Part 3 RECOMMENDATIONS FOR EXPEDITED PERMITTING FOR SMALL PV SYSTEMS

A streamlined, expedited permit process for small solar PV systems that simplifies and consolidates the structural, electrical and fire review of the PV system, can eliminate the need for detailed engineering studies and avoids unnecessary delays. Many local governments in California have already taken steps to streamline solar permitting realizing resource savings and increased throughput. These efforts have helped to inform the following recommendations.

A streamlined permit process for solar PV projects 10 kW or less includes, but is not limited to, the following elements:

- Use of a simple eligibility checklist to determine whether projects qualify for expedited permitting and requisite written materials.
- Use of a standard plan to describe the proposed solar PV project in the permit application. A standard plan reduces applicant errors and can simplify review.
- Permit application materials are made available through the Internet.
- Application submittals, fee payment, signatures and permit issuance are completed electronically, where capability exists.
- A streamlined process for structural review.
- For eligible projects, plan review and permit issuance are completed "over the counter" for walk-in applications or electronic submittals, or automatically through online software. If over-the-counter approval is not offered, a maximum timeframe of 1–3 days in which to review the permit application is provided.

A streamlined inspection process for solar PV systems should include the following:

- A single, final inspection coordinated among the various agencies or for inspections by multiple agencies to occur at the same time. Typically this involves coordination between the building department and the local fire authority.
- Use of a concise inspection list that provides permit applicants a clear understanding of what elements of the solar installation will be inspected before final approval of the installation.
- Enable inspection requests to be submitted online or electronically.
- Provide for on-site inspection during the next business day after notification that the solar system has been installed. If next business day is not possible, schedule inspection within five days.
- Provide a scheduling time window for on-site inspection of no more than two hours, and utilize phone and/or email communication to provide information on anticipated inspection time.
- The most streamlined permit process also ensures close coordination between the building department and the local utility to coordinate on-site inspections.

The model streamlined permit process recommended in this section is intended to apply to PV systems with a maximum power output of 10 kW or less that meet certain criteria. As PV systems increase in size and complexity, the ability to handle these projects via a standard framework diminishes. However, it should be noted that larger PV systems or installations with complicating factors can still be approved in a timely manner through a clear and efficient permit review process.

It is not the intent of an expedited process to circumvent the engineering process. Rather, the intent of a streamlined process is to recognize the similarities among these smaller systems and establish guidelines to determine when a PV project is within the boundaries of typical, well-engineered systems.

Efficient permitting requires cooperation among local permitting staff and solar contractors. Many local enforcing agencies have provided informational training for agency staff and solar contractors to explain local requirements and vice versa. This training has resulted in better educated staff and contractors, reducing permit application errors and saving time and resources for the local permitting agency.

PV Toolkit for Local Governments

The seven template documents provided in this section form an optional toolkit that local governments can utilize to reduce their costs of permit review, approval and inspection, and to ensure a predictable and efficient process for permit applicants.

Assembly Bill 2188 (2014, Muratsuchi) requires local governments to adopt an expedited permitting process that "substantially conforms" with the process outlined in this Guidebook. According to the bill's author:

> *"The term 'substantially conform' is intended to allow local governments enough flexibility to address potential changes that they believe are necessary while still meeting the goal of streamlining and standardizing solar permitting. Further, AB 2188 states that local governments may modify the Guidebook, if necessary, due to 'unique climatic, geological, seismological or topographical conditions.' These modifiers are intended to provide additional flexibility for local governments and are not intended to limit how the cities and counties 'substantially conform' to the Guidebook."*

The author further notes that this flexibility is also intended to allow jurisdictions to make any changes necessary to reflect the operational needs of local fire departments or districts.

The templates in this toolkit can be adopted in many jurisdictions with only minor administrative adjustments. However, building officials should review these documents and the assumptions on which they are based, and make further modifications as necessary to meet the needs of their jurisdiction. Jurisdictions are not required to notify the Building Standards Commission of modifications to these documents when adopted.

Templates for streamlining permitting of small systems (10 kW or less) on one- and two-family homes

- **Submittal Requirements Bulletin** — Outlines the necessary steps to secure permits and details what materials must be submitted in the permit application and key points of the on-site inspection.
- **Eligibility Checklist** — Defines the size, electrical, structural and fire safety requirements for solar installations to qualify for streamlined permitting.
- **Standard Electrical Plans** — Enable applicants to "fill in the blanks" to explain the electrical configuration of a solar PV system. This toolkit offers two simplified standard plans that can be used for small solar PV installations: one for systems using a central/string inverter and another for systems utilizing microinverters. Comprehensive standard plans for **central/string inverter** and for **microinverters** are available online, provide instructions for the simplified standard plans and can be used for PV installations that do not fit into the simplified plans.

Materials to further improve permitting of solar PV systems of all sizes

- **Example MOU** — Provides a template agreement between two local agencies to coordinate permit review and approval. It can be used, for example, to streamline review between a local building department and a local fire service.
- **Structural Criteria** — Ensures structural code compliance for flush-mounted solar arrays. It enables applicants to submit a simple list and supporting documents after conducting a site audit to determine structural conditions. A technical appendix describing the technical analysis behind these criteria is listed in the Additional Resources section.
- **Technical Information Bulletin for Solar PV Systems (on all types of buildings)** — Provides consistent and comprehensive information regarding current state requirements for solar PV systems on all buildings, including both residential and commercial buildings, in a local jurisdiction. It could be issued as a department advisory or as an informational handout and can be used by solar installers as a reference document. Enforcing agencies can modify the information bulletin based on local needs or policies.
- **Inspection Guide** — Provides a code reference and field inspection sheet for solar PV systems inspections. This guide is meant to improve consistency and uniformity in inspections and to provide permit applicants with a clear understanding of the process.

PV TOOLKIT DOCUMENT #1

Your City logo here

Submittal Requirements Bulletin — Solar Photovoltaic Installations 10 kW or Less

This information bulletin is published to guide applicants through a streamlined permitting process for solar photovoltaic (PV) projects 10 kW in size or smaller. This bulletin provides information about submittal requirements for plan review, required fees and inspections.

*Note: Language in **ALL CAPS** below indicates where local jurisdictions need to provide information specific to the jurisdiction. Language in italics indicates explanatory notes from the authors of this Guidebook.*

1. Approval Requirements

The following permits are required to install a solar PV system with a maximum power output of 10 kW or less:

a) [LIST TYPE OF PERMIT(S) REQUIRED BY THE LOCAL JURISDICTION, i.e., ELECTRICAL OR BUILDING PERMIT].

Planning review [IS/IS NOT] required for solar PV installations of this size.
Fire Department approval [IS/IS NOT] required for solar PV installations of this size.

2. Submittal Requirements

a) Completed permit application form. This permit application form can be downloaded at [WEBSITE ADDRESS].

b) Demonstrate compliance with the eligibility checklist for expedited permitting. These criteria can be downloaded at [WEBSITE ADDRESS].

This Guidebook recommends use of a simple checklist to clearly identify eligibility criteria for expedited permitting, where established.

c) A completed Standard Electrical Plan. The standard plan may be used for proposed solar installations 10 kW in size or smaller and can be downloaded at [WEBSITE ADDRESS].

This Guidebook recommends use of a standard plan that allows permit applicants to simply fill in information regarding a solar system's electrical configuration. Template standard plans are provided in this Guidebook (PV Toolkit Documents 3 and 4).

If standard electrical plans are not provided for use, an electrical plan should be submitted that includes the following:

- *Locations of main service or utility disconnect*
- *Total number of modules, number of modules per string and the total number of strings*
- *Make and model of inverter(s) and/or combiner box if used*
- *One-line diagram of system*
- *Specify grounding/bonding, conductor type and size, conduit type and size and number of conductors in each section of conduit*
- *If batteries are to be installed, include them in the diagram and show their locations and venting*

- *Equipment cut sheets including inverters, modules, AC and DC disconnects, combiners and wind generators*
- *Labeling of equipment as required by CEC, Sections 690 and 705*
- *Site diagram showing the arrangement of panels on the roof or ground, north arrow, lot dimensions and the distance from property lines to adjacent buildings/structures (existing and proposed)*

d) A roof plan showing roof layout, PV panels and the following fire safety items: approximate location of roof access point, location of code-compliant access pathways, PV system fire classification and the locations of all required labels and markings. Examples of clear path access pathways are available in the State Fire Marshal Solar PV Installation Guide. **http://osfm.fire.ca.gov/pdf/reports/solarphotovoltaicguideline.pdf**.

e) Completed expedited Structural Criteria along with required documentation. Structural Criteria can be downloaded at [WEBSITE ADDRESS].

For non-qualifying systems, provide structural drawings and calculations stamped and signed by a California-licensed civil or structural engineer, along with the following information:

- The type of roof covering and the number of roof coverings installed
- Type of roof framing, size of members and spacing
- Weight of panels, support locations and method of attachment
- Framing plan and details for any work necessary to strengthen the existing roof structure
- Site-specific structural calculations
- Where an approved racking system is used, provide documentation showing manufacturer of the rack system, maximum allowable weight the system can support, attachment method to the roof or ground and product evaluation information or structural design for the rack system

This Guidebook recommends that local jurisdictions adopt a prescriptive approach to establishing minimal structural requirements that avoids the need for structural calculations. A simple list of criteria is provided in this Guidebook (PV Toolkit Document 5). A full explanation of the methods and calculations used to produce these criteria can be found in the Structural Technical Appendix for Residential Rooftop Solar Installations, which is available at **http://www.opr.ca.gov/docs/Solar_Structural_Technical_Appendix.pdf**.

3. Plan Review

Permit applications can be submitted to [DEPARTMENT NAME] in person at [ADDRESS] and [IF APPLICABLE] electronically through: [WEBSITE/EMAIL/FAX].

Permit applications utilizing standard plan may be approved "over the counter" at [ADDRESS]. Permit applications may also be submitted electronically for "over the counter" approval [IF APPLICABLE] through: [WEBSITE/EMAIL/FAX].

Permits not approved "over the counter" should be reviewed in [ONE TO THREE] days.

4. Fees

[PROVIDE CLEAR FEE SCHEDULE]

5. Inspections

Once all permits to construct the solar installation have been issued and the system has been installed, it must be inspected before final approval is granted for the solar system. On-site inspections can be scheduled by contacting [DEPARTMENT] by telephone at [PHONE NUMBER] or electronically at [WEBSITE OR EMAIL ADDRESS]. Inspection requests received within business hours are typically scheduled for the next business day. If next business day is not available, inspection should happen within a five-day window.

Permit holders must be prepared to show conformance with all technical requirements in the field at the time of inspection. The inspector will verify that the installation is in conformance with applicable code requirements and with the approved plans.

The inspection checklist provides an overview of common points of inspection that the applicant should be prepared to show compliance. If not available, common checks include the following:

- Number of PV modules and model number match plans and specification sheets number match plans and specification sheets.
- Array conductors and components are installed in a neat and workman-like manner.
- PV array is properly grounded.
- Electrical boxes are accessible and connections are suitable for environment.
- Array is fastened and sealed according to attachment detail.
- Conductor's ratings and sizes match plans.
- Appropriate signs are property constructed, installed and displayed, including the following:
  - Sign identifying PV power source system attributes at DC disconnect
  - Sign identifying AC point of connection
  - Sign identifying switch for alternative power system
- Equipment ratings are consistent with application and installed signs on the installation, including the following:
  - Inverter has a rating as high as max voltage on PV power source sign.
  - DC-side overcurrent circuit protection devices (OCPDs) are DC rated at least as high as max voltage on sign.
  - Switches and OCPDs are installed according to the manufacturer's specifications (i.e., many 600VDC switches require passing through the switch poles twice in a specific way).
  - Inverter is rated for the site AC voltage supplied and shown on the AC point of connection sign.
  - OCPD connected to the AC output of the inverter is rated at least 125% of maximum current on sign and is no larger than the maximum OCPD on the inverter listing label.
  - Sum of the main OCPD and the inverter OCPD is rated for not more than 120% of the bus bar rating.

6. Departmental Contact Information

For additional information regarding this permit process, please consult our departmental website at [WEBSITE] or contact [DIVISION NAME] at [PHONE NUMBER].