DES
DEPARTMENT OF ENVIRONMENT AND SUSTAINABILITY
air quality desert conservation PROGRAM sustainability

4701 W. Russell Rd Suite 200
Las Vegas, NV 89118-2231
Phone (702) 455-5942
Fax (702) 383-9994

PART 70 OPERATING PERMIT
TECHNICAL SUPPORT DOCUMENT
(STATEMENT of BASIS)

APPLICATION FOR:
Minor Revision

Application Received: April 22, 2024 and June 11, 2024

SUBMITTED BY:
Broadbent & Associates, Inc.

FOR:
MGM Resorts International
Source: 00825

LOCATION:
3730 South Las Vegas Boulevard
Las Vegas, Nevada 89158

SIC Codes 7011, "Hotels and Motels"
SIC Code 7999, "Amusement and Recreation Services, Not Elsewhere Classified
NAICS Code 721120, "Casino Hotels"
NAICS Code 711310, "Promoters of Performing Arts, Sports, and Similar Events with Facilities"

October 2, 2024

EXECUTIVE SUMMARY

MGM Resorts International (MGMRI) operates under SIC Codes 7011, "Hotels and Motels," and 7999, "Amusement and Recreation Services, Not Elsewhere Classified" and NAICS codes 721120, "Casino Hotels" and 711310, "Promoters of Performing Arts, Sports, and Similar Events with Facilities." MGMRI is located in Clark County, Nevada, on South Las Vegas Boulevard. The permittee is a major source located in Hydrographic Area (HA) 212, the Las Vegas Valley. HA 212 is in attainment for all regulated air pollutants except ozone; effective January 5, 2023, HA 212 was designated as moderate nonattainment for the 2015 ozone National Ambient Air Quality Standards (NAAQS).

MGMRI is permitted under the New Source Review (NSR) regulations as a Prevention of Significant Deterioration (PSD) major stationary source of NO_x and CO, and a minor source of all other regulated pollutants. MGMRI is also a source of greenhouse gasses (GHG). The source operates a combination of fossil-fuel boilers with a cumulative heat-input rating exceeding 250 million Btu per hour, which classifies it as a categorical source under AQR 12.2.2(j).

The emission units and activities at the MGMRI properties are divided among 12 properties. Emission units present at this source include natural gas boilers and water heaters, diesel-powered emergency generators and fire pumps, cooling towers, woodworking and surface coating operations, gasoline storage and dispensing equipment, two natural gas turbines, and pyrotechnic equipment.

The following table summarizes the source potential to emit for each regulated air pollutant from all emission units addressed by this Part 70 Operating Permit (Part 70 OP).

Table 1: Source Potential To Emit

Pollutant	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	Pb	H_2S	GHG[1]
Tons/year	84.46	80.97	802.03	375.90	4.06	76.89	22.03	0	0	605,686.05
Major Source Thresholds (Title V/Categorical)	100	100	100	100	100	100	10/25[2]			75,000

[1]GHG expressed as CO_2e

[2]10 tons for any individual HAP or 25 tons for combination of all HAPs.

DAQ will continue to require the sources to estimate their GHG potential to emit in terms of each individual pollutant (CO_2, CH_4, N_2O, SF_6). The TSD includes these PTEs for informational purposes.

This source is subject to 40 CFR Part 60, Subparts Dc, IIII, and KKKK and 40 CFR Part 63, Subparts ZZZZ and CCCCCC.

DAQ has received delegated authority from the U.S. Environmental Protection Agency to implement the requirements of the Part 70 OP. Based on the information submitted by the applicant, supplemental information provided to the application, and a technical review performed by DAQ staff, the draft Part 70 OP is proposed.

TABLE OF CONTENTS

LIST OF TABLES

I. ACRONYMS AND ABBREVIATIONS

Acronym	Term
AQR	Clark County Air Quality Regulation
AST	aboveground storage tank
ATC	Authority to Construct
Avgas	aviation gasoline
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
DAQ	Division of Air Quality
DES	Clark County Department of Environment and Sustainability
DOM	date of manufacture
EPA	U.S. Environmental Protection Agency
EU	emission unit
GDO	gasoline dispensing operation
GHG	greenhouse gas
HAP	hazardous air pollutant
hp	horsepower
kW	kilowatts
MMBtu/hr	Millions of British Thermal Units per Hour
MSP	Minor Source Permit
NAC	Nevada Administrative Code
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NSPS	New Source Performance Standard
OP	Operating Permit
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RICE	reciprocating internal combustion engine
SDS	Safety Data Sheet
SIP	State Implementation Plan
SIC	Standard Industrial Classification
SM80	Synthetic Minor – one or more pollutants exceed 80% of major source threshold
SO_2	sulfur dioxide
UST	underground storage tank
VEE	Visible Emissions Evaluation
VOC	volatile organic compound

II. SOURCE DESCRIPTION

A. PROCESS DESCRIPTION

MGMRI operates multiple resort hotels and casinos and a sports/entertainment center. The properties that have been consolidated for this permit are identified in Table II-A-1. In addition, the permittee operates a public tram that runs between the Mandalay Bay, Excalibur, and Luxor hotels.

Table II-A-1. MGMRI Property Identification

MGM Grand, 3799 S. Las Vegas Boulevard	**Bellagio**, 3600 S. Las Vegas Boulevard
City Center, 3730 S. Las Vegas Boulevard	**Park MGM**, 3770 S. Las Vegas Boulevard
T-Mobile Arena, 3780 S. Las Vegas Boulevard	**New York-New York,** 3790 S. Las Vegas Boulevard
Excalibur, 3850 S. Las Vegas Boulevard	**Luxor**, 3900 S. Las Vegas Boulevard
Mandalay Bay, 3950 S. Las Vegas Boulevard	**The Four Seasons**, 3960 S. Las Vegas Boulevard
The Signature at MGM Grand, 145 E. Harmon Ave.	**The Cosmopolitan of Las Vegas,** 3708 S. Las Vegas Blvd.

B. PERMITTING HISTORY

May 19, 2022: Renewal permit issued.

July 6, 2023: Minor revision permit issued consisting of the addition and removal of miscellaneous boilers at the MGM, Excalibur, and Mandalay Bay hotels as well as updating serial numbers for previously permitted boilers.

March 25, 2024: Significant revision permit issued consisting of several applications:

- March 30, 2023: Minor revision to remove three boilers from Mandalay Bay and two boilers from Bellagio and the addition of six boilers at Mandalay Bay and four boilers at Bellagio.
- March 30, 2023: Significant revision to incorporate all emission units from the Cosmopolitan Hotel into the MGM operating permit.
- July 27, 2023: Administrative revision to update serial numbers for boilers located at Mandalay Bay and Luxor.
- October 25, 2023: Minor revision to remove nine boilers at Mandalay Bay and five boilers from Luxor, and add five boilers at Mandalay Bay.
- October 25, 2023: Prior notification to remove one boiler from Bellagio and one boiler from Excalibur to be replaced with identical units at each property.

C. CURRENT PERMITTING ACTION

This is a minor revision to a Title V operating permit that will expire on May 18, 2027. As submitted, the permittee selected the option for an "ATC as part of a Part 70 OP minor revision (AQR 12.4.3.2(e))". In accordance with AQR 12.4.3.2(e)(1), DAQ can issue the permit as a minor revision under AQR 12.5.2.14 due to the fact that the source-wide emissions increase is below the

minor NSR significance level for all regulated pollutants. Additionally, the project did not meet any of the preconstruction review applicability criteria listed in AQR 12.4.1.1(a). The permittee requested the following revisions:

- Removal of three 3,000 gpm cooling towers, previously identified as EUs: BE91 – BE93, from the Bellagio Hotel and Casino.
- Removal of a 21.0 MMBtu/hr boiler, previously identified as EU: LX004, from the Luxor Hotel and Casino.
- Addition of four 5.0 MMBtu/hr boilers at the Luxor Hotel and Casino to be identified as EUs: LX053 through LX056.
- Addition of a 6,000 gpm cooling tower, comprised of two 3,000 gpm cells, at the Bellagio Hotel and Casino to be identified as EU: BE199.
- Addition of two 3,000 gpm cooling towers, each comprised of two 1,500 gpm cells, at the Bellagio Hotel and Casino to be identified as EUs: BE200 and BE201.

The permittee submitted a second minor revision application on June 11, 2024. The requested revisions, itemized below, have been incorporated into this permitting action.

- Removal of three 1.35 MMBtu/hr natural gas-fired boilers, previously identified as EUs: BE153, BE155, and BE156, from the Bellagio Hotel.
- Addition of 21 natural gas-fired tankless water heaters, each rated at 0.199 MMBtu/hr. These units have been added to EU: BE193, which consists of a conglomeration of natural gas-fired boilers and water heaters with heat input ratings below 1.0 MMBtu/hr. This addition increases the total heat input rating from 7.88 to 12.40 MMBtu/hr.

The PTE calculation spreadsheet for the permitting action issued March 25, 2024 was outdated. Instead of trying to make the necessary corrections required to update that spreadsheet for this permitting action, a new spreadsheet was created. The new spreadsheet recalculates the PTE for every emission unit for the source. For some emission units, the new PTE calculations were slightly different than those calculated previously. The permittee was notified of these differences and subsequently approved of the new PTE calculations. The total source PTE identified in both the operating permit and TSD reflect the PTE calculated with the new spreadsheet.

III. EMISSIONS INFORMATION

A. EMISSION UNIT LIST

Table III-A-1 lists the new emission units for this Part 70 OP.

Table III-A-1: New and Modified Emission Units

EU	Rating	Description	Manufacturer	Model No.	Serial No.	SCC
Luxor						
LX053^{N}	5.0 MMBtu/hr	Natural Gas-Fired Boiler	RBI	MB-5000	112395388	10300603
LX054^{N}	5.0 MMBtu/hr	Natural Gas-Fired Boiler	RBI	MB-5000	112395387	10300603
LX055^{N}	5.0 MMBtu/hr	Natural Gas-Fired Boiler	RBI	MB-5000	022496151	10300603

EU	Rating	Description	Manufacturer	Model No.	Serial No.	SCC
LX056[N]	5.0 MMBtu/hr	Natural Gas-Fired Boiler	RBI	MB-5000	022496150	10300603
Bellagio						
BE199[N]	6,000 gpm	Cooling Tower; 2 cells (3,000 gpm each)	Evapco	AT 228-3024	TBD	38500101
BE200[N]	3,000 gpm	Cooling Tower; 2 cells (1,500 gpm each)	Evapco	Eco-ATWB-H	TBD	38500101
BE201[N]	3,000 gpm	Cooling Tower; 2 cells (1,500 gpm each)	Evapco	Eco-ATWB-H	TBD	38500101
BE193[M]	12.40 MMBtu/hr	Boilers/Water Heaters <1.00 MMBtu/hr	Various	Various	Various	10300603

Note: The 'N' and 'M' superscripts denote new and modified emission units for this permitting action.

B. APPLICABILITY EMISSIONS

Permitting applicability is determined by calculating the emissions for all proposed emission units using 8,760 hours of operation (except for emergency generators or fire pumps, which use 500 hours), any inherent controls, any inherent throughput limitations, and the emission factors provided by the manufacturer, by source test results, by EPA AP-42, or by other approved methods. As a categorical source, fugitive emissions are required to be included with applicability calculations.

Table III-B-1: Applicability Emissions Evaluation (tons per year)

Pollutant	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	H_2S	Pb	HAP	GHG[1]
Applicability Thresholds	5	5	5	25	25	5	1	0.3		
Major Source Thresholds (Categorical Source)	100	100	100	100	100	100	n/a	100	10/25[2]	75,000
Applicability Emissions Total	86.71	82.82	809.84	382.47	4.11	77.34	0	0	22.76	614,136.98

[1]In units of CO_2e
[2]10 tons for a single HAP or 25 tons for any combination of HAP compounds.

As Table III-B-1 shows, Applicability Emissions are above major source thresholds for NO_x, CO, and GHG pollutants which qualifies this source as a major source for the aforementioned pollutants. It is a minor source for all other regulated pollutants. Calculations are included as an attachment.

C. SOURCE-WIDE PTE

Table III-C-1: Source-wide PTE (tons per year)

Property Name	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP	GHG[1]
MGM Grand	13.81	13.81	148.26	77.62	0.68	20.29	6.46	605,444.95
New York -- New York	1.39	1.39	34.08	10.32	0.10	1.27	0.16	
Park MGM	6.58	6.58	37.90	23.19	0.17	2.22	0.47	
Signature	2.38	2.38	35.03	16.70	0.15	1.40	0.31	
Mandalay Bay	11.90	11.90	106.13	60.90	0.72	15.34	3.82	
Four Seasons	0.18	0.18	0.68	1.22	0.03	3.91	0.63	
Luxor	5.46	5.46	72.82	33.30	0.25	4.66	1.37	
Excalibur	4.22	4.22	58.67	25.92	0.28	3.32	0.61	
Bellagio	11.63	11.10	161.65	74.35	0.68	14.96	5.69	

Property Name	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP	GHG[1]
City Center	15.64	15.64	100.73	31.09	0.65	6.15	1.55	
T-Mobile Arena	0.08	0.08	10.83	0.85	0.01	0.20	0.03	
Cosmopolitan	11.19	8.23	35.25	20.44	0.34	3.17	0.93	
Total PTE	**84.46**	**80.97**	**802.03**	**375.90**	**4.06**	**76.89**	**22.03**	**605,686.05**

[1]In units of CO_2e

Table III-C-2: Emissions Increase (tons per year)

Description	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	GHG[1]
Current Permitting Action	84.46	80.97	802.03	375.90	4.06	76.89	22.03	605,686.05
Minor Revision Issued 03/25/2024	86.39	83.43	788.28	374.76	4.08	75.35	21.59	605,957.94
Difference	-1.93	-2.46	13.75	1.14	-0.02	1.54	0.44	-271.89
Net Emissions Increase	0	0	13.75	1.14	0	1.54	0.44	0
AQR 12.5.1(d) Minor NSR Significance Levels	7.5	5.0	20	50	20	20		N/A
AQR 12.2.2(uu) Significance Thresholds	15	10	40	100	40	40	10	N/A
RACT/BACT Analysis Required	No	No	No	No	No	No	No	No

[1]In units of CO_2e

As shown in Table III-C-3, the source wide emission increases are below the minor NSR significance thresholds. Therefore, a RACT analysis is not required.

D. OPERATIONAL LIMITS

There are no operational limitations associated with this permitting action.

E. CONTROL TECHNOLOGY

Boilers

1. Only natural gas shall be combusted in each boiler (EUs: LX053 – LX056 and BE193).
2. Each boiler shall be operated and maintained in accordance with the manufacturer's operations and maintenance instructions (EUs: LX053 – LX056 and BE193).
3. Each boiler shall be operated with burners that have a manufacturer's maximum emission concentration of 82 parts per million (ppm) NO_x, corrected to 3 percent oxygen (EUs: LX053 – LX056).
4. Each boiler shall be operated with burners that have a manufacturer's maximum emission concentration of 114 ppm CO, corrected to 3 percent oxygen (EUs: LX053 – LX056).

Cooling Towers

5. Each cooling tower shall be operated and maintained in accordance with the manufacturer's O&M manual for emissions-related components (EUs: BE199 – BE201).
6. Each cooling tower shall be operated with drift eliminators that have a manufacturer's maximum drift rate of 0.001 percent (EUs: BE199 – BE201).
7. The total dissolved solids (TDS) content of each cooling tower's circulation water shall not exceed 4,500 ppm (BE199 – BE201).

F. MONITORING

Compliance with permit requirements shall be met through the following:

Boilers

A burner efficiency test shall be conducted once each calendar year (EUs: LX053 – LX056).

Cooling Towers

The TDS of each cooling tower recirculation water shall be monitored monthly using a conductivity meter or another device the Control Officer has approved in advance (EUs: BE199 – BE201).

G. PERFORMANCE TESTING

There are no additional testing requirements associated with this permitting action. All performance testing requirements established with previous permitting actions remain enforceable.

IV. REGULATORY REVIEW

A. LOCAL REGULATORY REQUIREMENTS

There are no additional local regulatory requirements associated with this permitting action. All requirements established with previous permits remain applicable.

B. FEDERALLY APPLICABLE REGULATIONS

There are no additional applicable federal regulations associated with this permitting action. All requirements established with previous permits remain applicable.

V. COMPLIANCE

The permittee is required to monitor and keep records for all limitations specified in the permit.

VI. EMISSION REDUCTION CREDITS (OFFSETS)

The source is not subject to offset requirements.

VII. MODELING

MGM Resorts International is a major source in Hydrographic Area 212 (the Las Vegas Valley). Permitted emission units include boilers, generators, cooling towers for the operation of 11 facilities. Since minor source baseline dates for NO_x (October 21, 1988) and SO_2 (June 29, 1979) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

DAQ modeled the source using AERMOD to track the increment consumption. Average actual emissions (2022-2023) were used in the NO_X modeling. Stack data submitted by the applicant were supplemented with information available for similar emission units. Five years (2011 to 2015) of meteorological data from the McCarran Station were used in the model. U.S. Geological

Survey National Elevation Dataset terrain data were used to calculate elevations. Table VII-1 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.

Table VII-1: PSD Increment Consumption

Pollutant	Averaging Period	Source's PSD Increment Consumption (µg/m^3)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	6.11[1]	664440	3996573
SO_2	24-hour	2.53[1]	664438	3996654
SO_2	Annual	1.19	664438	3996654
NO_X	Annual	8.96	664200	3998200

[1] Highest Second High Concentration.

VIII. ENVIRONMENTAL JUSTICE

The primary principle of environmental justice is that all people have a right to live in a healthful environment that is protected from industrial pollution. Environmental justice focuses on the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The EPA EJ Screen website provides demographic indicators (e.g., low-income communities, communities of color, and tribal/indigenous communities) with environmental indicators in order to conduct a screening of a community potentially disproportionately and adversely affected by environmental and human health harms or risks.

The operating permit for MGM Resorts International encompasses several properties on or near Las Vegas Boulevard. The T-Mobile Arena was selected to represent the geographic center of the permitted properties to obtain representative demographic data. A two mile radius from this property is used for this report. The area within this circle equates to 12.56 square miles and represents a residential population of 29,334. The statistics indicate that there is a high percentile of the socioeconomic indicators in this area. However, the increases for criteria pollutants associated with this permitting action is minimal. Therefore, additional outreach is not warranted.

Languages Spoken at Home

LANGUAGE	PERCENT
English	53%
Spanish	29%
Other Indo-European	2%
Chinese (including Mandarin, Cantonese)	2%
Vietnamese	1%
Tagalog (including Filipino)	5%
Other Asian and Pacific Island	3%
Other and Unspecified	4%
Total Non-English	47%

Map of Selected Area

HEALTH INDICATORS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	21%	20%	54	20%	63
Heart Disease	6	5.7	64	5.8	56
Asthma	9.9	10.1	47	10.3	42
Cancer	5	6	31	6.4	21
Persons with Disabilities	12.8%	13.7%	48	13.7%	50

CLIMATE INDICATORS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	5%	6%	69	12%	44
Wildfire Risk	0%	33%	0	14%	0

CRITICAL SERVICE GAPS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	19%	12%	77	13%	76
Lack of Health Insurance	23%	12%	89	9%	94
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access Burden	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
ENVIRONMENTAL BURDEN INDICATORS					
Particulate Matter 2.5 ($\mu g/m^3$)	8.08	8.15	49	8.45	47
Ozone (ppb)	70.5	69.2	69	61.8	86
Nitrogen Dioxide (NO_2) (ppbv)	12	10	79	7.8	88
Diesel Particulate Matter ($\mu g/m^3$)	0.75	0.388	90	0.191	99
Toxic Releases to Air (toxicity-weighted concentration)	31	1,400	30	4,600	14
Traffic Proximity (daily traffic count/distance to road)	4,100,000	1,800,000	95	1,700,000	88
Lead Paint (% Pre-1960 Housing)	0.027	0.063	68	0.3	21
Superfund Proximity (site count/km distance)	0	0.11	0	0.39	0
RMP Facility Proximity (facility count/km distance)	0.077	0.4	37	0.57	29
Hazardous Waste Proximity (facility count/km distance)	5.7	3.3	90	3.5	81
Underground Storage Tanks (count/km^2)	9.9	3.2	91	3.6	89
Wastewater Discharge (toxicity-weighted concentration/m distance)	2000	30000	65	700000	78
Drinking Water Non-Compliance (points)	0	0.39	0	2.2	0
SOCIOECONOMIC INDICATORS					
Demographic Index USA	2.28	N/A	N/A	1.34	84
Supplemental Demographic Index USA	2.18	N/A	N/A	1.64	80
Demographic Index State	2.61	1.81	80	N/A	N/A
Supplemental Demographic Index State	1.89	1.44	74	N/A	N/A
People of Color	72%	51%	74	40%	78
Low Income	48%	32%	78	30%	80
Unemployment Rate	9%	7%	69	6%	77
Limited English Speaking Households	13%	6%	85	5%	89
Less Than High School Education	17%	14%	69	11%	77
Under Age 5	5%	5%	50	5%	49
Over Age 64	14%	18%	48	18%	41

Sites reporting to EPA within defined area:

Superfund	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities	4
Water Dischargers	172
Air Pollution	10
Brownfields	4
Toxic Release Inventory	8

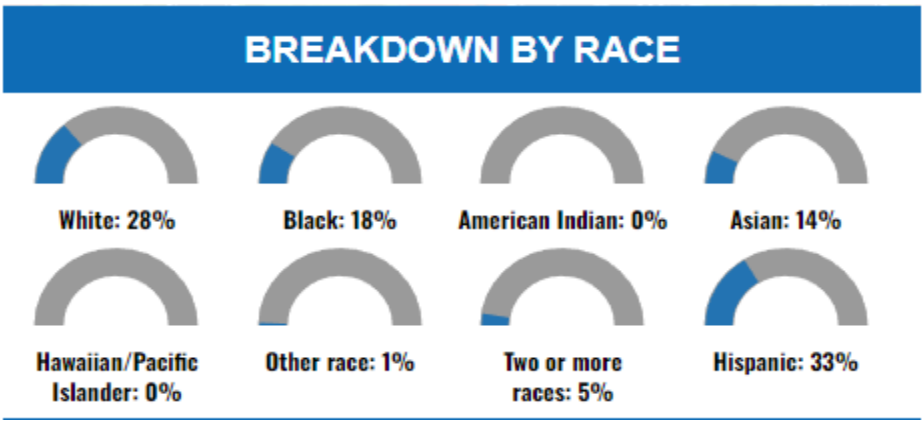
Other community features within defined area:

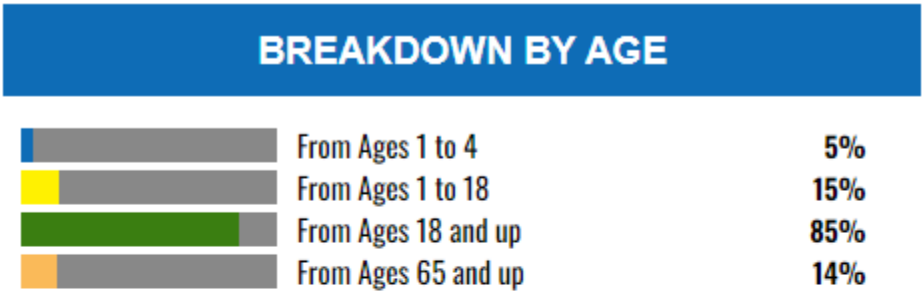
Schools	3
Hospitals	0
Places of Worship	2

Other environmental data:

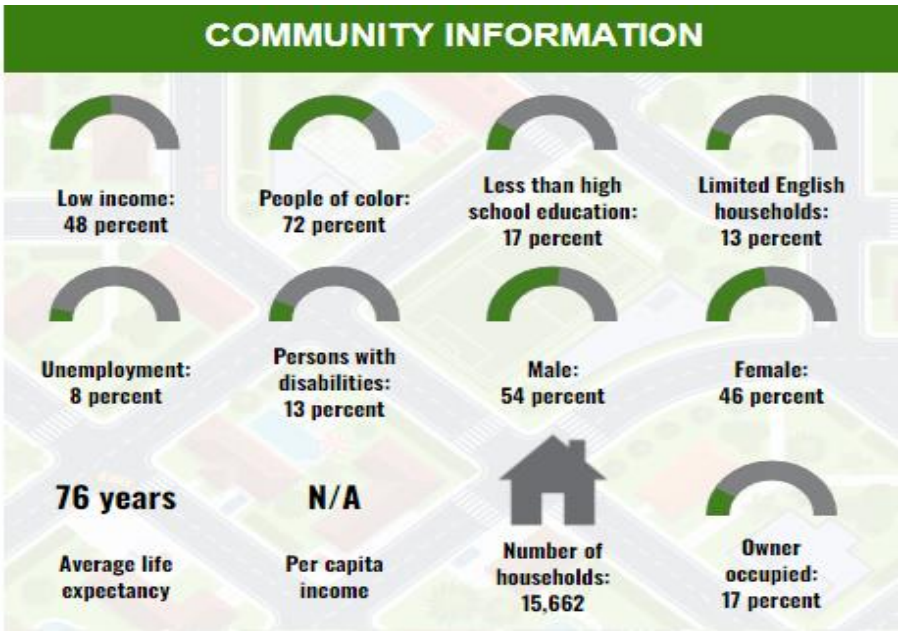
Air Non-attainment	Yes
Impaired Waters	Yes

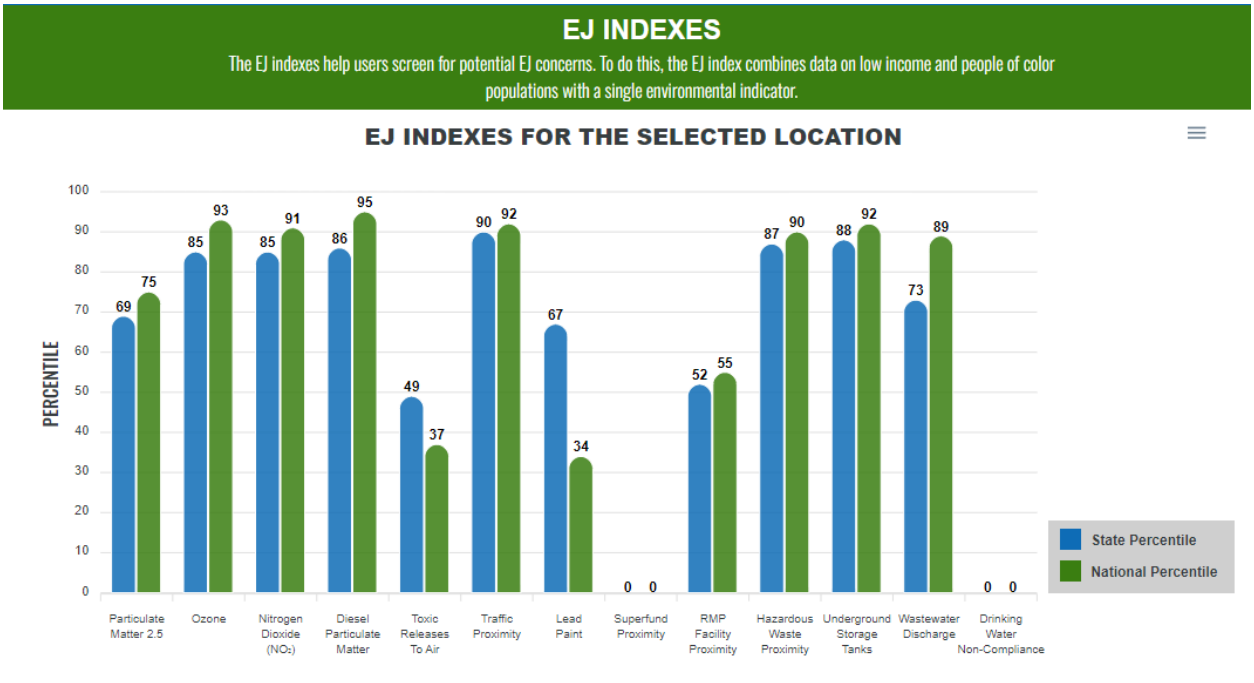
Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes


BREAKDOWN BY RACE
White: 28%
Black: 18%
American Indian: 0%
Asian: 14%
Hawaiian/Pacific Islander: 0%
Other race: 1%
Two or more races: 5%
Hispanic: 33%


BREAKDOWN BY AGE
From Ages 1 to 4 5%
From Ages 1 to 18 15%
From Ages 18 and up 85%
From Ages 65 and up 14%


LIMITED ENGLISH SPEAKING BREAKDOWN
Speak Spanish 53%
Speak Other Indo-European Languages 6%
Speak Asian-Pacific Island Languages 32%
Speak Other Languages 10%


COMMUNITY INFORMATION
Low income: 48 percent
People of color: 72 percent
Less than high school education: 17 percent
Limited English households: 13 percent
Unemployment: 8 percent
Persons with disabilities: 13 percent
Male: 54 percent
Female: 46 percent
76 years
Average life expectancy
N/A
Per capita income
Number of households: 15,662
Owner occupied: 17 percent



IX. PERMIT SHIELD

The permittee did not request a permit shield.

X. PUBLIC PARTICIPATION

This permitting action is for a minor revision to an AQR 12.5 operating permit. As a result, public participation is required in accordance with AQR 12.5.2.17.

XI. ATTACHMENTS

X-1. Source PTE Summary

Property Name	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP
MGM Grand	13.81	13.81	148.26	77.62	0.68	20.29	6.46
New York -- New York	1.39	1.39	34.08	10.32	0.10	1.27	0.16
Park MGM	6.58	6.58	37.90	23.19	0.17	2.22	0.47
Signature	2.38	2.38	35.03	16.70	0.15	1.40	0.31
Mandalay Bay	11.90	11.90	106.13	60.90	0.72	15.34	3.82
Four Seasons	0.18	0.18	0.68	1.22	0.03	3.91	0.63
Luxor	5.46	5.46	72.82	33.30	0.25	4.66	1.37
Excalibur	4.22	4.22	58.67	25.92	0.28	3.32	0.61
Bellagio	11.63	11.10	161.65	74.35	0.68	14.96	5.69
City Center	15.64	15.64	100.73	31.09	0.65	6.15	1.55
T-Mobile Arena	0.08	0.08	10.83	0.85	0.01	0.20	0.03
Cosmopolitan	11.19	8.23	35.25	20.44	0.34	3.17	0.93
Total PTE	**84.46**	**80.97**	**802.03**	**375.90**	**4.06**	**76.89**	**22.03**

X-2. Source Applicability Summary

Property Name	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP
MGM Grand	13.81	13.81	148.26	77.62	0.68	20.29	6.46
New York -- New York	1.39	1.39	34.08	10.32	0.10	1.27	0.16
Park MGM	6.58	6.58	37.90	23.19	0.17	2.22	0.47
Signature	2.38	2.38	35.03	16.70	0.15	1.40	0.31
Mandalay Bay	11.90	11.90	106.13	60.90	0.72	15.34	3.82
Four Seasons	0.18	0.18	0.68	1.22	0.03	3.91	0.63
Luxor	5.46	5.46	72.82	33.30	0.25	4.66	1.37
Excalibur	4.22	4.22	58.67	25.92	0.28	3.32	0.61
Bellagio	11.63	11.10	161.65	74.35	0.68	14.96	5.69
City Center	15.64	15.64	100.73	31.09	0.65	6.15	1.55
T-Mobile Arena	0.08	0.08	10.83	0.85	0.01	0.20	0.03
Cosmopolitan	11.19	8.23	35.25	20.44	0.34	3.17	0.93
Insignificant Units	2.25	1.86	7.81	6.57	0.05	0.45	0.73
Total	**86.71**	**82.83**	**809.84**	**382.47**	**4.11**	**77.34**	**22.76**

X-3. PTE and Applicability Emissions for New Natural Gas-Fired Boilers

				Emission	PTE (per unit)		
EU#:	LX053 - LX056			Factor	lb/hr	lb/day	ton/yr
Make:	RBI		**PM10**	0.0075	0.04	0.90	0.16
Model:	XLF-5000		**PM2.5**	0.0075	0.04	0.90	0.16
S/N:	See Table III-A-1		**NOx**	0.1000	0.50	12.00	2.19
5.00	mmBtu/hr		**CO**	0.0840	0.42	10.08	1.84
24.0	hr/day		**SO_2**	6.00E-04	0.01	0.07	0.01
8760	hr/yr		**VOC**	0.0054	0.03	0.65	0.12
			HAP	1.90E-03	0.01	0.23	0.04
Concetrations:		**%O2**	**Lead**	4.90E-07	2.45E-06	5.88E-05	1.07E-05
82	ppm NOx	3.0					
114	ppm CO	3.0					
Fuel:	Natural Gas						

X-4. PTE and Applicability Emissions for New Cooling Towers (ton/yr)

EU	Description	Drift Loss %	Flow Rate (gal/min)	TDS (mg/l)	Operation (hr/yr)	PM_{10}	$PM_{2.5}$
BE199	Cooling Tower	0.001%	6,000	4,500	8760	0.28	0.01
BE200	Cooling Tower	0.001%	3,000	4,500	8760	0.14	0.01
BE201	Cooling Tower	0.001%	3,000	4,500	8760	0.14	0.01

X-5. PTE for Modified Emission Unit

				Emission Factor	Potential Emissions		
EU#:	BE193						
Make:	Various			(lb/mmBtu)	lb/hr	lb/day	ton/yr
Model:	Various		**PM10**	0.0075	0.09	2.23	0.41
S/N:	Various		**PM2.5**	0.0075	0.09	2.23	0.41
			NOx	0.0980	1.22	29.16	5.32
12.40	mmBtu/hr *		**CO**	0.0824	1.02	24.52	4.48
24.0	hr/day		**SO_2**	6.00E-04	0.01	0.18	0.03
8760	hr/yr		**VOC**	0.0054	0.07	1.61	0.29
			HAP	1.90E-03	0.02	0.57	0.10
Concetrations:		**%O2**	**Lead**	4.90E-07	6.08E-06	1.46E-04	2.66E-05
	ppm NOx	3.0					
	ppm CO	3.0					
	Natural Gas		*Cumulative total for all boilers <1.0 MMBtu + 10%				
Fuel:	2						

Greenhouse Gas Calculations

Greenhouse gases (GHG) are a group of compounds that act to trap heat in the atmosphere making the Earth's surface warmer than it would be, otherwise. The EPA has identified carbon dioxide, methane, nitrous oxide, and fluorinated gases as the primary GHG compounds. Total source GHG emissions, represented as CO_2e, are calculated by applying a global warming potential (GWP) factor to each GHG compound. The GWP is an equalization factor which compares the heat-trapping capacity of each GHG compound to an equal mass of CO_2. Table X-14 shows the GWP for each GHG compound emitted by the Apex Generating Plant.

Boilers

X-6. GWP Factors (from 40 CFR 98 Subpart A, Table A-1)

CO_2	CH_4	N_2O
1	25	298

X-7. Emission Factors (from 40 CFR 98 Subpart C, Tables C-1 and C-2)

Fuel	CO_2	CH_4	N_2O
Natural Gas	53.06 kg/MMBtu	0.001 kg/MMBtu	0.0001 kg/MMBtu

X-8. Emission Factors for GHG from Combustion of Natural Gas

Pollutant	GWP	GHG EF (kg/MMBtu)[1]	GHG Equivalent (kg/MMBtu)[2]	GHG Equivalent (lb/MMBtu)[3]
CO_2	1	53.06	53.06	116.997
CH_4	25	0.001	0.025	0.055
N_2O	298	0.0001	0.0298	0.066
			Total	**117.12**

[1]EF from 40 CFR Part 98, Subpart C Table C-1 and C-2

[2]EF * GWP

[3]Conversion factor: 1kg = 2.205 lbs

Equation 1: GHG (ton/yr) = (MMBtu of EU * 117.12 lb/MMBtu * 8,760 hr/yr) ÷ 2,000 lb/ton

X-9. GHG Calculations for Boilers (new and removed)

EU	Rating (MMBtu)	GHG (tons/yr)		EU	Rating (MMBtu)	GHG (tons/yr)
Units Added with this Permitting Action				**Units Removed with this Permitting Action**		
LX053	5	2564.93		LX004	21	10,772.70
LX054	5	2564.93				
LX055	5	2564.93				
LX056	5	2564.93				
	Total Added	**10,259.72**		**Difference: 10,259.72 – 10,772.70 = -512.98**		

X-10. Source Wide GHG PTE

Total GHG From Permit Issued 03/25/2024	605,957.94
GHG (Added EUs)	10,259.71
GHG (Removed EUs)	10,772.70
Total	**605,444.95**

X-11. GHG from Insignificant Boilers

Property	Rating (MMBtu)[1]	GHG (tons/yr)
MGM	0.3	138.51
NY NY	1.0	504.78
Park MGM	0.5	230.84
Mandalay	3.0	1533.83
4 Seasons	0.9	461.69
Excalibur	2.38	913.11
Bellagio	6.62	3395.96
Cosmo	2.95	1513.31
Total		**8692.03**

[1]Ratings represent the cumulative total for all insignificant units.

GHG Applicability = 605,444.95 (Table X-10) + 8,692.03 (Table X-11) = 614,136.98 ton/yr