



Loma Prieta Chapter

SOLAR ELECTRIC PERMIT FEES FOR COMMERCIAL INSTALLATIONS IN THE SAN FRANCISCO BAY AREA

A COMPARATIVE REPORT

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Version 2.1

Executive Summary

A mid-2010 survey by the Sierra Club revealed wide variation in permit fees charged for commercial rooftop photovoltaic (PV) energy systems by municipalities in three counties in the San Francisco Bay Area. The survey found that fees for commercial PV projects of 131 kW in size varied from \$0 to over \$13,000. High fees can discourage businesses from making good, long-term, high-yield investments in solar power. 37% of the surveyed municipalities are charging fees that exceed the maximum cost-recovery levels identified in this report.

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 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 businesses 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 the detailed survey responses at:

www.SolarPermitFees.org/PVCommercialPermitFeeSpreadsheet.html

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1 Background

For many businesses in the sunshine-rich San Francisco Bay 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 statutes 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 Summer 2010, the Sierra Club surveyed three counties in the San Francisco Bay Area to determine how much municipalities charge for permits to install solar panels on commercial rooftops. The survey asked municipalities to provide permitting costs for three different configurations: 8, 49, and 131kW. The 8kW configuration was chosen so as to allow easy comparison between the permit fees for a commercial and a residential system (8kW lies within the typical range of both). The 49 and 131kW sizes were chosen to investigate how the fees varied by system size and cost. One survey was conducted for each county. These surveys are available at:

Alameda County: www.SolarPermitFees.org/PVFeeSurveyAlamedaCountyNonRes.pdf

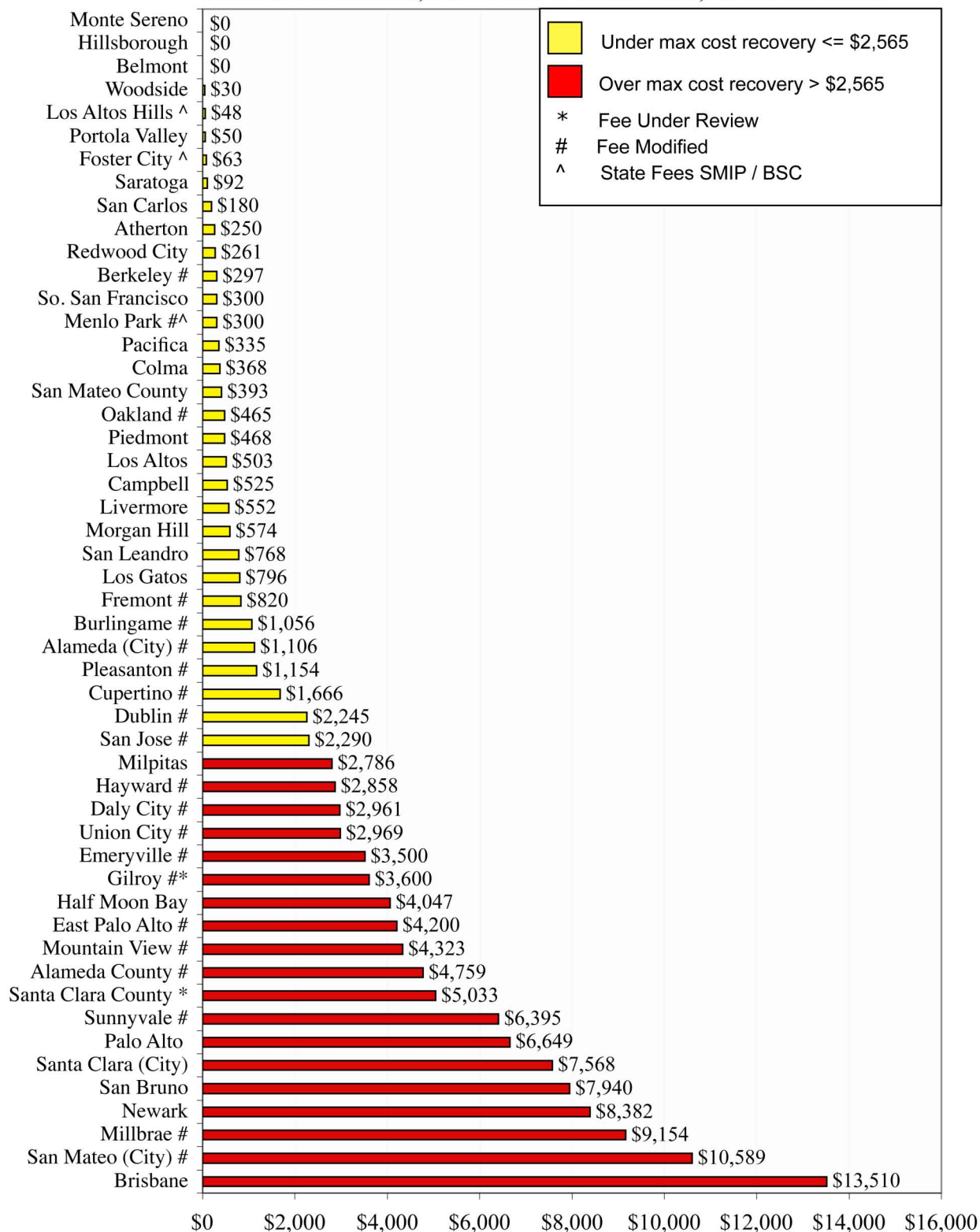
San Mateo County: www.SolarPermitFees.org/PVFeeSurveySanMateoCountyNonRes.pdf

Santa Clara County: www.SolarPermitFees.org/PVFeeSurveySantaClaraCountyNonRes.pdf

The responses reveal wide variations. Some municipalities charge nothing, but others charge over \$13,000 for a permit for a 131kW system. Many have a fee that exceeds any reasonable estimate for cost recovery. The following graph shows fees by municipality for a 131kW system in the surveyed counties. The darker (red) bars denote fees that exceed the maximum amount estimated for cost recovery. See Section 4, PV Permit Fee Calculator, for an explanation of how we determined the maximum amounts.

PV Solar Permit Fees for 131 kW Commercial Rooftop Systems

Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



Appendix B provides the complete survey results.

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, and a 100kW PV system typically takes about two to three times as long to process as a 10kW permit.

4 PV Permit Fee Calculator

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 survey 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 survey 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 G: Case Studies on Page 33 for a description of how some cities have economized their PV permit process.

5 Recommendations

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

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.

5.1 Commercial PV permit processing and fee calculation methodology

Ideally, building departments would design a fee calculator 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.

For this report, we've used the calculator's default values and a reasonable billable hourly rate of \$135 to compute a *reasonable* fee to achieve cost recovery for the three sizes of PV system included in this survey. For details on how we calculated these fees, see Appendix C, Reasonable Permit Fees on Page 24.

Estimated *reasonable* PV permit fee for cost recovery:

- 8kW: \$493
- 49kW: \$965
- 131kW: \$1,438

We've also used the calculator's maximum review tasks with default values for processing time and a high billable hourly rate of \$165 to compute the *maximum* fee required to achieve cost recovery for the three sizes of PV system included in this survey. For details on how we calculated these fees, see Appendix C, Maximum Permit Fees on Page 27.

Estimated *maximum* PV permit fee for cost recovery:

- 8kW: \$825
- 49kW: \$1,733
- 131kW: \$2,558
- **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.
- **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.
- **Consider fast-tracking applications for solar contractors who have reliable track records** for PV installations. One process for fast-tracking an experienced contractor is to

allow that contractor to submit an initial master PV plan to the building department for review. Based on that review, the contractor and building department could refine the master PV plan until it becomes an agreed-upon template for future PV plans. When that contractor applies for future PV permits, the building department's plan review could be completed quickly or even over-the-counter for PV systems that resemble the pre-approved permit submittal master.

- **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.
- **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

5.2 Residential PV permit fees

A fixed fee approach for residential systems is appropriate because the time required for plan review and inspection is neither size dependant 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. See Appendix H for details.

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,
Email: KurtNewick@yahoo.com, Phone: 408-370-9636
- Malcolm Crawford—Report co-author,
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- Carl Mills—Report co-author, Email: carlmills@yahoo.com, Phone: 510-427-2917
- Scott Troyer—PV Permit Fee Calculator author and expert permit process consultant,
Email: astroyer@comcast.net, Phone: 408-738-2603
- Wendy Boyle—Team leader of letters sent to municipalities and PV permit fee surveyor assistant

7.2 Download or View the Report Online

- Report: www.SolarPermitFees.org/PVFeeStudyCommercial.pdf
- Web page for this report: www.solarpermitfees.org/sfbay.html
- Executive summary: www.SolarPermitFees.org/PVFeeCommercialExecSum.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:**
www.SolarPermitFees.org
- **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 (Jan. 2011):**
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**

- **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:**

http://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?":

<http://www.nmsu.edu/~tdi/pdf-resources/IAEI-5to6-05.pdf>

"Photovoltaic Power Systems: What Inspectors Should Know":

<http://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:
http://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:
http://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: <http://www.solarenergy.org/>
- **National Association of Board Certified Energy Practitioners**, a North American certification organization of solar PV and solar Thermal energy system installers: <http://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:**
<http://www.gosolarcalifornia.com/>
- **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 June 20, 2010 through August 17, 2010. It included all the municipalities in Alameda, San Mateo, and Santa Clara counties. 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 confirmed their jurisdictions responses—most in writing—and the survey team made any requested changes that the CBOs suggested.

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

Question 1: 8 kW Size

What is the total cost for the permit to install an 8 kW PV system flush-mounted to a non-residential roof (such as a doctor's office) in your jurisdiction? Include any and all fees necessary for permit issuance, with itemization if possible.

The PV system is valued at \$74,000 (value before any rebates or tax credits). Assume 40 solar modules, 2 inverters, no external DC disconnect, no DC combiner boxes, and 2 AC circuit breakers (30 AMPS each).

Question 2: 49 kW Size

What is the total cost for the permit to install a 49 kW PV system that is rack-mounted on the roof of a two-story commercial building (such as a specialty grocery store) in your jurisdiction? Include any and all fees necessary for permit issuance, with itemization if possible.

The PV system is valued at \$475,000 (value before any rebates or tax credits). Assume 243 solar modules, 1 inverter, 1 DC disconnect switch, 1 DC combiner box and 1 AC circuit breaker (250 AMPS).

Question 3: 131 kW Size

What is the total cost 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).

IMPORTANT NOTE:

The value used for the 131 kW PV project in this survey is \$1,200,000. This was the approximate market price for a fully installed commercial PV system when this survey was designed in 2008. To be consistent, we have decided to use the same survey question 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. Although PV module prices fluctuate, the PV permit process is independent from this.

Appendix B: Survey Results

One survey was created for each county:

Alameda County: www.SolarPermitFees.org/PVFeeSurveyAlamedaCountyNonRes.pdf

San Mateo County: www.SolarPermitFees.org/PVFeeSurveySanMateoCountyNonRes.pdf

Santa Clara County: www.SolarPermitFees.org/PVFeeSurveySantaClaraCountyNonRes.pdf

The following Google docs spreadsheet shows the survey response details, including itemized PV permit fee information, response dates and the names of those who responded:

www.solarpermitfees.org/PVCommercialPermitFeeSpreadsheet.html

The following chart shows the permit fee charged by each municipality for each of the system sizes, ranked by fee.

PV Commercial Permit Fees, Counties of: Alameda, San Mateo & Santa Clara

Sierra Club Solar Permit Fee Survey as of 7/27/2011

| Ranked by Fee Municipality | 8kW Fee | Ranked by Fee Municipality | 49 kW Fee | Ranked by Fee Municipality | 131 kW Fee |
|-------------------------------|------------|-------------------------------|--------------|-------------------------------|---------------|
| Brisbane | \$1,666 | Brisbane | \$5,950 | Brisbane | \$13,510 |
| Gilroy #* | \$1,400 | San Mateo (City) # | \$4,740 | San Mateo (City) # | \$10,589 |
| San Mateo (City) # | \$1,318 | Millbrae # | \$4,005 | Millbrae # | \$9,154 |
| Dublin | \$1,272 | Sunnyvale # | \$3,856 | Newark | \$8,382 |
| Hayward # | \$1,176 | Santa Clara (City) | \$3,632 | San Bruno | \$7,940 |
| Daly City # | \$1,162 | Newark | \$3,561 | Santa Clara (City) | \$7,568 |
| Millbrae # | \$1,139 | San Bruno | \$3,020 | Palo Alto | \$6,649 |
| Santa Clara (City) | \$1,119 | Milpitas | \$2,786 | Sunnyvale # | \$6,395 |
| Milpitas | \$961 | Palo Alto | \$2,599 | Santa Clara County * | \$5,033 |
| Newark | \$875 | Santa Clara County * | \$2,539 | Alameda County # | \$4,759 |
| Alameda (City) # | \$869 | Gilroy #* | \$2,400 | Mountain View # | \$4,323 |
| Alameda County # | \$781 | San Jose # | \$2,290 | East Palo Alto # | \$4,200 |
| East Palo Alto # | \$741 | East Palo Alto # | \$2,200 | Half Moon Bay | \$4,047 |
| Union City * | \$695 | Alameda County # | \$2,146 | Gilroy #* | \$3,600 |
| Emeryville # | \$650 | Mountain View # | \$2,115 | Emeryville # | \$3,500 |
| Sunnyvale # | \$634 | Half Moon Bay | \$2,029 | Union City # | \$2,969 |
| Burlingame | \$571 | Emeryville # | \$1,800 | Daly City # | \$2,961 |
| Palo Alto | \$569 | Hayward # | \$1,682 | Hayward # | \$2,858 |
| Mountain View # | \$566 | Union City # | \$1,663 | Milpitas | \$2,786 |
| San Bruno | \$560 | Daly City # | \$1,386 | San Jose # | \$2,290 |
| Los Gatos | \$550 | Dublin | \$1,345 | Dublin # | \$2,245 |

| | |
|----------------------|-------|
| Fremont # | \$530 |
| Cupertino # | \$524 |
| Half Moon Bay | \$522 |
| Los Altos | \$503 |
| Oakland # | \$465 |
| Santa Clara County * | \$382 |
| San Leandro | \$373 |
| San Mateo County | \$348 |
| Pacifica | \$335 |
| Piedmont | \$310 |
| San Jose # | \$310 |
| South San Francisco | \$300 |
| Morgan Hill | \$293 |
| Pleasanton | \$291 |
| Livermore | \$276 |
| Redwood City | \$261 |
| Atherton | \$250 |
| Campbell | \$225 |
| Berkeley # | \$212 |
| Colma | \$208 |
| San Carlos | \$180 |
| Saratoga | \$92 |
| Portola Valley | \$50 |
| Woodside | \$30 |
| Menlo Park #^ | \$19 |
| Foster City ^ | \$11 |
| Los Altos Hills ^ | \$3 |
| Belmont | \$0 |
| Hillsborough | \$0 |
| Monte Sereno | \$0 |
| Average | \$521 |
| Albany ? | |

| | |
|---------------------|---------|
| Alameda (City) # | \$953 |
| Cupertino # | \$911 |
| Burlingame # | \$772 |
| San Leandro # | \$768 |
| Los Gatos | \$673 |
| Pleasanton # | \$650 |
| Fremont # | \$635 |
| Los Altos | \$503 |
| Oakland # | \$465 |
| Livermore | \$414 |
| Morgan Hill | \$393 |
| Campbell | \$375 |
| Piedmont | \$367 |
| San Mateo County | \$364 |
| Pacifica | \$335 |
| South San Francisco | \$300 |
| Berkeley # | \$297 |
| Redwood City | \$261 |
| Atherton | \$250 |
| Colma | \$235 |
| San Carlos | \$180 |
| Menlo Park #^ | \$119 |
| Saratoga | \$92 |
| Portola Valley | \$50 |
| Foster City ^ | \$30 |
| Woodside | \$30 |
| Los Altos Hills ^ | \$19 |
| Belmont | \$0 |
| Hillsborough | \$0 |
| Monte Sereno | \$0 |
| Average | \$1,337 |
| Albany ? | |

| | |
|-------------------|---------|
| Cupertino # | \$1,666 |
| Pleasanton # | \$1,154 |
| Alameda (City) # | \$1,106 |
| Burlingame # | \$1,056 |
| Fremont # | \$820 |
| Los Gatos | \$796 |
| San Leandro | \$768 |
| Morgan Hill | \$574 |
| Livermore | \$552 |
| Campbell | \$525 |
| Los Altos | \$503 |
| Piedmont | \$468 |
| Oakland # | \$465 |
| San Mateo County | \$393 |
| Colma | \$368 |
| Pacifica | \$335 |
| Menlo Park #^ | \$300 |
| So. San Francisco | \$300 |
| Berkeley # | \$297 |
| Redwood City | \$261 |
| Atherton | \$250 |
| San Carlos | \$180 |
| Saratoga | \$92 |
| Foster City ^ | \$63 |
| Portola Valley | \$50 |
| Los Altos Hills ^ | \$48 |
| Woodside | \$30 |
| Belmont | \$0 |
| Hillsborough | \$0 |
| Monte Sereno | \$0 |
| Average | \$2,533 |
| Albany ? | |

* Fees under review

Fees modified significantly

? Fees unknown for survey

^ State Fees SMIP/BSC

The following chart shows the permit fee that each municipality charges for each system size, ranked alphabetically with notes on changes between 2008 and 2011 for the 131 kW size.

PV Permit Fees, Commercial Systems, Counties of: Alameda, San Mateo & Santa Clara

| Sierra Club PV Permit Fee Survey as of 7/27/2011 | | | | |
|--|----------|-----------|------------|-------------------------|
| Municipality | 8 kW Fee | 49 kW Fee | 131 kW Fee | 131 kW Notes |
| Alameda (City) # | \$869 | \$953 | \$1,106 | Reduced from \$4,620 |
| Alameda County # | \$781 | \$2,146 | \$4,759 | Reduced from \$25,942 |
| Albany ? | | | | |
| Atherton | \$250 | \$250 | \$250 | |
| Belmont | \$0 | \$0 | \$0 | |
| Berkeley # | \$212 | \$297 | \$297 | Reduced from \$12,000 |
| Brisbane | \$1,666 | \$5,950 | \$13,510 | Increased from \$13,351 |
| Burlingame # | \$571 | \$772 | \$1,056 | Increased from \$612 |
| Campbell | \$225 | \$375 | \$525 | |
| Colma | \$208 | \$235 | \$368 | Increased from \$320 |
| Cupertino # | \$524 | \$911 | \$1,666 | Reduced from \$39,573 |
| Daly City # | \$1,162 | \$1,386 | \$2,961 | Reduced from \$18,365 |
| Dublin # | \$1,272 | \$1,345 | \$2,245 | Reduced from \$10,000 |
| East Palo Alto # | \$741 | \$2,200 | \$4,200 | Reduced from \$26,000 |
| Emeryville # | \$650 | \$1,800 | \$3,500 | Reduced from \$24,108 |
| Foster City ^ | \$11 | \$30 | \$63 | Increased from \$0 |
| Fremont # | \$530 | \$635 | \$820 | Reduced from \$11,277 |
| Gilroy #* | \$1,400 | \$2,400 | \$3,600 | Reduced from \$15,737 |
| Half Moon Bay | \$522 | \$2,029 | \$4,047 | |
| Hayward # | \$1,176 | \$1,682 | \$2,858 | Increased from \$300 |
| Hillsborough # | \$0 | \$0 | \$0 | Reduced from \$509 |
| Livermore | \$276 | \$414 | \$552 | |
| Los Altos | \$503 | \$503 | \$503 | Increased from \$474 |
| Los Altos Hills ^ | \$3 | \$19 | \$48 | Increased from \$0 |
| Los Gatos | \$550 | \$673 | \$796 | Increased from \$617 |
| Menlo Park #^ | \$19 | \$119 | \$300 | Reduced from \$6,960 |
| Millbrae # | \$1,139 | \$4,005 | \$9,154 | Reduced from \$10,104 |
| Milpitas | \$961 | \$2,786 | \$2,786 | Increased from \$2,776 |
| Monte Sereno | \$0 | \$0 | \$0 | |

| | | | | |
|----------------------|--------------|----------------|----------------|-----------------------------|
| Morgan Hill | \$293 | \$393 | \$575 | Reduced from \$620 |
| Mountain View # | \$566 | \$2,115 | \$4,323 | Reduced from \$17,100 |
| Newark | \$875 | \$3,561 | \$8,382 | Increased from \$3,322 |
| Oakland | \$465 | \$465 | \$465 | Increased from \$220 |
| Pacifica | \$335 | \$335 | \$335 | Increased from \$334 |
| Palo Alto | \$569 | \$2,599 | \$6,649 | Reduced from \$6,736 |
| Piedmont | \$310 | \$367 | \$468 | Increased from \$420 |
| Pleasanton # | \$291 | \$650 | \$1,154 | Increased from \$465 |
| Portola Valley | \$50 | \$50 | \$50 | Reduced from \$97 |
| Redwood City | \$261 | \$261 | \$261 | |
| San Bruno | \$560 | \$3,020 | \$7,940 | |
| San Carlos | \$180 | \$180 | \$180 | Increased from \$176 |
| San Jose # | \$310 | \$2,290 | \$2,290 | Reduced from \$2,750 |
| San Leandro | \$373 | \$768 | \$768 | Reduced from \$775 |
| San Mateo (City) # | \$1,318 | \$4,740 | \$10,589 | Increased from \$318 |
| San Mateo County | \$348 | \$364 | \$393 | Increased from \$345 |
| Santa Clara (City) | \$1,119 | \$3,632 | \$7,568 | |
| Santa Clara County * | \$382 | \$2,539 | \$5,033 | |
| Saratoga | \$92 | \$92 | \$92 | |
| South San Francisco | \$300 | \$300 | \$300 | |
| Sunnyvale # | \$634 | \$3,856 | \$6,395 | Reduced from \$25,377 |
| Union City # | \$695 | \$1,663 | \$2,969 | Reduced from \$9,330 |
| Woodside | \$30 | \$30 | \$30 | |
| Average # | \$521 | \$1,337 | \$2,533 | Reduced from \$6,423 |

* Fees under review

Fees modified significantly

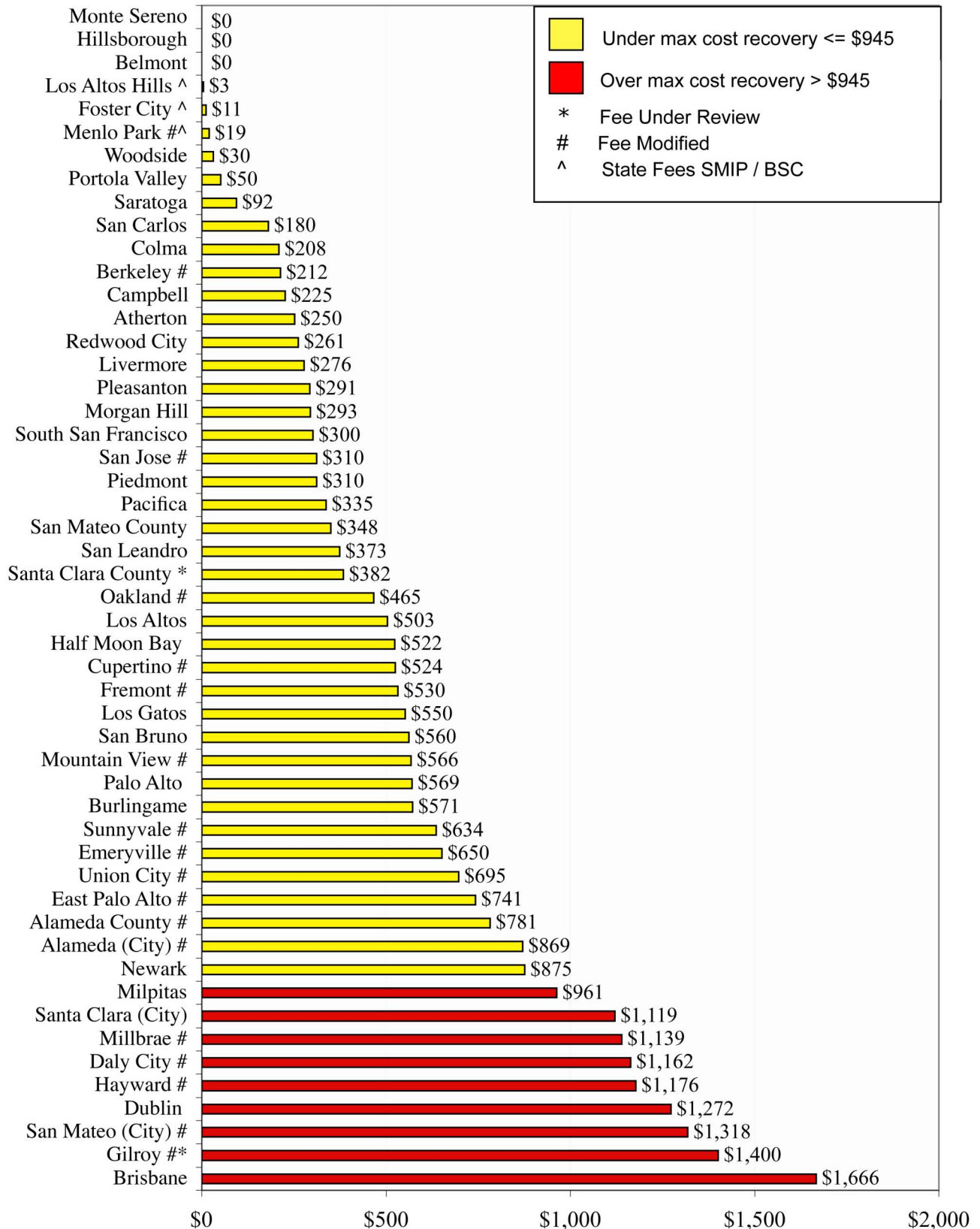
? Fees unknown for survey

^ State Fees SMIP/BSC

The following graphs present the survey data ordered by cost for each system size. 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 C describe how the estimated maximum cost-recovery levels were determined.

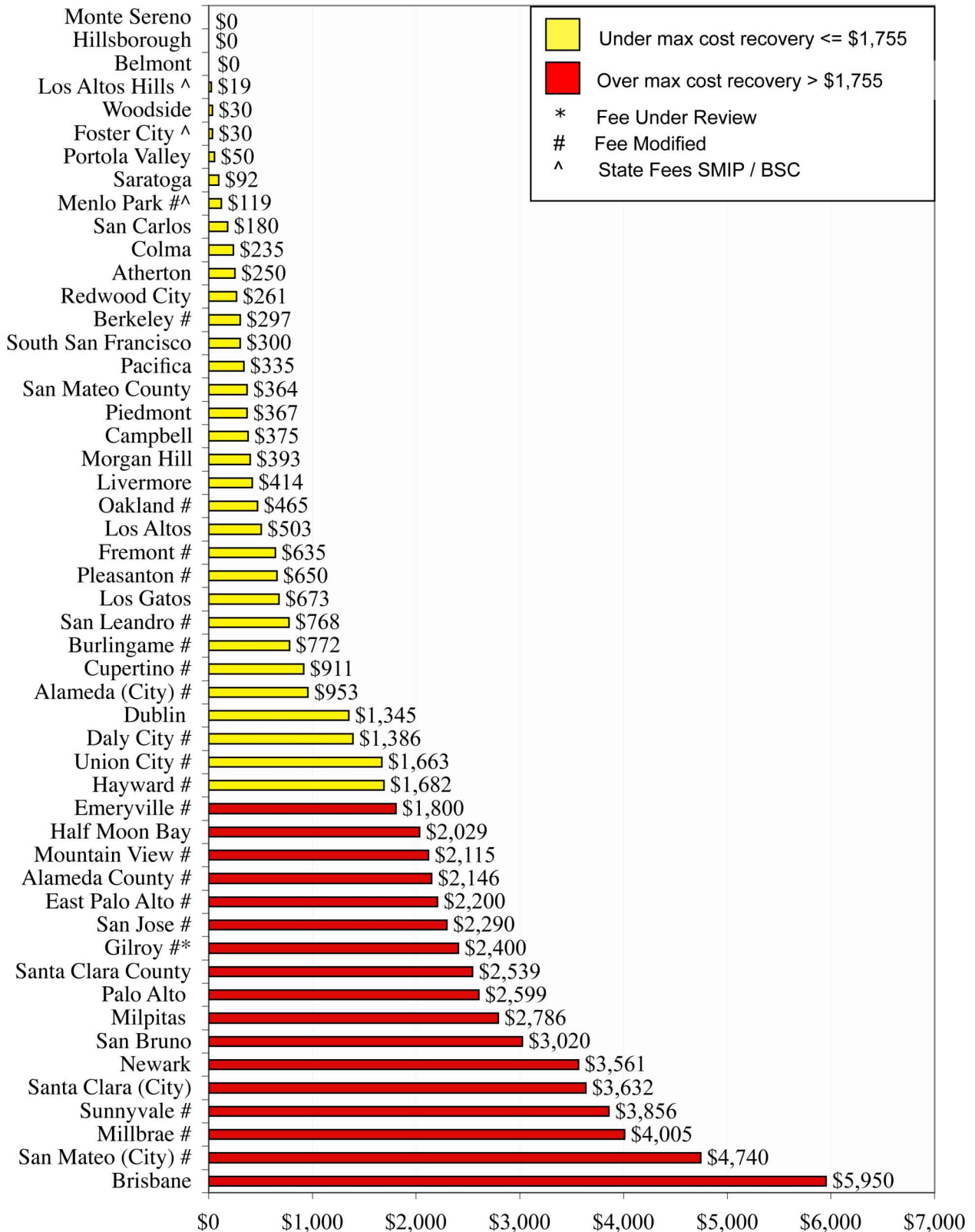
PV Solar Permit Fees for 8 kW Commercial Rooftop Systems

Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



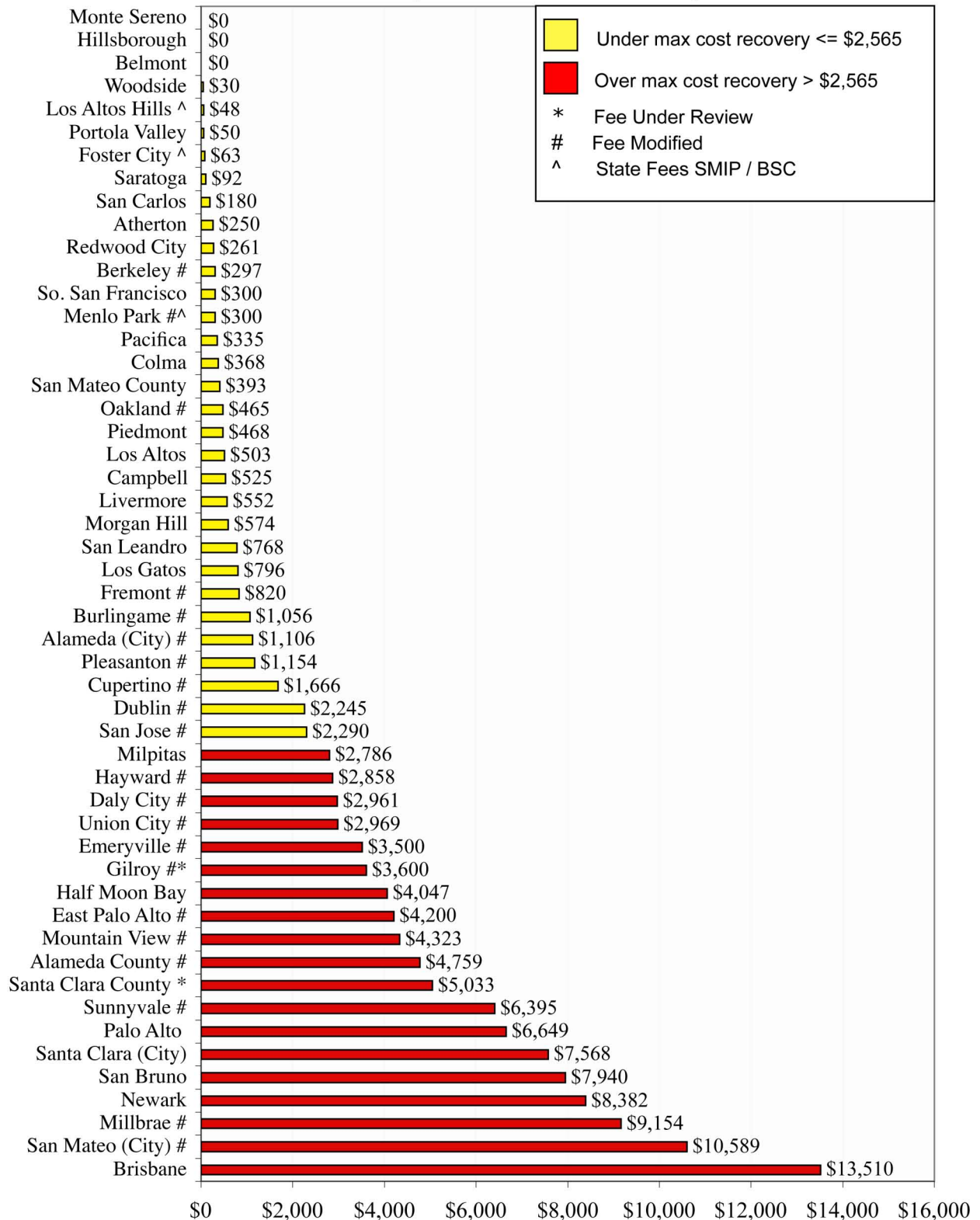
PV Solar Permit Fees for 49 kW Commercial Rooftop Systems

Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



PV Solar Permit Fees for 131 kW Commercial Rooftop Systems

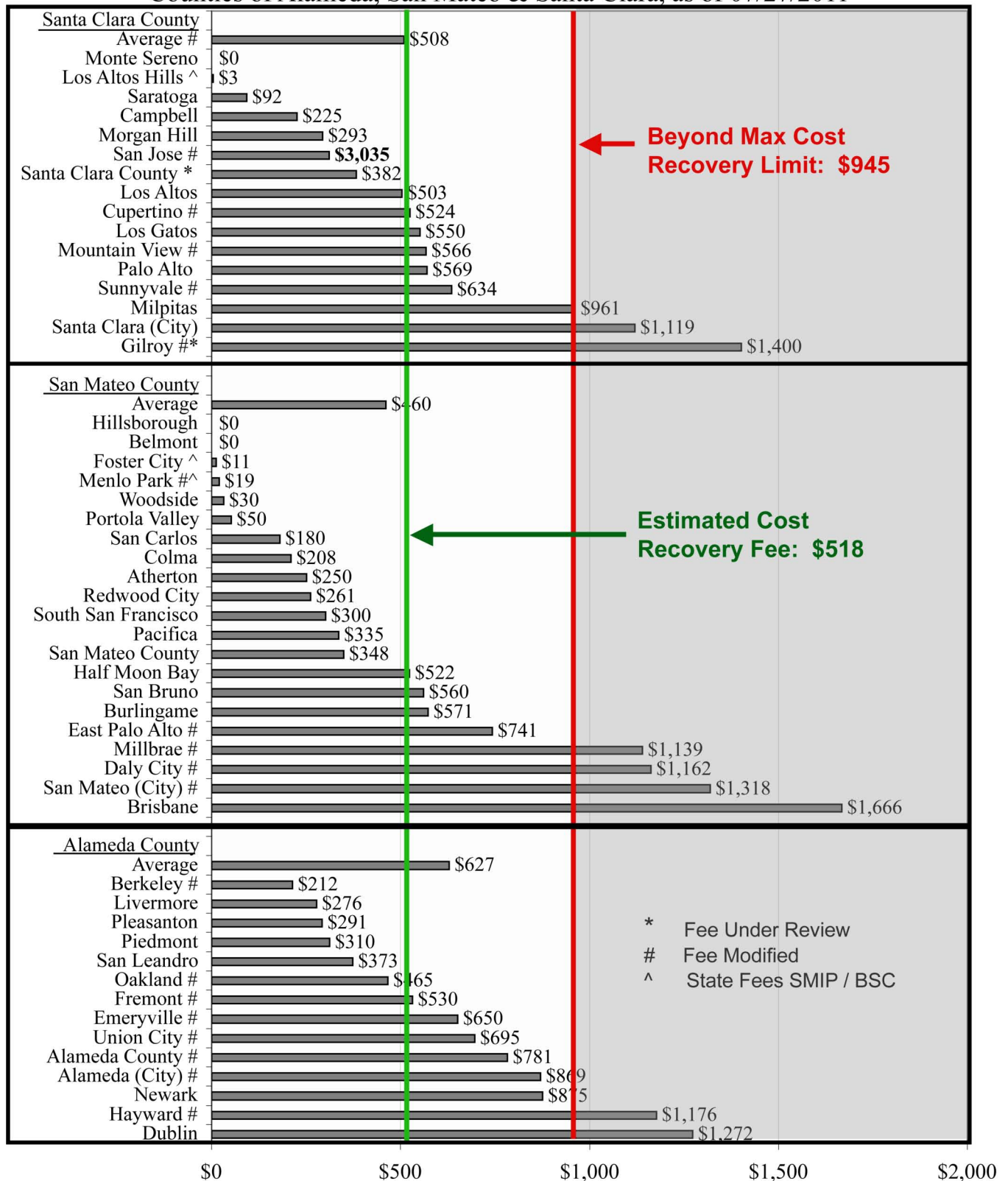
Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



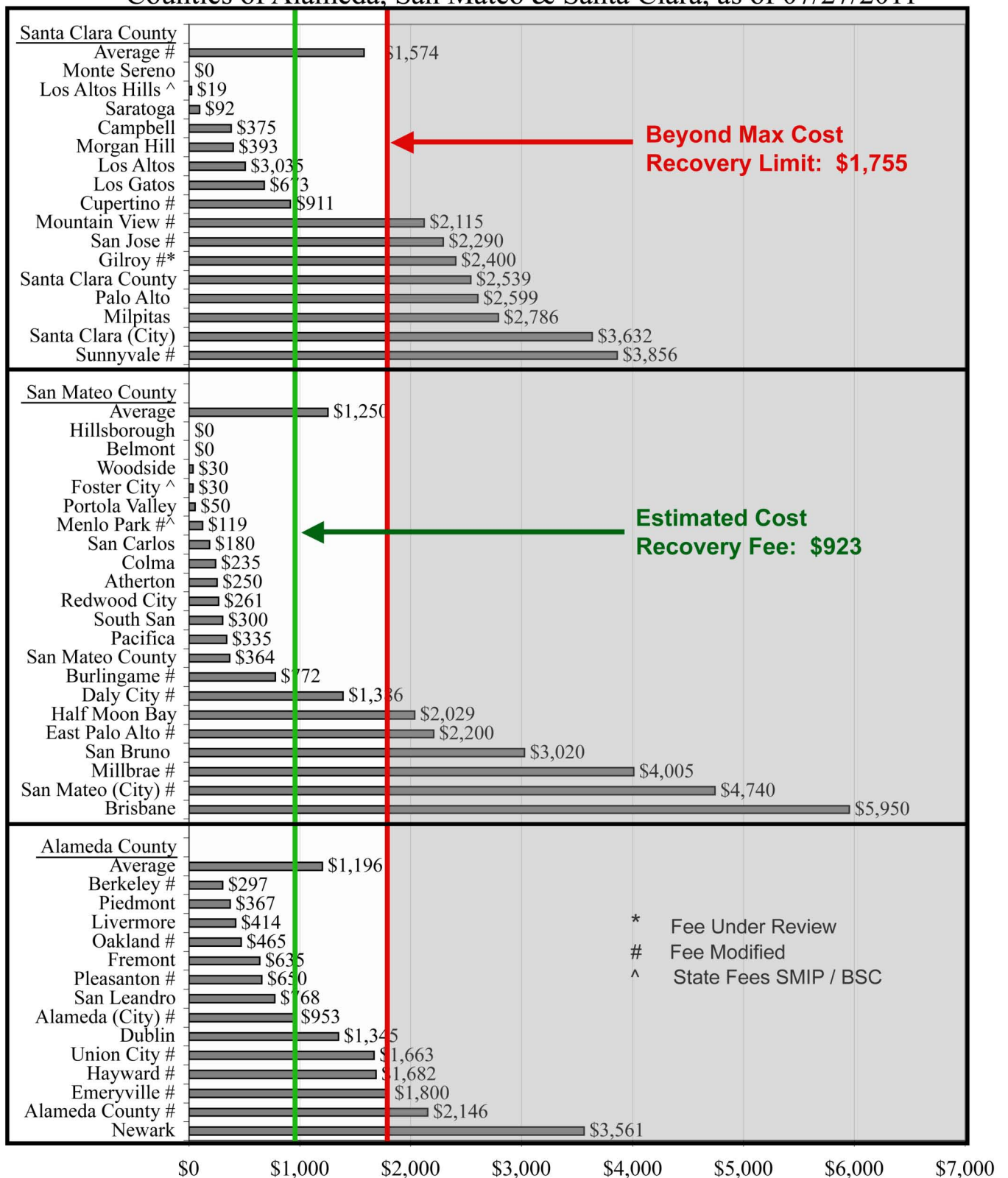
The following graphs present survey data ordered alphabetically by jurisdiction within each county to show how fees compare to the estimated reasonable and the estimated maximum cost recovery levels according to the recommendations in this report. Sections 4 and 5 and Appendix C describe how the estimated reasonable and maximum cost-recovery levels were determined.

PV Solar Permit Fees for 8 kW Commercial Rooftop Systems

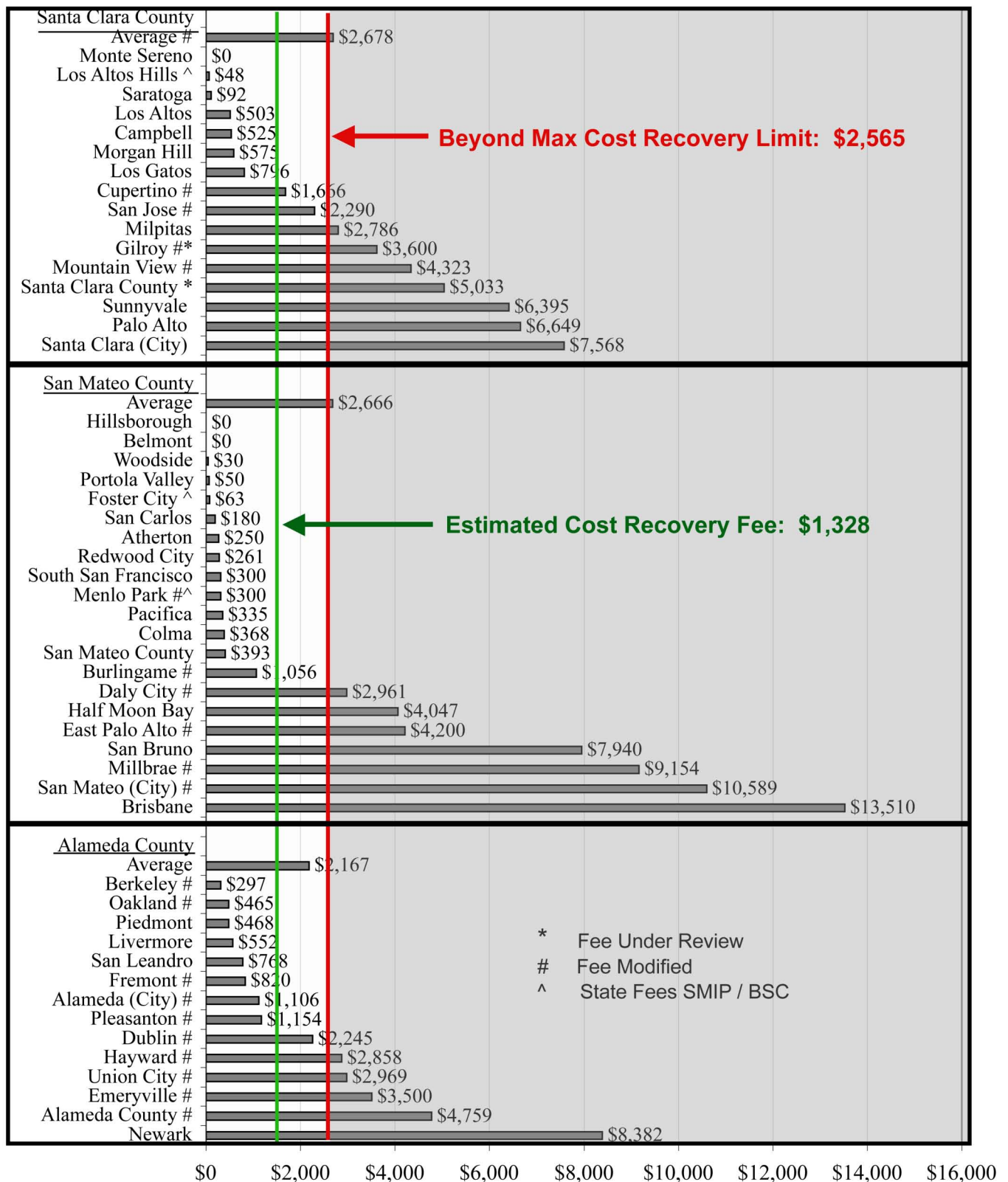
Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



PV Solar Permit Fees for 49 kW Commercial Rooftop Systems Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011



**PV Solar Permit Fees for 131 kW Commercial Rooftop Systems
Counties of Alameda, San Mateo & Santa Clara, as of 07/27/2011**



Appendix C: Recommended Permit Fees

Reasonable Permit Fees

The following tables show how we determined a reasonable PV permit fee to achieve cost recovery for each system size in the survey using the PV Permit Fee Calculator described on Page 5. We used a billable hourly rate of \$135, used the default review/inspection times and selected the most common, required review tasks.

8kW system (reasonable cost recovery): \$518

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): 8

| 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 | | Hours Computed for Project Size: 8 kW |
|--|--|----------------------------|-------------|---------------------------------------|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 0.5 |
| Structural Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 0.5 |
| Fire Review (1st cycle) | <input type="checkbox"/> FALSE | 0.5 | 1.5 | 0.0 |
| Planning Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Processing Time for 1st cycle | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Subtotal, Plan Review (1st cycle) | | 2.5 | 6.5 | 2.0 |
| 2nd Cycle Review % | 20% | 0.3 | 0.7 | 0.2 |
| Total, Plan Review (1st & 2nd cycle) | | <u>2.8</u> | <u>7.2</u> | <u>2.2</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Bldg Racking Inspection | <input type="checkbox"/> FALSE | 0.5 | 1.0 | 0.0 |
| Electrical Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 2.0 | 0.5 |
| Fire Inspection | <input type="checkbox"/> FALSE | 0.5 | 1.0 | 0.0 |
| Subtotal, Inspection (1st cycle) | | 2.0 | 5.0 | 1.0 |
| Inspection Turn Down Rate % | 20% | 0.3 | 0.8 | 0.2 |
| Total, Inspection | | <u>2.3</u> | <u>5.8</u> | <u>1.2</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$135.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>3.5</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$518</u> |

49kW system (reasonable cost recovery): \$923**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): 49

| 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 | | Hours Computed for Project Size: 49 kW |
|--|--|----------------------------|-------------|--|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.1 |
| Structural Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.1 |
| Fire Review (1st cycle) | <input type="checkbox"/> FALSE | 0.5 | 1.5 | 0.0 |
| Planning Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.8 |
| Processing Time for 1st cycle | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.8 |
| Subtotal, Plan Review (1st cycle) | | 2.5 | 6.5 | 3.7 |
| 2nd Cycle Review % | 20% | 0.3 | 0.7 | 0.4 |
| Total, Plan Review (1st & 2nd cycle) | | <u>2.8</u> | <u>7.2</u> | <u>4.1</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.8 |
| Bldg Racking Inspection | <input type="checkbox"/> FALSE | 0.5 | 1.0 | 0.0 |
| Electrical Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 2.0 | 1.4 |
| Fire Inspection | <input type="checkbox"/> FALSE | 0.5 | 1.0 | 0.0 |
| Subtotal, Inspection (1st cycle) | | 2.0 | 5.0 | 2.2 |
| Inspection Turn Down Rate % | 20% | 0.3 | 0.8 | 0.3 |
| Total, Inspection | | <u>2.3</u> | <u>5.8</u> | <u>2.5</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$135.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>6.5</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$923</u> |

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 | | Hours Computed for Project Size: 131 kW |
|--|--|----------------------------|-------------|--|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.6 |
| Structural Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.6 |
| Fire Review (1st cycle) | <input type="checkbox"/> FALSE | 0.5 | 1.5 | 0.0 |
| Planning Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 1.1 |
| Processing Time for 1st cycle | <input checked="" type="checkbox"/> 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) | | <u>2.8</u> | <u>7.2</u> | <u>5.9</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 1.1 |
| Bldg Racking Inspection | <input type="checkbox"/> FALSE | 0.5 | 1.0 | 0.0 |
| Electrical Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 2.0 | 2.2 |
| Fire Inspection | <input type="checkbox"/> 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 | | <u>2.3</u> | <u>5.8</u> | <u>3.7</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$135.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>9.5</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$1,328</u> |

Maximum Permit Fees

The following tables show how we determined the maximum PV permit fee to achieve cost recovery for each system size in the survey using the PV Permit Fee Calculator described in Section 4, on Page 5. We used a high billable hourly rate of \$180, used the default review/inspection times and selected all the possible review tasks.

8kW system (maximum cost recovery): \$945

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): | 8 |

| 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 | | Hours Computed for Project Size: 8 kW |
|--|--|----------------------------|-------------|---------------------------------------|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 0.5 |
| Structural Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 0.5 |
| Fire Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 0.5 |
| Planning Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Processing Time for 1st cycle | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Subtotal, Plan Review (1st cycle) | | 2.5 | 6.5 | 2.5 |
| 2nd Cycle Review % | 20% | 0.3 | 0.7 | 0.3 |
| Total, Plan Review (1st & 2nd cycle) | | <u>2.8</u> | <u>7.2</u> | <u>2.8</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Bldg Racking Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Electrical Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 2.0 | 0.5 |
| Fire Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 0.5 |
| Subtotal, Inspection (1st cycle) | | 2.0 | 5.0 | 2.0 |
| Inspection Turn Down Rate % | 20% | 0.3 | 0.8 | 0.3 |
| Total, Inspection | | <u>2.3</u> | <u>5.8</u> | <u>2.3</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$180.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>5.0</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$945</u> |










49kW system (maximum cost recovery): \$1,755**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): 49

| 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 | | Hours Computed for Project Size: 49 kW |
|--|--|----------------------------|-------------|--|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) |  TRUE | 0.5 | 1.5 | 1.1 |
| Structural Plan Review (1st cycle) |  TRUE | 0.5 | 1.5 | 1.1 |
| Fire Review (1st cycle) |  TRUE | 0.5 | 1.5 | 1.1 |
| Planning Review (1st cycle) |  TRUE | 0.5 | 1.0 | 0.8 |
| Processing Time for 1st cycle |  TRUE | 0.5 | 1.0 | 0.8 |
| Subtotal, Plan Review (1st cycle) | | 2.5 | 6.5 | 4.8 |
| 2nd Cycle Review % | 20% | 0.3 | 0.7 | 0.5 |
| Total, Plan Review (1st & 2nd cycle) | | <u>2.8</u> | <u>7.2</u> | <u>5.3</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection |  TRUE | 0.5 | 1.0 | 0.8 |
| Bldg Racking Inspection |  TRUE | 0.5 | 1.0 | 0.8 |
| Electrical Inspection |  TRUE | 0.5 | 2.0 | 1.4 |
| Fire Inspection |  TRUE | 0.5 | 1.0 | 0.8 |
| Subtotal, Inspection (1st cycle) | | 2.0 | 5.0 | 3.7 |
| Inspection Turn Down Rate % | 20% | 0.3 | 0.8 | 0.6 |
| Total, Inspection | | <u>2.3</u> | <u>5.8</u> | <u>4.3</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$180.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>9.5</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$1,755</u> |

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 | | Hours Computed for Project Size: 131 kW |
|--|--|----------------------------|-------------|--|
| | | 10 kW | 100 kW | |
| PV Plan Reviews | | | | |
| Electrical Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.6 |
| Structural Plan Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.6 |
| Fire Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.5 | 1.6 |
| Planning Review (1st cycle) | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 1.1 |
| Processing Time for 1st cycle | <input checked="" type="checkbox"/> 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) | | <u>2.8</u> | <u>7.2</u> | <u>7.7</u> |
| PV Inspections | | | | |
| Bldg Attachment Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 1.1 |
| Bldg Racking Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 1.0 | 1.1 |
| Electrical Inspection | <input checked="" type="checkbox"/> TRUE | 0.5 | 2.0 | 2.2 |
| Fire Inspection | <input checked="" type="checkbox"/> 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 | | <u>2.3</u> | <u>5.8</u> | <u>6.2</u> |
| Miscellaneous Amounts | | | | |
| Permit Issuance Fee: | \$45.00 | | | |
| Billable Hourly Rate: | \$180.00 | | | |
| Total Hours (Plan Review & Inspection), round to 1/2 hour | | <u>5.0</u> | <u>13.0</u> | <u>14.0</u> |
| Total Calculated PV Permit Fee: | | | | <u>\$2,565</u> |

Appendix D: 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 report. The following is an excerpt from Appendix D (“Costs of Permits”) of Brooks’ document. (You can 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 E: 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 Act¹ **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...."

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.

¹ California Solar Rights Act: http://www.SolarPermitFees.org/070123_RightsActPaperFINAL.pdf

Appendix F: The Benefits of Solar

Rooftop PV systems contribute a partial solution to a growing array of environmental, economic and national-security problems related to energy production. The following are some of the more obvious benefits businesses provide to their municipalities, California, the United States, and the Earth in general by installing PV systems.

- Generating PV electricity does not produce any of the greenhouse gasses (GHGs) that are responsible for global warming². In contrast, generating electricity via coal or natural gas produces massive amounts of GHGs. Solar energy currently provides just 0.2% of California's electricity. Coal provides 16.6% and natural gas provides 45.2%.³
- California gets more sunshine hours than any state besides Arizona.⁴ As such, this state has a tremendous, unrealized potential for solar energy.
- PV electricity reduces our reliance on polluting energy sources such as natural gas. Natural gas emissions add tons of pollutants to the atmosphere that cause smog and contribute to thousands of deaths and hospital visits in California every year.
- PV generates its maximum output during the day, and can help meet peak demand. This reduces the need for the most inefficient and most highly polluting power plants in the state.
- If current population trends continue, California's population will increase from 36 million in 2007⁵ to 59 million by 2050⁶. PV, together with energy efficiency and conservation, can reduce the number of new power plants that might otherwise be required to meet the future energy needs of California's growing population.
- Rooftop PV virtually eliminates long-distance electric transmission losses (which are around 7%) because the individual building can be both the source and destination of the energy.
- PV could provide a local source of electricity to help protect a community in time of earthquake or other emergency, when distant transmission lines and power plants might not be operating.
- Once a PV system is installed, it takes advantage of the free energy of the sun, requires minimal maintenance, and can last at least 35 years. This makes PV an outstanding long-term financial investment.

² For more information on global warming, visit the website of the Intergovernmental Panel on Climate Change at <http://www.ipcc.ch>. Alternatively, read an overview of the science behind Vice President Al Gore's documentary, "An Inconvenient Truth," at <http://www.climatecrisis.net>.

³ California Energy Almanac, state energy sources: <http://energyalmanac.ca.gov/electricity/overview.html>

⁴ USA Today referring to National Weather Service data: http://www.usatoday.com/weather/news/2004-06-21-fla-sunshine_x.htm

⁵ U.S. Census Bureau: <http://quickfacts.census.gov/qfd/states/06000.html>

⁶ California Department of Finance: http://www.dof.ca.gov/html/DEMOGRAP/ReportsPapers/Projections/P1/documents/P-1_Tables.xls

Appendix G: Case Studies

Cupertino and San Leandro are model cities in that they charge PV permit fees that are reasonably low but still recover processing costs. For a 49 kW system, Cupertino charges \$911 and San Leandro charges \$768. 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 costs of the PV projects. A *valuation-based* fee methodology is the primary factor driving unreasonably high fees. The costs of solar modules and inverters do not correlate to the resources required to review PV plans and inspect PV installations. For this reason, San Leandro does not use the value of any PV electrical components when computing permit fees.
- The size of a PV project, while correlating to purchase price, does not correlate well to processing times. William Schock, San Leandro's Chief Building Official (CBO), said his staff takes only about 50% longer to approve a 100 kW system than a 10 kW system. San Leandro's fee for a 49 kW system is the same as for a 131 kW system: \$768.
- Conducting only plan reviews that are necessary to verify a PV installation meets code requirements. (These requirements ensure the installation poses no danger to people, the utility's electric grid or supporting structures.) San Leandro requires just four sets of plans for non-residential PV systems. Its typical planning department plan review time for such systems is 30 minutes, at a typical cost of \$59. In San Leandro, structural plan checks typically take up to 4 hours and electrical plan reviews take about 1 hour for a 49kW or 131kW system.
- 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.
- Giving inspectors PV-specific training so they can focus on the critical aspects of installation and perform inspections quickly and accurately. Cupertino allocates two hours for inspections. For a very large PV system, its inspectors randomly spot-check components and as long as they see no code violations or problems, they do not need to examine every single item. If a spot check does indicate problems, the inspector performs a more thorough inspection.
- Making PV permit submittal guidelines available online. Cupertino publishes its PV permit submittal checklist on the Internet. The checklist includes an innovative fee estimator that enables solar installers and customers to have specific, up-front knowledge as to what the PV permit fee will be. This more readily enables financial decisions to be made when project costs are known in advance of giving the nod to a solar installation. For example, in Cupertino, a solar permit fee for commercial installations is \$505 for the first 8kW then \$7 per kW thereafter (plus state fees). Consequently, applicants understand the permit costs involved up-front and what is expected for the permit submittal. They are thus more likely to submit a complete and accurate application the first time. This reduces the need for multiple submittals and therefore reduces the staff-hours required to process permits.

- Lastly, both Cupertino and San Leandro are aware of solar energy's importance, local and global, to the cause of promoting renewable energy and combating global warming. Both cities understand that having low permit fees and quick processing times encourages people to install PV systems.

By applying these principles, Cupertino reduced its permit fee for a 131 kW system from \$39,573 in 2008 to \$1,666 in 2010. It can recover inspection costs for a PV system with a billable rate of \$126 per staff hour.

San Leandro can recover inspection costs for a PV system with a billable rate of \$77.10 per staff hour. It recoups other costs (e.g. training, building overhead, equipment, etc.) with a fixed \$86 permit issuance fee.

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

- The building that will support the PV system might require structural modifications. In such cases, San Leandro calculates 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.
- Solar permit applicants sometimes submit incomplete or inaccurate applications. Failed reviews cost more time and money for city staff. For Cupertino, like many cities, having a professional engineer (or licensed design professional) *stamp* and *sign* the PV plans can expedite the permitting process.
- Installations that fail inspections cost more time and money for city staff. San Leandro charges re-inspection fees for third and subsequent failed inspections. This helps the city recover its costs without penalizing PV installers who perform better quality work.
- 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, and so on. It is reasonable to assess extra fee amounts for such complications because they require city staff to expend more resources on review and inspection.

Appendix H: 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 dependant 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