Commentary: Mixed-use and public lands represent special cases and should also be evaluated with greater scrutiny, given their diverse functions and heightened public interest. "Open Space" is included with public lands and recreation in the table above to require a discretionary permit. Based on local General Plans,[4] LPAs may assess whether "Open Space" lands may be eligible to receive a ministerial permit.

[3] California Department of Conservation. Important Farmland Categories. https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx.

[4] Local General Plans refers to the foundational long-term planning documents that counties and cities in California are required to adopt per California Government Code §65300

Application Requirements

Overview of Application Requirements Commentary:

Application requirements are divided into the following categories in this section:

1. Pre-application Conditions for Ministerial Permits
2. Application Conditions for Discretionary Permits
3. Conditions of Approval for Use Permits (Ministerial and Discretionary)
4. Additional Considerations for Use Permits (Ministerial and Discretionary)

Applications for both ministerial and discretionary permits should include detailed project information and site plans, an assessment of environmental and cultural impacts, and any mitigation plans that may be required based on the results of these assessments. A key difference between ministerial and discretionary permit requirements is the timeline of submission of some materials. Projects eligible for a ministerial permit submit all documentation required for approval along with permit application; because this documentation is prepared ahead of the application, these materials are referred to as "pre-application conditions."

Discretionary permits, on the other hand, involve an ongoing review process led by the LPA in accordance with CEQA with some elements of the application process, including public hearings and the preparation and submittal of environmental reports taking place after the permit application is submitted and prior to the LPA's issuance of discretionary approval. Therefore, materials for a discretionary permit are referred to as "application conditions."

Pre-Application Conditions for Ministerial Permits

An application for a ministerial land use permit shall include the following information:

1. A project summary, including, to the extent available:

A. A narrative description of the project including relevant context in non-technical terms and including the project location

B. A description of the applicant, project owner and operator; including the names, addresses, and phone numbers of the applicants, owners and operators

C. Total nameplate generating capacity of the SES facility

D. Typical Original Equipment Manufacturers (OEMs) of key project components (modules, inverters, racking system)

E. Electrical diagram detailing the system layouts and interconnection

F. Property lines and physical features, including roads, for the project site.

G. Proposed changes to the landscape of the site, including site grading, vegetation clearing and planting, the removal of any large trees, access roads, exterior lighting, signage, fencing, landscaping, and screening vegetation or structures

H. The maximum height of the solar modules

2. A preliminary site plan for the installation of the SES facility showing:

A. The planned location of each of the primary structures

B. Property lines (including identification of adjoining properties), setback lines, public access roads and turnout locations

C. Substation(s), including electrical cabling from the solar modules to the substation's ancillary equipment, proposed options for intertie transmission lines from the facility to the utility substation with clearly identified county or city-maintained roads, public or private access easements

Note: public access easements, including use of public road rights-of-way, may require the processing of a franchise agreement)

D. Layout of all structures within the geographical boundaries of any applicable setback

3. A summary of the community outreach and education efforts undertaken and planned by the applicant, including a description of any public meetings and / or meetings with elected officials

4. Any reports, approvals or requirements demonstrating compliance with any mitigation measures incorporated into an environmental document (such as a programmatic EIR) adopted for the implementation of ministerial permitting for specific parcels

5. Demonstration that the project will not present adverse environmental impacts incremental to those already contemplated in the environmental document (such as a programmatic EIR) adopted for the underlying zoning district. This may include the preparation of resources such as:

A. Phase I Environmental Site Assessment

B. Cultural Resources Survey

C. Traffic Impact Assessment

D. Geotechnical Survey

6. Any other information required by the [County/Town/City] as part of its zoning regulations, including all studies, reports, certifications, and approvals demonstrating compliance with the provisions of all applicable federal, state, and local regulations

Application Conditions for Discretionary Permits

An application for a discretionary land use permit shall include the following information:

1. A project summary, including, to the extent available:

A. A narrative description of the project including relevant context in non-technical terms and including the project location

B. A description of the applicant, project owner and operator; including the names, addresses, and phone numbers of the applicants, owners and operators

C. Total nameplate generating capacity of the SES facility

D. Typical Original Equipment Manufacturers (OEMs) of key project components (modules, inverters, racking system)

E. Electrical diagram detailing the system layouts and interconnection

F. Property lines and physical features, including roads, for the project site.

G. Proposed changes to the landscape of the site, including site grading, vegetation clearing and planting, the removal of any large trees, access roads, exterior lighting, signage, fencing, landscaping, and screening vegetation or structures

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Note: public access easements, including use of public road rights-of-way, may require the processing of a franchise agreement)

D. Layout of all structures within the geographical boundaries of any applicable setback

The preparation and submission of an EIR as well as any required public hearings should take place in accordance with any regulations or requirements established under CEQA.

Conditions of Approval for Use Permits (Ministerial and Discretionary)

Both ministerial and discretionary use permits should be awarded conditional upon the complete submission of the following safety and operational plans prior to receipt of a construction permit:

1. Signatures from all surface property owners on which the SES facility is located

2. Stormwater assessment including a Stormwater Pollution Prevention Plan to minimize, mitigate, and repair any impacts to site drainage during site preparation and project construction

3. Vegetation management plan (construction and operations)

4. Decommissioning Plan complying with the requirements of the "Decommissioning Plan" section of this ordinance

Conditions of Approval for Use Permit Commentary: Several assessments or plans, including a Stormwater Pollution Prevention Plan, Vegetation Management Plan, and Decommissioning Plan, are covered in construction permit requirements and are therefore not needed in a use permit. However, local planning authorities and developers indicated in focus group feedback that inclusion of these requirements in a use permit application as a condition of approval can provide reassurance to the public of the enforcement of these requirements.

In practice, conditions of approval would enable LPAs to issue conditional approval of a use permit; that approval would be revoked or finalized after issuance of a construction permit. Because conditions of use permit approval are structured such that meeting construction permit requirements would satisfy these conditions of approval, it should never be the case that a construction permit is issued by use permit conditions of approval are not met.

LPAs may have their own process for adding conditions of approval to issuance of a use permit, in which case those processes can be followed for these requirements. Ordinance language for LPAs without their own process for adding conditions of approval is suggested in the relevant sections. LPAs should still solicit legal and regulatory advice from their own teams to ensure compatibility of conditions of approval.

Additional Considerations for Use Permit Conditions (Ministerial and Discretionary)

An application for a discretionary or ministerial use permit may optionally include the following information:

1. ***Status of interconnection request (e.g. Phase I Study, Phase II Study, Interconnection Agreement or queue number).***

Optional Status of Interconnection Queue Commentary: LPAs may optionally request that developers provide the high-level status of their interconnection request. This would be particularly appropriate for LPAs that receive a large number of permit applications to help prioritize the order of application review. For projects requesting interconnection through CAISO, this information could include indication of which phase of the interconnection process the project is in (e.g. Phase I Study, Phase II Study, Interconnection Agreement) or queue number.

The further along a project is in the CAISO interconnection process, the more likely the project is to come online if granted a permit; therefore, this information can help LPAs understand the likelihood for projects to come online if granted a permit and more accurately assess the cumulative land use impacts of all clean energy permit requests in their jurisdiction. Projects in the interconnection queue get whittled down due to several factors, such as if study results find that prohibitively expensive upgrades are required to bring the project online. Under its Interconnection Process Enhancements, CAISO also caps its interconnection studies to 150% of the available and planned transmission capacity in specific zones. Project scores, based on commercial interest, project viability, and system need, are used to inform the order in which projects are advanced into the study and any projects that do not fit in the 150% capacity are withdrawn from the queue. Due to this nature of projects getting whittled down in the interconnection queue, developers also tend to submit interconnection requests for more projects than they anticipate developing; this further exacerbates the artificial inflation of projects in the queue and potentially also the projects requesting use permits from local planning authorities.

However, it is worth noting that interconnection queue status can change quickly; for example, the withdrawal of other projects from the study process can impact the status of any particular project in the queue. Therefore, interconnection queue status alone should not be relied on for assessing the timeframe for when a project could begin construction.

Notice of Withdrawal of Interconnection Request Commentary: A best practice for developers is to notify an LPA as soon as their project is withdrawn from the queue. If developers do not proactively notify LPAs, LPAs could also periodically request updated interconnection queue status for projects that have submitted permit applications.

Pre-Application Meetings Commentary: A best practice is for LPAs to offer and/or encourage developers to participate in pre-application meetings to facilitate the preparation of the application. Pre-application meetings can help avoid incomplete or improperly prepared applications, which can cause permitting delays by requiring revisions or curative work.

Permit Fees

Local resolutions governing permit fees and review costs should be updated to include SES upon adoption of this ordinance. Permit fees must be set by the relevant [County/City/Town Planning Department] and should generally be capped at the actual cost of application review.

Permit Fees Commentary: The above ordinance language generally recommends permit fee costs be roughly equivalent to the cost of application review, but does not prescribe a method for setting permit fees. Local planning authorities who participated in interviews and focus groups recommended real-time billing as one method to determine the actual cost of application review. Real-time billing by LPAs would charge for time spent on reviewing a submitted application. An applicant must submit a deposit upfront and that deposit will go towards paying for local permitting staff time for application review. If the full deposit is not spent, the remaining amount will be returned to the applicant. If the cost to review nears the deposit amount, the local permitting staff would alert the applicant and determine if an additional deposit is needed. If LPAs prefer other methods besides real-time billing, they should use any alternative methods best suited for their staff and systems.

Design Standards

Maximum Height

Ground-mounted solar installation systems shall have a maximum height, measured at the maximum tilt angle for a tracking system and/or the highest point of a fixed-tilt system, of [15 or 25′ ft].

Purpose of Maximum Height Restrictions Commentary: Maximum heights are typically required for fire and structural safety considerations. Maximum heights are also often incorporated for minimizing visual impact or other aesthetic reasons.

Options for Maximum Height Commentary: This Guide provides two options for maximum height of SES and outlines the use cases for each maximum height option. These two options are summarized in the table below.

Table 2: Options for Maximum Height for Solar Energy Systems

Maximum Height	Use Cases of Maximum Height
15′	Potentially for some community solar projects or urban uses (but these may be below the size threshold for the model ordinance)
25′	All other use cases

Ground-mounted solar installations have a maximum height that is automatically adjusted throughout the day so that the panels can track the sun's movement. The maximum height of panels rarely exceeds 15' based on panel design (primarily panel spacing design), which is less than the height than a two-story home.

A height limit of 15' may be appropriate for projects located in zoning districts that include similar height limits for other types of infrastructure. Otherwise, while it is exceedingly rare that a solar project using commercially available PV module technologies would exceed 15' height, it may be useful to allow for additional buffer to account for extenuating factors such as additional pile height required for geotechnical support, or future repowerings using panels larger than existing commercially available technologies.

Setbacks

SES shall comply with the setbacks outlined in the table below.

Table 3: Setback Recommendations

Participating Property Lines	Distance to properties participating in the project	None
Participating Residences	Distance to residences participating in the project	None
Nonparticipating Property Lines	Distance to adjacent properties not involved in the project	50', subject to landowner waiver
Nonparticipating Residences	Distance to adjacent residence not involved in the project	[100' - 250'] measured from nearest edge of the perimeter fencing of the Facility to the outside wall of the residence, or 200' without a vegetation buffer, subject to landowner waiver
Occupied Community Structures	Distance to schools, hospitals, or other structures regularly occupied by community members	75' measured from nearest edge of the perimeter fencing of the Facility to the outside wall of the residence
Roads and Railways	Distance to public transportation routes	None
Public Roads or Railways ROW	Rights of way reserved for future public works such as road expansion or repaving, connection of new water delivery or sewage infrastructure, or new gas pipelines	50' measured from nearest edge of the perimeter fencing of the Facility to nearest edge of the ROW
Environmental Hazards	Distance to identified environmental hazards or contaminants	None
Agricultural Zones	Land used for agricultural purposes	None

Purpose of Setbacks Commentary: Setbacks are the minimum allowable distance between the SES and nearby buildings, structures, or property lines. Setbacks are an important tool that LPAs can use to ensure that land will be used in a way that is safe and acceptable to the local community. Setbacks can serve additional purposes, such as mitigation of visual impacts.

Rationale for Recommended Setbacks Commentary: The purpose of each setback is described in the table below.

Table 4: Setback Recommendations - Details and Rationale

Setback Type	Rationale for Setback
Participating Property Lines and Residences	No setback is needed since property owners must consent to the location of the proposed WECS
Nonparticipating Property Lines	A 50′ setback can ensure the safety of neighboring property, avoid encroachment, and reduce visual, noise, and other aesthetic impacts. Nonparticipating landowners may elect to waive this setback requirement if the location of the proposed SES is acceptable to them
Occupied Structures	Minimize disturbance (noise, aesthetics), and for fire safety
Roads and Railways	No setback is needed for ensuring the safety of non-public roads and railways.
Public Roads or Railways ROW	A 50′ setback can preserve the rights of way (ROW) for transportation uses
Environmental Hazards	No setback is needed since the environmental assessment conducted for the use permit will determine appropriate mitigation measures, which may include setbacks from environmental hazards that may be present
Agricultural Zones	No setback is needed since a code-compliant SWPPP will mitigate stormwater runoff impacts on agricultural property. Many SES facilities are constructed in agricultural zones

Consultation with Local Code Officials Commentary: LPAs should also consult with local fire and building code officials to understand if there are any additional setback requirements that should be incorporated to ensure compliance with fire and building code.

Permitting, Safety, and Environmental Compliance

Environmental Compliance

Projects applying for discretionary use permits shall comply with all applicable California Environmental Quality Act (CEQA) requirements.

Projects applying for ministerial use permits shall comply with any mitigation measures identified in the programmatic EIR prepared for the underlying zoning district. Projects applying for ministerial permits shall also submit environmental and cultural resource surveys evaluating whether the project introduces incremental environmental impacts beyond those contemplated in the programmatic EIR prepared for the underlying zoning district. If so, the project must comply with any recommended mitigation measures identified by the LPA as a condition for application completeness.

An applicant shall notify and consult with relevant local, state, and federal environmental jurisdictions and agencies regarding the proposed project and potential protected resources that may be present before submission of a site plan application.

CEQA Requirements Commentary: For renewable energy projects, LPAs are typically the lead agency for the CEQA process. Therefore, LPAs will be involved in the determination of any requirements based on CEQA review of the project. Requirements from CEQA may include describing any avoidance, minimization, or mitigation measures for protected resources incorporated into the project plan. If consultation is required, the applicant shall coordinate with relevant local, state, or federal agencies and jurisdictions.

For projects that impact any state or federally listed protected species, projects must also provide mitigation that is roughly proportional to the level of impact to the protected species as part of the California Endangered Species Act (CESA) and federal Endangered Species Act.

Stormwater Assessment

An applicant shall provide a stormwater assessment including a Stormwater Pollution Prevention Plan compliant with [County/City/Town] construction permit requirements as a condition of approval.

Stormwater Assessment Commentary: A stormwater assessment is conducted to minimize, mitigate, and repair any impacts to site drainage during site preparation and project construction. A stormwater assessment, including a Stormwater Pollution Prevention Plan, is required for issuance of a construction permit to any ground-disturbing development, including a SES; therefore, it is not necessary for a stormwater assessment to be included as part of a use permit application. However, LPAs may choose to include a stormwater assessment as a condition of approval to instill confidence that this assessment will be complete for the proposed project.

Vegetation Management

The SES must provide a vegetation management plan compliant with [County/City/Town] fire code as a condition of approval.

Purpose of Vegetation Management Commentary: As discussed in the "Fire Safety" section, risk of fire from SES is very low. Proper vegetation management can help to minimize the risk of a SES fire starting or spreading.

Vegetation Management Requirements in Local and CA Fire Code Commentary: The CA Fire Code (CFC) requires ground-mounted photovoltaic panel systems to have a clear, brush-free area of 10 feet around the perimeter of the arrays and a noncombustible base under the photovoltaic arrays and associated electrical equipment installations (Section 1205.5.1). Local fire code must at minimum incorporate this requirement but may incorporate additional or more stringent requirements. If LPAs choose to include vegetation management requirements as a condition of approval of a use permit, LPAs should consult with the local fire code officials to understand the local fire code requirements for vegetation management. Since compliance with the local fire code is required for a construction permit, it is not strictly necessary that LPAs include vegetation management in the use permit. The condition of approval is recommended to instill public confidence in the safety of the land use for SES.

See Appendix A: Vegetation Management Plan for example criteria that may be required as part of a vegetation management plan.

Commissioning, Standards & Certifications

SES Facilities must provide [County/Town/City] with copies of Operation and Maintenance Agreements with third-party providers, or plans for self-operating and self-maintenance, prior to the project's [Commissioning Date / In-Service Date].The plan must include:

A. Frequency of panel cleaning on an annual basis

B. Frequency of vegetation and pest management on an annual basis

C. Emergency Response Plan covering site security, fire prevention, and stormwater runoff prevention during operations

Decommissioning

The solar energy system owner shall provide a decommissioning plan that ensures that the facility is dismantled, removed, and the site restored to a condition reasonably similar to its original state once the system has reached the end of its useful life or is otherwise no longer in operation for a continuous period of 12 months. The decommissioning plan shall contain:

1. *An estimate of when the decommissioning should be triggered for solar and any accompanying infrastructure, based on lease tenor, asset life, and equipment performance*
2. *A description of the time and activities required and an estimation of the cost to decommission and remove the Solar Energy System and any ancillary structures*

3. *A description of the time and activities required and an estimation of the cost to repair any damage caused to the property by the installation and removal of the Solar Energy System, sufficient to ensure that the property shall be returned to its condition prior to the installation of the energy system or to some other condition reasonably appropriate for the designated land use*
4. *Plan for the disposal and/or recycling of Solar Energy System components including panels, inverters, and racking systems, including disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations*
5. *The provision of a decommissioning security which shall adhere to the following requirements:*
    I. *The deposit, executions, or filing with the [County/Town/City] Clerk of cash, bond, or other form of security reasonably acceptable to the [County/Town/City] attorney and/or engineer, shall be in an amount sufficient to ensure the good faith performance of the terms and conditions of the permit issued pursuant hereto and to provide for the removal and restorations of the site subsequent to removal. The amount of the bond or security shall be [115] % of the cost of removal and site restoration for the Solar Energy System, and shall be revisited every [5] years and updated as needed to reflect any changes (due to inflation or other cost changes). The decommissioning amount shall be reduced by the amount of the estimated salvage value of the Solar Energy System*
    II. *The security bond shall be posted in the following increments:*
        i. *25% at COD*
        ii. *50% within 5 years of COD*
        iii. *100% within 10 years of COD*
    III. *In the event of default upon performance of such conditions, after proper notice and expiration of any cure periods, the cash deposit, bond, or security shall be forfeited to the [County/Town/City], which shall be entitled to maintain an action thereon. The cash deposit, bond, or security shall remain in full force and effect until restoration of the property as set forth in the decommissioning plan is completed*

Purpose of Decommissioning Plan Commentary: A decommissioning plan is an important assurance that the land will be restored to its pre-project state after the useful lifetime of the project.

CFC and Local Fire Code Requirements Commentary: Fire code also dictates requirements for decommissioning to ensure that the project is dismantled in a safe manner. The California Fire Code requires that solar photovoltaic power systems comply with decommissioning requirements outlined in Section 1207.2.3 (Section 1207.1.3). These decommissioning requirements include a narrative description of activities required to remove a system from service under normal conditions or post-incident. There may be additional decommissioning requirements from the local fire and/or building code. LPAs should consult with local fire and building code officials to ensure alignment of any overlapping or similar decommissioning requirements in the local fire and/or building code.

Recovery, Reuse, and Recycling of Raw Materials Commentary: A best practice during decommissioning is to recover, reuse, and/or recycle any valuable raw materials. In current solar PV technologies, 95% of material is recyclable. Since few solar PV panels have needed recycling to date, recycling facilities and processes are not yet developed at the scale that will be needed. It is possible that solar panels contain trace amounts of hazardous materials (lead, cadmium, telluride, silver); hazardous materials should be identified for the specific technology used and the facility owner should comply with state and federal regulations on hazardous waste.

Additional Considerations

Visual Impacts

The facility must comply with any [County/City/Town] visual requirements for the relevant zoning district. All solar panels should have anti-reflective coating(s).

Visual Impacts Commentary: Visual impacts from utility-scale Solar Energy Systems are typically minimal. In addition to any visual requirements for a residential zone, an LPA may also elect to require a visual screening buffer (such as natural vegetation, plantings, and/or fencing) to reduce visual and lighting impacts on any nearby residences. LPAs should consider how any the height at full maturity of any vegetative screens would impact the productive output of the utility-scale solar energy system and any impact should be minimized.

Sound

Average sound measured at the nearest occupied structure must not exceed the auditory limits established for each applicable land use zone as set in the [County/City/Town] regulations.

Sound Commentary: Solar panels do not emit sound when converting sunlight into electricity. Sources of sound at solar facilities coming from inverters and transformers are typically minimal.

Lighting

The SES shall comply with [County/City/Town] lighting requirements and regulations.

Compliance with Lighting Requirements Commentary: If a SES is already subject to regulations outside a solar-specific ordinance that would govern lighting requirements, LPAs may find it redundant to include the ordinance language above in a solar ordinance.

Any additional lighting requirements in the fire code will be required for the building and construction permits and therefore are not needed in the use permit. Lighting requirements from the local fire or building code may include but are not limited to providing sufficient illumination for inspection, maintenance, and emergency response.

Fire Safety

Overview of SES Fire Safety Risks Commentary: Fire risk from SES is very low and incidents of SES fires are very rare. Fire risk from a SES comes from the potential for electrical faults or damaged or improperly installed electrical equipment. Fire safety risks can be further minimized with proper maintenance (such as clearing overgrown foliage or animal nesting). An Operations & Maintenance agreement can help reduce fire safety risks posed by maintenance neglect. Vegetation Management plans (discussed in the section below) can also help minimize the fire risk from SES.

SES Fire Safety Requirements Covered in Construction Permit Commentary: Fire safety-related requirements are not recommended for inclusion in use permit requirements since any requirements necessary to ensure fire safety of these installations will be covered through compliance with fire code. Compliance with the local fire code (which at minimum, must incorporate the standards in the California Fire Code), is required as part of the construction permit.

Review Timeline

Review Timeline Commentary: Review timelines for a use permit application (i.e. timeline for review once all application requirements have been met and all materials have been submitted) for a SES can be the same as review timelines for other types of permit applications. Some LPAs have referenced the Permit Streamlining Act20 as a guideline or best practice that is used to set review timelines. Some LPAs have sought to expedite review timeline for renewable projects given the acknowledged importance and time-sensitivity of these projects for supporting clean energy.

For discretionary permits, review timelines should include notice of completeness (or notice of deficiency if application is not deemed complete) and should follow timelines and procedures that may be required as part of CEQA or the local permitting process for public hearings or other requirements for public participation.

Resources

American Clean Power Model Ordinance: Utility-Scale Solar Energy Systems: https://cleanpower.org/resources/model-ordinance-utility-scale-solar-energy-systems/

New York State Energy Research & Development Authority (NYSERDA) Model Solar Energy Law: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/NY-Sun/Model-Solar-Energy-Local-Law.docx

Planning & Zoning for Solar Energy Systems: A Guide for Michigan Local Governments – University of Michigan Graham Institute of Sustainability and Michigan State University: https://www.canr.msu.edu/planning/uploads/files/SES-Sample-Ordinance-final-20211011-single.pdf

Appendix A: Vegetation Management Plan

Local fire code may require a vegetation management plan that considers vegetation that:

A. Is project location site specific and compatible with the solar energy system design at the project site

B. Provides for the planting of non-invasive species and the use of native or naturalized species if:

   I. Appropriate to the region; and

   II. Economically feasible

C. Maintains current stormwater runoff flows or reduces flow such that it does not have material impact on surrounding natural features (i.e., wetlands, etc.)