

Governor Jim Gibbons’ NEVADA CLIMATE CHANGE Advisory Committee Final Report



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ACRONYMS USED

ACEEE	American Council for an Energy Efficient Economy
ATE	Advanced Travel Center Electrification
BC	Black Carbon
BDR	Bill Draft Request
CAFE	Corporate Average Fuel Economy
CALTRANS	California Department of Transportation
CANAMEX	Canada to Mexico Corridor
CCS	Center for Climate Strategies
CMAQ	Congestion Mitigation and Air Quality
CNG	Compressed Natural Gas
CO2	Carbon Dioxide
DAQEM	Dept. of Air Quality and Environmental Management (Clark County)
DOE	Department of Energy
DSM	Demand Side Management
EEC	Ely Energy Center
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
EPACT 2005	Energy Policy Act of 2005
FFV	Flexible Fuel Vehicles
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
HVAC	Heating, Ventilating and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Plans
KWH	Kilowatt Hour
LCB	Legislative Council Bureau
LED	Light-emitting Diode
LEED	Leadership in Energy and Environmental Design
MMT	Million Metric Tons
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MWH	Megawatt Hour
NAC	Nevada Administrative Code
NCCAC	Nevada Climate Change Advisory Committee
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NRS	Nevada Revised Statutes
PEC	Portfolio Energy Credit
PUCN	Public Utilities Commission of Nevada
RPS	Renewable Portfolio Standard
RTC	Regional Transportation Commission
TPAD	Temperature-Phased Anaerobic Digestion
VOC	Volatile Organic Compound
WCI	Western Climate Initiative
WESTCARB	West Coast Regional Carbon Sequestration Partnership
WRAP	Western Regional Air Partnership

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EXECUTIVE SUMMARY

On April 10, 2007, Governor Jim Gibbons signed an executive order that created the Nevada Climate Change Advisory Committee (NCCAC). The executive order directed the Committee to propose recommendations by which Greenhouse Gas (GHG) emissions can be further reduced in Nevada.

Climate change refers to any significant change in measures of climate, such as temperature, precipitation or wind, lasting for decades or longer. The term is also widely used to describe the impact on the environment from the emissions of GHGs and is often synonymously used with the term “global warming.” Six gases that are commonly accepted as GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

The Governor, with the assistance of the Nevada State Energy Office, assembled the NCCAC from a diverse group of public agency personnel, private industry representatives, interest groups, and the public at large. At the first NCCAC meeting, the Governor asked the Committee to review policies and impacts related to climate change in Nevada. He emphasized the need for actionable, Nevada-centered solutions. The committee agreed to create a three-part report delineating the potential impacts, highlighting accomplishments, and offering recommendations to address climate change in Nevada. Through the public meetings, the Committee invited several experts to provide presentations on energy transmission, wind energy, water resource issues, and geologic carbon sequestration.

Impacts of Climate Change

In formulating the Impacts section of the report, all Committee members were asked to research information pertaining to climate change issues specific to Nevada or the southwest US. The goal for the Committee was to provide a general overview of potential impacts from a change in the climate. Data was provided that indicated forecasted climate changes would have an undesirable impact on public health in the Silver State. High temperatures could result in direct public health concerns with heat sickness, increased troposphere ozone pollution, and increased dust and particulate matter concentrations. Some of the other issues addressed included: significant impacts to water resources for Nevada with increased drought conditions in the southern part of the state and less snowfall although more precipitation in the Sierra increasing the likelihood of area flooding and less summertime reserves; Decreasing water reserves could lead to more forest and wild land fires with potential greater intensity and devastating consequences; and the disappearance of some native species of fauna and increased invasive weed species. Agriculture practices and recreation opportunities in Nevada could also be negatively impacted.

Nevada's Accomplishments

The Accomplishments section was quickly and unanimously identified as a critical section to the report. Nevada is a leader in many energy initiatives. In 1997 Nevada was one of the first states to adopt a Renewable Portfolio Standard (RPS), which is now among the most progressive in the US. In the past year, two of the world's largest solar projects began operations in Nevada, the 64MW Nevada Solar One, and the 14MW Solar Star facility at Nellis Air Force Base, resulting in Nevada becoming the largest solar energy producer per capita in the United States. Nevada is the largest geothermal power producer per capita in the nation. Several significant wind farm projects are now in the planning

phase and beginning the permitting process for construction. The Committee developed a matrix to be included in the report. The matrix indicates a variety of actions and initiatives that are either completed or underway by the cities, counties and State of Nevada. The matrix also shows a significant number of green measures that are currently being implemented in the State.

Recommendations

After a period time of developing and collecting recommendations, the Committee agreed to a three-tiered rating system for ranking the recommendations. A recommendation was given a “1” if there was consensus that it should move forward to the main body of final report and ultimately be considered by the Governor. A recommendation rating of “2” was given for those that were considered by the Committee but for which there was no unanimity to move the recommendation to the main body of the report. The Committee agreed that these recommendations would be listed in the appendix of the report to indicate the Committee considered them. And lastly, a recommendation was rated as a “3” if it was considered by the committee and a consensus was reached to not include it in the main report. These recommendations were to be included in an appendix to indicate to the reader of the report they were also considered. The majority of recommendations that received a rating of “3” were duplicative of other recommendations. Other reasons for a 3-rating were that it was determined the policy or action was already being implemented or underway in the State, the recommendation was simply infeasible or inappropriate for the State, additional information or research was needed on the recommendation to move forward, or lastly, the recommendation was retracted by the originator. The committee felt it was important the final document include all 47 recommendations regardless of the rating, as this would demonstrate the breadth of recommendations the committee considered.

Recommendations were also grouped into categories or economic sectors as identified in the *Nevada Greenhouse Gas Inventory and Reference Case Projections, 1990-2020*, prepared by the Center for Climate Strategies. Three subcommittees were formed and assigned the task of further developing the recommendations by sector type. The subcommittees were: Electricity Production and Use, Transportation, and Waste/Agriculture/Other. Public meetings were held by each sub-committee. All final recommendations from the subcommittees were presented to the full committee for review and acceptance. The final recommendations generally consist of; 1) a “Finding” section to outline the concept; 2) a “Background” section to provide supporting evidence(s); 3) a “Recommendation(s)” section to propose actions; and 4) an “Impacts” section to address cost, funding source, staffing, and regulation or law modification related to the actions. These recommendations have considered that complete cost-to-benefit analyses are not available at this time.

The Committee deliberated and approved 28 recommendations from the subcommittees. The following is a list of recommendations the Committee agreed to move to the final report:

Electricity Consumption:

- Energy Transmission Corridors
- Energy Efficient Appliance/Equipment Standards for Public Facilities
- Renewable Portfolio Standard Modification Proposal
- Continued Support for Biomass Conversion to Electricity and Fuel
- Greenhouse Gas Reduction (Intensity)
- Greenhouse Gas Reduction (Support Federal Efforts)
- Utility Environmental Protection Act Siting Restrictions

Residential/Commercial/Industrial:

- Demand Side Management
- Create New Efficient Building Standards
- Continued Support for Brownfield Development
- Water Impacts
- Energy Efficient Building Codes

Transportation:

- Advanced Travel Center Electrification
- Clean-Fueled Bus Program
- Clean Fuels and Clean Vehicle Incentive Program
- Monitor the Status of California Motor Vehicle Emissions
- Reduce GHG Emissions from Motor Vehicles (DEP/DMV)
- State Fleets Alternative Fuel Cars
- Environmental Study for High Speed Train between Las Vegas and Anaheim
- Incentives for Ethanol-Blended Fuels
- Incentives for Bio-Diesel Fuels

Waste/Agriculture/Other:

- Sequestration Initiative
- Recycling Market Development Board
- Continued Support of Solid Waste Recycling Efforts
- Dairy Waste to Energy
- Education and Outreach
- Streamline Governmental Permitting and Review Process at State and Federal Levels
- Develop a State Climate Action Plan

The Committee agreed to identify six priority recommendations. These recommendations were chosen based on importance and actionability in the near term with current or minimal additional resources. The following recommendations were selected:

- Develop a State Climate Action Plan
- Utility Environmental Protection Act Siting Restrictions
- Greenhouse Gas Reduction (Intensity)
- Energy Transmission Corridors
- Renewable Portfolio Standard Modification Proposal
- Streamline Governmental Permitting and Review Process at State and Federal Levels

A full description of these recommendations is contained in the report.

Throughout the Committee's discussions of all the recommendations there was a recurring desire to see additional resources committed to the State Energy Office. Although many of the recommendations will be impacting various state agencies, it was overwhelmingly recognized that the majority of these actions will be centered in the Energy Office, and due to its current diminutive size, additional resources are critical to our success as a State to achieve GHG reductions.

This report will be delivered to Governor Jim Gibbons on July 29, 2008. The Report represents the work of the Nevada Climate Change Advisory Committee as a whole entity and does not reflect any individual member's personal views on this subject.

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INTRODUCTION

Nevada is fortunate to have an abundance of renewable energy resources. As Governor Gibbons said in his press release for the formation of the Climate Change Advisory Committee, *“Nevada can leverage these resources to reduce greenhouse gas emissions by investing in its renewable energy industries, thus promoting economic growth and energy security while maintaining and enhancing the environment for future generations of Nevadans.”* The goal of achieving reductions in greenhouse gas emissions and encouraging the development of renewable energy is of great importance for Nevada’s future.

The Nevada Climate Change Advisory Committee, created through Executive Order signed by Governor Jim Gibbons, was tasked to prepare a report with recommendations on how to reduce Nevada’s greenhouse gas emissions with emphasis placed on developing renewable energy resources within the state. At the outset, the Committee agreed not to debate the science of global climate change but to instead remain focused on solutions

The Committee and sub-committees held over 28 public meetings, invited numerous expert guest speakers, and visited the Nevada Solar One Facility. The Committee strictly adhered to all Nevada public-meeting laws and all meeting times, locations, and agendas were publicly noticed. The Committee’s report includes the following: a section on the potential impacts of a changing climate, a section highlighting accomplishments already underway to address renewables and energy conservation, and a series of recommendations for the reduction of greenhouse gases in Nevada.

As an important element of this work, the Committee discussed and reported some of the potential impacts to the State as a result of changes to the climate. In no way is this section to be considered comprehensive or authoritative, however it indicates possible outcomes if greenhouse gases continue to increase in the atmosphere unabated. Brief statements on public health, water, wildfire, air quality, and other areas are provided in the report.

Nevada has been a national leader in renewable energy and conservation actions and policies. Many cities and counties in the state have already moved forward with a variety of sustainability initiatives. The Committee felt these important accomplishments should be included in the report.

The Committee placed their greatest effort on the development of the recommendations in this report. The emissions inventory for greenhouse gases prepared by the Center for Climate Strategies was reviewed and the Committee agreed to group their recommendations by the sectors identified in the inventory. The six sectors are: Electricity Consumption, Residential/Commercial/Industrial, Transportation, Waste, Agriculture, and Other. The recommendations were thoroughly vetted by the Committee, although more thorough cost analysis and feasibility studies will have to be undertaken.

The Committee members are looking forward to Nevada’s continued leadership in renewable energy resources development and the reduction of greenhouse gases.

IMPACTS

In order to determine the possible impacts of Climate Change on Nevada, the committee gathered research from a wide variety of sources. The committee recognized that the issue of Climate Change is contentious and subject to debate. Nearly all of the research gathered by the committee agreed on some broad common themes. Scientists agree that impacts will become more widespread throughout the west as a result of climate change. This has the potential to impact Nevada.

The following is a summary of information gathered as it relates to general climate change as well as the topic areas of public health, water, wildfire, agriculture, and air quality. References to the basis for this summary can be found in Appendix B.

Public Health

The Western Governor's Association 2007 annual meeting was dedicated to the subject of climate change. The governors agreed that addressing climate change and its effects are critically important to their respective states, and regardless of how well we control future emissions of greenhouse gases, we can expect continued change in the environment for many years to come due to existing carbon levels in the atmosphere.

One panel discussion with the governors featured Christopher Field, Director of the Department of Global Ecology at the Carnegie Institution of Washington. Dr. Field indicated that coastal areas, agriculture, wildfires, water issues, and human health are the most significant areas of concern for the western U.S. The governors then asked Dr. Field to elaborate on the local effects of climate change on human health. Dr. Field explained that the predicted changes in the climate would impact public health through: 1) the direct effects of heat and frequent heat waves; 2) exacerbated air pollution as increased ground level ozone; 3) increases in infectious diseases, two mentioned were dengue fever and malaria; and 4) a decrease in general public health due to economic/social changes from climate change.

Dr. Julie L. Gerberding stated in testimony to the US Senate that climate change is likely to have a significant impact on health, through links with the following outcomes: direct effects of heat, health effects related to extreme weather events, air pollution-related health effects, allergic diseases, water- and food-borne infectious diseases, vector-borne and zoonotic diseases, food and water scarcity, at least for some populations, mental health problems, and long-term impacts of chronic diseases and other health effects¹. Dr. Gerberding's testimony details each of these health impacts as it relates to the anticipated climate change in the United States and in conclusion she calls for more focus and emphasis on public health preparedness to address these issues.

¹ Gerberding, M.D., M.P.H., Dr. Julie L., Director, Center for Disease Control and Prevention; Administrator, Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services. "Testimony to the United States Senate, Committee on Environment and Public Works." October 2007.

Water

The Colorado River basin is expected to see less precipitation overall, and a greater percentage will come as rain rather than snow. As the Las Vegas Valley receives over 90% of its drinking water from the Colorado River, this will present challenges to maintaining municipal water supply. Additionally, western Nevada receives most of its water from upstream storage in Sierra Nevada rivers, which also face the same challenges of decreased precipitation with a greater percentage of that precipitation coming from rain. Storage will become increasingly difficult.

In both the Rocky Mountains and the Sierra Nevada Mountains, the melting season will grow shorter, with earlier spring snowmelt leading to increased spring runoff and decreased summer stream flow. A higher percentage of this precipitation will fall as rain rather than snow. This will result in a greater likelihood of winter and spring flooding on the Truckee, Carson and Walker Rivers, along with fewer recreational opportunities in the summer months. Decreased stream flow in the summer will have an impact on the habitat of aquatic animals such as trout.

While the most recent studies show an increase to the clarity in Lake Tahoe, the Lake has had a documented decrease in clarity over the past 50 years. As the lake temperatures climb, more algae and plant growth in the lake will increasingly reduce that clarity. Additionally, with more precipitation falling as rain rather than snow erosion will increase.

Wildfire

A warming climate, especially in winter months, has impacted the growth patterns of forests. Trees are now able to grow at higher elevations than in the past. Additionally, very cold winters are much less common, which has allowed the bark beetle to survive and move to a one year life cycle. This has put more of the forest at risk of insect infestation, which makes these trees prime candidates for fire. The melting season in the mountains has grown and will continue to grow shorter, with earlier spring snowmelt. This leads to an earlier drying of the landscape, lengthening the fire season. Finally, the historic practice of forest fire suppression has left our forests overgrown, with massive amounts of fuel remaining on the forest floor, increasing the intensity of wildfires.

The western United States has seen an increase in both the length of the wildfire season and intensity of forest fires. The length of the season is strongly associated with spring and summer temperatures, with higher temperatures leading to increased chance of fire. Longer wildfire seasons have become more prevalent in Northern and Eastern Nevada in recent years. The Hawken, Angora and Waterfall fires threatened homes and communities, and fires like the one near Elko this past summer have devastated ecosystems for affected big game habitat. Most scientists predict that the wildfire season will continue to lengthen as temperatures continue to rise.

Air Quality

Climate change and air pollution are linked by the use of fossil fuels, including coal, petroleum, and natural gas. In the United States fossil fuel combustion accounts for 98% of anthropogenic emissions of carbon dioxide, the predominant greenhouse gas by volume. Although increasing levels of ambient carbon dioxide have no known direct adverse health effects at the expected atmospheric concentration levels, other byproducts of fossil fuel combustion have known impacts on respiratory health.

One such pollutant is ground-level ozone, which is formed from the reaction of nitrogen oxides and volatile organic compounds (VOC), as from power plant emissions and automobile exhaust, in the presence of light and heat. This reaction occurs more rapidly at higher temperatures, explaining, in part, why smog is more marked during the summer months. Global warming would be expected to worsen this form of air pollution. In addition VOC emissions from evaporative source (eg vented tanks of fuel) and from biogenic sources such as certain plants, increase with increasing temperatures. This may lead to increases in tropospheric ozone levels.

Ozone has been linked to decreased pulmonary function in healthy adults, an effect that depends on exposure concentration and duration. At low levels (0.3 ppm-0.5 ppm), ozone irritates mucous membranes of the eyes and throat and induces chest tightness. High-level exposure (5.0 ppm-10.0 ppm) for more than one hour can lead to pulmonary edema and death. Long-term exposure (4 or more years in areas with summer ozone levels of 80 ppb or more for at least 1 h daily) has been associated with adult-onset asthma in otherwise healthy, nonsmoking individuals.

Because the burning of fossil fuels is linked to both human-induced climate change and air pollution, there is a common solution: reducing the use of fossil fuels as an energy source. Clearly, this can be accomplished in part by using and developing technologies that increase energy efficiency and by jump-starting the transition from fossil fuels to renewable energy resources.

General

Agriculture

Nevada's agriculture depends upon irrigation to survive. Water available for irrigation will be diminished as a higher percentage of decreasing precipitation will fall as rain rather than snow and storage capacity will be limited. The growing season will likely be longer, but hotter in the summer months.

Recreation

The melting season in the mountains is expected to grow shorter, with earlier spring snowmelt leading to increased spring runoff and decreased summer stream flow. A higher percentage of this precipitation will fall as rain rather than snow. This could have an impact on fishing, with changing habitats for fish; rafting and kayaking, with increased spring river flows and decreased summer flows; and skiing with the prospect of a smaller snow pack and an earlier melting of that snow pack.

ACCOMPLISHMENTS

Nevada continues to experience unprecedented growth, yet must balance the preservation of its land, water and air resources. This report reflects significant accomplishments to that end, as put forward by Nevada's governmental entities and industry. As one of the first states to implement a Renewable Portfolio Standard (RPS), Nevada has already begun to reap environmental benefits in the form of increased renewable energy development, reduced pollution (including greenhouse gas reductions), energy cost savings and economic growth. As indicated in this report, green building construction, energy conservation, green transportation initiatives and alternative fuels have also made considerable contributions toward statewide reduction of greenhouse gases. While the accomplishment matrix that follows represents an overview of what the large jurisdictions in Nevada are doing to combat climate change, the items below represent the highlights.

Renewable Portfolio Standard

With large-scale geothermal development in Nevada dating back to the mid-1980's, and use of hydroelectric energy since the early part of the last century, Nevada's electric utilities have pioneered the use of renewable energy. In cooperation with the utilities, the State of Nevada was one of the first to adopt a Renewable Portfolio Standard (RPS) in 1997, which is now among the most aggressive in the U.S. Nevada's RPS has set the bar high in terms of its percent of renewable energy, timetable and solar quota. Power producers have responded by working with renewable energy companies to bring many new renewable projects into operation. As a result, Nevada now leads the Nation in both geothermal and solar power per capita.

In the past year, two of the world's largest solar projects began operation in southern Nevada, the 64 MW Nevada Solar One concentrating solar power plant, and the 14 MW Solar Star photovoltaic facility at Nellis AFB.

Geothermal energy, which utilizes the natural heat of the earth, is a renewable resource particularly abundant in Nevada. With three new geothermal plants completed in the past year, and a total of 26 projects under contract, our utility, Sierra Pacific Resources, is on the way to doubling the geothermal portion of its renewable energy portfolio by 2012 to a total of nearly 500 MW.

Existing Nevada Statutes

The State of Nevada has been proactive in adopting laws and regulations concerning air emissions, climate change and renewable energy. State policy makers have long recognized the need to preserve public health, Nevada's unique environment and encourage the utilization of our abundant renewable energy resources. Any recommended changes to policies in Nevada relating to these issues must be considered in the context of existing requirements. A listing of the applicable existing statutes in Nevada is contained in Appendix D.

Electricity Consumption

- The City of Reno City Council voted on March 6, 2008 to accept a bid for two solar energy systems, sized at 30 kW and 20 kW. One system will be installed at the City of Reno

Corporation Yard and the other at a local fire station.

- Assembly Bill 178, passed in the 2007 Nevada State legislative session, increased the net metering cap to 1 MW.
- Many local municipalities have begun to implement energy saving measures among both their internal operations (light sensors in public buildings) and external operations (LED stoplights and solar powered crosswalk signals).
- Nevada prohibits any governing body from adopting an ordinance or regulation that restricts property owners from using a system for obtaining solar or wind energy on their property.
- White Pine County School District with the help of Nevada Division Forestry has installed a bio-mass heating system for Davis E. Norman Elementary in the city of Ely. This is the primary heating for the school building. The fuel is from the by-products of forest thinning.

Residential/Commercial/Industrial

- Washoe County and the City of Reno updated their building codes to ensure consistency with sustainable building methods. The cities of Las Vegas, Henderson and Sparks committed to do the same.
- Many Nevada jurisdictions committed to conserving open space through the integration of open space into new development.
- Las Vegas committed to build all new public buildings to a LEED silver level standard.
- Many Nevada cities support transit-oriented development to provide residents with easy access to public transportation lines that would connect them with their workplace.
- Many Nevada jurisdictions adopted the 2006 International Energy Conservation Code created by the International Code Council to establish minimum requirements for energy efficiency.
- Nevada leads the country in the percentage of new homes built to ENERGY STAR standards. As of February 2008, approximately 75% of new residential construction is ENERGY STAR compliant.
- Nevada will prohibit the sale of light bulbs that produce less than 25 lumens per watt between January 1, 2012 and December 31, 2015.

Transportation

- Clark County School District has the largest biodiesel school bus fleet in the world. At the start of the 2002-03 school year, the district's 1,300 school buses began operating entirely on B20 (a blend of 20% biodiesel and 80% petroleum-based diesel).
- Since 1995, the State has required city, county and state fleets in Washoe and Clark Counties to purchase alternative fuel vehicles and to use alternative fuels. Currently, 90% of all new vehicle acquisitions must meet this requirement.
- In 2007, the City of Reno prepared a long-term plan for the use of alternative fuels within the city fleet. This plan includes goals to triple the number of hybrid and flex fuel vehicles, and gradually increase the percentage of bio-fuel added to diesel from 5% to 20%.
- The City of Reno committed to increasing the number of bike racks and showers available to city employees to encourage cycling to work.
- The Clark County Regional Transportation Commission (RTC) launched the Club Ride program in 1999 encouraging residents to use alternate transportation to and from work. Since the program's inception, participation has helped take more than 150,000 single occupancy vehicles off the roadways.

- The Clark County RTC operates more than 100 solar powered shelters.
- RTC buses in both Clark and Washoe County have at least two bike racks to encourage cycling as an alternate form of transportation. More than 55,000 bikes are transported every month.

Waste Management

- The City of Las Vegas and the City of Reno committed to increase the breadth of their internal recycling programs.
- Washoe County has been named the Best Local Government in the U.S. for waste reduction by the US EPA three years in a row - the maximum awards allowed.
- Pilot studies on single stream recycling are being conducted in Reno and Las Vegas. Preliminary results show significant increases in recycling using this approach.
- The recycling goal of 25% has been exceeded in Washoe County and Carson City.

Water

- Progress has been made to mitigate the impact of water-intense landscaping on our state's water supply. The City of Las Vegas replaced all turf in City Parks and public areas with synthetic turf resulting in a \$45,644 annual water savings. The City of Reno uses evapotranspiration for public landscaping and recently converted all public irrigation to a drip system.
- The City of Las Vegas, Clark County and the City of Reno made recirculated water available to local golf courses to reduce their reliance on potable water for maintenance of their turf.
- Southern Nevada Water Authority's "Cash for Grass" program, which started in 1999, reimburses residential and commercial customers \$1.50 per square foot of grass removed in favor of water efficient plants and shrubs. Over 100 million square feet of grass has been converted under the program; the equivalent of 1,700 football fields. Through the program, more than 18 billion gallons of water have been saved.

Other

- The City of Las Vegas released its Sustainability Plan in June 2007 in which they target a reduction of 150,336 pounds of carbon dioxide during the fiscal year 2007 – 2008. This includes;
 - o 123,458 lbs of CO2 from electricity conservation
 - o 11,646 lbs of CO2 from paper conversion and reduction
 - o 15,432 lbs of CO2 from vehicle conversion and a reduction in overall mileage
- The Mayors of Henderson, Las Vegas, Reno and Sparks (James Gibson, Oscar Goodman, Robert Cashell, Tony Armstrong respectively) signed the U.S. Conference of Mayor's Climate Protection Agreement which pledges to meet or beat the Kyoto Protocol targets in their own communities, urge their state and national governments to enact policies to meet or beat the Kyoto Protocol targets for the United States, and urges the U.S. Congress to pass greenhouse gas reduction legislation.
- The Department of Conservation and Natural Resources is required to issue a statewide inventory of greenhouse gas emissions released in the State starting December 31, 2008 and every four years thereafter.
- As a result of legislation passed in 2007, electric generating units greater than 5 megawatts, other than renewable energy units, are required to report their greenhouse gas emissions to a registry.

Accomplishment Matrix

	City of Henderson	City of Las Vegas	City of North Las Vegas	City of Reno	City of Sparks	Clark County	Washoe County	State of Nevada
I. Electricity Consumption								
Energy Conservation Measures	Item identified	Item complete	Item identified	Item complete	Item identified	Item complete	Item complete	Item complete
Renewable Energy Support	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
II. Residential/Commercial/Industrial								
Building Code Updates	Item identified	Item complete	Item complete	Item complete	Item identified	Item complete	Item complete	Item complete
Commitment to Sustainable Public Facilities	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Conservation Development (Conserving Open-Space)	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Green-Building Education	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Green-Building Support	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
IECC Adoption	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Support of Sustainable Neighborhoods/Transit-Oriented Development	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
III. Transportation								
Alternative-Fueled Vehicles for Public Use	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Encourage Alternate Transportation Use (public transportation, bicycling, carpooling)	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
IV. Waste Management								
Internal Recycling Program	Item complete	Item complete	Item complete	Item complete	Item identified	Item complete	Item complete	Item complete
V. Agriculture								
Encourage Drought-Tolerant Plants	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Flood Control	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Landscape Irrigation Controls	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
Water Conservation Measures	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete	Item complete
VI. Other								
Employee Education (Energy Conservation)	Item complete	Item complete	Item identified	Item complete	Item complete	Item complete	Item complete	Item complete
Environmentally Responsible Purchasing Policy	Item complete	Item complete	Item identified	Item complete	Item identified	Item complete	Item complete	Item complete
Formal Commitment to Sustainability	Item complete	Item complete	Item identified	Item complete	Item identified	Item complete	Item complete	Item complete
U.S. Conference of Mayors Climate Protection Agreement	Item complete	Item complete	Item complete	Item complete	Item complete	n/a	n/a	n/a

Key	
Item complete	Item identified
Item not identified or complete	

¹ Cities/Counties with a population exceeding 100,000

RECOMMENDATIONS

Recommendation Listing²

Electricity

- **Utility Environmental Protection Act Siting Restrictions (UEPA)**
- **Greenhouse Gas Reduction (Intensity)**
- **Energy Transmission Corridors**
- **Renewable Portfolio Standard Modification Proposal**
- Energy Efficient Appliance/Equipment Standards for Public Facilities
- Continued Support for Biomass Conversion to Electricity and Fuel
- Greenhouse Gas Reduction (Support Federal Efforts)

Residential/Commercial/Industrial

- Demand Side Management
- Create New Efficient Building Standards
- Continued Support for Brownfield Development
- Water Impacts
- Energy Efficient Building Codes

Transportation

- Advanced Travel Center Electrification
- Clean-Fueled Bus Program
- Clean Fuels and Clean Vehicle Incentive Program
- Monitor the Status of California Motor Vehicle Emission Standards for Greenhouse Gases
- Reduce GHG Emissions from Motor Vehicles (DEP/DMV)
- State Fleets Alternative Fuel Cars
- Incentives for Ethanol-Blended Fuels
- Incentives for Bio-Diesel Fuels
- High Speed Train between LA and Las Vegas

Waste Management

- Recycling Market Development Board
- Continued Support of Solid Waste Recycling Efforts

Agriculture

- Dairy Waste to Energy

Other

- **Develop a State Climate Action Plan**
- **Streamline Governmental Permitting and Review Process at State and Federal Levels**
- Sequestration Initiative
- Education and Outreach

² Bolded recommendations represent the Committee's six priority recommendations as described in the Executive Summary.

Electricity Consumption

The recommendations made in the Electricity Consumption and Residential/ Commercial/ Industrial categories were developed in accordance with the directive that Governor Gibbons gave in establishing the Committee. Four of the six priority recommendations chosen by the Committee fall under this group. The Committee recognizes that it is critical for any policy or program to be continually evaluated to avoid unintended negative consequences to the environment as well as the economy. Specifically, the recommendations were formulated with the following goals in mind:

- Nevada has emitted decreasing amounts of greenhouse gases per capita from 1990 to 2004. Nevada is blessed with an abundance of renewable energy resources and the state should encourage the development of renewable energy industries. The recommendations seek to spur development in renewable energy and reduce greenhouse gases without compromising the critical need for affordable and reliable energy.
- Nevada is also a leader in sophisticated and innovative demand side management programs. If the cost of saving the kilowatt hour is less than the cost of producing it, saving a kilowatt hour is necessarily the most effective way to conserve energy and to avoid emissions. The recommendations seek to increase the level of demand side management activity in the state and to make demand side management programs available to a wider array of Nevada's citizens, while recognizing that demand side measures must make economic sense.
- The Committee recognized that any particular recommendation may need to be further developed in light of new facts and new circumstances that will be brought to light as the recommendations are exposed to a wider audience. The Committee sought and welcomes constructive criticisms of the recommendations. Such a process will almost certainly lead to ideas that better serve the state. The Committee felt that the ideas presented in the recommendations offered innovative and beneficial starting points for an informed debate on how climate change issues could be addressed in Nevada. To this end, the highest priority recommendation for the Committee was the future development of a State Climate Action Plan to better flesh out these recommendations and to conduct a more complete policy and cost analysis.

UEPA New Generation Siting Restrictions

Finding:

Due to the fact that Nevada's neighboring states have passed or are proposing to pass laws that severely restrict emissions from power plants, creating future potential that independent power producers may plan to build plants in Nevada in order to export the majority of power produced out of the state. If that occurs, these plants will provide little or no benefit to the state while utilizing our valuable water and air resources and will significantly increase the amount of greenhouse gases produced in Nevada.

As future limitations on the amount of greenhouse gases power companies will be able to emit are inevitable, Nevada should be careful to ensure that these projects are needed and benefit the citizens of Nevada.

Background and Supporting Evidence:

NRS 704.890 outlines the findings that the Public Utilities Commission of Nevada must make in order to issue a Permit to Construct for a utility facility under the Utility Environmental Protection Act (UEPA).

The Commission must find and determine: 1) the nature of the probable effect on the environment; 2) the extent to which the facility is needed to ensure reliable utility service to customers in this State; 3) the need for the facility balances any adverse effect on the environment; 4) the facility represents the minimum adverse effect on the environment, considering the state of available technology and the nature and economics of the various alternatives; 5) That the location of the facility as proposed conforms to applicable state and local laws and regulations issued there under and the applicant has obtained, or is in the process of obtaining, all other permits, licenses and approvals required by federal, state and local statutes, regulations and ordinances; and 6) That the facility will serve the public interest.

In 2007, the Nevada Legislature excluded from the definition of a "utility facility" certain renewable energy systems which have a generating capacity of less than 35 megawatts³.

That said, the Dormant Commerce Clause, as outlined by the Supreme Court of the United States, states that any law that a state passes that discriminates against out of state parties is unconstitutional⁴. This law arises from the fact that Article 1 Section 8 of the Constitution which grants exclusive power over the regulation of interstate commerce to the federal government. A law that is facially discriminatory is presumed to be unconstitutional. In order to overcome this presumption, the state must show that the law is necessary to serve a compelling state objective.

³ NRS 704.860 "Utility facility" defined. "Utility facility" means:

Electric generating plants and their associated facilities, except: (a) Electric generating plants and their associated facilities that are or will be located entirely within the boundaries of a county whose population is 100,000 or more; or (b) Electric generating plants and their associated facilities which use or will use renewable energy, as defined in NRS 704.7811, as their primary source of energy to generate electricity and which have or will have a generating capacity of not more than 35 megawatts, including, without limitation, a net metering system, as defined in NRS 704.771.

⁴ City of Philadelphia v. New Jersey, 437 U.S. 617 (1978)

Kassel v. Consolidated Freightways Corp., 450 U.S. 662 (1981)

C&A Carbone, Inc v. Town of Clarkstown, N.Y, 511 U.S. 383 (1994).

Thus, part of the UEPA statute that is discriminatory against out of state interests would have to be necessary to further a compelling state objective.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada amend the UEPA statute, specifically 704.890(b) to require any utility facility built in Nevada pursuant to NRS 704.820 which emits greenhouse gases or consumes water resources be needed to ensure reliable utility service to customers in this State.

Also, NRS 704.860(a) should be amended to remove the language "that are or will be located entirely within the boundaries of a county whose population is 100,000 or more."

This law is necessary to further the compelling state objectives of reducing the greenhouse gases and other harmful pollutants emitted in the state, maintain the availability of crucial water supplies, keep vital transmission corridors available, and ensure reliable utility service to customers in this state. These changes should explicitly apply to UEPA applications received by the Public Utilities Commission of Nevada.

Impacts of Implementation:

Cost – Minimal

Funding Source – No new source needed.

Staffing – Existing Public Utilities of Nevada staff is adequate.

Existing Regulations or Laws to be Modified – NRS 704.820 through 704.900.

Greenhouse Gas Reduction (Intensity)

Finding:

In order to reduce the greenhouse gas emissions from Nevada, a target for the intensity of the total greenhouse gases (GHG)⁵ emitted per megawatt hour from all electricity producers in the State of Nevada should be established⁶. This should be a “producer based” system that will apply to almost all producers and could be achieved independently in Nevada.

Because of the disproportionately high rate of population and load growth projected for the state, coupled with the fact that Nevada began using renewables in the 1980s, Nevada’s greenhouse gas situation is unique. A traditional static “cap and fine” or “cap and trade” greenhouse gas reduction method is not necessary for Nevada. If such target measures were implemented, such as a cap and trade system, they may severely limit the economic growth potential for the State, resulting in significantly higher utility rates for Nevadans.

Background and Supporting Evidence:

Using an intensity approach will encourage the rapid development of new renewable resources and the replacement of older less efficient plants with newer plants with fewer environmental impacts.

This approach is similar to the one taken by California in AB 32, where a greenhouse gas limit was attached to individual generating plants. However, this proposal would use a Producer-wide basis for measuring emissions.

The target on greenhouse gas intensity will apply to large entities that generate electricity within the State of Nevada, including merchant generators as well as public utilities. This standard will not apply to most small rural providers of electricity in Nevada, as most do not own generating facilities⁷.

The intensity number will simply be reached by summing all greenhouse gas emissions and dividing them by kilowatt hours produced for each producer over its whole system on a yearly calendar basis.

This approach (unlike the California approach) will aid in the development of Nevada resources (such as geothermal, wind, and solar plants) that would meet the intensity target, as low emitting facilities offset emissions from facilities that cannot otherwise meet the intensity target individually.

Also, this approach does not discourage the development of particular types of generating technologies over others, and gives private industry the flexibility to meet the standard as is contextually appropriate, while encouraging the rapid and diverse development of energy resources in Nevada.

⁵ “Greenhouse Gas” is defined as any one of the six pollutants identified in the Kyoto treaty; carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

⁶ Producer is defined as a single unit or a group of generating units or facilities owned by a single entity or related entities located within the State of Nevada.

⁷ A notable exception is Wells Rural Electric Company, which owns and operates a small hydro facility that produces less than one megawatt of power. Wells receives the vast majority of its power from the Bonneville Power Administration.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada consider establishing a bureau within the Nevada Division of Environmental Protection that would be charged with establishing and monitoring a realistic annual target on the intensity of greenhouse gases emitted per megawatt hour from all electricity generators in a Producer's portfolio in the State of Nevada. "Intensity", for the purposes of this program is defined as follows: the sum total pounds of greenhouse gases emitted from all the electricity generators in a Producer's portfolio in the state divided by the sum of the megawatt hours produced by such portfolio.

A specific target of reduction percentage should be set as a target and a baseline year established for the intensity requirement.

A Producer with responsibility to serve retail electric load in the state will include, as part of its portfolio, in state generators that it does not own but with whom it has long term contractual agreements to purchase the electrical output.

Entities with responsibility to serve retail electric load that had no GHG emissions in the established baseline year, or Producers that had no GHG emissions in the established baseline year and obtained all required permits for generation facilities before the year 2020, should be required to reduce portfolio emission by the same target reduction percentage established by the Nevada Division of Environmental Protection by 2020, unless the Producer already meets the statewide average for GHG emissions. Producers that obtain all required permits for generation facilities after the year 2020 will be required to meet the average of the GHG intensity targets set for all other Producers to whom the intensity standard applies. This provision makes the GHG targets reachable by parties currently planning to build facilities in Nevada, while maintaining the responsibility to offset GHG emissions and encouraging the development of renewable resources.

Any future change in this target will be based on a Public Utilities Commission of Nevada study of impacts on rates, economic impacts to the state, and the feasibility and achievability of increased targets.

This goal can be achieved through a combination of adding new renewable energy sources, fuel switching to lower carbon fuels, and increasing the overall efficiency of the existing electrical generation and transmission system.

Producers will have the option of purchasing renewable energy generated in Nevada by third parties for purposes of meeting the intensity target. This energy, if agreed to by contract, would be removed from the calculation of the system average from the seller of the renewables, and added to the system average calculation of the buyer of the renewables. Producers of renewable energy will still be able to trade Portfolio Energy Credits per NRS 704.7803, independently of the intensity requirement.

Impacts of Implementation:

Cost – The particular costs for implementing such a intensity target system will be relative to each producer's circumstances, such as the age of existing equipment, the amount of renewable resources available to the producer, and the cost of alternative technologies. Based on existing circumstances the target on the intensity greenhouse emissions and an offset system will increase costs for electricity. There would also be costs for administering the system of registration and monitoring incurred by the Nevada Division of Environmental Protection.

Funding Source – The General Fund, fees and other revenue sources will fund the new bureau at the Nevada Division of Environmental Protection.

Staffing – This bureau will require an adequate number of new employees at the Nevada Division of Environmental Protection to administer the program.

Existing Regulations or Laws to be Modified – NRS Chapter 445B (“Air Pollution”) and NAC Chapter 445B (“Air Controls”) will likely be the appropriate legal framework to be modified to implement this proposal.

Energy Transmission Corridors

Finding:

Providing timely and constructive input into the West-Wide Energy Corridor Programmatic EIS being conducted by the Department of Energy and the Bureau of Land Management will help assure a needed and appropriately placed network of Rights-Of-Way for energy transmission. Enhancing access to renewable resources will benefit the state.

Background and Supporting Evidence:

In compliance with the 2005 Energy Policy Act signed by the President of the United States, the Department of Energy and the Bureau of Land Management are jointly conducting an Environmental Impact Analysis concerning the inclusion of additional Rights-Of-Way for energy transmission corridors throughout the western United States.

In the preferred alternative being considered approximately 6,000 miles of additional energy transmission corridors are identified. 1,630 miles are within the State of Nevada. The corridors under analysis would be 3,500 feet wide in order to accommodate multiple existing and future users.

Identification of future geothermal, wind, and solar power, and conventional generation facilities will help identify the location and routes for these transmission corridors.

The Governor initiated a study group to review and analyze requirements for better transmission access to renewable resources in Nevada. The report was published in December of 2007.

Recommendation:

The Governor's Climate Change Advisory Committee recommends that the State of Nevada assist federal land management agencies to develop and utilize a streamlined and environmentally sound analysis and decision process that address the need for expanded energy transmission corridors.

The State should also provide timely and constructive input to the Department of Energy and Bureau of Land Management concerning the West-Wide Energy Corridor Programmatic Environmental Impact Analysis.

The Nevada Climate Change Advisory Committee also accepts and supports the Governor's Nevada Renewable Energy Transmission Access Advisory Committee Report released by the Governor's Office on December 31, 2007 (Appendix D).

Impacts of Implementation:

Cost – None

Funding source – Not necessary

Staffing – None

Existing regulations and/or laws – None

Renewable Portfolio Standard Modification Proposal

Finding:

Nevada is proud to have one of the most aggressive Renewable Portfolio Standards (RPS) in the nation in terms of the amount of renewable energy required and the time frame allowed to meet that requirement. Nevada was also one of the first states to adopt an RPS standard. However, experience with implementing this standard has revealed practical problems. A study should be conducted to refine the RPS to ensure it will operate in a more comprehensive and pragmatic fashion.

Background and Supporting Evidence:

Currently the RPS standard does not apply to rural electric cooperatives, general improvement districts, utilities established pursuant to chapter 709 or 710 of Nevada Revised Statutes (NRS), cooperative associations, nonprofit corporations, or providers of electric service who provide service only to members. Applying some type of renewable portfolio standard, perhaps a lesser and more flexible standard, to these entities would significantly increase production and consumption of renewable energy in rural Nevada.

As renewable resources are not evenly distributed in the state, Sierra Pacific Power Company and Nevada Power have difficulties meeting the specific requirements of the RPS standard as separate entities. Allowing the two major public utilities to pool the sum and kind of renewables will enable development of resources in the optimal places and reduce transmission costs associated with renewables.

Demand Side Management (DSM) or Energy Efficiency Measures programs are often the most cost effective way of reducing carbon emissions and energy costs. Currently, 25% of the non solar RPS standard is allowed to be met using DSM programs. This percentage should be increased to reduce the cost of compliance with the RPS and to promote conservation measures within Nevada.

The acquiring and trading of Portfolio Energy Credits (PECs) by private individuals may create increased costs for ratepayers if public utilities have no alternative but to buy PECs at market rates. Creating a debit and credit system available only to those entities subject to the RPS standard allows ratepayers to avoid substantial costs. The debit and credit system allows entities subject to the RPS to borrow credits from other companies with the promise that the credits be repaid in kind at a later date.

PECs could still be traded freely in the open market by parties not subject to the RPS standard, or by entities subject to the RPS standard, should the pooling of PECs and the debit and credit system still leave an entity unable to comply with the RPS standard. PECs will also still be available for purchase from customers who generate the credits by participating in Net Metering pursuant to NRS 704.766. Entities subject to the RPS will have the option of using the debit and credit system or to buy PECs on the open market.

Increasing the RPS standard beyond the 20% required by 2015 to 25% by 2020 is also an option for reducing electricity consumption in the state. However, any increase in this standard should be based on a Public Utilities Commission of Nevada (PUCN) study of impacts on utility rates, economic impacts to the state, and the feasibility and achievability of such increases.

The high rate of growth in Nevada will require an ever increasing amount of renewable generation

be developed. As the state's load requirements increase due to population growth and economic expansion, the RPS will still require the 20% renewable ratio to apply to any new load after 2015. Thus, any increase in the RPS standard, in order to be practicable and achievable, would need to be evaluated thoroughly.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada consider amending Nevada's RPS statute to implement the following changes:

1) Cooperative associations, nonprofit corporations, or providers of electric service who provide service only to members should be required to maintain a percentage of electricity sold in the form of renewable energy.

2) Allow all entities subject to the RPS standard to pool the sum and kind of renewable energy produced in order to comply with the RPS and allow the Public Utilities Commission to establish a transfer pricing system that would equitably allocate the costs and benefits of the transfers between the utilities to help reduce costs for ratepayers.

3) The 25% limitation on PECs derived from Energy Efficiency Measures as defined in NRS 704.7802 used to meet the non solar component of the RPS standard should be increased to allow more use of Energy Efficiency Measures towards meeting the RPS standard.

4) Amend the Portfolio Energy Credit System to remove the monetary value of portfolio credits, but only between entities subject to the RPS standard. A debit and credit system between entities subject to the RPS standard should be established to reduce costs for ratepayers, while a collateral open and competitive market for PECs is maintained.

5) Also, an economic analysis should be conducted by the Public Utilities Commission to evaluate increasing the RPS standard beyond the 20% required by 2015 to a reasonably achievable number (considering expected load growth) based on impacts on rates, economic impacts to the state, system reliability, and the feasibility and achievability of such an increase.

Impacts of Implementation:

Cost – This program would increase some costs while reducing others: 1) It would promote renewables, although it would increase costs to the new entities to which a variation of the RPS standard would apply. 2) It would reduce costs for customers of Sierra Pacific Power and Nevada Power due new efficiencies. 3) It would decrease costs for consumers, as DSM programs are typically less expensive than developing new renewable resources. 4) It would decrease ratepayer costs by introducing a debit and credit system associated with PECs for entities subject to the RPS standard, while maintaining an open and competitive market for the trading of PECs between individuals. (5) The cost of increasing the RPS standard will likely increase rates for utility customers if it remains true that renewable sources are generally more expensive than fossil fuel alternatives. Such a determination could be made in the future study.

Funding Source – The Public Utilities Commission of Nevada will incur increased costs from administering the broadened RPS program. Ratepayers will ultimately bear these minimal costs of an expanded program.

Staffing – The Public Utilities Commission would require minimal new staff to meet the additional workload.

Existing Regulations or Laws to be Modified – NRS 704.7801 through 704.7828 will require modification, as will the regulations contained in NAC 704.8831 through 704.8939.

Energy Efficient Appliance/Equipment Standards for Public Facilities

Finding:

Appliances and electrical equipment utilized in public facilities account for a significant portion of the overall energy consumption of government business and operations. There are many choices for energy efficient appliances and equipment that result in lower energy costs and will reduce related greenhouse gas emissions.

Background and Supporting Evidence:

Twenty-three states have already adopted requirements that equipment purchased for or installed in public facilities meet certain energy efficiency standards⁸, such as ENERGY STAR or other energy efficient appliance and efficiency standards. These standards can cover a wide range of products including lighting, HVAC equipment, office equipment and other energy using devices. The equipment purchase requirements may take the form of procurement policies or standard specifications. Specific legislative action might be required to modify procurement regulations to recognize the standards where mandatory low-bid for public facilities requirements are in place.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada adopt regulations to require appliances and/or equipment purchased for or installed in public facilities to meet certain energy standards. (See Appendix E for matrix from the Environmental Protection Agency).

Impacts of Implementation:

Cost – Potential minor initial increase in equipment costs, however offset by lower operational costs.

Funding source – Borne by the agencies purchasing the equipment.

Staffing – LCB/NDEP to draft new legislation.

Existing regulations and/or laws – Possible change to modify procurement specification and/or policies.

⁸ The Environmental Protection Agency's website has a matrix which lists the various standards and actions that states have taken to implement suggested green purchasing practices, at <http://www.epa.gov/cleanenergy/energy-programs/state-and-local/state-best-practices.html>.

Continued Support for Biomass Conversion to Electricity and Fuel

Finding:

Nevada possesses a wealth of biomass resources (forest and range products, municipal solid waste) which may be beneficially used to generate heat and/or electricity. Forest products such as small diameter wood, crop waste from agriculture, municipal solid waste, and waste from construction and demolition projects can all be converted into energy. Utilizing biomass in this way reduces our consumption of fossil fuels and beneficially reuses a material that normally would have to be handled and disposed of by other means. If not utilized, much of this material would end up in landfills, burnt as slash, or left in place to decompose. Removing slash from forests provides a concurrent benefit in reducing the risk of catastrophic wildfire and the associated air pollution, as well as reducing the generation of greenhouse gases.

Background and Supporting Evidence:

Through the use of biomass facilities in Nevada, heat and electricity can be generated to reduce fossil fuel consumption, greenhouse gas emissions, air pollution (from the open burning of biomass) and preserve landfill capacity. On top of this, the added benefit is of a reduced threat of catastrophic wildfires and the associated air pollution.

In 2007, wildfires destroyed over 3,100 acres of forest, 254 homes in the Lake Tahoe basin, and almost 850,000 acres of rangeland in Nevada. Research shows each dry ton of biomass burnt in the open produces approximately 150 pounds of carbon monoxide, 15 pounds of particulate matter, seven pounds of nitrogen oxide, and eight pounds of methane. Biomass placed in a landfill produces 130 pounds of methane as it decomposes⁹.

In comparison, a dry ton of biomass burnt in a co-generation facility produces approximately 1 MWH of electricity and 7.5 pounds of carbon monoxide, a half pound of particulate matter, 2.5 pounds of nitrogen oxide, and 0.25 pounds of methane¹⁰. Comparatively, power generated from coal produces, during the entire life-cycle, approximately twice as much carbon monoxide, 200 times as much particulate matter, 23 times as much nitrogen oxide and 800 times as much methane¹¹. Biomass can be converted to syngas or liquid fuel through gasification or biogenic processes.

Many biomass products are by-products of other activities, such as the thinning of forests and rangelands that have an excess of fuel. Other biomass products come from construction and demolition projects and agricultural crop waste. By using these products to generate energy, Nevada could increase the diversity of its energy sources, create rural jobs, reduce the threat of catastrophic wildfire and reduce greenhouse gas emissions.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada support the development and use of biomass for the generation of heat and electricity in order to reduce the consumption of coal, oil and other fossil fuels. The Committee recommends a two-pronged approach to improving biomass utilization in Nevada.

⁹ Morris, G.. "The Value of the Benefits of U.S. Biomass Power." *National Renewable Energy Laboratory* (November 1999).

¹⁰ US Department of Agriculture, Forest Service. "Woody Biomass Utilization Desk Guide." September 2007.

¹¹ Renewable Energy Policy Project. "The Environmental Imperative for Renewable Energy: An Update." April 2000.

- 1) Producers, transporters, regulatory agencies and users collaborate, communicate, and co-operate in order to understand each others' concerns and needs.
- 2) The State of Nevada evaluate an incentive based program to encourage the construction and operation of biomass facilities in Nevada. This evaluation should include cost incentives for the utilization of biomass generated power and tax or emission reduction credits. Such incentives should apply whether or not the power is placed into the grid.

Impacts of Implementation:

Cost – The actual cost of the recommendation is zero. Biomass projects may need to be funded and/or subsidized by federal, state or local governments or the private sector.

Funding source – For the design and construction of plants a combination of private and government revenue.

Staffing – None.

Existing regulations and/or laws – Requires research and adoption of incentives to power plants to purchase power at accelerated rates. It is suggested that offset credits be considered.

Greenhouse Gas Reduction (Support Federal Efforts)

Finding:

During this Congressional session or the next, there is a strong likelihood the federal government will enact legislation to limit carbon dioxide or greenhouse gas emissions generated from the production of electricity.

Background and Supporting Evidence:

There are currently several bills before Congress addressing the topic of green house gas emissions¹². It is likely that any federal legislation addressing global climate change will preempt state action.

Nevada is in a unique position regarding greenhouse gas emissions legislation. This is the case for a number of reasons: 1) Nevada aggressively developed renewable energy resources before there were federal rules requiring it; 2) Nevada has implemented aggressive energy conservation initiatives; 3) Nevada has a relatively high percentage of cleaner gas fired generation; 4) Nevada uses relatively little coal generation; and 5) Nevada has experienced and is expected to continue to experience explosive population and economic growth.

Nevada has also, as a response to the Western Energy Crisis, adopted a strategy to increase its owned generation position.

The actions Nevada has taken to reduce dependence on energy markets to provide for the growing needs of Nevada have already reduced carbon emissions on a per unit basis as the new plants are at least 20% more efficient than power plants that were formerly providing energy to Nevada.

However, a failure of federal legislation to recognize these efforts could, in practical terms, punish Nevada for taking an early and aggressive position on these issues.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada work with our state government and our federal delegation to ensure federal legislation recognizes and takes into account Nevada's unique position, high rate of population and economic growth, and existing efforts to reduce greenhouse gas emissions.

The Committee supports legislation that provides a limit and reduction of greenhouse gas emissions, in a matter that best fits Nevada, rather than an absolute cap on carbon emissions.

¹² These bills include: America's Climate Security Act of 2007 (S:2191), the Climate Stewardship and Innovation Act of 2007 (S:280), Low Carbon Economy Act of 2007 (S:1766), the Global Warming Pollution Reduction Act of 2007 (S:309), the Electric Utility Cap and Trade Act of 2007 (S:317), the Safe Climate Act of 2007 (H.R. 1590), and the Climate Stewardship and Economic Security Act of 2007 (H.R. 4226). Copies of these bills are available at the Library of Congress webpage at: <http://thomas.loc.gov/>. A summary matrix of pending bills, current as of January 11, 2008, is available from Resources For the Future at: <http://www.rff.org/rff/News/Releases/2007Releases/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=31222&CFID=8790214&CFTOKEN=66909946>.

Impacts of Implementation:

Cost – Minimal

Funding Source – Not Applicable

Staffing – Minimal

Existing Regulations or Laws to be Modified – None

Residential/Commercial/Industrial

Demand-Side Management

Finding:

Nevada Power and Sierra Pacific Power Company account for almost 85 percent of retail electricity sales in Nevada. Much of the overhead and common costs for Demand-Side Management Programs (DSM) are shared by the two companies and are delivered by firms contracted by the companies. However, significant areas of Nevada are not served by these utilities and have no or minimal DSM programs, such as those required in order to receive electricity from the Western Area Power Administration¹³.

Both Nevada Power and Sierra Pacific Power Company already participate in an established advisory DSM Collaborative. The organizations represented at each of the DSM Collaborative meetings include the Public Utilities Commission's Technical Staff, the Bureau of Consumer Protection, the Office of the Attorney General, the Washoe County Senior Law Project, the State Housing Division, and the Southwest Energy Efficiency Project.

Background and Supporting Evidence:

Nevada Power and Sierra Pacific Power Company offer cost effective DSM programs to assist customers to reduce or modify their electricity use patterns. In addition, Sierra Pacific Power Company offers a limited menu of cost effective programs to encourage their customers to use natural gas more efficiently.

Nevada Power has a PUCN-approved three-year DSM budget of \$105 million. Sierra Pacific Power Company has DSM budgets of \$2.2 million and \$29.8 million for its natural gas and electric operations respectively for the three-year period beginning January 1, 2008 and ending December 31, 2010. These programs target a number of market segments in both the residential and non-residential sectors and address a broad range of energy uses.

Recommendation:

The Governor's Climate Change Advisory Committee recommends municipal utilities, electric cooperatives, gas utilities, and independent power producers should also be required to participate in or create cost effective DSM programs, or be required to pay into an energy conservation fund. Sierra Pacific Power Company and Nevada Power Company should be required to work with municipal utilities, electric cooperatives, independent power producers, and gas utilities to provide information and share strategies regarding participation in DSM programs. All DSM programs should be required

¹³ Western Area Power Administration Integrated Resource Planning guidelines; Integrated resource planning was mandated by the Energy Policy Act of 1992. The EAct requires all Western Area Power Administration customers to submit IRPs to Western every five years, and the requirement is included in Western's power sales contracts with long-term firm customers. The current Resource Planning Approval Criteria (10 CFR Part 905) went into effect May 1, 2000, after Western reviewed the original regulations and completed a public process. Customers with total energy use or sales of less than 25 gigawatthours per year and who are not members of joint action agencies or member-based associations may submit a less complicated Small Customer Plan. 10 CFR Part 905 (Energy Planning and Management Program) requires that customers provide certain information in their IRP. This plan includes minimal DSM requirements. Part 905.15 requires companies to "Consider all reasonable opportunities to meet future energy service requirements using demand-side management techniques, renewable energy resources, and other programs that provide retail consumers with electricity at reasonable cost."

to consider new solar thermal energy sources that displace electricity or any fossil fuel consumption by using solar radiation to heat water or provide space heating or cooling.

Impacts of Implementation:

Cost – The cost and cost effectiveness of individual DSM programs is highly variable. Cost allocation issues for this proposal could be vetted in rulemaking proceedings by either the Public Utilities Commission of Nevada or the Nevada Division of Environmental Protection.

Funding Source – Sierra Pacific Power Company, Nevada Power Company, municipal utilities, electric cooperatives, gas utilities, and independent power producers in Nevada would be required to contribute to the energy conservation fund as an alternative to implementing DSM programs. This fund could be overseen by a bureau within the Nevada Division of Environmental Protection.

Staffing – Additional Staff would be required at the Nevada Division of Environmental Protection. Additional staff may also be required by Sierra Pacific Power Company and Nevada Power Company, municipal utilities, electric cooperatives, gas utilities, and independent power producers to administer and oversee the programs.

Existing Regulations or Laws to be Modified – NRS 704.991 and 704.992 give authority for the Public Utilities Commission’s resource planning process. NRS 704.736 through 704.751 outlines the required demand side plan to be provided to the Commission by Sierra Pacific Power Company and Nevada Power Company. The Public Utilities Commission of Nevada’s Electric and Gas Resource Planning regulations are contained in NAC 704.9005 through 704.973. Presumably, municipal utilities and electric cooperatives will need to be brought under a limited jurisdiction of the Nevada Division of Environmental Protection to administer the program.

Efficient Building Standards

Finding:

The heating, cooling, and lighting of homes and commercial buildings is a major energy consumer in the United States. Through the use of new and more energy efficient building standards, energy consumption can be substantially reduced. Through these revised standards greenhouse gas emissions and air pollutants will be concurrently reduced.

Background and Supporting Evidence:

Using improved and more efficient standards for residential and commercial buildings, significant energy saving can result along with a concurrent reduction in local and regional energy generation and concurrent reductions in carbon dioxide and other air emissions.

Recommendation:

The Governor's Climate Change Advisory Committee recommends local governments and the State of Nevada enact new or support existing energy efficient building standards to reduce energy consumption as necessary.

Impacts of Implementation:

Cost – It is anticipated that there will be an as yet unquantified increase in the cost of commercial and residential construction with the new standards. This cost will ultimately be offset through energy savings.

Funding source – The increased construction costs associated with the new standards will be borne by the owners/constructor.

Staffing – Some additional, yet unquantified staffing may be necessary in some jurisdictions to ensure the new standards are implemented.

Existing regulations and/or laws – Through the recommendations the State of Nevada and local jurisdictions will need to modify existing building codes.

Support Brownfield Development

Finding:

The State of Nevada should encourage the state's Brownfields program. Through the redevelopment of already developed lands, we can strengthen our urban cores, provide for more livable and walkable communities, encourage environmental clean up and reduce urban sprawl. All of these activities will reduce energy consumption and concurrently result in a reduction of greenhouse gases and other air emissions.

Background and Supporting Evidence:

Brownfields are previously developed lands typically located in urban areas that have environmental contamination issues associated with them. For over a decade the State of Nevada has operated a program that encourages and provides financial assistance for the clean up and reuse of these lands. Through revitalization and clean up, the development of outlying undisturbed land is reduced resulting in reductions in vehicle traffic and a greater potential for foot traffic and public transportation.

Recommendation:

The Governors Climate Change Advisory Committee recommends the State of Nevada continue to support Nevada's Brownfield's program for the redevelopment of environmentally impacted lands, the revitalization of urban cores and to encourage livable and sustainable communities.

Impacts of Implementation:

Cost – None, the program is ongoing.

Funding source – Ongoing and existing; federal dollars with local and private match.

Staffing – No new staffing is needed.

Existing regulations and/or laws – Existing requirements are in place.

Water Impacts

Finding:

As the driest state in the United States, water is Nevada's most precious resource. Without a doubt climate change will have dramatic implications to our state's water availability and use. To ensure Nevada is positioned to respond to changes in water supply and timing, Nevada's water law must contain flexibility. The Office of the State Engineer, in cooperation with state policy makers should evaluate current Nevada water law and make the necessary modifications (if any) to address climate variability.

Background and Supporting Evidence:

The Governor's Climate Change Advisory Committee heard from Tracy Taylor, Nevada State Engineer, on the observed climatological modifications of water resources in Nevada. Mr. Taylor outlined his observations of the earlier onset of spring runoff, the unavailability of the use of this water during the growing season and the increased use of supplemental ground water in late summer among other impacts. Mr. Taylor's recommendation to the committee was to work with his office, Governor Gibbons and the legislature to ensure water law has the flexibility to accommodate changes in the climate and any associated water resource impacts.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State Engineer, in association with the Governor of the State of Nevada and the Nevada Legislature, conduct a review of Nevada water law to ensure it has the flexibility to accommodate climate change and associated impacts to Nevada's water resources.

Impacts of Implementation:

Cost – None, use existing resources

Funding source – Use existing resources

Staffing – Use existing resources

Existing regulations and/or laws – Potential changes to Nevada water law

Energy Efficient Building Codes

Finding:

The US Energy Information Administration (EIA) estimates that residential and commercial buildings use nearly 40% of our energy and emit 38.5% of our greenhouse gas emissions.

Background and Supporting Evidence:

Homes and commercial buildings are the nation's number one energy consumers and contributors to global warming¹⁴.

Recommendation:

The Governor's Climate Change Advisory Committee recommends Nevada improve energy efficiency of all buildings but particularly new construction with the goal of achieving carbon neutrality for all new buildings by 2030. This will follow the American Institute of Architects' 2030 challenge.

To achieve this it will be necessary to reduce energy consumption in a stepwise manner:

- Require that in 2010 all new buildings and major renovations meet or exceed a 50% reduction in the annual operating energy consumption (fossil fuel consumption per gross square foot) of the regional average for each building type.
- Increase the reduction in annual fossil energy consumption for new buildings to 60% by 2013, 70% by 2017, 80% by 2021, 90% by 2025 and 100% (or carbon neutral) by 2030 through a combination of energy efficiency, on-site renewable energy generation, and/or certified renewable energy credits.

Much of this will be accomplished through working with federal agencies on important aspects such as:

- Work with our federal delegation and the U.S. Department of Energy (DOE) to identify the barriers that inhibit timely action on appliance efficiency standards, including staffing and funding needs and unnecessary requirements imposed by Congress – for example, requirements in the Energy Policy Act of 2005 (EPACT 2005) that DOE conduct a lengthy rulemaking process after consensus already had been reached by consumer groups and manufacturers. Champion the necessary appropriations and procedural reforms by Congress.
- Require DOE to review and update each existing standard on a regular timetable.
- Work with our federal delegation and the DOE to set the maximum cost-effective efficiency level for appliance and equipment standards.
- Have our federal delegation propose that Congress give DOE the authority to set regional standards for heating and cooling equipment to reflect differences in climate. (Under current law, all standards must be uniform nationwide. Regional standards for space-conditioning equipment would produce greater efficiency gains.)
- Have our federal delegation propose that standby power (the power that certain appliances use while turned off) be incorporated into federal standards. Standby power represents 5% of residential electricity use in the United States.
- Have our federal delegation propose legislation to set an efficiency standard for lightbulbs, sufficient to phase out incandescent bulbs by 2012 and to increase the standard in 2020. The

¹⁴ Energy Information Administration's (EIA), "Annual Energy Outlook 2007 report." 8 May 2008, www.eia.doe.gov/oi/af/aio/index.html.

American Council for an Energy Efficient Economy (ACEEE) estimates that by 2030, the standards could save more energy than all previous appliance standards combined and could avoid the emission of more than 100 million metric tons (MMT) of CO₂.

Impacts of Implementation:

Cost – Additional costs to train inspectors. Some up-front costs for state buildings built to these standards, but these would be easily paid back to the state in energy savings.

Funding source – None

Staffing – None

Existing regulations and/or laws – Modification to existing building codes.

Transportation

Many of the following transportation recommendations are intended to further efforts to supplement and diversify Nevada's fuel supplies, and to reduce air pollutants and greenhouse gases. These and other policy initiatives need to be monitored over time to be sure they achieve their intended purpose and don't result in unintended consequences. For example;

- Scientific discussion is occurring on all fuels both in the US and Europe. Nevada should monitor these discussions and may need to adjust its fuels programs and policies to assure that they are not promoting the use of fuels that may be contributing to global warming.
- The economies of Nevada and most other states depend on an adequate and reliable supply of transportation fuels, both conventional and alternative. Conventional fuels will still be needed to provide the majority of transportation fuels into the foreseeable future, as new generation, cleaner burning transportation fuels come into the market.
- As fuel diversification occurs going forward it is important ensure increased attention and resources devoted to alternative and renewable fuel development don't divert excessive capital, attention, and other resources from the critical need to maintain and upgrade the state's petroleum-based transportation fuel supplies and infrastructure.
- Finally, current state regulations limit the ability of fuel producers to blend ethanol into gasoline. Nevada needs to adopt changes to its gasoline specifications that recognize the effects of ethanol blending on the volatility and distillation characteristics of finished gasoline.

Advance Travel Center Electrification

Finding:

Advanced Travel Center Electrification (ATE) Systems allow truckers to shut down their truck's engine, and still obtain electrical power and comfort needs without idling. ATE systems reduce a trucker's idling time, which eliminates fuel consumption and decreases greenhouse gas emissions by more than 93 percent. It is estimated that ATE systems save truckers at least 1 gallon of diesel per hour incurred during extended idling, as well as additional costs associated with maintenance (i.e., wear and tear on the truck's engine). As to greenhouse gas emissions, CO₂ emissions per truck are reduced by 10,397 grams per hour or 31.14 metric tons per year. At this rate, 50 ATE spaces would provide 1,821.55 metric tons per year reduction of CO₂, while 500 spaces would provide 18,568.9 metric tons per year reduction of CO₂.

The State of Nevada and local governmental entities should install ATE facilities to reduce greenhouse gas emissions. For instance, the Clark County Department of Air Quality and Environmental Management (DAQEM) applied for and received Congestion Mitigation and Air Quality (CMAQ) monies to install 150 ATE units in Clark County. This project will net 5,299.7 metric tons per year of CO₂ reductions (total idling emission reductions is 5,692.4 metric tons per year while emissions from electric generation is 392.7 metric tons per year). Eighty percent of the project will be funded by CMAQ monies and twenty percent by the ATE provider. The project should be completed by 2010.

In the fall of 2008, DAQEM will be requesting additional CMAQ monies to fund the construction of 300 ATE units. If approved by the Metropolitan Planning Organization (MPO), the project could be completed by 2012. This project will net 10,599.4 metric tons per year reduction in greenhouse gas emissions in Clark County.

In sum, by 2012, if all projects are approved and implemented in a timely manner, Clark County will have 450 ATE units operational. These projects will collectively net 15,899.1 metric tons per year reduction in greenhouse gas emissions.

Background and Supporting Evidence:

Interstate 15 and 80 are among the busiest truck freight corridors in the nation. "Nevada is a 'bridge state': commercial trucks comprise up to 40 percent of the traffic on rural I-15 and I-80, and 80 percent of these trucks have an origin and destination outside of the state. A large increase in truck traffic related to expansion of the ports in Oakland and Long Beach, as well as just-in-time delivery, will occur on Nevada's Interstate and National Highway System routes¹⁵."

Along I-15, the average daily traffic is 56,000, and the average daily truck traffic is 9,000. The projected 2035 average daily traffic is 150,000, which includes over 7,000 trucks¹⁶.

Along I-80, the average daily traffic varies. In Washoe County, the average daily traffic is 27,000, and the average daily truck traffic is 4,300¹⁷. In Eureka County, the average daily traffic is 6,500, and the

¹⁵ State of Nevada, Blue Ribbon Task Force to Evaluate NDOT Long-Range Projects 2008-2015. (December 2006).

¹⁶ U.S. Department of Transportation, "Corridor of the Future Fact Sheet." Office of Public Affairs. 8 May 2008, <http://www.dot.gov/affairs/CORRIDORS%20OF%20THE%20FUTURE%20FACT%20SHEET.htm>.

¹⁷ Carano, Gary. "Testimony before the U.S. Senate Subcommittee on Transportation, Infrastructure, and Nuclear Safety." (August 2002).

average truck traffic is 2,080. Traffic has been increasing two percent per year over the last ten years¹⁸.

Parts of U.S. 93 and 95 are also major commercial corridors for interstate and international commerce. U.S. 95 serves as a north-south road from southern California to northwestern Nevada and as a highway to take traffic from I-40 to I-15. U.S. 93 is a direct north-south link between Phoenix and Las Vegas, and it carries a high volume of east-west traffic from Interstate 40 to Las Vegas to I-15. U.S. 93, in combination with other highways, such as I-15, creates a contiguous Canada to Mexico (CANAMEX) corridor. U.S. 93 traverses central Nevada and central Idaho¹⁹.

U.S. 93 and 95 are not heavily traveled in rural sections of Nevada. In Clark County, U.S. 93 and 95 are heavily traveled, especially on the U.S. 93/ U.S. 95/ Interstate 515 sections. Travel rates vary.

For instance, near the dam, it is estimated that the average daily traffic on U.S. 93 is 14,000. Prior to 9/11, truck traffic comprised 2,800 vehicles. With the new bridge and better highway systems, the projected traffic volume is 21,000 in 2017 and 26,000 in 2027 and projected truck traffic volume is 4,200 in 2017 and 5,200 in 2027.

On I-515 at U.S. 93-95 (railroad pass exit), the average daily traffic volume is 32,135, and the average daily truck volume is 6,425. On I-515 between Tropicana and the I-15 interchange, the average daily traffic volume ranges between 100,000 to 150,000, and the average daily truck volume ranges between 16,000 and 18,000²⁰.

In central Nevada, on U.S. 93 in Ely at the U.S. 50 interchange, the average daily traffic volume is 12,000 and the average daily truck volume is 1,920. On U.S. 95 in Hawthorne, the average daily traffic volume is 6,500, and the average daily truck volume is 1,040.

Diesel CO₂ emissions are based on Argonne models. Electric emissions derived from CO₂ are provided from EPA breakout by region. In calculating emission reduction rates per truck space, it is assumed that each space is utilized at a rate of 40 percent (9.6 hours per day, per unit).

ATE systems reduce greenhouse gas emissions dramatically. For instance, Idleaire, the largest provider of ATE systems, found that their facilities reduced CO₂ by 70 million pounds in the first three months of 2007.

Recommendation:

The Governor's Climate Change Advisory Committee recommends Nevada expand the Advanced Travel Center Electrification (ATE) program providing energy-efficient heating, ventilation, and cooling systems (HVAC), cable TV, and phone connections for use by truckers at travel centers and other areas where drivers stop and idle their vehicles. The ATE systems reduce idling, fuel consumption, and associated emissions.

¹⁸ Lumos and Associates, Inc, "Eureka County Yucca Mountain Existing Transportation Corridor Impact Assessment Report." (September 2005).

¹⁹ Arizona Department of Transportation Board. "Statement before the U.S. Senate Subcommittee on Transportation, Infrastructure, and Nuclear Safety." (September 2002).

²⁰ Nevada Department of Transportation, Annual Vehicle Miles of Travel - 2006 Data. (October 2007).

Impacts of Implementation:

Cost – The estimated cost is \$16,700 per truck space.

Funding source – Congestion, Mitigation, and Air Quality Act (CMAQ) grant, if approved by the local Metropolitan Planning Organization; local funding, if approved by the Board of County Commissioners; state funding, if authorized by the state legislature and approved by the governor; Environmental Protection Agency grant (EPA), if approved by EPA.

Staffing – Local Air Quality/Planning Agencies and/or Nevada Division of Environmental Protection.

Existing regulations and/or laws – 2005 Energy Policy Act; Congestion, Mitigation, and Air Quality Act (CMAQ).

Clean Fueled Bus Program

Finding:

The State of Nevada will benefit by implementing a Clean-Fueled Bus Program. Further, the program could incorporate incremental fleet conversion requirements (i.e. 25% of public transit fleets must include clean-fueled buses by year 2015, 50% by year 2020, and 90% by 2025).

Based on program results over the past ten years from the New York State Energy Research and Development authority (administrator of the nation's largest Clean-Fueled Bus Program), 378 clean-fueled transit buses were purchased at a subsidized cost of \$21 million. The program benefits during this time frame include the displacement of 3 million gallons of diesel fuel per year, and a reduction of 840 tons of NO_x, 46 tons of PM-10, and 111,000 tons of CO₂ (a principal contributor to greenhouse gases) per year.

Background and Supporting Evidence:

Various states have implemented Clean-Fueled Bus Programs (e.g. New York, Texas and California). The primary objective of the programs is to reduce emissions (NO_x, PM-10 and greenhouse gases) from buses in areas where air quality improvements are needed. In general, the programs seek to leverage private sector funding by providing bus operators with financial assistance to cover the incremental cost of clean-fueled buses over conventional diesel buses. Further, these programs are typically funded through Bond Initiatives, State Budget Appropriations, or by grants from the Federal Highway Administrations (FHWA) Congestion Mitigation and Air Quality (CMAQ) program.

Clean-Fueled Bus Programs provide funds to state and local transit agencies, municipalities, and schools for up to 100% of the incremental cost of new alternative-fuel buses over conventional diesel buses. Eligible vehicles include any motor vehicle with a seating capacity of 15 or more passengers in addition to the driver and used for the transportation of persons on public highways that is powered by compressed natural gas (CNG) including dual-fuel technology, propane, methanol, hydrogen, biodiesel or ethanol, or uses electricity, including electricity either stored or generated on board, as a primary motive force (e.g. hybrid-electric). Further, the emissions reduction potential of alternative-fuel buses is evaluated prior to project selection.

The benefits from Clean-Fueled Bus Programs not only includes the reduction of mobile source emissions (e.g. NO_x, PM-10 and CO₂ (a principal contributor to greenhouse gases)), but results in the displacement of conventional diesel fuel.

Recommendation:

The Governor's Climate Change Advisory Committee recommends through a resolution signed by the Governor, Nevada encourage local transit organizations to implement a Clean-Fueled Bus Program that provides funding for the incremental cost of a clean-fueled bus over a diesel bus to transit authorities, state agencies, universities, municipalities, and school bus fleets.

Impacts of Implementation:

Cost – The cost of implementing a Clean-Fueled Bus Program in Nevada is currently unknown. States with Clean-Fueled Bus Programs, however, have found the incremental cost of financing a clean-fueled bus over a diesel bus to average \$55,000 for hybrid-electric and \$100,000 for CNG. Based on this estimate, the cost to promote the purchase of 100 clean-fueled buses annually would total \$5.5 million.

Funding source – Start-up funding could be derived by initiating/passing a “Nevada Clean Air Bond” initiative, with ongoing costs obtained through state budget appropriations.

Staffing – Nevada Division of Environmental Protection

Existing regulations and/or laws – NRS 445b, 2005 Energy Policy Act, FHWA – CMAQ

Clean Fuels and Clean Vehicle Incentive Program

Finding:

Providing grants toward the purchase or lease of new technologies/low emission vehicles such as electric hybrid and advanced fuel cell (hydrogen powered) vehicles reduce greenhouse gas emissions generated by light-duty automobiles and trucks in Nevada. Similar reductions in greenhouse gas emissions be realized by providing incentives for the use of clean renewable fuels, such as natural gas, ethanol and biodiesel.

It's important to note that most advanced technology vehicles are expensive. Further, the apparent reluctance of new vehicle owners to forego the purchase of a new technology/low emission vehicle (because of increased incremental cost) is clear. By providing consumers with grants and incentives for the purchase of advanced technology vehicles and clean renewable fuels, it is anticipated the consumer's current vehicle purchasing habits could be changed. Further, by providing these grants and incentives it is anticipated the State's overall fuel consumption could be reduced, resulting in a lessened dependency on foreign petroleum imports.

Background and Supporting Evidence:

The transportation sector produces roughly 30% of the greenhouse gas emissions in the United States²¹. While fuel economies of successive model years of U.S. light-duty automobiles and trucks have essentially been constant since 1998, advancement of new technologies that positively affect vehicle efficiency have dramatically increased (i.e. advanced engine designs, improved batteries, fuel cells which convert fuel directly to electricity without burning it, and improved power trains for electric vehicles). Similar advances occurred in adapting or designing vehicles to run on clean fuels such as natural gas, propane, methanol and hydrogen.

This makes addressing greenhouse gas emissions from light-duty automobiles and trucks in Nevada a worthy and essential endeavor.

Recommendation:

The Governor's Climate Change Advisory Committee recommends Nevada provide grants toward the purchase or lease of new technologies/low emission vehicles, and provide incentives for use of clean renewable fuels such as natural gas, ethanol and biodiesel.

Impacts of Implementation:

Cost – Many states implemented incentive/rebate programs to assist consumers in the purchase/ lease of advanced technology vehicles. Generally, state programs attempt to make the price of these vehicles comparable to that of a conventionally fueled vehicle. Depending on the technology, the price difference can vary greatly i.e., \$250 for flex fueled vehicles, \$2,000 – \$6,500 for electric hybrid vehicles, and into the tens of thousands for fuel-celled (hydrogen powered) vehicles. Typically, states with these types of programs provide consumers with incentives/rebates/tax credits ranging between \$750 (State of Oregon) to \$9,000 (State of California).

²¹ Plotkin, Steve. "Technologies and Policies for Controlling Greenhouse Gas Emissions from the U.S. Automobile and Light Truck Fleet." *Center for Transportation Research Argonne National Laboratory* (January 2000).

Funding source – Legislative authorization and Governor approval to authorize local air quality boards (Clark and Washoe) to assess an annual \$6 greenhouse gas (GHG) abatement charge for all vehicles registered in their respective counties. Monies collected would be used to fund local mobile source GHG abatement programs.

Staffing – Local Air Quality/Planning Agencies.

Existing regulations and/or laws – NRS 445b, 2005 Energy Policy Act.

Monitor the Status of California Motor Vehicle Emissions Standards for Greenhouse Gases

Finding:

California along with twelve other states requested a waiver from the U.S. EPA to adopt greenhouse gas (GHG) vehicle emissions standards. The other states include: Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Arizona, and Washington. These new vehicle standards are currently being considered by seven other states. The proposed California GHG emissions standards are nearly twice as effective in reduce GHG emissions as the new federal energy bill Corporate Average Fuel Economy (CAFE) standards alone.

Background and Supporting Evidence:

Under the Federal Clean Air Act, California has the right to set its own vehicle emission standards. Other states have the right to adopt the California standards as their own, upon receipt of a waiver from the EPA. In 2004, California adopted the nation's first regulation to reduce greenhouse gas emissions from cars. It requires emissions of carbon dioxide and other pollutants to be reduced by 22 percent by the 2012 model year and 30 percent by the 2016 model year.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the Governor direct state agencies to closely monitor the status of the California Clean Car Waiver litigation currently pending in the federal courts and formulate, in coordination with the Governor's Office, a consolidated Nevada position.

Impacts of Implementation:

Cost – None

Funding source – None

Staffing – None

Existing regulations and/or laws – None

Reduce GHG Emissions from Motor Vehicles

Finding:

The Center for Climate Strategies has estimated that Nevada's gasoline and diesel derived transportation greenhouse gas emissions in 2005 was 11.5 million metric tons of CO₂e. Reductions in these emissions can be realized through consumer and driver education and smart vehicle purchases. Many consumers of new motor vehicles would like to factor into their purchase decisions greenhouse gas emission estimates. This information is readily available from vehicle manufactures. Nevada law should be modified to make this information readily available to the consumer. Through smart vehicle choices, Nevadans can significantly reduce greenhouse gas emissions.

Background and Supporting Evidence:

Transportation contributes to a substantial portion of Nevada's overall greenhouse gas emissions. By purchasing lower emission vehicles, reductions in greenhouse gas emissions can be realized. Auto manufactures completed the research needed to quantify carbon dioxide emissions from vehicles. Many consumers of these vehicles would like to factor into their purchase decisions the emission of greenhouse gases, much as they do for vehicle mileage estimates. Nevada vehicle sale requirements could be modified to mandate the posting of emission estimates for all new vehicle sales.

Recommendation:

The Governor's Climate Change Advisory Committee recommends a bill draft be developed by the 2009 session of the Nevada Legislature to modify Nevada's motor vehicle sale requirements to mandate the posting of greenhouse gas emission estimates for all new vehicles.

Impacts of Implementation:

Cost – There may be some additional cost to the auto manufacturing industry to develop emission estimates and inclusion of this data on vehicle stickers.

Funding source – None necessary

Staffing – None necessary

Existing regulations and/or laws – Modification to existing motor vehicle laws

State Fleets Alternative Fuel Cars

Finding:

According to the Center for Climate Strategies, the transportation sector in Nevada contributes 32% of the greenhouse gas emissions in the state. A significant portion of these emissions come from the operation of vehicles for state and local government use. A wide variety of vehicles are used to deliver public services, but some of these vehicles are standard vehicles which could be run on alternative fuels. Many alternative fuels, such as biodiesel, E-85 ethanol, and hybrids have the potential to significantly reduce greenhouse gas emissions.

Background and Supporting Evidence:

Currently, guidelines empower the use of clean burning fuel in state fleets; however, clean burning fuel includes relatively conventional fuels such as reformulated gasoline and ultra low sulfur diesel. Expanding these guidelines to encourage the use of alternative fuel and technologies such as biodiesel and hybrids could have a large impact.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada change the definition of alternative fuel in NRS 486A.030 to remove reformulated gasoline and ultra low sulfur diesel. It is also recommended the Department of Conservation and Natural Resources review the appropriate regulations on a regular basis to ensure all potential cleaner burning fuels and cleaner technologies are included under the definition of alternative fuel and alternative fueled vehicles. Additionally, the State of Nevada should direct the Department of Conservation and Natural Resources to update the schedule in NAC 486A.160 to allow for reasonable phase-out of reformulated gasoline vehicles and implementation of new standards.

Impacts of Implementation:

Cost – Alternative fuel vehicles are usually more expensive to purchase, so there may be an increased cost to government in the short term, but savings from fuel costs could offset this in the long term.

Funding source – Additional budgets for fleet purchase and maintenance could be required.

Staffing – No additional staff is anticipated within state government.

Existing regulations and/or laws – It would require a statutory change to NRS.

Incentives for Ethanol Fuels

Finding:

The use of ethanol as an alternative fuel source should be encouraged in Nevada due to the positive impact on the State's environment. Ethanol is a clean burning, high-octane fuel that is produced from renewable resources. Ethanol contains oxygen and helps regular gasoline burn cleaner, more efficiently, and helps to reduce tailpipe carbon monoxide emissions by as much as 39% - 46%²².

While the use of ethanol should be encouraged for environmental and economic reasons, the Department of Motor Vehicles has an obligation to protect the State's Highway Fund revenues by mitigating the possibility for fuel tax evasion.

Background and Supporting Evidence:

With the cost of gasoline continuing to rise, along with increased awareness of the environmental impact of petroleum-based fuels, the public is turning more to alternative fuels, including ethanol.

The ethanol industry increased annual production capacity to more than seven billion gallons per year, with billions more under development. These ethanol plants pumped billions of dollars into the American economy, helping to slow the tide of the transfer of wealth to foreign countries supplying petroleum-based fuels. As a result, there has been resurgence in rural America and, along with ethanol plants springing up from the heartland's cornfields, a technology revolution promises to dramatically expand the base for ethanol production. Municipal, forest, and agriculture wastes are close to commercial viability as ethanol feedstocks. The expansion of ethanol production has been a boom to the industry and to the consumer, as well. Provided with the choice of purchasing ethanol-blended fuel over regular gasoline, the consumer is likely to purchase the ethanol-based fuel due to its positive effects on the air quality. Today, all facets of the public are embracing the term 'going green', or living by sustainable design. The use of ethanol-based fuel is one of the simplest methods for the general public to contribute to the 'green' movement.

During the past several years, major automobile manufacturers, including General Motors, Daimler Chrysler, Ford, Isuzu, Mazda, Mercedes, Mercury and Nissan, developed flexible fuel vehicles (FFVs) that can run on both gasoline and E-85 (a blend of 85% ethanol and 15% gasoline) fuel. Today, more than six million FFVs are on the road and are increasing daily.

Typically, ethanol is blended with gasoline, creating gasohol, which can be used to operate motor vehicles. In Nevada, ethanol is taxed only when it has been blended with gasoline. It is at that point that ethanol is also subject to clean up and inspection fees.

All ethanol used for blending in Nevada is imported into the State; no ethanol producers are located in Nevada. The majority of ethanol used for blending is being imported into Nevada via railcars and truck fuel transporters. Nevada currently has 20 fuel suppliers importing ethanol for blending purposes.

Due to the lack of accountability resulting from importation outside of a controlled pipeline environment, ethanol imports are reported on the 'honor system', leaving the State vulnerable to fuel tax evasion.

²² National Ethanol Vehicle Coalition, "E85 and the Environment." 8 May 2008, <http://www.e85fuel.com/information/environment.php>.

While the use of ethanol should be encouraged for environmental and economic reasons, the Department of Motor Vehicles has an obligation to protect the State's Highway Fund revenues by mitigating the possibility for fuel tax evasion.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada promote use of Federal tax incentive programs that positively impact the alternative fuels industry. Section 1344 of the Energy Policy Act of 2005 extended the tax credit for alternative fuel producers. These credits are recognized by the Internal Revenue Service and include the following²³:

- Alternative Fuel Refueling Property Credit – IRS Form 8911
- Credit for Alcohol Used as Fuel – IRS Form 6478
- Non-conventional Source Fuel Credit – IRS Form 8907
- Credit for Federal Tax Paid on Fuels – IRS Form 4136
 - o \$0.51 per gallon of ethanol at 190 proof or greater
 - o \$0.0051 per percentage point of ethanol if fuel is used in a mixture
 - o \$0.51 per gallon of E100

Nevada must propose legislation to change the point of taxation on ethanol to the time of importation or production, rather than at the time ethanol is blended with gasoline. By including ethanol in the definition of motor vehicle fuel, ethanol will be subject to the same requirements and fuel tax rate as gasoline.

By taxing ethanol fuel at the time of importation, and pursuing Federal tax incentives, the State of Nevada can reduce the potential for fuel tax evasion, while still encouraging increased availability and usage of alternative fuels. With the expansion of ethanol usage in Nevada, our citizens can reduce tailpipe carbon monoxide emissions by as much as 39% - 46%.

Impacts of Implementation:

Cost – No additional cost would be incurred by the State.

Funding Source – No additional state funding will be required; however, Nevada promotes the use of Federal tax incentives for the use and production of ethanol and ethanol-blend fuels.

Staffing – Existing staffing levels will be used to collect the tax imposed on ethanol.

Existing regulations or laws – A Bill Draft Request (BDR) will need to be submitted to clarify statutory language regarding ethanol. The proposed BDR (Appendix F) includes language changes to NRS 365.

²³ Nontaxable Use of Fuels – IRS Form 8849; Alternative Motor Vehicle Credit – IRS Form 8910, <http://www.irs.gov>; <http://www.eere.energy.gov>.

Incentives for Biodiesel Fuels

Finding:

The use of biodiesel and biodiesel-blend fuels as alternative fuel sources should be encouraged in Nevada due to the positive impact such fuels would have on the State's environment. Biodiesel is a cleaner burning diesel replacement fuel made from natural, renewable sources such as new and used vegetable oils, animal fats, and algae. Biodiesel reduces almost all of the major exhaust pollutants.

In order to protect the State Highway Fund, biodiesel and biodiesel blend-fuels should be taxed at the same rate as petroleum-based diesel fuel. Rather than reduce or remove the fuel tax on alternative fuels, the State should promote the use of Federal tax incentives to encourage usage.

Background and Supporting Evidence:

Biodiesel intended for use as fuel is produced by chemically treating fats and oils with alcohol, creating 'Methyl Ester'. Water is then used to extract the glycerin out of the Methyl Ester, creating biodiesel. In addition to using vegetable oils as a base, biodiesel can be produced using certain species of lipid-bearing algae. Nevada's geothermal resources and open-land opportunities are ideal for algae production. An acre of algae creates more than 30 times the oil from an acre of terrestrial oil seed crops.

Biodiesel in its pure state is non-toxic, non-hazardous, non-flammable, and is biodegradable with a flash point above 100° F. The Environmental Protection Agency has documented reduced emissions of carbon monoxide, particulates, unburned hydrocarbons, and air toxics with both pure biodiesel and biodiesel blends.

Biodiesel has almost no sulfur, which is a major contributor to acid rain. The sulfur fluctuates based on feedstock, which naturally may have high concentrations of sulfur. Releases of carbon dioxide (CO₂) are significantly reduced into the environment by 79%²⁴ compared to petroleum-based fuel. This 'greenhouse gas' has been shown to contribute to the problem of global warming.

Biodiesel blends of up to 20 percent biodiesel, blended with petroleum-based diesel fuel, can be used in nearly all diesel equipment and are compatible with most storage and distribution equipment. Higher blends, even pure biodiesel (100% biodiesel or B100) can be used in many engines built since 1994 with little or no modification. Expired retail virgin oils, such as french-fry oil and used motor oil, are converted almost 100% into biodiesel with little processing involved.

Today, all facets of the public are embracing the term 'going green', or living by sustainable design. The use of biodiesel blend fuel is one of the simplest methods for the general public to contribute to the 'green' movement.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada promote use of Federal tax incentive programs that positively impact the alternative fuels industry. Section 1344 of the Energy Policy Act of 2005 extended the tax credit for alternative fuel producers. These credits are

²⁴ Iowa State University, Mechanical Engineering Department. "What is Biodiesel?." *Biodiesel Education*. 8 May 2008, <http://www3.me.iastate.edu/biodiesel/Pages/biodiesel1.html>.

recognized by the Internal Revenue Service and include the following²⁵:

- Alternative Fuel Refueling Property Credit – IRS Form 8911
- Low Sulfur Diesel Fuel Production Credit – IRS Form 8896
- Non-conventional Source Fuel Credit – IRS Form 8907
- Biodiesel and Renewable Diesel Fuels Credit – IRS Form 8864
 - o Biodiesel credit
 - o Renewable diesel credit
 - o Biodiesel mixture credit
 - o Renewable diesel mixture credit
 - o Small agri-biodiesel producer credit
- Credit for Federal Tax Paid on Fuels – IRS Form 4136
 - o \$1.00 per gallon of agri-biodiesel
 - o \$0.50 per gallon of waste-grease biodiesel
 - o \$0.01 per percentage point of agri-biodiesel used
 - o \$0.0050 per percentage point of waste-grease biodiesel

Nevada should propose legislation to add a definition for a manufacturer/blender to Nevada Revised Statutes (NRS), requiring the payment of fuel taxes to the State upon placing biodiesel or biodiesel blend fuel into the supply tank of a motor vehicle.

In addition to proposed legislation, a public awareness campaign is essential to the success of collecting the tax due on biodiesel produced on private property throughout Nevada. The average consumer producing biodiesel at a home or business location only thinks about the savings when compared with the cost of purchasing petroleum-based diesel fuel at a retail location. They simply do not realize they are evading fuel taxes. The public awareness campaign should include announcements in the various media as well as posting literature at restaurants where consumers are most likely to purchase the oil they are converting to biodiesel.

Impacts of Implementation:

Cost – No additional cost would be incurred by the State.

Funding Source – No additional state funding would be required; however, Nevada promotes the use of Federal tax incentives for the use and production of biodiesel and biodiesel blend fuels²⁶.

Staffing – Existing staffing levels will be used to collect the tax imposed on biodiesel and biodiesel-blend fuels.

Existing regulations or laws – A Bill Draft Request (BDR) be submitted to clarify statutory language regarding biodiesel. The proposed BDR (Appendix G) includes language changes to NRS Chapter 366.

²⁵ Nontaxable Use of Fuels – IRS Form 8849; Alternative Motor Vehicle Credit – IRS Form 8910, <http://www.irs.gov>; <http://www.biodiesel.org>.

²⁶ Nontaxable Use of Fuels – IRS Form 8849; Alternative Motor Vehicle Credit – IRS Form 8910, <http://www.irs.gov>; <http://www.biodiesel.org>.

Environmental Study for High Speed Train between Las Vegas and Anaheim

Finding:

The State of Nevada should encourage and support the continued development and ultimate completion and operation of a high speed train between Southern California and Las Vegas.

Background and Supporting Evidence:

In April, 2003 the Federal Railroad Administration and the Nevada Department of Transportation were identified as the lead federal and state agencies, and the California-Nevada Super Speed Train Commission and Caltrans were identified as Cooperative Agencies, to the Complete the Environmental Impact Statement for the high speed train project. The information included to this point are preliminary design and engineering, route alignment, identification of potential station locations, financial analysis, right-of-way, and capital and operation and maintenance. When the project is completed it will reduce traffic on Interstate 15, reducing GHG and will eliminate the need to increase the number of lanes on the interstate. The high speed train will use a fraction of the land that increasing the size of I-15 would use. The high speed train will produce no GHG. It is estimated the 52 million people will be traveling this corridor annually by the year 2015. Existing highways and airports, however, have an annual capacity of only 38 million.

Recently, through the efforts of Senator Harry Reid, funding has been provided to allow the development of the necessary National Environmental Policy Act (NEPA) documentation. These funds will be utilized by the Nevada Department of Transportation to continue the NEPA process for the train.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada continue supporting the development, construction, and operation of a high speed train between Southern California and Las Vegas. Through the coordination of the Nevada Department of Transportation, the necessary NEPA documentation should be completed. The State of Nevada should work in cooperation with the congressional delegations of Nevada and California to secure federal dollars making this project a reality.

Impacts of Implementation:

Cost – It is anticipated that the majority of the costs for the planning, construction and perhaps, to a significant degree, operation of the train will be paid for through the federal government. There will likely be a state cost share component, however, at this time, the actual dollar amount for the project cannot be determined.

Waste Management

Solid waste and agricultural wastes (especially those from animal feeding operations) can significantly contribute to the emission of greenhouse gasses. Though sound management of these materials, emissions can be substantially reduced and, though conversion to electrical energy, provide valuable energy resources.

Ongoing public education is a critical component to raising the awareness of greenhouse gas emissions in Nevada. An educated and aware populace will make lifestyle choices that will reduce greenhouse gas emissions.

Nevada is in a unique situation in that it has an enormous potential for the use of renewable resources for power generation. Often however, these resources are in remote areas of the state making it difficult to get the power to the market. Compounding this problem is the predominance of federally owned lands which transmission lines must reside upon. It is imperative that the federal land managers recognize the importance of transmission corridors and encourage, not impede approval of these rights of way.

Finally, the Committee recognized the limitations of the recommendations contained in this report. The time frame to develop the report was short and the budget limited. To further implement the recommendations contained in the report, a State Climate Action Plan should be developed in cooperation with state and local governments, the private sector and utilities.

The recommendations in the waste, agriculture and other sectors address these important issues.

Recycling Market Development Board

Finding:

Developing a number of local companies in the Las Vegas Valley to utilize the recycle stream will decrease the greenhouse gas emissions associated with transportation of these streams to already established regional and international markets. In addition, this emphasis will also reduce the overall greenhouse gas emissions associated with extracting and processing raw materials.

Recommendations from other state or local governments considering a similar effort include finding an independent funding system, selecting an independent body to make final funding decisions, and providing adequate staffing. With a legislatively mandated board providing both an independent review and a check-and-balance process for projects, the lengthy and cumbersome review and approval procedure may discourage some potential applicants.

Background and Supporting Evidence:

The break point population for establishing a series of locally operating businesses that utilize the raw recycled market is two million people. The Las Vegas Valley population is at this break point now. The 2006 recycling rate for the Las Vegas Valley was seventeen percent. This is down from eighteen percent in 2005.

In 2006 the Las Vegas Valley recycled 4,900 tons of aluminum, 279,000 tons of ferrous scrap metal, 14,500 tons of plastic, 248,000 tons of paper, 78,500 tons of organic material, and 3,500 tons of used tires. Presently these products are purchased by buyers and transported to California, New Mexico, Arizona, Utah, Kentucky, China, and Malaysia.

Financial incentives or grants will be necessary to jump-start the associated industries. This money will be collected through a surcharge on every ton of waste going into a landfill. Technical assistance, promotions, marketing, and other activities will evolve.

Recommendation:

The Governor's Climate Change Advisory Committee recommends local Recycling Market Development Programs be established for the Las Vegas Valley that will reduce landfill waste, reduce transportation impacts, and save energy and natural resources by strengthening the recycling at a local level infrastructure.

Impacts of Implementation:

Cost – Undetermined at this time. Dependent upon infrastructure needs.

Funding source – Municipal solid waste tipping fees for start up and initial capitalization with a contribution of private dollars from the franchisee.

Staffing – None by this action.

Existing regulations and/or laws – No changes will be needed.

Continued Support of Solid Waste Recycling Efforts

Finding:

The Center for Climate Strategies estimated that solid waste management activities in Nevada generated 1.1 million metric tons of greenhouse gas emissions in Nevada in 2005. Recycling can significantly reduce the volume of waste destined for disposal as well as the concurrent need for waste transport and handling. The State of Nevada has a legislatively mandated goal of 25% for recycling of municipal solid waste. Through the recycling of waste materials and the reduction of the volume of waste destined to landfills, significant reductions in greenhouse gas emissions can be realized. This includes the generation of methane (a greenhouse gas) in landfills which is typically released to the atmosphere.

Background and Supporting Evidence:

The manufacture, use, and distribution of consumable good and products along with after use waste management all result in greenhouse gas emissions. The Center for Climate Strategies has estimated that waste management activities produced 1.1 million metric tons of greenhouse gas emissions in 2005. In addition to these direct sources, waste decomposition in landfills can produce substantial amounts of methane, a greenhouse gas. Through recycling of waste, emissions from these sources can be substantially reduced.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the State of Nevada encourage and support waste recycling in the State of Nevada. The committee strongly encourages attainment of the statewide recycling goal of 25%.

Impacts of Implementation:

Cost – To achieve the 25% goal for recycling of the municipal waste stream in Nevada some subsidies may need to be provided to some communities. These costs, at this time, are not defined.

Funding source – The source of solid waste subsidies may be derived from the State of Nevada, local government, or by ratepayers.

Staffing – No additional staff is needed within state government. Some local government and private staffing resources may be needed to achieve and maintain the 25% recycling goal.

Existing regulations and/or laws – None needed. Existing statutory and regulatory authorities are adequate.

Agriculture

Dairy Waste to Energy

Finding:

The primary benefit of the anaerobic digestion energy system is more cost-effective manure management that meets environmental and odor requirements, especially for large dairy farms and feedlots. For a facility housing 2,500 animals, the system eliminates 1,250 tons per year of methane emissions (equivalent to 26,250 tons of CO₂) from waste lagoons, and reduces emissions by a further 600 tons CO₂e per year by replacing 0.75 megawatts of coal-fueled electric generation.

On a smaller scale, current technology produces 35 kW of electricity from the waste of 300 dairy cows, and 100 kW from 500 cows.

Currently Nevada Power and Sierra Pacific are seeking sources of renewable electricity to meet the state's renewable portfolio standards.

Background and Supporting Evidence:

A typical dairy farm or feedlot houses nearly 2,500 animals, produces approximately 60,000 gallons of manure per day. Currently, this manure is discharged into lagoons and then used as fertilizer on the fields.

A temperature-phased anaerobic digestion (TPAD) energy system for manure management produces biogas, which fuels industrial internal combustion engines that drive electric generators. The electricity produced by the generators is then sold as renewable electricity to the grid.

Animal waste management is an essential part of dairy farming. As environmental regulations tighten and dairy farms become larger, new waste management systems become more important. The anaerobic digestion energy system also provides revenue to dairy farmers and significantly reduces odor problems.

New animal waste management systems can cost-effectively include energy production. State agricultural and energy agencies can partner to develop pilot projects with a large replication potential. Continued monitoring and dissemination of the results are critical to promoting this system.

Barriers to overcome include financing, regulatory permitting, and interconnecting with the grid. Commercial financing for the pilot project was unavailable because the technology is new in the United States. Therefore, government assistance was required. Regulatory permitting is a challenge since regulators may not know how to handle the new system. This project, like all distributed generation projects, will have to overcome utility interconnection issues and be competitive with market rates.

Recommendation:

The Governor's Climate Change Advisory Committee recommends Nevada encourage "green power" generation from dairy waste on Nevada farms, reducing methane emission, and producing electricity for participating farms. The Committee also encourages power utilities and dairies to work together to provide for long-term power contracts at competitive market rates.

Impacts of Implementation:

Cost – Unknown.

Funding source – Low interest loans or tax credits from state.

Staffing – There may some additional workload for the Division of Environmental Protection for the permitting of these operations for air and/or water pollution control. These impacts are so far unquantified.

Existing regulations and/or laws – Compliance with air quality and water quality requirements.

Other

Develop State Climate Action Plan

Finding:

A Climate Action Plan is an essential tool for states and territories to properly assess, plan, and implement strategies for the reduction of greenhouse gas emissions. Beyond the recommendation of the advisory committee, the state needs an action plan for the reduction of greenhouse gases. Over 28 other states adopted such plans and are pursuing measurable actions towards those goals.

Background and Supporting Evidence:

Nevada has advisory committees on climate change and renewable energy issues, and the most recent session of the legislature adopted statutes for a greenhouse gas registry and the preparation of periodic GHG emission inventories. However the state should develop/adopt a plan to identify emission reduction targets, implement action plans, and prepare mitigation strategies. The Plan could be a shared responsibility between the NDEP and the State Energy Office.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the Governor support the development of a State Climate Action Plan for Nevada that will set objectives and performance standards for activities related to the reduction of greenhouse gases. The Committee further recommends that adequate funds be secured for the State Energy Office and other appropriate agencies to accomplish this objective.

Impacts of Implementation:

Cost – Additional general appropriation to provide support for the development of a climate action plan, including staff time, public meeting coordination, and document preparation costs.

Funding source – To be identified.

Staffing – Additional staff resources for the energy office may be required to complete this recommendation.

Existing Regulations or Laws to be Modified – None

Streamline Governmental Permitting and Review Process at State and Federal Levels

Finding:

The state and federal review and permitting process is not sufficient to meet the future needs of energy production, particularly non traditional sources. The systems at both levels of government are structured for the last century's fossil fuel regime. While maintaining environmental protection, a system is needed that encourages innovation and entrepreneurship. Instead, applicants are often shuttled among agencies and even subgroups within the same agency. The result is often abandonment of projects based on time and expense.

Background and Supporting Evidence:

Governor Gibbon's Executive Order in 2007 directing state agencies to streamline permitting, served as a good starting point. Often the first governmental agency confronted amounts to a maze of regulations and laws not always understandable to smaller companies (and some bigger ones too) and project managers. A simple road map outlining where and whom to go to will be a tremendous help. In some cases the government agencies have become so compartmentalized they are unable to tell applicants a direction outside their own sphere.

More problematic, because of jurisdictional issues it is difficult for different levels of government to coordinate efforts.

Recommendation:

The Governor's Climate Change Advisory Committee recommends the Governor pursue, through the Western Governor's Association, a resolution requesting the federal land management agencies seek a coordinated approach for energy applicants especially those exploring alternative energy sources. Although the federal government and some individual agencies have promised responsiveness the federal government needs to coordinate its process, this should be done in concert with our Congressional Delegation who in the past have shown enthusiasm for alternate energy resources.

Finally, Governor Gibbons should consider an "Energy Summit" to reach consensus on the approach by which the federal and state regulatory agencies operate. Although much rhetoric has been expended about cooperation, the result has been less than acceptable.

Impacts of Implementation:

Cost – Staff time from Executive Branch.

Funding source – Existing agency budgets.

Staffing – Governor's Office including the Washington DC office, and line agencies in state government. No additional staff would be necessary unless streamlining procedures require.

Existing regulations and/or laws – Some alteration of federal and state regulations may be necessary, but most agencies have the mandate to accomplish streamlining presently.

Sequestration Initiative

Finding:

There are three large coal projects planned or under way in eastern Nevada: the 1500 MW Ely Energy Center in White Pine County, planned by Sierra Pacific Resources which is the holding company for Nevada's two main electric public utilities (Nevada Power and Sierra Pacific Power Company); the 750 MW Toquop plant planned by Sithe Global in Lincoln County; and the 1,590 MW White Pine plant planned by White Pine Energy Associates (LS Power and Dynergy).

The Nevada Division of Environmental Protection has signed a Memoranda of Understanding (MOU) with each of these producers. The MOUs require each producer to implement carbon capture and sequestration technology when it becomes commercially viable to do so.

The capture of carbon from power generation facilities and other industrial applications is under development and at least a decade away before becoming commercially available. Nevada's research institutions can and should play a major role in the development of these systems.

Geologic carbon sequestration opportunities in Nevada were evaluated by the University of Nevada, Reno, Bureau of Mines and Geology. Preliminary results suggest limited in-site sequestration sites are present in the state, however, much more work needs to be done to confirm these initial findings and to evaluate other sequestration technologies such as mineral carbonation. It is critical that sequestration options in proximity to carbon dioxide emitting facilities be fully explored and evaluated.

Background and Supporting Evidence:

The use of coal in electricity generating plants "adds a significant amount of carbon dioxide to the atmosphere per unit of heat energy²⁷." However, in Nevada, where high load growth and lack of generating capacity has caused a significant resource deficiency, coal remains the preferred option for the next "base load" electricity generation plants²⁸. This is due to a variety of factors including: the ubiquity of coal sources, such as Powder River Basin coal²⁹ in the western United States, the low cost and stability of coal prices as compared to other fuel sources such as natural gas, and the infeasibility and unavailability of plants that use other base load fuel sources, such as nuclear power. Senator John Ensign is a strong advocate in developing Nevada's in-state capacity for electrical generation (especially for the Ely Energy Center) in a manner that is environmentally responsible.

²⁷ Hong, B.D., and E.R. Slatick. "Carbon Dioxide Emission Factors for Coal." *Energy Information Administration, Quarterly Coal Report, January - April 1994* 94/Q1(1994): 1-8.

²⁸ The Public Utilities Commission of Nevada, in its Order in Docket No. 06-06051 approving initial funding for Sierra Pacific Resources planned Ely Energy Center and "Critical Facilities" status to the center, found that, "In terms of constructing new baseload capacity, the Commission acknowledges that a gas-fired combined cycle unit is relatively quick to construct, the cost for this capacity on a per MW basis is relatively low, it is relatively less risky for the utility to undertake, and less risky for the utility's shareholders when compared to a coal-fired facility such as the EEC. However, the cost and availability of fuel to operate gas generation facilities represents a significant price risk when compared to Powder River Basin coal. As Staff observed, while gas prices were relatively low at the time of hearing, the price of natural gas is far more volatile than coal." (Public Utilities Commission of Nevada, Revised Order, Docket No. 06-06051 and 06-07010, paragraph 197, January 24, 2007).

²⁹ The United States Energy Information Administration estimated in 2005 the total coal reserves in Wyoming to be 7,975 million short tons, at http://www.eia.doe.gov/cneaf/coal/reserves/table14_05.pdf.

Helping existing and future companies comply with future regulations and providing effective and cost efficient pollution control systems is essential to maintaining a healthy and stable environment and a strong economy. Capture and sequestration technology development is ongoing at the national and international levels. The State of Nevada has world class research institutions that can and should play a major role in the development of these social policies and environmental technologies.

Similarly, these institutions must be at the forefront in further evaluating Nevada's potential for geologic and other carbon sequestration opportunities to serve the state's industrial needs.

Recommendation:

The Governor's Climate Change Advisory Committee recommends;

1. The State of Nevada should establish a collaborative inter-agency research program/partnership to explore viable carbon dioxide sequestration site locations and management options in Nevada. The Desert Research Institute, the Nevada System for Higher Education, the Nevada State Energy Office, the Department of Conservation and Natural Resources, the Nevada Bureau of Mines, and private companies could participate. Such an organization should pool resources and expertise in search of the most favorable storage sites and management options for the transport and permanent and safe storage of carbon dioxide emissions. The research should be tailored to the needs and limitations that are unique to each project planned or underway and the resources available. These institutions should also provide information to state and federal agencies in the development of sequestration regulatory programs.
2. The state must seek and encourage the awarding of technology grants to the state's research institutions for the mitigation of coal burning emissions and development of cost effective carbon capture technologies. All funding sources in the private sector as well as all levels of government should be evaluated to support this recommendation.

Impacts of Implementation:

Cost – The cost of additional sequestration research in Nevada is difficult to determine. Sequestration technology is currently under development and practical cost estimates for research and actual projects are difficult to calculate. The cost of any project will be relative to its size and scope. However, the costs of the study and the gathering of data could be accomplished through graduate research and through the resources available at the Desert Research Institute, Nevada System of Higher Education.

Funding Source – Projects could be conducted through the West Coast Regional Carbon Sequestration Partnership (WESTCARB)³⁰, funded by participating state agencies, the United States Department of Energy, and participating companies. Other as yet unidentified technology development grants could provide significant funding.

Staffing – A collaborative state inter-agency research program/partnership to explore viable carbon dioxide sequestration locations and management options in Nevada will require a considerable increase in manpower by participating research institutions, state agencies and companies, depending on the size and scope of the project.

³⁰ WESTCARB is a research project that is funded principally by the Department of Energy via California Energy Commission, which is the prime contractor with the Department of Energy. WESTCARB is one of several regional projects organized under the National Energy Technology Laboratory to explore sequestration options according to regional variables. Participants in WESTCARB often provide supplementary cash or in-kind contributions to fund projects.

Existing Regulations or Laws to be Modified – NRS Chapter 445B (Air Pollution) and NAC Chapter 445B (Air Controls) will be likely be the appropriate legal framework to be modified to implement this proposal.

Education and Outreach

Findings:

A broader awareness of climate change issues is critical to the success of GHGs control. To ensure continuing progress is being made toward reducing GHGs emission in Nevada, clear, consistent and accurate messages must be circulated among policy makers, community and industry leaders, and the general public. It is critical to carry out the education and outreach activities in a cost-effective manner, including leveraging existing resources at the federal, state and local levels.

Background and Supporting Evidence:

Public opinions have strong influences on the policy-making of energy production and environmental conservation. Individuals can also contribute to GHGs reduction by adopting more environment-friendly lifestyles in housing, transportation, dining, shopping, and entertaining. These changes may increase personal expenses upfront, but in the long run both the individuals and environment will benefit from reduced energy consumption. It is important to educate the public to factor the big picture into personal decision-making. Although information about climate change, renewable energy, energy efficiency, green technology, etc. are accessible through the media and internet, the amount of information is overwhelming and, sometimes, not accurate. Furthermore, they are not tailored specifically for Nevadans' needs, including the consequence/adaptation of climate change, economic considerations, government policies and tax incentives, and options for alternative energy. Education and outreach should be a priority in any climate change strategy.

Recommendation:

The Governor's Climate Change Advisory Committee recommends a Climate Change Education/Outreach Committee be established. The committee should include representatives from State's Energy Office, Division of Environmental Protection and Governor's office. The committee should receive input from all interested parties including the general public. The education and outreach activities should focus on the following audiences: policy makers (e.g., legislators and Executive branch agencies; community leaders; K-12 students and home-schoolers; local civic organizations, and the general public.

The committee may conduct the following:

- 1) Education and marketing of GHGs mitigation actions;
- 2) Identification of existing resources and programs within the state and nationwide;
- 3) Identification of additional needs and supplemental sources of funding for climate change education;
- 4) Development of a clearinghouse for Nevada climate change information and education resources (i.e., a dedicated website);
- 5) Annual evaluation for the achievement of climate change education/outreach (including co-benefit issues, such as clean air and public health).

Impacts of Implementation:

Cost – The cost of education and outreach may be in part supported by government and the utility industry through grants and/or corporative agreements. The committee should actively seek for other funding and leveraging opportunities.

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