



CLARK COUNTY • DEPARTMENT OF AIR QUALITY
4701 W. Russell Road Suite 200 • Las Vegas, NV 89118-2231
(702) 455-5942 • Fax (702) 383-9994
Lewis Wallenmeyer Director

June 23, 2014

Ozone Advance
c/o Laura Bunte, Mail Code C304-01
109 TW Alexander Drive
RTP, NC 27711

Re: Clark County Ozone Advance Submission

Dear Ms. Bunt:

The Clark County Department of Air Quality (DAQ) is pleased to submit our Path Forward to meet the current National Ambient Air Quality Standard (NAAQS) for ozone. Clark County enrolled in the program on June 12, 2013. The goals of the program are to help attainment areas take action to keep ozone levels below the level of the NAAQS to ensure continued health protection for citizens, to better position areas to remain in attainment, and to efficiently direct available resources toward actions to address ozone problems quickly.

If you have any questions or need more information, please contact Mike Sword at (702) 455-1615.

Sincerely,

A handwritten signature in black ink that reads "L. Wallenmeyer". The signature is written in a cursive style.

Lewis Wallenmeyer, Director

cc:

Amy Zimpfer, EPA Region 9
Karina O'Conner, EPA Region 9
Matt Lakin, EPA Region 9

BOARD OF COUNTY COMMISSIONERS
Steve Sisolak, Chair • Larry Brown, Vice-Chairman
Susan Brager • Tom Collins • Chris Giunchigliani
Mary Beth Scow • Lawrence Weekly
Don Burnette, County Manager



**Clark County Department of Air Quality
Ozone Advance Program
Path Forward**

June 2014

Table of Contents

1. Introduction..... 1-1
 Current Attainment Status..... 1-1
 Impacts of Meteorological Conditions on Ozone Concentrations..... 1-3

2. Emission Sources 2-1
 Emissions and Source Categories 2-2
 Source Apportionment Modeling 2-4

3. Stakeholders 3-1

4. Outreach, Education and Voluntary Control Measures 4-1
 Private Companies 4-4

5. Local Mandatory Measures..... 5-1
 Air Quality Regulations 5-1
 Inspection and Maintenance Program..... 5-2
 Renewable Portfolio Standard 5-3
 Progress..... 5-4
 Future Planned Projects 5-5
 2013 Emission Reductions..... 5-6

6. Potential Voluntary Control Measures..... 6-1
 DAQ-Specific 6-1
 Electric Vehicle Purchase 6-1
 Vacuum-Assist Stage II Disabling Assistance Program..... 6-1
 Vapor Processor Rebate Program 6-1
 Other Entities 6-1

7. Future Mandatory Control Measures 7-1
 Federal Rules 7-1
 Reid Gardner Power Plant 7-1
 Project Neon..... 7-1
 Boulder City Bypass 7-2

8. Path Forward Implementation..... 8-1
 On-road and Non-road Mobile Emission Reductions..... 8-1
 Stage II Vapor Recovery and Control Systems 8-1
 Congestion Mitigation and Air Quality Projects 8-1
 DAQ Public Education and Outreach Program 8-2
 Renewable Portfolio Standard 8-2

Conclusion 8-2

List of Figures

Figure 1-1: Clark County Ozone Maintenance and Attainment/Unclassifiable Areas.....	1-1
Figure 1-2: Design Value History.....	1-2
Figure 1-3. Average wind speeds at McCarran (1989-2012).	1-4
Figure 1-4. Wind Directions in Clark County.	1-4
Figure 1-5. Airflow in Clark County.	1-5
Figure 2-1. NO _x Source Apportionment.	2-1
Figure 2-2. VOC Source Apportionment.....	2-2
Figure 5-1. Clark County Emissions Testing Area.....	5-3
Figure 5-2. Monthly NO _x Reductions.....	5-7

List of Tables

Table 1-1. Fourth Highest Concentrations.....	1-3
Table 1-2. 2013 Design Values for Clark County	1-3
Table 2-1. NO _x Emissions for 2008 and 2011	2-1
Table 2-2. VOC Emissions for 2008 and 2011	2-2
Table 2-3. NO _x Emissions in 2011	2-2
Table 2-4. VOC Emissions for 2011.....	2-3
Table 2-5. Emissions for Reid Gardner	2-3
Table 4-1. Southwest Gas Incentive Programs	4-6
Table 5-1. Future RE Projects.....	5-5
Table 5-2. New & Proposed Capacities.....	5-5
Table 5-3. Inputs for AVERT Model.....	5-6
Table 5-4. Model Outputs	5-6

List of Acronyms and Abbreviations

Acronyms

AQR	Clark County Air Quality Regulation
BCC	Clark County Board of County Commissioners
CFR	Code of Federal Regulations
DAQ	Clark County Department of Air Quality
EPA	U.S. Environmental Protection Agency
I/M	Nevada Vehicle Inspection and Maintenance Program
HA	Hydrographic Area
MEGAN	Model of Emissions of Gases and Aerosols from Nature
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NEI	National Emissions Inventory
NRS	Nevada Revised Statutes
RTC	Regional Transportation Commission of Southern Nevada
SIP	state implementation plan
SLAMS	State and Local Air Monitoring System
SBAP	Small Business Assistance Program
SNFA	Southern Nevada Fleet Association
SNRCP	Southern Nevada Regional Planning Coalition
TAC	Technical Advisory Committee
WESTAR	Western States Air Resources Council

Abbreviations

CO	carbon monoxide
KWh	kilowatt hour
MW	megawatt
NO _x	nitrogen oxides
ppb	parts per billion
tpy	tons per year
VOC	volatile organic compounds

1. Introduction

The Clark County Department of Air Quality (DAQ) enrolled in EPA’s Ozone Advance program on June 12, 2013. The program’s goal is to help maintenance and attainment areas reduce emissions to ensure continued health protection, to better position those areas to remain in attainment, and to efficiently direct available resources toward actions to address ozone and its precursors quickly. To this end, DAQ has implemented a set of stringent Air Quality Regulations (AQRs) in Clark County.

Current Attainment Status

Clark County is a maintenance area for the 1997 8-hour ozone National Ambient Air Quality Standard (NAAQS) and is in attainment/unclassifiable for the 2008 8-hour ozone standard. The state of Nevada uses hydrographic areas (HAs) to define airsheds. In Clark County, HAs 164A, 164B, 165, 166, 167, 212, 213, 214, 216, 217, and 218 are in the ozone “attainment/unclassifiable” and “maintenance” areas (Figure 1-1).

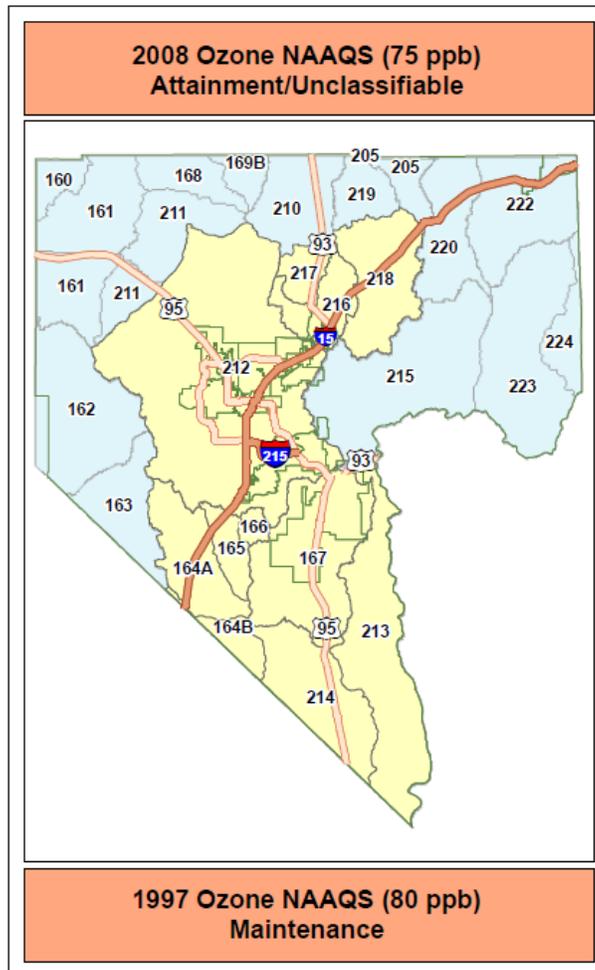


Figure 1-1: Clark County Ozone Maintenance and Attainment/Unclassifiable Areas.

The redesignation of the Clark County nonattainment area for the 1997 8-hour ozone standard became effective on February 7, 2012 (Vol. 78, pg. 1149 of the *Federal Register* [78 FR 1149]). Clark County is an “attainment/unclassifiable” area under the 2008 8-hour ozone standard.

The design value history in Figure 1-2 shows a downward trend from 2007 through 2011; however, the design values increased in 2012 and 2013.

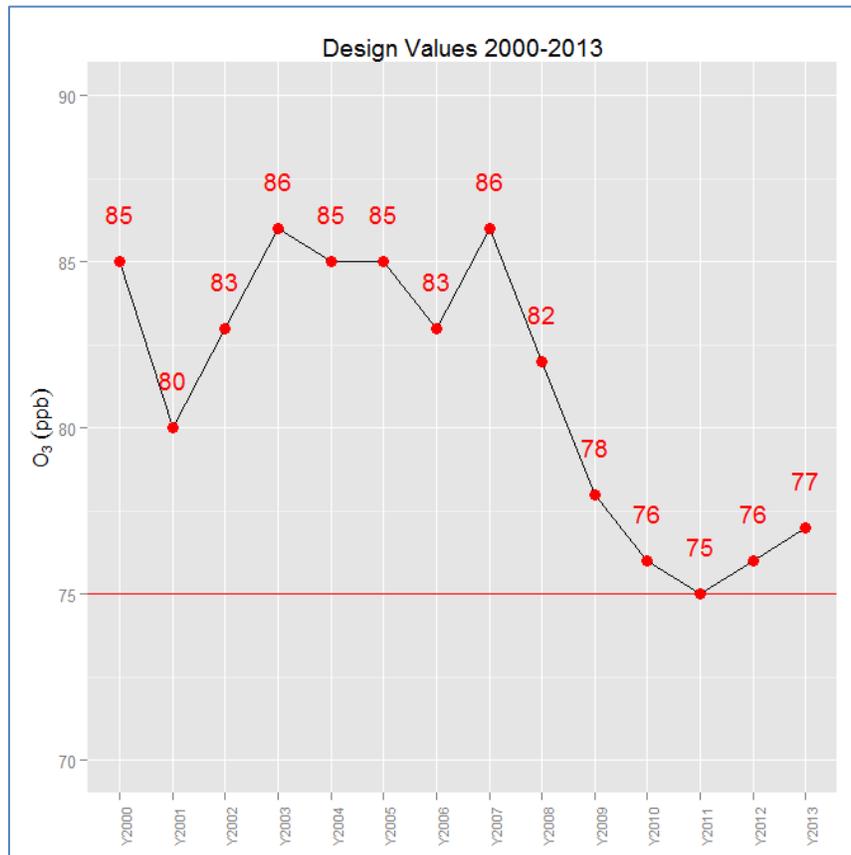


Figure 1-2: Design Value History.

Clark County was impacted by several fires during the 2012 and 2013 wildfire seasons, and the impacts from these fires raised the design values by a few parts per billion (ppb). Table 1-1 shows the fourth highest concentrations for 2013; the highest concentrations occurred during the fires on May 4 and July 3, 2013.

Table 1-1. Fourth Highest Concentrations

Monitoring Site	Highest		Second Highest		Third Highest		Fourth Highest	
	Date	Value	Date	Value	Date	Value	Date	Value
Apex	6/21/2013	78	4/30/2013	74	5/5/2013	73	5/4/2013	73
Mesquite	5/22/2013	68	5/16/2013	68	6/21/2013	67	6/18/2013	67
Paul Meyer	7/3/2013	87	5/4/2013	80	5/25/2013	76	6/21/2013	75
Walter Johnson	7/3/2013	87	5/4/2013	80	5/25/2013	75	7/19/2013	74
Palo Verde	7/3/2013	83	5/4/2013	82	5/25/2013	76	7/19/2013	74
Joe Neal	7/3/2013	81	6/21/2013	77	5/4/2013	77	7/20/2013	76
Winterwood	5/4/2013	76	6/21/2013	75	5/25/2013	73	5/21/2013	71
Jerome Mack	5/4/2013	74	5/25/2013	73	6/21/2013	72	5/21/2013	69
Boulder City	6/21/2013	74	5/22/2013	72	5/21/2013	72	6/22/2013	71
Jean	5/4/2013	84	5/21/2013	78	5/25/2013	76	6/21/2013	75
JD Smith	6/21/2013	76	5/25/2013	74	5/4/2013	74	6/5/2013	72

DAQ has submitted an exceptional event package for wildfires on May 23, 2012, and is in the process of completing exceptional event packages for the 2013 fires. Hopefully, the Region 9 office of the U.S. Environmental Protection Agency (EPA) will concur with our findings, which will lower the design values near or under the NAAQS. Our design value for calendar year 2013 is currently 77 ppb (Table 1-1).

Table 1-2. 2013 Design Values for Clark County

Monitoring Site	Fourth Highest Average			DV
	2011	2012	2013	
Jerome Mack	73	76	69	72
Paul Meyer	78	77	75	76
Winterwood	73	74	71	72
Joe Neal	77	80	76	77
Boulder City	70	77	71	72
Jean	74	77	75	75
Walter Johnson	77	78	74	76
Palo Verde	77	78	74	76
J.D. Smith	72	76	72	73

Impacts of Meteorological Conditions on Ozone Concentrations

High ozone events in Clark County generally occur during three weather types; all characterized by high pressure those results in a stable atmosphere and light winds aloft. Regional wind fields are also influenced by the local terrain, which channels winds through passes, slopes, and valleys. Such slope-and-valley wind systems are local, thermally-driven flow circulations created

in complex terrain areas like the Las Vegas Valley. These systems directly affect the transport and dispersion of pollutants.

According to historical data collected at McCarran International Airport¹, the highest average wind speeds in Clark County occur in the early spring (April–May), which are the same months that ozone concentrations seem to increase rapidly. Figure 1-3 shows average wind speeds.

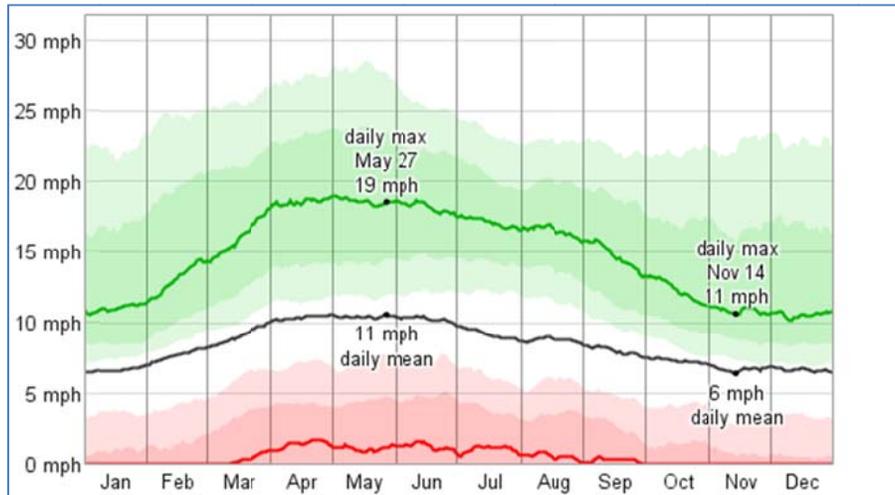


Figure 1-3. Average wind speeds at McCarran (1989-2012).

The same data shows that these winds mostly come from the south-southwest (Figure 1-4).

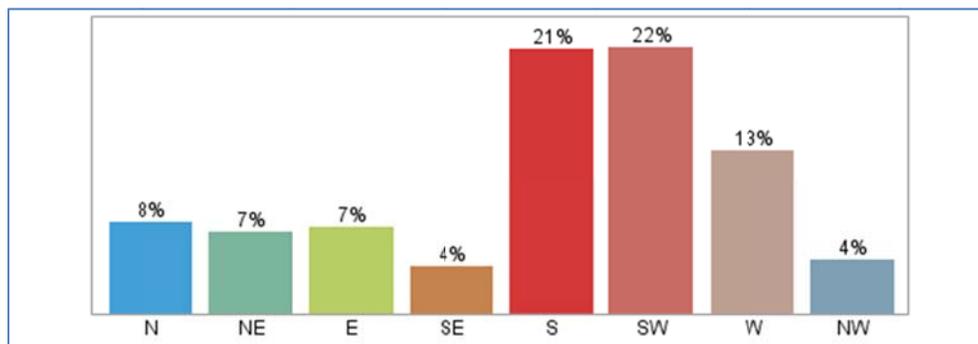


Figure 1-4. Wind Directions in Clark County.

The northwest quadrant of the Las Vegas Valley typically experiences the highest ozone levels during the days Clark County experiences elevated ozone concentrations. Often stagnant flow conditions in the populated urban areas of California increase ozone concentrations locally, which can be transported into Clark county and contribute to widespread exceedances throughout the Clark County network. Figure 1-5 shows the predominant airflow in Clark County, which enters from the south (following I-15) and exits to the northwest (following U.S. Highway 95).

¹ <http://weatherspark.com/averages/30697/Las-Vegas-Nevada-United-States>.

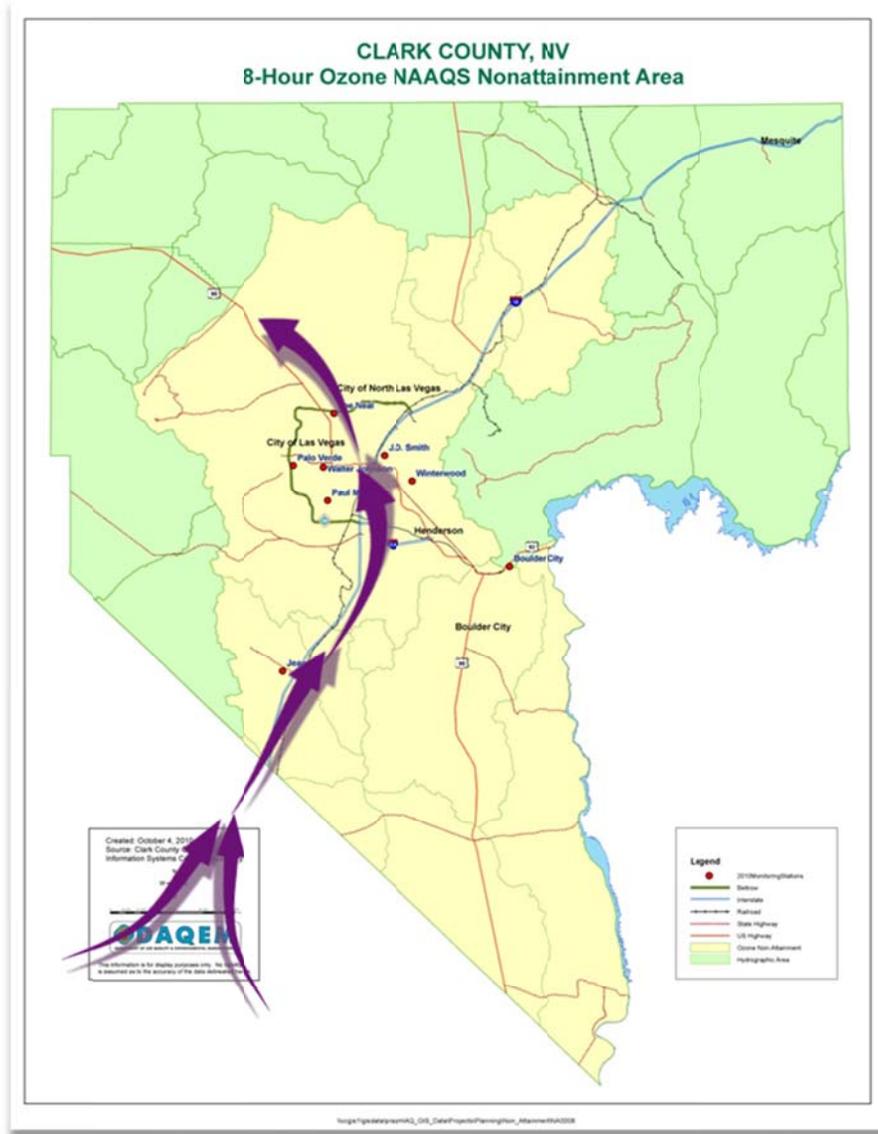


Figure 1-5. Airflow in Clark County.

Several studies directed by DAQ have confirmed that there is transport from southern California into Clark County; however, the contribution from local versus transported ozone is difficult to quantify.

2. Emission Sources

DAQ submits emission inventory data to EPA for stationary, area, on-road, and non-road sources. Most of this is based on local data, either figures submitted by source facilities or estimates made using population data. Biogenic emissions are calculated using the Model of Emissions of Gases and Aerosols from Nature (MEGAN).

EPA includes these emission inventories in the National Emissions Inventory (NEI),² which contains data not only for criteria pollutants, but also for hazardous air pollutants (some of which are VOCs). The following sections focus on nitrogen oxides (NO_x) and volatile organic compounds (VOCs), considered the precursors for ozone. Tables 2-1 and 2-2 provide NO_x and VOC data for four source categories: stationary, on-road, and non-road sources and biogenics. The stationary source group includes point and area sources. Biogenic emissions contribute substantially to VOC emissions, so are listed as a separate category.

Table 2-1. NO_x Emissions for 2008 and 2011

Source Category	2008	2011
Stationary	12,298	8,583
On-road	19,067	30,590
Non-road	15,600	13,654
Biogenics	812	735
TOTAL	47,777	53,562

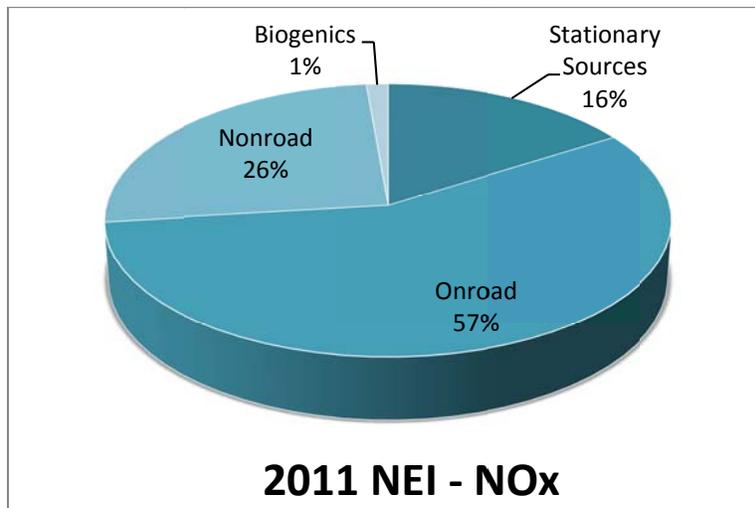


Figure 2-1. NO_x Source Apportionment.

² <http://www.epa.gov/ttn/chief/eiinformation.html>.

Table 2-2. VOC Emissions for 2008 and 2011

Source Category	2008	2011
Stationary Sources	24,852	17,261
Onroad	16,543	12,744
Nonroad	10,827	8,838
Biogenics	155,248	126,574
TOTAL	207,470	165,417

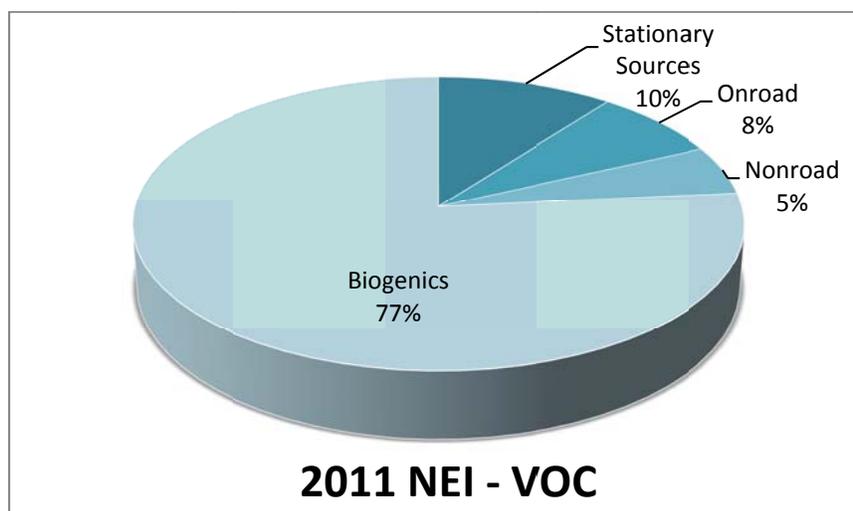


Figure 2-2. VOC Source Apportionment.

Emissions and Source Categories

Tables 2-3 and 2-4 list TIER 1 NO_x and VOC emission data, respectively, for 2011. Vehicles (on-road and non-road) make up the two highest categories of NO_x emissions, accounting for about 83% of the 2011 total in Clark County.

Table 2-3. NO_x Emissions in 2011

TIER 1 NAME	NO _x	% of Total
HIGHWAY VEHICLES	30,590.29	57.11
OFF-HIGHWAY	13,653.92	25.49
FUEL COMB. ELEC. UTIL.	3,788.70	7.07
FUEL COMB. OTHER	2,215.33	4.14
OTHER INDUSTRIAL PROCESSES	1,484.25	2.77
FUEL COMB. INDUSTRIAL	986.63	1.84
BIOGENICS - VEGETATION & SOIL	734.80	1.37
WASTE DISPOSAL & RECYCLING	53.14	0.10
MISCELLANEOUS	33.45	0.06
PETROLEUM & RELATED INDUSTRIES	19.38	0.04
STORAGE & TRANSPORT	2.03	0.00

TIER 1 NAME	NO _x	% of Total
SOLVENT UTILIZATION	0.36	0.00
METALS PROCESSING	0.20	0.00
TOTAL	53,562.48	100.00

Biogenics make up the highest category of VOC emissions, accounting for 76% of the 2011 total. On-road vehicles are the second-highest category, followed by solvent utilization.

Table 2-4. VOC Emissions for 2011

TIER 1 NAME	VOC	% of Total
BIOGENICS - VEGETATION & SOIL	126,574.00	76.52
HIGHWAY VEHICLES	12,744.08	7.70
SOLVENT UTILIZATION	12,675.41	7.66
OFF-HIGHWAY	8,838.12	5.34
STORAGE & TRANSPORT	2,057.69	1.24
FUEL COMB. OTHER	1,114.26	0.67
OTHER INDUSTRIAL PROCESSES	497.77	0.30
MISCELLANEOUS	340.28	0.21
WASTE DISPOSAL & RECYCLING	318.84	0.19
FUEL COMB. ELEC. UTIL.	227.02	0.14
FUEL COMB. INDUSTRIAL	13.29	0.01
PETROLEUM & RELATED INDUSTRIES	11.26	0.01
METALS PROCESSING	4.76	0.00
TOTAL	165,416.80	100.00

The Reid Gardner power plant, owned by NV Energy, contributed 80% of the utility NO_x total in 2011, or 3,034 tons per year (tpy) (Table 2-5).

Table 2-5. Emissions for Reid Gardner

	TPY	Percent
NEI 2011 Utilities	3,788.70	100.00%
Reid Gardner utility boilers 2011	3,034.02	80.08%
Reid Gardner utility boilers 2013	1,847.85	60.90%

In June 2013, Nevada's governor signed a law accelerating the retirement of Reid Gardner Generating Station. Three of the plant's four units will close in 2014, and the remaining unit will close in 2017. Currently, the boilers are coal fired; the fuel conversion from coal to natural gas at the plant will significantly reduce NO_x emissions in Clark County.

According to EPA's Air Markets Program Data,³ total 2011 NO_x emissions in Clark County were 3,789 tpy, with a Reid Gardner contribution of 3,034 tpy, or 80 percent. In 2013, however, Reid Gardner NO_x emissions were 1,848 tpy, a reduction of 61 percent from 2011 levels (Table 2-5). To offset the closure of the plant, NV Energy will construct or obtain 150 megawatts (MW) of renewable energy in upcoming years.

Source Apportionment Modeling

DAQ has conducted several studies to characterize ozone transport, and the results show that interstate transport significantly impacts Clark County. Transport from Asia and stratospheric ozone intrusions also contribute to ozone concentrations. However, it is almost impossible to quantify transport contributions from any of these sources. Nevertheless, DAQ plans to perform source apportionment modeling in the near future, with the goal of identifying sources that affect ozone concentrations in the county. The new computer modeling platform that EPA is proposing may be able to analyze interstate transport and better characterize source contributions.

Past modeling results show that the background ozone concentration in Clark County is between 40 and 45 ppb. The same results also show that transport into Clark County from inside and outside the United States is between 20 and 40 percent, depending on the episode.

³ <http://ampd.epa.gov/ampd/>.

3. Stakeholders

DAQ has engaged with stakeholder groups for many years to provide a forum to review and provide feedback on state implementation plans, Exceptional Event Rule demonstration packages, county rulemakings, etc. Stakeholder groups include members of the regulated community, environmental groups, other Clark County communities, state agencies, and the EPA.

In August 2001, the department's Management Board established the **Technical Advisory Committee (TAC)**. The TAC consists of representatives from local and state governments, as well as private sector stakeholders. Its mission is to:

- Provide input on technical and policy issues to the Clark County Air Quality Management Board and the Executive Advisory Committee;
- Discuss and recommend solutions to conflicts, challenges, or policy issues relating to air quality programs in Clark County;
- Ensure that the respective governing bodies of local governments and state agencies are kept abreast of all issues of concern, challenges, and progress in the development and implementation of air quality programs in Clark County; and
- Provide assistance to the DAQ management staff.

The TAC provides essential oversight and assistance in building consensus on policy and technical issues and in resolving problems as we move forward with a variety of programs to improve air quality in southern Nevada. The committee is scheduled to meet quarterly; occasionally, more frequent meetings are needed to address specific issues and work programs. All meetings of the TAC are publicly noticed, and the public is invited to attend.

Members of the Technical Advisory Committee (TAC) represent the following:

- Clark County
- City of Boulder City
- Regional Transportation Commission
- Nevada Division of Environmental Protection
- City of North Las Vegas
- City of Henderson
- Nevada Division of Weights and Measures
- City of Mesquite
- Associated General Contractors
- Various citizen and environmental groups
- Southern Nevada Homebuilders Association

- Bureau of Land Management
- Clark County Department of Aviation
- Nevada Department of Transportation (NDOT)
- Nevada Department of Agriculture
- University of Nevada, Las Vegas (UNLV)
- Western States Petroleum Association
- American Trucking Association
- Public Utilities Commission
- Silver State Materials Corporation
- Nevada Motor Transport Association
- Manufacturing industry
- Las Vegas Paiute Tribe.

Clean Cities ([Las Vegas Clean Cities Coalition](#)) is an organization that works with vehicle fleet managers, fuel suppliers, community leaders, and others throughout the county to decrease fuel use in transportation. The **Southern Nevada Fleet Association** ([SNFA](#)) is a subcommittee of Clean Cities, a nonprofit whose goal is to improve efficiency and reduce operating costs by advancing clean technologies, networking between agencies, education, and training.

SNFA provides the following tools to its members:

- Technical training, both for fleet managers and technicians
- Educational programming
- Networking
- Newsletters
- Problem-solving forums
- Strategies for reducing operating costs
- Grant access and information
- High-level speakers, manufacturers, and expert panels
- Best practices for fleets
- Fleet scorecards and benchmarking
- Web site blogs and forums
- Equipment and vehicle purchasing methods
- Specification writing and a library of sample specifications.

The Metropolitan Planning Subcommittee ([MPS](#)) assists the Southern Nevada Regional Transportation Commission (RTC) Executive Advisory Committee in preparing recommendations to the RTC Board. The subcommittee considers transportation planning that needs further analysis. Members include the planning agency manager of each RTC member

entity, the NDOT chief of program development, the director of the Department of Aviation, and the planning agency director of any incorporated city in Clark County. Additional members include DAQ staff and representatives from the Nevada Taxicab Authority, the Clark County School District, the Bureau of Land Management, the Southern Nevada Water Authority, public mass transit operators in Clark County, and the urban goods/freight transportation industry.

The Southern Nevada Regional Planning Coalition (SNRPC) recognizes that fast growth brings about many challenges that transcend governmental jurisdictional boundaries. In January 2000, Clark County, the cities of Boulder City, Henderson, Las Vegas and North Las Vegas, and the Clark County School District entered into an agreement to establish the SNRPC. Its purpose, guided by a 10-member board, is to “focus and capitalize on strategies that create a sustainable and balanced environment where economic and fiscal vibrancy, social equity, environmental preservation, and physical improvements are experienced by all in the community.” Projects include the Sustainability Initiatives, Southern Nevada Strong, the Committee on Homelessness, and the Regional Open Space & Trails project.

The legal authority for the **Advisory Committee on Control of Emissions from Motor Vehicles** was established by the 2013 Nevada Legislature in [Nevada Revised Statute \(NRS\) 445B.830](#), as amended by [Senate Bill 148](#). The committee was charged to:

- a. Establish goals and objectives for the program for control of emissions from motor vehicles;
- b. Identify areas where funding should be made available; and
- c. Reviewing and make recommendations concerning regulations adopted pursuant to [NRS 445B.770](#).

Committee members are appointed by the deputy director of the Department of Motor Vehicles and meet at least quarterly. See [Nevada Administrative Code AQT445B.853–857](#) for details.

The **Western States Air Resources Council (WESTAR)** was founded in 1988 by eight western state air agencies, and has since grown to fifteen states and several local and tribal air quality agencies. It was formed to promote the exchange of information between states, share resources for the common benefit of members, and serve as a forum for discussing regional air quality issues of common concern. WESTAR changed its bylaws in 2013, allowing DAQ to join as an ex-officio member, and the department has been a very active participant now that ozone transport has become a regional issue. During meetings and conferences, WESTAR discusses possible control measures and other ways to reduce NO_x and VOC emissions. This is an excellent platform to exchange information with agencies outside of Clark County and evaluate their control programs.

The council’s purposes are to:

- Promote the exchange of information related to the control of air pollution for use in state and federal activities, as authorized by air quality statutes and regulations.

- Develop processes and procedures for consideration by western states, federal land managers, and EPA to meet air quality objectives and protect environmental resources.
- Discuss air quality issues of common concern.
- Report on the status of efforts undertaken to achieve air quality objectives.
- Establish work groups, task forces, etc., to investigate specific topics and recommend a course of action for council members.
- Adopt resolutions and policy statements for council member implementation or use during the development of local, state, and federal programs, regulations, and laws.

4. Outreach, Education and Voluntary Control Measures

Several agencies and businesses in Clark County have actively promoted voluntary measures to control ozone precursors from mobile sources, such as cars, and energy usage. Government entities, as well as private companies, offer many different opportunities for the citizens of Clark County to engage in programs that indirectly reduce emissions.

However, it is difficult to achieve long-lasting results from voluntary programs because they involve a behavior change. Therefore, education and outreach are key components of any successful program. Recognizing this, the agencies and businesses promoting voluntary control measures have developed sets of materials to use in outreach campaigns to promote their programs. This section does not detail the campaigns, but rather focuses on the successes of programs themselves.

Government Agencies

The Nevada Office of Energy is the gatekeeper of many of the federal funds and grants available to agencies and entities in the state, distributing and tracking the funds it receives for projects in Nevada. The office itself has a directive, per the Nevada Revised Statutes, to prepare a state energy reduction plan that reduces the amount of energy purchased for state-owned buildings and facilities. To date, the energy consumption in state-owned buildings has declined by 10.2 percent. Between 2011 and 2012, the amount of renewable energy produced in Nevada increased by 19 percent.



The goal of DAQ's Public Education and Outreach Program is to enhance our interaction with the community and industry in efforts to create citizen awareness of and interest in air quality, transform behaviors and habits, and encourage voluntary air pollution-reducing actions. To this end, DAQ has developed and distributed to the public several brochures on air quality in general and ozone specifically. Additionally, the public can sign up for EPA's EnviroFlash alerts through our Web site. Every year, Clark County issues a season-long ozone advisory that informs the public of ozone's health effects and suggests ways to reduce ozone pollution. DAQ also provides daily air quality reports and forecasts on its Web site, along with real-time monitoring data.



Although many Small Business Assistance Programs (SBAP) in other states have a multi-branch mission (air, water, waste), our SBAP is focused on air only. The three cornerstones of our program are that assistance is free, consultation is confidential, and help is given on a non-enforcement basis. Two staff members are assigned to the SBA program: one assists with any and all permitting issues that small businesses may deal with, from applicability issues to completion of permit applications. The second helps with compliance concerns, reviewing air quality permits with small business owners/permit holders to ensure they understand permitting and regulatory air pollution control requirements. SBAP staff also assist clients with annual reporting and emission inventories and questions about annual billing.



In addition, SBAP conducts outreach activities, giving presentations to business groups and holding workshops for specific industries that may require a more narrow focus.

The Clark County Office of Sustainability promotes sustainability practices within Clark County.



One of its goals is to help residents and businesses understand the options available regarding energy conservation, clean transportation, and recycling, to name a few. Some of the regional efforts the office supports are greenhouse gas emission reductions, the Southern Nevada Green Building Program, the Southern Nevada Regional Plant Program, and the Regional Planning Work Program. Most of these are targeted towards energy and resource conservation. In 2008, the Clark County Board of County Commissioners (BCC) adopted the “Clark County Eco-County Initiative,”

which focuses on seven topics: air quality, water, land use/ habitat conservation, water reduction, green building, and energy use.

Welcome to Fabulous Las Vegas

Three different organizations, Clark County's Office of Sustainability, [Green Chips](#) and [Clean Energy Project](#) partnered to promote energy conservation in Clark County. One project they developed was to power the “Welcome to Fabulous Las Vegas” sign using solar photovoltaic energy and “...serve as a measurable stride toward a more sustainable future in Southern Nevada.”

Solar photovoltaic (PV) projects and electric car charging stations

Two 30 kilowatt (kW) solar PV arrays were installed on top of parking canopies at the Clark County Government Center and Development Services Campus. The array at the Government Center covers 20 visitor parking spaces, with six of those spaces equipped with electric vehicle charging stations. The Development Services Campus solar PV array is a covered parking installation with an interactive kiosk located inside the building. Together, these systems will reduce the County’s electric purchases by an estimated 52,000 kilowatt hours (kWh) per year. In addition, the County has an existing 30kW solar PV array located at the Spring Mountain Youth Camp.

Streetlight Retrofits

Clark County Public Works (CCPW) has converted approximately 5,000 residential neighborhood street lights from mercury vapor to energy efficient induction lighting that provide approximately 30% in energy savings, or, 850,000 kWh per year. CCPW has also replaced 400 watt High Pressure Sodium (HPS) luminaire fixtures with 130 watt LED fixtures at 190 signalized intersections for an energy savings of approximately 66%. Ultimately, all the remaining 310 signalized intersections will have the 400 watt HPS luminaire fixtures replaced to LED luminaire fixtures, and all new traffic signals will be equipped with LED luminaire fixtures.

Automotive Fleet

The County's fleet size is 2,700 vehicles with 100% alternative fuels and 537 hybrids with an estimated cost savings over regular gas vehicles of approximately \$1.5 million annually. By replacing the 537 regular gas vehicles with the same number of hybrid vehicles the County has reduced CO₂ emissions by 1,276 tons per year.

The City of Las Vegas has implemented the "Sustaining Las Vegas" program, which focuses on air quality and transportation, energy efficiency, renewable energy, green buildings, and climate protection. The Air Quality component promotes the purchase of fuel-efficient vehicles, encourages alternative transportation methods, and focuses on greenhouse gas emission reduction. The city's vehicle fleet includes several hybrid and electric cars, and employees have the opportunity to use electric bikes for short trips around the downtown area. Energy Efficiency and Renewables focuses on energy conservation programs and home energy assessments, targeting the use of alternative energy in the home. Additionally, the city monitors and manages energy consumption and costs for all city facilities, streetlights, and fleets. To that end, Las Vegas adopted a "Sustainability Energy Strategy" in 2008 that will help build a more sustainable community by conserving energy and increasing the use of renewable resources.



The City of Henderson's sustainability program, "OurHenderson," focuses on being green, which, "in the desert...really isn't about green at all....Being green, or sustainable, is really about maintaining the quality of our lives within the means of nature."⁴ The city thus implemented a range of energy conservation measures at city facilities, which add up to an average savings of \$250,000 annually. These measures



include remote power management to reduce computer energy demands in city facilities during off-peak hours, installation of new boilers at government buildings, lighting controls, an energy management control system for heating/air conditioning systems in city buildings, and traffic signal conversion from incandescent lamps to energy-saving LEDs. The city has expanded the number of hybrid and alternative-fuel vehicles in its fleet for a number of years, until now only 13 percent of non-emergency vehicles use standard fuels. The weatherization program emphasizes energy-efficient homes; the city performs a home assessment upon request and suggests measures that might increase energy efficiency. Homeowners who meet certain income requirements may have the opportunity for home weatherization at no cost to them.

The City of North Las Vegas introduced the ongoing "greeNLV" strategy in 2009. The Enhanced Recycling Program cut the number of garbage pickups to one day a week, reducing the number of trips by garbage/recycling trucks. The majority of the city's fleet has been replaced by hybrids or vehicles converted to alternative fuels to reduce NO_x emissions.



⁴ http://www.cityofhenderson.com/sustainability/Our_Henderson_eBook/pdf/HCD2831-OurBrochure_2.pdf.

The RTC is the transit authority and transportation/planning agency for southern Nevada. One of its major goals is to implement and update Clark County’s transportation systems to improve air quality. In this vein, the RTC established the Club Ride program to encourage commuters to use alternative transportation. One service offered is “Commute Options,” where a traveler can pick an alternative to driving alone. “Free Ride Matching” is a computer application to find a carpool or vanpool that suits a rider’s needs; another application locates the Park & Ride lot closest to a residence. The “Guaranteed Ride Home” feature ensures a commuter is not stranded when an emergency happens.



A network of live freeway traffic cams alerts commuters to possible traffic gridlocks so they can avoid traffic congestion. RTC also set up a Bike Center in downtown Las Vegas that provides free parking for 75 bikes and free workshops on bike repair. Additionally, RTC has an extensive electric bike program for government employees in the downtown area.

In its efforts to create a more sustainable community, the Las Vegas Valley Water District (LVVWD) built solar power generating systems at six facilities, including the Springs Preserve.



The 3.1 megawatt photovoltaic solar energy project is one of the largest ever built by a local public agency in the United States. The [Distributed Solar Array systems](#) generate approximately 5.3 million kilowatt-hours of clean electricity per year. The electricity generated by the solar arrays supports onsite operations, including pumping operations and water-treatment processes.

Private Companies

In addition to government agencies, there are private companies that promote voluntary control measures, in the form of rebates or incentive programs, for switching to more efficient appliances or installing alternative power sources. Some also provide better metering devices for homes. On average, four MW-hours (MWh) of renewables will displace 1 MWh of coal generation and 3 MW-hours of gas.⁵



Nevada’s Renewable Portfolio Standard (RPS) is one of the most aggressive in the nation, with a requirement that at least 25 percent of (the company’s) retail energy sales be derived from renewable energy resources by 2025. Innovative provisions of the standard allow up to 25% of the total credits from energy efficiency programs and require a minimum of 6% of the standard to come from solar resources. NV Energy signed its first contract for geothermal power in the early 1980s, and by 2013 had surpassed one gigawatt under contract.

NV Energy promotes customer-installed facilities through its RenewableGenerations program, which offers rebates for solar, wind, and hydropower projects. More than 1,400 projects totaling more than 38 MW have been installed to date in homes, businesses, public buildings, and

⁵ www.nrel.gov/electricity/transmission/.

schools. The company is also making it easier for customers to own plug-in electric vehicles by offering a special rate for charging them during off-peak hours. Customers who use NV Energy's natural gas or electric service to fuel their hot water heaters may receive an incentive for installing qualifying solar hot water systems and qualifying solar space heating systems.

NV Energy's utility-scale solar energy projects primarily comprise solar photovoltaic (PV) systems, which convert sunlight into electric current using the photoelectric effect, or concentrated solar power, which uses mirrors and tracking systems to focus a large area of sunlight into a heat source for a conventional power plant. Both systems involve long-term power purchase agreements.

NV Energy's standard meter for electric service is a digital smart meter. Smart meters collect household energy use information. Customers can access the data via a secure network. Residential customers may view energy use by day, in 15-minute intervals, by outside temperature, compare usage to previous months and see a projected bill. This smart meter is designed to help customers take control of their energy use.

NV Energy is also working with a leading appliance company to recycle old refrigerators and replace them with more efficient new ones. The NV Energy customers will receive a \$50 rebate.



Southwest Gas has a [dedicated Web site](#) that promotes energy savings and equipment efficiency for private homes and businesses with energy efficiency programs and rebates. The company has a vast array of rebates and promotions available for homeowners and businesses. Table 4-1 lists Southwest Gas programs available in 2014.

Table 4-1. Southwest Gas Incentive Programs

Name of Rebate/Program	Expiration Date	Description
Appliance Connections - Special Offer - NV Homeowner/Renter	9/30/2014	Have your gas range, dryer, or barbeque connected at a special price.
Nevada Air Curtain - Business	12/31/2014	Air curtains can help you reduce your energy usage and now we have rebates available! Requires natural gas space heating.
Nevada Boiler Equipment - Business	12/31/2014	Take advantage of rebates for new boilers or high-efficiency equipment for existing boilers.
Nevada Commercial Energy Audit Program	12/31/2014	An energy audit can lead you in the right direction to higher efficiency. Incentive awards 50% (up to \$5,000/facility; \$50,000/customer).
Nevada Convection Oven - Business	12/31/2014	Using hot air, commercial convection ovens are the workhorses in commercial kitchens and one of the most widely used appliances in the foodservice industry.
Nevada Conveyor Oven - Business	12/31/2014	Save money, energy and time with a natural gas conveyor oven!
Nevada Custom Commercial Rebates Program - Business	12/31/2014	Southwest Gas commercial customers in Nevada may be eligible to receive rebates on the installation of eligible measures resulting in verifiable natural gas savings.
Nevada Dishwasher - Business	12/31/2014	Want to save up to \$2,000 on a new ENERGY STAR® qualified commercial dishwashers (requires natural gas water heating)?
Nevada Lavatory Faucet - Business	12/31/2014	Receive a \$50 rebate for Lavatory Faucet.
Nevada Lavatory Faucet - Homeowner/Renter	12/31/2014	Receive a \$50 rebate for Lavatory Faucet.
Nevada Multi-Family Master-Metered Rebates	12/31/2014	Southwest Gas is pleased to offer rebates to multi-family master-metered builders within Southwest Gas' Nevada service territories.
Nevada Natural Gas Clothes Dryer - Business	12/31/2014	Get faster heat-up and shorter drying times with a natural gas dryer. Receive up to \$30 rebate on the purchase of a gas dryer with a moisture sensor.
Nevada Natural Gas Storage Water Heater - Business	12/31/2014	Get higher efficiency, better insulation and heat traps, and more efficient burners. Rebate up to \$500. Unit with thermal efficiency of at least 95% and input rating \geq 199,000 btu/hr.
Nevada Natural Gas Tankless Water Heater - Business	12/31/2014	Heat water only when you need it. Save energy, money, and space. Rebate of \$350 on the purchase of an ENERGY STAR® qualified unit.
Nevada Natural Gas Tankless Water Heater - Homeowner/Renter	12/31/2014	Heat water only when you need it. Save energy, money, and space. Rebate of \$350 on the purchase of an ENERGY STAR® qualified unit.
Nevada Smart Low-Flow Showerhead - Business	12/31/2014	Lower your monthly water and natural gas bill by using SmartTechnology that prevents hot water waste. \$20 rebate on the purchase of a showerhead with ShowerStart Technology™ and have a natural gas water heater installed in household.

Name of Rebate/Program	Expiration Date	Description
Nevada Smart Low-Flow Showerhead - Homeowner/Renter	12/31/2014	Lower your monthly water and natural gas bill by using SmartTechnology that prevents hot water waste. \$20 rebate on the purchase of a showerhead with ShowerStart Technology™ and have a natural gas water heater installed in household.
Nevada Smarter Greener Better® Homes Program for Homebuilders	12/15/2014	Enhance customer satisfaction and increase your business potential with ENERGY STAR® homes that provide all the features and amenities that homebuyers are looking for.
Nevada Smarter Greener Better® Solar Water Heating Program for Builder		Rebate incentives to qualifying Nevada customers who install solar water heating systems with a natural gas back up.
Nevada Smarter Greener Better® Solar Water Heating Program for Business	12/15/2014	Rebate incentives to qualifying Nevada customers who install solar water heating systems with a natural gas back up.
Nevada Steamer - Business	12/31/2014	Enjoy shorter cooking times and higher production rates with these ENERGY STAR® qualified steamers. Rebate up to \$200.
Nevada Tankless Water Heater – Single-Family and Multi-Family Individually-Metered	12/31/2014	Now is the perfect time to make <i>Smarter Greener Better®</i> choices for you and the environment. Save money with rebates on qualified energy-efficient products.
Nevada Windows Rebate - Homeowner/Renter	12/31/2014	Whether you own or rent your residence, the Southwest Gas Nevada Windows Rebate is a great way to increase the energy efficiency of your home.
NV Cooktops & Ranges - Special Offer - Homeowner/Renter	6/30/2014	Receive a FREE GE appliance with the purchase of a GE Monogram Pro Range or any Wall Oven & Cooktop Combo. See link or participating stores for details.
NV Cooktops & Ranges - Special Offer - Homeowner/Renter	6/30/2014	Receive a free dishwasher, ventilation system, or instant savings on the purchase of a qualifying Dacor appliances. See link or an authorized Dacor retailer for details.
NV Cooktops & Ranges - Special Offer - Homeowner/Renter	9/30/2014	Receive a free dishwasher on the purchase of any 36" or 48" DCS U-Series range. See link for details.
NV Cooktops & Ranges - Special Offer - Homeowner/Renter	12/15/2014	Receive a FREE dishwasher and ventilation hood with the purchase of select Thermador appliances.
NV Cooktops - Special Offer - Homeowner/Renter	9/30/2014	Receive a free dishwasher on the purchase of any DCS cooktop, wall oven & refrigerator.
NV Natural Gas Clothes Dryer - Homeowner/Renter	12/31/2014	Get faster heat-up and shorter drying times with a natural gas dryer. Receive a \$30 rebate on the purchase of a gas dryer with a moisture sensor.
NV Ranges - Special Offer - Homeowner/Renter	9/30/2014	Receive a free dishdrawer dishwasher on the purchase of a DCS french door refrigerator & any 30" DCS U-Series range. See link for details.
Smarter Greener Better® Solar Water Heating Program for Nevada - Homeowner/Renter		Southwest Gas is proud to offer a program providing rebate incentives to qualifying Nevada customers who install solar water heating systems with a natural gas back-up.

MGM Resorts International[®] has implemented a comprehensive environmental program across its 15 properties. Green Advantage focuses on five areas: energy and water conservation, green buildings, recycling and waste, sustainable supply chain, and outreach and education. In the last five years, MGM Resorts has saved nearly 2 million kilowatt-hours of natural gas through operating improvements, employee education, community and business partnerships, and ongoing monitoring. A total of 420 kilowatt-hours of electricity was saved through conservation.



Throughout its properties, MGM Resorts installed light dimmers and motion sensors to power down lights when not in use. The Mandalay Bay Convention Center designed and developed an intelligent lighting control platform that is now an industry model, saving enough energy to power 400 average homes. Most of MGM's properties have received a Leadership in Energy & Environmental Design certification, and its CityCenter won Gold Awards from the U.S. Green Building Council.

The employee education program is "...dedicated to engaging and empowering MGM Resorts' employees and surrounding communities to share in our sustainability efforts by committing to their environmental education at work and home."⁶ Through participation in Club Ride, MGM Resorts employees kept 470 tons of greenhouse gases from being released in 2012, including several tons of NO_x.

Mechanical equipment retrofits and improvements over the last few years included the relocation of two central plant boilers from Mandalay Bay; a completed optimization on central plant boilers, chillers, and pumps; and implementation of air handler controls throughout the casino.

MGM Resorts International planned the installation of one of the largest rooftop solar photovoltaic arrays in the world at the Mandalay Bay Resort Convention Center in Las Vegas. The 6.2-megawatt installation will be MGM Resorts' first commercial solar project in the United States and will generate enough electricity to power the equivalent of 1,000 homes. At peak production, the rooftop array is expected to produce nearly 20 percent of the Mandalay Bay's power demand.

In 2007, Caesars Entertainment committed to being a responsible steward of the environment. Through a program named CodeGreen, Caesars identifies, monitors, measures, assess, manages and reduces their material impact on the environment. For example, in 2012 Caesars completed 37 corporate efficiency projects (lighting, HVAC and water) with an investment of \$3.5 million; delivering annualized savings estimated at \$2.5 million with nearly 24 million kWh energy savings per year. Caesars also achieved an absolute reduction in greenhouse gas emissions of 11.4% from 2007 to 2012, an amount that exceeded their targeted reduction one



⁶ <http://www.mgmresorts.com/csr/environmental/green-advantage/outreach-education.aspx>.

year early. These efforts, and others, have earned Caesars three Travelife Gold Certifications for commendable environmental sustainability practices.

5. Local Mandatory Measures

Air Quality Regulations

In accordance with NRS Chapter 445B, the BCC has adopted the AQRs and delegated enforcement authority to DAQ. Emission sources within Clark County are required to comply with all existing rules and regulations through federally enforceable state implementation plan regulations.⁷

Clark County has an approved Prevention of Significant Deterioration (PSD) program, and most of the AQRs are EPA-approved. The BCC has adopted several regulatory updates and submitted them to EPA for incorporation in Nevada's State Implementation Plan (SIP). Below is the complete list of AQRs, with section numbers on the left side.

- 0 Definitions
- 2 Procedures for Adoption and Revision of Regulations and for Inclusion of those Regulations in the State Implementation Plan
- 4 Control Officer
- 5 Interference with Control Officer
- 6 Injunctive Relief
- 7 Hearing Board and Hearing Officer
- 8 Persons Liable for Penalties – Punishment: Defense
- 9 Civil Penalties
- 10 Compliance Schedules
- 12.0 Applicability, General Requirements and Transition Procedures
- 12.1 Permit Requirements For Minor Sources
- 12.2 Permit Requirements For Major Sources In Attainment Areas (Prevention Of Significant Deterioration)
- 12.3 Permit Requirements For Major Sources In Nonattainment Areas
- 12.4 Authority To Construct Application And Permit Requirements For Part 70 Sources
- 12.5 Part 70 Operating Permit Requirements
- 12.6 Confidentiality
- 12.7 Emission Reduction Credits
- 12.9 Annual Emissions Inventory Requirement
- 12.10 Continuous Monitoring Requirements for Stationary Sources
- 12.11 General Permits for Minor Stationary Sources
- 12.12 Transfer of Permit
- 12.13 Posting of Permit
- 13 National Emission Standards for Hazardous Air Pollutants
- 14 New Source Performance Standards
- 18 Permit and Technical Service Fees
- 21 Acid Rain Permits
- 22 Acid Rain Continuous Emission Monitoring

⁷ Although not a SIP rule, DAQ administers the Part 70 (Title V) permit requirements through the implementation of Section 12.5 – Part 70 Operating Permit Requirements.

- 25 Affirmative Defense for Excess Emissions Due to Malfunctions, Startup, and Shutdown
- 26 Emission of Visible Air Contaminants
- 27 Particulate Matter from Process Weight Rate
- 28 Fuel Burning Equipment
- 32 Reduction of Animal Matter
- 33 Chlorine in Chemical Processes
- 40 Prohibitions of Nuisance Conditions
- 41 Fugitive Dust
- 42 Open Burning
- 43 Odors in the Ambient Air
- 44 Prohibitions on Planting, Selling, or Offering to Sell Fruitless Mulberry and European Olive Trees
- 45 Idling of Diesel Powered Motor Vehicles
- 50 Storage of Petroleum Products
- 51 Petroleum Product Loading into Tanks, Trucks And Trailers
- 53 Oxygenated Gasoline Program
- 70 Emergency Procedures
- 80 Circumvention
- 81 Provisions of Regulations Severable
- 90 Fugitive Dust From Open Areas and Vacant Lots
- 91 Fugitive Dust From Unpaved Roads, Unpaved Alleys, and Unpaved Easement Roads
- 92 Fugitive Dust From Unpaved Parking Lots and Storage Areas
- 93 Fugitive Dust From Paved Roads and Street Sweeping Equipment
- 94 Permitting and Dust Control for Construction Activities

Inspection and Maintenance Program

Clark County implemented a basic inspection/maintenance (I/M) program in 1978, updated to an enhanced program in 1995. The current program is a decentralized hybrid program that includes both test-only and test and repair stations operated by independent contractors.

NRS Chapter 445B (“Air Pollution”) establishes the authorities and requirements for regulating motor vehicle emissions in the state. In particular, NRS 445B.760 establishes the state’s authority to develop emission standards and NRS 445B.770 establishes the authority for counties to adopt regulations controlling vehicle emissions and to develop a program for vehicle inspection and testing.

Emission testing is required of all passenger and light duty vehicles in the Las Vegas Valley (HA 212) and within a five-mile buffer zone around it. The only exceptions are vehicles based in Goodsprings, a small town near the border of the buffer zone. The town of Jean is outside the buffer zone.

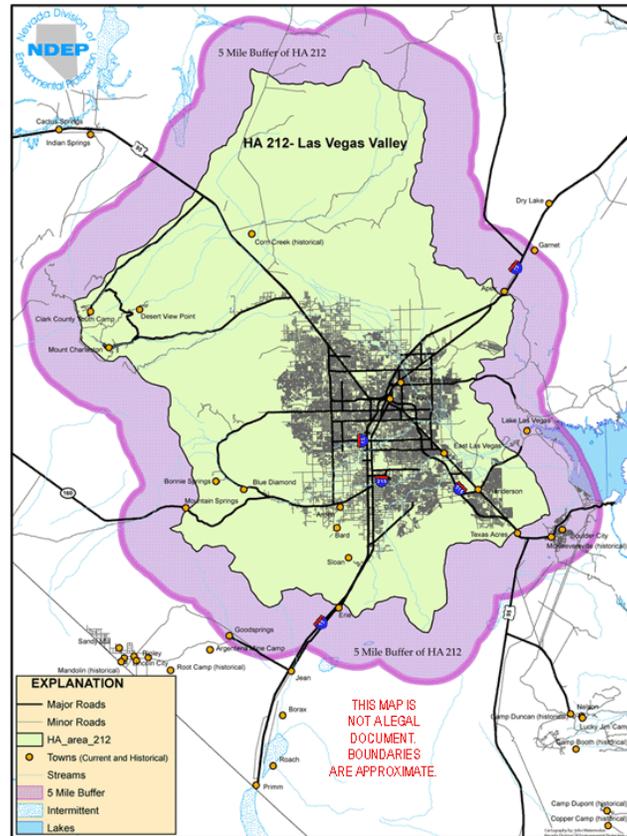


Figure 5-1. Clark County Emissions Testing Area.

Renewable Portfolio Standard

The Nevada Legislature adopted the state RPS in 1997, and has modified it in every legislative session since. The RPS establishes the percentage of electricity sold by an electric utility to retail customers that must come from renewable sources. More specifically, electric utilities are required to generate, acquire, or save a certain percentage of electricity annually using portfolio energy systems or energy efficiency measures.

The percentage of renewable energy required by the RPS will increase every two years until it reaches 25 percent in 2025. Included within that is a requirement that solar facilities generate at least five percent of the total renewable energy in the portfolio through 2015 and at least six percent beginning in 2016. In 2005, the Legislature determined that energy efficiency measures can be used to comply with up to 25 percent of the annual RPS requirement; however, half of that 25 percent must come from measures installed at residential customer service locations.

Progress

NV Energy installed 3,543 kW of solar electric equipment in southern Nevada in 2013, out of a state total of 5,365 kW. Equipment was installed in residences, small businesses, schools, and public-sector buildings.

The state's Office of Energy closely tracks renewable energy generation. In 2010, Nevada generated 3,034,160 MWh from renewables. The following year saw a 6 percent increase to 3,217,758 MWh. In 2012, the last year for which data are available, Nevada generated 3,822,968 MWh of renewable energy, an increase of 19 percent from the previous year. Projects scheduled for completion in 2014 will increase the total generated by renewables even more.

The following projects are operational and online, some since 2007; others came online in 2013. As the list below demonstrates, Nevada has made substantial progress in generating renewable energy since the inception of the RPS.

Apex Nevada Solar – 20.0 MW

This solar PV project located 30 miles north of Las Vegas came on line in 2012.

Las Vegas Valley Water District (6 projects) – 3.0 MW

The Water District owns six Las Vegas-area solar PV projects totaling 3.0 MW. These installations began producing electricity in 2006.

Mountain View Solar – 20.0 MW

Currently in the construction stage, this solar PV project near Apex being developed by the City of North Las Vegas is expected to be operational in 2014.

Nellis Air Force Base Solar Star – 13.2 MW + 19 MW

This solar PV project is one of the largest in the West. Operational in 2007, it can produce more than 13 MW of energy for Nellis Air Force Base. An additional 19 MW solar photovoltaic power system will be built at the base in 2015.

Nevada Solar One – 69.0 MW

This solar thermal plant is located in Eldorado Valley, near Boulder City. It came on line in 2007.

Searchlight Solar – 17.5 MW

Still in the development stage, this solar PV project will be located near Searchlight.

Silver State Solar – 52.0 MW

Operational in 2012, this solar PV array near Primm was the first project built on public lands in Nevada.

Spectrum Nevada Solar – 30.0 MW

Operational in 2013, this solar PV project is located northeast of Las Vegas.

CC Landfill Energy, LLC – 12.0 MW

Located at Republic Services' Apex regional landfill, this project is Nevada's largest landfill gas-to-energy facility. It began producing energy in 2012.

Goodsprings Energy Recovery Station – 7.5 MW

This is the first Nevada power plant to capture waste heat from a natural-gas compression plant.

Searchlight Wind Energy – 200 MW

Located in Searchlight, NV, 60 miles southeast of Las Vegas, this wind energy project will have 83 2.3 MW Siemens wind turbines.

Moapa Solar Energy Center – 200MW

The Moapa Solar Energy Center Project will involve the development of up to 1,000 acres of the Moapa reservation to produce approximately 200 MWs of solar energy.

Midland Solar Project – 350MW

A 350 MW solar plant will be built outside of Boulder City. This will be one of the largest renewable energy ventures in the country.

Future Planned Projects

The following projects are currently planned in Clark County.

Table 5-1. Future RE Projects

PLANT NAME	COUNTY	SUMMER CAPACITY	PRIME MOVER	ACTUAL OR PROPOSED ONLINE DATE
Copper Mountain 2	Clark	58 MW	Photovoltaic	Dec. 2014
Spectrum Solar	Clark	30 MW	Photovoltaic	Sept. 2013
Mountain View Solar	Clark	8 MW	Photovoltaic	Feb. 2014
Copper Mountain 3	Clark	250 MW	Photovoltaic	Dec. 2016
K-Road	Clark	250 MW	Photovoltaic	Dec. 2015
Silver State Solar Power South	Clark	250 MW	Photovoltaic	May 2017

Table 5-2. New & Proposed Capacities

ENERGY SOURCE	2012	2013	2014	2015	2016	2017	TOTAL
Solar PV	173 MW	30 MW	66 MW	250 MW	250 MW	250 MW	1,019 MW
Solar Thermal		110 MW					110 MW
TOTAL							1,129 MW

2013 Emission Reductions

DAQ used EPA’s AVOIDED Emissions and generation Tool (AVERT) to calculate the emission reductions in 2013 due to renewable energy and energy efficiency programs. It started with the nine projects online at the beginning of 2013, which generated a total of 203 MW. Another project, Spectrum Solar (30 MW), came online in 2013, and an additional 5 MW were recovered through NV Energy’s Solar Electric Program.⁸ All in all, renewable energy projects produced a total of 238 MW in 2013. Table 5-3 shows the corresponding input file for the AVERT model.

Table 5-3. Inputs for AVERT Model

Enter EE impacts based on the % reduction of regional fossil load.				
Reduce generation by a percent in some or all hours.				
Apply reduction to top X% hours:	0%	% of top hours		
Reduction % in top X% of hours:	0.0%	% reduction		
And/or enter EE impacts distributed evenly throughout the year.				
Reduce generation by annual GWh:	0	GWh		
OR				
Reduce each hour by constant MW.	0	MW		
And/or enter annual capacity of RE resources.				
Wind capacity:	0	MW		
Utility solar PV capacity:	238	MW		
Rooftop solar PV capacity:		MW		

According to the model, renewable energy generation displaced 87,700 MWh . This equals a reduction of 31,400 lbs. (15.7 tpy) of NO_x. During the 2013 ozone season, renewables displaced a total of 22,500 lbs. (11.25 tons) of NO_x in Clark County (Table 5-4).

Table 5-4. Model Outputs

Peak Gross Generation, Post-EERE (MW)	Annual Gross Generation, Post-EERE (MWh)	Annual Displaced Generation (MWh)	Annual Displaced NO _x (lbs.)	Ozone Season Displaced NO _x (lbs.)
4,416	19,862,400	-87,700	-31,400	-22,500

⁸ RenewableGenerations – December 2013.

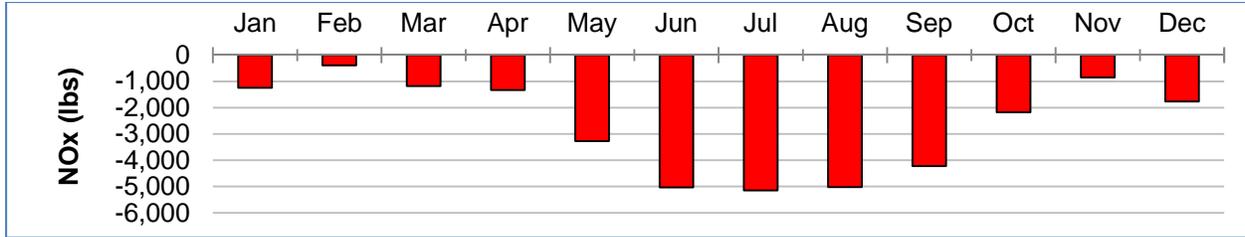


Figure 5-2. Monthly NO_x Reductions.

6. Potential Voluntary Control Measures

DAQ-Specific

Earlier this year, the RTC asked if DAQ had any projects to include in the Transportation Improvement Program (TIP) for federal fiscal years 2015–2019. DAQ will participate in the TIP through projects funded by the Congestion Mitigation and Improvement Program (CMAQ). The three projects targeted for CMAQ funds are:

Electric Vehicle Purchase

DAQ will invest up to \$300,000 in plug-in hybrid vehicles for the Clark County fleet, with the option to purchase electric charging stations. They will be available to county employees at the Government Center for business purposes and to Building Department employees for conducting inspections. Electric vehicles emit up to 80 percent fewer VOCs and 79 percent less NO_x than conventional gas-fueled vehicles.

Vacuum-Assist Stage II Disabling Assistance Program

In May 2012, EPA determined that Stage II controls on gasoline stations are no longer necessary. DAQ will offer financial assistance to any gasoline station owner who wants to disable the assist system. A total of \$500,000 is set aside for the program, and DAQ will reimburse owners up to 80 percent of the cost. This program could reduce VOC emissions by 1.26 tpy per station.

Vapor Processor Rebate Program

This program supplements the Stage II Disabling Assistance Program. DAQ will offer financial assistance to any gasoline station owner to retrofit a pressure/vacuum relief valve with a device that reduces evaporative emissions while leaving the system intact. The potential cost of this retrofit is \$40,000, so DAQ will use the \$500,000 allocated to this program to reimburse owners 50–80 percent of their costs. This program could reduce VOC emissions by 4.46 tpy per station.

Other Entities

Other agencies and private companies will continue to provide the incentive programs described in Section 4 to their customers. Everybody involved is continuously evaluating programs and seeking funding for more pollution-prevention and emission-reduction programs. Stakeholders will continue with their educational programs, and DAQ will continue to hold stakeholders meetings as appropriate.

7. Future Mandatory Control Measures

Federal Rules

DAQ relies on new federal rules for on-road and non-road mobile sources to control NO_x emissions in Clark County. In early 2014, EPA finalized the Tier 3 Motor Vehicle Emission and Fuel Standards, which set new emissions standards and lower the sulfur content of gasoline. The standards will reduce tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. According to EPA estimates, Tier 3 will reduce non-methane organic gases and NO_x by approximately 80 percent compared to today's fleet. The new standard will become effective in 2017.

Reid Gardner Power Plant

Nevada Senate Bill 123 (SB123) specifies the details for retiring the coal-fired boilers at the Reid Gardner power plant. The bill requires NV Energy to submit to the Nevada Public Utility Commission a comprehensive plan for reducing emissions from coal-fired plants and their replacements with increased capacity from renewable energy facilities and other electric plants. An amendment⁹ sets out the following actions:

- Retire Reid Gardner 1, 2 & 3 (300 MW) by December 31, 2014.
- Retire Reid Gardner 4 (257 MW) by December 31, 2017.
- Replace Reid Gardner 1, 2, 3 and 4 with 500–550 MW of natural gas.
- Build 150 MW of renewables, with construction to begin by December 2017 and finish by the end of 2021.

Although SB123 allows retrofitting the coal-fired boilers to gas-fired boilers, that would still result in a significant reduction of NO_x emissions.

Project Neon

NDOT has future plans to reengineer and rebuild the U.S. 95/I-15 interchange near downtown Las Vegas. Growing congestion (specifically on I-15) and freeway overcapacity contribute to high accident rates, noise pollution, and air pollution, especially along the Las Vegas resort corridor. Project NEON is designed to alleviate this congestion by providing alternatives to motorists who travel I-15 daily, which will also reduce emissions from NO_x, one of the biggest ozone precursors.

The project has six phases; the first has already started and is scheduled to be finished in 2016. It includes High-Occupancy Vehicle lanes between U.S. 95 and I-15, along with better connections to surface streets into the downtown area. Completion of all six phases is scheduled for 2019.

⁹ NVision (proposed amendment to SB123), version 2, 4/11/13.

Boulder City Bypass

This project involves road improvements to U.S. Highway 93, a major regional commercial corridor and the single route through Boulder City. As a major urban arterial, Highway 93 carries 32,000 vehicles per day of east-west traffic.

Although Clark County is currently designated in attainment for ozone, there is concern that ozone levels are higher in Boulder City than in the Las Vegas Valley. If traffic congestion remains a problem on U.S. 93, ozone levels could rise even higher. Past sampling of ozone at the Boulder City monitoring station has indicated that ozone levels recorded there are often as high as the values recorded at monitoring stations in Las Vegas. One explanation could be a high production of NO_x from vehicles traveling on U.S. 93, since vehicle emissions contribute significantly to NO_x. High traffic volumes, especially in combination with idling vehicles, produce higher levels of NO_x, which could lead to higher ozone levels.

8. Path Forward Implementation

DAQ is proposing the following measures to proactively control ozone precursors. We are dedicated to investigating any new measures that might become available, and will implement them if they are economically and financially feasible.

On-road and Non-road Mobile Emission Reductions

According to data from the Nevada Department of Motor Vehicles, older cars and trucks are replaced with new, cleaner vehicles at a rate of about 4 percent a year. Over the next few years, this turnover will significantly reduce NO_x emissions. DAQ also anticipates significant reductions when the Tier 3 program for onroad and nonroad engines and equipment becomes effective in 2017.

DAQ does not have any jurisdiction to regulate engine emissions, so it has proactively promoted voluntary emission reduction programs and will continue to do so as long as federal funds are available to help. Availability of funding from several grant programs have already enabled our Clark County partners to effectively replace their fleets with more efficient vehicles, hybrids, and/or electric cars.

Stage II Vapor Recovery and Control Systems

In May 2012, EPA determined that onboard vapor recovery technology is used throughout motor vehicle fleets nationwide and waived the requirement to implement Stage II gasoline vapor and control systems at gasoline dispensing facilities in nonattainment areas. DAQ is currently reviewing this regulation, and is planning to phase out the installation of Stage II systems at gas-dispensing facilities in Clark County.

Congestion Mitigation and Air Quality Projects

DAQ's Electric Vehicle project has two phases. In the first phase, DAQ will obtain a Buy American Waiver. This phase is scheduled to start in October 2014, and DAQ plans to have the waiver by January 2015. In the second phase, DAQ will issue bids and purchase the vehicles. This phase is set to start in February 2015 and finish in September 2015.

The first phase of the Vacuum-Assist Program, which involves development, marketing, and roll-out, is scheduled to begin in October 2015 and finish in September 2016. The second phase, implementation, will begin in October 2016 and finish in September 2017.

The Vapor Processor Rebate program will start in October 2015 and last through September 2018. This includes the program development and marketing phases, as well as the program implementation phases.

DAQ Public Education and Outreach Program

DAQ actively conducts local public outreach and education activities through targeted community interaction to promote clean air initiatives. Promoting individual and corporate behavior that reduces air pollution is an important role that is well suited to DAQ. DAQ promotes clean air initiatives by partnering with local schools and public/private organizations in the planning of public activities and events that provide public information (simple tips) and incentives to reduce ozone precursor emissions, e.g., Earth Day events.

DAQ also maintains an EPA sponsored air quality messaging service (EnviroFlash) that the public can subscribe to via the DAQ webpage. EnviroFlash is designed to send emails about the daily air quality forecast in the Las Vegas Valley; information that the local radio or television stations provide, plus suggested safety measures when levels are unhealthy. Subscribing to EnviroFlash is important because exposure to high levels of air pollution can aggravate heart disease, asthma and other respiratory diseases, and by being aware of the “real time” air quality levels, individuals can take precautions to protect themselves and their families.

Further, DAQ is in the process of developing materials to be used in outreach campaigns to promote air quality initiatives, as well as developing an annual calendar of recurring outreach venues and opportunities to better educate the public.

Renewable Portfolio Standard

Electric energy producers in Clark County and Nevada will continue to displace NO_x and VOC emissions from traditional energy generating sources, such as coal-fired boilers, with clean renewable energy from solar, wind, and hydropower units.

Conclusion

Several factors out of DAQ’s control have a significant impact on ozone concentrations in Clark County. Taking into account that studies have shown significant ozone transport from different regions, and that background concentrations are close to 45 ppb, Clark County will have a hard time meeting the NAAQS.

The ozone design value is close to the NAAQS, and NO_x emissions increased by 12 percent between 2008 and 2011 because of an increase in on-road mobile sources. In 2012 and 2013, smoke from wildfires in nearby states affected Clark County’s ambient air significantly; in fact, most of the higher daily ozone concentrations were recorded during wildfire days. DAQ anticipates EPA concurrence with the exceptional event demonstrations it has submitted, which would exclude these higher wildfire-caused ozone concentrations for any regulatory purposes.

Private companies and agencies at all levels of government provide Clark County residents with a variety of programs to reduce emissions. Future federal regulations for mobile sources, in conjunction with scheduled highway improvement projects, will further reduce NO_x emissions in the county, as will the replacement of the Reid Gardner coal-fired boilers and further RPS requirements.

DAQ has implemented many voluntary and mandatory control measures for NO_x and VOC. Many organizations in Clark County, both government and private, are making great strides to reduce precursor emissions through various programs. Although few options remain that have not already been explored, DAQ will continue to research and evaluate any control measures that become available.