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2 WASHINGTON DEPARTMENT OF ECOLOGY
3 MAILSTOP PV-11
4 OLYMPIA, WASHINGTON 98504
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6 **IN THE MATTER OF:**] **NO. PSD 91-02 AMENDMENT 2**
7] **PRELIMINARY**
8 **Encogen Northwest, L. P.**] **APPROVAL OF**
9 **Encogen Northwest Cogeneration Project]** **PSD APPLICATION**
10 **Bellingham, Washington]**
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13 Pursuant to the U.S. Environmental Protection Agency (EPA) regulations for the Prevention
14 of Significant Deterioration (PSD) set forth in Title 40, Code of the Federal Regulations, Part 52
15 and based upon the complete Prevention of Significant Deterioration (PSD) Amendment
16 application submitted by EEX Power Systems (EEX), operator of the Encogen Northwest
17 Cogeneration Plant (Encogen), and the technical analysis performed by the Department of
18 Ecology (Ecology), Ecology now finds the following:
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20 **FINDINGS**

- 21 1. EEX Power Systems (EEX) operates Encogen, which is owned by Encogen Northwest, L.
22 P. (ENWLP). The plant is located adjacent to the Georgia Pacific pulp and paper mill in
23 Bellingham, Washington. The plant was constructed and formerly operated by Enserch
24 Development Corporation. Enserch Development Corporation was the original PSD permittee.
25 2. Encogen consists of three combustion gas turbine/heat recovery steam generator trains and
26 a single steam turbine generator. It is a combustion turbine based cogeneration facility,
27 supplying electric power to Puget Sound Energy and process steam to Georgia Pacific
28 Corporation. Each gas turbine generator unit is designed to generate approximately 41
29 megawatts (Mw) of electrical power, while consuming 440 million Btu/hr of natural gas. A
30 Final Prevention of Significant Deterioration Approval allowing construction of the project and
31 operation **only** on natural gas was issued on September 26, 1991. An amendment to fuel the
32 source with oil during times of natural gas curtailment was approved on December 6, 1993. On
33 March 16, 1998, EEX submitted an application for a minor revision to this permit. The
34 application for this revision was found to be complete on April 20, 1998. The application
35 requested an increase in the daily permitted nitrogen oxide (NO_x) emissions to account for

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36 equipment operational changes that accompany cold weather. Permitted annual NO_x emissions
37 will not be changed in the proposed revision. In addition, the application requested several other
38 administrative revisions intended to improve reporting, simplify the permit, and improve its
39 consistency with PSD permitting guidance. None of these administrative changes increase
40 permitted emissions.

41 3. Encogen qualifies as a major source of air pollutants because it is listed and has the
42 potential to emit more than 100 tons per year of NO_x and carbon monoxide (CO). It is located in
43 an area designated Class II for the purposes of PSD evaluation, under 40 CFR 52.21.

44 4. The site of the proposed project is within an area that is in attainment with regard to all
45 pollutants regulated by the national ambient air quality standards.

46 5. The emissions of NO_x, CO, sulfur dioxide (SO₂), particulate matter (PM), and particulate
47 matter finer than ten microns in diameter (PM₁₀) from the proposed cogeneration project are
48 subject to PSD review.

49 6. The emissions of all other air pollutants from the proposed new source are subject to new
50 source review by the Northwest Air Pollution Authority (NWAPA).

51 7. Best Available Control Technology (BACT) will be used for the control of all air pollutants
52 which will be emitted by the proposed project.

53 8. The cogeneration project would have the potential to generate up to 175 tons per year of
54 NO_x.

55 9. The cogeneration project would have the potential to generate up to 50 tons per year of SO₂.

56 10. The cogeneration project would have the potential to generate up to 131 tons per year of
57 CO.

58 11. The cogeneration project would have the potential to generate up to 56 tons per year of
59 particulate matter, all of which would be finer than 10 microns in diameter (PM₁₀).

60 12. The project will have no significant adverse impact on air quality.

61 13. No noticeable effect on industrial, commercial, or residential growth in the Bellingham area
62 is anticipated due to the project.

63 14. Visibility will not be impaired in any Class I area due to the proposed emissions. Screening
64 analyses showed no significant degradation of sky to terrain contrast or visible plume against the
65 sky or terrain resulting from the project.

66 15. Ecology finds that all requirements for PSD are satisfied. Approval of the PSD application
67 and notice of construction are granted subject to the following conditions:

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69 APPROVAL CONDITIONS

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- 70 1. The combustion turbine/heat recovery steam generator trains shall be fueled only by
71 pipeline quality natural gas except for periods when the supply of natural gas has been curtailed
72 or for limited testing. During periods of natural gas curtailment and during limited test periods
73 the combustion turbine/heat recovery steam generator trains may be fueled by "on-road
74 specification diesel fuel" (referred to as "oil" throughout the remainder of this Approval). The oil
75 may contain no more than 0.05 percent sulfur by weight, as specified in 40 CFR § 80.29, as
76 amended through July 1, 1992. No more than 300,000 gallons of oil may be fired by the
77 combustion turbine/heat recovery steam generator trains in any calendar year for the purposes of
78 testing. No more than 10,600,000 gallons of oil may be fired by the combustion turbine/heat
79 recovery steam generator trains in any calendar year for the purposes of testing or operation
80 during periods of natural gas curtailment. Encogen shall report any oil fired operations of the
81 combustion turbine/heat recovery steam generator trains to NWAPA in accordance with the
82 reporting requirements in Condition 9.
- 83 2. NO_x emissions from each exhaust stack of the cogeneration project shall not exceed 7.0
84 parts per million on a dry volume basis (ppmdv) corrected to 15 percent oxygen and ISO (ISO
85 standard day conditions means 288 degrees Kelvin, 60 percent relative humidity and 101.3 kilo
86 Pascals pressure) conditions on a daily average when the unit is fired on natural gas. NO_x
87 emissions from each exhaust stack of the cogeneration project shall not exceed 11.0 ppmdv
88 corrected to 15 percent oxygen and ISO conditions on a daily average when the unit is fired on
89 oil. Initial compliance shall be determined by EPA Reference Method 20. NO_x emissions from
90 each exhaust stack shall be measured and recorded by a continuous emission monitoring system
91 (CEMS) which meets the requirements of Condition 8. NO_x emissions from the cogeneration
92 project shall not exceed 1,000 pounds per day when the unit is fired on natural gas or 1,605
93 pounds per day when the unit is fired on oil. Total NO_x emissions in any consecutive twelve
94 months shall not exceed 175 tons. During startup or shutdown conditions, NO_x emissions in
95 excess of the above limits shall be considered unavoidable provided the source reports the
96 exceedance in accordance with Approval Condition 10., below.
- 97 3. SO₂ emissions from each exhaust stack of the cogeneration project shall not exceed 9.0
98 ppmdv corrected to 15 percent oxygen and ISO conditions on a daily average when the unit is
99 fired on oil. Initial compliance shall be determined by EPA Reference Method 6, or an
100 equivalent method approved in advance by Ecology. SO₂ emissions from the cogeneration
101 project shall not exceed 100 pounds per day when the unit is fired on natural gas or 1,584 pounds
102 per day when the unit is fired on oil. Upon request from NWAPA, ENWLP shall provide data
103 demonstrating compliance for this condition for any period(s) that the combustion turbine/heat

104 recovery steam generator trains are fueled by oil. Such data shall be in a format agreed to in
105 advance by NWAPA. The data shall include at a minimum: copies of receipts from the oil
106 supplier showing the sulfur content of the oil, the quantity of oil fired per day, and calculations
107 showing the maximum SO₂ concentration and emission rates in units of the emission limitations
108 in this condition.

109 4. CO emissions from each exhaust stack of the cogeneration project shall not exceed 10.0
110 ppm_d corrected to 15 percent oxygen and ISO on an hourly average as measured by EPA
111 Reference Method 10. CO emissions from the project shall not exceed 718 pounds per day.
112 During startup or shutdown conditions, CO emissions in excess of the above limits shall be
113 considered unavoidable provided the source reports the exceedance in accordance with Approval
114 Condition 10., below.

115 5. PM₁₀ emissions (particulate finer than 10 micrometers in diameter) from each exhaust stack
116 of the cogeneration project shall not exceed 60 pounds per day when the unit is fired on natural
117 gas or 408 pounds per day when the unit is fired on oil. Initial compliance shall be determined
118 by EPA Reference Methods 5, 201 or an equivalent method agreed to in advance by Ecology or
119 NWAPA. PM₁₀ emissions from the cogeneration project shall not exceed 180 pounds per day
120 when the unit is fired on natural gas or 1,224 pounds per day when the unit is fired on oil.

121 6. Within 60 days after achieving maximum production, but not later than 180 days after start-
122 up, ENWLP shall conduct performance tests for NO_x, SO₂, CO, and PM₁₀ on each combustion
123 turbine, to be performed by an independent testing firm. A test plan shall be submitted for
124 Ecology's approval at least 30 days prior to the testing.

125 7. Sampling ports and platforms shall be provided for each affected source, after the final
126 pollution control device. The ports shall meet the requirements of 40 CFR, Part 60, Appendix A
127 Method 20. Adequate permanent and safe access to the test ports shall be provided. Other
128 arrangements may be acceptable if approved by Ecology or NWAPA prior to installation.

129 8. Any continuous emission monitoring system (CEMS) used by ENWLP to measure NO_x and
130 O₂ emissions shall, at a minimum, conform with EPA Title 40 Code of the Federal Regulations,
131 Part 60, Appendix B Performance Specifications. In addition, before initial start-up a continuous
132 emission monitoring quality control plan conforming with 40 CFR 60 Appendix F and
133 acceptable to Ecology or NWAPA shall be submitted and Ecology or NWAPA may require the
134 plan to be periodically updated.

135 9. CEMS and process data shall be reported in written form to NWAPA at least monthly
136 (unless a different testing and reporting schedule has been approved by Ecology or NWAPA)

- 137 within thirty days of the end of each calendar month and in a format approved by Ecology or
138 NWAPA which shall include but not be limited to the following:
- 139 9.1. Quantity of oil burned for testing, total quantity of oil burned, and sulfur content of all
140 oil purchased since the last report.
 - 141 9.2. For each stack, the daily average NO_x concentration, in ppm_{dv} corrected to 15% ISO
142 conditions.
 - 143 9.3 For the cogeneration project, total mass emissions of NO_x on daily (pounds per day)
144 and twelve month moving total (tons per year) bases.
 - 145 9.4. The duration and nature of any monitor down-time excluding zero and span checks.
 - 146 9.5. Results of any monitor audits or accuracy checks.
 - 147 9.6. Results of any stack tests.
 - 148 9.7. The above data shall be retained at the Encogen site for a period of five years.
- 149 10. Each occurrence of monitored emissions in excess of the standard shall be reported to
150 NWAPA. Excess emissions which represent a potential threat to human health or safety or which
151 ENWLP believes to be unavoidable shall be reported as soon as possible. Other excess emissions
152 shall be reported as part of the routine reporting described in Approval Condition 9., above. Each
153 excess emissions report shall include the following:
- 154 10.1. The time of the occurrence.
 - 155 10.2. Magnitude of the emission or process parameters excess.
 - 156 10.3. The duration of the excess.
 - 157 10.4. The probable cause.
 - 158 10.5. Corrective actions taken or planned.
 - 159 10.6. Any other agency contacted besides NWAPA.
- 160 11. Operating and maintenance manuals for all equipment that has the potential to affect
161 emissions to the atmosphere shall be developed and followed. Copies of the manuals shall be
162 available to Ecology or NWAPA. Emissions that result from a failure to follow the requirements
163 of the manuals may be considered proof that the equipment was not properly operated and
164 maintained.
- 165 12. Operation of the emitting equipment must be conducted in compliance with all data and
166 specifications submitted as part of the PSD application unless otherwise approved by Ecology.
- 167 13. This approval shall become void if construction of the project is not commenced within
168 eighteen (18) months after receipt of final approval, or if construction or operation of the facility
169 is discontinued for a period of eighteen (18) months.

170 14. Any activity which is undertaken by ENWLP or others, in a manner which is inconsistent
171 with the intended operation of this facility as described in the "Findings" section or with the
172 "Approval Conditions" of this PSD permit, may be subject to enforcement under applicable
173 regulations. Nothing in this PSD permit shall be construed so as to relieve ENW of its
174 obligations under any state, local, or federal laws or regulations.
175 15. ENWLP shall notify Ecology in writing at least thirty days prior to initial start-up of the
176 plant.
177 16. Access to the source by the EPA, Ecology or NWAPA shall be permitted upon request for
178 the purpose of compliance assurance inspections. Failure to allow access is grounds for
179 revocation of this determination of approval.

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181 Reviewed by:

Bernard Brady, P.E. Engineering and Technical Services Washington Department of Ecology	Date

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189 Approved by:

Stuart Clark Acting Manager, Air Quality Program Washington Department of Ecology	Date

Anita Frankel Director of the Office of Air Quality United States Environmental Protection Agency, Region X	Date