

1
2 WASHINGTON DEPARTMENT OF ECOLOGY
3 MAILSTOP PV-11
4 OLYMPIA, WASHINGTON 98504
5

6 **IN THE MATTER OF:**] **NO. PSD 91-02 AMENDMENT 2**
7] **FINAL APPROVAL OF**
8 **Encogen Northwest, L. P.**] **PSD APPLICATION**
9 **Encogen Northwest Cogeneration Project**]
10 **Bellingham, Washington**]
11
12

13 Pursuant to the U.S. Environmental Protection Agency (EPA) regulations for the Prevention of
14 Significant Deterioration (PSD) set forth in Title 40, Code of the Federal Regulations, Part 52 and
15 based upon the complete Prevention of Significant Deterioration (PSD) Amendment application
16 submitted by EEX Power Systems (EEX), operator of the Encogen Northwest Cogeneration
17 Plant (Encogen), and the technical analysis performed by the Department of Ecology (Ecology),
18 Ecology now finds the following:
19

20 **FINDINGS**
21

- 22 1. EEX Power Systems (EEX) operates Encogen, which is owned by Encogen Northwest, L.
23 P. (ENWLP). The plant is located adjacent to the Georgia Pacific pulp and paper mill in
24 Bellingham, Washington. The plant was constructed and formerly operated by Enserch
25 Development Corporation. Enserch Development Corporation was the original PSD
26 permittee.
27
- 28 2. Encogen consists of three combustion gas turbine/heat recovery steam generator trains and a
29 single steam turbine generator. It is a combustion turbine based cogeneration facility,
30 supplying electric power to Puget Sound Energy and process steam to Georgia Pacific
31 Corporation. Each gas turbine generator unit is designed to generate approximately 41
32 megawatts (Mw) of electrical power, while consuming 440 million Btu/hr of natural gas. A
33 Final Prevention of Significant Deterioration Approval allowing construction of the project
34 and operation **only** on natural gas was issued on September 26, 1991. An amendment to fuel
35 the source with oil during times of natural gas curtailment was approved on December 6,

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36 1993. On March 16, 1998, EEX submitted an application for a minor revision to this permit.
37 The application for this revision was found to be complete on April 20, 1998. The application
38 requested an increase in the daily permitted nitrogen oxide (NO_x) emissions to account for
39 equipment operational changes that accompany cold weather. Permitted annual NO_x
40 emissions will not be changed in the proposed revision. In addition, the application requested
41 several other administrative revisions intended to improve reporting, simplify the permit, and
42 improve its consistency with PSD permitting guidance. None of these administrative changes
43 increase permitted emissions.
44

- 45 3. Encogen qualifies as a major source of air pollutants because it is listed and has the potential
46 to emit more than 100 tons per year of NO_x and carbon monoxide (CO). It is located in an
47 area designated Class II for the purposes of PSD evaluation, under 40 CFR 52.21.
48
- 49 4. The site of the proposed project is within an area that is in attainment with regard to all
50 pollutants regulated by the national ambient air quality standards.
51
- 52 5. The emissions of NO_x, CO, sulfur dioxide (SO₂), particulate matter (PM), and particulate
53 matter finer than ten microns in diameter (PM₁₀) from the proposed cogeneration project are
54 subject to PSD review.
55
- 56 6. The emissions of all other air pollutants from the proposed new source are subject to new
57 source review by the Northwest Air Pollution Authority (NWAPA).
58
- 59 7. Best Available Control Technology (BACT) will be used for the control of all air pollutants
60 that will be emitted by the proposed project.
61
- 62 8. The cogeneration project would have the potential to generate up to 175 tons per year of
63 NO_x.
64
- 65 9. The cogeneration project would have the potential to generate up to 50 tons per year of SO₂.
66
- 67 10. The cogeneration project would have the potential to generate up to 131 tons per year of
68 CO.
69

- 70 11. The cogeneration project would have the potential to generate up to 56 tons per year of
71 particulate matter, all of which would be finer than 10 microns in diameter (PM₁₀).
72
73 12. The project will have no significant adverse impact on air quality.
74
75 13. No noticeable effect on industrial, commercial, or residential growth in the Bellingham area is
76 anticipated due to the project.
77
78 14. Visibility will not be impaired in any Class I area due to the proposed emissions. Screening
79 analyses showed no significant degradation of sky to terrain contrast or visible plume against
80 the sky or terrain resulting from the project.
81
82 15. Ecology finds that all requirements for PSD are satisfied. Approval of the PSD application
83 and notice of construction are granted subject to the following conditions:
84

85 APPROVAL CONDITIONS

- 86
87 1. The combustion turbine/heat recovery steam generator trains shall be fueled only by pipeline
88 quality natural gas except for periods when the supply of natural gas has been curtailed or for
89 limited testing. During periods of natural gas curtailment and during limited test periods the
90 combustion turbine/heat recovery steam generator trains may be fueled by "on-road
91 specification diesel fuel" (referred to as "oil" throughout the remainder of this Approval). The
92 oil may contain no more than 0.05 percent sulfur by weight, as specified in 40 CFR § 80.29,
93 as amended through July 1, 1992. No more than 300,000 gallons of oil may be fired by the
94 combustion turbine/heat recovery steam generator trains in any calendar year for the
95 purposes of testing. No more than 10,600,000 gallons of oil may be fired by the combustion
96 turbine/heat recovery steam generator trains in any calendar year for the purposes of testing
97 or operation during periods of natural gas curtailment. Encogen shall report any oil fired
98 operations of the combustion turbine/heat recovery steam generator trains to NWAPA in
99 accordance with the reporting requirements in Condition 9.
100
101 2. NO_x emissions from each exhaust stack of the cogeneration project shall not exceed 7.0 parts
102 per million on a dry volume basis (ppmdv) corrected to 15 percent oxygen and ISO (ISO

103 standard day conditions means 288 degrees Kelvin, 60 percent relative humidity and 101.3
104 kilo Pascals pressure) conditions on a daily average when the unit is fired on natural gas. NO_x
105 emissions from each exhaust stack of the cogeneration project shall not exceed 11.0 ppmdv
106 corrected to 15 percent oxygen and ISO conditions on a daily average when the unit is fired
107 on oil. Initial compliance shall be determined by EPA Reference Method 20. NO_x emissions
108 from each exhaust stack shall be measured and recorded by a continuous emission monitoring
109 system (CEMS) which meets the requirements of Condition 8. NO_x emissions from the
110 cogeneration project shall not exceed 1,000 pounds per day when the unit is fired on natural
111 gas or 1,605 pounds per day when the unit is fired on oil. Total NO_x emissions in any
112 consecutive twelve months shall not exceed 175 tons. During startup or shutdown conditions,
113 NO_x emissions in excess of the above limits shall be considered unavoidable provided the
114 source reports the exceedence in accordance with Approval Condition 10., below.

115
116 3. SO₂ emissions from each exhaust stack of the cogeneration project shall not exceed 9.0
117 ppmdv corrected to 15 percent oxygen and ISO conditions on a daily average when the unit
118 is fired on oil. Initial compliance shall be determined by EPA Reference Method 6, or an
119 equivalent method approved in advance by Ecology. SO₂ emissions from the cogeneration
120 project shall not exceed 100 pounds per day when the unit is fired on natural gas or 1,584
121 pounds per day when the unit is fired on oil. Upon request from NWAPA, ENWLP shall
122 provide data demonstrating compliance for this condition for any period(s) that the
123 combustion turbine/heat recovery steam generator trains are fueled by oil. Such data shall be
124 in a format agreed to in advance by NWAPA. The data shall include at a minimum: copies of
125 receipts from the oil supplier showing the sulfur content of the oil, the quantity of oil fired per
126 day, and calculations showing the maximum SO₂ concentration and emission rates in units of
127 the emission limitations in this condition.

128
129 4. CO emissions from each exhaust stack of the cogeneration project shall not exceed 10.0
130 ppmdv corrected to 15 percent oxygen and ISO on an hourly average as measured by EPA
131 Reference Method 10. CO emissions from the project shall not exceed 718 pounds per day.
132 During startup or shutdown conditions, CO emissions in excess of the above limits shall be
133 considered unavoidable provided the source reports the exceedence in accordance with
134 Approval Condition 10., below.

- 136 5. PM₁₀ emissions (particulate finer than 10 micrometers in diameter) from each exhaust stack
137 of the cogeneration project shall not exceed 60 pounds per day when the unit is fired on
138 natural gas or 408 pounds per day when the unit is fired on oil. Initial compliance shall be
139 determined by EPA Reference Methods 5, 201 or an equivalent method agreed to in advance
140 by Ecology or NWAPA. PM₁₀ emissions from the cogeneration project shall not exceed 180
141 pounds per day when the unit is fired on natural gas or 1,224 pounds per day when the unit is
142 fired on oil.
143
- 144 6. Within 60 days after achieving maximum production, but not later than 180 days after start-
145 up, ENWLP shall conduct performance tests for NO_x, SO₂, CO, and PM₁₀ on each
146 combustion turbine, to be performed by an independent testing firm. A test plan shall be
147 submitted for Ecology's approval at least 30 days prior to the testing.
148
- 149 7. Sampling ports and platforms shall be provided for each affected source, after the final
150 pollution control device. The ports shall meet the requirements of 40 CFR, Part 60,
151 Appendix A Method 20. Adequate permanent and safe access to the test ports shall be
152 provided. Other arrangements may be acceptable if approved by Ecology or NWAPA prior
153 to installation.
154
- 155 8. Any continuous emission monitoring system (CEMS) used by ENWLP to measure NO_x and
156 O₂ emissions shall, at a minimum, conform with EPA Title 40 Code of the Federal
157 Regulations, Part 60, Appendix B Performance Specifications. In addition, before initial start-
158 up a continuous emission monitoring quality control plan conforming with 40 CFR 60
159 Appendix F and acceptable to Ecology or NWAPA shall be submitted and Ecology or
160 NWAPA may require the plan to be periodically updated.
161
- 162 9. CEMS and process data shall be reported in written form to NWAPA at least monthly (unless
163 a different testing and reporting schedule has been approved by Ecology or NWAPA) within
164 thirty days of the end of each calendar month and in a format approved by Ecology or
165 NWAPA which shall include but not be limited to the following:
166
- 167 9.1. Quantity of oil burned for testing, total quantity of oil burned, and sulfur content of all
168 oil purchased since the last report.

- 169 9.2. For each stack, the daily average NO_x concentration, in ppm_{dv} corrected to 15% ISO
170 conditions.
- 171 9.3 For the cogeneration project, total mass emissions of NO_x on daily (pounds per day)
172 and twelve month moving total (tons per year) bases.
- 173 9.4. The duration and nature of any monitor down-time excluding zero and span checks.
- 174 9.5. Results of any monitor audits or accuracy checks.
- 175 9.6. Results of any stack tests.
- 176 9.7. The above data shall be retained at the Encogen site for a period of five years.
- 177
- 178 10. Each occurrence of monitored emissions in excess of the standard shall be reported to
179 NWAPA. Excess emissions which represent a potential threat to human health or safety or
180 which ENWLP believes to be unavoidable shall be reported as soon as possible. Other excess
181 emissions shall be reported as part of the routine reporting described in Approval Condition
182 9., above. Each excess emissions report shall include the following:
- 183
- 184 10.1. The time of the occurrence.
- 185 10.2. Magnitude of the emission or process parameters excess.
- 186 10.3. The duration of the excess.
- 187 10.4. The probable cause.
- 188 10.5. Corrective actions taken or planned.
- 189 10.6. Any other agency contacted besides NWAPA.
- 190
- 191 11. Operating and maintenance manuals for all equipment that has the potential to affect
192 emissions to the atmosphere shall be developed and followed. Copies of the manuals shall be
193 available to Ecology or NWAPA. Emissions that result from a failure to follow the
194 requirements of the manuals may be considered proof that the equipment was not properly
195 operated and maintained.
- 196
- 197 12. Operation of the emitting equipment must be conducted in compliance with all data and
198 specifications submitted as part of the PSD application unless otherwise approved by
199 Ecology.
- 200

169 13. This approval shall become void if construction of the project is not commenced within
170 eighteen (18) months after receipt of final approval, or if construction or operation of the
171 facility is discontinued for a period of eighteen (18) months.

172 14. Any activity which is undertaken by ENWLP or others, in a manner which is inconsistent
173 with the intended operation of this facility as described in the "Findings" section or with the
174 "Approval Conditions" of this PSD permit, may be subject to enforcement under applicable
175 regulations. Nothing in this PSD permit shall be construed so as to relieve ENW of its
176 obligations under any state, local, or federal laws or regulations.

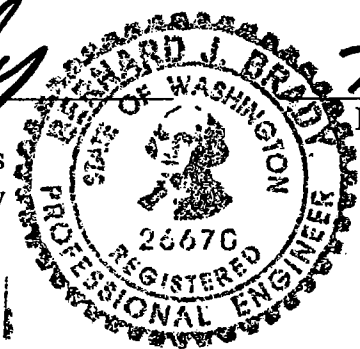
177 15. ENWLP shall notify Ecology in writing at least thirty days prior to initial start-up of the
178 plant.

179 16. Access to the source by the EPA, Ecology or NWAPA shall be permitted upon request for
180 the purpose of compliance assurance inspections. Failure to allow access is grounds for
181 revocation of this determination of approval.

182
183 Reviewed by:

184 *Bernard Brady*
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187 Bernard Brady, P.E.
188 Engineering and Technical Services
189 Washington Department of Ecology
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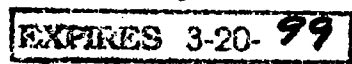


187 *7/8/98*
Date

191 Approved by:

192
193
194 *Stuart Clark*
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196 Stuart Clark
197 Acting Manager, Air Quality Program
198 Washington Department of Ecology
199



200 *7/20/98*
Date

201
202 *Anita Frankel*
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204 Anita Frankel
205 Director of the Office of Air Quality
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7-23-98
Date