

# San Francisco Mayor’s Renewable Energy Task Force RECOMMENDATIONS REPORT

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## EXECUTIVE SUMMARY

In recent years, renewable energy has moved from “alternative” to mainstream. Forward thinking cities, states, and entire countries are now looking at ways to shift to renewable energy-based economies. They are motivated by desires to address public health and safety concerns about traditional energy sources, mitigate global climate change, increase energy independence, strengthen local economies and create jobs. **San Francisco has set its own goal of meeting 100% of its electricity demand with renewable power.** The Mayor’s Renewable Energy Task Force was established in January 2011 to develop recommendations to help meet this goal within ten years. This report outlines the major findings and recommendations of the task force.

**San Francisco’s currently electricity supply is already 41% renewable**, due to a completely renewable municipal power supply from the San Francisco Public Utilities Commission’s (SFPUC) hydroelectric, solar and biogas facilities, and a state Renewable Portfolio Standard (RPS) that requires utilities and electricity service providers to meet 20% of their electricity demand with renewable resources by 2010. Pacific Gas & Electric (PG&E), which provides most of the power for San Francisco residents and businesses, is on track to meet that goal by 2013 with a 2010 supply mix that included 15.9% RPS-eligible resources, and another 15.6% from large hydroelectric sources. PG&E’s supply will become even greener through 2020, as the state RPS ramps up to 33%.

The task force has determined that **it is technically feasible and economically viable for San Francisco to achieve a 100% renewable power supply**, but it will require coordinated action in three main areas: improving energy efficiency to reduce total electricity demand; increasing in-city renewable distributed generation to reduce the need for imported green power; and finally, providing all San Francisco customers a 100% renewable power purchasing option. Public policy at municipal and state levels will be necessary to enable and encourage these strategies. Funding and financing mechanisms must also be put in place to encourage investment in renewable energy and growth in local renewable energy deployment. These in turn will need support through public education and outreach efforts.

### *Improving Energy Efficiency: Reduce, then Produce*

Increasing energy efficiency is a critical first step to reaching San Francisco’s 100% Renewable goal. By maximizing efficiency, we reduce the amount of electricity generation needed, and thus the amount of renewable energy generation that needs to be supplied. Building energy audits and energy labeling can provide timely information on energy use and the most effective energy efficiency improvements to property owners and potential buyers and renters. San Francisco’s new Existing Commercial Buildings Energy Performance Ordinance will go a long way toward improving energy efficiency in large commercial buildings, requiring energy audits every five years and energy demand disclosure every year, which can then be integrated into building energy labels. Updating the Residential Energy Conservation Ordinance (RECO), or “retrofit on resale” rules, to include performance-based improvements and reduce exemptions would ensure a basic level of efficiency across most residential properties in the city as the building stock turns over. Given the

long timeline in property development, adjusting the order in which permitting and zoning approval are made for new developments will help ensure that buildings are designed to meet the latest energy code, rather than out-of-date codes in place when the development was first conceived.

### *Increasing Local Renewable Distributed Generation*

Increasing the amount of renewable energy-based distributed generation (DG) in San Francisco has several important co-benefits in addition to health and environmental benefits. Local generation increases energy independence, security, and resiliency during emergencies. Renewable energy investments often have high upfront costs, but very low operating costs, improving long-term electricity price stability for customers and reducing vulnerability to fuel price fluctuations. Finally, renewable energy deployment can spur local economic development, driving business growth for local installation companies, creating “green collar” jobs for local workers, attracting renewable energy manufacturers and developers to open offices in the city, and ultimately keeping our energy dollars close to home.

In order to increase renewable DG, financing options need to be made available and known to property owners. On-bill financing, Property Assessed Clean Energy (PACE) financing, power purchase agreements and solar leases can all reduce upfront cost barriers to renewable DG, bringing system payments in line with energy savings. The interconnection process for these small systems should be streamlined, and grid integration processes improved. Correct and stable price signals need to be put in place to give potential renewable energy system owners confidence that their investment will pay off. Continued success of the state’s net energy metering program will require increasing participation caps and ensuring that net-metering rates fairly represent the full value of renewable DG. New tools such as feed-in tariffs can also be used to provide stable, long-term payments for renewable power, and can be targeted to small, in-city generation. In San Francisco, where two-thirds of residential units are in multi-family buildings and over 60% of households rent, overcoming split incentives and providing access to renewable energy investment opportunities is key. This can come through green leases, virtual net metering, and community solar.

There are also major opportunities to increase energy efficiency and reduce greenhouse gas emissions through renewable thermal energy technologies. Solar water heating is a proven technology that uses the sun’s heat to provide hot water and even space heating, reducing the electricity or natural gas demand from domestic water heaters. As with solar electric systems, making financing options known and ensuring that new buildings are designed to take advantage of this clean, free energy source will help bring this technology into the mainstream. District energy, in which multiple buildings are connected to a shared heating and electric system, increases overall energy efficiency by putting the waste heat from electricity generation to use in heating and cooling nearby buildings. These systems also reduce heating system redundancy at the building level, freeing up space and capital for real estate developers. All redevelopment projects around the city should look at opportunities to integrate district energy, and transition these typically natural gas-powered systems to renewable fuel sources over time.

### *Providing 100% Renewable Power Purchasing Options*

San Francisco will remain reliant on imported power for the foreseeable future. The San Francisco Public Utility Commission's power supply is already 100% renewable. Providing this power to more customers – including all tenants at municipal facilities, new developments, and public transit providers – would directly increase the share of renewable power in the city's overall supply mix, and also provide stable revenues to enable the City to further increase its investment in both energy efficiency and renewable power.

While the electricity supply from California's investor-owned utilities (IOUs) is becoming increasingly green thanks to the state renewable portfolio standard (RPS), it will not be 100% renewable within the next ten years. San Francisco electricity customers will soon have a new electricity supply option, through the state's Community Choice Aggregation (CCA) legislation. San Francisco's CCA program is slated to provide 100% renewable power to its customers, beginning as early as this summer. There will be a price premium for this power, though, and as such some customers – particularly price-sensitive businesses – are expected to opt to remain with PG&E's power supply. The extent to which the City is able to maximize the number of participants in the CCA will be the determining factor in how close San Francisco comes to reaching its 100% renewable goal.

### *Supporting Investment in Renewable Energy*

While the renewable energy industry has grown significantly in the past decade, with technologies maturing and prices dropping dramatically, it is still a nascent market and one that investors are not as experienced in or comfortable with. The City can leverage its own financial resources to support renewable energy investment and development. Expanding SFPUC retail electricity sales can generate revenues which could be reinvested in renewable energy capital projects and power purchase agreements. Community renewable energy bonds and municipal bonds, as authorized under San Francisco's Propositions B and H, could also be used to develop municipal renewable energy projects.

CCA provides unique opportunities for the City to actively support investment in renewable energy projects, both as a project developer and/or purchaser of renewable electricity. The CCA creates new demand for renewable power, and that demand can be used to reduce risks to project developers and investors, encouraging greater investment. For example, the City can offer long-term contracts to renewable energy project developers to purchase power from their systems, which in turn provides the assurance of project revenues that financiers need to invest in the projects. These contracts could be issued based on a feed-in tariff, or a competitive request for proposals, or a combination thereof. These would drive private development of renewable energy projects, and could also be used to install renewable energy at underutilized municipal property, such as school roofs or the Hetch Hetchy transmission right-of-way, through public-private partnerships. Finally, CCA could enable community solar programs in San Francisco by cooperating on billing integration and administration. These community solar programs would allow San Franciscans,

particularly tenants or those without good renewable energy resources at their own property, to invest in community-scale renewable energy projects, and receive generation credits from those systems on their own utility bill.

Changes in the way solar systems are valued by assessors and classified by banks can also help reduce the long-term cost of capital for solar energy projects. Recognizing solar systems as “real property” and developing standardized underwriting criteria for this asset class can allow these systems to be securitized and financed at low rates similar to home mortgages. Educating local banks on renewable energy technologies, true risks and opportunities of investing in renewable energy projects, and connecting project developers with these banks could unlock millions of dollars in private capital to support renewable energy development in the region. The San Francisco Employee Retirement System and other employee pension funds could also be leveraged to support renewable energy development. Educating and encouraging fund managers to include renewable energy investments in their portfolios would help deliver the array of public benefits discussed above along with stable, long-term returns to the fund.

#### *Continuing Public Education and Outreach*

Educating the public about energy efficiency and renewable energy is essential to developing support for these efforts and increasing their uptake. It can be difficult for the public to stay abreast of rapidly evolving renewable energy technologies and costs, leading to inaction due to confusion, misconceptions, or simply the time needed to make an informed decision. The City can provide unbiased, third-party assistance to help property owners understand the renewable energy technologies and efficiency improvements that may be appropriate for their homes and businesses, and ensure that they are aware of the various incentives, funding and financing options available to them. Making energy data available to potential new tenants and property owners, in an easy to understand format, can help the real estate market drive demand for more energy efficient buildings. Providing information on renewable energy technologies, incentives and financing to new property owners can encourage them to include energy upgrades in planned capital improvements and allow them to roll capital expenses into their mortgage. Ensuring all residents and businesses are aware of the energy purchasing and investment options available to them, whether clean power through the CCA, community solar investment opportunities, or self-generation on site, can empower San Franciscans to make choices that support their own social, economic and environmental values.

#### *100% Renewable in the Regional Context*

San Francisco does not exist in an energy vacuum. While we have unique opportunities to take control of our local power supply both through the municipal SFPUC and new CCA program, we remain part of the larger California electricity system, and reliant upon it. Until energy storage is deployed on a mass scale, San Francisco will require the electricity deliveries and load balancing provided by PG&E’s transmission and distribution lines and the California Integrated System Operator (CAISO) in order to meet its 100% Renewable goal. Ultimately, becoming a renewable energy powered region will require significant coordination, increased energy storage, and

significant smart grid improvements to match supply with demand and overcome the barriers posed by intermittent renewable resources and ever changing electricity demands. San Francisco can lead the way, though, by creating demand for renewable energy, enabling local generation, and driving market development and investment.

## Recommendations

The following recommendations, based on discussions and findings of the Renewable Energy Task Force over their year of study, outline important actions the City can take to move toward achieving the Mayor's 100% renewable energy goal. Further detail and context for these recommendations can be found in the full report.

### Better Energy Data

1. Error! Not a valid bookmark self-reference.Energy Data Sharing – The City should advocate to the California Public Utilities Commission (CPUC) to require PG&E to provide customer level data to the City and its agents for purposes of implementing the Climate Action Strategy and energy efficiency programs. It should also be made easy for building owners to obtain energy usage information about their own facilities, so that they can readily comply with the California AB 1103 Commercial Building Energy Use Disclosure Program and local law.
2. Building Energy Data – If data is not available from local utilities, the City should undertake a building energy use data collection effort to obtain more accurate, San Francisco specific building energy use by commercial sector and residential building type, including type and timing of demand for various uses (e.g. heating, cooling, lighting, servers, etc.)

### Increasing Renewable Distributed Generation

3. Increase or remove net energy metering cap – The City should participate in relevant regulatory proceedings and encourage the CPUC to update NEM rules and participation limits to better reflect actual technical constraints to DG integration and current costs and benefits of increased on-site DG.
4. Support robust and sustainable feed-in-tariffs for local renewables – The City should advocate the adoption of FIT programs and tariff rates that fairly compensate small scale local, renewable distributed generation projects commensurately with their additional social and environmental benefits, and thereby stimulate increased private investment in local renewable energy projects. The City should also explore integrating such a program into the CCA.
5. Green Leases –The City should continue to encourage green lease adoption in the commercial sector by working with the Business Council on Climate Change (BC3) to promote the Green Tenant Toolkit, which includes information and sample documents for property owners, tenants and real estate agents in San Francisco.
6. Energy Efficiency & Renewable Energy Pass-Throughs under Rent Control – The Board of Supervisors should adopt as ordinance the energy conservation pass-through provision put forth by the Rent Board, thereby clarifying pass-through eligibility for specific energy efficiency and

- renewable energy measures (those determined to reduce net costs to tenants and provide reasonable payback to landlords) as approved capital improvements under the Rent Ordinance.
7. Support Virtual Net Metering for customers in all multi-unit buildings – The City should support the expansion of VNM for multi-unit customers in California (both residential and commercial), such as by allowing VNM for developments served by multiple Service Delivery Points, easing size limitations, expanding eligibility to all multi-tenant and multi-meter properties, and supporting pilot installations in San Francisco in coordination with interested property owners and tenants.
  8. Support community renewable energy policies – The City should support state community energy policy to enable Californian electricity customers to invest in or purchase a subscription to off-site renewable energy projects, and utilize community energy ownership and billing models to be credited for the power from those systems, thereby expanding the opportunity to take part in renewable energy development to all customers, including tenants and property owners without suitable incentives or opportunities to develop on-site renewable energy resources.
  9. Upgrade distribution network citywide – The City should work with PG&E to determine the cost effectiveness of upgrading the distribution infrastructure as necessary citywide to enable increased penetration of renewable DG and increased loads due to electric vehicles. These efforts should build off of existing CPUC requirements that utilities such as PG&E identify the surplus capacity on their distribution system available for connecting DG systems.
  10. Enable DG on downtown network – The City should work with PG&E to study the City’s secondary distribution network to identify the technical feasibility and expected costs to upgrade this network and its operation to enable renewable energy installations in the downtown core, North Beach, and the Tenderloin, while maintaining utility worker safety and grid reliability.
  11. Adopt a Solar Ready Policy – The City should adopt a policy that incents or requires newly-constructed, heavily-renovated buildings, and buildings undergoing roof replacement, with viable renewable energy resources to either install renewable energy systems, or put in place appropriate conduit (electrical and/or plumbing) and stanchions for future renewable energy installation.
  12. Address Solar System Shading – The City should identify options to protect solar access and/or compensate early adopters of solar installations for shading of their systems by new construction, such as a solar access indemnity fund, without negatively impacting densification goals or private development rights.
  13. Streamline and standardize renewable energy permitting processes – The City should continue to streamline renewable energy permitting processes, especially for wind and solar water heating, including shifting to electronic permitting, to reduce time and costs for the City and system owners, while maintaining public safety. The City should work with neighboring jurisdictions to share best practices and implement standardized, streamlined processes across the region, further reducing installation costs.

## **Renewable Heating & Cooling**

14. Solar Water Heating Outreach – The City should undertake an outreach campaign to improve awareness and understanding of SWH technology, and identify financing mechanisms to overcome the challenges of high upfront costs and long payback periods, such as solar thermal power purchase agreements and on-bill repayment with utilities.
15. Solar Water Heating Requirement for New Construction – The City should require SWH on all new residential construction with adequate solar access, thereby reducing installation costs (versus retrofits), and enabling property owners to finance the system with their home mortgage or line of credit, or emerging financing options such as PACE or on-bill repayment. Heating bill savings can in turn offset financing costs.
16. Municipal Solar Water Heating – The City should explore the feasibility of using SWH at municipal facilities with high hot water loads, and install SWH systems on those facilities where energy savings are found to outweigh SWH installation costs.
17. Advance District Energy – In order to ensure that district energy opportunities are explored and, where appropriate, developed, the City should require that the Developer or Sponsor of large commercial real estate projects prepare a district energy feasibility study as part of the project development process, concurrent with the conceptual design phase of the project. The study would consider three components of energy including heat, chilled water and generated electricity. Elements of the study scope would include potential cogeneration projects, integration with existing city steam loops, ground source geothermal, and other district energy concepts. The study would be reviewed by an inter-agency committee, and used as a decision-making tool for the project developers and City policy makers.

### **Funding & Financing Renewable Energy**

18. Pursue third-party ownership structures with private sector partners – The City should explore and expand the use of PPA and lease ownership models to finance municipal renewable energy projects, in order to take advantage of federal tax incentives and minimize the City’s capital requirements, while also leveraging municipal funding opportunities to reduce financing costs and increase project returns.
19. Financing Energy Efficiency and Renewable Energy – The City should continue its commercial PACE program, and reinstate the residential PACE program as soon as possible, either by overcoming objections to the use of the PACE program by mortgage insurers such as Fannie Mae and Freddie Mac or by identifying alternative financial arrangements. The City should also continue to explore other opportunities to spur and improve access to financing for renewable energy and efficiency upgrades, such as financing enhancements, revolving loan funds, and interest rate buy downs to attract and stretch private capital.
20. Support On-Bill Financing – The City should support the expansion of on-bill financing or third-party on-bill repayment of energy efficiency and renewable energy with local utilities, and explore potential to allow on-bill financing through SFPUC (e.g. on the water and sewage utility bill or through a Community Choice Aggregation program).

21. Energy Bonds – The City should advocate for the issuance of more Clean Renewable Energy Bonds by the U.S. Department of Treasury, and explore the use of Qualified Energy Conservation Bonds to help finance municipal solar PV and solar thermal installations.
22. State and Federal Grants and Incentives – The City should advocate for the continuation or extension of state and federal renewable energy grant and incentive programs, including the ITC, PTC and accelerated depreciation, and seek funding and technical assistance to support implementation of the City’s renewable energy plans and fulfillment of the 100% renewable goal. The City should support allocation of any remaining funding for CSI PV incentives to enable a smooth program conclusion, educate residents and businesses about incentive changes, and collaborate with PG&E to leverage their CSI-Thermal marketing and outreach campaign in San Francisco.
23. Continue full funding for GoSolarSF, municipal energy efficiency, and municipal renewable programs – The City should support the SFPUC in obtaining new sources of revenue so that the SFPUC can fully fund programs that meet the City’s objectives, including GoSolarSF, municipal energy efficiency and municipal renewables programs.
24. Support emerging local clean technologies – As part of the City’s efforts to nurture local cleantech innovation and market development in San Francisco, the City should seek continued collaboration with the state and federal governments to support the development of renewable energy markets, pilot renewable energy and energy efficiency technologies and programs, and showcase best practices in renewable energy permitting, financing, outreach and deployment. The City should promote the testing and evaluation of new clean technologies that may be suitable for urban deployment, such as the Green Test Bed concept outlined in the 2011 Updated ERP.
25. Outreach and support for property owners – The City should provide information on energy efficiency and renewable energy installations and financing options to new property owners at point of sale, and provide support in the form of a dedicated, unbiased city “energy advisor” to walk new and existing homeowners through the energy upgrade process, educate about energy efficiency and renewable energy technologies and options, and help navigate available incentives and financing options.

### **Workforce Development and Labor**

26. Workforce Development – The City should continue to integrate workforce development and training considerations, especially for disadvantaged San Franciscans with employment barriers such as low educational attainment, criminal history, disability, language proficiency, homelessness, etc. into its energy programs to help meet the needs of growing energy efficiency and renewable energy industries, and support local green job development through the San Francisco Local Hiring Policy for Construction.
27. Clarify labor requirements – The City should continue to work with the State to clarify prevailing wage rates for solar projects and explore other options to minimize jurisdictional disputes among labor unions and provide clarity to contractors on the appropriate prevailing wage rates that should be paid for construction work on solar projects.

## **Increasing Provision of Renewable Public Power**

28. Municipal Electricity Rates – The City should transition the electric rates it charges so that all SFPUC power customers at least pay the actual delivered cost of service. This would encourage energy efficiency and enable the SFPUC to receive a stand-alone credit rating necessary to issue long-term bonds to finance further renewable energy developments, energy efficiency and other capital improvements. The City should develop a plan and timeline to achieve full cost of service rates; for example, to minimize budget impacts, these rate changes could be phased in over a 4-8 year period.
29. Meet all municipal utility loads with 100% renewable energy and expand municipal deliveries – The SFPUC is committed to procuring 100% renewable energy to serve any new municipal loads. The City should support the SFPUC in its efforts to increase the number of customers served by the SFPUC, require all electrical loads located on City-owned property be served by the SFPUC (e.g. Airport and Port tenants), and expand the number of SFPUC-powered electric vehicle charging stations.
30. Make SFPUC default power provider for new developments and increase institutional customers – The City’s Administrative Code should be revised to allow the SFPUC to be the default provider, with first right of refusal, for all major construction projects within San Francisco, not just for redevelopment projects.
31. Implement CCA program and commit to procuring exclusively renewable energy to serve CCA customers – The City should offer a 100% renewable electricity supply to San Francisco residents and businesses through CCA. Renewable energy for the program should be procured, to the maximum extent technically and economically feasible, from local projects or projects on City-owned property, and the rest from RPS-eligible resources.
32. Increase City support for public and private renewable energy development – The City should explore options to cost-effectively encourage and leverage private development, for example through appropriately-priced power purchase agreements or feed-in tariffs to procure generation for the CCA, development of public-private partnerships and/or use of municipal bonds to support low-cost financing for local renewable energy projects.
33. Encourage broad participation in CCA – Given the central role of CCA in achieving the 100% Renewable goal, the City should target broad participation in the CCA, including by integrating CCA participation into eligibility requirements for energy-related municipal incentives and recognition programs, and identifying ways to encourage businesses’ participation in the CCA or other green power purchasing options.

## **Encourage Investment in Renewable Energy**

34. Encourage Renewable Energy-based Direct Access – The City should make San Francisco’s direct access customers (including BART) aware of the availability of 100% renewable ESPs, including SFPUC power service, and encourage their procurement of 100% renewable power.
- 35.
36. Support enabling statewide RE policies – The City should support steadily increasing the statewide RPS while also recognizing those utilities that already have minimal or zero-GHG

emissions, such as the SFPUC. The City should support the successful implementation of the SB 32 Feed-in Tariff program to stimulate private sector investment and financing for mid- to large-scale renewable energy projects. The City should support state legislation to remove existing barriers to development of community renewable energy projects.

37. Support energy storage market development – The City should support research and development of technologies that support increased renewable energy, and act as test bed for such technologies, simultaneously supporting economic development and environmental goals. In particular, San Francisco should support state efforts to develop cost-effective energy storage options and encourage energy storage deployment in San Francisco, both through pilot installations and appropriate planning and permitting requirements.
38. Recognize solar energy installations as real property – The City should recognize solar as real property by including its value in property assessments by the Assessor-Recorder’s office. The City should explicitly make solar property tax exempt for 10 years or until the 100% Renewable goal or similar solar market development targets are met.
39. Support standardized underwriting criteria for solar – The City should support regional or national efforts to develop standardized underwriting criteria for solar projects.
40. Encourage community bank and local institutional investor participation in renewable energy project finance – The City should work with local community banks and institutional investors to increase understanding of renewable energy technologies and markets and build comfort with renewable energy investments, thereby increasing financing opportunities for local renewable energy projects, and serving as a catalyst for an increase in such lending nationwide. The City could act as a convener of parties to bring together these banks, investors, and renewable energy project developers.
41. Leverage public pension funds to support renewable energy market development and deployment – The City, through the SFERS, should investigate opportunities to invest in clean energy to promote local economic development and renewable energy deployment while meeting the fund’s investment goals.

### **Reducing Demand through Energy Efficiency**

42. Retrofit on Resale — The City should amend the SF RECO Ordinance to require new measures and remove the permanent exemption. The updated RECO should: require performance-based improvements; require compliance for multi-tenant buildings that are held in trust; apply to new leases; and provide for publicly accessible asset ratings and historic energy use disclosure, which could be integrated into a home energy label (see recommendation XX).
43. Energy Audits – The City should develop outreach programs and provide incentives to encourage home energy audits, and continue work begun under the Energy Upgrade California program to incent energy efficiency, identify financing options and train contractors.
44. Energy Labeling of Real Estate – The City should continue developing and implementing its plan to add energy assessment results and other environmental labels to the Assessor’s database, and include results in the Multiple Listing Service (MLS) used by real estate professionals. These activities should build off of the requirements of AB 1103 that require sellers to provide

ENERGY STAR Portfolio Manager information based on the last two years of energy data to prospective purchasers, whole building lessees, or to banks refinancing mortgage loans of commercial property, as well as San Francisco's 2011 Existing Commercial Buildings Energy Performance Ordinance which requires annual disclosure of the Portfolio Manager information to a publicly accessible database.

45. Update Planning and Permitting Process – The City should update Planning's development review and Department of Building Inspection's site permit processes to require that developments meet the energy code that is in place upon application for a fully-specified building permit, rather than at time of site permit, in order to ensure buildings are built to current energy code.

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## APPENDICES

- A. Renewable Energy Task Force Members
- B. List of acronyms

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# Appendix A: Mayor's Renewable Energy Task Force Members

## *Chairs*

**Danielle Murray**, Renewable Energy Program Manager, San Francisco Department of Environment  
**Johanna Partin**, Director of Climate Protection Initiatives, Office of Mayor Edwin M. Lee

## *Members*

**Aaron Israel**, Energy Committee Chair, Sierra Club - San Francisco Bay Chapter  
**Adam Browning**, Executive Director, Vote Solar  
**Carrie Byles**, Managing Director, SOM Architects  
**Carrie Portis**, Executive Director, SF Works  
**Charles Eley**, Principal, Eley Associates  
**Claire Bonham-Carter**, Director of Sustainability, AECOM  
**Dan Adler**, President, California Clean Energy Fund  
**David Hochschild**, Vice President, Solaria  
**Dian Grueneich**, Former Commissioner, CPUC  
**Gerald Bernstein**, Director, Advanced Transportation Tech & Energy, City College of San Francisco  
**Gordon Judd**, General Manager, NRG  
**Janan New**, Executive Director, SF Apartment Association (SFAA)  
**Janice Lin**, Director, California Energy Storage Alliance (CESA)  
**Jeanine Cotter**, CEO, Luminalt  
**Jim Chace**, former director of Pacific Energy Center, PG&E  
**Jim Wunderman**, President & CEO, Bay Area Council  
**Joe Boss**, Member, San Francisco Powerplant Task Force  
**Joshua Arce**, Executive Director, Brightline Defense  
**Ken Cleaveland**, Director of Government & Public Affairs, BOMA SF  
**Kenneth Casarez**, Pacific Southwest Assistant Regional Manager, Laborers' International Union of North America  
**Laura Tam**, Sustainable Development Policy Director, San Francisco Planning + Urban Research Association (SPUR)  
**Mark Jacobson**, Professor of Energy Resources Engineering, Stanford University  
**Martha Amram**, CEO, Ennovationz  
**Matt Freedman**, Staff Attorney, The Utility Reform Network (TURN)  
**Michael Schmitz**, California Director, ICLEI – Local Governments for Sustainability  
**Michael Theriault**, Secretary-Treasurer, San Francisco Building & Construction Trades Council  
**Neal de Snoo**, Division Manager, Office of Energy and Sustainable Development, City of Berkeley  
**Noah Long**, Energy Program Attorney, Natural Resources Defense Council (NRDC)  
**Ontario Smith**, Senior Director of Regulatory Affairs, PG&E  
**Panama Bartholomy**, Deputy Director, California Energy Commission (CEC)  
**Raphael Reyes**, Director, Bay Area Climate Collaborative (BACC)  
**Ryan Pletka**, Director, Renewable Energy Strategic Planning, Black & Veatch  
**Saul Griffith**, Founder, WattzOn  
**Sean Timmons**, Principal, Timmons Design Engineers  
**Steve Suzuki**, Executive Director, Asian Neighborhood Design  
**Utuma Belfrey**, Founder, Sustainable Futures  
**Wade Crowfoot**, Regional Director, Environmental Defense Fund (EDF)

***Advisory Members (City Agencies):***

**Barbara Hale**, Assistant GM, Power, SFPUC

**Barbara Smith**, Administrator Housing Development and Modernization, SF Housing Authority

**Dan Adams**, Director of Program Development, MOH

**Guillermo Rodriguez**, Director, CityBuild, MOEWD

**Jason Fried**, Senior Program Officer, LAFCO

**Jon Lau**, Legislative Aide, Supervisor Cohen's office

**Lori Mitchell**, Acting Manager, Renewable Energy Generation, SFPUC

**Manuel Ramirez**, Acting Manager, Regulatory & Legislative Affairs, SFPUC

**Todd Rufo**, Director of Business Development, MOEWD

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