Santa Cruz County Group

SOLAR ELECTRIC PERMIT FEES FOR COMMERCIAL & RESIDENTIAL INSTALLATIONS IN SANTA CRUZ COUNTY

A COMPARATIVE REPORT

By Malcom Crawford, Carl Mills, Kurt Newick and Scott Troyer

Version 1.2

Executive Summary

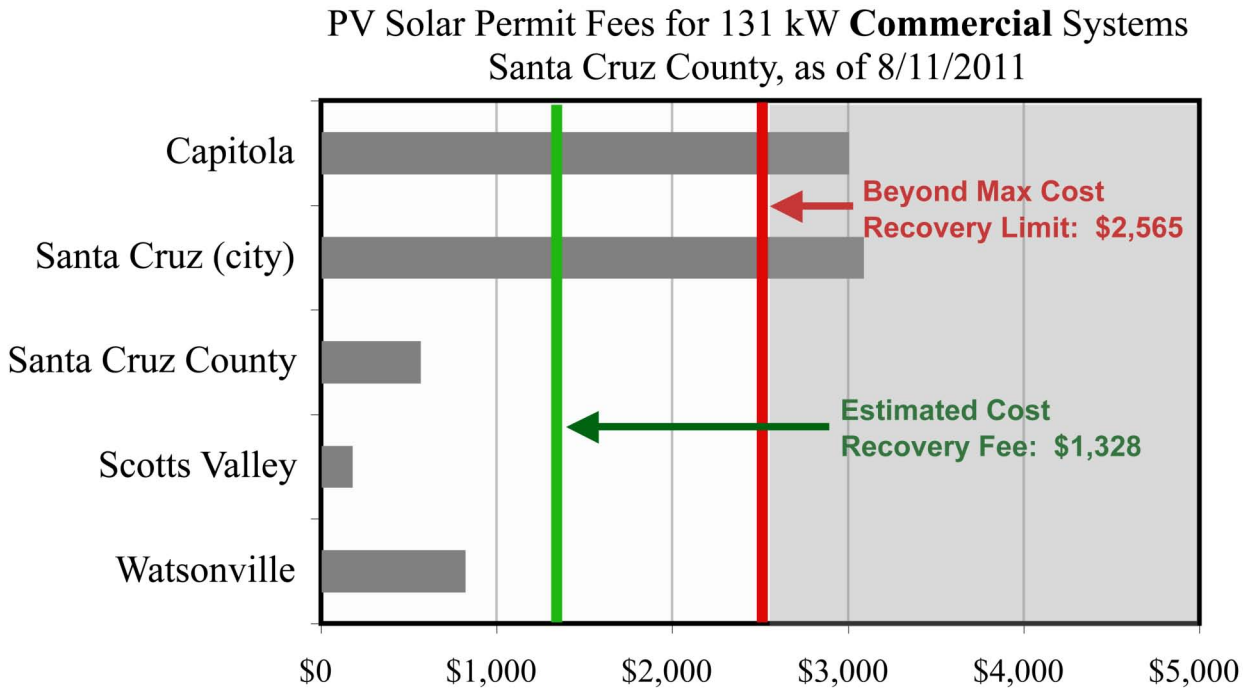
A summer 2011 survey by the Sierra Club, Santa Cruz County Group revealed variations in permit fees charged for commercial and residential rooftop photovoltaic (PV) energy systems by municipalities in Santa Cruz County. The survey found that fees for commercial PV projects of 131 kW in size varied from $175 to over $3,000. High fees can discourage businesses and residences from making good, long-term, high-yield investments in solar power. Two municipalities (40%) are charging fees that are slightly higher than the maximum cost-recovery levels identified in this report for commercial PV projects. Commercial PV permit fees for all Santa Cruz County municipalities are relatively reasonable compared to all other California counties surveyed by the Sierra Club over the past several years! For 3kW residential PV permits none of the municipalities in Santa Cruz County are charging fees that are excessive!

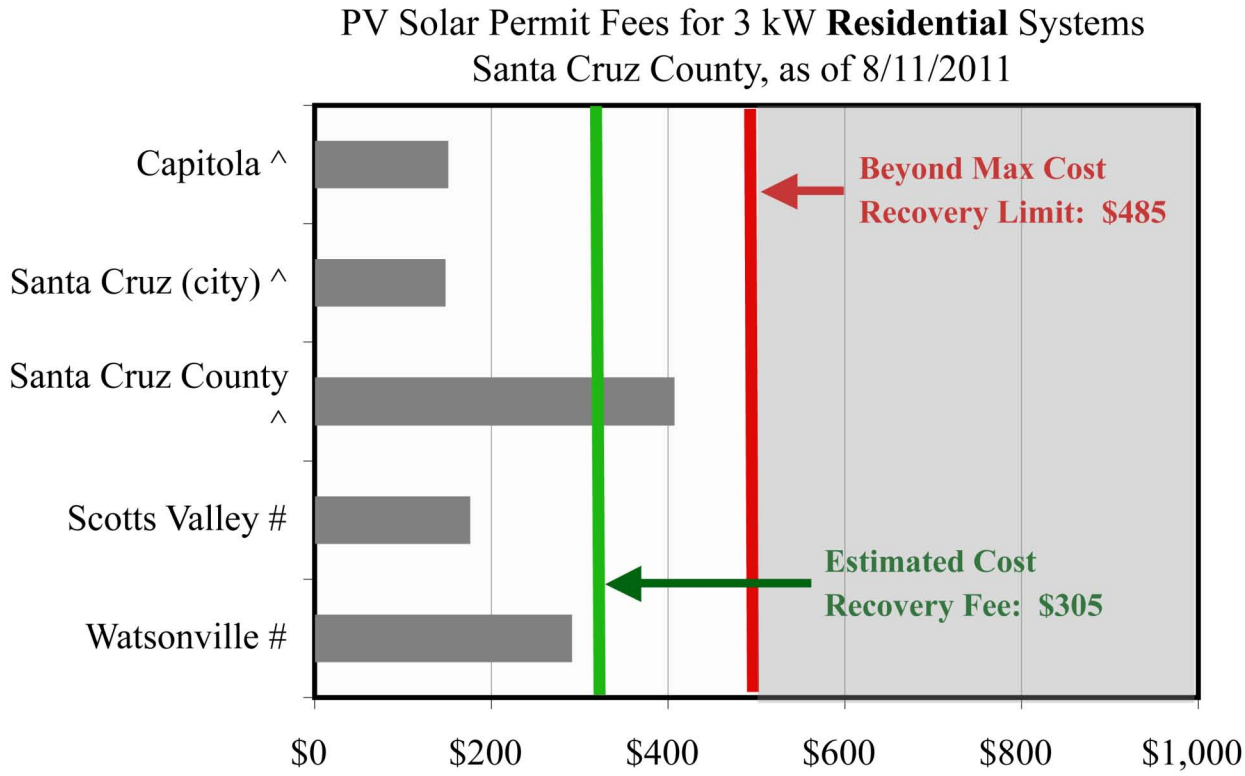
The time needed for city staff to review and inspect a commercial PV project does not vary linearly by system size. For instance, interviews conducted in the preparation of this report revealed that the difference in time needed to process a 100 kW PV project is about two to three times longer than a 10 kW project (not ten times longer). Basing fees on the value of the solar equipment inflates permit costs to unreasonably high levels, especially for larger, more expensive solar power projects. To recover costs, therefore, permit fees should be based on specific review times and billable hourly rates and not on PV project valuations.

The authors of this study have developed a free, public fee calculator spreadsheet for PV systems mounted on commercial rooftops to help municipalities determine cost recovery: www.SolarPermitFees.org/PVFeeCalcCommercial.xls.

This report recommends best practices that municipalities can adopt to assure greater consistency, and help our society develop an energy source that leads to a healthier, safer, and more stable community. These include setting permit fees at cost-recovery levels, and instituting streamlined permit processing procedures. You can see detailed survey responses for each jurisdiction at: www.SolarPermitFees.org/PVFeesSantaCruzCounty.html.

The following graphs on the next two pages present solar permit fee survey data ordered alphabetically for all jurisdictions in Santa Cruz County for a 131 kW commercial project and a 3 kW residential PV system. These show how fees compare to the estimated reasonable and the estimated maximum cost recovery levels, according to the recommendations in this report. Sections 4 and 5 and Appendix B describe how the estimated reasonable and maximum cost-recovery levels were determined.





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1 Background

For many businesses in the sunshine-rich Santa Cruz County area, installing photovoltaic (PV) energy systems (solar panels) on their buildings can represent a good, long-term, high-yield, investment. The economic benefit is in addition to the general environmental benefits that accrue from clean generation of electricity.

Currently the cost of installing solar panels is high compared to other energy resources, so state and federal governments offer incentives through rebates and tax offsets to encourage businesses to make the investment. It is imperative that municipal governments complement federal and state incentives by keeping their permit fees as low as possible. High permit fees can discourage businesses from investing in solar power.

Two regulatory statues have been passed in California with the specific purpose of containing municipal cost impacts:

1. The California Solar Rights Act (AB 2473) declares that solar energy system permitting costs shall be minimized (see a letter by Assembly member Louis Wolk on this subject, www.SolarPermitFees.org/WolkPVFeeLetter.pdf)

2. California Government Code Section 66014 provides that fees associated with building inspections and building permits "shall not exceed the estimated reasonable cost of providing the service for which the fee is charged."

2 Survey and Major Findings

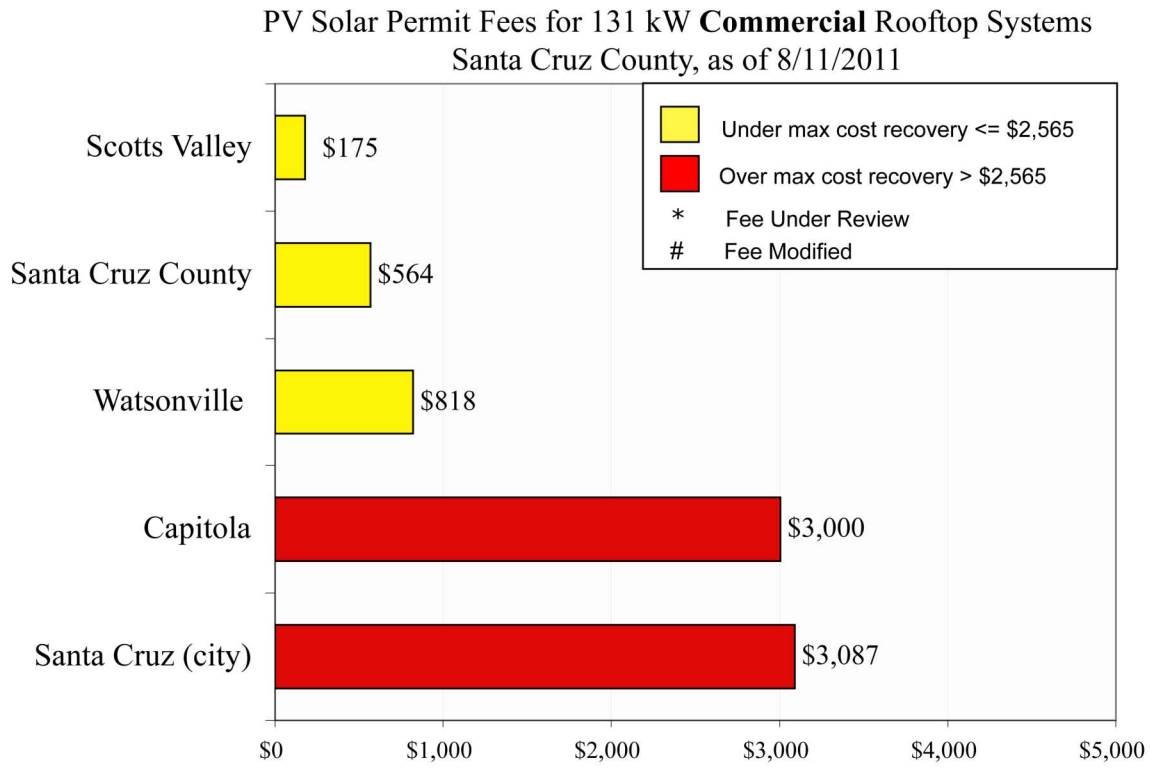
In the summer of 2011, the Sierra Club surveyed all jurisdictions in Santa Cruz County to determine how much municipalities charge for permits to install solar PV panels on commercial and residential rooftops. The survey asked municipalities to estimate the permit fee for a 131 kW commercial project and a 3 kW residential PV system. The 131 kW size was chosen as similar surveys have been done for commercial PV permit fees for other counties for 8 kW, 49 kW and 131 PV project sizes. To simplify this survey only the 131 kW size was used for commercial projects (e.g. fits on a typical grocery store) allowing for comparisons between cities.

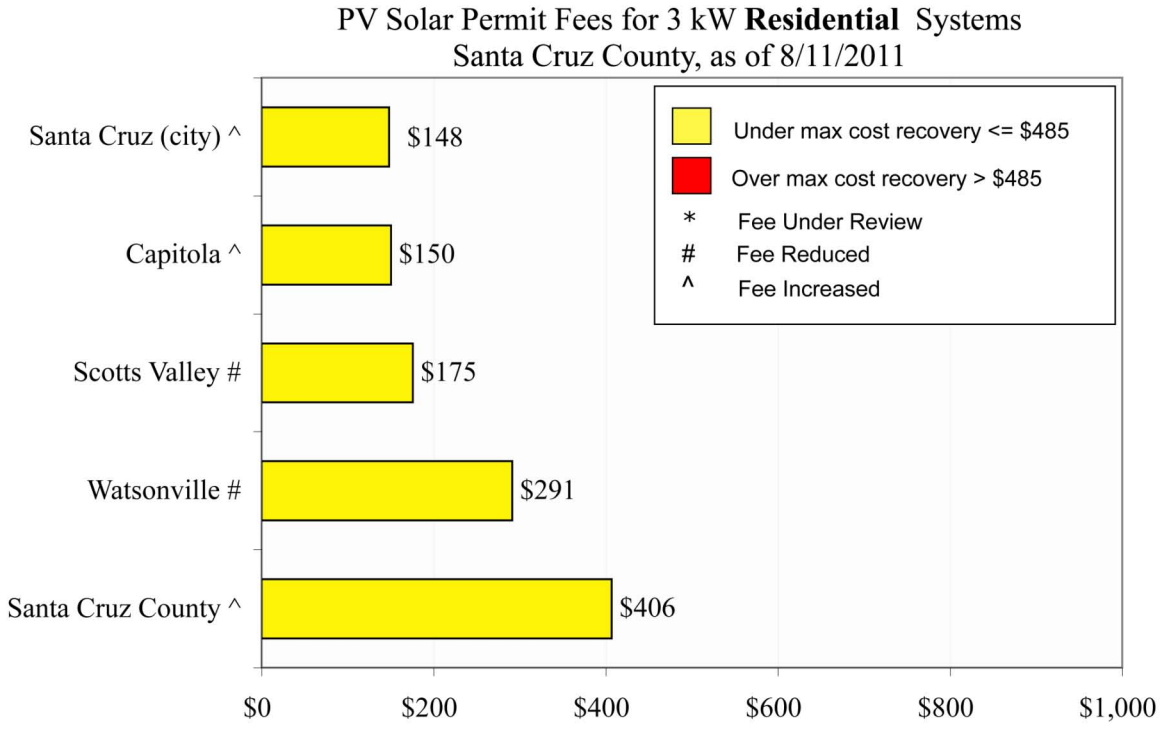
The survey is available at: www.SolarPermitFees.org/PVPermitFeeSurveySantaCruzCounty2011.pdf. A CAD drawing of the 131 kW PV project used for this survey is available at: www.SolarPermitFees.org/CAD131kWPVFeeSurvey.pdf

The responses reveal variations between jurisdictions. Two cities (40% of the cities surveyed) charge $3,000 or more for a 131 kW commercial PV system, slightly exceeding the maximum estimated fee for cost recovery. For a 3 kW residential PV system, no cities charge more than the maximum PV permit fee for cost recovery according to the recommendations in this report! Out of more than a dozen California counties surveyed for commercial PV permit fees thus far, Santa Cruz county jurisdictions have some of the most fair fees! The following Google docs spreadsheet shows the survey response details, including itemized PV permit fee information (when provided): www.solarpermitfees.org/PVFeesSantaCruzCounty.html.

The bar charts on the next few pages present the survey data ordered by fee. The lighter (yellow) bars show fees that are under the maximum reasonable cost-recovery amount. The darker (red) bars

indicate fees that exceed that amount. Sections 4 and 5 and Appendix B describe how the estimated maximum cost-recovery levels were determined.





PV Permit Fees, **131 kW Commercial** Systems, Santa Cruz County as of 8/11/2011

Ranked by Fee Municipality	131 kW Fee
Santa Cruz (city)	$3,087
Capitola	$3,000
Watsonville	$818
Santa Cruz County	$564
Scotts Valley	$175
Average	$1,529

Alphabetic Rank Municipality	131 kW Fee	Notes
Capitola	$3,000	Approximate permit fee
Santa Cruz (city)	$3,087	
Santa Cruz County	$564	
Scotts Valley	$175	
Watsonville	$818	
Average	$1,529	

PV Permit Fees, **3 kW Residential** Systems, Santa Cruz County as of 8/11/2011

Ranked by Fee Municipality	3 kW Fee
Santa Cruz County ^	$406
Watsonville #	$291
Scotts Valley #	$175
Capitola ^	$150
Santa Cruz (city) ^	$148
Average ^	$234

Alphabetic Rank Municipality	3 kW Fee	Notes
Capitola ^	$150	Increased from $130
Santa Cruz (city) ^	$148	Increased from $136
Santa Cruz County ^	$406	Increased from $242
Scotts Valley #	$175	Reduced from $250
Watsonville #	$291	Reduced from $399
Average ^	$234	Increased from $231

* Fees under review
# Fees reduced
^ Fees increased

3 Factors Affecting PV Permit Fees

Responses to this permit fee survey and detailed interviews that the authors of this report conducted have confirmed that the cost of a PV project does not correlate with the staff-hours a municipality must devote to plan review and inspection services. Basing a permit fee on the valuation of a PV system tends to generate much higher fees than the actual cost incurred to service a permit.

The time involved for review and inspection is not linear either (i.e. incurred cost does not directly relate to system size). For example, it does not take six times as long to evaluate a 49kW installation as an 8kW system. A 100kW PV system typically takes about two to three times longer to process than a 10kW permit.

4 PV Permit Fee Calculator for Commercial Rooftop Systems

4.1 Overview

Some municipalities already charge PV permit fees in line with cost recovery; others charge considerably more. To help municipalities determine an appropriate fee, we have developed a

spreadsheet that calculates a fee based on the estimated time required to process a permit which accounts for such factors as PV system size and the billable hourly rate that a jurisdiction charges: www.SolarPermitFees.org/PVFeeCalcCommercial.xls. The following subsections explain the calculator's limitations, how it operates and how we determined its default values.

4.2 Limitations

The fee calculator only applies to PV systems that meet the following criteria:

- Standard, professionally designed and installed.
- Commercial, rooftop systems that range from 1kW to 1MW in size.
- Systems approved in the first cycle of reviews or a second cycle with minimal corrections being addressed. If a contractor does not meet the permit requirements within these limitations, the municipality should charge that contractor an hourly rate to cover costs thereafter.

4.3 How the Calculator Operates

To use the fee calculator, simply open it and follow the steps described in the **Start Here** worksheet. The calculator is sophisticated enough for a municipality's permitting staff to precisely determine the recovery cost for a permit based on its specific review times and billable hourly rate. However, the calculator is also simple enough that any individual (such as an elected official, journalist, solar installer or interested voter) can use its default values to estimate a municipality's PV permit fee for cost recovery.

The calculator bases the fee for a system of any size on the values the user enters for a 10kW and 100kW system. For each task in the permitting process (such as electrical review), the calculator applies a simple formula to compute the fee for a system of the specified size.

4.4 Default Values

A jurisdiction that has an efficient PV permit process can charge less than the computed maximums and still recover most or all of their costs for an average PV permit. We derived the calculator's default values in consultation with the municipalities in our surveys that have experience in processing commercial PV permits. The following points summarize these values:

- In terms of plan reviews, most municipalities only require an electrical review, structural review and planning review. (Depending on exceptional environmental factors like high wind or fire risk, some municipalities might require other reviews.)
- About 20% of permit applications require a second round of plan reviews.
- In terms of inspections, some municipalities only require two inspections: a building attachment inspection and an electrical inspection. Exceptional environmental factors, however, might necessitate other inspections.
- About 20% of systems require a second round of inspections, due to inspection turn-downs.
- The review and inspection times (e.g. 1.5 hours for the electrical review of a 100kW system) are liberal estimates based on data that the municipalities in our survey supplied.
- The $135 billable hourly rate for permitting staff is a liberal estimate based on data that the municipalities in our Sierra Club surveys supplied.

Note that these criteria would differ for systems that are subject to unusual conditions (for example, ground-mounted or mounted on a building structure that is inadequate to support the weight of the PV panels). For more typical systems, it is reasonable for any given municipality's review times and billable rates to vary a little from these default values. However, if a municipality's times and rates significantly exceed those values, this could indicate an unrealized potential for economizing its permitting process. An efficient process usually goes hand-in-hand with giving permitting staff PV-specific training. Greater efficiency can economize permitting for both municipalities and solar customers. See Appendix E: Case Studies on Page 20 for a description of how some cities have economized their PV permit process.

5 Recommendations

Based on the survey results, our primary recommendation is that municipalities use a permit fee calculation method based on processing-cost recovery instead of project valuation and consider these recommendations:

- **Encourage complete and accurate permit submittals by the solar installers.** This is probably the most important factor determining how much time a municipality spends processing a permit. Before accepting a permit application, the building department might want to review the plans over-the-counter with the applicant present to ensure all necessary items are included. If items are missing, staff can simply refuse to accept the application, immediately notify the applicant which items are missing and request that the applicant provide these items. For busy jurisdictions and applicants, the building department can offer this over-the-counter pre-review by appointment to economize everyone's time.
- **Standardize permit requirements and guidelines.** We recommend that municipalities create a standard permit process with clear guidelines. It would be even better if municipalities collaborated to create and adopt regional standard guidelines for permit submittal, review and inspection tasks, as well as standard signage for labeling that do not vary by jurisdiction. This would reduce the variability between jurisdictions. Such variability tends to increase the costs to the solar installers and ultimately the solar owners. You can see an example of standardized PV permit guidelines, which local chapters of the International Code Council in Northern California have approved for residential PV permit submittals, at:

  www.SolarPermitFees.org/PVPermitGuidelines2010-07TUCC.pdf
- **Provide application forms, requirements/guidelines and permit fee schedules on the municipality's website** to facilitate the application process for solar contractors and for customers who install their own systems.
- **Reduce the time window for inspection appointments.** Some cities schedule inspection windows of half a day. We recommend that the appointment window be no more than two hours. When feasible, cities should offer specific appointment times, such as the first inspection of the day or the first inspection after lunch. Another option is for the city to call the solar contractor with an estimated appointment time as the appointment window time gets close. We also recommend that cities grant an appointment within 24 hours after the solar installer gives notice that the installation is ready for inspection.

5.1 Commercial PV permit processing and fee calculation methodology

Ideally, building departments would design a fee schedule that makes the fee assessment process transparent and simple enough even for non-staff to understand. (This is the premise for the fee calculator described in Section 4.)

If an application fails to meet permit requirements after two rounds of reviews and/or inspections, we recommend that the building department bill the applicant at an hourly rate based on cost recovery for subsequent attempts, to be fair to the more competent solar contractors, and to ensure municipalities recover costs.

In the interest of encouraging cost-recovery based fees, we recommend the following measures for municipalities to reduce their processing costs:

- **Integrate review processes.** Incorporating the fire, planning, and other reviews into the building department review not only expedites the review process, but reduces the overall cost. This might involve training building department staff to perform standard fire department plan checks on standard PV systems. In this scenario, staff would only submit the application to the fire department for systems that present an unusual design or challenge.
- **Use the PV permit fee calculator**. This allows anyone to determine a reasonable permit fee that enables cost recovery based on specific review tasks, time assessments for each task and billable hourly rates for a particular jurisdiction. These are the specific factors that are most relevant to cost recovery and each jurisdiction controls them.

1) To compute a reasonable fee to achieve cost recovery for the 131 kW PV system included in this survey, we've used the calculator's default values and a reasonable billable hourly rate of $135. This $135 billable hourly rate is being used in this report for the reasonable recommended permit fee calculations for the commercial PV project, as this is the median rate reported by a dozen jurisdictions in a 2010 survey of San Francisco Bay Area counties.

   For details on how we calculated these fees, see Appendix B Reasonable Permit Fees, on Page 23.

   Estimated *reasonable* fee for cost recovery for a 131 kW commercial PV project: $1,328

2) To compute the maximum fee required to achieve cost recovery for the 131 kW PV system included in this survey, we've selected all the calculator's review tasks with default values for processing time and used a high billable hourly rate of $180. For details on how we calculated these fees, see Appendix B, Maximum Permit Fees, on Page 24.

   Estimated *maximum* fee for cost recovery for a 131 kW commercial PV project: $2,565

5.2 Residential PV permit fee calculation methodology

A fixed fee approach for residential systems is appropriate because the time required for plan review and inspection is neither size dependent nor valuation based. The time required for review of a small PV system is basically the same as for a larger system. The fee assessed should be based on actual cost recovery, which is best derived by assessing the review times required multiplied by the jurisdiction's true billable hourly rate.

- Determine the staff time required to review and inspect an average project that will cover your costs 80% of the time, assuming a well trained staff and a professional permit submittal/installation.

- The average plan review time should allow for one 2nd cycle minor correction review, but should be based on only the number of required inspections. Additional plan reviews or additional inspections should be assessed additional fees based on actual incurred costs. This fee methodology rewards proficient customers with fees that reflect actual costs and does not subsidize the less competent.
- To estimate the permit fee multiply the billable hourly rates for each job function by the staff time required for each task, that will cover 80% of your customer submittals.
- For exceptional cases that do not conform to the norm simply charge by the hour for the staff time for both the plan reviews and inspections based on the billable hourly rate for the job function.

The assessed plan review and permit fee should be a fixed fee that does not vary with system size or value (within reason) for rooftop, residential, grid-tied PV systems up to 15 kW using the above principles and based on these assumptions:

- A professional installation where the permit application meets permit submittal guidelines.
- If your organization is capable of performing over the counter, same day, permit issuance, this should be instituted. This can significantly reduce administrative processing, saving valuable staff time compared to a permit that is taken in for later review!
- Plan checkers and inspectors are trained in PV installations.
- A fully burdened realistic billable hourly rate to account for total incurred costs. This billable hourly rate varies significantly among municipalities. Each city should use its own rate to determine a fee level that is the most appropriate for cost recovery! For this report the reasonable recommended mid range permit fee calculations for the residential PV project are based on median billable hourly rates reported by a dozen jurisdictions in a 2010 survey done for San Francisco Bay Area counties.

1) Reasonable processing times based on survey results from different jurisdictions should be approximately as follows. Based on the above assumptions and suggested permit fee calculation methodology this reasonable PV permit fee is computed as:
   - 45 minutes for plan check X $140 per hour for plan reviewer = $105
   - 1 hour for inspections X $125 per hour for inspector = $125
   - 45 minutes for administration tasks X $100 per hour for permit tech = $75

   Total *reasonable mid range* PV permit fee: $305 (computed: $105 + $125 + $75).

   Estimated **reasonable mid range** fee for cost recovery for a residential PV project: $305

2) Based on the above assumptions for a mid range PV permit fee and subtracting 15 minutes to the plan check and 15 minutes to the administration tasks the permit fee calculation methodology for a *minimum* PV permit fee (subtracting $20 per hour to each job function compared to the mid range PV permit fee method) is computed as:
   - 30 minutes for plan check X $120 per hour for plan reviewer = $60
   - 1 hour for inspections X $105 per hour for inspector = $105
   - 30 minutes for administration tasks X $80 per hour for permit tech = $40

   Total *reasonable minimum* PV permit fee: $205 (computed: $60 + $105 + $40).

   Estimated **reasonable low end** fee for cost recovery for a residential PV project: $205

3) Based on the above assumptions for a mid range PV permit fee and adding 15 minutes to the plan check and 15 minutes to the administration tasks the permit fee calculation methodology for a *maximum* PV permit fee (adding $40 per hour to each job function compared to the mid range PV permit fee method) is computed as:
   - 1 hour for plan check X $180 per hour for plan reviewer = $180
   - 1 hour for inspections X $165 per hour for inspector = $165
   - 1 hour for administration tasks X $140 per hour for permit tech = $140

   Total *reasonable maximum* PV permit fee: $485 (computed: $180 + 165 + 140).

   Estimated **reasonable high end** fee for cost recovery for a residential PV project: $485

Here is a downloadable PDF file summary of the key recommendations from this section: www.SolarPermitFees.org/PVPermitRecommend2010.pdf

6 Conclusion

Many municipalities charge PV permit fees that significantly exceed cost recovery. Those fees can make a critical difference to some businesses that are considering installing solar panels. Municipalities should charge a fee that covers actual review and inspection costs for solar permits rather than basing fees on project valuation.

We ask that all cities consider the recommendations in this report to encourage an energy solution that contributes so much to the wellbeing of our communities and the global environment.

7 References

7.1 Contacts

Feel free to contact the survey team members for more information:

- Kurt Newick—Surveyor lead and PV permit fee campaign team leader,

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- Scott Troyer—PV Permit Fee Calculator author and expert permit process consultant,

  Email: astroyer@comcast.net, Phone: 408-738-2603

7.2 Download this Report

- Report: www.SolarPermitFees.org/PVFeeStudySantaCruz.pdf
- Web page for this report: www.solarpermitfees.org/santacruz.html
- Executive summary: www.SolarPermitFees.org/PVFeeSantaCruzExecSum.pdf

- Key recommendations: www.SolarPermitFees.org/PVPermitFeeRecommend2010.pdf

7.3 More information on solar PV permit resources

- **PV Permit Fee Campaign by Sierra Club, Loma Prieta Chapter (main web site):** www.SolarPermitFees.org
- **PV Permit Fee Calculator by Sierra Club:** www.SolarPermitFees.org/PVFeeCalcCommercial.xls
- **Commercial and Residential PV permit fee report for Sacramento County by Sierra Club, Loma Prieta Chapter (Aug. 2011):** www.SolarPermitFees.org/PVFeeStudySacramento.pdf
- **Commercial and Residential PV permit fee report for Los Angeles County by Sierra Club, Angeles and Loma Prieta Chapters (Apr. 2011):** www.SolarPermitFees.org/PVFeeStudyLosAngeles.pdf
- **Commercial and Residential PV permit fee report for Sonoma County by Sierra Club, Redwood and Loma Prieta Chapters (Jan. 2011):** www.SolarPermitFees.org/PVFeeStudySonoma.pdf
- **Commercial PV permit fee report for San Luis Obispo County by Sierra Club, Santa Lucia and Loma Prieta Chapters (Dec. 2010):** www.SolarPermitFees.org/PVFeeStudySanLuisObispo.pdf
- **Commercial PV permit fee report for Ventura County by Sierra Club, Los Padres and Loma Prieta Chapters (Dec. 2010):**

  www.SolarPermitFees.org/PVFeeStudyVentura.pdf
- **Commercial and Residential PV permit fee report for Marin County by Sierra Club, San Francisco Bay and Loma Prieta Chapters (Dec. 2010):**

  www.SolarPermitFees.org/PVFeeStudyMarin.pdf
- **Commercial and Residential PV permit fee report for Contra Costa County by Sierra Club, San Francisco Bay and Loma Prieta Chapters (Dec. 2010):**

  www.SolarPermitFees.org/PVFeeStudyContraCosta.pdf
- **Commercial PV permit fee report for Napa County by Sierra Club, San Francisco Bay and Loma Prieta Chapters (Dec. 2010):**

  www.SolarPermitFees.org/PVFeeStudyNapa.pdf
- **Commercial PV permit fee report for Orange County by Sierra Club, Angeles and Loma Prieta Chapters (Dec. 2010):**

  www.SolarPermitFees.org/PVFeeStudyCommercialOrange.pdf
- **Commercial PV permit fee report for San Diego County by Sierra Club, San Diego and Loma Prieta Chapters (Nov. 2010):**

  www.SolarPermitFees.org/PVFeeStudyCommercialSanDiego.pdf
- **Commercial PV permit fee report for the San Francisco Bay Area by Sierra Club, Loma Prieta Chapter (Oct. 2010):**

www.SolarPermitFees.org/PVFeeStudyCommercial.pdf

- **Residential PV permit fee report for Southern California by Sierra Club, Angeles Chapter (June 2009):**

  www.SolarPermitFees.org/SoCalPVFeeReport.pdf

- **Residential PV permit fee report for Northern California by Sierra Club, Loma Prieta Chapter (Dec. 2008):** www.SolarPermitFees.org/NorCalPVFeeReport.pdf

- **PV Permit Submittal Guidelines**

  International Code Council Tri-chapter Uniform Code Committee (Northern California chapters of the ICC for the Peninsula, East Bay and Monterey Bay chapters) has approved Residential (Single-Family) Solar PV System Utility Grid-Tie Connection permit submittal guidelines:www.SolarPermitFees.org/PVPermitGuidelines2010-07TUCC.pdf

- **Expedited process for PV systems:** Solar America Board for Codes and Standards documents about an expedited process for PV system permits under 15kW in size: www.solarabcs.org/permitting

- **Guidelines for reviewing and inspecting PV systems:** www.irecusa.org/fileadmin/user_upload/NationalOutreachPubs/InspectorGuidelines-Version2.1.pdf

- **How the National Electric Code (NEC) applies to reviewing and inspecting PV systems**

  "PV Power Systems and the National Electrical Code: Suggested Practices": www.nmsu.edu/%7Etdi/Photovoltaics/Codes-Stds/PVnecSugPract.html

  "Permitting or Inspecting a PV System?": www.nmsu.edu/~tdi/pdf-resources/IAEI-5to6-05.pdf

  "Photovoltaic Power Systems: What Inspectors Should Know": www.nmsu.edu/~tdi/pdf-resources/IAEI-3to4-04.pdf

- **A checklist for PV installations**, based on the general requirements found in the 2005 National Electric Code (NEC), Article 690: www.solarsebastopol.com/PDFs/INSPECTOR_CHECKLIST_5-05__1.pdf

- **PV system design and installation,** California Energy Commission: A Guide to PV System Design and Installation: www.energy.ca.gov/reports/2001-09-04_500-01-020.PDF

- **California Solar Energy Industries Association,** a professional association of California solar installers: http://calseia.org/

- **SolarTech,** a nonprofit Corporation dedicated to removing barriers to solar power: www.solartech.org/

- **Bay Area Climate Collaborative**, is coordinating efforts to help create a consistent approach to solar permitting by promoting PV permit standards for local jurisdictions in the San Francisco Bay Area: www.baclimate.org/impact/foundation-for-permitting.html

- **Solar Energy International,** a renewable energy training organization: www.solarenergy.org/
- **National Association of Board Certified Energy Practitioners**, a North American certification organization of solar PV and solar Thermal energy system installers: www.nabcep.org
- **Solar Professional Magazine**, a technical publication for solar industry professionals: http://solarprofessional.com
- **California solar access Laws as of 2005:** www.SolarPermitFees.org/CASolarAccessLaws.pdf
- **California's Solar Initiative Program for 2007:** www.gosolarcalifornia.com/
- **California searchable web site of PV installs by city and sector:** www.californiasolarstatistics.ca.gov/search/
- **State Senator Lois Wolk's letter of intent regarding solar permit fees and design reviews**, sent to all California cities on June 7, 2006: www.SolarPermitFees.org/WolkPVFeeLetter.pdf

Appendix A: Survey Parameters

The survey was conducted from July 29, 2011 through Aug. 12, 2011. It included all the municipalities in Santa Cruz County. The survey team asked each municipality the same questions. The survey was emailed to the Chief Building Official (CBO) of each jurisdiction using Zoomerang (an on-line survey tool). The team conducted phone interviews for municipalities that did not respond to the on-line survey. All the CBOs were given the opportunity to confirm their jurisdiction's responses.

For a PDF file of the survey see: www.SolarPermitFees.org/PVPermitFeeSurveySantaCruzCounty.pdf

Below are the survey questions that pertain to the survey results shown in this report:

131 kW Commercial PV Project Survey Question:

What is the total cost[1] for the permit to install a 131 kW PV system that is rack-mounted on the roof of a two-story commercial building (such as a grocery store) in your jurisdiction? Include any and all fees necessary for permit issuance, with itemization if possible.

The PV system is valued at $1,200,000 (value before any rebates or tax credits). Assume 648 solar modules, 1 SatCon 135 kW inverter, 1 DC disconnect switch, 4 DC combiner boxes and 1 AC circuit breaker (700 AMPS).

NOTE: for jurisdictions that compute fees based on the square footage of the PV panels 8,634 square feet was used.

3 kW Residential PV System Survey Question:

What is the total[1]cost for a permit to install a 3 kW solar electric system on a composite-shingle roof of a single-story residence in your jurisdiction (assuming the system cost is $27,000 before the California Solar Initiative [CSI] rebate)? The system will be professionally installed and mounted flush to the roof. It will have 1 inverter and 20 solar modules. It will be 320 square feet in size and have a weight load of 3 pounds per square foot.

IMPORTANT NOTE:

The value used for the 131 kW PV project in this survey is $1,200,000 and $27,000 for the 3 kW residential system. These were the approximate market prices for installed PV systems when this survey was designed in 2008. To be consistent, we have decided to use the same survey questions to track how fees change over time. The price of PV modules has dropped significantly over the past few years. Thus jurisdictions that base their PV permit fees on recently changed market prices are likely to have lower fees than what is reported in this report. This is another reason to recommend that jurisdictions decouple PV permit fees from valuations. The market prices for fully installed PV system as of April 2011 for a 131 kW commercial PV project is about $700,000 and $21,000 for a 3 kW residential system. Although PV module prices fluctuate, the PV permit process is independent from this.

[1] *Total* here means the combined cost for all the various fees and reviews (e.g. electrical review, plan check, issuance fee, fees charged by other city departments such as planning and fire. required state fees, etc., excluding business license fee).

Appendix B: Recommended Permit Fees

Reasonable Permit Fees

The following table shows how we determined a reasonable PV permit fee to achieve cost recovery for the 131 kW PV system size in the survey using the PV Permit Fee Calculator described on Page 13 and downloadable from www.SolarPermitFees.org/PVFeeCalcCommercial.xls. We used a typical billable hourly rate of $135 and issuance fee of $45. The example below shows typical review/inspection times and selects "True" for the most common, required review tasks.

131kW system (reasonable cost recovery): $1,328

PV Permit Fee Calculator for Commercial Rooftop Systems

by Scott Troyer & Kurt Newick, 11/28/10 Version 2.2

Jurisdiction Name:	PV Permit Fee Study, Sierra Club, Loma Prieta Chapter
Project Name:	Reasonable Computed Fee to Enable Cost Recovery, 1/13/2011
PV Project Size (kW AC):	131

Clicking on the field labels in these Rows and Columns reveals a pop up box with an explanation of this task	Select Separate Reviews Required	Input Average Review Hours 10 kW	100 kW	Hours Computed for Project Size: **131 kW**
PV Plan Reviews				
Electrical Plan Review (1st cycle)	☒ TRUE	0.5	1.5	1.6
Structural Plan Review (1st cycle)	☒ TRUE	0.5	1.5	1.6
Fire Review (1st cycle)	☐ FALSE	0.5	1.5	0.0
Planning Review (1st cycle)	☒ TRUE	0.5	1.0	1.1
Processing Time for 1st cycle	☒ TRUE	0.5	1.0	1.1
Subtotal, Plan Review (1st cycle)		2.5	6.5	5.4
2nd Cycle Review %	20%	0.3	0.7	0.5
Total, Plan Review (1st & 2nd cycle)		2.8	7.2	5.9
PV Inspections				
Bldg Attachment Inspection	☒ TRUE	0.5	1.0	1.1
Bldg Racking Inspection	☐ FALSE	0.5	1.0	0.0
Electrical Inspection	☒ TRUE	0.5	2.0	2.2
Fire Inspection	☐ FALSE	0.5	1.0	0.0
Subtotal, Inspection (1st cycle)		2.0	5.0	3.2
Inspection Turn Down Rate %	20%	0.3	0.8	0.5
Total, Inspection		2.3	5.8	3.7
Miscellaneous Amounts				
Permit Issuance Fee:	$45.00			
Billable Hourly Rate:	$135.00			
Total Hours (Plan Review & Inspection), round to 1/2 hour		5.0	13.0	9.5
Total Calculated PV Permit Fee:				**$1,328**

Maximum Permit Fees

The following table shows how we determined the maximum PV permit fee to achieve cost recovery for the 131 kW PV system size in the survey using the PV Permit Fee Calculator described in Section 4, on Page 6. This case uses a high billable hourly rate of $180, uses typical review/inspection times and selects all the possible review tasks.

131kW system (maximum cost recovery): $2,565

PV Permit Fee Calculator for Commercial Rooftop Systems

by Scott Troyer & Kurt Newick, 11/28/10 Version 2.2

Jurisdiction Name:	PV Permit Fee Study, Sierra Club, Loma Prieta Chapter
Project Name:	Maximum Computed Fee to Enable Cost Recovery, 1/13/2011
PV Project Size (kW AC):	131

Clicking on the field labels in these Rows and Columns reveals a pop up box with an explanation of this task	Select Separate Reviews Required	Input Average Review Hours 10 kW	100 kW	Hours Computed for Project Size: **131 kW**
PV Plan Reviews				
Electrical Plan Review (1st cycle)	TRUE	0.5	1.5	1.6
Structural Plan Review (1st cycle)	TRUE	0.5	1.5	1.6
Fire Review (1st cycle)	TRUE	0.5	1.5	1.6
Planning Review (1st cycle)	TRUE	0.5	1.0	1.1
Processing Time for 1st cycle	TRUE	0.5	1.0	1.1
Subtotal, Plan Review (1st cycle)		2.5	6.5	7.0
2nd Cycle Review %	20%	0.3	0.7	0.7
Total, Plan Review (1st & 2nd cycle)		2.8	7.2	7.7
PV Inspections				
Bldg Attachment Inspection	TRUE	0.5	1.0	1.1
Bldg Racking Inspection	TRUE	0.5	1.0	1.1
Electrical Inspection	TRUE	0.5	2.0	2.2
Fire Inspection	TRUE	0.5	1.0	1.1
Subtotal, Inspection (1st cycle)		2.0	5.0	5.4
Inspection Turn Down Rate %	20%	0.3	0.8	0.8
Total, Inspection		2.3	5.8	6.2
Miscellaneous Amounts				
Permit Issuance Fee:	$45.00			
Billable Hourly Rate:	$180.00			
Total Hours (Plan Review & Inspection), round to 1/2 hour		5.0	13.0	14.0
Total Calculated PV Permit Fee:				**$2,565**

Appendix C: Expedited Permit Process for PV Systems

Bill Brooks, an authority on PV issues, authored a document titled "Expedited Permit Process for PV Systems" that recommends PV permit fees similar to those listed in this Sierra Club report. The following is an excerpt from Appendix D ("Costs of Permits") of Brooks' document. We suggest that subdivisions with more than 5 similar solar units should receive additional fee reductions. (Download the full report from: http://www.brooksolar.com/files/Expedited_Explanation-5-6-09.pdf)

> Each jurisdiction may have different internal costs structures and approaches to working with solar PV systems. The following section is provided as a suggestion in developing the cost structure for a local jurisdiction.
>
> Explanation: Costs for permits are often based on the overall project cost. This works well for many conventional projects because this accurately represents the scale of the project.
>
> However, with a PV installation, the equipment costs are much higher than with other projects of similar scope. It is therefore recommended that an alternative permit fee scale be used for PV system installations. The scope of a PV installation is similar to that of installing a retrofitted residential HVAC system. The permitting costs for a PV system should be similar to those for an HVAC system.
>
> Although initial plan review and field inspection costs may be slightly higher for the first few systems, those costs should reduce as the local jurisdiction becomes familiar with the installations. A subdivision of more than 10 units should be considered for an additional fee reduction based on the repetitive nature of the reviews.
>
> **A suggested fee schedule is as follows:**
>
> Small PV system (up to 4 kW): $75 - $200
>
> Large PV system (up to 10 kW): $150 - $400
>
> For systems of 10-50 kW, consider a permit cost of $15 - $40 per kW.
>
> For systems of 50-100 kW, consider a permit cost of $1,500.
>
> For systems of 100-500 kW, consider a permit cost of $3,000.
>
> For systems up to 1000 kW, consider a permit cost of $3,000-$5,000.

Appendix D: Laws Governing PV Permits and Fees

California Government Code Section 66014 provides that fees associated with building inspections and building permits "**shall not exceed the estimated reasonable cost of providing the service for which the fee is charged**." (Emphasis added).

The California Solar Rights Act[2] **limits the review of solar energy systems by city building officials to whether they meet applicable health and safety requirements.** (See California Government Code Section 65850.5 (b) and California Health and Safety Code Section 17959.1.) Discretionary reviews, including a design review for aesthetics, are prohibited. Section 65850.5(a) states: "It is the intent of the Legislature that local agencies not adopt ordinances that create unreasonable barriers to the installation of solar energy systems, including, but not limited to, design review for aesthetic purposes**,** and not unreasonably restrict the ability of homeowners and agricultural and business concerns to install solar energy systems. It is the policy of the state to promote and encourage the use of solar energy systems and to limit obstacles to their use. <u>It is the intent of the Legislature that local agencies comply not only with the language of this section, but also the legislative intent to encourage the installation of solar energy systems by removing obstacles to, and minimizing costs of, permitting for such systems</u>."

For details on this issue, see the letter of intent about solar permit fees that State Senator Lois Wolk authored: www.SolarPermitFees.org/WolkPVFeeLetter.pdf. The letter was emailed to all California Cities on June 7, 2006.

"City attorneys have advised San Diego Chapter ICBO (now International Code Council), ...[these attorneys felt it] is legally permissible that fees somewhat exceed the direct building department costs for larger projects while being somewhat insufficient to cover direct costs for smaller projects. The city attorneys further noted that California courts have been very flexible regarding methodologies used by local jurisdictions to establish service fees."

The International City Management Association states, "If consumption of a good or activity generates public benefits, general funds should be used to subsidize that portion of the activity that benefits the community as a whole."

Summary of California Laws Governing PV Solar Permits and Fees:

www.SolarPermitFees.org/SolarPermitLawsSumCA.pdf

Detail Text of California Laws Governing PV Solar Permits and Fees:

www.SolarPermitFees.org/SolarPermitLawsDetailCA.pdf

[2] California Solar Rights Act: http://www.SolarPermitFees.org/070123_RightsActPaperFINAL.pdf

Appendix E: Case Studies

Lancaster, La Mesa, San Diego and San Leandro are model cities for Commercial PV permit fee schedules in that they charge fees that are reasonably low but still recover processing costs. For a 131 kW large commercial system La Mesa charges $1,669, San Diego $1,030, San Leandro $768 and Lancaster $670. These cities achieve fee recovery at low costs by applying the following principles:

- Basing PV permit fees on the actual staff-hours required to process the permits rather than on the cost or size of the PV projects. The latter v*aluation-based* fee methodology is the primary factor driving unreasonably high fees.
- The hours required for a trained permitting professional to review commercial PV plans and do inspections for a standard PV installation done by a licensed, professional installer are estimated in our PV Permit Fee Calculator for Commercial Rooftop Systems (far right column, "Hours Computed for Project Size"). These time and cost estimate for PV permit fees are applicable for standard rooftop commercial PV systems up to 1 MW in capacity.
- The costs of solar modules and inverters do not correlate to the resources required to review PV plans and inspect PV installations. In La Mesa, the permit fees are based on the estimated staff time for permit processing, plan review and inspections. This enables cost recovery for a 131 kW commercial project in that town with a fee of $1,669.
- The size of a PV project, while correlating to purchase price, does not correlate well to processing times. Afsaneh Ahmadi, a building official with the City of San Diego, said her staff takes about twice as long to inspect a 100 kW commercial project compared to a 10 kW project. Other cities have confirmed this time variance: for every 10-fold increase in system size, there is an approximately 2-fold increase in plan review times and a 2 to 4+ fold increase in inspection times.
- Making PV permit submittal guidelines available online. After publishing information on how to obtain a permit for PV systems in San Diego (informational bulletin 301) Martin Montessoro, an electrical plan reviewer at the City of San Diego, has noticed that applicants now better understand the permit submittal requirements. Consequently PV permit applications are more complete, enabling more efficient plan reviews, which enables cost-recovery using a very fair fee schedule for commercial PV projects ($1,030 is the total estimated permit fee for a 131 kW commercial PV project in San Diego). San Diego's PV permit fee schedule is documented in Informational Bulletin 301, downloadable at:
  www.sandiego.gov/development-services/industry/pdf/infobulletin/ib301.pdf

  In Lancaster all residential (roof and ground mounted) PV installations are reviewed over-the-counter (same day). Professionally prepared design documents conforming to Solar ABCs and California State Fire Marshall guidelines have all the necessary information and are easily reviewed on the spot for residential PV systems in the city of Lancaster. Lancaster's PV permit submittal guidelines are viewable at: www.cityoflancasterca.org/Modules/ShowDocument.aspx?documentid=11944
- Processing permit applications quickly. Jessie Wu, a building official in La Mesa, California said professionally designed commercial PV systems are reviewed and permits are likely issued within 2 to 3 business days! Prompt permit issuance is a critical factor to the solar industry, as delays cost the installer time and money.

- Over the counter permit issuance. In San Jose residential PV permits are issued on the spot (first visit) as long as the PV plans meet the city of San Jose's permit submittal criteria. A PDF of San Jose's PV plan review and permitting requirements is downloadable at: www.sanjoseca.gov/building/PDFHandouts/1-10Solar.pdf
- Cross-training staff to perform multiple types of reviews. This enables staff to review a PV application quickly and accurately. It also means fewer staff can perform all the necessary reviews instead of passing a PV application to multiple agencies or departments.
- Minimizing the number of job site inspection trips by consolidating required inspections. In San Leandro, PV systems up to 8 kW require only one inspection. Larger systems typically require only two: a progress inspection for the attachments and mounting system, and a final inspection for the electrical components.
- Lastly, these cities are aware of solar energy's importance, local and global, to the cause of promoting renewable energy and combating global warming. Low permit fees and quick processing times encourage people to install PV systems.

Note that certain factors beyond a jurisdiction's control can inflate a city's processing costs, and therefore its fees, for a particular permit:

- Installations that fail inspections cost more time and money for city staff. The cities featured in this case study section charge re-inspection fees for third and subsequent failed inspections. This helps these cities recover their costs without penalizing PV installers who perform better quality work.
- According to Craig Earl, with the Building and Safety Division, Dept. of Public Works, at the city of Lancaster, California, PV permitting times vary widely for projects of 1 kW to 500 kW. Earl quantifies this range of times as between 2 to 30 hours. This means that one fixed permit fee that does not vary by system size is not fair or appropriate for jurisdictions that work on a large range of PV project sizes from small residential to large commercial or industrial scale solar.
- Several factors can make a PV system more complex: inadequate structural support of the building to hold the solar panels, ground mounting, high wind conditions, battery storage, large system sizes and so on. It is reasonable to assess extra fees for such complications because they require city staff to expend more resources on reviews and inspections. To insure full cost recover jurisdictions must be allowed to charge more for certain non-standard or complex PV projects. For such cases a "complexity factor" can be used to assess additional fees. The same concept applies in reverse to small, easy to review PV installations (i.e., jurisdictions may be able to fully recoup expenses with a reduced fee). For simplicity sake it may be easier to adhere to a standard PV permit fee schedule, but there are disadvantages to this. Thus permitting authorities should have authority to set fees as appropriate for each project.
- Solar permit applicants sometimes submit incomplete or inaccurate applications. Failed reviews cost more time and money for city staff. Having a professional engineer (or licensed design professional) *stamp* and *sign* the PV plans can expedite the permitting process.
- The building that will support the PV system might require structural modifications. In such cases, cities are justified in calculating the extra fee amount based on the cost of those modifications. This is reasonable, as reviewing and inspecting structural modifications requires more staff hours.
- For jurisdictions that cover a large geographic area, it could take inspectors longer to drive to the PV installation site. This directly increases the staff time, and therefore cost, to inspect a system.