

**Module: Introduction**

**Page: Introduction**

**0.1**

Introduction

Please give a general description and introduction to your city.

Over the past decade, Las Vegas and the Southern Nevada region have made significant public and private sector investments in clean energy, water conservation, recycling, green building, and alternative transportation that have resulted in significant impacts to the environment, economy, and community. Efforts in sustainability have made noticeable impacts to the City government as well; after an initial \$65 million investment in energy efficiency, renewable energy, water conservation, and recycling, the City of Las Vegas is on track to reduce City energy costs more than \$6 million annually, putting it on the course to achieving its goal of being America's first net-zero city.

Las Vegas today, in early 2013, looks radically different than it did more than a decade ago. In 2002, the Las Vegas metropolitan region was estimated at more than 1.5 million with more than 35 million visitors entering the region, staying at the City's 126,787 hotel rooms, and spending \$7.63 billion at casinos. Ten years later, nation's fastest growing city would add another 400,000 residents and increase its room inventory to 150,487. And despite dips in visitation during the recession that ultimately crippled gaming and sales revenue, leading to job losses and home foreclosures, Las Vegas had just shy of 40 million visitors in 2012, spending \$9.4 billion in Clark County casinos. 2002 was also the year the Southern Nevada Water Authority (SNWA), the region's water management agency, and local municipalities took action on the drought that was taking a toll on Lake Mead, the City's reservoir fed by the Colorado River and held back by Hoover Dam and provides 90% of the region's water, by developing a drought plan and ordinance to curb water consumption.

In 2006, Mayor Oscar Goodman, recognizing further risks and impacts climate change was having and could continue to have on the community, nation, and world, signed the U.S. Conference of Mayor's Climate Protection Agreement, leading the City Council to resolve to reduce energy consumption and greenhouse gas emissions and construct new City buildings and facilities as green buildings. In 2008, the City formalized its Sustainability Initiative to focus on municipal and community-wide efforts that have already saved the City more than \$4 million.

**0.2**

Emissions Accounting Choice

By checking the boxes below you are indicating that you have fuel and/or GHG emissions data to report at this time.

- Select Government to report emissions from your local government operations (also referred to as 'corporate' or 'municipal'): relating to those emissions arising from the operations of the local government.
- Select Community to report emissions from the entire city (also referred to as 'geographic' or 'city-wide'): encompassing emissions which are within a particular geopolitical region, over which the city government can exercise a degree of influence through the policies and regulations they implement.
- Select both boxes to report fuel and/or emissions for both inventories.
- Do not select either box if you have no fuel and/or GHG emissions data to report this year.

Government

**Module: Governance**

**Page: Governance**

**1.0**

Please describe the process by which the city reviews its progress and manages overall responsibility for climate change.

The City of Las Vegas Office of Sustainability has fully implemented its sustainability initiative defined by the City's Sustainable Energy Strategy passed by the Mayor and City Council in 2008; an update to the City's 2020 Master Plan incorporated additional goals and strategies to measure, monitor, and manage sustainability metrics, including those for energy, water, and waste management (and their resulting greenhouse gas emissions). The City measures its progress from established baselines; using utility billing data, accounts for electricity, natural gas, fuel, water, waste, and fuel consumption/costs are monitored month-to-month for buildings, parks, community centers, fire stations, wastewater treatment operations, the vehicle fleet, and other sources and compiled in quarterly reports to assess changes, fluctuations, or discrepancies and overall progress toward goals.

Implementation is coordinated through the City Manager and Office of Sustainability and requires a collaborative effort between multiple city departments, including the City's departments of Finance, Public Works, Planning, Building, Operations and Maintenance, and Parks and Recreation.

**1.1**

Do you provide incentives for management of climate change issues, including the attainment of GHG reduction targets?

No

**1.2**

Please describe the impact of national and/or regional climate change activities on your city's own climate change activities.

In addition to being a part of the original US Conference of Mayors Climate Protection Agreement in 2006, the city of Las Vegas is currently involved in regional efforts to address climate change, including the Western Adaptation Alliance (WAA). The Alliance developed a "Report on Climate Change and Planning Frameworks for the Intermountain West" and has worked with the Institute for Sustainable Communities to conduct a series of Climate Leadership Academies that brings together practitioners from western cities in the fields of public infrastructure, planning, emergency management, public health and sustainability.

The City also works with other regional entities including the Southern Nevada Regional Planning Coalition, the Clark County Regional Flood Control District, the Regional Transportation Commission of Southern Nevada, the Southern Nevada Water Authority, the Nevada State Office of Energy, universities within the Nevada System of Higher Education (University of Nevada, University of Nevada, Las Vegas, and the Desert Research Institute), regional utilities and other local governments on sustainability issues, adaptation strategies, and mitigation efforts.

**Module: Risks & Adaptation**

**Page: Physical Risks**

**2.0**

Do current and/or anticipated effects of climate change present significant physical risks to your city?

Yes

**2.0a**

Please list and describe the effects of climate change which you expect to experience in your city, together with anticipated timescales.

Effects of climate change	Level of risk	Anticipated timescale in years	Impact description
More hot days	Serious	Current	Las Vegas is located within the arid Mojave Desert where temperatures regularly exceed 100 degrees in the summer, where annual rainfall of approximately 4 inches per year, and average temperatures are projected to rise 5° to 8° F by the year 2100. Temperatures in the Las Vegas Valley have reached a record of 118 during summer months and average in the 100's. With higher extreme temperatures comes the risk of dehydration, heat stroke and similar illnesses, especially during the hotter months of the year. Prolonged periods of summer high temperatures will also affect the amount of energy used to cool buildings in the summer.
Hotter summers	Serious	Current	Hotter summers could mean average temperatures rising above current summertime averages, which may cause increased stress on building air conditioning and electricity transmission systems. More days with above average temperatures, contributing to a hotter summer could also impact emergency services.
More frequent heatwaves	Less serious	Current	With more frequent heatwaves comes a greater risk of more periods of at least three consecutive days with an average temperature exceeding 9 degrees above the existing average. Higher temperatures overall due to heatwaves pose similar risks of heat-born illnesses
More intense heatwaves	Serious	Current	With daytime temperatures increasing, the intensity of heat waves can become more frequent. With higher extreme temperatures comes the risk of dehydration, heat stroke and similar illnesses, especially during the hotter months of the year.
Increased urban heat island effect	Less serious	Medium-term	Higher extreme temperatures can increase the urban heat island effect. On a hot summer day, the sun can heat darker and more exposed urban surfaces, such as roofs and pavement, to temperatures 50–90°F hotter than the mean air temperature. The surrounding desert environment can also contribute to and intensify the urban heat island effect
More intense rainfall	Less serious	Current	Flash flooding and severe storms could become more frequent and may damage property and infrastructure. Flash flooding could also impact water quality by washing chemicals, sewage and other contaminants into lakes, rivers and streams.
More frequent droughts	Extremely serious	Current	Climate change could increase the number of drought periods over time. Long term impacts to weather systems that provide snowpack in the Colorado Rockies and other parts of the inter-mountain West present a possibility of reduced water available within the Colorado River basin for drinking, irrigation, power generation, recreation and other uses. Rising temperatures are already decreasing snowpacks in the mountains of the western United States. Long-term drought conditions in the Colorado River basin have already resulted in falling water levels in Lake Mead, which stores 90% of the region's annual supply of water.
More intense droughts	Extremely serious	Current	Higher temperatures, combined with lower snowpacks and overall amount of available water, may lead to longer lasting, more intense drought periods. The intensity of drought over years or decades could have a long term impact both seasonal and long-term water supplies in the region.

**2.1**

Please describe any compounding factors that may worsen the physical effects of climate change in your city.

Climate change can potentially impact many sectors within the Las Vegas Valley including water resources, energy use, air quality, transportation, commerce, recreation and tourism. Weather events or changes within Southern Nevada itself, such as reductions in water supply or higher temperatures could also deter people from visiting, which could reduce spending, economic growth, and resulting tax revenue from sales or gaming taxes. Additionally, while Las Vegas is prepared for periods of intense heat, the impact of prolonged high temperatures in the western US will stress electricity supply, and any disruption to air conditioning in summer months in Las Vegas could have pronounced impacts for citizens, children, elderly and at risk populations. A disruption impacting a portion of the 150,000 hotel rooms could send tens of thousands of visitors seeking shelter from excessive heat. What happens in Las Vegas is national and international news, and an event impacting thousands of visitors negatively could have additional impacts on the local economy.

**2.2**

Do you consider that the physical impacts of climate change could threaten the ability of businesses to operate successfully in your city?

Yes

**2.2a**

Please explain the reasoning behind your response.

Las Vegas continues to be a global haven for tourism. However, Southern Nevada's economy will be most affected by the availability of water. Adequate water resources are relied upon to provide drinking water, recreation and hydroelectric power to the Nevada's growing population. As of 2013, both Lake Mead and Lake Powell stand at historic lows despite higher levels of inflow.

Climate change poses threats to the economy and environment of Southern Nevada and the region, especially with respect to water resources, commerce, recreation and tourism. Las Vegas today, in early 2013, looks radically different than it did more than a decade ago. In 2002, the Las Vegas metropolitan region was estimated at more than 1.5 million with more than 35 million visitors entering the region, staying at the City's 126,787 hotel rooms, and spending \$7.63 billion at casinos. Ten years later, nation's fastest growing city would add another 400,000 residents and increase its room inventory to 150,487. And despite dips in visitation during the recession that ultimately crippled gaming and sales revenue, leading to job losses and home foreclosures, Las Vegas had just shy of 40 million visitors in 2012, spending \$9.4 billion in Clark County casinos. However, national changes resulting from the environment or alterations in energy and fuel prices, for example, could result in fewer tourists, spending less discretionary income that is instead applied to cost of living expenses, leading to regional economic woes and reduced sales and gaming tax revenue for the City similar to those experienced during the recession.

**2.3**

Please select the primary process or methodology used to evaluate the physical risks to your city.

Primary Methodology	Description
Other: City of Las Vegas self assessment	The City of Las Vegas prepared its own self assessment of the physical risks to the City and community following a mixed methodology .

**3.0**

Do you have a plan for increasing your city's resilience to the expected physical effects of climate change?

Yes

**3.1**  
Please describe the actions you are taking to reduce the risk to your city's infrastructure, citizens, and businesses from climate changes as identified on the previous page (Q2.0a).

Effects of climate change	Actions to reduce vulnerability	Action Description
More hot days	Projects or policies targeted at those most vulnerable	Increases in extreme weather, including more hot days, that will potentially be more frequent may have the highest impacts on public health. The City and its Office of Emergency Management warns residents and tourists of days where forecasted temperatures could lead to health related impacts and continue to provide resources, such as "cooling stations" for the public on extreme heat days. The City currently works with the Southern Nevada Health District, area hospitals, Fire Departments, Metropolitan Police Department, and health care providers, when hot days do occur.
Hotter summers	Community engagement/education	Hotter summers, as with more hot days that are more intense, may also have impacts on public health. Hotter summers will lead to more frequent heat warnings for local residents and tourists, as well as efforts to prevent the health effects associated with heat.
More frequent heatwaves	Community engagement/education	More frequent heat waves will likely lead to impacts on public health, especially to at-risk population segments, including the elderly, homeless, infants, low-income, and youth. With higher extreme temperatures at increased frequency comes greater chances for health effects associated with heat.
More intense heatwaves	Community engagement/education	More intense heat waves and hotter days will likely lead to impacts on public health. As with more hot days, the City and its Office of Emergency Management warns residents and tourists of days where forecasted temperatures of high intensity could lead to health related impacts and continue to provide resources, such as "cooling stations" for the public on extreme heat days. The City currently works with the Southern Nevada Health District, area hospitals, Fire Departments, Metropolitan Police Department, and health care providers, when intense heat days do occur.
Increased urban heat island effect	Tree planting and/or creation of green space	Tree plantings from multiple agencies and organizations and drought tolerant plant and tree standards contribute to the increase of shade to help reduce the cumulative urban heat island effect. The Southern Nevada Regional Planning Coalition released a regional species list of approved drought tolerant and adaptive plant species that the City has incorporated into its Unified Development Code.
More intense rainfall	Flood defences – development and operation & storage	The Regional Flood Control District has coordinated the development of the regional flood control network, which includes approximately 70 detention basins and 530 miles of open-flow channels, culverts, and storm drains to safely channel water into the Las Vegas wash system and ultimately Lake Mead.
More frequent droughts	Diversification of water supply	To diversify the region's water supply, the SNWA played a part in the renegotiation of Colorado River water law. It is also constructing a third water intake to ensure continued access to high-quality water in the deeper waters of Lake Mead, during periods of low-lake level. Additionally, SNWA is securing water rights and right-of-way permits to access unused groundwater in Eastern Nevada in the event that drought conditions in the Colorado River basin persist.
More intense droughts	Awareness campaign/education to reduce water use	The Southern Nevada Water Authority and local municipalities have reduced the community's water consumption by 36 billion gallons despite an increase of 400,000 residents from 2002-2011 through conservation programs, including an incentive program for turf removal. SNWA also utilizes an aggressive education campaign.

**3.2**  
Please describe any other efforts you have undertaken or will undertake to ensure business and operational continuity - for both the city government and the businesses located in your city - in the event of a significant weather-related event.

Consequences of inaction could have variable impacts to the City's economy. Heat waves and decreased snowfall can adversely impact the local economy, including recreation and tourism. On a global scale, climate change impacts could strain resources in other parts of the world or country, making it more difficult for potential tourists to spend money to visit the Southern Nevada region. Weather events or changes within Southern Nevada itself, such as reductions in water supply or higher temperatures could also deter people from visiting, which could reduce spending, economic growth, and resulting tax revenue from sales or gaming taxes. In the case of such events, the City's Office of Emergency Management would coordinate the response utilizing available resources, including Las Vegas Metropolitan Police, Las Vegas Fire and Rescue, and health care providers.

**Page: Social Risks**

**4.0**  
Does your city face any social risks as a result of climate change?

Yes

**4.0a**  
Please complete the table

Social impacts of climate change	Impact description
Fluctuating socio-economic conditions	Because much of the Las Vegas economy is supported by the resort, service, and hospitality industry, the latest economic recession impacted low-income and minority communities fairly hard through job losses, home foreclosures, and reduced incomes. Climate change on a regional and national scale could similarly impact the nation's economy, which in turn impacts discretionary spending, and thus visitation to Southern Nevada.
Increased demand for public services (including health)	Climate change impacts could create an increase in demand for public services - increased temperatures, hotter summers, and climatic events with greater intensity could all create increasing incidences that may strain emergency services, which might have to respond to heat-related issues, flash-flood rescues, wildland fires, and other calamities.
Increased risk to already vulnerable populations	Climate change could pose risks to the very young and elderly with respect to increases in temperatures and hotter summers and resulting impacts from the urban heat island effect.
Increased conflict and/or crime	Disruptions in economic and social structures that result from climate change that impact the environment could potentially lead to increases in crime. While a low risk, any emergency situation without adequate law enforcement may result in dramatic increases in crime and property loss; prolonged climatic events that cause serious disruptions could result in long-term, gradual increases in crime.
Loss of traditional jobs	Prolonged climatic events that cause serious disruptions could result in long-term, gradual increases unemployment in traditional job sectors, such as the resort and hospitality industry; this could be both localized, regional, national, or global as the City is heavily reliant upon international tourism.
Population displacement	Should climatic events occur in other areas around the country, population migration from other parts of the country that are impacted could be displaced to areas such as Las Vegas that still have favorable year-round climates. Conversely, long-term drought and higher temperatures or significant impacts to the region's economy could lead to an out-migration of residents.

**Module: Opportunities**

**Page: Opportunities**

**5.0**

Does climate change present any economic opportunities for your city?

Yes

**5.0a**

Please indicate the opportunities and describe how the city is positioning itself to take advantage of them.

Economic Opportunity	Describe how the city is maximizing this opportunity
Increased infrastructure investment	To ensure growing water demands in the desert southwest are met, the water authority embarked on construction of a third lower elevation water intake at Lake Mead in case regional pressures, reduced snowpacks in the Rocky Mountains, or prolonged drought jeopardize the intakes at higher elevations; a pipeline is also being constructed in Eastern Nevada to bring groundwater to Southern Nevada. The State of Nevada established a renewable portfolio standard (RPS) in 1997. Under the standard, NV Energy (the state's investor owned utility) must use renewable energy resources or energy efficiency measures to supply a minimum percentage of the total electricity it sells or actually reduces demand for. After modifications in subsequent Legislative sessions, the RPS is scheduled at 25% renewables/efficiency in 2025. In addition, 6% of the standard must come from solar power. The state's investor-owned electric utility surpassed one gigawatt of renewable energy under contract, giving Nevada one of the most diverse energy resource portfolios in the country with utility scale solar, biomass, geothermal, hydro, and wind capacity. Because Nevada's renewable portfolio standard is one of the most aggressive in the nation, over 1,400 projects were constructed statewide under net-metering agreements at homes, businesses, public buildings and schools totaling more than 38 megawatts. Energy conservation has also been eyed; like the City, other municipalities have invested heavily in LED and induction streetlighting. Construction is nearing completion on a new transmission line in Eastern Nevada The 500-kilovolt line connects Nevada's northern and southern grids and helps bring renewable energy from remote and rural parts of Nevada areas to the urban areas including Las Vegas. As with renewable energy, the pace of green building in Southern Nevada has also been aggressive. Fueled initially by the property tax abatement legislation, more than 45 million ft2 of LEED certified buildings were constructed in Southern Nevada over the past decade. Nearly all resorts have incorporated efficient lighting, green housekeeping, and water saving technologies into their operations.
Improved efficiency of operations	Performing a local and regional emissions inventory had the added benefit of identifying inefficiencies in operations by tracking data related to energy consumption, waste processes and water consumption at the government operations and regional levels. The reviews have helped the City cut cost and improve operations through analysis of City facilities, streetlights, wastewater treatment, and fleet operations.
Other: Increased migration - tourism	Changing weather patterns and climates in other parts of the country may hasten another "snowbird" migration. As a result, climate change may create new migrational flows to Las Vegas; more people might move or visit Las Vegas as a result of its year-round climate and favorable weather conditions.

**Module: Emissions - Local Government Operations**

**Page: Local Government - Methodology**

**LGO1.0**

Please state the dates of the accounting year or 12-month period for which you are reporting a GHG measurement inventory for your local government operations.

Sun 01 Jan 2012 - Mon 31 Dec 2012

**LGO1.1**

Please indicate the category that best describes the boundary of your municipal GHG emissions inventory.

Companies, entities or departments over which operational control is exercised

**LGO1.2**

Please indicate which of the following major sources of emissions are included in your municipal GHG emissions inventory.

Source of emissions	Status
Airport(s)	Not applicable
Buildings	Included
Buses	Not applicable
Electricity generation	Not applicable
Electricity transmission and distribution	Not applicable
Employee commuting	Not included
Incineration of waste	Not applicable
Landfills	Not applicable
Local trains	Not applicable
Maritime port	Not applicable
Municipal vehicle fleet	Included
Regional trains	Not applicable
Roads / highways	Not applicable
Street lighting and traffic signals	Included
Subway / underground	Not applicable
Thermal energy	Not applicable
Waste collection	Included
Wastewater treatment	Included
Water supply	Not applicable

**LGO1.3**

Please give the name of the primary protocol, standard or methodology you have used to calculate GHG emissions.

International Emissions Analysis Protocol (ICLEI)

**LGO1.3a**

Please explain your methodology (including use of additional protocol), methods of calculation, and processes for data collection.

The City collects energy, water, and waste consumption and financial data for all departments as bills are paid to the investor owned utilities or as fuel is consumed. Subsequent emissions that result from energy combustion (either Scope 1 or 2) are calculated using the Local Government Operations Protocol developed through ICLEI and entered in the Clean Air and Climate Protection modeling software. Emissions outputs are compared with staff calculated results based on the power generation profile

of the utilities within the region.

**Page: Local Government - Energy Data**

**LGO1.4**

Please give the total amount of fuel that your local government has consumed this year.

Fuel	Amount	Units
Compressed Natural Gas (CNG)	1401522250	Btu
Biodiesels	42750242440	Btu
Diesel/Gas oil	23648576700	Btu
Ethanol	22240364784	Btu

**LGO1.5**

How much electricity, heat, steam, and cooling has your local government purchased for its own consumption during the reporting year?

Type	Amount	Units
Electricity	136080.58	MWh
Heat	869098	Therms

**Page: Local Government - GHG Emissions Data**

**LGO1.6**

Please provide total (Scope 1 +Scope 2) GHG emissions for your local government's operations, in metric tonnes CO2e.

91904

**LGO1.7**

If applicable, please provide the following GHG emissions.

Scopes are a common categorization method.

Scope 1: All direct GHG emissions (with the exception of direct CO2 emissions from biogenic sources).

Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity in metric tonnes CO2e emitted	Total Scope 2 activity in metric tonnes CO2e emitted
5408	86496

**LGO1.8**

Do you measure Scope 3 emissions?

No

**LGO1.8b**

Please explain why not and detail your plans to do so in the future, if any.

The City is not able to analyze Scope 3 emissions as it does not have data management systems or protocol in place.

**LGO1.9**

Where it will facilitate a greater understanding of your government emissions, please provide a breakdown of these emissions by department, facility, greenhouse gas (CO2, CH4, N2O etc) or by any other classification system used in your city.

Department / Facility / GHG / Other	Type	Emissions (metric tonnes CO2e)
Vehicle Fleet and operations	Scope 1	5408
Buildings and facilities	Scope 2	31998
Streetlights and traffic signals	Scope 2	28617
Wastewater treatment operations	Scope 2	25881

**LGO1.11**

Please explain why your emissions have increased, decreased, or stayed the same from the previous year.

Emissions for the City of Las Vegas have decreased substantially due to major investments and completions of renewable energy and energy efficiency projects at City facilities, which have resulted in decreased consumption in electricity, net-metered renewable energy consumption, and an increased shared in natural gas-fired facilities. These projects include 5 megawatts of solar, replacement of 80% of streetlights with LEDs, and completion of LEED green buildings. In addition, the region's grid has diversified substantially; the local investor-owned utility's portfolio includes an increasing percentage of renewables through PPAs and natural gas-fired generation.

**Page: Local Government - External Verification**

**LGO1.12**

Has the GHG emissions data you are currently reporting been externally verified or audited in part or in whole?

No

**LGO1.12a**

Please provide any other relevant information about the emissions verification process.

The City is currently working with institutions within the Nevada System of Higher Education, including the University of Nevada, University of Nevada-Las Vegas, and Desert Research Institute, as well as the Southern Nevada Water Authority and Southern Nevada Regional Planning Coalition to concur on a methodology to externally verify local government emissions, as well as community based emissions as a part of a regional greenhouse gas emission inventory.

**Module: Strategy**

**Page: GHG Emissions Reduction - Local Government Operations**

**6.0**

Do you have a GHG emissions reduction target in place for your city government operations?

Yes

**6.0a**

Please provide details of your reduction target.

Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	GHG sources to which the target applies	Target date	Comment
2008	123028	10%	Total/All	2011	
2008		20%	Total/All	2020	
2008		30%	Total/All	Other: 2030	

**6.1**

What activities are you undertaking to reduce your emissions in your local government operations?

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Energy Demand in Buildings > Building codes and standards		The City periodically updates the City's Building code to more efficient energy codes. The City has adopted the 2009 IECC and is in the process of reviewing and approving the 2012 version.
Energy Demand in Buildings > Building performance rating and reporting		The City has established LEED Silver as a standard of construction for new City facilities. The City also participates in commissioning, benchmarking, and post commissioning at City facilities.
Energy Demand in Buildings > Energy efficiency/retrofit measures		871,000 ft2 of City buildings have been built or upgraded to green standards. The City completed energy efficiency, lighting, window, HVAC, and other green improvements to at least 12 buildings.
Energy Demand in Buildings > Renewable on-Site energy generation		The City has installed 5 megawatts of solar at City facilities. More than 11% of the City's energy consumption comes from City installed renewables at 30 City facilities, parks, fire stations, and community centers. Completion of 3.5 megawatts of solar at the City's wastewater treatment plant, East Yard, and West Yard, generates more than 7 million kWh of power.
Outdoor Lighting > LED / CFL / other luminaire technologies		The City has upgraded 35,000 of the City's 52,000 streetlights to LED's, reducing consumption by 4.33 million kWh and saving \$287,000 in 2012.
Transport > Improve fuel economy and reduce CO2 from motorized vehicles		Nearly 100% of the City's vehicle fleet runs on alternative fuels, including G-Diesel, a cleaner burning fuel for City fire trucks. The City has also purchased 2 electric and 2 plug-in hybrid electric vehicles and installed charging stations at 6 City facilities.
Urban Land Use > Brownfield redevelopment programs		The City and its redevelopment agency have remediated a former brownfield and have worked with a private developer to construct Symphony Park, a LEED Gold pilot Neighborhood Development constructed on a former railroad yard.
Urban Land Use > Limiting urban sprawl		The City adopted a Unified Development Code intended to accommodate a wider range of development types. Urban sprawl is further limited by surrounding Federal land and a land disposal boundary.
Urban Land Use > Greenspace and/or bio-diversity preservation and expansion		The City has supported preservation of open space, including land in a natural desert wash area. It has worked with the Federal government and other regional partners to preserve the space for a national monument.
Urban Land Use > Compact cities		The City supports and is planning for infill development closer to the urban core. The City's redevelopment agency incentivized urban redevelopment and reinvestment in the core; the City's Public Works Department has also been designing complete streets to accommodate all modes of transportation.
Water > Methane recovery for reuse		The City utilizes methane recovery and anaerobic digestion at its primary wastewater treatment facility.
Water > Water recycling or reclamation		The City recycles more than 75 million gallons of water per day at its wastewater treatment plants, for use at golf courses or returned to Lake Mead. It has also converted more than 8 acres of grass to synthetic turf and has employed additional conservation efforts such as designing landscapes using drought tolerant plants and public art.
Waste > Recycling or composting collections and/or facilities		Recycling services are provided to the community through a private franchised waste haulment agreement. The City has also implemented single stream recycling at its facilities. By the end of 2013, the City and its residents will be on track to recycle half of all materials discarded at City facilities.

**Page: GHG Emissions Reduction - Community**

**7.0**

Do you have a GHG emissions reduction target in place for your community?

No

**7.0b**

Please explain why you do not have an emissions reduction target.

The City is participating with other municipalities that are a part of the Southern Nevada Regional Planning Coalition and the University of Nevada, Las Vegas on an update to a regional greenhouse gas emissions inventory. This regional inventory will cover residential, commercial, and industrial emissions from mobile and stationary sources; data collection is currently under way and a final report with findings and recommendations for mitigation should be available later in 2013. A regional emissions reduction target will be discussed by members of the working group and the Coalition's board.

**7.1**

What activities are you currently undertaking to reduce emissions city-wide?

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
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Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Energy Demand in Buildings > Building codes and standards		Building departments across the county have actively participated in regional and statewide discussions to adopt new building codes, including the 2006, 2009, and 2012 versions of the International Energy Conservation Code.
Energy Demand in Buildings > Building performance rating and reporting		Tax abatements are available through the State Energy Office for LEED green building. There is now 45 million ft2 of LEED certified buildings in Southern Nevada. Public and private buildings (residential/commercial) participate in regional/statewide building performance rating programs (ex: ENERGY STAR). These have also been incentivized through utility rebate programs.
Energy Demand in Buildings > Energy efficiency/retrofit measures		Energy efficiency and retrofits are supported at the residential and commercial level by the state's Home Performance with ENERGY STAR program and through utility based rebate programs that can claim energy efficiency toward the state's renewable portfolio standard.
Energy Demand in Buildings > Financing mechanisms for retrofit		To facilitate community green building activity, the City incentivizes the construction of LEED and green buildings and has funded incentives and low-interest financing for a growing statewide Home Performance with ENERGY STAR and solar program run by non-profits and supported by contractors, the state's electric and gas utilities, banks, universities and colleges within the Nevada System of Higher Education, and the Nevada State Office of Energy. Qualified Energy Conservation Bonds are available for use within the state, of which less than \$10 million have been issued for efficiency improvements. The 2013 Legislature is also considering property assessments for clean energy and efficiency within districts established by municipalities.
Energy Demand in Buildings > Renewable on-Site energy generation		The state's investor-owned electric utility surpassed one gigawatt of renewable energy under contract, giving Nevada one of the most diverse energy resource portfolios in the country with utility scale solar, biomass, geothermal, hydro, and wind capacity. Because Nevada's renewable portfolio standard is one of the most aggressive in the nation, over 1,400 projects were constructed statewide under net-metering agreements at homes, businesses, public buildings and schools totaling more than 38 megawatts.
Energy Demand in Buildings > Switching to low-carbon fuels		Nearly 100% of the City's vehicle fleet runs on alternative fuels and includes four electric and plug-in hybrid electric vehicles; the City also installed public electric vehicle charging stations at six City facilities. Other public and private sector organizations, including the region's transit agency and the resort industry use biodiesels, ethanol blends, CNG, and hybrid fuel types in their bus/fleet operations.
Energy Supply > Clean energy procurement strategies		Government agencies within Nevada have explored power purchase agreements and have entered into contracts with the private sector. There is a current effort to obtain a greater allocation of power generated at Hoover Dam for the use by Southern Nevada municipalities.
Energy Supply > Low or zero carbon energy supply generation		Within the region, the composition of the energy portfolio has shifted toward cleaner/lower carbon based fuels. In 2005, one major coal fired power plant (Fort Mohave in Laughlin, NV) was shut down due to environmental regulations. Most new generation that has been constructed has been natural gas fired. A new 500 kV transmission line will link the grid between Northern Nevada and Southern Nevada in 2013, allowing renewable power (geothermal in the north, solar in the south) to flow to either region.
Energy Supply > Smart grid		The state's investor owned electric utility received grant money to deploy smart meters at its commercial and residential account locations. Nearly 100% of the residential program has been deployed, and more than 50% of the commercial program has been rolled out.
Outdoor Lighting > LED / CFL / other luminaire technologies		All major Southern Nevada municipalities, including the City have deployed LED or induction lighting throughout their jurisdiction. The City of Henderson has installed more than 30,000 induction streetlights and the City, County, and City of North Las Vegas have installed LEDs on major arterials, intersections, and in neighborhoods, replacing high pressure sodium, mercury vapor, or metal halide fixtures.
Transport > Infrastructure for non-motorized transport		Regional efforts have been in place to increase transportation infrastructure, including bike lanes, complete streets, bus only lanes, carpool lanes, and miles of new trails. In mid-February, a regional planning effort funded through a HUD Sustainable Communities Planning grant kicked off to define and solve major community issues, including economic diversification, neighborhood revitalization, and transportation infrastructure investments.
Transport > Improve fuel economy and reduce CO2 from motorized vehicles		National fuel economy regulations have boosted the overall fuel economies of passenger vehicles, trucks, and other vehicle classes.
Transport > Improve the accessibility to public transit systems		The Regional Transportation Commission of Southern Nevada has worked closely with member jurisdictions to increase coverage to lower-density areas while maintaining frequent transit service to highly productive areas. As a result, suburban park and rides and transit centers have been and will continue to be constructed, according to the Regional Transportation Plan.
Transport > Improve fuel economy and reduce CO2 from bus and/or light rail operations		RTC has purchased more fuel efficient buses as a part of its fleet replacement program. This has included the purchase of CNG, biodiesel, and hybrid vehicles.
Transport > Improve bus transit times		The RTC has focused on improving its routes with the highest ridership and providing faster, more frequent service. There are now four "Bus Rapid Transit" routes and three regional express routes that provide fast and more frequent service.
Transport > Transportation demand management		The RTC has a transportation demand management program called club ride that provides incentives for carpooling, walking, using transit, or bicycling. The program has growing participation and is supported by many of the largest employers within the community.
Urban Land Use > Brownfield redevelopment programs		Efforts to redevelop infill areas, including the transformation of a 60 acre former railroad yard near Downtown Las Vegas into a LEED Gold Neighborhood Development, have taken off and have lead to the construction of a regional shopping center, performing arts center, a medical research institute, a museum, a 5 million ft2 furniture wholesaler complex, and government and corporate offices.
Urban Land Use > Limiting urban sprawl		Urban sprawl is somewhat limited due to the natural topography surrounding the City and due to Federal lands preventing urban expansion.
Urban Land Use > Compact cities		While the footprint of Las Vegas rapidly expanded over the past two decades, Las Vegas maintains relatively high densities – more than 4,000 per square mile — compared with other cities in the American West. However, due to natural geography and public land boundaries, Las Vegas is still somewhat compact, resulting in a concentrated core around Downtown and the Strip.
Water > Wastewater to energy initiatives		Some municipalities utilize methane which is used to heat wastewater digesters and power air blowers which save on energy costs.
Water > Water metering and billing		Water purveyors that are members of the Southern Nevada Water Authority use tiered billing structures based on service type, consumption, and meter size. Water over-use can lead to higher charges.
Water > Water recycling or reclamation		Golf courses, parks, and major commercial uses utilize greywater and reuse water where possible to irrigate turf; however, water that is returned to Lake Mead is credited toward Nevada's water allotment.

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Waste > Recycling or composting collections and/or facilities		Once among the lowest recycling rates in the country, single family residential single stream recycling is being deployed throughout most of the county over the next five years; initial progress has already indicated recycling rates doubled to more than 35%, meeting the U.S. EPA's estimated national average. To facilitate this, the primary franchised waste management operator constructed a state-of-the-art recycling center to handle increased recycling volume. The operator also constructed a 12 megawatt plant at the regional landfill to provide renewable energy from landfill gas. Composting opportunities have also grown due in part of the response to the resort industry. While recycling bins are often unseen by the public, uneaten food and organic waste from Strip resorts are sorted "back of house" and taken to a local farm to use as feed for pigs.

**Page: Planning**

**8.0**

List any climate change-related projects for which you hope to attract private sector involvement.

The City's focus on clean energy and energy efficiency is hoped to attract private sector involvement by driving demand. The City's geographic location in the desert southwest provides ample opportunity to drive private sector involvement in construction, installation, production, research, and development of solar energy systems at a residential, commercial, and utility scale.

The result of the City's past and current efforts has been a reduction in the City's annual energy consumption by 24%, more than 15% of the City's energy consumption coming from City installed renewables, saving more than 200 million gallons of water, increased recycling rates to more than 50%, and saving more than \$4.4 million in energy costs since 2008, which will increase to more than \$6 million as the City's 3 megawatt solar plant produces power and streetlights continue being replaced. Built into the City's strategy is a policy of reinvestment of those cost savings into future energy, water, and recycling projects and programs.

City leadership set a new goal to become a net-zero user of resources by 2020. In developing a plan for net-zero, savings and investments will be directed to each major sector (energy, water, and waste). More renewable energy will be required, likely through more than 10 megawatts of City installed solar or power purchase agreements. Other energy efficiency projects will be explored, including opportunities for more green buildings, more efficient lighting and mechanical systems, integration of intelligent building systems, and additional phases of streetlight replacements. To continue water reduction efforts, the City has contracted with a consultant to make recommendations on how best to use metered and non-metered water resources to achieve greater water reduction savings over those already made. And new recycling efforts, composting, and possible use of City waste as a fuel source are also under consideration.

Using private sector partners, non-profits, and academic institutions is anticipated to drive further investment contracting industry will grow.

**8.1**

Does your city incorporate desired GHG reductions into the master planning for the city?

Yes

**8.1a**

Please describe the ways that the master plan is designed to reduce GHG emissions.

The City's Sustainable Energy Strategy and Master Plan's Conservation Element have goals and funding to meet renewable energy, energy efficiency and community goals within three core areas: city operations, city codes and community programs.

These goals and leveraging of city grant funds, utility rebates, tax credit bonds, and internal special revenue funds for a total investment of nearly \$65 million collectively help in attaining the progressive emissions reductions targets of a 10 percent reduction to the City's carbon footprint by 2011 (achieved), 20 percent (achieved) by 2020, and 30 percent by 2030. Among the projects implemented through the City's capital project plan and community plans are renewable energy projects, energy efficiency upgrades at City facilities, streetlight upgrades, green (LEED) buildings, clean fleet operations, residential energy efficiency upgrades, urban forestry, and alternative mode programs. The City's master plan also requires that the City participate and collaborate with other local governments, utilities, and non-profits on projects and programs to reduce greenhouse gas emissions, including constructing of HOV lanes, multi-modal trails, Bus Rapid Transit corridors, provision of public transportation, and walkable communities and corridors.

**8.2**

Please describe any renewable energy targets or goals and how the city plans to meet those targets.

The City's current renewable energy targets are 7 megawatts by 2015 and attaining a 20% renewable portfolio standard by 2020; as the City now has a goal to be net-zero, renewable energy will be required above the levels currently resolved to by the City Council.

**Page: Water**

**9.0**

Do you foresee substantive risks to your city's water supply in the short or long term?

Yes

**9.0a**

Please identify the risks to your city's water supply as well as the timescale.

Risks	Timescale	Risk description
Increased water stress or scarcity	Other: Current, Short, Medium, Long Term	Long term impacts to weather systems that provide snowpack in the Colorado Rockies and American West present a possibility of water stress and scarcity in terms of the amount of water available within the Colorado River basin. Changing weather patterns can affect the amount and quality of water resources available for drinking, irrigation, power generation, recreation and other uses. Rising temperatures are already decreasing mountain snowpacks. Over time, this reduced snowpack and prolonged drought could affect seasonal water supplies in the Las Vegas Valley. Given that the Colorado River is fully apportioned and the West is susceptible to drought, Las Vegas and other southwestern cities are vulnerable to water supply shortages. The Colorado River basin and Las Vegas Valley have been experiencing a drought since 1999. This has led to the SNWA declaring a Drought Watch in 2003 and a Drought Alert in 2004. With more than a decade of below average snowpacks in the Colorado Rockies, Lakes Mead and Powell have been far below average through 2012. Lake Mead's elevation dropped 133 feet from a peak elevation of 1,214 feet to 1,081 feet. If the elevation ever drops below 1,075 feet, Federal officials could declare a shortage and cut Nevada's river share. If water levels of the Lake Mead continues to decrease, the region would risk losing one of two water intakes
Higher water prices	Other: Current, Short, Medium, Long	In 2012, The 2009 Water Resource Plan states that a long term resource is needed to meet demands during the current and future droughts. The SNWA has pursued development of 134,000 AFY of groundwater in Eastern Nevada. The \$3.5 billion Eastern Nevada Groundwater Development Project proposes to run a water pipeline from ground wells located in the Spring, Cave, Delamar, Dry Lake



Risks	Timescale	Risk description
		and Snake Valleys to the Las Vegas Valley. Applications have been submitted to the Bureau of Land Management (BLM) and Office of the State Engineer for consideration. The state Engineer will make a decision based on (1) conflicts with existing water rights, (2) public interest concerns and (3) public notification and impact on existing domestic wells. Considerable opposition arose from residents within Lincoln, White Pine and Nye Counties concerning the potential of over drafting the aquifers. Environmental impacts to wells, springs and the Great Basin National Park also drew concerns. The Nevada Supreme Court voided a 2007 ruling from the State Engineer that would have allowed 58,000 AFY to be yielded to Southern Nevada in January 2010. SNWA filed new applications in 2010 to draw up to 126,000 AFY, making it the biggest water case in the history of the state. A draft ruling is anticipated in January 2012.
Regulatory	Other: Current, Short, Medium, Long	Through the 2009 Water Resource Plan, regulations currently affect water usage

**9.0b**

Please describe the actions (on the supply and demand side) you are taking to reduce the risks to your city's water supply.

The Colorado River is allocated amongst the seven Colorado River basin states and Mexico. Nevada diverts 90% of its demand from Lake Mead. The Southern Nevada Water Authority, the regional water agency whose members include the Las Vegas Valley Water District, and the cities of Las Vegas, Henderson, North Las Vegas, and Boulder City, is responsible for developing and managing regional water resources, regional water treatment, and infrastructure and conservation programs. SNWA acquires groundwater and surface water resources from new sources and agreements, as well as ensures the conservation and efficient use of existing resources.

SNWA's Board of Directors approved construction of a new water intake in Lake Mead in 2005. In addition to preserving supply capacity, the third intake will provide access to water at a lower elevation in the event that Lake Mead water levels decline in times of drought. The project is scheduled to be completed in 2014.

Beyond Nevada's Colorado River water apportionment, the main resource to meet future water demands will be in-state groundwater. Groundwater within the Las Vegas Valley remains instrumental in helping purveyors meet peak water demands. To maximize the use of Nevada's Colorado River allocation, SNWA member agencies began storing or "banking" water in the Las Vegas Valley in 1987. Banking occurs through the artificial recharging of Nevada's unused Colorado River water into the local groundwater aquifer. This provides Southern Nevada with additional resources that can help bridge potential shortfalls in meeting demands. While the Southern Nevada Water Bank is a resource upon which the community can draw in times of need, The SNWA also recharges groundwater that helps manage the groundwater aquifer for well users. The recharge water also helps maintain stable water levels and reduce the likelihood of subsidence and well failures.

The SNWA has pursued development of 134,000 AFY of groundwater in Eastern Nevada. The \$3.5 billion Eastern Nevada Groundwater Development Project proposes to run a water pipeline from ground wells located in the valleys north of the Las Vegas Valley.

The leading potential for water savings comes from conservation through reclamation, regulations, pricing, incentives and education. The result of these strategies has lead Las Vegas and Southern Nevada to reduce its demand 29 percent, from 314 gallons per capita per day (GPCD) in 2002 to 223 GPCD in 2010. Southern Nevada's annual water consumption was decreased by nearly 32 billion gallons between 2002 and 2010. This was accomplished despite a population increase of 420,000 during that time span. The 2009 Water Resource Plan anticipates that conservation will save the community approximately 276,000 AFY by the year 2035.

CDP