

## CLEAN & RELIABLE ENERGY

### GOALS

- Reduce energy consumption in County buildings and operations.
- Increase the use of clean, renewable energy to power County operations.
- Promote policies and programs that improve energy efficiency in residential and commercial buildings.
- Promote policies and programs that increase reliance on **renewable energy** sources for powering residential and commercial buildings.

### ***Renewable energy***

*noun*

Energy produced from non-fossil fuel, renewable sources, such as the sun, wind, waves, and geothermal heat.



Energy use in Clark County’s operations comes in many forms, from cooling the County’s 112 buildings in the summer months and powering traffic signals to lighting office space and using appliances. In 2019, energy use accounted for 61% of County operational greenhouse gas emissions.<sup>5</sup> If the County is to achieve its goals of 20% energy reduction from efficiency measures by 2023 and zero-emissions by 2050, it must significantly reduce its building and operations energy consumption while simultaneously paving a new path forward for how it uses energy. By pursuing measures now to achieve these goals for its own operations, Clark County can lead by example and demonstrate to the broader community the many benefits of energy reduction, as well as provide lessons learned for future projects. The County has already achieved an 8% improvement in energy performance between 2013 and 2019 and expects to continue this trend through continued efficiency investments and the achievement of the goals and actions in this Plan.



**1,500**

**LED retrofits completed for traffic signals**



**11,010**

**streetlights upgraded to LED**



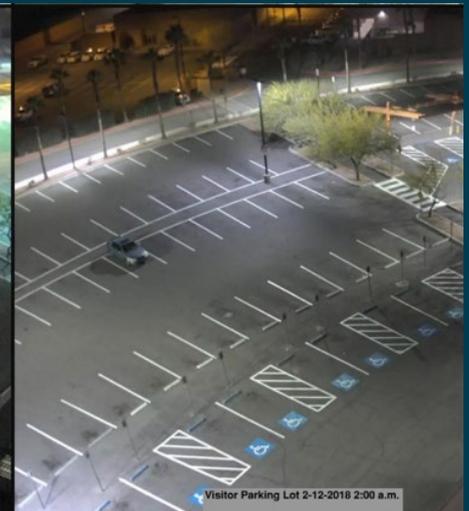
**57,120**

**streetlights left**

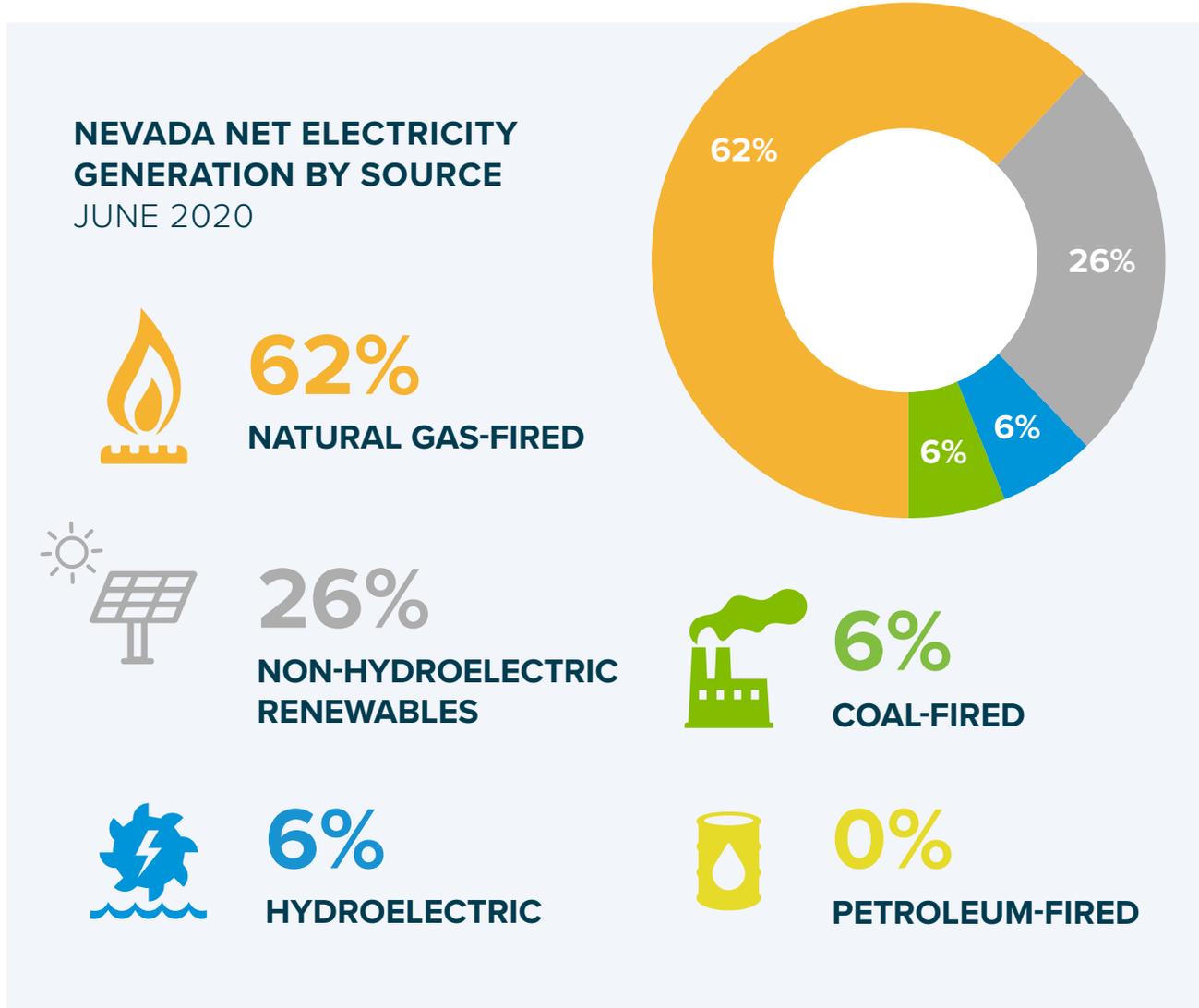
Once upgraded to LED, these lights could generate an additional savings of more than **28,000 MWh** and a GHG reduction of **13,000 MTCO<sub>2</sub>e**.



**LED upgrades at the Government Center Visitor Parking Lot not only save the County energy costs, but also improve safety by providing increased illumination.**



Clark County must also shift the source of its operational energy from fossil fuels, such as natural gas, to clean, renewable energy, like solar. The County will be supported in meeting its renewable energy goals by the recently enhanced state-wide Renewable Portfolio Standard, which is currently set to 50% energy production by renewable sources by 2030, a doubling of the previous goal. Further, as Nevada currently has the nation’s highest solar capacity per capita rate in the country, and ranked 4th for solar electric growth (between 2007-2016), Clark County has ample opportunity to leverage solar growth in the state and the region for sourcing clean electricity.<sup>6</sup> As of the writing of this plan, Clark County’s operational energy is expected to be sourced by 100% Nevada-based solar energy through NV Energy’s Optional Pricing Program Rate, beginning in 2021. NV Energy has also commissioned an additional 1,190 MW of solar generation and 590 MW of battery storage to be constructed within Clark County boundaries that will come online in 2024.<sup>7</sup>





### DID YOU KNOW?

Clark County has six solar arrays, five rooftop and one ground-mounted, totaling 341 kilowatts (kW) in generation capacity.

Government Center	36 kW
Development Services Russell Road	38 kW
Hollywood Rec Center	40 kW
Desert Breeze Recreational Center	42 kW
Spring Mountain Youth Camp	35 kW
Torrey Pines	150 kW

Solar Array on the Hollywood Recreation Center



**IF THE COUNTY COMPLETES LIGHTING UPGRADES THROUGHOUT ALL ITS FACILITIES, IT COULD RESULT IN AN ESTIMATED SAVINGS OF 1,600 MWH AND REDUCTION OF 750 METRIC TONS CO<sub>2</sub>E. THAT'S AN ANNUAL COST SAVINGS OF APPROXIMATELY \$149,500.**



Real Property Management staff install LED lighting.

As Clark County makes strides toward its operational energy goals, it can enhance existing systems to ensure that building design standards are not only met with each retrofit and new construction, but continue to evolve and improve as best practices and capabilities for sustainable design also advance. County projects are currently expected to meet or exceed one of three options: 20% improvement over IECC 2018 Section C401.2, LEED Silver, or SITES Silver, though actual certifications are not required. By setting high design standards for its own facilities, the County can lead the community by example, demonstrating the benefits of efficient building design, acting as a testbed for best practices, and promoting the use of these practices to the residential and commercial sectors. This will be an increasingly important focus for the County as it moves toward a community-wide plan, and conversations with residents and developers will be essential to framing the needs of the community.



## WHAT ARE IECC, LEED, AND SITES?



### International Energy Conservation Code (IECC)<sup>8</sup>

The IECC is a set of model requirements that cities and towns can adopt to achieve energy-efficient buildings throughout design and construction.



### Leadership in Energy and Environmental Design (LEED)<sup>9</sup>

LEED is a set of standards for siting, design, and construction that emphasize resource efficiency and human well-being. Projects must meet credit requirements across several categories, such as Water Efficiency, Energy & Atmosphere, and Materials & Resources.



### SITES<sup>10</sup>

SITES is a set of development standards that emphasize sustainable landscaping. SITES certification credits require measures such as stormwater filtration and habitat maintenance to protect ecosystems and improve human health.

While equipment upgrades and efficiency measures are important for the County to reduce its energy use, the County’s staffing capacity to manage these operations is equally critical. Staffing an energy management team for the County will set the County up for continued success, particularly as it brings on its new energy management systems and as new buildings are constructed and maintained.

Finally, the need for employee training and education was a common theme heard throughout interviews and surveys. Engaging County staff, whether by training energy managers on operating HVAC control systems or educating administrators on energy-friendly behaviors, will support ongoing energy improvements.



### DID YOU KNOW?

In Spring 2021, Clark County will launch a comprehensive energy management system called EnergyCAP, which will give the County new insight and control into its buildings’ energy use. With dashboards that easily display energy use and locations, capabilities for accounting and data analysis, and the ability to tie GHG emissions to energy use, Clark County will be well-equipped as it continues to improve the way it tracks and reduces its energy use. If building efficiency is optimized through this system, the County could see an estimated savings of more than 16,000 MMBtu (a cost savings of \$293,000) and a GHG reduction of 1,690 MTCO<sub>2</sub>e.

# POTENTIAL ACTIONS

Shifting how the County consumes energy; sourcing its energy from clean, renewable sources; and empowering its employees to make smarter energy choices will be critical to reducing the County's energy-related greenhouse gas emissions, saving on operating costs, and meeting its energy goals. The following actions have been identified to help the County achieve its goals for clean and efficient energy use.

## ACTION

**Staff an energy management team for all County facilities and operations.**

**Continue to upgrade all lighting in County buildings to LED.**

**Assess the need to expand outdoor lighting control systems (sensors, timers) to all exterior lighting.**

**Continue to implement energy conservation measures for the highest energy intensity County buildings and continue to conduct energy audits on other high energy intensity buildings.**

**Establish an employee energy awareness and conservation program.**

## DESCRIPTION

Increasing staff capacity for energy management within County operations can help expand opportunities for operational optimization, maintenance savings, management of energy contracts and relationships, and tracking cost savings. Currently, a single County staff position manages energy administration for all of the County's 112 buildings and accounts with 20 different utilities.

LED lighting currently offers the highest efficiency, longest lifespan, and lowest annual cost on the market. Transitioning all County buildings to LED lighting can have significant operations and maintenance savings. LEDs also release minimal heat compared to CFLs or incandescents, which can emit up to 80% of the energy they use as heat,<sup>11</sup> so switching to LEDs can decrease the amount of cooling needed in County buildings.

Installing lighting control systems can help the County automate when and for how long lighting is required based on occupancy and safety needs, while eliminating unnecessary lighting. While Synergy software currently controls interior lighting, and Maxicom software controls most exterior lighting for parks, ball fields, and parking lots, there may be additional opportunities for automation.

Clark County has already conducted energy audits of its three highest energy consumers, as well as of 22 other major facilities. Selected measures from these audits are submitted for capital funding. Additional energy audits will allow the County to identify causes of high energy use and prioritize energy upgrade projects that will have the most impact. Targeting special use facilities like pools, auditoriums, or 24-hour-operation buildings may help identify unique opportunities for energy savings.

Educating employees on energy awareness and conservation can empower employees to take action, as well as amplify the positive benefits of technology upgrades. While Clark County has established energy conservation policies for its employees, it has not engaged them with accompanying awareness programs and campaigns.



## ACTION

**Establish a revolving energy fund that leverages savings from efficiency projects to continue to fund additional investments.**

**Continue to expand building management system (BMS) to all County buildings and integrate data into new Energy Management System.**

**Retrofit all occupied County facilities with solar glazing and energy efficient windows.**

**Pilot battery storage for critical County facilities.**

**Develop partnerships with stakeholders to identify innovative technologies for clean energy production.**



## DESCRIPTION

By reinvesting savings from efficiency projects, the County creates space within its operational budget to incorporate innovation as well as demonstrate the County’s commitment to efficiency. Having a dedicated funding stream will keep efficiency as a priority because it will not have to compete with other costs. It also means that when a piece of equipment fails, it can be replaced with the most efficient option instead of the cheapest.

BMS systems can help the County automate and streamline the operation of large-scale energy-users like HVAC, lighting, and pumps and increase the efficiency of systems that would otherwise need to be manually operated. This can save on operating costs as well as ensure connected systems operate smoothly together. Currently, the County’s BAS system, Metasys, controls 70 of the County’s 112 buildings. Expanding the BMS to all County buildings can help optimize building equipment and use. Digital and remote control as well as alarms/notifications of malfunctions also enhance the resilience of County buildings and operations.

Solar glazing and energy efficient windows can help maintain building temperature and occupant comfort while reducing heating and cooling costs for the County. While these features are addressed via County design guidelines in new construction, existing County buildings will need to be retrofitted.

Replacing fuel-based backup generators with solar power plus battery storage can move the County towards clean reliable technology. Battery storage can extend the benefits of the County’s six on-site solar PV systems by storing clean energy when demand is low and supplementing the energy supply during peak use times or when grid energy supply is interrupted. This use case can help reduce the strain on utilities during extreme heat events and may be financially rewarded by the utility.

Identifying and collaborating with stakeholders across the valley can position the County to act as a testbed for piloting new energy technologies and keep the County at the forefront of innovation while supporting and attracting local clean energy businesses.

# METRICS AND TARGETS

To ensure the County can track its progress towards clean and efficient energy, the following metrics and targets have been identified. Note, where possible, **All-In Clark County** has aligned its metrics and targets with existing County, state, or regional plans to ensure efforts for sustainability and climate resilience are aligned.

Metric	Baseline	2030 Target	2050 Target
<b>Total energy consumption (MMBtu) from County facilities</b>	570,897 MMBtu (2019)	20% reduction	40% reduction
<b>Building energy intensity (kBtu/sq ft)</b>	207 kBtu/sq ft	25% reduction (155.25 kBtu/sq ft)	50% reduction (103.5 kBtu/sq ft)
<b>GHG emissions from County energy consumption</b>	62,688 MtCO <sub>2</sub> e (2019)	50% reduction	Zero emissions
<b>On-site renewable energy generation</b>	341 kW	Upward Trend	
<b>% of County facilities meeting energy efficient/green building standards</b>	New Metric	Upward Trend	100%

