

# Clark County Eco-County Initiative



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## **Acknowledgments**

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## **Executive Summary**

Quality of life for Clark County's residents depends upon the availability and use of natural resources. In a sustainable state, consumption of resources is in balance with nature's ability to replenish them. Pursuant to the Eco-County Initiative Resolution passed by the Clark County Board of County Commissioners December 2007, three working groups were established comprised of local government personnel to study various issues as they relate to sustainable practices in Clark County. This report outlines the findings of the three working groups: the Inventory, Challenges and Outreach subcommittees.

The Inventory Committee gathered initial data identifying both completed and ongoing efforts that served as a baseline for aligning future sustainable measures. Measures are categorized into seven principle areas: air quality, water, land use/habitat protection, waste reduction/recycling, transportation, green building, and energy use. Each category has a brief synopsis denoting why the area is important to sustainability, what constitutes a sustainable state, and what Clark County is doing in this area.

Additional measures for future implementation were derived from the Inventory Committee's findings. These measures were assessed by the Challenges Committee for both immediate and long-term impacts. Perceived obstacles that have the potential to inhibit or influence implementation were identified. Recommendations are provided for future consideration. Exact fiscal impact figures are undetermined at this time, and will be largely dependent upon the types of measures identified for further exploration.

The Outreach Committee dedicated much of its efforts toward identifying methods to engage the public and our community partners in a collaborative regional approach toward addressing our most salient environmental concerns.

To address greenhouse gas emissions, an inventory of the County has been provided that advocates the development of a regional plan for greenhouse gas emission reductions. It is important to note that the County's greenhouse inventory was developed using "best effort" estimates of the County's energy usage. To accurately reflect the County's greenhouse gas emissions would entail an in-depth study requiring additional project funding as well as allocation of staff resources.

Lastly, this report denotes regulatory and non-regulatory measures that have been adopted and/or implemented at the local, state, regional, federal, and/or international levels related to climate change. Proposed regulatory and non-regulatory measures are also detailed.

The quest to create a sustainable community is complex and multi-faceted. The exploration of new greener technologies and alternative energy has obvious benefits, but by themselves, they won't stop climate change or create a sustainable society. By establishing a factual profile of current sustainability measures in-place in Clark County government, agency staff can evaluate the impacts of their policy decisions on the County's ecological resources. Expanding our thinking to include not only the parts, but adopting a whole system emphasis in order to more effectively address the social, economic and environmental challenges we face is essential.

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## **Clark County Sustainability Measures: AIR QUALITY**

Clean air is essential to ensure healthy ambient conditions for all life. Certain criteria air pollutants, such as carbon monoxide (CO), ground-level ozone (O<sub>3</sub>), and suspended particulate matter of 10 microns or less in size (PM<sub>10</sub>) have been of particular concern to human health and the environment in Clark County. More recently, there has been a great deal of attention given to the release of greenhouse gas (GHG) emissions. These emissions deal primarily with carbon dioxide (CO<sub>2</sub>) gas and other gases such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O).

In a sustainable state, reasonable measures are in place to control the emissions of air pollutants to ensure clean air in Clark County.

In the past several years, Clark County's air quality has improved significantly. Many challenges remain, however, in protecting public health and the environment.

### ***Measure #1: Reducing Criteria Air Pollutants***

The Department of Air Quality & Environmental Management (DAQEM) is the lead agency for ensuring clean air in Clark County. Current efforts underway include:

- Operating and maintaining a monitoring network that samples for the six criteria pollutants named in the Clean Air Act, along with various other air contaminants. In Clark County, the pollutants of most concern are CO, O<sub>3</sub> and PM<sub>10</sub>. The monitoring program also has a network of spore and pollen traps that measure these particles, and report their concentrations;
- Permitting of any new or modified facility in Clark County that emits regulated air pollutants above certain levels. Currently, more than 3,000 facilities in Clark County have air permits, including power plants, chemical plants, dry cleaners, commercial buildings, and gas stations;
- Implementing programs to further reduce mobile source emissions, the pilot lawn mower exchange program offered an opportunity for 1,000 program participants to trade in their gas powered lawn mowers. The participants received a voucher to exchange their mower and purchase a new cordless electric lawn mower at a significantly reduced price. Exchanged mowers would be recycled for their scrap metal value. Lawn mower exchange programs are currently used throughout the country to reduce air pollution. One gas mower can emit as much pollution as 40 new or late-model cars operating over the same time period. Electric mowers produce no on-site emissions and mowers equipped with a mulching blade will reduce landfill pollution. Exchanging dirty combustion engine mowers with clean cordless electric lawn mowers reduces particulate matter, which are precursors of ground-level ozone and helps with sustainability. Plans are under way to repeat a similar program with Nevada Power next year;
- Compliance and enforcement actions necessary to ensure adherence to federal, state, and local air quality regulations. DAQEM processes more than 380 dust control permit applications each month; and
- Long-range planning with community groups and the Environmental Protection Agency (EPA) to develop State Implementation Plans (SIPs), that ensure attainment

and maintenance of the federal health standards for criteria air pollutants; emissions inventorying and modeling using computer models that simulate dispersion of pollutants in the atmosphere and identify pollutant sources that must be controlled; and the development and implementation of mobile source emission reduction programs for the following technologies: cars, trucks, buses, construction equipment, RVs, off-road vehicles, and lawn/garden equipment.

The Department of Aviation (DOA) is reducing air pollution at Clark County airports by:

- Using central power units and A/C units for aircraft at gates, which lessens emissions from aircraft;
- Purchasing low volatile organic compounds (VOC) paints, when possible;
- Placing dust suppressants on unpaved areas and regularly street sweeping;
- Maintaining vapor recovery systems at fueling facilities;
- Using a fuel hydrant system for aircraft, which lessens emissions during fueling operations; and
- Utilizing an Automated Vehicle Identification System, which decreases congestion and trips by taxis.

## ***Proposed Additional Measures***

### **Telecommuting**

Alternative work locations allow employees whose job duties are more communication-based to work from home. The chief benefits to the community are decreased numbers of cars on the highway during commute hours and reduced air quality emissions. This effect would help advance the County's greenhouse gas emission targets. Other benefits for the County include reductions in housekeeping expenses and resources associated with housing employees.

#### *Implementation Challenges*

The absence of a uniformly enforced policy to allow telecommuting inhibits the County's ability to reap maximum benefits. Opposing viewpoints exist regarding what constitutes a beneficial and productive "presence in the workplace" and warrants consensus based upon modern and innovative practices.

### **Video Conferencing**

Video Digital Conferencing lends itself to fewer occurrences of driving to meetings, thereby saving on fuel consumption and decreased usage of public works roadways. In addition, there is tremendous potential for a reduction of GHG emissions produced by County vehicles, hence contributing to GHG reduction goals.

#### *Implementation Challenges*

There are fiscal considerations associated with the purchase of additional equipment to expand the use of this meeting alternative.

## **Warm Mix Asphalt Paving**

Warm mix asphalt uses lower temperatures to produce binder/aggregate mixtures. This reduces the emissions from fuels needed to warm the mixture at the paving site, and reduces odors and emissions from the mixture itself.

### *Implementation Challenges*

Collaboration with the Regional Transportation Commission of Southern Nevada is needed to establish policy which will allow the use of warm mix asphalt paving on RTC funded projects. Current County Code does not allow for the use of this material.

## **GHG's Produced by Facility Operations Electrical Consumption and Vehicular Activity as a Result of Traditional Work Schedules**

When large-scale operations are rearranged to reduce or eliminate facility and vehicle activity for one day per week, significant reduction in GHG's can result. A particularly advantageous characteristic of this approach is that there are minimal costs involved on the front-end compared to most eco-sustainable solutions. Some government entities utilize alternative work schedules specifically for the purpose of reducing GHG production and improving operating efficiencies, thereby meeting sustainability targets.

### *Implementation Challenges*

Fully exploring building designs and associated zones of operations during partial shutdown may result in providing services in non-traditional ways, in order to realize the benefits of full or partial shutdown. Four ten-hour work weeks are a consideration.

## **Online Services**

Seventy percent of households have Internet connections with half of those having broadband connections. Online Services not only help to avoid additional traffic but help elderly, handicapped, stay-at-home parents, etc. to access government services from home. Although in progress to some degree, a check should be made to leverage any missed opportunities. Greater access to online services results in reduced building operation costs.

### *Implementation Challenges*

There are fiscal considerations associated with the purchase of software and possible programming changes to expand the use of this option.

## ***Measure #2: Use of Alternative Fuels – Advanced Technology Vehicles***

Beginning in 1993, the Clark County Board of Commissioners (BCC) adopted the Clark County Alternative Fuel Strategy. The program was designed to improve air quality by using compressed natural gas (CNG) as a clean-burning alternative motor vehicle fuel. Since that time, alternative fuel usage in County operated vehicles has grown to include propane, bio-diesel blends, and hybrid electric vehicles.

The following is a list of major sustainability measures within County organizations:

- Since 2000, the Department of Finance's Automotive Services has ensured that 90% of small and medium duty new vehicle purchases by Clark County were alternative fuel vehicles or advanced technology vehicles. Alternative fuel/advanced technology vehicles include bi-fueled motor vehicles (e.g., hybrid electric) and dedicated alternative fuel motor vehicles (e.g., CNG or propane);
- The Regional Transportation Commission (RTC) has purchased some of the most technologically advanced buses and paratransit vehicles in the country. The RTC operates transit maintenance facilities, including a CNG fueling facility. The RTC also uses various bus technologies, including the futuristic Civis vehicle that is utilized in the Metropolitan Area Express or MAX Ride program. A cross between a bus and a bullet train, the 61-foot MAX vehicle can carry approximately 120 passengers and has a unique and attractive appearance. It features an environmentally sound hybrid diesel-electric propulsion engine; and
- The Las Vegas Valley Water District (LVVWD) has been committed to alternative fuels and advanced transportation technologies for more than a decade. The company operates hundreds of CNG, biodiesel, and hydrogen powered vehicles in its fleet, including the newest additions serving the Springs Preserve. The Springs Preserve is a 180-acre cultural and historical attraction designed to commemorate Las Vegas' dynamic history and to provide a vision for a sustainable future. The Preserve set new standards for green building in the desert southwest by erecting seven new green buildings that have achieved "Platinum" Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (USGBC).

### ***Measure #3: Implementing Land Use Planning Principles that Improve Air Quality***

The Department of Comprehensive Planning (CCDCP), through the development of the Clark County Comprehensive Plan (CCCP), incorporates land development and zoning principles to promote sustainable development. The CCCP places an emphasis on air quality. The major sustainable measures in the CCCP that improve air quality include:

- Promoting a Transit Oriented Development (TOD) design that encourages the location, configuration, and mix of uses in TOD areas that are within an average of 1,320 feet walking distance from an existing or proposed transit system. More compact urban forms improve the air quality by creating alternative transportation modes such as walking, biking, and use of existing or planned mass transit corridors;
- Addressing the cumulative impacts of development and mixed uses in Clark County, improving the jobs/housing balance, and facilitating alternative modes of transportation; and
- Placing high-polluting facilities away from sensitive receptors (segments of the population susceptible to poor air quality and certain at-risk sensitive land uses such as schools, hospitals, parks, or residential communities).



#### ***Measure #4: Participation in Las Vegas Regional Clean Cities Coalition***

The Las Vegas Regional Clean Cities Coalition (LVRCCC) was formed in 1993 as a locally based, voluntary public-private partnership. At present, approximately 145 individual stakeholders representing nearly 100 public and private organizations are involved in the LVRCCC including the DAQEM, Finance – Automotive Services, CCSD, RTC, Water Reclamation District and LVVWD.

LVRCCC's genesis is in the Energy Policy Act of 1992 (EPAct), passed by Congress with the goal of reducing energy dependence in the U.S. by 30% by 2010. As part of EPAct, the Clean Cities program was founded with the mission of helping American transportation systems become more efficient, less dependent on foreign fuel sources, less environmentally disruptive, and more sustainable and safe.

## Clark County Sustainability Measures: WATER

With Clark County's population surpassing two million people in 2007, the pressure placed on our water resources has never been greater. This pressure comes in many forms, including an increased demand for potable water in homes and businesses, amplified wastewater treatment challenges, and needed plans to reduce and control surface water runoff caused by additional impermeable surfaces in the county (i.e., roads, parking lots, houses, etc.).

Clark County acquires nearly 90% of its water from the Colorado River. The remaining 10% of the County's water comes from groundwater that is pumped out through existing wells. With the West undergoing its worst drought in decades, Lake Mead's water levels have dropped over 100 feet since 1998. Fluctuations in the lake level are a natural part of its operations. Long-term sustainability in the valley's water supply, however, will heavily depend on when the drought ends (i.e., which will allow the lake to return to more historically normal elevations).

In a sustainable state, water use remains within the limit of the water supply. To ensure this balance, reasonable measures need to be established that promote water conservation, provide for alternative use and reuse of reclaimed water, and plan for storm water management.

Over the past several years, Clark County has implemented numerous sustainability measures to ensure an adequate water supply for the community. However, depending on the length and degree of the current drought across the West, additional measures may be required.

### ***Measure #1: Water Conservation***

The following is a list of major sustainable measures (both voluntary and drought mandatory) initiated by the Southern Nevada Water Authority (SNWA) to promote conservation of water resources within Clark County:

- The *Water Smart Landscapes Rebate Program (WSL)* helps property owners convert water-thirsty grass to xeriscape, a lush yet water-efficient landscape. Under WSL, qualifying residential and commercial customers receive \$1.50 for each square-foot of grass they replace with water-efficient plants and shrubs, no matter how large the conversion. The community converted more than 18.4 million square feet of grass in 2007, a 72% increase over the amount converted in 2006;
- The SNWA offers several *instant rebate coupons* for single-family, residential property owners for the purchase of water-saving products including:
  1. The *Pool Cover Instant Rebate Coupon* provides residential property owners \$50 or 50% off the purchase price of a pool cover, whichever is less, or \$200 or 50% off the purchase of a permanent, mechanical pool cover. A pool cover can save 10,000 to 15,000 gallons of water each year by reducing evaporation;

2. The *Rain Sensor Instant Rebate Coupon* provides residential property owners \$25 or 50% off the purchase price of a qualifying product, whichever is less. Rain sensors are designed to shut down a residential irrigation system during and after a rainy period. Watering during rainy periods can lead to soil over-saturation and wasteful runoff. Turning off sprinklers on the days surrounding a heavy rain can save about 500 gallons a day;
  3. The *Smart Irrigation Controller Rebate Coupon* provides residential property owners \$200 or 50% off the purchase price of a qualifying product, whichever is less. These “smart” irrigation controllers automatically adjust watering schedules based upon weather conditions; and
- In support of the SNWA Drought Plan, Clark County has adopted various restrictions to help curb water use during current drought conditions. The major mandatory conservation efforts found in the SNWA Drought Plan (April 2007) include landscape watering restrictions (seasonal scheduling); surface, building, equipment and vehicle washing; landscape development codes; conservation provisions for golf course irrigation; restrictions on operation of ornamental fountains; temporary drought surcharges; and public involvement and awareness programs designed to solicit public support and cooperation in the reduction of water consumption.

In April 2003, the BCC approved the Department of Parks & Recreation (DPR) Water Conservation Action Plan. The plan provided a framework of actions needed to reduce outdoor water use in Clark County parks, medians, and building landscapes. The following is a list of major sustainability measures initiated by the DPR to promote conservation of water resources within Clark County:

- DPR has completed the installation of *MAXICOM* (master valves and flow sensors) in all urban Clark County parks. The MAXICOM system monitors daily weather conditions and manages the vast irrigation system in all parks. The system is designed to have individual irrigation schedules, water budgeting, cycle and soak options, flow watch and maintenance, rain watch, and automatic evapotranspiration. Principally designed to save water, the control system also decreases the need for chemical usage and fertilizer, and controls the majority of the outdoor lighting used in the parks.
- Through the DPRs *Park and Street Xeriscape Renovation Program*, approximately 286,000 square feet of turf was removed from medians on Endora Drive, Desert Inn Estates, Harmon Avenue, Spring Valley Loop and Rainbow Blvd. and replaced with drought-resistive landscape materials. Removal of grass from medians was a high priority for DPR because the previous irrigation systems wasted water by broadcasting spray into streets and sidewalks. Irrigation systems in medians were also subject to a high degree of vehicular and pedestrian vandalism, resulting in broken irrigation lines and missing irrigation devices;
- In accordance with the DPRs Water Conservation Action Plan, two mature regional parks were renovated (i.e., Sunset Park and Dessert Breeze Park) by removing a combined total of 647,000 square feet of turf and replacing it with drought-resistive landscape materials;

- Since 2003, the *Synthetic Turf Conversion Program* has yielded 277,000 square feet of turf removal from five athletic fields within the Clark County park system (i.e., four baseball fields at Desert Breeze Park and one baseball field at Paul Meyer Park). Clark County currently has 64 softball fields, 13 baseball fields, 10 soccer fields, and 35 multi-use fields;
- In 2007, as part of the McCarran International Airport expansion, McCarran Marketplace Park was constructed and donated to DPR. Contained within the park are two synthetic soccer fields; and
- *New Park Designs* will aim to further reduce water consumption. These designs will incorporate decorative walking paths, shade shelters, and planter boxes between green spaces.

Through the implementation of the aforementioned water conservation efforts, DPR has decreased its outdoor water use by approximately 92 million gallons since 2003, for an annual cost savings of approximately \$195,000. It is anticipated that when the Water Conservation Action Plan is fully implemented, the DPR will save over 250 million gallons of water annually at a cost savings of approximately \$470,000.

The DOA has also been active in water conservation projects as reflected in the following examples:

- The *McCarran Turf Removal Project*, launched in 1996, is designed to replace 5.4 acres of grass outside the airport with desert-friendly xeriscape and includes changes to the airport's irrigation infrastructure. Since 1996, the airport has converted more than nine acres of lawn into desert landscaping, resulting in an annual water savings of 15.3 million gallons of water; and
- *New Remodeled Restrooms* at the airport are equipped with automatic faucets and flush valves for lower water usage.

## ***Proposed Additional Measures***

### **Expanded Use of Gray Water**

For purposes of this report, gray water is defined as wastewater that originates from residential clothes washers, bathtubs, showers, and sinks (except kitchen sinks) but does not include wastewater from toilets. It is not treated.

Many desert communities see gray water as a beneficial use. Gray water distribution systems can range from simple to complex. An important consideration is the suitability of gray water for residential use.

Because the Las Vegas Valley has traditionally employed return flow credits rather than recycling water, a review of expanded use of gray water has not been fully explored. The Southern Nevada Water Authority and the Clean Water Coalition, in partnership with the Cities of Henderson, Las Vegas and North Las Vegas, Clark County Water Reclamation District, Las Vegas Valley Water District, Southern Nevada Water Authority, Clark County Department of Air Quality & Environmental Management, Black and

Veatch, James Crook Environmental Consulting and Katz & Associates is currently undertaking a study to examine the reuse of water. This study, which compares water reuse practices in Southern Nevada to those in other arid or semi-arid communities, focuses on water rights, resources, and demands for each community, and considers other factors that shape water reuse practices including: public health and safety, the cost of public infrastructure, and public acceptance of reuse supplies. Recommendations from the Southern Nevada Regional Water Reuse Study are forthcoming.

#### *Implementation Challenges*

The Clark County Uniform Plumbing Code removed the section permitting residential gray water systems in 1997. The Code would have to be amended to permit residential gray water use. Partnering with the Southern Nevada Health District would have to occur in order for the code development process to begin. Gray water systems are most cost effective in new construction. It is costly to retrofit existing homes.

It is significant to note that gray water may have health implications and any standing water could become a breeding ground for mosquitoes, the vectors of West Nile virus. This virus is endemic to the Las Vegas Valley. A crucial aspect of this endeavor involves a high degree of assurance that public health and safety can be sufficiently safeguarded. This would involve not only establishing a regulatory program but also identifying the appropriate lead agency.

#### ***Measure #2: Alternative Use and Reuse of Reclaimed Water***

The Clark County Water Reclamation District (WRD) has been active in educating citizens on the uses, benefits, and opportunities for reuse of reclaimed water in the Las Vegas Valley. Reclaimed water is treated wastewater, cleaned to a standard to ensure its quality is safe for reuse. It can be treated to a level referred to as safe for 'full body' contact. The following is a list of major sustainable measures initiated by the WRD with regards to reuse of reclaimed water:

- The WRD supplies five community golf courses with reclaimed water for use in irrigating tee, fairway and green areas, and the surrounding landscape. The higher nutrient levels in the reclaimed water means that course operators do not need to add as much fertilizer to keep these areas green;
- Since the summer of 2005, the playing fields and landscape at Silver Bowl Park have been irrigated using reclaimed water provided by the WRD;
- The landscape at each of the WRD treatment facilities is currently being irrigated with reclaimed water;
- At a number of power generation stations in Clark County, reclaimed water is used as a coolant for the generators;

- In certain areas of the Las Vegas Valley, reclaimed water is available to contractors for dust control during earthmoving, grading, and construction activities; and
- The WRD has recently entered into discussions with the CCSD to use reclaimed water on playing fields and landscape areas at selected schools.

The SNWA has also been active in reusing reclaimed water. The following is a list of major sustainability measures initiated by the SNWA, which includes:

- Reclaiming its wastewater via return-flow credits or direct reuse, including water for golf courses, median landscaping, power plants, and some parks. SNWA member agencies use 24 million gallons of water per day (MGD) for reuse and send more than 165 MGD of highly-treated wastewater to the Las Vegas wash for return credits; and
- Applying reuse principles to wastewater accumulated outside the Las Vegas Valley. As Clark County continues to grow, development of in-state resources outside the Las Vegas Valley will create additional wastewater that, if treated and reused, has the potential to increase yield. The SNWA will reclaim in-state water through direct reuse, or by accounting for these imports as consumptive use prior to reaching Lake Mead.

## ***Proposed Additional Measures***

### **Expanding the Use of Reclaimed Water for Irrigation**

Many potential uses for reclaimed water exist. Reclaimed water is currently used to irrigate Stallion Mountain Country Club adjacent to the water reclamation facility, the Silver Bowl Sports Complex, and Nevada Power's Clark generating facility for cooling water. The Desert Breeze water reclamation facility produces water that is sold by the City of Las Vegas to water three golf courses. Further use of this system to irrigate schools, municipal government turf areas, and private concerns depend on distribution infrastructure expansion and mandating its use when reasonable. Using reclaimed water for uses that do not require potable water has the potential for conserving drinking water.

The Southern Nevada Regional Water Reuse Study is taking a fresh look at the role of reclaimed water in our community's future. The development of new water sources that do not provide return flow water credits may make expansion of reclaimed water even more desirable than it is at present.

#### *Implementation Challenges*

Assuming the study supports an action in this regard, expanding the use of reclaimed water would require construction of an expensive separate distribution system. (Reclaimed water cannot be distributed through the drinking water distribution system.) Expanding the use of reclaimed water must include collaboration with outside stakeholders such as the Southern Nevada Water Authority and Southern Nevada Health District.

### ***Measure #3: Managing Storm Water and Urban Runoff***

Typically, rainwater travels through gutters, storm drains, channels, and washes until it drains into Lake Mead. Other water from hoses and sprinklers also eventually drain into the lake. As the water runs off, pollutants are picked up from streets, parking lots, and lawns. This water then enters the 66,000 catch basins throughout Las Vegas and Southern Nevada. From there, this 'polluted urban runoff' flows through a massive system of pipes and open channels straight to the Las Vegas Wash untreated.

In accordance with the Federal Water Pollution Control Act, the Clark County Regional Flood Control District (RFD), acting as lead agency and in conjunction with the DAQEM, initiated the following major sustainable measures with regards to managing storm water and urban runoff:

- Execution of a Storm Water Management Plan (SWAMP) that identified specific program areas, along with those that must still be addressed;
- Implementation of a construction site inspection program for local construction companies, including training sessions. The inspection program, which is the result of an interlocal agreement with DAQEM, allows air quality inspectors to perform storm water quality inspections at construction sites along with their other duties. The inspection program will reduce the amount of sediment and construction pollutants entering the storm drain system;
- Development of a new public service announcement (PSA) focusing on the importance of keeping storm drains clear of clogging debris. This PSA ran on all the local network affiliates and emphasized the importance of not dumping trash and reporting problems to the District. Other PSAs developed by the District focus on proper fertilizing of lawns, responsible disposal of pet waste, and the benefits of using commercial car washes. District staff is available to give presentations to groups interested in environmental topics associated with flood control; and
- Continued participation and advocacy through the Lake Mead Water Quality Forum, the Las Vegas Wash Coordination Committee, and the Management Advisory Committee for the Las Vegas Wash, with the goal of advocating additional storm water and urban runoff sustainability measures.

### ***Measure #4: Participation in the Water Utility Climate Alliance***

Since climate change poses a major long-term challenge to delivering high-quality drinking water, the SNWA and some of the nation's largest water agencies announced the formation of an unprecedented coalition, the Water Utility Climate Alliance (WUCA). The alliance will work to improve research into the impacts of climate change on water utilities, develop strategies for adapting to climate change and implement tactics to reduce greenhouse gas emissions.

## **Clark County Sustainability Measures: LAND USE/ HABITAT PROTECTION**

Good growth management policies are necessary in Clark County to balance the community's needs and preserve a high quality of life. Sprawling growth and inadequate open space protections can lead to development far from the urban center. The County's lands also contain habitats that support many types of animals, such as the desert tortoise, and habitat destruction caused by sprawling growth endangers populations of native species.

In a sustainable state, the community balances land use so as to coexist within the economic needs of the community while preserving open spaces and protecting native habitat.

Land use planning and native habitat protection in Clark County has been an ongoing effort for many years. County programs, policies, and measures aimed at implementing sustainable urban development are contained in the County's comprehensive plan and are primarily the responsibility of the CCDCP. The development of guidelines for environmentally responsible land use within the County is principally DAQEM's responsibility. The following is a list of major sustainability measures employed by the CCDCP and DAQEM with regards to urban land use/planning and habitat protection.

### ***Measure #1: Programs, Policies, & Measures for Implementing Sustainable Development***

Programs, policies, and measures for implementing sustainable development contained in the comprehensive plan and the land use plans, developed by the CCDCP and adopted by the BCC in the last five years, provide for the provision of adequate public facilities, open spaces, and infrastructure needed to support sustainable economic growth. At the same time, policies and work programs recommended in the comprehensive plan are strongly connected to the regulatory framework of the Unified Development Code Title 30 that prescribes regulation for street layout, open space, public utilities, and environmental site standards designed to implement sustainable development.

The following are the major planning mechanisms included in the comprehensive plan aimed at improving the environmental quality and sustainability of Clark County:

- The *Mixed Used Overlay District Ordinance (30.48 part J Title 30)* is designed to encourage a diversity of compatible land uses, including a mixture of residential use. The intent of the ordinance is to create opportunities for connectivity between land use, transportation, and air quality by creating and sustaining pedestrian-oriented neighborhoods where local residents have convenient access to jobs, schools, shops, public facilities, transit, and important public services;
- The *Asian Overlay District Ordinance (30.48 part K Title 30)* is designed to protect and maintain the Asian character and cultural heritage of existing and proposed developments by implementing additional design standards that unify appropriate physical and architectural elements of the Asian community; and



- Implementation of combined land use, transportation, and air quality policies designed to change the current development pattern of urban sprawl to more compact urban forms, and improve the air quality by encouraging or creating alternative transportation modes such as walking, biking, and the use of existing or planned mass transit corridors.

### ***Proposed Additional Measures***

#### **Land Use - Promote Sustainability through Incentives and Code Requirements**

In Nevada, the Comprehensive Plan (including land use plans) is a policy document whose real strength is demonstrated through County Code. These tools are not intended to be implementation measures, but rather as guides for implementation. The zoning code/land use approval process, together with infrastructure projects should be considered the most effective tools for implementation of public policy.

Clark County's 2005 Growth Task Force identified Infill Development – development of vacant or underutilized parcels, within the urban/suburban core, to promote the better utilization of valuable, taxable land and improvements – as one of its top six strategy areas. Specifically the report lists a recommendation that the County encourage infill development.

#### *Implementation Challenges*

The vested interests of stakeholders such as property owners, developers, and attorneys remains an unknown variable. Further exploration is needed to adequately assess their investment.

#### ***Measure #2: Open Space and Native Habitat Protection***

The DAQEM is tasked with protecting and preserving open space and native habitat within Clark County. Through the development of documents that provide guidelines and direction for environmentally responsible land use within the County, DAQEM coordinates with other entities to ensure best management practices are used for managing environmental issues through compliance with laws, regulations, and mandates.

The following are the major environmental focus areas entrusted to DAQEM:

- The Clark County *Desert Conservation Program* administers conservation programs to benefit native species and ecosystems. The program promotes a balance between economic stability and environmental integrity in Clark County;
- The mission of the Clark County *Federal Lands Program* is to provide ongoing coordination with the six federal land management agencies that administer land in Clark County and to monitor all planning and National Environmental Policy Act (NEPA) related actions on federal land that may impact the environment, urban development, the economy, and the overall quality of life in Clark County;

- The Clark County *Trails Program* facilitates the development of recreational trail systems in urban and rural areas of the County to provide recreational opportunities, alternative off-street transportation options, and access from urban areas to federal lands for residents and visitors to Clark County; and
- The Clark County *Advisory Board to Manage Wildlife* solicits and evaluates local opinion and advises the Board of Wildlife Commissioners on matters relating to wildlife. Appointed board members are selected from the sportsman, farming, and ranching community. This board receives its mandate from Nevada Revised Statute 501.

The DOA is also actively involved in preserving native habitat, as is the SNWA.

DOA owns 110 acres of unimproved real property at the North Las Vegas Airport. This property contains one of the largest and last remaining tracts of habitat for rare plant species, namely the Las Vegas bearpoppy (*Arctomecon California*). The Las Vegas bearpoppy is listed as critically endangered by the State of Nevada (NRS 527.260 – Protection and Propagation of selected Species of Native Flora). The County, DOA, and Bureau of Land Management, via a Memorandum of Understanding, have agreed that the land should be managed as an undisturbed and undeveloped open-space, which fosters the preservation of the bearpoppy's native habitat.

The SNWA formed a 30 member Las Vegas Wash Coordination Committee nearly 10 years ago to help restore and protect the Las Vegas Wash. The committee developed and implemented a long-term management plan for the Wash and wetlands. The plan encompasses stabilizing the wash channel by installing erosion control structures and bank protection, enhancing the environment, and garnering public support through outreach. The Wash is home to tens of thousands of native trees and shrubs and more than 500 species of plants and animals.

The SNWA works with local state and federal agencies in its commitment to the protection of endangered species. The 1,200 acre Warm Springs Ranch, near the Moapa Valley National Refuge was purchased to protect the Moapa dace, a threatened species of fish which is found only in the Muddy River and its tributaries in Clark County.

In addition the Authority actively participates in the Lower Colorado River Multi-species Conservation Program, the Clark County Multi-Species Conservation Plan and the Lower Virgin River Recovery Implementation Team.

## **Clark County Sustainability Measures: WASTE REDUCTION/ RECYCLING**

Quality of life for the residents of Clark County depends upon the availability and use of natural resources. Many of these resources are renewable but our consumption may outpace nature's ability to replenish them. Waste reduction and recycling efforts focus on ways to achieve a balance between resource consumption and renewal, and ensures the highest end use for our resources.

Although Clark County has over four decades of landfill space available at the current APEX Regional Waste Management Center, landfill space is still a finite amount. Preserving the space available for waste disposal should be a County waste management planning priority, as current alternatives have higher environmental impacts.

In a sustainable state, consumption of resources is in balance with nature's ability to replenish them. Source reduction creates less waste, and the products that are produced are reused, recycled, or composted rather than thrown away.

As the Las Vegas Valley area has grown, the APEX Regional Waste Management Center, a 2,200-acre facility serving Clark County since 1992, has seen a significant increase in the amount of waste it receives. Each day in 2007, 500-600 trucks deliver 15,000-17,000 tons of waste to the facility. Clark County's sustainability measures seek to reduce the amount of waste disposed of at the Waste Management Center. Waste reduction principally centers on an array of recycling efforts and initiatives.

Source reduction is any action that reduces the amount of solid waste to be collected. Examples of source reduction include using materials designed with longer life spans or less packaging. Recycling is the diversion or removal of materials from a solid waste stream in order to reuse it in the same way or for a different purpose.

### ***Measure #1: Community Recycling Efforts***

The Nevada Environmental Commission (NEC) establishes recycling rate goals for the State of Nevada. Current recycling rate goals for Nevada and Clark County are 25%. Actual recycling rates for Clark County are 8%.

The NEC works with the Nevada Division of Environmental Protection (NDEP), the agency responsible for implementing and enforcing regulations adopted by the NEC. NDEP has designated the Clark County Health District as the local solid waste management authority. However, because the recycling rates are goals and not mandates, enforcement is not plausible. Republic Services, Inc. offers curbside recycling services to its residential customers and some businesses (e.g., the casino industry).

### ***Measure #2: County Recycling Efforts***

Many County organizations participate in the recycling efforts of paper, plastic, aluminum, corrugated cardboard, books, newsprint, magazines, toner cartridges, discarded computers and monitors, surplus furnishings and supplies, wood pallets, brass, copper,

and miscellaneous metals. The following sustainability measures provide a cross-sectional view of the County's current efforts with regards to recycling:

- The Real Property Management Department currently coordinates the County's recycling of general waste items such as paper, plastic bottles, and aluminum cans retrieved by janitorial staff from all appropriate containers throughout the Government Center. These items are gathered and placed in grey recycling containers and taken to the recycling compactor, which is located at the loading dock of the Government Center. This recycling compactor is retrieved once a week by Republic Services;
- The Department of Information Technology currently coordinates the recycling efforts of discarded computers, monitors and cell phones. The Blind Center of Nevada provides the necessary computer recycling services for the County by assuring data privacy and maximization of raw material extraction;
- The SNWA, through the recommendations of its own internal Sustainability Task Force (STF) created in July 2007, identified areas where sustainability goals could be reached by 2010 with regards to diverting 25% of the recyclable materials from the SNWA's waste stream. The SNWA provides recycling bins for general recyclable materials in every office space at the District. Additional systems are also in place to collect used oil, antifreeze, fluorescent bulbs, and rechargeable batteries;
- Currently, SNWA's principal vendors for recycling include Opportunity Village, Blind Center of Nevada, Safety Kleen Services, Inc., and the Rechargeable Battery Recycling Corporation. In 2007, SNWA recycled approximately 305,129 pounds of office paper; 30,920 pounds of cardboard; 1,686 pounds of aluminum cans; 1,227 pounds of plastic containers, 13,935 gallons of used oil; and 696,587 pounds of scrap metal including brass, copper, and ferrous metals;
- Through the Department of Public Works' *Pulverise and Pave Program*, existing asphalt on older more deteriorated streets is grinded and recycled as a high-quality base for a new layer of asphalt paving. In 2005, the Department pulverized and paved nearly three million square yards of roadway. Additionally, Public Works also recycles existing asphalt; by grinding the hot mix asphalt into a proper gradation and placing it in new hot mix asphalt, and concrete, by grinding it into proper gradation for use in Rip Rap and base material;
- Sustainability measures underway within the Purchasing Department include researching the purchase of recycled toner cartridges, recycled paper, and printers/copiers that can print double-sided documents; and
- In 2007, McCarran International Airport recycled more than 15,800 square feet of carpet, enough to cover nearly seven football fields.

## ***Proposed Additional Measures***

### **Document Production Solutions – Digital Document Distribute/Print**

It is not always necessary to produce a hard copy of a document. For example, when collaboration is required to produce a document, the existence of several copies exchanged over time can result in many inefficiencies and wasted paper. Efficient document production solutions exist.

#### *Implementation Challenges*

Clark County has no specified document control policy that could allow a user to select a specific type of document production format. Absent a formalized process, employees would be left to use their own judgment which could contribute to wasted resources. There are fiscal considerations associated with the purchase of software and possible programming changes to expand the use of this option.

### **Default Duplex Printing**

Instant reduction in the amount of paper consumption would occur through the use of default duplex printing.

#### *Implementation Challenges*

Currently no uniformly enforced policy exists. In order to achieve the greatest impact and maximize results a county-wide policy should be implemented.

### **Purchasing Guidelines**

Green initiative support for development and infrastructure generally costs more up front in order to meet sustainability goals. Purchasing under the lowest responsive and responsible bidder rules generally prevents eco-friendly procurement and beta testing without special formal processes. The County's goal should be to make such actions a normal procedure, according to the green initiative's values.

#### *Implementation Challenges*

There are no policies allowing or promoting sustainable/green purchasing in existence at this time. Modification of the NRS to permit sustainable/green purchasing would ease the integration of sustainability into everyday business procedure. Until done, sustainability projects may be restricted to special demonstration projects.

### **Purchasing of Recycled Content Products**

Green initiative support for the purchase of recycled content products appears to be inconsistent at best, although Nevada Revised Statute (NRS) 332.065 mandates a preference for purchasing recycled products under certain circumstances and allows for a price variance for recycled products and recycled paper. Since recycled products typically have a higher initial cost than products made of virgin materials, vendors are reluctant to "bid" recycled products when they know that they are in head-to-head price competition, under the requirements of Nevada Revised Statute 332.065, to "award the contract to the lowest responsive and responsible bidder".

### *Implementation Challenges*

There is no policy in existence at the present time to encourage/allow purchasing of recycled content products. The NRS defining purchasing practices that must be followed by Clark County do not provide enough incentive for bidders to bid recycled content paper. The price variance allowed is too low. The terminology of “best value” is vague and undefined in terms of eco-sustainability guiding values.

### ***Measure #3: Reclamation Efforts – Sunrise Landfill***

The BCC has directed the DAQEM staff to expedite the acquisition of the Sunrise Landfill site from the Bureau of Land Management (BLM). Staff is analyzing which land acquisition option it will use. An environmental assessment will identify the extent and perimeter of the lands that are occupied or impacted by waste at the Sunrise Landfill site. Once completed, the County will submit a formal request to purchase the property from BLM. Staff is initiating a process for developing a future alternative use for the Sunrise Landfill site. The first step in this process will be to determine developer, stakeholder, and community interest in regards to potential end use. The types of encouraged use will include public and recreational purposes.

### ***Measure #4: Participation in the Southern Nevada Recycling Advisory Committee***

The Southern Nevada Recycling Advisory Committee (SNRAC) was created by Clark County, Southern Nevada Health District, and the cities of Las Vegas, North Las Vegas, Henderson, Boulder City and Mesquite to develop recommendations to increase recycling in order to save natural resources. In late 2007, the BCC approved recommendations from SNRAC and authorized the Department of Administrative Services staff to work with Republic Services toward the implementation of the Project Green Works pilot program initiative. This initiative is designed to test single stream recycling and the viability of alternative schedules for collection of waste materials and recyclables in residential areas.

### ***Measure #5: Citywide Christmas Tree Recycling Program***

The LVVWD with participation from the SNWA, DAQEM, Parks and Recreation, Conservation District of Southern Nevada, and the Southern Nevada Health District, hosts the annual Christmas Tree Recycling program which runs from late December through mid-January.

Residents who purchase live Christmas trees are encouraged to give back to the community by returning their trees to the environment. Recycled trees are turned into nutrient-rich mulch, an organic material used in public gardens and parks across the valley to help conserve soil moisture and keep plants healthy. The mulch provides a protective barrier for the roots of other plants and prevents weed growth. As the mulch decomposes, it provides many nutrients that plants need to survive.

## Clark County Sustainability Measures: TRANSPORTATION

Transportation has a significant impact on the economy, environment, and quality of life in Clark County. Traffic congestion causes costly delays with regard to daily activities and wastes natural resources. Excessive idling of vehicles pollutes the air and is a significant contributor of greenhouse gas emissions. An over-reliance on automobiles also encourages low-density land use patterns that can waste precious land and lead to habitat fragmentation.

In a sustainable state, properly planned and maintained transportation infrastructures allow individuals to have access to affordable, efficient, and reliable means of public transportation.

Sustainable transportation in Clark County is a multi-agency responsibility. The following is a list of major transportation sustainability measures (including planning and maintenance of roadways, and airport operations).

### ***Measure #1: Transportation Activities – Roadway Congestion Mitigation***

The CCDCP formulates transportation planning policies and guiding principles within Clark County through the development of the Comprehensive Plan. Major transportation sustainability goals contained in the Plan include:

- Encouragement of an integrated network of roads, mass transit, bicycle paths, and pedestrian routes in order to provide alternative transportation choices in specific planning areas (e.g. Winchester/Paradise planning area); and
- Supporting a balanced transportation system through the proper placement of bicycling and walking paths, and use of public transit services as an alternative to automobile travel to reduce vehicle miles traveled and number of vehicle trips.

The RTC, in turn, is the designated Metropolitan Planning Organization (MPO) for transportation in the urban Las Vegas area and is responsible for comprehensive transportation planning. The latest MPO projects and transportation sustainability activities include:

- One of the country's premiere rapid transit projects, or the MAX, otherwise known as Southern Nevada's Metropolitan Area Express (MAX) system. A hybrid between bus and rail systems, MAX has many features of rail service with the cost and flexibility of a bus, making it an effective transportation solution. The MAX Line runs along Las Vegas Boulevard North and complements the CAT bus route 113 already in place. The RTC has designated approximately seven miles for the MAX corridor, connecting Las Vegas' Downtown Transportation Center to Nellis Air Force Base.
- A 33-mile Regional Fixed Guideway (RFG) that links the cities of Henderson, Las Vegas, and North Las Vegas with the Las Vegas Resort Corridor;
- An ADA Paratransit Service, or shared-ride, door-to-door program for those who are functionally unable to independently use the CAT fixed route system;

- The Silver STAR program which focuses on the mobility of senior citizens by providing a compromise between the flexibility of CAT fixed route operations and the door-to-door service of the ADA Paratransit Service; and
- The RTC's Club Ride Commuter Services is a program that helps employees find more ways to get to and from work safely and more economically such as carpool and vanpool partners, transit schedules and routing, and walking and biking information.
- The RTC's fixed-route bus system, currently called Citizen's Area Transit (CAT), provides over 60 million rides per year. The service also includes a 100 percent bike-rack-equipped fleet and carries over 50,000 bikes per month, one of the highest rates in the nation

### ***Measure #2: Transportation Activities – McCarran International Airport***

In 2007, nearly half of all Las Vegas visitors arrived via McCarran International Airport, making it one of the top ten busiest airports in the world. Due to the airport's enormous scope of operations, it's becoming increasingly important to the DOA to ensure adequate transportation sustainability measures are also in place. The following are the major transportation sustainability activities at McCarran International Airport:

- DOA has constructed an off-site Consolidated Rental Car Facility with associated busing services to reduce traffic congestion and emissions; and
- DOA provides satellite check-in facilities to further reduce traffic congestion.

### ***Measure #3: Roadway Improvement Projects***

Regular maintenance of roadways is an essential, efficient, and cost effective method to transportation infrastructure sustainability. The following are current measures taken by the Department of Public Works aimed at extending pavement life and improving levels of road serviceability:

- Slurry seals, a mixture of fine-graded sand, and aggregates with quick setting asphalt emulsions, are used on pavements that are 5 to 15 years old to extend the life of pavement by sealing out water and shielding the asphalt from oxidation due to ultraviolet rays. In 2005, this program treated over 1.3 million square yards of pavement;
- Grinding up the existing asphalt on older, more deteriorated streets and recycling it as a base for a new base-layer of asphalt paving. In 2005, 2,813,000 square yards of pulverized base-layer was laid;
- Crack sealing, a process of applying a liquid asphalt/rubber compound into cracks and voids in existing pavement, has extended pavement life by preventing water and other extreme elements from entering and deteriorating pavement surfaces. In 2005, approximately 190 lane miles of crack sealing was completed;



- Pothole patching, a process routinely used to repair minor irregularities in pavement surfaces, has restored 192,065 square feet of existing roadway in 2005;
- Street sweeping, a vital service that helps prevent air pollution by removing street dust and debris from storm water inlets, was performed on 2,510 curb miles in 2005; and
- Road construction projects such as the Desert Inn Super Arterial and 215 Beltway, and widening projects such as Tropicana and other roadways.

### ***Proposed Additional Measures***

#### **Use of Rubberized Asphalt Concrete**

The use of rubberized asphalt concrete appears to be a longer lasting pavement with reduced maintenance and replacement costs when compared to conventional paving material. The decision to use this material is environmentally beneficial because it finds alternative usage for waste rubber tires. Tires present a noteworthy problem in that they do not degrade readily, nor do they collect in landfills or above-ground dumping sites.

##### *Implementation Challenges*

Collaboration with the Regional Transportation Commission of Southern Nevada is needed to establish policy to explore the use of rubberized asphalt concrete in future projects. Fiscal impacts must be considered as costs associated with the product exceed that of conventional paving.

#### **Use of Recycled Asphalt Concrete**

As landfill costs for Construction, Demolition, and Land clearing debris (CDL) continue to rise and landfills become more heavily regulated, the economic climate suggests seeking alternative methods to dispose of asphalt that is collected during construction and demolition. More disposal sites are becoming available and contractors are routinely incorporating recycling into their operations to decrease disposal costs.

Recycled asphalt can be an economical alternative to new asphalt. Project managers can ensure that contractors are aware of opportunities to recycle this material and to use recycled material in construction.

##### *Implementation Challenges*

The Regional Transportation Commission sets the code mandating the permissible percentage of rubberized asphalt allowed in paving mixtures. The mixture currently allowed is not suitable for all types of paving designs.

#### **Use of Full Depth Recycled Pavements**

This form of paving uses the entire road and recycles it at the location with the use of specialized equipment. Although the majority of old asphalt pavements are recycled at central processing plants, asphalt pavements may be pulverized in place and incorporated into granular or stabilized base courses using a self-propelled pulverizing

machine. Hot in-place and cold in-place recycling processes have evolved into continuous train operations that include partial depth removal of the pavement surface, mixing the reclaimed material with beneficiating additives, and placing and compacting the resultant mix in a single pass. Paving with this material has higher up-front costs but produces longer lasting pavements and reduces construction costs associated with hauling and disposal of an otherwise useful material.

*Implementation Challenges*

Current County Code is silent on the utilization of this type of paving material.

**Longer Life Pavements for Developing Projects**

Since 1998, the durability of contracted pavements by Public Works has improved. However, the durability of those sponsored by developers remains questionable. Pavements placed by developers that are supported by the County have experienced significant failures within three to five years of placement.

*Implementation Challenges*

Current County Code is silent on the requirements for the use of specific types of paving materials used by developers as compared to those used by CCPW. Resistance from developers is expected.

**Permanent Road Maintenance Plan**

New and existing roads are not a part of a productive maintenance plan to extend the life of pavements, resulting in higher costs to the County. Provisions for adequate budget allocations for a routine road maintenance plan would require approximately \$40 million per year. Benefits would include life extension of pavements, decreased usage of new materials, avoidance of emergency projects, and a reduction in the amount of emissions created by re-construction of deteriorated pavements. Currently roads are only maintained when spare or left over funds are available.

*Implementation Challenges*

There are no current policies addressing routine road maintenance. Fiscal considerations are associated due to projected increased costs to the County. Additionally, resistance from developers is anticipated.

## **Clark County Sustainability Measures: GREEN BUILDING**

Inefficient construction of buildings leads to both large environmental impacts and high operating costs. Many buildings also contain chemicals that pollute the indoor air, which may harm the health of building occupants. According to the EPA, indoor air quality can be three to five times worse than outdoor air.

In a sustainable state, green building practices become the norm and are encouraged through policies at the county level. Green buildings are energy efficient, water conserving, durable, and nontoxic, with high-quality spaces and use of high recycled-content materials. By employing green building techniques, Clark County can reduce operating costs of the building, enhance building comfort, and preserve the environment.

Awareness and support of green building practices has greatly increased over the past few years in Clark County. Although the County does not have a formal green building policy, many agencies within the County are encouraging green building practices.

### ***Measure #1: LEED Building Practices***

Agencies within Clark County are currently in the process of investigating the USGBC LEED rating system as the principal foundation for formulating green building policies. LEED is a point-based framework that addresses site selection, water and energy efficiency, indoor air quality, material choices, and innovative design. There are four progressive levels of LEED certification — Certified, Silver, Gold and Platinum – which are awarded based on the number of measures and points a building achieves. The following are current County activities towards achieving LEED building certification:

- The CCDCP, through inclusion in the comprehensive plan, encourages that new sites have LEED compliant designs with regards to construction techniques and utilize materials that promote energy conservation. This will provide optimal air quality benefits by reducing the demand for electrical generation and heating fuels.
- The Real Property Management Department is in the process of evaluating the benefits of adopting a LEED building guideline for new building construction and existing structure retrofits. The Department expects the implementation of a green building policy to yield cost savings to county taxpayers through reduced operating costs, provision of a healthy work environment for county employees and visitors to county facilities and buildings, and contributions to the realization of the BCC's stated goal of sustainability by protecting, conserving, and enhancing the County's environmental stature.
- The DOA requires all new construction to be designed with day-lighting and xeriscaping. Further, the DOA requires energy-efficient fixtures be installed on all remodeled areas and new structures, air leakage tests be conducted on all newly installed windows, cooling tower fans be replaced with more efficient seven blade designs, and aging roof systems on all major buildings be replaced with more efficient systems; and

- The SNWA has directed all departments to incorporate the LEED framework when designing new buildings or retrofitting existing structures. Current efforts include lighting and HVAC retrofits, low flow water appliances, occupancy sensors, increased insulation, trash compaction, fenestration modifications, air curtains, xeriscaping and the implementation of an energy management system.

### ***Proposed Additional Measures***

The use of consultants is necessary to complete a comprehensive review of codes for green building initiatives.

#### *Implementation Challenge*

Presumed fiscal constraints and resources for obtaining consultant services.

## **Clark County Sustainability Measures: ENERGY USE**

Most of the energy used by Clark County is produced by burning nonrenewable fossil fuels such as coal, petroleum, and natural gas. The burning of fossil fuels negatively impacts air quality by releasing significant amounts of carbon dioxide, a greenhouse gas linked to climate change. Further, the U.S. economy's vulnerability to volatile oil and natural gas prices and the acknowledgement of the environmental and health costs of burning fossil fuels are both good reasons for the County to promote energy conservation measures and the use of clean energy technologies (i.e., solar power).

In a sustainable state, energy consumption is balanced with the ability to produce clean energy. Energy is used efficiently and is produced from clean, renewable sources such as solar and other emerging technologies.

Clark County is a large consumer of electricity and natural gas. The County, in partnership with the Southern Nevada utilities providers, continually strives to plan, develop, and implement energy sustainability measures to meet the current and future energy needs of its citizens in an efficient and sustainable manner. The following are efforts currently under way:

### ***Measure #1: Conservation Element of the Comprehensive Plan***

CCDCP, through the Clark County Sustainable Energy Report, provides high level background, analysis, and recommendations for future needs and demands of electricity, natural gas, and renewable sources of energy. Examples of renewable sources of energy currently in operation or proposed within the county include:

- *Solar One*, the third largest solar power plant in the world generating 64mW as of June 2007. Located on the southeast fringes of Boulder City, Nevada, Solar One is the first solar thermal power plant built in the U.S. in more than 16 years and covers 320 acres of land;
- *Nellis PV System*, a 15mW solar photovoltaic system at Nellis Air Force Base, supplies 25% of the total power used by the base. The Nellis PV System covers 140 acres of land at the western edge of the base;
- The *Government Center Demonstration Project*, a 30kW solar photovoltaic power system at the Clark County Government Center with an Interpretation Program designed to bring awareness to the general constituency about sustainable renewable energy; and
- An energy efficient design of the *Spring Mountain Youth Camp* 30kW solar photovoltaic power system.

### ***Measure #2: Clark County Buildings Energy Conservation Efforts***

Since 2004, the Department of Real Property Management and the Department of Public Works has embarked on an aggressive plan for completing an array of energy

conservation measures with regard to County buildings. Major energy conservation measures include:

- Installing automatic building controls in all County buildings to maintain County temperature standards and implement unoccupied set back schedules;
- Retrofitting traffic lights at most intersections with LED lights;
- Replacing high mercury vapor street lights with high pressure sodium lights;
- Installing window film at Clark Place;
- Delamping (a method of bulb removal) pool lights and installing time clocks at the Desert Breeze Aquatics Park;
- Retrofitting exterior lights with CFL lighting at the Laughlin Regional Government Center;
- Converting solid state Chiller controller to a Variable Speed Drive at the Department of Juvenile Justice System Central Plant;
- Replacing High Intensity Discharge lamps with T8 fluorescent lamps at the Clark County Parking Garage; and
- Replacing T12 lamps with T8 lamps at the Laughlin Government Center.

The aforementioned achievements, in conjunction with other retrofit and energy saving measures were implemented in accordance with the 2003 Energy Management Policy. To date, this policy has resulted in an estimated annual cost savings of \$980,290.

### ***Proposed Additional Measures***

#### **Power Reduction in the Clark County Data Center**

The Clark County Data Center is a high user of power. It is reported that data centers use 1.5% of all power consumed in the U.S. Power reductions focused on the IT center may prove to be an instant remedy.

##### *Implementation Challenges*

The use of Energy Service Companies (ESCO) is not permitted under current purchasing rules. ESCO refers to companies offering both energy and efficiency services, but it usually refers to an efficiency services company. ESCOs primarily serve large-scale industrial and commercial customers by assisting in the reduction of energy consumption. Typically the customer pays an ESCO a percentage of the energy savings that the ESCO provides.

#### **Power Reduction from Information Technologies Equipment**

Clark County IT equipment is a high user of power. Oftentimes replacement of IT equipment does not include sustainability specifications such as Energy Star 80 Plus.

Equipment with these ratings tend to be more expensive than equipment that does not provide reduced energy consumption.

*Implementation Challenges*

Currently there is no policy regarding energy and toxicity standards for IT equipment. Purchasing rules are a barrier to obtaining this type of equipment.

**Installation of Solar Panels on all Covered Parking**

Installation of solar panels on all covered parking structures would result in reduced power consumption for the lighting of these structures. Solar powered parking structures at the Government Center and Airport would demonstrate to tax payers that the County is committed to sustainable and environmentally conscious business practices.

*Implementation Challenges*

The range of fiscal considerations for this initiative are unknown.

**Measure #3: McCarran International Airport Energy Conservation Efforts**

The DOA major energy conservation measures include:

- Utilizing electric and natural gas equipment such as forklifts, scissor lifts, boom lifts, and carts; purchasing Energy Star rated equipment, when available; replacing all CRT monitors used to display flight information with LCD monitors, thereby reducing energy consumption by 25%; upgrading many display devices to include energy-efficient PC drivers; and replacing incandescent airfield lighting with LED lighting;
- Replacing air conditioning units attached to the jetways with more efficient units;
- Replacing the boilers, chillers, and chiller controls in the central plant with new energy efficient models; requiring energy efficient lighting on all new construction; modernizing all escalators and moving walkways with higher efficient/lower horsepower motors; and
- Using solar powered Reader Display boards and construction lighting.

**Measure #4: Southern Nevada Water Authority - Renewable Energy Initiative**

The SNWA has tasked their Energy Department to develop a plan to attain 20% power usage from renewable energy supplies by the year 2015. Major components of the plan include the use of the following technologies:

- Small in-conduit hydro energy systems will be placed at Rate-of-Flow Control facilities and will replace control valves that are currently used to control water flows. The current system uses valves that typically reduce pressure, which results in excessive heat and vibrations;

- Small solar photovoltaic installations will be demonstrated at various facilities that are typically 1mW or less;
- Large solar photovoltaic plants will be constructed in partnership with other entities such as the Silver State Energy Association. Typically, these facilities will range in size from 50mWh to 200mW;
- Geothermal projects will be co-developed with entities and will produce power in the 15mW to 35mW range;
- Biomass technologies will be investigated, such as forms of bio-fuel and pyrolysis units. Either unit will be designed to operate in the 5mW to 15mW range. The bio-fuel unit will utilize waste oils and convert them into fuel that can be burned in the turbines through a process of using a catalyst. The pyrolysis unit, in turn, will take organic material and heat it to create a synthetic gas that can be burned in a turbine; and
- Wind projects ranging from 200mW to 500mW will be undertaken. Like the other large projects mentioned above, this technology will require partnerships with other agencies and developers to bring these projects to fruition.

## ***Proposed Additional Measures***

### **Landfill Gas Programs**

Research is required to use landfill areas to recycle gas produced by decomposing trash. Landfill gas emissions are composed of approximately 50% methane. Methane is a green house gas that is approximately 25 times more powerful in raising temperature, thus any program to reduce the pounds of methane lost to the atmosphere is 25 times more beneficial, pound for pound, than the reduction of carbon dioxide. This is offset somewhat by burning the methane due to combustion that releases carbon dioxide. The USEPA has a Landfill Methane Outreach Program (LMOP) to work collaboratively with businesses, states, energy providers, and communities to capture landfill gas for energy.

#### *Implementation Challenges*

There is no policy to address this issue. The Sunrise Landfill is the only candidate landfill located in Las Vegas that is listed on the USEPA LMOP website. Republic Services owns the Sunrise Landfill and is currently engaged in a legal dispute with Nevada Department of Environmental Protection over the Sunrise Landfill remediation plan.



## **Clark County's Greenhouse Gas (GHG) Emissions Inventory Development**

The working group has been tasked with examining the feasibility of creating an inventory of Clark County government (operational) GHG emissions. This effort is part of the larger discussion called for in the Eco-County Initiative involving the development of a regional climate protection action plan. Common to both efforts is the need to establish a baseline inventory and a target year.

The Eco-County Initiative directed that the working group discuss the feasibility of setting 2008 as the baseline year and 2050 as the target year, with the goal of reducing GHG emissions in Clark County by 80% below the baseline by 2050. The initiative also directed the working group to discuss the development of a Climate Protection Action Plan, with the goal of stopping increases in GHG emissions by 2010 and achieving a 10% GHG emissions reduction every 5 years through the year 2050. Since determining a common baseline year precedes the development of a baseline emissions inventory, some measure of consensus should be reached in a timely manner.

### ***Selection of Baseline Year***

In Southern Nevada, efforts to coordinate intergovernmental cooperation on regional issues, such as natural resource and air quality protection, is overseen by the Southern Nevada Regional Planning Coalition (SNRPC). The establishment of a common baseline year among municipal entities and the County is already being discussed at the SNRPC to facilitate regional planning efforts. During the selection process, a variety of factors that may be considered include: growth of the region, availability of data, reliability of data, and baseline years established for concurrent planning efforts to reduce GHG emissions.

#### **Growth**

Southern Nevada has led the nation in growth for the past few decades, so it may be a relatively greater challenge for Clark County, as opposed to other local governments, to achieve GHG emissions reduction targets when the baseline year is set in the distant past.

#### **Data Availability**

Energy consumption, fuel consumption, and other records are not kept perpetually by either public or private entities. The availability of these records tends to diminish as the baseline year is set further back in time. The ability to acquire necessary data is important for the establishment of a baseline year.

#### **Data Reliability**

Effective climate protection action plans are dependent on reasonably accurate emission inventories. For the purpose of establishing a climate action plan, the

baseline year determination should be based on the earliest year for which reliable data exists.

### **Concurrent Planning Efforts**

Compatibility with other baseline years established for concurrent GHG emissions reduction efforts should be considered. Table 1 provides a list of some of the more prominent concurrent multi-state and international efforts.

**Table 1: Concurrent Multi-State and International GHG Emissions Reduction Efforts**

<b>Agreement, Initiative, or Proposed Legislation</b>	<b>Baseline Year</b>	<b>Reduction Goal</b>
Proposed Lieberman-Warner legislation	2005	70% below year 2005 levels by the year 2050
UNFCCC's Kyoto Protocol	1990	Collective average GHG reductions of 5% below 1990 levels for developed countries
U.S. Mayors Climate Protection Agreement	1990	7% below year 1990 levels by the year 2012
Western Climate Initiative	2005	15% below year 2005 levels by the year 2020

### ***Selection of Target Year***

With regards to the science of global warming, the EPA and other administrative agencies defer to the Intergovernmental Panel on Climate Change (IPCC) as the authoritative body to provide scientific advice to policy makers on climate change. The establishment of 80% emissions reductions by 2050 has been derived from IPCC policy recommendations.

Federal efforts to address climate change have been minimal thus far. Therefore, the selection of short-, mid-, or long-term targets by various states and local governments have often followed regional and international efforts based on IPCC recommendations, such as those described in Table 1. The target years set forth in the Eco-County Initiative are in line with these regional and international efforts.

### ***Emissions Inventory Development***

The software most widely used to create GHG emissions inventories for local government operations has been the ICLEI's *Clean Air and Climate Protection (CACP)* software. The structural framework of ICLEI's software was used to determine the feasibility of developing a GHG emissions inventory for County government operations for calendar year 2007.

In August 2008, a *Local Government Operations (LGO)* protocol was developed to quantify and report GHG emissions. It involved a collaborative effort between the *California Climate Action Registry (CCAR)*, ICLEI, *California Air Resources Board*

(CARB), and *The Climate Registry* (TCR). It is anticipated that the LGO protocol will be adopted by these organizations and used for future GHG emissions inventory development efforts.

The scope of Clark County government operations can vary depending on whether organizational boundaries are based on operational or financial control. The calendar year 2007 GHG emissions inventory provided in this document includes emissions from the RTC, LVVWD as well as those from University Medical Center, Clark County Housing Authority, Metro Detention Services, Clark County Fire Department, DOA, and the 38 diverse and geographically dispersed departments falling under the aegis of Clark County Government. The scope of operations should be considered in the context of any future inventory climate protection action plan adopted by the BCC.

The six internationally recognized anthropogenic GHG pollutants are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (S<sub>6</sub>F). Because different GHG pollutants have various impacts on global warming, emissions from all GHGs are expressed using the standard unit of measure, CO<sub>2</sub>e metric tons (tonnes). CO<sub>2</sub>e is shorthand for “carbon dioxide equivalent” and represents the combined effect of GHG pollutants.

GHG emissions associated with government operations include both direct emissions under County government control and indirect emissions that are not controlled by County government. Examples of direct GHG emissions are those resulting from County vehicles driven by employees during work. Examples of indirect GHG emissions are those resulting from electricity consumption in County buildings and from gasoline and diesel consumption by County employees commuting to and from work.

### ***Emissions Inventory Verification***

Some municipalities and county governments creating government operations GHG inventories have also decided to include the inventory in a registry. Submitting the inventory to a well-recognized registry that emphasizes accuracy and consistency through an established verification process may provide a measure of confidence to policy-makers that future action plans and policy recommendations are based on reasonably reliable emissions inventory information.

In June, 2008, a nationally recognized registry was launched called *The Climate Registry* (TCR). Numerous states, including Nevada, will require affected sources within the state to report their emissions to the TCR. The TCR has stringent verification requirements.

Verification is intended to promote completeness, consistency, comparability, accuracy, and transparency of emissions data. The TCR will require verification to be conducted by an accredited third-party and will require, *inter alia*, an assessment of conformance with TCR’s general reporting protocol, an assessment of completeness, and a verification of emission calculations.

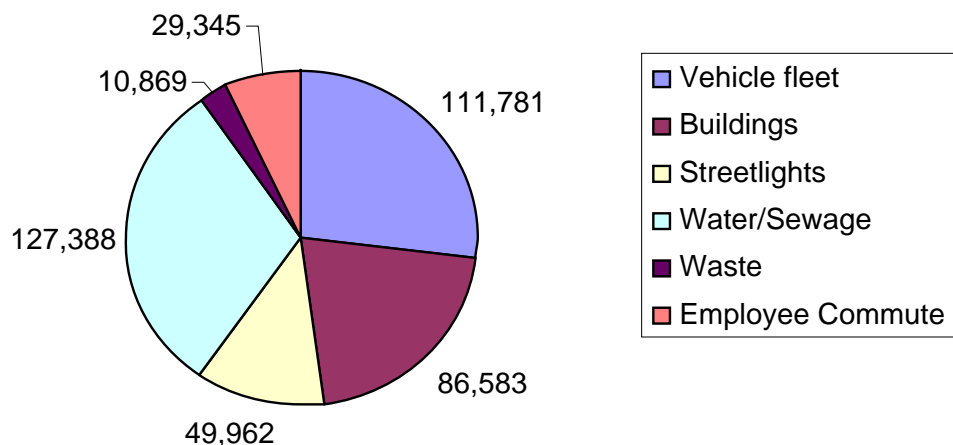
## Emissions Inventory

The GHG emissions inventory was divided into six sector categories: (i) *Buildings Sector*—includes emissions generated by all Clark County managed facilities, (ii) *Streetlights Sector*—includes emissions generated by all outdoor lighting, (iii) *Water and Sewage Sector*—includes emissions generated by pumping and treating drinking water and wastewater, (iv) *Vehicle Fleet Sector*—includes emissions generated by County vehicle fleets, (v) *Waste Sector*—includes emissions resulting from all County operations, (vi) and *Employee Commute Sector*—includes emissions generated by employees traveling to and from work.

In order to determine the feasibility of inventory and to facilitate the development of a representative inventory, a preliminary GHG emissions inventory was generated based on readily available data. The information below provides a potential template for collecting data and structuring a representative GHG emissions inventory.

Figure 1 provides each sector's emissions in comparison to overall Clark County Government GHG emissions. Table 2 provides information concerning throughput values and emissions contributing to overall sector emissions. Based on this data, the water and sewage sector contributes the greatest amount of GHG emissions (31%). The next highest source of GHG emissions is emitted by the vehicle fleets sector (27%) followed by the buildings sector (21%). These three sectors produce almost 80% of GHG emissions from Clark County government operations.

**Figure 1: Clark County GHG Emissions Inventory (tonnes CO<sub>2</sub>e)**



**Table 2: GHG Emissions**

	<b>GHG emissions (tonnes CO<sub>2</sub>e)</b>	<b>Percent total GHG emissions</b>	<b>Throughput</b>	<b>Throughput Units</b>
<b>VEHICLE FLEET SECTOR **</b>				
Unleaded gasoline	3,552	0.9 %	383,560	gallons
RFG gasoline	1,296	0.3 %	139,974	gallons
B20 diesel	15,662	3.7 %	1,498,125	gallons
CNG	327	0.1 %	47,268	GGE
CNG (RTC)	7,305	1.7 %	1,154,333 *	therms
Diesel (RTC)	83,638	20.0 %	8,000,000	gallons
<b>Subtotal:</b>	<b>111,780</b>	<b>26.8 %</b>		
<b>BUILDING SECTOR **</b>				
Electricity	61,170	14.6 %	107,130,472	KWh
Electricity (RTC)	1,373	0.3 %	2,404,149	KWh
Electricity (CCWRD)	3,216	0.8 %	5,632,156 *	KWh
Electricity (LVVWD)	6,829	1.6 %	11,959,414 *	KWh
Natural Gas	9,014	2.2 %	1,689,446	therms
Natural Gas (RTC)	141	0.0 %	26,398 *	therms
Natural Gas (CCWRD)	187	0.0 %	35,045 *	therms
Natural Gas (LVVWD)	4,654	1.1 %	872,211 *	therms
<b>Subtotal:</b>	<b>86,584</b>	<b>20.7 %</b>		
<b>STREETLIGHTS SECTOR</b>				
Electricity (RTC)	49,962	12.0 %	87,500,410	KWh
<b>Subtotal:</b>	<b>49,962</b>	<b>12.0 %</b>		
<b>WATER/SEWAGE SECTOR</b>				
Electricity (CCWRD)	40,785	9.8 %	71,428,521 *	KWh
Electricity (LVVWD)	86,603	20.7 %	151,672,518 *	KWh
Natural Gas (CCWRD)	583	0.1 %	109,320 *	therms
Natural Gas (LVVWD)	1,167	0.3 %	218,640 *	therms
<b>Subtotal:</b>	<b>129,138</b>	<b>30.9 %</b>		
<b>WASTE SECTOR</b>				
Solid Waste	10,869	2.6 %	12,988	tons
<b>Subtotal:</b>	<b>10,869</b>	<b>2.6 %</b>		
<b>EMPLOYEE COMMUTE SECTOR</b>				
Gasoline	29,095	7.0 %	3,141,627 *	gallons
Diesel	100	0.0 %	9,549 *	gallons
Hybrid	150	0.0 %	16,154 *	gallons
<b>Subtotal:</b>	<b>29,345</b>	<b>7.0 %</b>		
<b>TOTALS:</b>	<b>417,678</b>			

\* Throughput values were derived based on various assumptions which are discussed in the attached *Technical Support Document, 2007 Clark County Government Greenhouse Gas Emissions Inventory (July 2008)*.

\*\* The scope of the GHG emissions inventory differed for the vehicle fleet and building sectors. A more detailed description of the government agencies included in each sector is provided in the attached *Technical Support Document, 2007 Clark County Government Greenhouse Gas Emissions Inventory (July 2008)*.

## **Building Sector**

Generally, GHG emissions attributed to the building sector can be determined by quantifying electricity and natural gas consumption. The electricity used by County buildings is supplied by Nevada Power Company, which obtains electricity from both inside and outside the state. Because it is impractical to determine the specific origin of electricity used by the County, the National Electric Reliability Council (NERC) averaged emission factors were used that represent the emissions associated with the *Western Electrical Coordinating Council/CNV Grid Electricity Set*. If electricity is provided to a County building directly from a renewable energy source, then emission factors associated with that source could be used for that particular building.

For purposes of creating an action plan, it may be useful to identify the electricity and natural gas consumption associated with individual County buildings. If building-specific data can be collected, GHG emissions can be expressed in terms of energy use per unit area. At this time, the preliminary GHG emissions for the County-maintained buildings are estimated to be approximately 86,584 CO<sub>2</sub>e tonnes.

## **Streetlights Sector**

Electricity is used to operate County streetlights, traffic signals, illuminated pedestrian signs, parks and recreation lights, and other outdoor lighting. For purposes of creating an action plan it may be useful to quantify outdoor lighting by category (i.e., streetlights, traffic signals, etc.), and to identify the distribution of lighting used for each category (i.e., percentage of solid-state lighting (LED), percentage of incandescent, percentage of fluorescent, and percentage of halogen). At this time, GHG emissions from the streetlights sector are estimated to be approximately 49,962 CO<sub>2</sub>e tonnes.

## **Water and Sewage Sector**

A significant amount of GHG emissions are emitted in the process of supplying County water and treating sewage generated by government operations. The emissions are produced by generators and power plants that provide electricity to pump potable water and wastewater during the treatment processes. GHG emissions (primarily methane) are also produced during the treatment process.

Water use can be divided into a number of categories. For purposes of furthering water conservation efforts and achieving emission reductions associated with those efforts it would be useful to partition water use into categories that include: landscape use, building operation requirements, and other (e.g., fire department training).

For purposes of estimating GHG emissions from wastewater pumping and treatment, it is assumed that the factor used to establish return flow credits (i.e., 70%) approximates the volume of wastewater generated by government operations. At this time, GHG emissions from the water and sewage sector are estimated to be approximately 129,138 CO<sub>2</sub>e tonnes.

## Vehicle Fleet Sector

The Clark County vehicle fleet consists of 2,939 vehicles. Of that, a total of 332 vehicles are hybrid vehicles, representing approximately 11% of the entire vehicle fleet. Table 3 partitions the vehicles by vehicle type.

**Table 3: County Vehicle Fleet**

Vehicle Type	No. of Vehicles
Sedans	558
Vans/Minivans	188
Sport/Utilities	217
Class 1 – 2 Trucks	944
Class 3 – 6 Trucks	134
Class 7 – 8 Trucks	276
Off-Road Equipment	622
<b>Total:</b>	<b>2,939</b>

Table 4 describes the consumption and costs of fuels used by the County in 2007.

**Table 4: Fuel Consumption and Costs in 2007**

Fuel Type	Consumption (gallons)	No. of Vehicles	Consumption (gallons)/vehicle	Cost	Cost/gallon
Unleaded Gasoline	383,560	817	469	\$1,090,625	\$2.84
Biodiesel (B5)	1,498,125	1,202	1,246	\$3,967,492	\$2.65
Reformulated Gasoline (RFG)	139,974	185	757	\$328,927	\$2.35
Compressed Natural Gas (CNG)	47,268	232	204	\$72,526	\$1.53

Fuel consumption by vehicle type has not yet been acquired; therefore, several assumptions were made about fuel distribution. Based on these assumptions, the preliminary GHG emissions for the County vehicle fleet are estimated to be approximately 111,780 CO<sub>2</sub>e tonnes.

## Waste Sector

Solid waste generated by government internal operations can be categorized into office employee waste and non-office employee waste. All solid waste generated by the County was transported to the Apex landfill in 2007. The waste eventually decomposes in the landfill and emits GHGs, primarily in the form of methane gas.

Solid waste can be divided into the following five categories: paper products, food waste, plant debris, wood/furniture/textiles, and all other waste. Specific emission factors are associated with each category so that the quantity of GHG emissions are dependent on distribution. Table 5 shows the preliminary distribution estimates for office and non-office employee waste. At this time, GHG emissions from the waste sector are estimated to be approximately 10,869 CO<sub>2</sub>e tonnes.

**Table 5: Solid Waste Distributions for Office and Non-office employees**

<b>Waste Type</b>	<b>Office Employees</b>	<b>Non-office Employees</b>
Paper Products	82%	38%
Food Waste	2%	13%
Plant Debris	0%	10%
Wood/Furniture/Textiles	3%	4%
Other (non-organic)	13%	35%

### **Employee Commute Sector**

The BCC does not have direct control over the GHG emissions created as a result of employee commutes. However, these emissions are an indirect result of County government operations and can be reduced through incentive programs such as Club Ride. At this time, insufficient data has been collected to create a sufficiently accurate inventory. However, a preliminary estimate of GHG emissions has been made based on the number of employees, and general assumptions involving: employee average work days per year, employee vehicle types, fuel types (gasoline/diesel), and average fuel economy by vehicle type. Based on these assumptions, the preliminary GHG emissions for employee commutes are estimated to be approximately 29,345 CO<sub>2</sub>e tonnes.

### **Other Sector**

All other identifiable GHG emissions that do not fit into the descriptive sectors, and are not de minimis, fall within this sector.



## **Concurrent Efforts to Address Climate Change**

Substantial efforts to address climate change are taking place at various levels of government. Numerous regulatory and non-regulatory measures are being proposed, adopted, or implemented at the local, state, regional, federal, and/or international level. The direction of climate protection regulation occurring at governmental levels is malleable and subject to change.

### ***Local Efforts to Address Climate Change***

Both the City of Las Vegas and the City of Henderson have signed the U.S. Mayors Climate Protection Agreement in support of government action to reduce GHG emissions. The City of Las Vegas has been conducting GHG emissions inventories and their Planning & Development Department has identified five action items that will help the city reduce GHG emissions: decreasing paper consumption, increasing electricity conservation, increasing recycling efforts, increasing vehicle fuel efficiency, and increasing participation in Club Ride.

There are ongoing discussions to address climate change taking place within the SNRPC. These discussions include efforts to encourage the uniform use of baseline years and emissions estimate methodologies among County municipalities.

### ***State of Nevada Efforts to Address Climate Change***

In April, 2007, Governor Gibbons formed the Nevada Climate Change Advisory Committee (NCCAC). The committee consisted of 12 voting members, appointed by the Governor, that met on a monthly basis. By executive order, the members were tasked with proposing “. . . recommendations by which greenhouse gas emissions can be further reduced in Nevada, including the use of renewable energy resources.” A final report containing 28 recommendations was submitted to the Governor on July 29, 2008. After receiving the report, the Governor stated that he was “. . . determined to reduce the amount [of] greenhouse gas emissions we generate here in Nevada . . . .”

During the 2007 legislative session, state legislators adopted Senate Bill 422 requiring the State Environmental Commission to mandate reporting of GHG emissions emitted by each “Affected Unit” in Nevada for inclusion in a registry of GHG emissions. The Bill also required the State Department of Conservation and Natural Resources to issue a statewide GHG emissions inventory by December 31, 2008 and update the GHG emissions inventory at least every four years thereafter. Further requirements may be promulgated in the 2009 legislative session depending on the report and recommendations issued by the NCCAC, as well as climate protection measures adopted by western states or the federal government.

### ***Regional Western States Efforts to Address Climate Change***

The Western Climate Initiative (WCI) is a regional collaboration of the United States, Canada, and Mexico, which includes states, tribes, and provinces. The purpose of WCI

is to develop regional strategies to address climate change. In addition to the seven U.S. western states having a partner status, the WCI also recognizes an observer status that places no obligations on a state. Nevada is currently one of six U.S. western states having an observer status.

On August, 22, 2007, the WCI set a goal of regional aggregate GHG emissions reductions of 15% below year 2005 levels by the year 2020. A draft design of the regional cap-and-trade program was issued on July 23, 2008. According to the draft program, all entities and facilities subject to mandatory reporting will begin reporting 2010 GHG emissions in early 2011. The proposed start date for the cap-and-trade program would be January 1, 2012.

Even though the WCI encourages state participation, the existing state partners take into consideration whether a proposed new entrant has: adopted an economy-wide GHG reduction goal that reflects a level of effort consistent with those of the existing partners (see Table 6, *infra*), developed (or is in the process of developing) a comprehensive multi-sector climate action plan to achieve the GHG reduction goal, committed to adopting GHG tailpipe standards for passenger vehicles, and been admitted as a member state in the TCR.

**Table 6: Established GHG Emissions Reduction Targets of WCI Participants**

	<b>Short Term (2010-12)</b>	<b>Medium Term (2020)</b>	<b>Long Term (2040-50)</b>
<b>Arizona</b>	not established	2000 levels by 2020	50% below 2000 by 2040
<b>British Columbia</b>	not established	33% below 2007 by 2020	not established
<b>California</b>	2000 levels by 2010	1990 levels by 2020	80% below 1990 by 2050
<b>Manitoba</b>	6% below 1990	6% below 1990	not established
<b>New Mexico</b>	2000 levels by 2012	10% below 2000 by 2020	75% below 2000 by 2050
<b>Oregon</b>	arrest emissions growth	10% below 1990 by 2020	>75% below 1990 by 2050
<b>Utah</b>	- Will set goals by June 2008 -		
<b>Washington</b>	not established	1990 levels by 2020	50% below 1990 by 2050

### ***Federal Efforts to Address Climate Change***

In April 2007, the U.S. Supreme Court's *Massachusetts v. EPA* decision obligated the EPA to issue mobile emissions standards if the EPA Administrator determined that GHG emissions ". . . cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." In response to the Court's decision, the EPA issued an Advanced Notice of Proposed Rulemaking (ANPR) on July 30, 2008. In the ANPR the EPA Administrator stated that it was his belief that the Clean Air Act ". . . is ill-suited for the task of regulating global greenhouse gases." The comment period for the ANPR ends on November 28, 2008.

There have been a number of bills proposed to address comprehensive federal climate change legislation. The bill that has received the most attention is the America's *Climate*

*Security Act*, also known as the Lieberman-Warner bill. In December, 2007, the bill passed through the Senate's Committee on Environment and Public Works, and was brought before the full Senate in June 2008. The bill failed to garner enough support to overcome a filibuster. However, it is likely that future attempts will be supported by the next President since both presidential candidates have recognized the need for some type of comprehensive federal climate change legislation.

In December, 2007, the *Omnibus Appropriations Bill for FY 2008* was signed by the President. The legislation included provisions that required the adoption of an EPA GHG rule. The rule will mandate reporting of GHG emissions above appropriate thresholds in all sectors of the economy. EPA has flexibility in establishing the threshold and frequency for reporting. A draft of the rule is required no later than September 2008, and the final rule no later than June 2009.

The challenges presented by climate change and energy security often have common solutions. In December 2007, the Energy Independence and Security Act was signed by the President. Among the measures that simultaneously addressed climate change were the increases in CAFÉ standards; improved standards for federal and commercial buildings; and improved standards for appliances and lighting.

In April 2008, President Bush announced a goal of ending the growth of GHG emissions in the United States by the year 2025. The announcement took place prior to an international conference on climate change. In comparison, the Lieberman-Warner bill proposed to decrease GHG emissions by the year 2025 as much as 32 percent from 2005 levels.

Other proposed federal efforts to address climate change (and energy security) include Senator Reid's continued efforts to both advance tax incentives for renewable energy development and increase capacity of power transmission lines by setting forth provisions for financing their construction.

### ***International Efforts to Address Climate Change***

In 1997, the Kyoto protocol was adopted at the 3<sup>rd</sup> Conference of the Parties (COP). Currently 178 countries are parties to the protocol. Although the United States is a party to the United Nations Framework Convention on Climate Change (UNFCCC), and is therefore obligated to submit annual GHG inventories and periodic climate action reports, the United States is not a party to the UNFCCC's Kyoto protocol.

The Kyoto protocol will expire in 2012. In December 2007, over 180 nations met for 12 days in Bali, Indonesia at the 13<sup>th</sup> COP to create an agenda and a timeline for developing a post-Kyoto treaty. The United States participated in the discussions and development of the timeline. In December 2009, over 180 nations will meet again at the 15<sup>th</sup> COP with the intended goal of formalizing an agreement to a post-Kyoto treaty.

## **Outreach Plan**

An essential component to the successful implementation of any regional initiative is the participation of stakeholders in an organized, comprehensive and collaborative approach. Well coordinated internal efforts are best represented through the earnest dedication of allocated resources and staff to become better aligned with evidence-based best practices.

In a sustainable state, official partnerships with local and federal government, the public sector, the private sector, school district and the like are necessary to accomplish the aforementioned measures and ultimately support progressive sustainable solutions.

### ***Outreach to Local Government Entities***

A number of governmental entities have their own ongoing efforts, sustainable measures and public outreach. However, heightened coordination amongst these entities has the potential to support greater progress from a regional perspective.

The Southern Nevada Regional Planning Coalition (SNRPC) board has created a Sustainability Working Group comprised of members from Clark County, the cities of Las Vegas, Henderson, North Las Vegas and Boulder City as well as the Clark County School District. The group is already in the process of coordinating with other local municipalities to create countywide sustainability outreach efforts.

### **Partnership Opportunities**

- *SNRPC*  
Utilize the SNRPC board as a conduit for outreach to local government throughout Clark County. Connecting with SNRPC will create a more far-reaching and contiguous network of communication and public education.
- *Clark County School District*  
A separate education program targeting youth should be discussed with the school district regarding conservation and sustainability efforts.

### ***Outreach to State and Federal Agencies***

The Governor's office currently has a Renewable Energy and Energy Conservation Task Force that works at the state level to advise the Nevada State Office of Energy. This task force aids in the development and periodic review of the comprehensive state energy plan as it relates to the use of renewable energy and measures that conserve or reduce the demand for energy.

The task force also coordinates activities and programs with the Nevada State Office of Energy, the Attorney General's Bureau of Consumer Protection, the Public Utilities Commission of Nevada and other federal, state and local offices and agencies involved in sustainable energy use.

Additionally, the task force mandates the inclusion of public education and outreach, the creation of program incentives, the distribution of grants, and the development of studies related to sustainable energy use.

### **Partnership Opportunities**

- *Nevada State Office of Energy*  
The County should coordinate with the Nevada State Office of Energy to aid them in their missions of energy conservation.

### ***Outreach to Private Sector***

The County has made a concerted effort to work with local businesses to encourage “green building” initiatives.

### **Partnership Opportunities**

- *Large Businesses*  
Large businesses that participate in conservation programs have the potential for greater net energy savings. They serve a dual use for outreach because the County can help them to develop conservation incentive programs with their employees that will result in a better conservation effort.
- *Utility Providers*  
Outreach to utility providers like Nevada Power, Southwest Gas, Republic Services and Las Vegas Valley Water District provides a wealth of opportunity. Many of these companies already have their own conservation outreach programs that will likely prove to be beneficial.
- *Local Chambers of Commerce*  
Local Chambers of Commerce and utility companies have established partnerships to develop incentive programs that will encourage conservation.

### ***Outreach to the Public Sector***

While the sustainability initiative addresses outreach to local government and businesses to increase awareness, it is imperative that we include the public in the equation. There are a number of outlets to be explored that will result in building awareness with residents including dedicating County resources such as CCTV4 and accessclarkcounty.com to better expand the flow of information about the County’s goals and accomplishments as avenues to solicit ideas as we all work toward reducing our carbon footprint.

### **Partnership Opportunity**

- *EcoMedia*  
EcoMedia is an environmental media company that brings together government and corporate partners to highlight environmental causes. Through its program “EcoZone,” EcoMedia finds a corporate sponsor willing to finance environmental

messaging. That sponsor then funds the public education program, at no expense to the County. Half of all EcoZone dollars generated from corporate sponsorships are given to the County to fund community environmental programs of our choosing. The program not only provides free messaging, but also includes production of commercials and signage.

### ***County Office of Sustainability***

A well-coordinated effort is required to successfully implement plans regarding outreach and fostering partnerships. Due to the County's ongoing need to interface with a variety of entities from local government, state, business and the public, it is necessary to create a position that will serve as the focal point for sustainable issues. It is recommended that an *Office of Sustainability* be created to handle the following functions:

- *Serve as a Liaison Between the County and Other Entities*  
The office would serve as the County's liaison between businesses, governments and the public on sustainability issues and would work with SNRPC, the Nevada State Office of Energy, EcoMedia, Conservation District of Nevada and other entities to refine the County's outreach strategy, and oversee the strategic marketing plan developed for businesses and residents. The office would also establish an ongoing relationship with the Office of Public Communication to coordinate messaging and identify effective media outlets.
- *Cultivate Funding Resources*  
The County should work toward fostering relationships with already established and potential funding sources. The County should conduct an exhaustive search of funding opportunities on a continual basis.
- *Create a Strategic Marketing Plan*  
Consulting services may be needed to develop a well defined strategic marketing plan that will create a blueprint for education and marketing of GHG mitigation programs targeting the business and government sector.
- *Develop a Dedicated External Website on Sustainability Efforts*  
Development of a website that is dedicated to providing resources for businesses and consumers who would support the County's sustainability efforts. A public conservation idea blog could serve as a mechanism to garner public input. This would create a network within the County that promotes positive, proactive measures in place. A good example of this would be King County, WA. The site can be viewed at [www.metrokc.gov/dnrp/swd/greenbuilding](http://www.metrokc.gov/dnrp/swd/greenbuilding).
- *Promote Ongoing County Conservation Efforts*  
Utilize the Office of Public Communications to get free or "earned" media on conservation and sustainable measures featured on CCTV4.

## Recommendations

### ***Air Quality***

- *Telecommuting*  
Disparity among departments regarding the applicability of telecommuting, suggests the need for an in-depth study of time management to determine the feasibility of a broad-based policy that establishes countywide protocols.
- *Warm Mix Asphalt Paving*  
A test project could be planned to gain experience with proper application of the product and to test the long-term quality. Different additives must be reviewed and tested to provide complete information.
- *GHGs Produced by Facility Operations, Electrical Consumption and Vehicular Activity as a Result of Traditional Work Schedules*  
Building energy management systems may require reprogramming to fully exploit savings during a planned day of minimized activity. Additional investigation is needed to determine the costs associated with this idea.  
  
Full implementation requires the consideration of mandatory four-day work week for many County business units. Obstacles to four-day work weeks must be assessed.

### ***Water***

- *Expanded Use of Gray Water and Reclaimed Water for Irrigation*  
Await the findings of the Southern Nevada Regional Water Reuse Study to ensure that this initiative is correctly aligned with its recommendations.

### ***Land Use/Habitat Protection***

- *Promote Sustainability through Incentives and Code Requirements*  
Seek additional opportunities in County Code for development to occur along transit corridors to provide a reduction of automobile traffic.  
  
Promote live-work opportunities through form-based codes.

### ***Waste Reduction/Recycling/Green Products***

- *Document Production Solutions – Digital Document – Distribute/Print*  
Studies should be conducted in individual departments to seek ways that paper can be placed into a document production format. Exploration of shared locations that can store information that several persons can gain access to. This prevents duplication of individual copies, resulting in waste reduction.
- *Default Duplex Printing*  
Actions to study, identify and prioritize the largest consumers of paper products should occur. Duplex training and formatting printers to default duplex would reduce

paper consumption. A monitoring program should be implemented to confirm the actual reduction. Incentives for departments that lower paper consumption by a specified percent could be devised to promote cooperation.

- *Purchasing Guidelines*

Perform an in depth review of existing policy to determine if it contains provisions for these programs, and to what extent.

Set a level of fiscal commitment to determine if newer eco-friendly alternatives are in line with current funding availability.

Explicitly refer to resource efficient preferences in conformance with adopted sustainability initiatives. Provide exemption from the lowest responsive and responsible bidder requirements in order to encourage bidders to submit leading edge conservation-based proposals.

Review the total cost of projects by including the long-term cost benefits achieved from sustainable products and procedures. This will require looking at projects in terms of life-time costs that may offset initial costs. These cost savings could accrue from reduced power consumption or lower GHG emissions.

Explain decisions to incorporate sustainability in a meaningful way.

- *Purchasing of Recycled Content Products*

Examine the NRS to support the provision of allowing the purchase of recycled content products. If merit is found, a Bill Draft Request should be submitted for inclusion in the State's bi-annual House Cleaning Bill during the legislative session.

Some sustainability projects may never be "cost effective" even when life cycle costs are considered, yet they may be in the community's best interest. A process that includes elected officials would be needed to justify such projects.

Select and/or recruit a workgroup to consider the items listed above and to devise a process by which appropriate information is gathered for projects that promote sustainability.

## ***Transportation***

- *Use of Rubberized Asphalt Concrete*

Dedicate resources and staff to research the potential use of this material. Further development of codes and unique specifications may be necessary.

- *Use of Recycled Asphalt Concrete*

What is unknown is how to obtain the quality of asphalt concrete needed to meet design specifications. An RTC workgroup is convening to resolve these issues.

The current specification allows for the use of 15% recycled asphalt concrete, however, it may be advantageous for the County to increase that percentage. CCPW supports the use of a higher percentage than currently allowed. An industry workgroup is actively working to address this issue.



- *Use of Full Depth Recycled Pavements*  
Formalize a partnership with the Regional Transportation Commission of Southern Nevada to allow for use of this product on RTC funded projects.
- *Longer Life Pavements for Developer Projects*  
Consideration for changes in the Regional Transportation Commission specification revisions should be pursued. As it stands, standard specifications represent an agreed upon set of construction guidelines that identify acceptable material types, methods of construction, inclusion and width of sidewalks, type of curb and gutter, and all other remaining factors that would have to be determined during the design phase of a roadway construction project. Standard specifications enable jurisdictions to move forward on construction projects without having to spend time working out the details related to the factors referenced above. Its purpose is to save time and ensure that there is consistency across all roadways in Clark County.
- *Permanent Road Maintenance Plan*  
Secure funding is needed to implement the plan. The number of roads requiring maintenance, cost, and strategy has been determined but due to fiscal constraints, no action has been taken.

### ***Green Building***

A full discussion of the challenges to green building is heavily dependent upon an in depth review of building, plumbing and electrical codes. A project of this magnitude warrants the use of consultants to complete a comprehensive review of codes for green building initiatives.

### ***Energy Use***

- *Power Reduction in the Clark County Data Center*  
Exploring incentives regarding power savings for the Data Center should occur. If incentives are not adequate, possible performance contracts should be considered as well as hiring a consultant to determine additional actions.
- *Power Reduction from Information Technologies Equipment*  
Purchasing guidelines related to commodity purchases would require revision to permit acquisition of energy and low toxicity equipment. Additionally, the Technology Replacement Plan warrants review and updating.
- *Land Fill Gas Programs*  
Research is required to determine feasibility and implementation.  
  
Ongoing monitoring would be beneficial for an endeavor of this magnitude.
- *Installation of Solar Panels on all Covered Parking*  
A comprehensive cost benefit analysis is necessary to fully assess long-term impacts.

## **Outreach Plan**

- *Outreach to Local Government Entities*  
Continue to engage partnerships with SNRPC and CCSD to support conservation and sustainability efforts.
- *Outreach to State and Federal Agencies*  
The County should coordinate with the Nevada State Office of Energy to aid them in their missions of energy conservation.
- *Outreach to Private Sector*  
To encourage “green building” initiatives, the County will continue collaborations with large businesses, utility providers, and local chambers of commerce.
- *Outreach to the Public Sector*  
Dedicating County resources such as CCTV4 and [accessclarkcounty.com](http://accessclarkcounty.com) to better expand the flow of information about the County’s goals and accomplishments as avenues to solicit ideas as we as we all work toward reducing our carbon footprint. Partnerships with companies such as EcoMedia will further support those initiatives.  
  
Pursue partnership opportunities with the UNLV Center for Sustainability to conduct jointly sponsored seminars and public events as well as exploring the possibility of internships.
- *Clark County Monitoring Program ([www.monitoringprogram.com](http://www.monitoringprogram.com))*  
This program was established in 2005 to provide a foundation for ongoing policy discussions and a baseline from which economic, fiscal, or social changes could be used over time. It provides an excellent source of reference in terms of measuring progress and results. Additionally, the site can be utilized as an important outreach tool.
- *Office of Sustainability*  
Due to the County’s ongoing need to interface with a variety of entities from local government, state, business and the public, it is necessary to create a position that will serve as the focal point for sustainable issues. This position would be responsible for serving as a liaison to other entities, cultivating funding resources, creating a strategic marketing plan, developing an external website, and promoting ongoing County conservation efforts.