# TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN APPLICATION FOR A PART 70 OPERATING PERMIT

APPLICATION SUBMITTED BY

## El Dorado Energy, LLC

For

## El Dorado Energy, LLC

**Part 70 Operating Permit Number: 652**
**(Renewal)**

SIC Code 4911: Electric Utility Services

Clark County
Department of Air Quality and Environmental Management
Permitting Section

**November 2010**

***This Technical Support Document (TSD) accompanies the proposed Part 70 Operating Permit for El Dorado Energy, LLC.***

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# I. ACRONYMS

**Table I-1: List of Acronyms**

| Acronym | Term |
|---|---|
| AQR | Clark County Air Quality Regulations |
| ATC | Authority to Construct |
| CAA | Clean Air Act |
| CAM | Compliance Assurance Monitoring |
| CEMS | Continuous Emissions Monitoring System |
| CFR | United States Code of Federal Regulations |
| CO | Carbon Monoxide |
| CTG | Combustion Turbine-Generator |
| DAQEM | Clark County Department of Air Quality & Environmental Management |
| DLN | Dry Low-$NO_x$ |
| EPA | United States Environmental Protection Agency |
| EU | Emission Unit |
| HAP | Hazardous Air Pollutant |
| HHV | Higher Heating Value |
| HP | Horse Power |
| kW | kilowatt |
| LHV | Lower Heating Value |
| MACT | Maximum Achievable Control Technology |
| MMBtu | Millions of British Thermal Units |
| M/N | Model Number |
| MW | Megawatt |
| NAICS | North American Industry Classification System |
| $NO_x$ | Nitrogen Oxides |
| NRS | Nevada Revised Statutes |
| OP | Operating Permit |
| $PM_{10}$ | Particulate Matter less than 10 microns |
| ppm | Parts per Million |
| ppmvd | Parts per Million, Volumetric Dry |
| PTE | Potential to Emit |
| QA/AC | Quality Assurance/Quality Control |
| RATA | Relative Accuracy Test Audits |
| RICE | Reciprocating Internal Combustion Engine |
| RMP | Risk Management Plan |
| SCC | Source Classification Codes |
| scf | Standard Cubic Feet |
| SIC | Standard Industrial Classification |
| SIP | State Implementation Plan |
| S/N | Serial Number |
| $SO_2$ | Sulfur Dioxide |
| $SO_x$ | Sulfur Oxides |
| TCS | Toxic Chemical Substance |
| ULN | Ultra Low-$NO_x$ |
| VOC | Volatile Organic Compound |

## II. EXECUTIVE SUMMARY

El Dorado Energy, LLC (EDE) is a major source of $NO_X$ and $PM_{10}$, and a minor source of CO, $SO_X$, VOC and HAP. All processes at the site are grouped under SIC 4911: Electric Services (NAICS 221112: Fossil Fuel Electric Power Generation). The EDE is located at 701 El Dorado Valley Drive, Boulder City, Nevada 89005 in the El Dorado Valley airshed, hydrographic basin number 167. Hydrographic basin 167 is designated as nonattainment area for ozone and attainment area for all other regulated air pollutants.

The EDE is a 500 MW natural gas power generating plant. The plant has a two-on-one combined cycle configuration, consisting of two natural gas-fired stationary gas turbines, two Heat Recovery Steam Generators (HRSGs) with natural gas fired duct burners for supplemental firing and one steam turbine generator. The facility also operates one diesel-fired emergency fire pump.

The following table summarizes the source PTE for each regulated air pollutant for all emission units addressed by this Part 70 Operating Permit:

| $PM_{10}$ | $NO_X$ | CO | $SO_X$ | VOC | HAP | $NH_3$ |
|---|---|---|---|---|---|---|
| **103.84** | **194.17** | **95.35** | **8.65** | **49.25** | **12.16** | **213.80** |

The initial Title V operating permit (OP) was issued on October 23, 2003. This Part 70 OP is issued based on the Title V renewal application submitted on April 11, 2008 and supplemental information submitted on December 19, 2008, June 18, 2009, July 22, 2009, September 10, 2009, February 8, 2010 and September 28, 2010.

Based on the information submitted by the applicant and a technical review performed by the DAQEM staff, the DAQEM proposes the renewal of Part 70 Operating Permit to El Dorado Energy, LLC.

## III. SOURCE INFORMATION

### A. General

| | |
|---|---|
| Permittee | El Dorado Energy, LLC |
| Mailing Address | P.O. Box 62470, Boulder City, Nevada 89006 |
| Contacts | Kevin Lampman |
| Phone Number | (702) 564-8206 |
| Fax Number | (702) 568-8213 |
| Source Location | 701 El Dorado Valley Drive, Boulder City, Nevada 89005 |
| Hydrographic Area | 167 |
| Township, Range, Section | T25S, R62E, Section 12 |
| SIC Code | 4911: Electric Services |
| NAICS Code | 221112: Fossil Fuel Electric Power Generation |

### B. Description of Process

The El Dorado Energy, LLC (EDE) has a two-on-one combined cycle configuration, consisting of two combustion turbine generators (CTGs), two heat recovery steam generators (HRSGs), one steam turbine generator and associated auxiliary systems and equipment. The plant is capable of generating a nominal 500 megawatts (MW) of gross electrical power with duct burning at a maximum ambient air temperature of 120°F and 15% humidity. The CTGs are heavy-duty, single-shaft turbines with a 165 MW (nominal) rating each.

The combustion system has dry low-$NO_x$ combustion burner technology that accurately controls fuel flow to maintain turbine load and minimize turbine emissions. The turbines and duct burners combust only pipeline quality natural gas.

Each CTG is equipped with inlet air filtering and inlet air evaporative coolers. Combustion air for the turbine is filtered by media filters housed in an inlet filter compartment mounted adjacent to the turbine compartment. The filter housing also contains the evaporative cooling system. Air flows through the air filter, evaporative cooler and associated inlet air ductwork of each CTG and is then compressed. Natural gas is injected into the combustor section and ignited. The hot combustion gases expand through the turbine section to drive the entire CTG. The hot gases exit the turbine section and enter a HRSG dedicated to each combined turbine generator.

The Forney natural gas fired duct burners are installed immediately upstream of each HRSG. The duct burners are used for supplemental firing for additional power. The CTGs and HRSGs are in single train configuration and the exhaust gases from each HRSG passes through the ductwork to individual 100-foot exhaust stacks. The HRSGs are equipped with SCR and oxidation catalyst systems to reduce emissions.

In the HRSG, heat from the turbine exhaust gas is recovered by transferring the heat to water pumped into the HRSG, resulting in generation of steam. The steam from each HRSG is combined for use in a single steam turbine generator. The steam generator at EDE has a nominal output of 170 MW. The system is using a large air-cooled condenser.

There is also one 140 bhp emergency diesel fire pump on site. Ancillary equipment on site which does not require a permit either by AQR regulations or Part 70 includes two diesel

storage tanks (250- and 500-gallons), one 280-gallon gasoline storage tank, an aqueous ammonia storage tank and lube oil tanks for the turbines.

## C. Permitting History

El Dorado Energy, LLC is regulated by the Clark County Department of Air Quality and Environmental Management (DAQEM) and has a Title V permit. The initial Title V operating permit (OP) was issued on October 23, 2003. This Part 70 OP renewal is proposed based on the Title V renewal application submitted on April 11, 2008 and supplemental information submitted on December 19, 2008, June 18, 2009, July 22, 2009, September 10, 2009, February 8, 2010 and September 28, 2010. The renewal application and the supplemental information submitted thereafter, request incorporation of NSR permits issued after the issuance of the initial Part 70 OP.

**Table III-C-1: Permits Issued to El Dorado Energy, LLC**

| Date Issued | Description |
|---|---|
| 12/17/09 | ATC Mod 2: ATC for solar plant disturbed surfaces |
| 4/30/07 | ATC/OP Mod 1, Rev 1: Modification updated existing fire pump (EU: A03) emissions and cancelled previous ATC issued for wet surface air cooler (EU: A04) |
| 4/21/04 | ATC Mod 1: Modification to add wet surface air cooler (EU: A04) |
| 10/23/03 | Issuance of initial Title V operating permit |
| 12/13/00 | Issuance of Section 16 operating permit |
| 8/15/97 | Issuance of initial authority to construct |

**Table III-C-2: Applications and Supplemental Information submitted by El Dorado Energy, LLC**

| Date Submitted | Description |
|---|---|
| 04/11/08 | Part 70 OP renewal application received. The source also requested various administrative changes to language throughout the permit including changes to the startup/shutdown definition. |
| 12/19/08 | Supplemental information received from the source requesting additional changes to permit language of various conditions. |
| 06/18/09 | Supplemental information received from the source requesting a determination of whether or not the disturbed area associated with the adjacent solar plant facility would be considered part of the existing El Dorado Energy power plant facility. |
| 07/22/09 | Supplemental information received from the source clarifying the need and basis for the change to the startup/shutdown language. |
| 09/10/09 | DAQEM received a copy of the acid rain renewal application from the source. |
| 02/08/10 | Supplemental information received from the source to incorporate the emission units (disturbed surfaces) associated with the solar plant into the Title V operating permit renewal. |
| 09/28/10 | Supplemental information received from the source showing a list of all onsite insignificant activities. |

<u>ATCs Incorporated to the Part 70 OP as part of this Renewal Action:</u>

1. ATC/OP Mod 1, Rev 1, issued on April 30, 2007.

2. In the course of various permitting actions in the past, different emission limits have been assigned to the fire pump (EU: A03) even though the unit was never modified or replaced. The source seeks an administrative change to update the emissions for fire pump (EU:

A03) based on the data provided by the engine manufacturer. Also, the source decided not to construct the WSAC (EU: A04). ATC/OP Modification 1, Revision 1, updated the emission factors for fire pump (EU: A03) and canceled the ATC issued for WSAC (EU: A04) Mod 1, Revision 2 incorrectly changed the PTE limits for $NH_3$. Since this is a typographical error, the values from the Initial Title V permit are retained as the enforceable PTE.ATC Mod 2, Rev 0, issued on December 17, 2009.

The source constructed two solar electrical generating plants, El Dorado Energy Solar and Copper Mountain Solar 1. The only emissions identified by the source are fugitive $PM_{10}$ emissions from unpaved haul roads and disturbed surfaces.

An ATC issued to add these emission units the EDE permit. The emission unit identification numbers for each plant are separated due to the physical location of the units with respect to the EDE thermal power plant.

Originally, the source submitted two separate applications for each solar plant, El Dorado Energy Solar as Modification 2 and Copper Mountain Solar 1 as Modification 3. Both of these permitting actions were combined with the issuance of this permit.

The source submitted emission factors from the Western Regional Air Partnership's Fugitive Dust Handbook, Chapter 8.4.3, for the disturbed surfaces and an emission factor for unpaved roads from Chapter 6.2.1 of the same document. After reviewing these emission factors, DAQEM concluded that since they have not been approved by EPA or used in a federally enforceable document, they are inappropriate to use in this permit. The source believes that the PTE calculated by DAQEM is overly conservative, but agrees to use the DAQEM default emission factor in this permit.

On December 19, 2008, the EDE requested administrative revision of Part 70 OP to amend the startup and shutdown conditions and to remove permit conditions which impose a cap on source-wide emission limits. The requested revisions were incorporated in the renewed Part 70 OP.

**Table III-C-3: BACT Determinations for Emission Units**

| EU | Description | BACT Technology | BACT Limit |
|---|---|---|---|
| A01 | 165 MW Stationary Gas Turbine | SCR, dry low-$NO_X$ burners, oxidation catalyst, natural gas combustion, inlet air filters | 3.5 ppmvd $NO_X$ and 2.5 ppmvd CO on a 3-hour average at 15 percent $O_2$ |
| A01+A01A | 165 MW Stationary Gas Turbine and 175 MMBtu/hr Duct Burner | SCR, dry low-$NO_X$ burners, oxidation catalyst, natural gas combustion, inlet air filters | 3.7 ppmvd $NO_X$ and 3.5 ppmvd CO on a 3-hour average at 15 percent $O_2$ |
| A02 | 165 MW Stationary Gas Turbine | SCR, dry low-$NO_X$ burners, oxidation catalyst, natural gas combustion, inlet air filters | 3.5 ppmvd $NO_X$ and 2.5 ppmvd CO on a 3-hour average at 15 percent $O_2$ |
| A02+A02A | 165 MW Stationary Gas Turbine and 175 MMBtu/hr Duct Burner | SCR, dry low-$NO_X$ burners, oxidation catalyst, natural gas combustion, inlet air filters | 3.7 ppmvd $NO_X$ and 3.5 ppmvd CO on a 3-hour average at 15 percent $O_2$ |
| A03 | 140 hp diesel emergency fire pump | Timing retardation, turbocharging, aftercooling, low sulfur diesel fuel | NA |
| A05-A06 | Disturbed Surface | 90% control from the use of soil stabilizers and water | 1.66 lb/acre-day |

The application for this permit renewal was deemed complete on May 28, 2009. The Part 70 OP will be issued under the authority of AQR Section 12.5 of the current regulations, consistent with the federal Part 70 rules and the transition procedures identified in AQR Section 12.0 of the current regulations.

### D. Operating Scenario

Stationary Gas Turbine Generators
The stationary gas turbines are heavy duty, single shaft and natural gas-fired units with a nominal energy production rating of 165 MW each. The heat input for each stationary gas turbine, based on the lower heating value of natural gas, is limited to 1,652.94 MMBtu/hr. Determination of this heat input limit is based on operating at full load, 13.77 psia and 8°F. There is no limit on the hours of operation of the stationary gas turbines.

Duct Burners
Heat input for each duct burner, based on the lower heating value of natural gas, is limited to 175 MMBtu/hr and 692,000 MMBtu/year (4,000 hrs/year), based on 12-month rolling average. Determination of these heat input limits are based on operating at full load. There is no limit on the hours of operation of the duct burners.

Emergency Fire Pump
The emergency engine-driven diesel fire pump is installed at the site to ensure the availability of fire-fighting water, even in the event of a power failure. The unit has a rating of 140 hp. The fire pump PTE is based on 500 hours of operation per year .

Disturbed Surfaces
The source constructed two solar electrical generating plants, El Dorado Energy Solar and Copper Mountain Solar 1. The disturbed surfaces identified as part of these new plants are EU A05- Disturbed Surfaces, 89.5 acres – El Dorado Energy Solar and EU A06- Disturbed Surfaces, 380 acres – Copper Mountain Solar 1.

### E. Proposed Exemptions

No proposed exemptions.

## IV. EMISSIONS INFORMATION

### A. Source-Wide Potential to Emit

The EDE is a major source for $NO_x$ and $PM_{10}$, and a minor source for CO, $SO_x$, VOC, and HAP:

**Table IV-A-1: Total Source PTE (tons per year)**

| Pollutant | $PM_{10}$ | $NO_x$ | CO | $SO_x$ | VOC | HAP |
|---|---|---|---|---|---|---|
| PTE Totals | 103.84 | 194.17 | 95.35 | 8.65 | 49.25 | 12.16 |
| Major Source Thresholds | 100 | 100 | 100 | 100 | 100 | 10/25[1] |

[1] 25 tons for combination of all HAPs (no single HAP exceeds 10 tons).

### B. Emission Units, Emission Limitations and PTE

The stationary source covered by this Part 70 OP is defined to consist of the emission units summarized in Table IV-B-1.

**Table IV-B-1: List of Emission Units**

| EU | Description | Rating | Make | Model # | Serial # | SCC |
|---|---|---|---|---|---|---|
| A01 | Stationary Gas Turbine, natural gas fired | 1,616.53 MMBtu/hr 165 MW | Westinghouse | 501FC | 37A8029 | 20100201 |
| A01A | Duct Burner for HRSG EU: A01 | 175 MMBtu/hr | Forney | 394671-01 | N/A | 10100601 |
| A02 | Stationary Gas Turbine, natural gas fired | 1,616.53 MMBtu/hr 165 MW | Westinghouse | 501FC | 37A8030 | 20100201 |
| A02A | Duct Burner for HRSG EU: A02 | 175 MMBtu/hr | Forney | 394671-01 | N/A | 10100601 |
| A03 | Emergency Diesel Fire Pump, DOM: 1998 | 140 bhp | Clarke Allison | PDFP-06YT | 713787F | 20200102 |
| A05 | Disturbed Surfaces – El Dorado Energy Solar | 89.5 acres | N/A | N/A | N/A | 30502507 |
| A06 | Disturbed Surfaces – Copper Mountain Solar 1 | 380 acres | N/A | N/A | N/A | 30502507 |

The following units or activities are present at this source, but are insignificant. The emissions from these units or activities, when added to the PTE of the source presented in Table IV-B-2, will not make the source major for any additional pollutant not already considered major.

**Table IV-B-2: Insignificant Units or Activities**

| Description |
|---|
| Gasoline Storage Tank (280 gallons) |
| Diesel Storage Tank (100 gallons) |
| Diesel Storage Tank (500 gallons) |
| 0.1 MMBtu/hr Diesel Powered Space Heater |
| 0.1 MMBtu/hr Diesel Powered Space Heater |
| 29 hp Diesel Powered Mobile Welder, Miller Big Blue, M/N: 251D |
| 10.5 hp Diesel Powered Light Tower |
| 16 hp Gasoline Powered Pressure Washer |
| 0.028 MMBtu/hr Diesel Powered Pressure Washer Heater |



Stationary Gas Turbines and Duct Burners (EUs: A01/A01A and A02/A02A)

Hourly emission limits for all pollutants except HAP for each turbine (without duct burner) were taken from manufacturer's specifications obtained from GE and Westinghouse for models 7FA and 501FC, respectively. The worst case emission limit in pounds per hour was taken between 8°F and 67°F, each for 100% load. The duct burner is on at higher temperatures due to the lower heat input. Hourly emission limits for the turbine and the duct burner combined were taken from manufacturer's specifications at 100% load and 116°F.

Annual emission limits for each turbine (without duct burner) were calculated by multiplying the hourly emission limit in pounds per hour by 8,760 hours per year. Annual emission limits for each turbine and duct burner combined were calculated by multiplying the hourly emission limit for the turbine alone at 67°F by 4,760 hours per year and adding it to the product of the turbine and duct burner hourly limit (at 116°F) and 4,000 hours per year.

$PM_{10}$ example

A01 (turbine alone at 67°F) hourly limit: 9.00 lbs/hr

A01+A01A (turbine plus duct burner) hourly limit: 11.60 lbs/hr

A01 (turbine alone) annual limit:

$$9.00\frac{lbs}{hr} * 8{,}760\frac{hrs}{yr} * \frac{1}{2{,}000}\frac{ton}{lbs} = 39.42\frac{tons}{yr}$$

A01+A01A (turbine plus duct burner) annual limit:

$$\left(9.00\frac{lbs}{hr} * 4{,}760\frac{hrs}{yr} * \frac{1}{2{,}000}\frac{ton}{lbs}\right) + \left(11.6\frac{lbs}{hr} * 4{,}000\frac{hrs}{yr} * \frac{1}{2{,}000}\frac{ton}{lbs}\right) = 44.80\frac{tons}{yr}$$

The HAP emissions were calculated by using CATEF emission factors for all HAP except metals and lead which were calculated from EPA AP-42 emission factors.

Emergency Fire Pump (EU: A03)

Short term emissions from the fire pump were provided by the source from the manufacturer. Annual PTE was calculated by multiplying the hourly emission limits by 500 hours per year.

**Table IV-C-2: Emission Unit PTE, Including Startups and Shutdowns (tons per year)**

| EU | $PM_{10}$ | $NO_x$ | CO | $SO_x$ | VOC | HAP | $NH_3$ |
|---|---|---|---|---|---|---|---|
| A01 | 39.42 | 96.50 | 45.55 | 4.30 | 22.78 | --- | 58.00 |
| A01+A01A | 44.80 | 96.50 | 47.65 | 4.30 | 24.60 | 6.07 | 106.90 |
| A02 | 39.42 | 96.50 | 45.55 | 4 | 2 2 . 7 8 | - | 58 . 0 0 |
| A02+A02A | 44.80 | 96.50 | 47.65 | 4.30 | 24.60 | 6.07 | 106.90 |
| A03 | 0.02 | 1.17 | 0.05 | 0.05 | 0.05 | 0.02 | 0.00 |
| A05 | 2.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A06 | 11.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total PTE** | **103.84** | **194.17** | **95.35** | **8.65** | **49.25** | **12.16** | **213.80** |

**Table IV-C-3: Emission Unit PTE, Excluding Startups and Shutdowns (pounds per hour)**

| EU | $PM_{10}$ | $NO_x$ | CO | $SO_x$ | VOC | HAP | $NH_3$ |
|---|---|---|---|---|---|---|---|
| A01 | 9.00 | 23.00 | 10.40 | 1.01 | 5.20 | --- | 24.40 |
| A01+A01A | 11.60 | 23.00 | 13.10 | 1.01 | 6.60 | 1.36 | 24.40 |
| A02 | 9.00 | 23.00 | 10.40 | 1.01 | 5.20 | --- | 24.40 |
| A02+A02A | 11.60 | 23.00 | 13.10 | 1.01 | 6.60 | 1.36 | 24.40 |
| A03 | 0.06 | 4.69 | 0.19 | 0.20 | 0.18 | 0.06 | 0.00 |
| A05 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A06 | 2.63 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total PTE** | **26.45** | **50.69** | **26.39** | **2.22** | **13.38** | **2.78** | **48.80** |

**Table IV-C-4: Emission Rates/Concentrations Excluding Startups and Shutdowns**

| EU | Averaging Period | $O_2$ Standard | $NO_X$ (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvd) |
|---|---|---|---|---|---|
| A01 | 3-Hour | 15% | 3.5 | 2.6 | 10 |
| A01+A01A | 3-Hour | 15% | 3.7 | 3.5 | 10 |
| A02 | 3-Hour | 15% | 3.5 | 2.6 | 10 |
| A02+A02A | 3-Hour | 15% | 3.7 | 3.5 | 10 |

The startup and shutdown emission rates listed in Table IV-C-5 are not federally enforceable limits. These values are to be used when CEMS data is not available. The Permittee shall include actual startup and shutdown emissions in the annual emission inventory reporting.

**Table IV-C-5: Startup and Shutdown PTE (pounds per hour)[1]**

| EU | $NO_x$ | CO |
|---|---|---|
| A01 | 44.63 | 132.24 |
| A02 | 44.63 | 132.24 |

[1] Emissions do not include contribution from HRSG units.

**Table IV-C-6: HAP PTE (tons per year)**

| Pollutant | Per Turbine with Duct Burning (pounds per hour)[1] | Per Turbine with Duct Burning (tons per year) |
|---|---|---|
| 1,3 Butadiene | 2.27E-04 | 0.01 |
| Acetaldehyde | 1.23E-01 | 0.54 |
| Acrolein | 4.24E-02 | 0.19 |
| Arsenic | 3.65E-04 | 0.01 |
| Benzene | 2.46E-02 | 0.11 |
| Beryllium | 2.15E-05 | 0.01 |
| Ethylbenzene | 3.21E-02 | 0.14 |
| Formaldehyde | 1.97E-01 | 0.86 |
| Lead | 8.94E-04 | 0.01 |
| Naphthalene | 2.97E-03 | 0.01 |
| Propylene Oxide | 8.54E-02 | 0.37 |
| Toluene | 1.27E-01 | 0.56 |
| Xylenes | 2.56E-01 | 1.15 |
| Hexane | 4.63E-01 | 2.03 |
| Cadmium Compounds | 1.97E-03 | 0.01 |
| Chromium Compounds | 2.50E-03 | 0.01 |
| Cobalt Compounds | 1.50E-04 | 0.01 |
| Manganese Compounds | 6.80E-04 | 0.01 |
| Mercury Compounds | 4.65E-04 | 0.01 |
| Nickel Compounds | 3.76E-03 | 0.02 |
| **HAP Emissions Subtotals** | **1.36** | **6.07** |

[1] Emission factors from CATEF for all pollutants except metals and lead which come from EPA AP-42.

No single source-wide HAP emission will exceed ten tons per year and total source-wide HAP emissions will not exceed 25 tons per year. Therefore, this source is not subject to MACT for stationary gas turbines. The emergency fire pump is subject to a MACT standard (40 CFR 63, Subpart ZZZZ) since it is an existing reciprocating internal combustion engine operating at an area source of HAP emissions.

## D. Testing

Performance testing is subject to 40 CFR 60, Subparts A, Db and GG, 40 CFR 63, Subpart ZZZZ, 40 CFR 72 and DAQEM's Guideline of Performance Testing.

**Table IV-D-1: Performance Testing Requirements for Stationary Gas Turbines**

| Test Point | Pollutant | Method (40 CFR 60, Appendix A) |
|---|---|---|

| | | |
|---|---|---|
| Turbine Exhaust Outlet Stack | $PM_{10}$ | Method 201/202 or 201A/202 |
| Turbine Exhaust Outlet Stack | VOC | Method 25A |
| Turbine Exhaust Outlet Stack | CO | EPA Method 10 analyzer |
| Turbine Exhaust Outlet Stack | Opacity | EPA Method 9 |
| Turbine Exhaust Outlet Stack | $NH_3$ Slip | Method Pre-approved by DAQEM/EPA |
| Stack Gas Parameters | --- | EPA Methods 1, 2, 3, 4 |

## E. Continuous Emissions Monitoring

To demonstrate continuous direct compliance with all emission limitations for $NO_X$ specified in this permit, the source operates a continuous emission monitoring system (CEMS) for $NO_X$ and $O_2$ on each stationary gas turbine unit in accordance with 40 CFR 75. The CEMS monitors and records the following parameters for each individual stationary gas turbine:

a. hours of operation;
b. electrical load;
c. fuel consumption and type;
d. exhaust gas flow rate (by direct or indirect methods);
e. exhaust gas concentration of $NO_X$ and diluent $O_2$;
f. three-hour average $NO_X$ concentration;
g. the mass flow rate of $NO_X$;
h. daily and quarterly accumulated mass emissions of $NO_X$; and
i. hours of downtime of the CEMS.

Compliance with all emission limitations for CO shall be demonstrated with compliance assurance and monitoring plan for CO oxidation catalyst for each of turbine generators as well as with CO performance testing. The plan includes the following enforceable conditions:

a. the oxidation catalyst temperature thermocouple must be mounted in the inlet duct leading to the catalyst bed and must maintain an accuracy within five degrees Fahrenheit (5°F);
b. the thermocouple must be calibrated, maintained, and operated as directed by the manufacturer. The Permittee shall maintain log of these activities; and
c. the catalyst bed must be visually inspected for degradation by trained professionals during plant downtime.

Compliance with all emission limitations for $SO_X$ shall be demonstrated via certification of fuel sulfur analysis from the fuel oil supplier for each delivery or the annual certification from the natural gas supplier or gas analysis. The sulfur content shall not exceed a rolling 12-month average of 0.2 grains/100 dscf.

Required periodic audit procedures and QA/QC procedures for CEMS shall conform to the provisions of 40 CFR 60, Appendix F. Relative accuracy test audits (RATA) of the $NO_X$ and $O_2$ CEMS shall be conducted at least annually.

## F. Compliance Assurance Plan

The turbines with duct burners (EUs: A01/A01A and A02/A02A) are subject to the requirements of 40 CFR 64 for CO. The Permittee shall use the oxidation catalyst operating temperature to demonstrate compliance with 40 CFR 64, Compliance Assurance Monitoring (CAM).

**Table IV-F-1: Monitoring Approach[1]**

| Criteria | Indicator |
|---|---|
| Indicator and Measurement | The oxidation catalyst operating temperature is monitored as the |

| Criteria | Indicator |
|---|---|
| Approach | indicators of CO emissions compliance. |
| Indicator Range | The operating temperature range of the catalyst is used to determine the required CO destruction efficiency.<br>An excursion is defined as a three-hour average temperature outside the specified catalyst temperature range. The real-time continuous measurements of inlet temperature are collected and archived by the facility's distributed control system DCS). The minimum oxidation catalyst inlet temperature was established at 515°F and the maximum catalyst inlet temperature was established at 1,000°F. Excursions trigger an investigation, corrective actions and a reporting requirement.<br>Number of temperature excursions greater than five percent (5%) of the total unit operating time will require a quality improvement plan (QIP). |
| Performance Criteria<br>Data Representativeness | The catalyst temperature is measured by a thermocouple mounted in the inlet duct leading to the catalyst bed and represents an overall average temperature. The accuracy of this measurement is within ± 5°F.<br><br>The turbine emissions are tested annually using EPA Method 10 to ensure the CO emissions are below the emission rate listed in the permit. |
| Verification of Operational Status | Compliance with Part 70 OP conditions |
| QA/QC Practices and Criteria | Annual verification of thermocouple accuracy is performed (based on manufacturer's specification). Annual source testing using EPA Method 10. Visual inspection of the catalyst bed for debris is also performed. |
| Monitoring Frequency | The real-time oxidation catalyst inlet temperature is monitored continuously by a thermocouple system. |
| Data Collection Procedures | A real-time continuous measurements of the oxidation catalyst inlet temperatures are collected and archived by the facility distributed control system (DCS). |
| Averaging Period | A three-hour fixed block averaging period is used. All reported emissions are based on rolling hour average. |

[1] Except during periods of startup, shutdown, calibration, maintenance/planned outage, or malfunction. Neither short term permit limits nor CO controls are applicable to turbine startup and shutdown periods.

For purpose of CAM, an exceedance of CO is deemed to occur if the data logging system records a three-hour average oxidation catalyst temperature outside the optimum range or performance test records a CO result higher than the 3.5 ppmvd limit. The Permittee shall use CO performance testing; and information from the data logging system as a measure of compliance with the turbine's CO annual emission limits.

## V. REGULATORY REVIEW

DAQEM has determined that the following public law, statutes and associated regulations apply:

1. CAAA, Authority: 42 U.S.C. § 7401, et seq.;
2. Title 40 of the CFR;
3. NRS, Chapter 445B;
4. Portions of the AQR included in the SIP for Clark County, Nevada. SIP requirements are federally enforceable. All requirements from ATC permits issued by DAQEM are federally enforceable because these permits were issued pursuant to SIP-included sections of the AQR; and
5. Portions of the AQR not included in the SIP. These locally applicable requirements are locally enforceable only.

## A. Local Regulatory Requirements

The NRS and the CAAA are public laws that establish the general authority for the Regulations mentioned.

The DAQEM Part 70 (Title V) Program received Final Approval on November 30, 2001 with publication of that approval appearing in the Federal Register December 5, 2001 Vol. 66, No. 234. AQR Section 19 - Part 70 Operating Permits details the Clark County Part 70 Operating Permit Program. These regulations may be accessed on the Internet at: http://www.accessclarkcounty.com/depts/daqem/aq/rules/pages/regs.aspx

Local regulations contain sections that are federally enforceable and sections that are locally enforceable only. Locally enforceable only rules have not been approved by EPA for inclusion into the SIP. Requirements and conditions that appear in the Part 70 Operating Permit which are related only to non-SIP rules are notated below as locally enforceable only.

**Table V-A-2: Clark County DAQEM – AQR with Source Compliance or Requirement**

| Applicable Section – Title | Applicable Subsection - Title | SIP | Affected EUs |
|---|---|---|---|
| 0. Definitions | applicable definitions | yes | entire source |
| 4. Control Officer | all subsections | yes | entire source |
| 5. Interference with Control Officer | all subsections | yes | entire source |
| 6. Injunctive Relief | all subsections | yes | entire source |
| 8. Persons Liable for Penalties - Punishment: Defense | all subsections | yes | entire source |
| 9. Civil Penalties | all subsections | yes | entire source |
| 10. Compliance Schedule | when applicable; applicable subsections | yes | entire source |
| 11. Ambient Air Quality Standards | applicable subsections | yes | entire source |
| Through June 30, 2010:<br>12. Preconstruction Review for New or Modified Stationary Sources (Amended 10/07/04) | All subsections except the following: 12.2.18 HAP Sources in Clark County.12.2.20 Additional Requirements for STATIONARY SOURCEs with Beryllium, Mercury, Vinyl Chloride, or Asbestos EMISSIONS in Clark County | Yes except 12.2.18 and 12.2.20 | entire source |
| Beginning July 1, 2010:<br>12.5. Part 70 Operating Permit Requirements | applicable subsections | yes | entire source |
| 13. National Emission Standards for Hazardous Air Pollutants | CCAQR Section 13.2.85: Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines | no | fire pump |

| Applicable Section – Title | Applicable Subsection - Title | SIP | Affected EUs |
|---|---|---|---|
| 14. New Source Performance Standards | CCAQR Section 14.1.46: Subpart GG Standards of Performance for Stationary Gas Turbines<br>CCAQR Section 14.1.10: Subpart Db Standards of Performance for Industrial – Commercial – Institutional Steam Generating Units | no | Stationary Gas Turbines and auxiliary boiler |
| 18. Permit and Technical Service Fees | 18.1 Operating Permit Fees<br>18.2 Annual Emission Unit Fees<br>18.4 New Source Review Application Review Fee<br>18.5 Part 70 Application Review Fee<br>18.6 Annual Part 70 Emission Fee<br>18.14 Billing Procedures | yes | entire source |
| Through June 30, 2010:<br>19. Part 70 Operating Permit<br><br>FEDERAL APPROVAL (11/25/01) | 19.2 Applicability<br>19.3 Part 70 Permit Applications<br>19.4 Part 70 Permit Content<br>19.5 Permit Issuance, Renewal, Re-openings, and Revisions<br>19.6 Permit Renewal by the EPA and Affected States<br>19.7 Fee Determination and Certification | N/A | entire source |
| 21. Acid Rain Permits | all subsections | no | entire source |
| 22. Acid Rain Continuous Emissions Monitoring | all subsections | no | entire source |
| 24. Sampling and Testing - Records and Reports (Through June 30, 2010) | 24.1 Requirements for installation and maintenance of sampling and testing facilities<br>24.2 Requirements for emissions record keeping<br>24.3 Requirements for the record format<br>24.4 Requirements for the retention of records by the emission sources | yes | entire source |
| 25. Affirmative Defense for Excess Emissions due to Malfunctions, Startup and Shutdown | applicable subsections | no | entire source |
| 26. Emission of Visible Air Contaminants | 26.1 Limit on opacity (≤ 20 percent for 3 minutes in a 60-minute period) | yes | entire source |
| 28. Fuel Burning Equipment | Emission Limitations for PM | yes | entire source |
| 29. Sulfur Contents of Fuel Oil | Sulfur content shall be equal to or less than 0.05 percent sulfur by weight | no | fire pump |
| 40. Prohibitions of Nuisance Conditions | 40.1 Prohibitions | no | entire source |
| 41. Fugitive Dust | 41.1 Prohibitions | yes | entire source |
| 42. Open Burning | 42.2 | no | entire source |
| 43. Odors In the Ambient Air | 43.1 Prohibitions coded as Section 29 | no | entire source |

| Applicable Section – Title | Applicable Subsection - Title | SIP | Affected EUs |
|---|---|---|---|
| 55. Preconstruction Review for New or Modified Stationary Sources in the 8-hour Ozone Nonattainment Area (Through June 30, 2010) | all subsections | no | entire source |
| 60. Evaporation and Leakage | all subsections | yes | entire source |
| 70. Emergency Procedures | all subsections | yes | entire source |
| 80. Circumvention | all subsections | yes | entire source |
| 81. Provisions of Regulations Severable | all subsections | yes | entire source |

AQR SECTION 11 - AMBIENT AIR QUALITY STANDARDS *(in part)*

Eldorado Energy is a major source in Hydrographic Area (HA) 167 (Eldorado Valley). Permitted emission units include two turbines, one fire pump and disturbed surfaces. Minor source baseline dates for $PM_{10}$ (December 19, 2001), $NO_2$ (December 19, 2001) and $SO_2$ (December 19, 2001) have been triggered for HA 167. Since minor source baseline dates have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

DAQEM modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were supplemented with information available for similar emission units. Five years (1999 to 2003) of meteorological data from the McCarran Station and Desert Rock Station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) terrain data was used to calculate elevations. Table 1 presents the results of the modeling.

**Table V-A-3: PSD Increment Consumption for HA 167**

| Pollutant | Averaging Period | PSD Increment Consumption by the Source (µg/m$^3$) | Location of Maximum Impact | |
|---|---|---|---|---|
| | | | UTM X (m) | UTM Y (m) |
| $SO_2$ | 3-hour | 4.79[1] | 681400 | 3962816 |
| $SO_2$ | 24-hour | 1.18[1] | 681400 | 3962816 |
| $SO_2$ | Annual | 0.20 | 681400 | 3962816 |
| $PM_{10}$ | 24-hour | 3.15[2] | 682488 | 3961739 |
| $PM_{10}$ | Annual | 0.70 | 681497 | 3962818 |
| $NO_X$ | Annual | 0.72 | 681497 | 3962818 |

[1]Modeled 2nd High Concentration
[2]Modeled 6th High Concentration

Table V-A-3 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

## B. Federally Applicable Regulations

### 40 CFR 60-STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES:

### Subpart A – General Provisions

### 40 CFR 60.7 – Notification and record keeping

**Discussion:** This regulation requires notification to DAQEM of modifications, opacity testing, records of malfunctions of process equipment and/or continuous monitoring device, CEMS data,

and performance test data. These requirements are found in the Part 70 OP. DAQEM requires records to be maintained for five years, a more stringent requirement than the two years required by 40 CFR 60.7.

**40 CFR 60.8 – Performance tests**
**Discussion:** These requirements are found in the Part 70 OP in Section IV-D. Notice of intent to test, the applicable test methods, acceptable test method operating conditions, and the requirement for three runs are outlined in this regulation. DAQEM requirements for initial performance testing are identical to AQR Section 60.8. DAQEM also requires periodic performance testing on emission units based upon throughput or usage. More discussion is in this document under the compliance section.

**40 CFR 60.11 – Compliance with standards and maintenance requirements**
**Discussion:** Compliance with various applicable standards will be demonstrated by performance tests unless otherwise specified in the standard. The source is subject to 40 CFR 60 Subpart GG which requires fuel monitoring and sampling to meet a standard. Subpart GG requirements are addressed in the Part 70 OP. AQR Section 26 is more stringent than the federal opacity standards, setting a maximum of 20 percent opacity for a period of more than 6 consecutive minutes. El Dorado Energy, LLC shall operate in a manner consistent with this section of the regulation.

**40 CFR 60.12 – Circumvention**
**Discussion:** This prohibition is addressed in the Part 70 OP. This is also local rule AQR 80.1.

**40 CFR 60.13 – Monitoring requirements**
**Discussion:** This section requires that CEMS meet 40 CFR 75 Appendix B and 40 CFR 60 Appendix F standards of operation, testing and performance criteria. The Part 70 OP contains the CEMS conditions and citations to 40 CFR 75 Appendix B and 40 CFR 60 Appendix F. In addition, the QA plan approved for the CEMS follows the requirements outlined including span time and recording time.

**Subpart Db – Standards of Performance for Industrial – Commercial – Institutional Steam Generating Units**

**40 CFR 60.40b – Applicability**
**Discussion:** The duct burners (EUs: A01A and A02A) are subject to the provisions of this subpart. They each have a rated capacity of 175 MMBtu/hr.

**Subpart GG – Standards of Performance for Stationary Gas Turbines**

**40 CFR 60.330 – Applicability and designation of affected facility**
**Discussion:** Subpart GG applies to the two stationary gas turbines at this source (EUs: A01 and A02).

**40 CFR 60.332 – Standard for nitrogen oxides**
**Discussion:** The NSPS $NO_X$ emission standard is calculated with a heat rate of 1.0548 kJ/Btu. Assuming that there are 8.29 Btu/Wh, the value of Y in this equation is 8.74 kJ/Wh. Because the facility uses natural gas, the F factor is zero.
Therefore:
$NO_x$ emission standard = 0.0075 (14.4 / Y) + F

0.0075 x 14.4/8.74 + 0 = 0.0124 percent by volume at 15 percent oxygen
0.0124 volume% x (10,000 ppm/volume %) = 124 ppmv $NO_X$ at 15 percent oxygen
EDE shall comply with this standard. See Table VI-D-1 of this document.

**40 CFR 60.333 – Standard for sulfur dioxide**
**Discussion:** The sole use of pipeline-quality natural gas with total sulfur content less than 0.8 percent (8000 ppmw) satisfies this requirement. The sulfur is limited to 0.75 grains per 100 dry standard cubic feet. See Table VI-D-1 of this document.

**40 CFR 60.334 – Monitoring of operations**
**Discussion:** The requirements are stipulated in the Part 70 OP. Sulfur content shall be verified annually and based on data from the gas supplier.
**40 CFR 60.335 – Test methods and procedures**
**Discussion:** These requirements are found in the conditions for performance testing found in the Part 70 OP.

**Subpart KKKK – Standards of Performance for Stationary Combustion Turbines**

**40 CFR 60.4305 – Applicability.**
**Discussion:** Subpart KKKK does not apply to the turbines at this source because the turbines did not commence construction, modification, or reconstruction after February 18, 2005.

**40 CFR 63-NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES:**

**Subpart ZZZZ – National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**

**40 CFR 63.6585 – Applicability**
**Discussion:** Subpart ZZZZ applies to the 140 hp emergency fire pump engine at this source.

**40 CFR 63.6595 – Date of Compliance**
**Discussion:** The emergency diesel fire pump must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.

**40 CFR 63.6603 – Emission Limitations and Operating Limitations**
**Discussion:** The requirements are stipulated in the Part 70 OP.

**40 CFR 63.6625 – Monitoring, Installation, Collection, Operation and Maintenance Requirements**
**Discussion:** The source must install a non-resettable hour meter if one is not already installed. The source must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop their own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

**40 CFR 64 – COMPLIANCE ASSURANCE MONITORING**

**40 CFR 64.2 – Applicability**

**Discussion:** CAM requirements contained in 40 CFR 64 are only applicable for an emission unit when that unit meets all of the following:

- The unit must be located at a major source for which a Part 70 or 71 permit is required.
- The unit must be subject to an emission limitation or standard.
- The unit must have uncontrolled potential emissions of at least 100 percent of the major source amount.
- The unit must use a control device to achieve compliance.

The turbines with duct burners (EUs: A01/A01A and A02/A02A) are subject to the requirements of 40 CFR 64 for CO. The Permittee shall use the oxidation catalyst operating temperature to demonstrate compliance with 40 CFR 64, Compliance Assurance Monitoring (CAM).
Additionally, certain exemptions under the CAM rule apply to those unit that are subject to requirements and compliance demonstration provisions under Titles IV and V to the Clean Air Act (CAA).

**40 CFR 72 – ACID RAIN PERMITS REGULATION**

**Subpart A – Acid Rain Program General Provisions**

**40 CFR 72.6 – Applicability**
**Discussion:** El Dorado Energy, LLC is defined as a utility unit in the definitions of 40 CFR 72; therefore, the provisions of this regulation apply.

**40 CFR 72.9 – Standard Requirements**
**Discussion:** El Dorado Energy, LLC has applied for all of the proper permits under this regulation.

**Subpart B – Designated Representative**
**Discussion:** El Dorado Energy, LLC has a Certificate of Representation for Designated Representative on file. They have fulfilled all requirements under this Subpart.

**Subpart C – Acid Rain Permit Applications**
**Discussion:** El Dorado Energy, LLC has applied for an acid rain permit.

**Subpart D – Acid Rain Compliance Plan and Compliance Options**
**Discussion**: This Subpart discusses the individual requirements necessary for a complete compliance plan. A compliance plan exists for each stationary combustion turbine.

**Subpart E – Acid Rain Permit Contents**
**Discussion:** El Dorado Energy, LLC has applied for an acid rain permit and it will contain all information necessary to demonstrate compliance with this Subpart.

**40 CFR 73 – ACID RAIN SULFUR DIOXIDE ALLOWANCE SYSTEM**
**Discussion:** El Dorado Energy, LLC is an affected source pursuant to 40 CFR 72.6 because it fits the definition of a utility unit; therefore, this regulation shall apply.

**Subpart B – Allowance Allocations**
**Discussion:** El Dorado Energy, LLC is not listed on either Phase I or Phase II tables because it is a newer power plant; therefore, it will not have an initial allocation per 40 CFR 73.10.

**Subpart C – Allowance Tracking System**
**Discussion:** A complete certificate of representation has been received and an account has been established for this source. El Dorado Energy, LLC shall follow all guidelines and instructions presented in this Subpart while maintaining its allowance account.

**Subpart D – Allowance Transfers**
**Discussion:** When an allowance transfer is necessary, El Dorado Energy, LLC shall follow all procedures in this Subpart.

**Subpart E – Auctions, Direct Sales and Independent Power Producers Written Guarantee**
**Discussion:** This Subpart outlines the auction process for allowance credits.
**Subpart F – Energy Conservation and Renewable Energy Reserve**
**Discussion:** There are no qualified conservation measures or renewable energy generation processes at this source; therefore, this Subpart does not apply.

**40 CFR 75 – CONTINUOUS EMISSION MONITORING**
**Discussion:** El Dorado Energy, LLC is subject to the Acid Rain emission limitations of 40 CFR 72; therefore, the facility is subject to the monitoring requirements of this regulation. Each stationary gas turbine/duct burner has been equipped with a $NO_X$ CEMS and a diluent oxygen monitor. Each stationary gas turbine is also equipped with a fuel flow monitor. The data from the CEMS is used to provide quarterly acid rain reports to both EPA and DAQEM.

## VI. COMPLIANCE

### A. Compliance Certification

19.3.3.9 Requirements for compliance certification:

(a) Regardless of the date of issuance of this Part 70 OP, the schedule for the submittal of reports to the DAQEM shall be as follows:

**Table VI-A-1: Reporting Schedule**

| Required Report | Applicable Period | Due Date[1] |
|---|---|---|
| Semi-annual Report for 1st Six-Month Period | January, February, March, April, May, June | July 30 each year |
| Semi-annual Report for 2nd Six-Month Period, any additional annual records required | July, August, September, October, November, December | January 30 each year |
| Annual Compliance Certification Report | 12 Months | 30 days after the Operating Permit issuance anniversary date |
| Annual Emission Inventory Report | Calendar Year | March 31 each year |
| Excess Emission Notification | As Required | Within 24 hours of the time the Permittee first learns of the excess emissions |
| Excess Emission Report | As Required | Within 72 hours of the Excess Emission Notification |
| Deviation Report | As Required | Along with semi-annual reports |
| Performance Testing | As Required | Within 60 days from the end of the test |

[1] Each report shall be received by DAQEM on or before the due date listed. If the due date falls on a Saturday, Sunday or a Federal or Nevada holiday, then the submittal is due on the next regularly scheduled business day.

(b) A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods.
(c) A schedule for submission of compliance certifications during the permit term.
(d) A statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements of the Act.

## B. Compliance Summary

**Table VI-B-1: AQR Applicable to El Dorado Energy, LLC**

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| AQR Section 0 | Definitions | Applicable – EDE will comply with all applicable definitions as they apply. | EDE will meet all applicable test methods should new definitions apply. | EDE complies with applicable requirements. |
| AQR Section 4 | Control Officer | Applicable – The Control Officer or his representative may enter into EDE property, with or without prior notice, at any reasonable time for purpose of establishing compliance with permit regulations | EDE will allow Control Officer to enter property as required. | EDE complies with applicable requirements. |
| AQR Section 11 | Ambient Air Quality Standards | Applicable – EDE is a source of air pollutants. | EDE demonstrated compliance in the ATC permit application with air dispersion modeling. | EDE complies with applicable requirements. |
| Through June 30, 2010:<br>AQR Section 12.1 (Amended 10/07/04) | General application requirements for construction of new and modified sources of air pollution | Applicable – EDE applied for and the ATC certificate was issued before commencing construction. | EDE received the ATC permit to construct. | EDE complies with applicable requirements. |
| Through June 30, 2010:<br>AQR Section 12.2.5 (Amended 10/07/04) | Requirements for specific air pollutants: $PM_{10}$ emission source located in the PSD area | Applicable – EDE is a major source of $PM_{10}$ emissions. | The EDE stationary gas turbines meet BACT requirements as applicable for Hydrographic Basin 164A. The Part 70 permit has relevant compliance, record keeping and reporting requirements. | EDE complies with applicable requirements for $PM_{10}$. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| Through June 30, 2010:<br>AQR Section 12.2.10<br>(Amended 10/07/04) | Requirements for specific air pollutants: Major CO emission source located in the PSD area. | Applicable – EDE is a major CO source with CO emission units located in Hydrographic Basin 164A. | The EDE CO controls meet BACT as applicable for Hydrographic Basin 164A. The Part 70 permit has relevant compliance, record keeping and reporting requirements. | EDE complies with applicable control technology requirements for CO. |
| Through June 30, 2010:<br>AQR Section 12.2.11<br>(Amended 10/07/04) | Requirements for specific air pollutants: Minor VOC sources located in the VOC Management Area. | Applicable – EDE is a minor VOC source with VOC emissions units located in Hydrographic Basin 212. | The EDE VOC controls meet BACT as applicable for Hydrographic Basin 164A. The Part 70 permit has relevant compliance, record keeping and reporting requirements. | EDE complies with applicable control technology requirements for VOC. |
| Through June 30, 2010:<br>AQR Section 12.2.14<br>(Amended 10/07/04) | Requirements for specific air pollutants: $NO_X$ sources located in the $NO_X$ Management Area. | Applicable – EDE has $NO_X$ PTE > 50 TPY. | The EDE $NO_X$ controls meet BACT as applicable for Hydrographic Basin 164A. The Part 70 permit has relevant compliance, record keeping and reporting requirements. | EDE complies with applicable control technology requirements for $NO_X$. |
| Through June 30, 2010:<br>AQR Section 12.2.16<br>(Amended 10/07/04) | Requirements for specific air pollutants: $SO_X$ sources located in the PSD area. | Applicable – EDE is a minor $SO_X$ source with $SO_X$ emission units located in Hydrographic Basin 164A. | The EDE stationary gas turbines meet BACT as applicable for Hydrographic Basin 164A. The Part 70 permit has relevant compliance, record keeping and reporting requirements. | EDE complies with applicable control technology requirements for $SO_X$. |
| Through June 30, 2010:<br>AQR Section 12.5<br>(Amended 10/07/04) | Air Quality Models | Applicable – Dispersion modeling will be performed as required for any future major modifications. | As applicable, if any future dispersion modeling is performed in response to a request for any ATC permit modifications, it will be in accordance with provisions of 40 CFR 51, Appendix W. | EDE complies with applicable requirements. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| Through June 30, 2010:<br>AQR Section 12.7<br>(Amended 10/07/04) | Continuous Emission Monitoring Systems | Applicable – The EDE has $NO_x$ PTE > 40 TPY and a CO PTE > 100 TPY. $NO_x$ and CO CEMS installed on all applicable stacks and meets provisions of 40 CFR 60 and 75. | EDE submitted all required protocols/test plans per the issued ATC permit prior to CEMS certification. CEMS certification was approved by DAQEM. | EDE complies with applicable requirements. |
| Beginning July 1, 2010:<br>AQR Section 12.5 | Part 70 Operating Permits | Applicable – EDE is a major stationary source and under Part 70. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months of commencing operation of the new emission unit. | EDE submitted the initial Part 70 permit application within 12 months of startup. The renewal application was submitted within the appropriate timeframe. | EDE complies with applicable requirements. |
| AQR Section 13.2.85<br>Subpart ZZZZ | NESHAP – Stationary Reciprocating Internal Combustion Engines | Applicable – The EDE fire pump is an affected unit. | Applicable monitoring requirements. | EDE complies with applicable requirements. |
| AQR Section 14.1.1<br>Subpart A | NSPS – General Provisions | Applicable – EDE is an affected facility under the regulations. Sec. 14 is locally enforceable; however, the NSPS standards they reference are federally enforceable. | Applicable monitoring, recordkeeping and reporting requirements. | EDE complies with applicable requirements. |
| AQR Section 14.1.9<br>Subpart Db | NSPS – Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced after September 18, 1978 | Applicable – The EDE duct burners are natural gas fired units with heat input greater than 250 MMBtu/hr. | All duct burners meet the applicable PM, $SO_2$ and $NO_x$ emission standards. The duct burners also meet the opacity requirements. | EDE complies with applicable requirements. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| AQR Section 14.1.46 Subpart GG | NSPS – Standards of Performance for Stationary Gas Turbines | Applicable – The EDE stationary gas turbines are natural gas fired units with heat input greater than 10 MMBtu/hr. | All stationary gas turbines meet the applicable $NO_x$ emission standard. When firing on natural gas, $NO_x$ emissions shall not exceed 2.5 ppmv (dry, corrected to 15 percent oxygen). $NO_x$ emissions determined by EPA Method 7E. | EDE complies with applicable requirements. |
| AQR Section 16 | DAQEM Operating Permits | Applicable – EDE must apply for and obtain a DAQEM operating permit prior to operation. | EDE applied for and received operating permit from DAQEM prior to commercial operation. | EDE complies with applicable requirements. |
| AQR Section 18 | Permit and Technical Service Fees | Applicable – EDE will be required to pay all required/applicable permit and technical service fees. | EDE is required to pay all required/applicable permit and technical service fees. | EDE complies with applicable requirements. |
| Through June 30, 2010:<br>AQR Section 19 | 40 CFR 70 Operating Permits | Applicable – EDE is a major stationary source and under Part 70 the initial Title V permit application will be submitted within 12 months of startup. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months of commencing operation of the new emission unit. Section 19 is both federally and locally enforceable. | EDE submitted the initial Part 70 permit application within 12 months of startup. The renewal application was submitted within the appropriate timeframe. | EDE complies with applicable requirements. |
| AQR Section 21 | Acid Rain Permits | Applicable – EDE is an affected facility. The stationary combustion turbines are applicable under the Acid Rain Program. | EDE submitted required acid rain permit forms/applications. | EDE complies with applicable requirements. |
| AQR Section 22 | Acid Rain Continuous Emission Monitoring | Applicable – EDE an affected facility and is required to meet the requirements for the monitoring , recordkeeping and reporting of flow rate. | EDE submitted all required protocols/test plans per ATC prior to CEMS certification. | EDE complies with applicable requirements. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| AQR Section 25 | Upset/Breakdown, Malfunctions | Applicable – Any upset, breakdown, emergency condition, or malfunction which causes emissions of regulated air pollutants in excess of any permit limits shall be reported to Control Officer. Section 25.1 is locally and federally enforceable. | Any upset, breakdown, emergency condition, or malfunction in which emissions exceed any permit limit shall be reported to the Control Officer within 1-hour of onset of such event. | The EDE currently complies with applicable requirements. |
| AQR Section 26 | Emissions of Visible Air Contaminants | Applicable – Opacity for the any emission unit may not exceed 20 percent for more than 6 consecutive minutes. | Compliance determined by EPA Method 9. | EDE complies with applicable requirements. |
| AQR Section 28 | Fuel Burning Equipment | Applicable – The PM emission rates for all stationary gas turbines are well below those established based on Section 28 requirements. | Maximum allowable PM emission rate determined from equation in Section 28. | EDE complies with applicable requirements. |
| AQR Section 29 | Sulfur Content of Fuel Oil | Applicable – If fuel oil is used it must be low sulfur fuel with sulfur content less than 0.05 percent by weight. Section 29 is locally enforceable only. | Fuel sulfur content verification obtained from fuel oil supplier. | EDE complies with applicable requirements. |
| AQR Section 40 | Prohibition of Nuisance Conditions | Applicable – No person shall cause, suffer or allow the discharge from any source whatsoever such quantities of air contaminants or other material which cause a nuisance. Section 40 is locally enforceable only. | EDE air contaminant emissions controlled by pollution control devices or good combustion and thus will not cause a nuisance. | EDE complies with applicable requirements. |
| AQR Section 41 | Fugitive Dust | Applicable – EDE shall take necessary actions to abate fugitive dust from becoming airborne. | EDE utilizes appropriate best practices to not allow airborne fugitive dust. | EDE complies with applicable requirements. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| AQR Section 42 | Open Burning | Applicable – In event EDE burns combustible material in any open areas, such burning activity will have been approved by Control Officer in advance. Section 42 is a locally enforceable rule only. | EDE will contact the DAQEM and obtain approval in advance for applicable burning activities as identified in the rule. | EDE complies with applicable requirements. |
| AQR Section 43 | Odors in the Ambient Air | Applicable – An odor occurrence is a violation if the Control Officer is able to detect the odor twice within a period of an hour, if the odor causes a nuisance, and if the detection of odors is separated by at least 15 minutes. Section 43 is a local enforceable rule only. | EDE is a predominantly natural gas-fired facility and is not expected to cause odors. | EDE complies with applicable requirements. |
| AQR Section 49 | Emission Standards for Boilers and Steam Generators Burning Fossil Fuels | Applicable – The auxiliary boiler at EDE is applicable to the requirements of Section 49. | EDE submitted required test protocols prior to initial performance testing. Tests reported within 60 days. DAQEM approves test reports. | EDE complies with applicable requirements. |
| Through June 30, 2010:<br>AQR Section 55 | Preconstruction review for New or Modified Stationary Sources in the 8-Hour Ozone Nonattainment Area | Applicable – EDE is located in Hydrographic area 164A and will need to meet the applicable emission control requirements at times of future modifications. | In the event EDE undertakes any modification, the facility will have to apply proper control technologies and meet offset requirements as applicable. | EDE complies with applicable requirements. |
| AQR Section 70.4 | Emergency Procedures | Applicable – EDE submitted an emergency standby plan for reducing or eliminating air pollutant emissions in the Section 16 Operating Permit Application. | EDE submitted an emergency standby plan and received the Section 16 Operating Permit. | EDE complies with applicable requirements. |

**Table VI-B-2: Federal Air Quality Regulations Applicable to El Dorado Energy, LLC**

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| 40 CFR Part 52.21 | Prevention of Significant Deterioration (PSD) | Applicable – EDE PTE > 100 TPY and is listed as one of the 28 source categories. | BACT analysis, air quality analysis using modeling, and visibility and additional impact analysis performed for original ATC permits. | EDE complies with applicable sections as required by PSD regulations. |
| 40 CFR Part 52.1470 | SIP Rules | Applicable – EDE is classified as a Title V source, and SIP rules apply. | Applicable monitoring and record keeping of emissions data. | EDE is in compliance with applicable state SIP requirements including monitoring and record keeping of emissions data. |
| 40 CFR Part 60, Subpart A | Standards of Performance for New Stationary Sources (NSPS) – General Provisions | Applicable – EDE is an affected facility under the regulations. | Applicable monitoring, recordkeeping and reporting requirements. | EDE complies with applicable requirements. |
| 40 CFR Part 60, Subpart Da | Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978 | Applicable – The EDE stationary gas turbines are applicable subject to the requirements of this Subpart. | Applicable monitoring, recordkeeping and reporting requirements. | EDE complies with applicable requirements. |
| 40 CFR Part 60, Subpart Dc | Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units | Applicable – The EDE auxiliary boiler is subject to the requirements of this Subpart. | Applicable monitoring, recordkeeping and reporting requirements. | EDE complies with applicable requirements. |
| 40 CFR Part 60, Subpart GG | Standards of Performance for New Stationary Sources (NSPS) – Stationary Gas Turbines | Applicable – The EDE stationary gas turbines are natural gas- fired units with heat input greater than 10 MMBtu/hr. | Applicable monitoring, recordkeeping and reporting requirements. | EDE complies with applicable requirements. |
| 40 CFR Part 60 | Appendix A, Method 9 or equivalent, (Opacity) | Applicable – Emissions from stacks are subject to opacity standards. | Opacity determined by EPA Method 9. | EDE complies with applicable requirements. |
| 40 CFR Part 63, Subpart ZZZZ | Emission Standards for Hazardous Air Pollutants | Applicable – The EDE diesel emergency fire pump is subject to the requirements of this subpart | Applicable monitoring, recordkeeping and reporting requirements. | EDE must be in compliance with the applicable requirements on and after May 3, 2013. |
| 40 CFR Part 64 | Compliance Assurance Monitoring | Not Applicable – EDE has CEMS to monitor $NO_x$ and CO emissions. | EDE continuously monitors $NO_x$ and CO missions with CEMS. | Not Applicable. |

| Citation | Title | Applicability | Applicable Test Method | Compliance Status |
|---|---|---|---|---|
| 40 CFR Part 70 | Federally Mandated Operating Permits | Applicable – EDE is a major stationary source and under Part 70 the initial Title V permit application was submitted as required. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months or commencing operation of any new emission unit. | EDE submitted a renewal application on May 7, 2009. Applications for new units will be submitted within 12 months of startup. | EDE complies with applicable requirements. |
| 40 CFR Part 72 | Acid Rain Permits Regulation | Applicable – EDE is applicable to the requirements under this regulation. | EDE has submitted the required application and notifications. | EDE complies with applicable requirements. |
| 40 CFR Part 73 | Acid Rain Sulfur Dioxide Allowance System | Applicable – EDE is applicable to the requirements under this regulation. | EDE will obtain $SO_2$ allowances based on the actual emissions recorded annually by the CEMS. | EDE complies with applicable requirements. |
| 40 CFR Part 75 | Acid Rain CEMS | Applicable – EDE is applicable to the requirements under this regulation. | EDE will comply with all monitoring, recordkeeping and reporting for $SO_2$, $NO_X$ and $CO_2$ emissions and flow rate from affected units under the Acid Rain Program. | EDE complies with applicable requirements. |
| 40 CFR Part 82 | Protection of Stratospheric Ozone | Applicable – EDE is subject to stratospheric ozone regulations based on 40 CFR 82.4. | Applicable. | Applicable. |

## C. Permit Shield

A permit shield was not requested by the source.

## D. Streamlining Demonstration

**Table VI-D-1: 40 CFR 60 Subparts Db and GG Streamlining Demonstration**

| EU | Regulation (40 CFR) | Regulatory Standard | Permit Limit | Value Comparison (in Units of the Permit Limit) | | | Averaging Period Comparison | | | Streamlining Statement for Shielding Purposes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Standard Value | Permit Limit Value | Is Permit Limit Equal or More Stringent? | Standard Averaging Period | Permit Limit Averaging Period | Is Permit Limit Equal or More Stringent? | |
| A01/ A02 | 60.332 (GG) | 75 ppmvd $NO_x$ @ 15% $O_2$ (1) | 2.5 ppmvd $NO_x$ @ 15% $O_2$ | 75 (1) | 2.5 | Yes | 4 hour | 3 hour | Yes | The permit limits are more stringent than the standard based upon both concentration and averaging time. Compliance with the permit demonstrates compliance with the standard. |
| A01/ A02 | 60.332 (GG) | 75 ppmvd (117 lbs/hr) $NO_x$ @ 15% $O_2$ (1) | 23.0 lb $NO_x$/hr | 117 | 23.0 | Yes | 4 hour | 3 hour | Yes | |
| A01/ A02 | 60.333 (GG) | 150 ppmvd (326 lbs/hr) $SO_X$ @ 15% $O_2$ | 1.01 lbs/hr $SO_X$ @ 15% $O_2$ (natural gas) | 326 | 1.01 | Yes | 4 hour | 3 hour | Yes | |
| A01/ A02 | 60.333 (GG) | 0.8% Sulfur by weight (280 gr/100 scf) | 0.2 gr/100 scf | 280 | 0.2 | Yes | 4 hour | rolling 12-month | Yes | |
| A01A/ A02A | 60.42 (Db) | 0.03 lb PM/MMBtu | 2.60 lbs $PM_{10}$/hr | 5.25 | 2.6 | Yes | 30-day rolling | 1 hour | Yes | The permit limits are more stringent than the standard based upon both concentration and averaging time. Compliance with the permit demonstrates compliance with the standard. |
| A01A/ A02A | 60.42 (Db) | 20% Opacity | 20% Opacity | 20 | 20 | Yes | 60-minute period, excepting 6 minutes | 60-minute period, excepting 6 minutes | Yes | |
| A01A/ A02A | 60.43 (Db) | 0.20 lb $SO_2$/MMBtu | 1.01 lb $SO_2$/hr | 35 | 1.01 | Yes | 30-day rolling | 1 hour | Yes | |
| A01A/ A02A | 60.44 (Db) | 0.20 lb $NO_X$/MMBtu | 23.0 lb $NO_x$/hr | 35 | 23.0 | Yes | 30-day rolling | 1 hour | Yes | |

[1] The 60.332 $NO_x$ standard is the following formula: STD = 0.0075 * (14.4)/Y + F; the calculated value (75 ppmvd) is the minimum possible value of the standard for any emission unit.

Where:

STD = allowable ISO corrected $NO_X$ emission concentration (percent by volume at 15 percent oxygen and on a dry basis);

Y = manufacturer's rated heat at manufacturer's rated load or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour (for the purposes of obtaining the minimum possible value of the standard, Y = 14.4; and

F = $NO_X$ emission allowance for fuel-bound nitrogen (N = the nitrogen content of the fuel). For the purposes of obtaining the minimum possible value of the standard, F = 0.

| Fuel-bound nitrogen (percent by weight) | F ($NO_X$ percent by volume) |
|---|---|
| N ≤ .015 | 0 |
| 0.015 < N≤ 0.1 | 0.04 (N) |
| 0.1 < N ≤ 0.25 | 0.004+0.0067(N–0.1) |
| N > 0.25 | 0.005 |

[2]Sulfur content was converted from percent by weight to grains per 100 scf as follows: 0.8% sulfur = 56 gr sulfur per lb natural gas. AP-42 defines natural gas as generally more than 85 percent methane and varying amounts of ethane propane, butane, and inerts (typically nitrogen, carbon dioxide, and helium). Assuming an average molecular weight of 18 lb/lb-mol, 1 lb natural gas = 20 scf. Lastly, 56 grains sulfur per 20 scf natural gas = 280 gr/100 scf

## E. Summary of Monitoring for Compliance

**Table VI-E-1: Summary of Monitoring for Compliance**

| EU | Process Description | Monitored Pollutants | Applicable Subsection Title | Requirements | Compliance Monitoring |
|---|---|---|---|---|---|
| A01 and A02 | Stationary Gas Turbines | CO, $NO_x$, $SO_2$, $PM_{10}$, VOC, HAPs | AQR Sections 12 (Amended 10/07/04), 12.5, 19, and 55<br><br>40 CFR 60 Subpart GG | Annual and short-term emission limits. | CEMS for $NO_x$.<br><br>Stack testing for CO, VOC, $NH_3$ slip, $PM_{10}$ and opacity as outlined in Part 70 OP.<br><br>Compliance for $SO_2$ and HAPs shall be based on sole use of natural gas as fuel and emission factors.<br><br>Recording is required for compliance demonstration. |
| A01 and A02 | Stationary Gas Turbines | Opacity | AQR Section 26 | Less than twenty percent opacity. | Use of natural gas as fuel and good combustion practices as well as EPA Method 9 performance testing upon the request of the Control Officer. |
| A01A and A02A | Duct Burners | CO, $NO_x$, $SO_2$, $PM_{10}$, VOC, HAPs | AQR Sections 12 (Amended 10/07/04), 19, 49 and 55<br><br>40 CFR 60 Subpart Db | Annual and short-term emission limits. | CEMS for $NO_x$.<br><br>Stack testing for CO, VOC, $NH_3$ slip, $PM_{10}$ and opacity as outlined in Part 70 OP.<br><br>Compliance for $PM_{10}$, $SO_2$, VOC and HAPs shall be based on sole use of natural gas as fuel and emission factors.<br><br>Recording is required for compliance demonstration. |
| A01A and A02A | Duct Burners | Opacity | AQR Section 26 | Less than 20% opacity. | Use of natural gas as fuel and good combustion practices as well as visual emission checks as outline in Part 70 OP. |
| A03 | Diesel Fire Pump | CO, $NO_x$, $SO_2$, $PM_{10}$, VOC, HAPs | AQR Sections 12 (Amended 10/07/04), 19, and 55<br><br>40 CFR Subpart ZZZZ | Annual and short-term emission limits. | Compliance for regulated pollutants shall be based on sole use of low-sulfur diesel fuel and emission factors.<br><br>Recording is required for compliance demonstration. |
| A03 | Diesel Fire Pump | Opacity | AQR Section 26 | Less than 20% opacity. | Sole use of low-sulfur diesel fuel and quarterly visual emission checks as outlined in Part 70 OP. |

## VII. EMISSION REDUCTION CREDITS (OFFSETS)

The source is subject to offset requirements in accordance with AQR Section 59. Offset requirements and associated mitigation are pollutant-specific.

## VIII. ADMINISTRATIVE REQUIREMENTS

AQR Section 19 requires that DAQEM identify the original authority for each term or condition in the Part 70 Operating Permit. Such reference of origin or citation is denoted by [italic text in brackets] after each Part 70 Permit condition.

DAQEM proposes to issue the Part 70 Operating Permit conditions on the following basis:

Legal:
On December 5, 2001 in Federal Register Volume 66, Number 234 FR30097 the EPA fully approved the Title V Operating Permit Program submitted for the purpose of complying with the Title V requirements of the 1990 CAAA and implementing 40 CFR 70.

Factual:
El Dorado Energy, LLC has supplied all the necessary information for DAQEM to draft Part 70 Operating Permit conditions encompassing all applicable requirements and corresponding compliance.

Conclusion:
DAQEM has determined that El Dorado Energy, LLC will continue to determine compliance through the use of CEMS, performance testing, quarterly reporting, daily recordkeeping, coupled with annual certifications of compliance. DAQEM proceeds with the preliminary decision that a Part 70 Operating Permit should be issued as drafted to El Dorado Energy, LLC for a period not to exceed five years.