

## Community Energy Action Plans

Energy Action Plans that have been adopted by our local communities to reduce their electricity and natural gas uses to combat climate change,

### Background

In 2015 the Sierra Business Council of Truckee created an Energy Action Plan for Nevada City to reduce electricity and natural gas use and obtained greenhouse gas emissions data from PG&E to use as a base reference. SBC provided an intern to coordinate activities of a citizen Working Group to help implement the first years of the plan. The NCCAN Renewables Committee contacted members of the Working Group, and re-formed the group to become the Nevada City 100% Renewables Committee. Sierra Nevada Alliance has a program to support Sierran communities in passing 100% renewable resolutions to combat climate change. NCCAN worked with them to gather petition signatures and were successful in having the Nevada City Council pass a resolution in 2017 that called for 100% renewable electricity by 2030, and 100% renewable energy including natural gas by 2050. In 2020, Nevada City passed an update to its Energy Action Plan (now called the Renewable Energy Plan) to continue to implement the goals and strategies outlined in the 2015 Nevada City Energy Action Plan through the year 2050.

### California Goals

In 2018 California passed SB100, which calls for utilities such as PG&E to supply 60 percent of all retail sales of electricity by 2030 to be renewable and 100 percent of electricity to be renewable by 2045. An executive order also directs California to achieve carbon neutrality by 2045 and to be net greenhouse gas negative thereafter.

California's goal of carbon neutrality by 2045 is not the same as 100% renewable energy. To achieve carbon neutrality, an organization must purchase carbon offsets that result in carbon reductions. This offsets fossil fuels, but does not eliminate them.

There has been some confusion in equating 100% renewable electricity as to meaning 100% renewable energy. For example, the 2019 California Building codes only deal with zero-net **electricity**. There is not the same requirement for zero-net energy that includes natural gas.

Options for reducing natural gas use include replacement of gas hot water heaters and ranges with electric appliances and installing HVAC heat pumps. All-electric homes would also eliminate natural gas usage.

### **Why are Community Energy Action Plans needed?**

Nevada County, like most communities in the Sierra Nevada, faces challenges associated with regional climate change. From record temperatures to proliferating wildfires and changing precipitation patterns, climate change poses an immediate and escalating threat to the region's environment, economic strength, and public health. The region is affected by more intense dry periods under warmer conditions, which lead to extended and more frequent periods of drought in California. The area burned by wildfires across the state increases in tandem with rising temperatures. Tree mortality in forested areas increases dramatically as trees become stressed from higher temperatures and decreased water availability, making them more vulnerable to insects and pathogens. The region is also impacted by a higher proportion of precipitation falling as rain instead of snow, more intense atmospheric river storms, and shortages in runoff and water supply, as well as substantial changes in runoff patterns and timing. This will affect groundwater recharge, and in turn affect Nevada County, as well as downstream communities. Climate change can impair the ability of ecosystems to provide goods and services, including reliable snowfall and healthy fishing ecosystems. Many these resources represent cultural, social, and economic benefits that local communities rely on for agriculture, tourism, recreation, and other industries.

In addition to the updated Nevada City Renewable Energy Plan of 2020, Energy Action Plans were created by the Sierra Business Council for Grass Valley (2018) and Nevada County (2019). All three of these plans call for citizen voluntary actions to meet their goals, with only the California Building Standards forcing mandatory actions. In addition, municipalities can vote for special measures to meet their own goals. These plans stress dollar savings from reduced electricity and gas use in addition to reducing GHG emissions. Note: the Energy Action Plans do not cover diesel or petroleum use in industry and transportation or agricultural use in California.

After passage of the plans, Sierra Business Council coordinated efforts to build Working Groups for each of the plans that included a coordinator and an intern from SBC, members from the municipality staff, and citizens with interest and experience in energy issues.

The goals of the Plans address three key areas of energy:

- Energy efficiency
- Renewable energy, and
- Water use efficiency.

Energy efficiency includes personal actions, buildings efficiency retrofitting, and time of day electricity use. Renewable energy refers mainly to existing and new building use of solar and wind, such as roof-top solar. New construction is controlled by 2019 Building Codes for efficiency and requires solar for residential homes.

Grass Valley's plan calls for a 36% decrease in electricity use by 2035, and Nevada County a 51% decrease by 2035. To meet these goals and the 100% renewables goal of Nevada City, the following are the recommended actions in the EAP's.

### **Municipal Actions called for in the Energy Action Plans**

- 1) Further renewable energy procurement efforts by evaluating additional sites for renewable energy on municipal facilities and property. Grass Valley and Nevada County already have solar farms for municipal use and Nevada City is considering a solar farm site.
- 2) Continue to promote existing energy-efficiency, water-efficiency, and renewable-energy programs and best practices - by providing information when available at municipality offices and on their website.
- 3) Develop a public recognition system that honors businesses that audit and retrofit their facilities and business practices.
- 4) Join the Institute for Local Government's Beacon Program in order to receive assistance in tracking community and municipal energy use and to learn more about best practices.
- 5) Continue to provide information regarding no-cost Title 24, Part 6 trainings for plan examiners, building inspectors, architects, designers, and contractors at municipality offices and on their website.

- 6) Continue to conduct building audits to benchmark energy and water use in facilities, and identify cost-effective retrofit projects.
- 7) Provide available information on incentives, resources, trainings, and funding opportunities for achieving Title 24 ZNE goals. Encourage new construction and renovation projects to participate in Energy Efficiency and Zero Net Energy design programs.
- 8) Provide heat gain mitigation information when available, for streets and parking lots (i.e. light-colored building and paving materials, landscaping, green roofs, shade trees, and other green infrastructure).
- 9) Retro-commission (that is, review) facilities to maximize energy performance and complete cost-effective retrofit projects.
- 10) Provide information when it becomes available on the benefits of incorporating renewable energy and energy storage systems into retrofit projects and into new construction.
- 11) Consider adopting purchasing guidelines and energy-efficiency analysis requirements in Requests For Proposals.
- 12) Encourage and participate in bulk purchasing of energy storage systems to support grid reliability and community resilience.
- 13) Encourage broadband infrastructure in new development proposals to ensure optimal connectivity for IT controls and networks of operating systems.

**Additional Municipal Planning Actions include:**

- 1) Priority to be given to the lowest cost measures to meet energy needs including cogeneration, district heating and cooling, decentralized electricity generation and smart grids/microgrids, the use of industrial waste heat, building controls, automated lighting.
- 2) Participate in related regulatory proceedings and State legislation to advocate for rules and policies that support the municipality energy goals
- 3) Publicize the PG&E Energy Efficient Retrofit, On-Bill Financing Projects and Solar Choice to inform the community on how to participate.

- 4) Create a plan to achieve these goals that will include interim milestones, budget estimates, equity metrics, estimated financial impacts, and financing mechanisms,

### **Working Group Actions called for in the Energy Action Plans**

- 1) Promote existing energy-efficiency, water-efficiency, and renewable-energy programs and best practices through outreach events in the community.
- 2) Assist community schools in offering educational energy events, curriculum, or workforce training.
- 3) Assist Project Go with specific outreach targeting low income and older homes for upgrades.
- 4) Provide information to tenants and landlords on energy efficiency practices and programs.
- 5) Promote no-cost Title 24 trainings and resources.
- 6) Provide guidance and information to realtors on the benefits to homeowners and commercial property owners to audit and retrofit their homes and commercial buildings for comfort and energy performance.
- 7) Encourage hotels and tourist organizations to educate visitors about water and energy efficiency.
- 8) Encourage multi-family property owners to explore community renewable energy projects.
- 9) Work with property owners to consider projects that utilize renewable energy and incorporate energy storage.
- 10) Partner with local organizations, other jurisdictions, and businesses to coordinate energy audits and bulk purchasing of energy efficient equipment & appliances.
- 11) Encourage businesses to participate in PG&E's Demand Response Program to reduce energy use during peak demand.
- 12) Work with internet service providers to support and expand broadband infrastructure projects.
- 13) Work with Nevada Irrigation District on water audits of potable water and wastewater systems and promote leak loss detection trainings for municipality and Nevada Irrigation District staff.

14) Assist community schools and Nevada Irrigation District to coordinate a water wise student education program.

15) Coordinate with Nevada Irrigation District on water bills to provide information on ways to reduce water waste, utilize demonstration gardens and develop new water-efficiency programs and market programs.

### **The Working Groups can also assist with the following outreach**

- 1) Follow new technologies and grant opportunities - hold meetings to release the information.
- 2) Hold regular forums to explain various PG&E and State incentive plans and grant opportunities.
- 3) Help with contracting for solar/wind farms to help all municipality facilities run on 100% renewable energy, and help offset citizen uses.
- 4) Proactively encourage all new homes to be all-electric (As of July 2020, 32 CA cities have implemented local codes to encourage all newly constructed buildings to be all-electric).
- 5) Review the 2019-2027 Housing Elements for additional areas that can support new technology and standards for housing energy reduction.

### **Community Survey**

Nevada County and its Working Group developed a Nevada County Energy Action Plan Community Survey that citizens and businesses can fill out to help the county determine where efforts can be made to help reach its goals. Here is a link to the survey:

<https://www.mynevadacounty.com/FormCenter/Nevada-County-Energy-Action-Plan-Communi-23/Nevada-County-Energy-Action-Plan-Communi-112>

The survey was made available on the website as well through the newspaper, newsletters, and email contacts.

It consists of eight questions as follows:

**1) How familiar are you with the Nevada County Energy Action Plan? The Plan outlines the goal to reduce electricity use by 51% and natural gas use by 30% by 2035.**

Answers can range from extremely familiar to never heard of it.

**2. Have you ever visited the Nevada County Energy Action Plan website at <https://www.mynevadacounty.com/3055/Energy-Efficiency?>**

Answer is yes, no or never heard of it.

**3. How likely are you to take advantage of cost saving programs that could reduce your energy bill/use?**

Answers can range from extremely likely to not likely at all.

**4. In your opinion what is the highest priority for energy efficiency for your home? Please check your top three priorities.**

Choices are: Electricity Reduction, Water Efficiency, Renewable Energy (i.e. Solar), Passive Heating and Cooling, Natural Gas Use

**5. What resources would you take advantage of to learn more about how to reduce your energy consumption? Check all that apply.**

Choices are: Web Page, Webinar, Local Business Association, Building Department, Social Media, Trainings, Resource Guide, Access to Financial Assistance (Programs such as grants, loans, rebates), NetWorking Opportunities with Experts, Energy, Consultation/Assessments

**6. What is the largest barrier for you to reduce your energy consumption?**

Choices are; Financial Costs, Too Busy, Lack of Information, Need home energy assessment assistance, Other

**7. Please check all that apply to you:**

I am a homeowner, I am a renter, I am a business owner, I am an energy conservation advocate, I am an energy conservation subject matter expert

**7. I want to take action to reduce and promote energy efficiency. Please contact me.**

Yes, please contact me, No, Thank you.

If you selected yes, please fill in name, address, email.

Survey results will also be shared with Grass Valley and Nevada City Working Groups.

The Working Groups will contact those respondents that asked to be contacted for more support.

**Energy Efficiency Toolkit**

In another action the Working Groups have developed an Energy Efficiency Toolkit to assist the citizens in their decisions to reduce their energy use.

A basic concept of the toolkit is the Renewable Energy Pyramid.

The Renewable Energy Pyramid is a visual guide to help understand the energy efficiency process. Following from the bottom up, the pyramid lays out the progression of energy efficiency for residents and businesses. Understanding what should be done first can make it easier to organize energy efficiency goals and save money at the same time.

- The first step on the energy pyramid is Energy Analysis. Energy audits review the current energy consumption of a building, and recommend ways to save energy through more efficient behaviors and use of equipment. An energy audit is a valuable tool for making decisions about energy, because it determines the best energy choices, their cost, and the return on investment in years. The energy audit can range from a simple walk-through of the building to a detailed audit with onsite measurements, tests, and analysis of many, if not all, building systems. An energy self audit can be a great place to start.
- The second step on the pyramid is Energy Conservation. Simple behavioral changes can make a long lasting and immediate impact on the amount of fuel and electricity a building uses. Energy savings can be achieved simply by turning off lights, fans and electronic devices when not in use, adjusting settings for the season and using a solar dryer clothesline. Energy conservation is all about human decision making and choices that increase energy efficiency, becoming aware of use efficiencies and time of use is a great place to start.
- Energy Efficiency is the third step on the energy pyramid. This step uses equipment to reduce a building's energy use by upgrading heating and cooling equipment and installing appliances that are energy efficient. It also centers on the envelope of a building or home, increasing air tightness and reducing energy loss. These upgrades can have significant cost reductions and tax deductions.
- The fourth step in the pyramid is Time-of-Use Management. Utilities have a demand charge on their electric bill. This means they charge a higher rate to cover the cost of the utility having enough capacity to meet customer needs

when that need is highest, often because natural gas generators must be activated when renewable sources are offline. Your energy bill can be reduced by changing the time you run your appliances or equipment, such as using the washer and dryer in off-peak hours (generally 12 AM- 10 AM), thus avoiding the demand charge.

- At the top of the energy pyramid is Renewable Energy. By doing the first four steps you will have minimized the cost of renewable energy. Renewable energy is created from naturally replenishing sources, such as solar and wind power, geothermal, hydroelectricity, and biofuels. Conversion to renewable resources can have significant tax offsets, and positive financial returns over time while reducing home carbon emissions. Solar prices for example have lowered so much that they are the most affordable source of energy in many parts of the world, contrary to popular belief.

After the energy pyramid discussion, the toolkit gives detail ideas on each of the five decisions with links to further details. It deals separately with residential and non-residential buildings.

- The Energy Audit section of the toolkit covers whether to do a self-audit of your energy needs or hire an energy audit specialist to perform the audit.
- The Energy conservation section provides ideas that you or your business can take on and includes lists of contractors that can help.
- The Energy efficiency section includes home retrofitting measures such as updating furnaces, water heaters, shifting to electric, updating insulation, window retrofits, and more. It also suggests ideas for landscaping and home hardening for fire prevention.
- The Time of Day Management section contains a link to PG&E's time of day rates.
- The Renewable Energy section discusses solar panels, battery storage and other ideas.

## **Accessing the Energy Action Plans**

Each of the municipalities has a section on their website about the Energy Action Plans including the actual Energy Action Plan itself. On the website are links to other websites that provide information on grants and loans the homeowner or business can get to facilitate energy efficiency.

You can google the following for the plans and other information

Nevada City Sustainability Plan

<https://nevadacityca.gov/pview.aspx?id=20800&catID=564>

Grass Valley energy action plan

<https://www.cityofgrassvalley.com/pod/energy-action-plan>

Nevada County energy efficiency

<https://www.mynevadacounty.com/3055/Energy-Efficiency>

### **Quick Tips**

The Working Group has also developed a list of Quick Tips as to how you can save energy:

Some of these items already are in the toolkit but can be used separately.

#### **Building envelope:**

Find and seal holes in siding or gaps around doors and windows at the lowest point of the house that go to the conditioned living space. These should include gaps around dryer vents, water heater drains, water heater vents. Next, seal any ceiling holes including gaps around light fixtures, vent fans, ceiling fans, and attic access doors that can allow heat to escape to the attic. The chimney effect draws outside air in the low part of the house and sucks heated air out through the attic.

If your windows are leaky or single pane, add insulating curtains, window film, or storm windows. Keep curtains or drapes closed when your home heating is on and to keep the house cool in summer.

Check to see that your ceiling insulation is of uniform thickness throughout the attic to make sure heat isn't escaping in spots. Typical places for problems include at roof eaves and over the attic access door.

If you have under eave storage in the upstairs, make sure those floors and walls are insulated.

Measure your ceiling insulation to determine its thickness to see if you can gain some efficiency by adding more.

[https://www.energystar.gov/campaign/seal\\_insulate/identify\\_problems\\_you\\_want\\_fix/diy\\_checks\\_inspections/insulation\\_r\\_values](https://www.energystar.gov/campaign/seal_insulate/identify_problems_you_want_fix/diy_checks_inspections/insulation_r_values)

Make sure your attic is vented to allow any moisture to escape that might damage insulation value. Make sure vents use maximum 1/8 inch screen size to prevent wildfire embers from entering. Vents size can be calculated here.

<https://www.gaf.com/en-us/for-professionals/tools/ventilation-calculator>

### **Mechanical systems:**

Change furnace filters every three months at least. A clogged filter makes the blower work harder, drawing more electricity. Clean heat pump intakes regularly for the same reason. This can save between 5% and 15% of energy use.

If you have forced air heat, use a programmable thermostat to set heat lower or shut off when no one is home. The same applies to air conditioning. This could save 10% on heating and cooling energy.

Rather than heating or cooling your whole house if only a room or two is in use, try portable electric resistance heaters and portable evaporative coolers. Heat pumps are so efficient that portable heaters and coolers probably don't help much.

If your water heater is in an unheated space, insulate it, but not before insulating as much hot water piping as possible. This could save 1% to 3% of energy.

Turn off lights. Even LED bulbs use 75% less electricity than conventional ones, don't waste it. If your family has a hard time remembering, consider motion-sensor switches. They could save you another 2% of your lighting consumption.

Wash clothes in cold water. It can save 9% of your washing cost.

Line dry your clothes. Dryers can use as much as 4% of your household energy.

Calculate the energy use of your appliances. Dryers also break down fabric fibers faster.

<https://www.energy.gov/energysaver/save-electricity-and-fuel/appliances-and-electronics/estimating-appliance-and-home>

### **Kitchen:**

Use electric kettles, slow cookers, instant pots, microwaves, and countertop induction cookers instead of your gas or electric cooktop or oven. For small amounts, these devices are much more efficient than turning on your oven. Gas cooktops also emit dangerous gases, sometimes worse than polluted outside air, into your living space. Save as much as 20% on energy.

Clean your refrigerator coils regularly. Make sure that door gaskets are sealing properly. You could save 4% on energy consumption. If your refrigerator is more than 15 years old newer ones will definitely save money and energy. Calculate your possible savings.

<https://www.energystar.gov/products/appliances/refrigerators/flip-your-fridge>

With dishwashers skip the drying cycle and let the dishes air dry. Most newer dishwashers don't require pre-rinsing of dishes so you save water and electricity. Set your dishwasher to run after peak electric hours since we are now entering time-of-use pricing, with highest rates running from 4 p.m. to 8 p.m. or 5 to 9, depending on your plan.

If you buy new appliances, look for Energy Star ratings and get the best you can afford. Shut off phantom loads, like coffee makers, electronics on standby, and anything that has a light that stays on. You could reduce your electricity usage by 5%.

Other actions being worked on by the Working Groups include:

- a flyer for Air B&Bs and hotels suggesting reducing water usage during the stay, and
- presentations to FireWise Groups and homeowner associations publicizing the toolkit.

It should be noted that these plans have goals that reach out to the year 2035. Steady local work on the goals will be necessary along with meeting new requirements by the State of California by utilities for stricter renewable standards, new building codes that require non-residential buildings to be zero energy, and conversion of buildings to all-electric. Another impact is being made around the state by the formation of non-profit Community Choice Aggregation companies that will provide local power to municipalities and directly to their citizens with a goal of 100% renewable energy.

Finally, there will be changes to respond to fire and drought in California that require the grid to be hardened with backup storage for utilities and individual buildings.

To assist with all this, the Working Groups are looking for interested citizens to join the Working Groups. Please contact Don at [rivenes@sbcglobal.net](mailto:rivenes@sbcglobal.net) if you want to join a group.