

August 22, 2001

MEMORANDUM

TO: Gwen P. Fransen, Administrator
Coeur d'Alene Regional Office

FROM: Steve Ogle, Associate Engineer 
Office of State Technical Services

SUBJECT: **PERMIT TO CONSTRUCT TECHNICAL ANALYSIS**
P-000127, Avista Corporation, Rathdrum
(Increase in Hours of Operation, PTC No. 055-00040)

PURPOSE

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.01.200 (*Rules for the Control of Air Pollution in Idaho*) for issuing Permits to Construct (PTC).

PROJECT DESCRIPTION

Avista Corporation (Avista) has requested an increase in the total allowable hours of operation from 13,200 to 16,848 for its two gas turbines. As a result of the increase in turbine operation, Avista is also requesting an increase in the permitted annual emissions of particulate matter (PM), particulate matter with an aerodynamic diameter of 10 micrometers or less (PM₁₀), and volatile organic compounds (VOC). The operational increase does not require any changes to the hourly or annual emissions limits for carbon monoxide (CO), oxides of nitrogen (NO_x), or sulfur dioxide (SO₂), or to the hourly emissions limits for PM/PM₁₀ and VOC. The facility is requesting the increase in hourly operating limits due to the current shortage of electricity in the western United States.

SUMMARY OF EVENTS

On February 20, 2001, the Idaho Department of Environmental Quality (DEQ) received an application from Avista for a minor modification. On March 13, 2001, the application was determined complete. Additional information concerning hours of operation was received on March 19, 2001. During the opportunity for public comment, it was requested that DEQ hold a public comment period. A public comment period was conducted from June 1, 2001 through July 12, 2001. Public hearings were held on June 19, 2001 and July 12, 2001, in accordance with IDAPA 58.01.01.209.

Washington Water Power (Avista) was originally issued PTC No. 055-00040 on May 21, 1993. The PTC was modified on August 6, 1993 and August 4, 1999.

DISCUSSION

1. Process Description

There is no change in the process at the Rathdrum facility. The process description can be found in Section 2 of the technical memo for the original PTC No. 055-00040, issued on August 6, 1993.

2. Equipment Listing

There is no change in equipment at the Rathdrum facility. The equipment listing can be found in Section 2 of the technical memo for the original PTC No. 055-00040, issued on August 6, 1993.

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3. Emissions Estimates

The actual annual emissions of all pollutants will increase due to the increase in operating hours; however, the increase in operating hours will not change the hourly emissions of the pollutants.

The facility asserts that CO, NO_x, and SO₂ annual emissions from the two turbines will not increase above the current allowable limits of 240.0, 235.5, and 19.8 tons per year, respectively. Continuous emissions monitoring records indicate that the actual CO and NO_x emissions from the two turbines are well below the permitted limits. Actual SO₂ emissions, estimated from the supplier's statement of the sulfur content of the natural gas, are also well below the permitted limits.

For PM/PM₁₀ and VOC, the facility has requested an increase in the annual allowable permit limits to reflect the increase in operating hours.

Table 1 shows a summary of the proposed change in operating hours and the consequent change in emissions. The basis for the actual emissions rate estimates is the actual, annual hours of operation from February 1999 through February 2001 (calculations for the actual number of annual operating hours can be found in Appendix A). The potential emissions estimates are based on the requested hourly operational limit of 16,848 hours per year.

Table 1: Criteria Pollutants Emissions Increase Summary

	PM/PM ₁₀ ^a	VOC ^b	SO ₂ ^c	NO _x ^d	CO ^e
Current Actual Emissions (T/yr) ^f	27	7	2	115	81
Current Actual Permitted (T/yr)	46.2	11.9	19.8	235.5	240
Permitted Annual Hours of Operation for Both Turbines	13,200	13,200	13,200	13,200	13,200
Revised Permit Limit (T/yr)	59.0	15.2	No change	No change	No change
Revised Annual Hours of Operation for Both Turbines	16,848	16,848	16,848	16,848	16,848
Difference in Current Actual Emissions to Revised Permitted Emissions (T/yr)	32	8.2	n/a	n/a	n/a
Significant?	Yes/Yes	No	n/a	n/a	n/a

^aparticulate matter/ particulate matter with an aerodynamic diameter of 10 micrometers or less

^bvolatile organic compounds

^csulfur dioxide

^dnitrogen oxides

^ecarbon monoxide

^ftons per year

The difference in current, actual emissions and the future potential (permitted) emissions for PM and PM₁₀ is significant, as defined by IDAPA 58.01.01.006.92; therefore, this project is a major modification as defined by IDAPA 58.01.01.006.56.

There are also several hazardous air pollutants associated with natural gas combustion. Table 3.1-3 in the *Compilation of Air Pollutant Emission Factors (AP-42)* lists emissions factors for 11 hazardous air pollutants that are regulated under IDAPA 58.01.01.585 and 586 as toxic air pollutants (TAPs). Table 2 shows a summary of the TAPs analysis conducted for the proposed project. The basis for all emissions estimates is an average heat content of 1027 BTU per

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standard cubic foot (SCF) for natural gas and an average hourly fuel consumption of 1,030,000 SCF/hr for both turbines combined (from the technical memorandum for the original PTC No. 055-00040, issued on August 6, 1993). The basis for the current emissions rate estimates is the actual, annual hours of operation from February 1999 through February 2001 (see Appendix A). The potential emissions estimates are based on the requested hourly operational limit of 16,848 hr/yr. The emissions screening levels (EL) are taken from IDAPA 58.01.01.585-586.

Table 2: TAPs Emissions Increase Summary

TAP	Emissions Factor (lb/MMBTU) ^a	Current Emissions Estimate (lb/hr) ^b	Potential Emissions Estimate (lb/hr)	Actual to Potential Difference (lb/hr)	Screening Emissions Level (lb/hr)	Exceeds EL?
1,3-Butadiene	4.3E-07	4.0E-04	8.8E-04	4.7E-04	2.4E-05	Yes
Acetaldehyde	4.0E-05	3.7E-02	8.1E-02	4.4E-02	3.0E-03	Yes
Acrolein	6.4E-06	6.0E-03	1.3E-02	7.0E-03	1.7E-02	No
Benzene	1.2E-05	1.1E-02	2.4E-02	1.3E-02	8.0E-04	Yes
Ethyl Benzene	3.2E-05	3.0E-02	6.5E-02	3.5E-02	2.9E+01	No
Formaldehyde	7.1E-04	6.6E-01	1.4E+00	7.8E-01	5.1E-04	Yes
Naphthalene	1.3E-06	1.2E-03	2.6E-03	1.4E-03	3.3E+00	No
PAH ^c	2.2E-06	2.1E-03	4.5E-03	2.4E-03	2.6E-06	Yes
Propylene Oxide	2.9E-05	2.7E-02	5.9E-02	3.2E-02	3.2E+00	No
Toluene	1.3E-04	1.2E-01	2.6E-01	1.4E-01	2.5E+01	No
Xylenes	6.4E-05	6.0E-02	1.3E-01	7.0E-02	2.9E+01	No

^aPounds per million BTU

^bPounds per hour

^cPolycyclic aromatic hydrocarbons

Table 2 indicates that five TAPs estimates exceed the appropriate EL; therefore, modeling is required to show compliance with the acceptable ambient concentration for carcinogens (AACC).

4. Modeling

For a review of the model used in this project, refer to Appendix B for the technical memorandum prepared by Yayi Dong, DEQ Air Quality Meteorologist.

5. Facility Classification

Due to the potential to emit over 100 T/yr of CO and NO_x, this facility is a major facility as defined in IDAPA 58.01.01.006.55. The facility is not a designated facility as defined in IDAPA 58.01.01.006.27. The facility is subject to federal New Source Performance Standards in accordance with 40 CFR 60, Subpart GG. The facility is not subject to federal National Emission Standards for Hazardous Air Pollutants in accordance with 40 CFR 61 or federal Maximum Achievable Control Technology standards in accordance with 40 CFR 63. The Standard Industrial Code of the facility is 4911, and the facility classification is A.

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6. Area Classification

This facility is located near Rathdrum, Idaho, which is located in Kootenai County. The area is designated as attainment or unclassifiable for all regulated criteria air pollutants. Kootenai County is located in Air Quality Control Region 62 and Zone 11.

7. Regulatory Review

7.1 IDAPA 58.01.01.201 Permit to Construct Required

The facility has requested an increase in operating hours with an increase in annual PM, PM₁₀, and VOC emissions. Per IDAPA 58.01.01.006.58, this is a modification. In accordance with IDAPA 58.01.01.201, a PTC is required for a modification to any stationary source.

7.2 IDAPA 58.01.01.210 Demonstration of Preconstruction Compliance with Toxic Standards

Table 2 shows that five TAPs exceed their ELs, and therefore require compliance with IDAPA 58.01.01.210. The estimated impact to ambient air for each of these pollutants is shown in Table 3. Table 3 demonstrates compliance for all five TAPs with their respective AACCs. The ambient increases are based on modeling results (refer to Section 4) and the estimated increases in the emissions rates (refer to Table 2). Appendix C shows a sample of the calculation used to determine the ambient increase for acetaldehyde.

Table 3: TAPs Compliance Demonstration

TAP ^a	Ambient Increase (µg/m ³) ^b	AACC ^c (µg/m ³)	Exceedance?
1,3-Butadiene	5.96E-06	3.60E-03	No
Acetaldehyde	5.54E-04	4.50E-01	No
Benzene	1.66E-04	1.20E-01	No
Formaldehyde	9.83E-03	7.70E-02	No
PAH ^d	3.05E-05	3.00E-04	No

^aToxic Air Pollutants

^bMicrograms per cubic meter

^cAcceptable ambient concentration for carcinogens

^dPolycyclic aromatic hydrocarbons

7.3 IDAPA 58.01.01.577 Ambient Air Quality Standards for Specific Air Pollutants

IDAPA 58.01.01.577.01 specifies a 24-hour and an annual ambient air quality standard (AAQS) for PM₁₀. Table 4 demonstrates compliance for both PM₁₀ AAQs. The ambient increases are based on modeling results (refer to Section 4), the estimated increases in the emissions rates (refer to Table 1), and the background PM₁₀ concentration (supplied by DEQ Air Quality Meteorologist Mary Anderson). Appendix C shows a sample of the calculation used to determine the ambient 24-hour increase for PM₁₀.

Table 4: AAQS Compliance Demonstration

Type of Ambient Impact	Ambient Increase (µg/m ³) ^a	AAQS ^b (µg/m ³)	Exceedance?
24 hour	94.9	150	No

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Annual	23.8	50	No
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*Micrograms per cubic meter

^bAcceptable ambient concentration for carcinogens

7.4 40 CFR 52 Prevention of Significant Deterioration

The facility is not a designated facility and does not emit 250 T/yr or more of any regulated air pollutant. In accordance with IDAPA 58.01.01.205.04(a), the facility is exempt from the requirements of IDAPA 58.01.01.205.01(b)ii.

7.5 40 CFR 60, Subpart GG New Source Performance Standards

The facility is subject to the standards and monitoring requirements in 40 CFR 60.330-334, Subpart GG.

7.6 40 CFR 61 and 63 National Emissions Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology

Not applicable.

8. Permit Revisions

Several insignificant and/or unsubstantial changes in format have been made to the PTC; these changes have been made in order to update the existing PTC to the current DEQ PTC format.

8.1 Numbering

In order to follow a new DEQ Air Quality permit format, Sections 3.1 and 3.5 of the original permit are renumbered as 3.1.1 and 3.1.2, respectively, under Section 3.1, Continuous Emissions Monitoring.

Due to deletion of obsolete requirements in the previous permit, Section 3.4 of the original permit is renumbered as 3.3, Section 4.3 is renumbered 4.1, Section 4.4 is renumbered 4.2, Section 4.5 is renumbered 4.3, and Section 4.6 is renumbered 4.4.

8.2 Emissions Limits

8.2.1 Changes in Section 1.1 of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

Emissions of nitrogen oxides (NO_x) from each of the turbines shall not exceed 0.010 percent by volume of exhaust gas at 15 percent oxygen and on a dry basis as required by 40 CFR 60.332(a). Emissions of NO_x nitrogen oxides from the two turbines operations (a total of two) shall not exceed any applicable emissions rate limits listed in Appendix A the appendix of this permit.

8.2.2 Changes in Section 1.2 of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

Emissions of sulfur dioxide (SO₂) from each of the turbines shall not exceed 0.015 percent volume of exhaust gas at 15 percent oxygen and on a dry basis as required by 40 CFR 60.333(a) nor shall any fuel containing sulfur in excess of 0.8 percent by weight be burned as required by 40 CFR 60.333(b). Emissions of SO₂ sulfur dioxide from the two turbines operations (a total of two)

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shall not exceed any applicable emissions rate listed in Appendix A the appendix of this permit.

8.2.3 Changes in Section 1.3 of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

Particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers (PM-10), carbon monoxide (CO), and volatile organic compound (VOC) emissions from the two turbines operations (a total of two) shall not exceed any corresponding emission rate limits listed in Appendix A the appendix of this permit.

8.2.4 Changes in Section 1.4 of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

Visible Emissions from each of the turbines, or any other stack, vent, or functionally equivalent opening associated with the turbines, shall not exceed 20 twenty percent (20%) opacity for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period as required by IDAPA 58.01.01.625 (Rules for the Control of Air Pollution in Idaho). Opacity shall be determined by the procedures contained in IDAPA 5846.01.01.625.

8.2.5 Changes in Appendix A of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

Emissions Limits^a - Hourly (lb/hr) and Annual^b (T/yr)

SOURCE DESCRIPTION	PM		PM ₁₀		SO ₂		NO _x		VOC		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
TOTAL (Two Turbines Only)	14	59.0 46.2	14	59.0 46.2	6	19.8	104	235.5	3.6	15.2 11.9	106	240

8.3 Operating Requirements

8.3.1 Changes in Section 2.2 of the previous PTC No. 055-00040, issued on August 4, 1999, have been made as follows:

The maximum annual hours of operation of the emissions units shall not exceed 16,848 hours in a calendar year (16,848 hr/yr). The total combined turbine operations shall be restricted to a maximum of 13,200 hours in a calendar year as per the applicant's submittal.

8.4 Monitoring and Recordkeeping Requirements

8.4.1 Changes in Section 3.1 of the previous PTC No. 055-00040, issued on August 4, 1999, (now Section 3.1.1) have been made as follows:

The permittee shall install, calibrate, and operate a continuous emissions monitoring system (CEM) to monitor and record stack gas concentrations and hourly emission rates of CO from each

turbine. The CO CEM shall meet all specifications and requirements of the CEM Certification Application, dated December 22, 1999, including the procedures outlines in the Quality Assurance Plan, which was submitted by Avista Corporation to United States Environmental Protection Region 10 (EPA) and the Department.

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~~The permittee shall install, calibrate, maintain and operate a continuous emissions monitoring system for the monitoring and recording of stack gas concentrations of oxygen and carbon monoxide from each turbine. The system shall be certified by the manufacturer to be accurate within \pm 5 percent and shall be calibrated on an annual basis in accordance with the manufacturer's instructions. The continuous monitoring system shall conform with the requirements and specifications in accordance with 40 CFR 60.~~

The previous PTC incorrectly referenced 40 CFR 60; there are no CO or oxygen continuous emissions monitoring requirements that apply to this source in accordance with 40 CFR 60. The revised PTC requires that oxygen concentrations be continuously monitored and recorded using the methods that are given in 40 CFR 75. The facility submitted a CEM Certification Application to Environmental Protection Agency Region 10 and DEQ on October 24, 1999.

- 8.4.2 Changes in Section 3.5 of the previous PTC No. 055-00040, issued on August 4, 1999, (now section 3.1.2) have been made as follows:

The permittee shall install, calibrate, maintain, and operate a CEM to monitor and record stack gas concentrations and pound per hour emission rates of NO_x from each turbine. The system shall conform to the requirements for NO_x CEM requirements of 40 CFR 75, including measuring the concentration of oxygen.

~~The permittee shall install, calibrate, maintain and operate a continuous emissions monitoring system for the monitoring and recording of stack gas concentrations of nitrogen oxides from each turbine. The system shall be certified by the manufacturer to be accurate within \pm 5 percent and shall be calibrated on an annual basis in accordance with the manufacturer's instructions. The continuous monitoring system shall conform with the requirements and specifications in accordance with 40 CFR 60.~~

The previous PTC incorrectly referenced 40 CFR 60; there are no NO_x continuous emissions monitoring requirements that apply to this source in accordance with 40 CFR 60. The PTC has been revised to reference 40 CFR 75 with regard to NO_x CEM requirements.

- 8.4.3 Section 3.3 of the previous PTC No. 055-00040, issued on August 4, 1999, has been removed from the permit. This requirement is obsolete because the facility has performed the visible emissions observation testing and NO_x performance testing that was required. The visible emissions monitoring results and NO_x monitoring results were received by DEQ on September 13, 1995 and February 17, 1995.

~~Within 60 days after achieving maximum production rate, but not longer than 180 days after initial startup, the permittee shall conduct a performance test to measure oxides of nitrogen emissions from one of the turbines as required by 40 CFR 60.8 and in accordance with the test methods and procedures in 40 CFR 60.335(a). Visible emissions shall be observed and recorded using the methods specified in IDARA 16.01.01.625. During the performance test, the amount of natural gas used shall be recorded.~~

8.5 Reporting Requirements

- 8.5.1 Sections 4.1 and 4.2 of the previous PTC No. 055-00040, issued on August 4, 1999, have been removed from the permit. These requirements are obsolete because the facility has already complied with the one-time requirement. The source test reports were completed in accordance with DEQ protocol and were submitted on September 13, 1995 and February 17, 1995.

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~~The permittee shall submit a test protocol for the performance test required in Section 3.3 of this permit to the Department for approval at least thirty (30) days prior to the test date.~~

~~The permittee shall submit a report of the results of the performance test and visible emissions evaluations required in Section 3.3 to the Department and the United States Environmental Protection Agency within thirty (30) days of performing the test.~~

- 8.5.2 Changes in Section 4.3 of the previous PTC No. 055-00040, issued on August 4, 1999 (now Section 4.1), have been made as follows (refer to Section 8.1):

The permittee shall report the continuous emissions monitoring data as required in Section 3.1 of this permit and 3.5 to the EPA in a calendar quarterly report to be received no later than 30 days after the end of each calendar quarter.

- 8.5.3 Changes in Section 4.6 of the previous PTC No. 055-00040, issued on August 4, 1999 (now Section 4.4), have been made as follows:

All documents submitted to the Department, including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certifications submitted to DEQ, shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

9. Permit Coordination

The facility is a major facility and subject to the Title V program. The revisions of PTC No. 055-00040 will be incorporated into the facility's Title V permit by DEQ Air Quality Engineer Steve Ogle.

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10. AIRS Information

This permit does not represent a new source at the Rathdrum facility; therefore, no Abbreviated AIRS Data Entry Sheet is required.

AIRS/AFS³ FACILITY-WIDE CLASSIFICATION³ DATA ENTRY FORM

Air Program Description	SIP ^c	PSD ^d	NESHAP ^e	NSPS ^f	MACT ^g	TITLE V	AREA CLASSIFICATION
							A - Attainment U - Unclassifiable N - Nonattainment
SO ₂ ^h	B			B		B	A
NO _x ⁱ	A			A		A	A
CO ^j	A					A	A
PM ₁₀ ^k	B					B	A
PM ^l	B					B	A
VOC ^m	B					B	U
VE/FE/FD ⁿ	ND	ND	ND	ND	ND	ND	

³Aerometric Information Retrieval System/AIRS Facility Subsystem

³AIRS/AFS CLASSIFICATION CODES:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

^cState Implementation Plan

^dPrevention of Significant Deterioration

^eNational Emission Standards for Hazardous Air Pollutants

^fNew Source Performance Standards

^gMaximum Achievable Control Technology

^hSulfur Dioxide

ⁱNitrogen Oxide

^jCarbon Monoxide

^kParticulate matter with an aerodynamic diameter of 10 microns or less

^lParticulate Matter

^mVolatile Organic Compounds

ⁿVE/FE/FD (visible emissions, fugitive emissions, and fugitive dust) are entered for compliance purposes only and do not require evaluation by the permit engineer.

FEES

The Avista facility is a major facility as defined in IDAPA 58.01.01.008.10 and is therefore subject to registration and registration fees in accordance with IDAPA 58.01.01.527. According to the Air Emissions Data Base Master List for 2000, Avista's Rathdrum facility has registered 105.24 tons of pollutants by paying fees. This modification has the potential to increase annual fees.

RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, DEQ staff recommends that Avista be issued modified PTC No. 055-00040 for the increase in the allowable

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hourly operation limits for the two gas turbines. The facility has been modeled and does not show any violations to any ambient air quality standards, and the project does not involve Prevention of Significant Deterioration requirements.

SO/bm

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Appendix A
Avista Corporation, Rathdrum
Increase in Hours of Operation/P-000127
Calculation of Actual Operating Hours

AVISTA ACTUALS:

1. OPERATING HOURS (BOTH TURBINES):

- 2001 (JAN-FEB): 2702.2 hrs
 - 2000 (JAN-DEC): 10317 hrs
 - 1999 (FEB-DEC): 2457 hrs

} SUBMITTED BY AVISTA

∴ AVERAGE ANNUAL OPERATION FOR LAST TWO YEARS:

$$(2702.2 + 10317 + 2457) \text{ hrs} / 2 \text{ YRS} = \boxed{7738.1 \text{ hrs/YR}}$$

2. ACTUAL EMISSIONS:

* EMISSION FACTORS ARE FROM MANUFACTURER (G.E.):

$\left\{ \begin{array}{l} \text{- PM / PM-10: } 0.0035 \text{ T/hr OPERATION} \\ \text{- VOC: } 0.0009 \text{ T/hr OPERATION} \end{array} \right.$

SUPPLIED BY AVISTA
 $\left\{ \begin{array}{l} \text{- CO: } 20.9 \text{ lb/hr} \\ \text{- SO}_2: 0.4 \text{ lb/hr} \\ \text{- NO}_x: 29.8 \text{ lb/hr} \end{array} \right.$

∴	PM : 27 TONS/YR	CO : 8.1 TONS/YR
	PM-10: 27 TONS/YR	SO ₂ : 2 T/YR
	VOC : 7 TONS/YR	NO _x : 115

3. ACTUAL TO POTENTIAL (FUTURE)

	ACTUAL (T/YR)	REQUESTED LIMIT (T/YR)	DIFFERENCE (T/YR)
PM	27	59.0	32
PM-10	27	59.0	32
VOC	7	15.2	8.2

Appendix B
Avista Corporation, Rathdrum
Increase in Hours of Operation/P-000127
Technical Memorandum by Yayi Dong

MEMORANDUM

TO: Steve Ogle, Air Quality Engineer, Technical Services Office

FROM: Yayi Dong, Air Quality Meteorologist, Technical Services Office

SUBJECT: Review of the modeling for the application for PTC and Title V modification from Avista Corporation

DATE: May 3, 2001

1. SUMMARY:

Avista submitted an application for increasing the limit of operating hours for existing two GE 7 gas turbines in the Rathdrum, Idaho. The Avista does not request any physical change, nor the short term emission rates. The only change is the annual operating hours from 13200 hours (two turbines) to 16848 hours, the annual PM10 emission limit of 46.2 tons/year (1999) to 59 tons/year, and VOC emission limit from 11.9 tons/year (1999) to 15.2 tons/year. Avista contracted MFG to perform a modeling analysis for permit to construct (PTC). According to MFG, the predicted average maximum impacts of PM10 is below the annual level of significance level of 1.0 μ g/m³, and predicted maximum concentrations of all toxic pollutants were less than AACC. IDEQ staff determined that all required pollutants to be modeled were included, and methodology of the modeling is valid.

2. DISCUSSION

2.1 Project Description

The facility is located in Rathdrum, Idaho. Avista Corp has operates two GE 7 gas turbines since 1995 in Rathdrum. Avista requested to increase the limit of operating hours from previously permitted 13200 hours to 16848 hours per year because of the current shortage of electricity in the west and the likelihood that this shortage will persist for the foreseeable future. This increase in operating hours will result in an increase in annual emission rates of PM₁₀ and toxic pollutants, but not the short term emission rates. This modeling project is to determine if the increase will have significant impact to the ambient air quality.

2.2 Applicable Air Quality Impact Limits

This facility is located in Kootenai County which is designated an attainment or unclassifiable area for all criteria pollutants. According to IDAPA 58.01.01.006.93, the PM10 emission increases should be modeled and those ambient concentrations would be compared to the significant contribution levels. If the ambient concentrations exceed these levels then the appropriate background concentration would be added to determine compliance to the National Ambient Air Quality Standards (NAAQS). The toxics identified must be compared to the acceptable ambient concentration (AAC) (for non-carcinogens) or the acceptable ambient

concentration for carcinogens (AACC) (for carcinogens), whichever is appropriate. The applicable regulatory limits for this Project are listed in Table 1.

Table 1. Applicable Regulatory Standards.		
Pollutant	Averaging Period	Regulatory Standard ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	150 ^a (NAAQS) 5 ^b (Significant)
PM ₁₀	Annual	50 ^a (NAAQS) 1 ^b (Significant)
Acetaldehyde	Annual	0.45 ^c
Benzene	Annual	0.12 ^c
1,3-Butadiene	Annual	0.0036 ^c
Polyaromatic Hydrocarbons	Annual	0.014 ^c
Formaldehyde	Annual	0.077 ^c
a. IDAPA 58.01.01.577		
b. IDAPA 58.01.01.006.93		
c. IDAPA 58.01.01.586		

2.3 Background Concentrations

Background concentrations for toxic pollutants are not available. Background PM10 concentrations for the area surrounding Post Falls, ID were used. The 24 hour average in Post Falls is 92 $\mu\text{g}/\text{m}^3$, the annual average is 24 $\mu\text{g}/\text{m}^3$.

2.4 Co-contributing Sources

Co-contributing sources are not included in this analysis.

3. RESULTS:

Avista provided SCREEN and ISCST3 modeling results. IDEQ modeling staff have reviewed the modeling methodology, and determined that the results are valid. All toxic emissions were found to exceed the screen emission levels, however, the model predicted toxic air pollutant annual average maximum impacts were less than the AACC. The PM10 ambient impact is lower than the significant level, and the annual maximum (includes the background) is less than the NAAQS. Since the 24 hour emission rate is not changed, remodeling 24 hour maximum is not required.

Appendix C
Avista Corporation, Rathdrum
Increase in Hours of Operation/P-000127
Ambient Impacts of PM/PM₁₀ and TAPs

Modeling Parameters	
Annual Ambient Impact (ug/m ³ /lb/hr):	0.01259
24-hr Ambient Impact (ug/m ³ /lb/hr):	0.39678

Pollutant	Increase in Emissions (lb/hr)	Ambient Increase (ug/m ³)	Background Concentration (ug/m ³)	Ambient Increase with Background (ug/m ³)	AAC or AAQS (ug/m ³)	Exceedance?
Acetaldehyde	4.40E-02	5.54E-04	n/a*	5.54E-04	4.50E-01	No
1,3-Butadiene	4.73E-04	5.98E-06	n/a*	5.96E-08	3.60E-03	No
Benzene	1.32E-02	1.66E-04	n/a*	1.66E-04	1.20E-01	No
Formaldehyde	7.81E-01	9.83E-03	n/a*	9.83E-03	7.70E-02	No
PAHs	2.42E-03	3.05E-05	n/a*	3.05E-05	3.00E-04	No
PM/PM-10 (24-hr)	7.29E+00	2.89E+00	92.0	9.49E+01	150	No
PM/PM-10 (annual)	7.29E+00	9.18E-02	23.7	2.38E+01	50	No

*the background concentrations of these TAPs are unknown

SAMPLE CALCULATIONS:

1) FOR CARCINOGENS:

$$\text{AMBIENT INCREASE} = (\text{INCREASE IN EMISSIONS}) / (\text{ANNUAL AMBIENT IMPACT})$$

$$\text{EX/FOR ACETALDEHYDE: AMBIENT INCREASE} = (4.4 \times 10^{-2} \text{ lb/hr}) / (0.0126 \frac{\text{ug/m}^3}{\text{lb/hr}}) = \underline{\underline{5.54 \times 10^{-4} \text{ ug/m}^3}}$$

2) FOR CRITERIA POLLUTANTS

$$\text{AMBIENT INCREASE} = (\text{INCREASE IN EMISSIONS}) / (\text{APPROPRIATE AMBIENT IMPACT}) \pm (\text{BACKGROUND CONC})$$

$$\text{EX/FOR 24-hr PM}_{10}/\text{PM}_{10}: \text{AMBIENT INCREASE} = (7.29 \text{ lb/hr}) / (0.3968 \frac{\text{ug/m}^3}{\text{lb/hr}}) + (92.0 \frac{\text{ug}}{\text{m}^3}) = \underline{\underline{94.9 \text{ ug/m}^3}}$$

August 22, 2001

**STATE OF IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY
RESPONSES TO COMMENTS AND QUESTIONS
SUBMITTED DURING A PUBLIC COMMENT PERIOD
FOR THE PROPOSED PERMIT TO CONSTRUCT
FOR AVISTA CORPORATION'S RATHDRUM FACILITY**

Introduction

The public comment period for the Avista Corporation (Avista) Rathdrum facility permit application, proposed permit to construct (PTC), and draft Tier I operating permit (OP) was held from June 1, 2001 through July 12, 2001, as required by IDAPA 58.01.01.209 and 364 (*Rules for the Control of Air Pollution in Idaho*). Public hearings were held on June 19, 2001 and July 12, 2001, as required by IDAPA 58.01.01.209 and 364. The proposed PTC and Tier I OP contain minor administrative amendments and permit modifications to the facility's existing permit limits that increase the allowable annual hours of operation. The increased operation time results in additional emissions, such that permit modifications to the facility's existing permitted emissions limits for particulate matter (PM), particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀), and volatile organic compounds (VOCs) were also required. Comment packages that included the permit application submitted by Avista, Idaho Department of Environmental Quality (DEQ) technical analysis, and the proposed permit were made available at DEQ's State Office in Boise, DEQ's Regional Office in Coeur d'Alene, and the Rathdrum Kootenai County Library. Comments were received by DEQ through postal mail, fax, and electronic mail. Additionally, one recorded comment was taken at the first public hearing.

Public comments regarding the air quality aspects of the proposed permit and analysis have been summarized below. Due to the similarity of many of the comments received, the summary presented below will have some comments that have been combined and/or paraphrased in order to eliminate duplication and to provide a more concise summary. Questions, comments, and/or suggestions received during the comment period which do not relate to the air quality aspects of the permit application, DEQ's technical analysis, or the proposed permit are not addressed.

Public Comments and DEQ Responses

Comment 1: Several public comments were submitted to DEQ addressing an adverse impact to ambient air quality as a result of the increase in permitted emissions from Avista's Rathdrum facility.

Response to 1: The proposed increase in the allowable annual hours of operation is an additional 3648 hours per year (hr/yr) of turbine operation. This additional operation of the turbines will result in increased emissions from the turbines; however, all emissions increases resulting from the additional operation are within current permit limits, with the exception of PM/PM₁₀ and VOCs. The proposed increase in allowable emissions is 32 tons per year (T/yr) of PM/PM₁₀ emissions and 8.2 T/yr of VOCs. An emissions increase is allowed provided the increase does not cause or contribute to a violation of an applicable ambient air quality standard, in accordance with IDAPA 58.01.01.203.

In accordance with IDAPA 58.01.01.202.02, the increases in permitted emissions were modeled using the U.S. Environmental Protection Agency approved ISC-ST3 air quality computer model to predict the impact of these increased emissions on the ambient air. The predicted impact indicates the source will not cause or contribute to a violation of

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an ambient air quality standard. Since ambient air quality standards are protective standards put in place to protect human health and welfare, as well as environmental air quality, this increase in emissions does not represent an adverse impact to human health or the environment.

Using the ISC-ST3 model, the predicted impact on the ambient air due to the increase in permitted PM/PM₁₀ and VOC emissions is well within state and federal air quality standards. Therefore, the increase in permitted emissions limits is allowed as mandated by law.

Existing permit limits for pollutants other than PM/PM₁₀ and VOCs were previously demonstrated to be in compliance with all applicable air quality and emissions standards through the use of a modeling demonstration. As these permit limits are not increasing, the existing airshed quality is preserved.

Comment 2:

A public comment was submitted to DEQ expressing concern over a lack of actual studies of ambient air quality in the Rathdrum area. The comment also expresses concern over co-contributing sources in the area.

Response to 2:

With exception of PM, PM₁₀, and five toxic air pollutants (TAPs), all emissions increases from the Avista facility were insignificant; therefore, these increases do not represent a threat to human health or the environment. DEQ does conduct monitoring for particulate in the area, and data collected by area monitors was used in the modeling impact analysis for PM and PM₁₀.

In lieu of actual ambient air quality studies, the *Rules for the Control of Air Pollution in Idaho* requires DEQ to regulate criteria pollutants based on national ambient air quality standards set by the U.S. Environmental Protection Agency (EPA). TAPs are regulated by application of occupational exposure limits as established by the Occupational Safety and Health Administration. DEQ uses a conservative approach when applying these standards to emissions estimates and modeling to ensure public safety and environmental protection. The ambient impacts of all five TAPs were well below the acceptable ambient concentration limits set forth in IDAPA 58.01.01.585-586.

The Avista facility does not produce more than 250 T/yr of any regulated pollutant. In accordance with IDAPA 58.01.01.205.04(a), Avista is not legally required to account for co-contributing sources in the area.

Comment 3:

A public comment was submitted to DEQ expressing concern over an "abnormally high NO_x [nitrogen oxides] limit," with respect to NO_x emissions from another Rathdrum power plant, Rathdrum Power, LLC.

Response to 3:

It is important to note that the Rathdrum Power, LLC facility is a designated facility (IDAPA 58.01.01.006.27) and is therefore subject to a 100 T/yr Prevention of Significant Deterioration (PSD) threshold. The Avista facility is not a designated facility and has a PSD threshold of 250 T/yr. This, in part, is the reason for the differences in permit limits, since many facilities take permit limits such that a PSD review is not required.

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The NO_x limit for this permitting action is not increasing, nor was it increased in the 1999 permit modification. The limit of 235.5 T/yr of NO_x was established in the original PTC No. 055-0040, issued on August 6, 1993. The ambient impact of the NO_x emissions was modeled using the EPA-approved SCREEN 3 computer model, and demonstrated compliance with all applicable regulations. So long as the facility demonstrates compliance with all applicable regulations, IDAPA 58.01.01.203 allows the facility to be granted a PTC.

It should also be noted that the permitted emissions limits do not represent the actual emissions from the facility. Continuous emissions monitoring reports for NO_x indicate that actual NO_x emissions from the Avista facility have historically been lower than 235.5 T/yr.

Comment 4:

A public comment was submitted to DEQ stating that the current emission limits are difficult to enforce. The comment further states that emission limits should be established in parts-per-million (ppm) to allow "brief, random" compliance testing.

Response to 4:

The currently-purposed permits use emissions rate limits expressed in T/yr and pounds per hour (lb/hr) to regulate air pollutants emitted from the facility. A concentration-based limit (i.e., ppm) would not effectively regulate the total amount of any pollutant emitted because the actual, concentration-based emissions of any pollutant are dependent upon the total amount of flow in the turbine exhaust. For example, the concentration of a given pollutant could be held to a constant percentage of the total mass of the exhaust, although the actual amount of a pollutant emitted would vary with any variance in total exhaust flow (i.e., an emissions rate limit might be met at lower exhaust flows, but exceeded at high exhaust flows even though the concentration in the exhaust remains constant).

Hourly and annual rate limits are used to preserve ambient standards, which are expressed in hourly and/or annual impacts for criteria pollutants (IDAPA 58.01.01.577) and toxic air pollutants (IDAPA 58.01.01.585-586). By regulating the emissions rate of pollutants, DEQ regulates the total amount of pollutants emitted into the airshed, as required by the *Rules for the Control of Air Pollution in Idaho*, and thus protects public health and the environment.

"Brief, random" compliance testing is not generally viewed as an effective means for demonstrating compliance with a permit. The Avista facility is subject to annual and hourly emissions rate limits with associated recordkeeping and reporting requirements. The annual requirements are done on a rolling 12-month basis, ensuring compliance regardless of the calendar year. Although these requirements place an additional workload on Avista personnel, they ensure on-going compliance with the permit and the *Rules for the Control of Air Pollution in Idaho*.

Comment 5:

A public comment was submitted to DEQ noting a lack of emissions control technology at the facility. The comment additionally stated that control technology should be required in response to increased NO_x and CO emissions.

Response to 5:

In accordance with IDAPA 58.01.01.203, the modification is subject to emissions standards, ambient air quality standards, and toxic air

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pollutant standards (IDAPA 58.01.01.585-586). Avista has successfully demonstrated compliance with all applicable standards and is not legally required to further reduce emissions.

Comment 6:

A public comment was submitted to DEQ questioning the potential to emit of greater than 250 T/yr of nitrogen oxides (NO_x) and carbon monoxide (CO).

Response to 6:

The *Rules for the Control of Air Pollution in Idaho* state that "any physical or operational limitation on the capacity of the facility to emit an air pollutant, provided the limitation...is state or federally enforceable, shall be treated as part of its design" (IDAPA 58.01.01.006.74). The permit limit placed on hours of operation effectively limits the potential of the Avista facility to less than 250 T/yr for both of these pollutants.

Additionally, continuous emissions monitoring and reporting are required for both NO_x and CO, so that any exceedance of the permitted limits would be identified.

End of comments.