



City of San José

# STRATEGIC ENERGY PLAN

Spring 2009

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## Executive Summary

*Strategic energy planning is vital.* The choices we make today will have positive or negative consequences in the years to come. The majority of our current energy stream is harnessed from limited, nonrenewable resources. Finding ways to better manage our urban energy demands today will ensure that we do not jeopardize the energy needs of the future. Strategic, sustainable energy policies encompass more than energy efficiency and conservation measures: they must be diverse, flexible, renewable and integrated.

The City of San Jose (City) has long been a leader in green policies and environmentally friendly programs. This commitment was further actuated when, in 2003, City Council approved the Sustainable Energy Policy and Action Plan. Since the passage of the first and subsequent energy plans, every City department has worked diligently to internalize energy-efficient practices that have reduced the City's impact on the environment, as well as its utility costs. The City has also worked collaboratively throughout our community—businesses, utilities, nonprofits and our residents.

With the adoption by Council of San Jose's Green Vision in October 2007, the City's focus on energy was aligned and strengthened with specific and aggressive goals related to the use of energy and renewables.

*Goal 2: Reduce energy use per capita by 50%*  
*Goal 3: Receive 100% of our electrical power from clean renewable sources.*

## Statement of Purpose:

The purpose of the Strategic Energy Plan is to create a community where energy is generated and used in the most sustainable manner possible. It seeks to identify the ways and means to implement the energy and renewable goals of the City's adopted Green Vision. This Energy Plan continues efforts to develop an infrastructure that values energy conservation and efficiency, energy reliability, reasonable and predictable energy costs, and the creation and use of clean, local energy sources.

## The Strategic Energy Plan Report: Focus and Development

The 2009 Strategic Energy Plan (Energy Plan) focuses on energy use in the built environment and is an integral part of San José's Green Vision. It builds on past efforts and further engages all City departments, the community, and stakeholders in identifying and creating opportunities that encourage, incentivize, and provide the City, residents, and businesses with resources to incorporate energy-saving practices and clean, green technologies.

In developing this plan, the City was guided by a steering group comprised of business, environmental and community representatives, along with city departmental staff. Between October 2008 and February 2009, city staff interviewed over 30 community-based organizations, non-profits, business associations, government agencies, and stakeholders. Additional outreach and comment from throughout the community was garnered as part of the review process. These interviews, and subsequent input, helped gauge the community's reception of past energy efforts and concerns for the future. With this information, the City can



better address and plan for the changing energy demands of San José's diverse community and economy.

This report provides background information on energy usage, including an inventory and description of current and past activities within San José. It details the current and future risks surrounding San José's energy supply and proposes goals, policies, and best practices that will ameliorate those challenges. It is designed to complement and update the energy component of the Sustainable City Plan as detailed within San José's General Plan: *San José 2020*.

Findings garnered as a result of the interviews and analysis of the current trends focused on the follow themes:

- Leadership
- Transformation
- Engagement
- Innovation.

### *Leadership*

Many in the community applauded the City's leadership in policy and program services in the energy field. Representatives of several building and construction related organizations spoke positively about the City's Green Vision, recognizing the alignment with many of their own goals, policies and directions.

They were encouraged with the direction of the City's current programs, and urged continued and strengthened efforts with energy efficiency and renewable energy activities.

### *Transformation*

To transform is to change. Change is needed to address the impacts of climate change and other

environmental pressures on the earth. Transforming/changing behavior throughout the San Jose community will involve the development and implementation of innovative strategies that induce lasting structural and behavioral changes in the marketplace, resulting in increased adoption of energy-efficient and renewable technologies.

### *Engagement*

There is widespread interest to partner with the City to achieve the Green Vision Goals. Numerous opportunities exist to enhance existing partnerships and expand and develop new relationships.

### *Innovation*

The City is known as a center for innovation and entrepreneurship where ideas and inventions change the world. As stated in the recent Green Vision report to the Council, San Jose has the opportunity to leverage its strengths to develop innovative solutions to our environmental challenges.





## Energy Action Plan Recommended Strategies and Objectives

### LEAD

*Continue the City's leadership in the development and implementation of policies, programs and actions that reduce the City's energy use and increase the use of renewable energy*

- Reduce energy consumption in city facilities by 50% by 2022
- Expand municipal energy efficiency funds by 40% by 2022
- Receive 100% of the city's municipal electricity from renewables by 2022

### TRANSFORM

*Create a change in behavior that will effect a meaningful, long-term reduction in energy consumption and increase the use of renewables*

- Achieve a 50% reduction in per capita energy use by 2022
- Increase resources for the community to install energy efficiency and/or renewable energy technologies
- Ensure environmental safety in the manufacturing and disposal of existing and emerging energy efficiency and renewable energy technologies

### ENGAGE

*Engage the San José community in order to strengthen, deepen and expand relationships, better connect people and resources in the community, and increase involvement in the City's Green Vision*

- Develop and expand partnerships throughout the community to implement energy efficiency and renewable energy programs.
- Coordinate with federal, state and regional agencies to increase building codes and permitting processes, including Title 24 building standards, Title 20 appliance standards.
- Strengthen and expand Low to Moderate Income Energy Efficiency programs utilization
- Work with area educational programs and institutions to ensure comprehensive and integrated job training programs in the energy efficiency and renewable energy sectors

### INNOVATE

*Foster Innovation throughout the community, enabling the discovery of new ways to create value and leverage opportunities*

- Achieve Green Vision Goal 3—Receiving 100% of electricity from renewables by 2022 by exploring opportunities for increasing renewable energy technologies throughout the community
- Engage the full range of participants within the clean and green technology sector to facilitate paths to market
- Design, pilot and evaluate emerging energy efficiency and renewable energy technologies
- Promote San José as the City of choice for manufacturers of clean energy technologies



## Green Vision:

In 2007, the City council approved its Green Vision goals, a landmark decision that committed the City to environmental, ecological, and economic sustainability. The Green Vision is a comprehensive approach to achieve sustainability through new technology and innovation. In adopting its Green Vision, the City established 10 goals to achieve within 15 years:

1. Create 25,000 Clean Tech jobs as the World Center of Clean Tech Innovation
2. Reduce per capita energy use by 50%
3. Receive 100% of our electrical power from clean renewable sources
4. Build or retrofit 50 million square feet of green buildings
5. Divert 100% of waste from landfill and convert waste-to-energy
6. Recycle or beneficially reuse 100% of our wastewater
7. Adopt a General Plan with measurable standards for sustainable development
8. Ensure that 100% of public fleet vehicles run on alternative fuels
9. Plant 100,000 new trees and replace 100% of our streetlights with smart, zero emission lighting
10. Create 100 miles of interconnected trails

The Energy Plan supports several Green Vision goals, including Goal 1 - create green jobs, Goal 2 - reduce energy use, Goal 3 - generate renewable energy, Goal 4 - build green, and Goal 7 - plan for sustainable development.

This Plan is essential in achieving Green Vision Goals 2 and 3 by 2022 in identifying short and long term goals to:

- Reduce per capita energy use by 50%.
- Receive 100% of our electrical power from clean, renewable sources.

These goals were further supported by the City's Sustainable Energy Policy and Action Plan, which was first approved by the City Council in 2003 and established the specific strategic goals to:

- Lead by example in pursuing the most efficient use of energy in City facilities and activities.
- Explore opportunities to improve energy reliability, supply and price stability to meet current and future needs.
- Promote collaboration on energy issues.
- Promote and achieve a cleaner and healthier environment, including improving air quality and reducing greenhouse gas emissions.
- Encourage the development and use of renewable energy sources and alternative fuels.



In addition, programs that increase energy efficiency and alternative energy sources, such as energy audits and the instillation of photovoltaic (PV) systems, will:

- Support Green Vision Goals 1 & 2 by fostering and generating additional demand for energy efficient and renewable technologies and products, which will support San José's green economy.
- Save residents and local businesses money. These smart savings create additional funds for non-essentials, such as discretionary spending or increasing personnel, which help circulate more money into the local economy.
- Further promotes San José's status as a sustainable city and green leader.

## Other Green Policies and Initiatives:

The Energy Plan is an integral component with many of the City's environmental programs and policies:

- Green Building Policies
- Environmentally Preferable Procurement Policy (EP<sup>3</sup>)
- General Plan/Sustainable City Policy
- Lighting Policies
- Zero Waste
- Clean Tech Legislative Agenda
- Smart Growth

The Energy Plan will support the City's existing and future environmental commitments such as:

- Envision 2040
- San José's Climate Action Plan
- The Bay Area Climate Compact
- The U.S. Mayors Climate Protection Agreement
- The Environmental Urban Accords
- The Climate Prosperity Project (Joint Ventures Silicon Valley)

## State Mandates:

Ensuring that San José meets national, State, and local energy-related mandates remains an Energy Plan priority. These mandates include:



- California Global Warming Solutions Act of 2006—AB 32
- The California Public Utilities Commission (CPUC) Energy Efficiency Strategic Plan
- California Solar Initiative
- The California Energy Commission's Integrated Energy Resource Plan

## Evaluation Criteria for Energy Plan Initiatives:

Each of the energy initiatives described in the Action Plan can be evaluated based on five criteria. They are the ability to:

1. Support Green Vision goals as well as local, state, and national mandates;
2. Address fiscal impacts related to energy use and increased utility or environmental costs;
3. Improve energy supply reliability and sustainability;
4. Increase community awareness and equity in access to alternative energy and efficiency programs and incentives; and
5. Decrease the environmental impacts related to San José's energy consumption

## Guiding Principles:

In developing the four strategic recommendations for action, the following

guiding principles were developed for additional policy guidance. These guiding principles were first recognized in 1996 as part of the City's Water Policy Framework

- **San José embraces the concept of Sustainability.** In short, this means the City should work to meet its existing needs without compromising the ability of future generations to meet their needs.
- **San José recognizes the mutual dependence of environmental quality and continued economic health.** Economic vitality and environmental protection are not mutually exclusive. A healthy environment is integral to the long-term economic interests of our City. Likewise, a healthy economy will allow the City to champion and implement the programs and projects that will maintain and enhance our local natural environment into the future.
- **San José is committed to environmental equity.** The City's environmental efforts must reach all segments of the community. The City should work to ensure that environmental requirements do not place inordinate and unfair burdens on any one sector of the City.
- **San José prefers prevention over cure.** The City favors a prevention oriented approach to environmental management, rather than corrective action after the fact.
- **San José recognizes that an aware, responsible and involved community is the key to our success.** The City's environmental efforts will fall short unless



individual citizens, community-based groups, and businesses are involved.

- **San José recognizes its role and responsibility in the regional and in the global community.** The City must continue to recognize, and act upon, the relationship between local environmental issues and the regional and global environment.
- **San José must practice what it preaches.** Few things raise as much ire as when government entities fail to meet the same standards and regulations they impose on others. The City must avoid this double standard and act as a leader in environmental management.
- **Since San José cannot do everything at once, we must ensure that we do the right things first, and do them well.** The City must develop and continually reevaluate its environmental priorities to ensure that it is making the best possible investments in San José's future.
- **Reducing risk is a main focus of San José's environmental policies and programs.** The overarching goal of all the City's environmental actions and

investments is to reduce the risks environmental problems pose to human health, the environment, the economy and the quality of life.

- **San José recognizes the value of continuing leadership in planning and implementing innovative and proactive environmental policies and programs.** The City understands and values the encouragement it has received, from individual San José residents to international organizations, as a city that manages our environmental affairs well. Being a municipal environmental leader has value in that it has given residents, businesses and City employees a renewed sense of civic pride which fuels our desire to solve all our urban problems with enthusiasm, determination and cooperation.

### Steering Group:

In addition to community interviews and outreach, the Energy Plan and action items were guided in their efforts by a Steering Group comprised of representatives from:

- Pacific Gas and Electric (PG&E)
- Solar Tech
- The Sierra Club's Cools Cities Program
- The Silicon Valley Leadership Group
- Community Representative involved in EnVision 2040



5/23/09 Draft

*Mayor's Summer Solstice Solar Fair, 2008*



## Introduction: Powering San José’s Future

*Energy powers our lives.* We depend on energy to run our days and illuminate our nights— it helps drive our economy and maintain our quality of life.

The City recognizes the urgent need to proactively shape its energy future. Much of that electricity used within San Jose is generated through the burning of fossil fuels, a nonrenewable resource. The current method production of generating electricity with fossil fuels releases millions of tons of carbon dioxide and other greenhouse gases (GHG) into our atmosphere. In order to maintain San José’s health, economic vitality, environment, and quality of life, the City has chosen to act.

San Jose Energy use by Sector	MWh/year (2006-2007)
Residential	1,894,084
Commercial	2,263,768
Industrial	796,647
Municipal	132,704
Total	5,087,203

### San José’s Vision for the Future: A World with Energy Efficiency and Renewables

Green technology is progressing. With the supply of traditional energy resources declining, the demand for sustainable energy

is on the rise— spawning innovative solutions for our energy demand.

The future of clean, sustainable energy is bright. The City is analyzing all options and methods to increase the reliability and affordability of San José’s energy supply, while at the same time, mitigating our impact on the environment and climate change.

Through its policies and ordinances, the City has many opportunities to incentivize energy efficiency and curb GHG emissions in San José. The municipality regulates some of the largest sources of energy consumption through its land use policies, master planning, building permits, and essential infrastructure. Thus, the City, in coordination with residents and stakeholders, must serve as a leader in energy management. This Energy Plan aims to put in place resources, practices, and policies will help make the City’s Green Vision a reality.

### San José at a Glance:

In San José, Census 2000 determined the population to be 894,943 persons as of April 1, 2000. Since that time, the population of San Jose has grown by nearly 100,000 persons to become the Nation's 10th largest city.

In a recent report developed for the City as part of Envision 2040, projections were presented that indicated an additional 172,000 jobs and 471,000 residents between 2007 and 2040. This growth is projected to lead to an



increase of 173,000 households during this period.

Accommodating this projected growth in population will require strategic, sustainable energy planning.

## Energy in Context:

Most Americans are almost entirely dependent on an abundant and uninterrupted supply of energy for living and working. Nowadays, we take it for granted that energy is available whenever we want it, but it is a key ingredient in all sectors of modern economies; therefore, the City has chosen to act with this Energy Plan.

### What is Clean, Sustainable Energy?

Supporting “sustainable energy” ensures that we have enough energy to maintain our current standard of living into the future. The United States currently relies heavily on coal, oil, and natural gas for its energy. Fossil fuels are *nonrenewable*, that is, they draw on finite

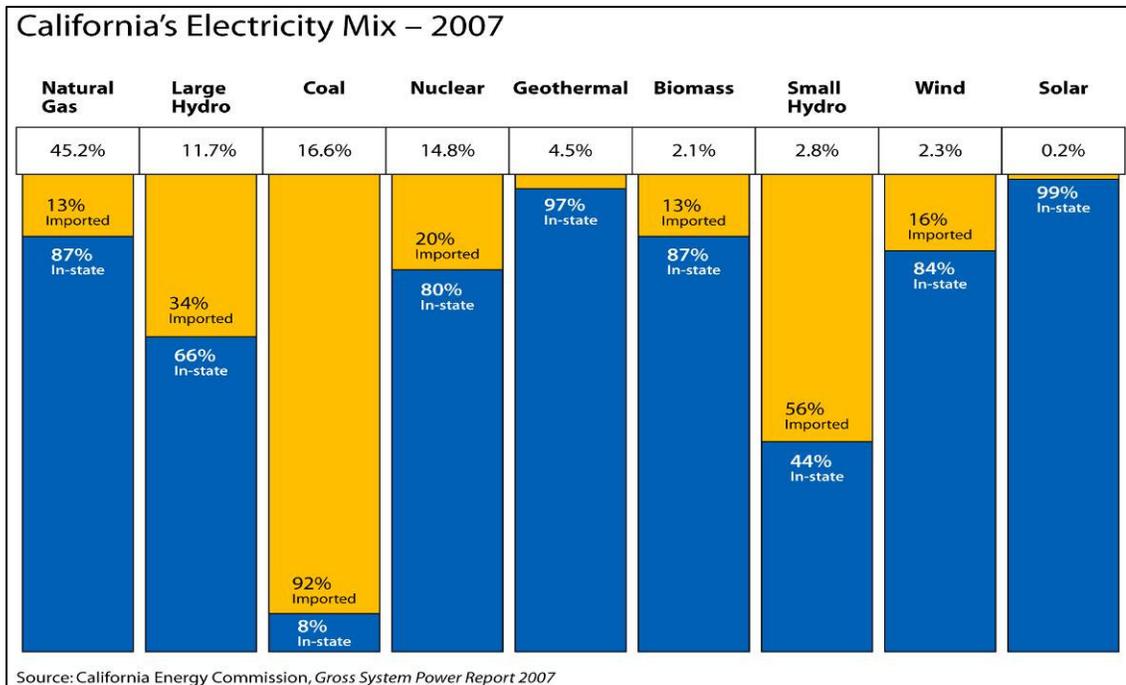
resources that will eventually dwindle, becoming too expensive or environmentally damaging to retrieve. In contrast, *renewable energy* resources—such as wind and solar energy—are constantly replenished and will never run out.<sup>1</sup>

As defined by the State of California, renewable resources include biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current

With this Strategic Energy Plan, the City is taking all necessary steps to better manage and conserve San José’s current energy resources for the built environment.

### State and Local Energy Issues

Approximately 85% of the energy consumed in the U.S. is derived from fossil fuels.<sup>2</sup> Unlike the global energy trends, the U.S. generates half of its electricity by burning coal. Coal is mostly composed of carbon.





When it is burned, the carbon dioxide is released into the atmosphere which contributes to climate change and poor air quality.<sup>3</sup>

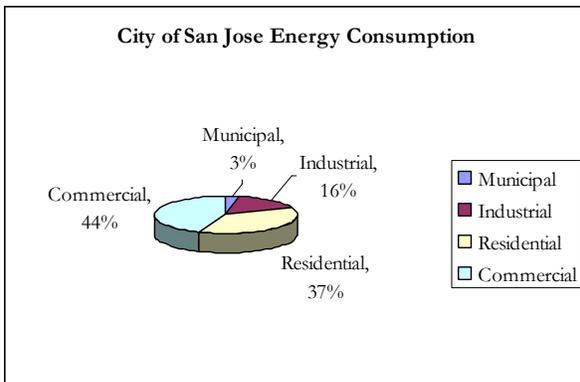
**Energy in California:**

Fueled by population growth, the demand for electricity in California is increasing. At the same time, local governments are anticipating future mandates to significantly decrease GHG emissions.

In 2007, the State produced 69% of the electricity it uses; the rest is imported. Unlike the national energy trends, natural gas is the main source for the State’s electricity at 45% of the total system power. In 2005, Californians spent \$31 billion for their electricity. The State's most pressing challenge is to ensure adequate electricity supplies.<sup>4</sup>

**Energy Use in San José:**

Citywide, the total electrical usage by all sectors is almost 5 billion kilowatt hours KWh on an annual basis (2007 data). The majority of that, 48%, was consumed by the commercial sector. For municipal operations, the City used 135 million KWh in 2007.



To achieve the Green Vision goal to reduce per capita energy use by 50% by 2015, energy use will need to be reduced by 4.55% per year for the next 15 years. It will also require a 17% cumulative reduction in municipal energy use by the end of 2011. Building and renovating City facilities to LEED Silver standard contributes to this goal by exceeding the State energy code by at least 14%.

**Climate Protection**

The overwhelming scientific consensus is that human-induced climate change is among the most pressing environmental and social problems facing this generation and those to come.

In the U.S., our energy-related activities account for three-quarters of our human-generated GHG emissions, mostly in the form of carbon dioxide emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants.<sup>5</sup>

**Taking Action**

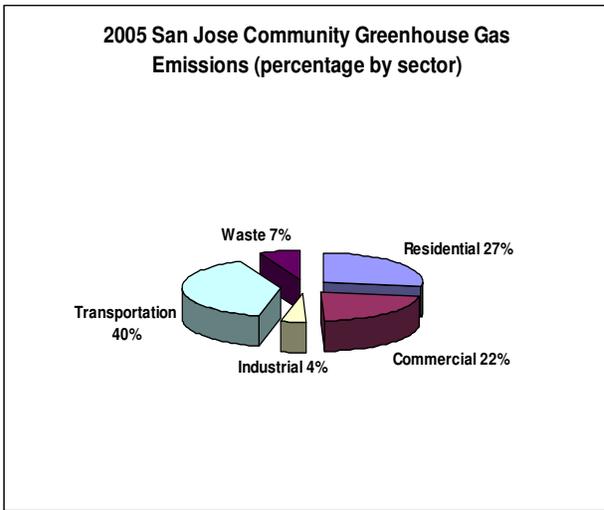
The Urban Environmental Accords, adopted by the City of San José in 2005, include a goal for signatory cities to reduce greenhouse gas (GHG) emissions by 25% by 2030 (Action 3).

AB 32, together with Executive Order S-3-05, set a statewide goal of reducing GHG emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050. In 2007, the San José City Council also adopted municipal GHG reductions to bring City GHG emissions below 1990 levels as follows:



Goal to bring GHG emissions below 1990 levels	
By Year	Percentage Below 1990 Levels
2012	25%
2015	30%
2020	35%
2030	50%
2045	80%

Today’s energy production methods emit significant amounts of GHGs. For example, in 2005, San José’s residential and commercial sectors combined generated 1.24 tons of carbon dioxide equivalent (CO<sub>2</sub>e), which accounts for approximately 49% of the communities GHG emissions.



Through energy conservation and transition to alternative energy sources, San José can significantly reduce its GHG emissions.

## Energy Trends: Barriers and Opportunities in San José

### Clean and Green Technology

Technology is a major driver of the local economy. As the Capital of the Silicon Valley, San José has long been a leader in cutting-edge, technological innovation. In keeping with that spirit of ingenuity, the City and its residents chose to rise to the challenge and transform regional problems into opportunities, as evident in its bold Green Vision goals. It is the City’s intention to advance its role as a technological leader and become a world Clean Tech center with thousands of jobs and billions of dollars of new investment in San José. This Energy Plan seeks to support and foster that spirit, find smart, sustainable solutions to our energy demands, and continue to lead by example.

### Smart Energy Makes Cents

Energy efficiency is an integral component of clean technology. In October 2008, Next 10 released “Energy Efficiency, Innovation and Job Creation in California,” a report which details the symbiotic relationship between the State’s energy issues and economy. The report concluded that energy efficiency saved Californians \$56 billion between 1972 and 2006. Much of that was redistributed into the economy, generating 1.5 million jobs with an estimated combined payroll of \$45 billion.<sup>6</sup>



Clean, sustainable energy has the benefit of:

- Reducing energy costs
- Conserving the nonrenewable resources upon which the commercial sector relies
- Driving demand for new, innovative technology
- Stimulating green business growth and creating local jobs.

### **Energy Efficiency and Renewable Energy Creates Jobs**

In an October 2008 Next10 report by David Roland-Holst, about 1.5 million FTE jobs with a total payroll of over 445 billion were created as a result of energy savings within California between 1972-2006. The report further states that “California’s energy policies and resulting economic growth provide evidence that innovation and energy efficiency can make essential contributions to economic growth and stability.”<sup>7</sup>

### **Smart Meters and Smart Grids**

California has led the way with the rise of smart metering, consumption, and emissions measurement technology. Recent innovations in consumer technology and the adoption/roll-out of smart meters put energy users in touch with their consumption habits and provide them with resources that will help them better manage energy waste and reduce their impact.

PG&E’s **SmartMeter** program will provide their customers with an automated gas and electric metering system that will improve the way they access meter readings. This technology empowers customers with better information and the ability to make cost-saving choices about the way they use energy. It also gives PG&E new rapid response capabilities to restore service following an outage, as well as enhanced abilities to assist customers when they phone our call centers.

A **smart grid** delivers electricity from suppliers to consumers using digital technology to save energy, reduce cost and increase reliability. A smart grid incorporates consumer equipment and behavior in grid design, operation, and communication technologies. The meters encourage consumers to reduce energy consumption during high-demand periods by notifying them whenever the price of electricity is about to increase or decrease. This will allow customers to adjust their electricity demands accordingly, as well as to take advantage of the prevailing rates of the time period.

### **Economic Issues**

A suffering U.S. economy, the mortgage crisis, paired with increasing gas and utility prices, means residents and businesses have less money to spend, and consequently less interest in upgrading to energy-efficient products. While many resources exist for the low-income populations within the State and the City, the “working poor”—those households which fall outside of the State’s income eligibility guidelines—do not have the economic resources to avail themselves of the energy efficiency and/or renewable technologies.

A typical family of four is eligible for low-income energy assistance programs if they



meet the income eligibility guidelines of \$41,500 to \$43,200 on an annual basis, depending on the State or utility program. Yet, the income eligibility guidelines for San José's Community Development Block Grant (CDBG) defines a lower-income family of four as those with an annual income \$84,900. An additional 30% of San José residents, while eligible for CDBG assistance, are not eligible for energy assistance programs. The City expects to address this discrepancy in collaboration with PG&E, the California Public Utilities Commission and through Federal Stimulus activities, which are expected to offer new financial resources for energy efficiency and renewables within the community.

### Land Use and Energy

As stated earlier, a recent report developed for the City as part of Envision 2040 projected an additional 172,000 jobs and 471,000 residents between 2007 and 2040. This growth is expected to lead to an increase of 173,000 households during this period.

Decisions affecting land use directly affect energy use, along with the consequent production of greenhouse gases, due primarily to the strong correlation between where we live and work and our transportation needs.

Accommodating this projected growth in population will require strategic, sustainable energy planning.

### Consumer Confusion about Options and Opportunities

Despite strong indicators like increasing CFL and EnergyStar adoption, there are signs that energy efficiency is losing priority with consumers in the United States. Experts have identified several barriers to adoption which

include: a lack of knowledge of the best options for increasing energy efficiency in the home; and the need to break through the “noise” of multiple messages coming from utilities, nonprofits, companies and local governments.

In California, more people believe that automobiles, rather than household energy usage, have an impact on global warming. In truth, our homes are the biggest opportunity to reduce GHG emissions, with the added benefit of saving money. Despite much progress, Californians need further fundamental education regarding energy efficiency. For example, the CPUC found that there still exists:

- Widespread confusion about energy efficiency terms, which actions provide greatest impact, and what is or is not energy efficient
- A significant gap between awareness and action
- The belief among Californians that they are “doing all they can”—yet they could easily do more.<sup>7</sup>

<sup>1</sup> [http://www.nrel.gov/learning/re\\_basics.html](http://www.nrel.gov/learning/re_basics.html)

<sup>2</sup> U.S. Department of Energy(DOE):

<http://www.energy.gov/energysources/fossilfuels.htm>.

<sup>3</sup> DOE:

<http://www.energy.gov/energysources/coal.htm>

<sup>4</sup> California Energy Commission:

<http://energyalmanac.ca.gov/electricity/index.html>

<sup>5</sup> EPA:

<http://www.epa.gov/climatechange/basicinfo.html>

<sup>6</sup> David Roland-Holst, “Energy Efficiency, Innovation and Job Creation in California: Executive Summary,” published by Next 10: Palo Alto, CA October 2008, p. 3.

<sup>7</sup> California Public Utilities Commission. Energy Efficiency California Foundation. Secondary Data Review. October 2008



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[http://www.californiaenergyefficiency.com/market\\_ed\\_outreach.shtml](http://www.californiaenergyefficiency.com/market_ed_outreach.shtml)

<sup>7</sup> David Roland-Holst, "Energy Efficiency, Innovation and Job Creation in California: Executive Summary," published by Next 10: Palo Alto, CA October 2008, p. 8.



## Successes to date

San José is proud of its many successes to date. Never before has there been such attention and support for energy efficiency and renewable energy technology within the community. The following provides a summary of the activities conducted and achieved.

Municipal electricity usage was **XXX** million kWh in **200X**. The General Services Department has historically tracked energy usage at the City's twelve largest facilities, and a number of small accounts such as libraries, community centers and service yards. Their latest figures indicated that, since 2001 (original baseline), the City has avoided close to **\$XXM** in energy costs. That translates to a **XX%** reduction compared over seven years, with over **XXXM** kWh reduced. This figure equates to **XXX** tons of CO<sub>2</sub><sup>e</sup> removed since 2001, or an annual reduction of GHG emissions from **XXXX** passenger vehicles.

- Based on these successes, staff estimates that \$650,000 will be available in the City's energy fund for 2009-10 projects.
- Staff is planning to audit 20-30 additional facilities in 2009-10 and has already identified efficiency projects in five facilities that will cost \$1.6M to implement but could save the general fund an additional \$718K per year and up to \$600K in rebates.



## Municipal Energy Highlights:

**The City Energy Fund:** Using first year savings and rebates from completed energy efficiency projects to provide resources for additional energy projects, the City continues to reinvest in reducing energy costs.

- In the last year, the energy efficiency projects that were implemented in sixteen city buildings are expected to save \$435,000 in annual general fund energy costs and earn over \$162,000 in rebates from PG&E.

**Community Development Block Grants (CDBG) Program:** Using funds provided by the HUD-CDBG allocation for the City of San José, the City is implementing a program that addresses energy and green building at facilities that serve San José residents located in low and moderate income areas. Energy and water efficiency, solar technologies and other green building measures on ten city facilities including:

- Fire stations: 1, 3, 16
- Community centers: Northside, St. James, Gardner, Alum Rock Youth Center, Hank Lopez, Washington Youth Center
- Libraries: Alviso



**Solar on City Facilities:** ESD finalized a RFP and Power Purchase Agreement template for use at all City facilities appropriate for solar installations. The first RFP for the City Central and Maybury Service Yards was released in February 2009 and bids are due by mid-April.

- These facilities were provided technical assessments from the Department of Energy have completed necessary energy-efficiency improvements and provide the potential for expedited activities.
- An estimate 1.5-2MW of solar potential was identified for the Central and Maybury Service Yards.
- Staff is in the process of prioritizing other facilities for solar installations based on their current energy efficiency status, ownership, and restrictions from tax exempt funding.

### Energy Efficient City Facilities

- ESD is working with PG&E to ensure comprehensive audits of City facilities with the largest energy use in order to have accurate data for developing energy projects.



- City staff is prioritizing City projects that could be funded using Federal Energy Efficiency and Conservation Block Grant funds.

### Water Pollution Control Plant—Energy Improvements:

The San Jose/Santa Clara Water Pollution Control Plant (“Plant”) has an operating budget of approximately \$40 million/year, a significant portion of which is spent on energy costs which total approximately \$6.0 million/year in Pacific Gas and Electric (PG&E) and landfill gas bills.

In an effort to contain the rising energy costs and optimize the wastewater treatment operations, the Plant in 2007 entered into an agreement with Quest, Inc. to conduct a free, no obligation energy audit of the Plant operations through the California Wastewater Process Optimization Program (CalPOP).

The program is funded by utility rate payers under the auspices of the California Public Utilities Commission (CPUC) and administered by PG&E through Quest, Inc. It provides free audits and incentives for implementation of the energy savings projects.

The audit report identified several energy optimization measures such as optimizing the operation of pumps using complex algorithms and programming, changing the aeration methodology for treatment (which required significant capital investment and modifications), and several other unique technologies. Over the preceding year, staff has invested significant time and resources to



implement these measures. Some of the more complex measures, such as pulsing of the air required for process, involved detailed sample design, data collection (of the biological parameters), and analysis to prove that the measures were feasible with no detrimental effect to the treatment process.

On December 05, 2008, several of these measures were tested and verified by PG&E and a post savings verification report confirmed a total savings of up to \$1.3 million/year is projected to be achieved through these measures. Further, PG&E will also be reimbursing the City \$279,969 for the costs incurred in implementing these measures. The resulting energy saving measures translate to a Plant carbon footprint reduction of 10,357 tons of CO<sub>2</sub> annually or an equivalent of 1,441 vehicles taken off the roads, helping achieve the City's Green Vision goals.

### **Organics to Energy:**

The City's Zero Waste Strategic Plan, adopted by Council in December, 2008, was created in order to outline the potential actions needed to reach zero waste.

San José remains committed to diverting waste to its highest and best uses including the recycling of paper, bottles and cans and the composting of clean yard waste. As the City analyzes the final portions of its waste stream, however, the materials become harder to capture and processes, creating the need to consider innovative technical solutions. One such solution is the conversion of organic waste to energy, which reduces the volume of these materials and prepares the feedstock for

further processing while capturing energy in the process.

The City hopes to achieve the following goals through organic waste-to-energy conversion:

- Divert hard-to-recycle waste from landfills
- Generate renewable energy
- Reduce carbon impacts of organic wastes
- Leverage private sector investment for technology development
- Provide regional solutions for organic waste management
- Become a leader in technology innovation

### **San Jose International Airport:**

San José International Airport (SJC) was recently awarded a \$4.6 million grant to install airport and ground service equipment that will help improve local air quality under the Federal Aviation Administration's Voluntary Airport Low Emissions (VALE) Program.

The grant will help fund the installation of "pre-conditioned air" and electrical power upgrades at thirteen airport gates in Terminal A that will reduce the need for diesel equipment and aircraft engine operations while aircraft are parked at the gate.

The VALE grant for preconditioned air is one of the many efforts by SJC to improve environmental quality in the vicinity of the Airport. Among these are the design and construction of its new terminal to achieve LEED sustainability certification; use of



recycled water and water conservation landscaping; energy conservation; solid waste recycling; and other pollution prevention measures.

## Community Energy Highlights:

### Community Energy Efficiency:

#### Silicon Valley Energy Watch Program— Local Government Partnership with PG&E:

The San José/Silicon Valley Energy Watch program (SJ-SVEW) builds upon numerous fruitful partnerships between the City and PG&E. San José was named as a Local Government Partnership program with PG&E for the 2009-11 period, pending final California Public Utility Commission approval. This project will provide direct installations of energy efficiency measures for the small business, residential and municipal sectors. San José is also working with the Silicon Valley Leadership Group to encourage energy conservation among leading companies.

A program to provide for the direct installation of energy efficiency measures for households in the low-to-moderate income sector is being finalized between PG&E and the City. More families and neighborhoods within San José would then be able to reduce their energy usage.

**Community Installations of Solar:** In October 2007, PG&E estimated that 13% of the electricity consumed in San José came from clean renewable sources. A recent report from the Northern California Solar Energy Association ranks San José 1<sup>st</sup> for total solar projects (723) since 1998 for large cities

with populations over 100,000. In the past year, we've seen significant investments in solar throughout San José, including:

- Macy's (307 kW),
- eBay (650 kW),
- San José Unified School District (5 MW on many facilities throughout San José),
- Star Quality Concrete facility
- (410 kW),
- Target Store (380 kW),
- The Tech Museum (185 kW)

Currently, the City is completing a data base that will compile and track all solar projects within San José.

**San José's Solar America City:** Finalized the contract between the Department of Energy and the City to implement a variety of activities throughout the community destined to increase the use of solar resources. The work plan for this grant program is to:

- Develop and pilot local and regional financing, incentive and regulatory strategies to ensure that all elements of the community have effective mechanisms in place to manufacture and install solar technologies





- Develop and implement a coordinated outreach and education strategy to ensure that the community has the resources, tools and workforce needed to increase the use of renewable energy; and
- Identify issues and opportunities for the City to achieve the goal of 100% electricity from renewable sources. The initial focus for this task will be on opportunities for the use of under-utilized City lands, closed landfills, and treatment plant and municipal water lands.

## Legislative Achievements:

Two key pieces of legislation passed in the latter half of 2009, which are likely to significantly spur solar investment. These are:

**Assembly Bill 2466 (AB 2466):** City staff worked closely with Assemblyman Laird to co-sponsor AB 2466 which allows local governments to receive a financial credit on their overall energy bills for up to 1 MW of excess energy produced per municipal solar installation. AB 2466 was signed into law in September 2008

**Renewal of the Solar Investment Tax Credit:** The solar investment was approved as part of the financial bailout package. One key provision increased the residential credit to 30% of the cost of installation, eliminating the \$2000 cap.

## Community Engagement:

**Solar Partnerships:** The City has demonstrated its commitment and dedication in supporting innovation and the entrepreneurial spirit within our community through partnerships, economic incentives and workforce development assistance. These

collaborative efforts include partnerships with entities such as the Tech Museum of Innovation, which has recently led to an agreement to install a 185kWp photovoltaic solar electric system on the Tech's roof. This system will be made accessible to the public through guided tours.

Economic incentives and workforce development support have been provided to several solar manufacturers including Solopower and Nanosolar. The assistance from the City has helped these businesses identify and secure manufacturing sites, obtain equipment assistance funds and establish partnerships with the City's Work2future program in order to further provide training assistance for current and future employees.

**Solar Tech Partnership:** The City has an active partnership program with *Solar Tech*, an innovative organization comprised of leading solar industry manufacturers, integrators and installers, utilities and training organizations. These partners have collaborated in a joint effort to create a Solar Center of Excellence in Silicon Valley. Their purpose is to identify, prioritize and resolve technical and adoption barriers to solar technology by addressing issues of performance, processes, standards, and workforce readiness.

# Strategic Recommendations and Activities

## LEAD

*Continue the City's leaderships in the development and implementation of policies, programs and actions that reduce the City's energy use and increase the use of renewable energy*

Strategies	Tactics		
	Near term 2009-11	Mid Term 2012-2015	Long Term 2016-2022
Reduce energy consumption in city facilities by 50%	<ul style="list-style-type: none"> <li>• Complete 20 energy audits and energy efficiency projects</li> <li>• Install LEDs for traffic, street and other outdoor lighting</li> <li>• Ensure a robust and effective data tracking and management system</li> <li>• Achieve a 20% reduction in energy consumption in city facilities</li> </ul>	Achieve a 20% reduction in energy consumption in city facilities	Achieve a 10% reduction in energy consumption in city facilities
Expand municipal energy efficiency funds by 40% by 2022	<ul style="list-style-type: none"> <li>• Continue and expand City's energy efficiency fund to ensure that first year savings, achieved as a result of energy efficiency projects, are returned and employed for future city energy efficiency projects</li> <li>• Ensure effective use of federal, state and other energy efficiency funds</li> <li>• Release an RFP for building a gasification plant</li> </ul>	<ul style="list-style-type: none"> <li>• Refine or develop most effective EE and RE financial instruments</li> </ul>	<ul style="list-style-type: none"> <li>• Refine or develop most effective EE and RE financial instruments</li> </ul>
Receive 100% of the city's municipal electricity from renewables by 2022	<ul style="list-style-type: none"> <li>• Achieve 1.5MW of solar on city facilities</li> <li>• Draft City guidance document applicable to all city facilities to expedite installations</li> </ul>	Secure 10MW of solar on city facilities  Evaluate effectiveness of guidance and RE procurement documents	Ongoing

# TRANSFORM

*Create a change in behavior that will effect a meaningful, long-term reduction in energy consumption and increase the use of renewables*

Strategies	Tactics		
	Near term 2009-11	Mid Term 2012-2015	Long Term 2016-2022
Achieve a 50% reduction in per capita energy use by 2022	<ul style="list-style-type: none"> <li>• Work with CPUC, CEC, utilities and local business, educational and community entities to develop and implement a community education and outreach effort.</li> <li>• Work with area builders to ensure implementation of energy efficiency strategies related to zero net energy by 2020 in residential and commercial construction</li> <li>• Conduct integrated public communication and marketing campaigns</li> <li>• Evaluate progress and refine strategies and actions</li> <li>• Ensure integration and implementation of Smart Meter and Smart Grid program activities</li> <li>• Ensure integrated and streamlined permitting systems for EE, RE and Green Building</li> </ul>	<p>Ensure adoption of Envision 2040 General Plan Policies that incorporate energy issues into policy decisions related to land use</p> <p>Evaluate progress and refine strategies and actions</p>	<p>Continue to refine and deliver integrated communication efforts to reach targeted sectors of the community</p>
Increase resources for the community to install energy efficiency and/or renewable energy technologies	<ul style="list-style-type: none"> <li>• Establish a San Jose financing mechanism for residential and/or business owners that incorporate funding for energy efficiency, renewable energy, and possibly roof repairs.</li> <li>• Ensure effective use of federal, state and other energy efficiency funds</li> </ul>	<p>Monitor and continuously improve financial products and programs for whole-house energy efficiency and renewable energy retrofits</p>	<p>Monitor and continuously improve financial products and programs for whole-house energy efficiency and renewable energy retrofits</p>

Strategies	Tactics		
	Near term 2009-11	Mid Term 2012-2015	Long Term 2016-2022
Increase resources for the community to install energy efficiency and/or renewable energy technologies (continued)	<ul style="list-style-type: none"> <li>• Achieve a 10% increase in the number of San Jose residents and businesses receiving energy efficiency and/or renewable energy services</li> <li>• Facilitate collaboration between various state, regional and local providers to develop new and existing funding mechanisms for energy efficiency improvements and renewable energy installations</li> <li>• Work with PG&amp;E to implement on-bill financing and other lending products</li> <li>• Establish a recognition program for the Energy Efficiency and Renewable Champions within our community</li> </ul>		
Ensure environmental safety in the manufacturing and disposal of existing and emerging energy efficiency and renewable energy tech	<ul style="list-style-type: none"> <li>• Ensure safe and proper disposal of all compact fluorescent lights</li> <li>• Work the state, regional and community organizations to ensure environmentally safe manufacturing of all energy efficiency and renewable technologies</li> </ul>	Monitor and evaluate outreach and education activities, refine strategy and implementation as identified	Ongoing

# ENGAGE

*Engage the San Jose community in order to strengthen, deepen and expand relationships, better connect people and resources in your community, and increase involvement in the City's Green Vision*

Strategies	Tactics		
	Near term 2009-11	Mid Term 2012-2015	Long Term 2016-2022
Develop and expand partnerships throughout the community to implement energy efficiency and renewable energy programs.	<ul style="list-style-type: none"> <li>Establish a partnership with area businesses and the commercial sector in the Energy Star Buildings Program.</li> <li>Establish a partnership with retail stores to promote the efficient use of energy star appliances</li> </ul>	Evaluate and update activities as needed	Evaluate and update activities as needed
Coordinate with federal, state and regional agencies to increase building codes and permitting processes, including Title 24 building standards, Title 20 appliance standards.	<ul style="list-style-type: none"> <li>Work with Santa Clara County Cities association and other state and regional associations and local government groups to identify and implement effective building codes</li> </ul>	Advance and implement Title 24 "beyond code" standards in step with state-wide mandatory standards in 2011 and 2014.	Fine tune and revise local building standards based on changing energy efficiency, green building and renewable energy state of the art.
Ensure environmental safety of CFLs, renewable energy technologies and other emerging EE and RE technologies	<ul style="list-style-type: none"> <li>Ensure education regarding proper disposal of CFLs and other EE/RE technologies</li> </ul>	Monitor and evaluate outreach and education activities, refine strategy and implementation as identified	Ongoing
Strengthen and expand Low-to-moderate Income Energy Efficiency (LIEE) programs utilization	<ul style="list-style-type: none"> <li>Improve and enhance regional LIEE outreach, coordination and implementation activities.</li> <li>Work with PG&amp;E, CPUC and City departments to expand LIEE programs to the low-to-moderate community sectors</li> </ul>	Monitor and evaluate outreach and implementation activities, refine strategy and implementation as identified	Ongoing
Work with area educational programs and institutions to ensure comprehensive and integrated job training programs in the energy efficiency and renewable energy sectors.	<ul style="list-style-type: none"> <li>Work with local, state and regional educational agencies to identify needs and opportunities</li> <li>Develop and implement targeted educational and outreach activities</li> <li>Use City's Go Green Schools program to enhance EE and RE educational activities</li> </ul>	Evaluate and update activities as needed	Evaluate and update activities as needed

# INNOVATE

*Foster Innovation throughout the community, enabling the discovery of new ways to create value and leverage opportunities*

Strategies	Tactics		
	Near term 2009-11	Mid Term 2012-2015	Long Term 2016-2022
Achieve Green Vision Goal 3— Receiving 100% of electricity from renewables by 2022 by exploring opportunities for increasing renewable energy technologies throughout the community	<ul style="list-style-type: none"> <li>• Develop one or more appropriate and cost-effective agreements to develop and build one or more “renewable energy/solar farms” of 5-20MW.</li> <li>• Develop a conversion technology research and incubation center</li> <li>• Incorporate an energy conversion option into the Commercial waste RFP</li> <li>• Prepare a recommendation regarding establishing Renewable Energy Zones within San Jose</li> </ul>	Evaluate and update activities as needed	Evaluate and update activities as needed
Engage the full range of participants within the clean and green technology sector to facilitate paths to market	<ul style="list-style-type: none"> <li>• Partner with clean tech companies to test and pilot innovated EE and RE projects</li> <li>• Leverage private, federal, state and local financing tools and mechanisms for technology research and investment</li> </ul>	Continuous Improvement including lessons learned of policies and actions	Continuous Improvement including lessons learned of policies and actions
Design, pilot and evaluate EE and RE technologies	<ul style="list-style-type: none"> <li>• Identify EE and RE opportunities for the use of the City’s Demonstration Policy</li> </ul>	Evaluate and update activities as needed	Evaluate and update activities as needed
Promote San Jose as the City of choice for manufacturers of clean energy technologies	<ul style="list-style-type: none"> <li>• Continue city efforts at achieving the Green Vision Goal of securing 25,000 new clean tech jobs</li> <li>• Continue and explore additional opportunities for the City to collaborate with others to showcase clean tech innovations</li> </ul>	Continuous Improvement including lessons learned of policies and actions	Continuous Improvement including lessons learned of policies and actions



## **APPENDICES**

**Steering Group**

**Stakeholder Interviews**

**Organics to Energy Workplan**

## Steering Group

In developing this plan, the City was guided by a steering group comprised of business, environmental and community representatives, along with city departmental staff.

- Papia B. Gambelin and Diane Silveira, Pacific Gas and Electric (PG&E)
- Doug Payne, Solar Tech
- David Marsland, The Sierra Club's Cools Cities Program
- Bob Hines, The Silicon Valley Leadership Group
- Lisa Jensen, City of San Jose Planning Commissioner, Community Representative--EnVision 2040

### City of San Jose Departmental Representatives:

- Mary Tucker, Energy Program Manager, Coordinator for the Strategic Energy Plan

Environmental Services Department:

- Kerrie Romanow
- Mary Ellen Dick
- Jessie Denver
- Amy Fonseca
- Kirsten Struve
- Michele Young

Randy Turner, General Services Department  
Bill Ekern, San Jose Redevelopment Agency  
Colin O'Mara, Office of Economic Development  
Charlene Sun, Finance Department  
Michael Rhoades, Planning, Building and Code Enforcement  
James Stagi, Housing Department

## Stakeholder Interviews

Individual interviews were held with City Departments, and with representatives from the following organizations/businesses:

- AIA
- Applied Materials
- ASHRAE (SV chapter)
- Asian Business Alliance of Silicon Valley
- Bo Enterprises (Weatherization Contractors)
- BOMA energy and Sustainability Committee
- California Building Performance Contractors Association
- Environmental Business Cluster
- Greenbelt Alliance
- Joint Venture Silicon Valley
- Joint Venture Silicon Valley—Sustainable Buildings Initiative
- League of Women Voters
- Office on Aging—Senior Commission
- Orchard Supply Hardware
- People Acting in Community Together/Unitarian church
- Parliament of the World's religions
- PG&E
- San Jose Conservation Corp and Charter School
- San Jose Developers Roundtable
- San Jose State University—Facility Management
- Santa Clara County Association of Realtors
- Santa Clara Valley Chapter National Electrical contractors association
- Sierra Club
- Silicon Valley Council of Nonprofits
- Silicon Valley Toxics Coalition
- Strong Neighborhoods initiative
- Tri-County Apartment Association
- Western Appliance
- Working Partnerships USA

**Organics to Energy Workplan  
(to be added)**