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5 BEFORE THE STATE OF WASHINGTON
6 ENERGY FACILITY SITE EVALUATION COUNCIL

7 IN RE APPLICATION NO. 99-1

EXHIBIT _____(BS-T)

8 SUMAS ENERGY 2 GENERATION
9 FACILITY

10 COUNSEL FOR THE ENVIRONMENT'S PREFILED DIRECT TESTIMONY

11 WITNESS #2: BRADLEY SMITH

12
13 **Q.** Please tell us your name and occupation.

14 **A.** Bradley F. Smith, Professor and Dean of Huxley College of Environmental Studies,
15 Western Washington University.

16
17 **Q.** What is the scope of your testimony today?

18 **A.** First I will tell you about my professional background. Then I will discuss my work
19 involving the study of the Greenhouse Gas Effect and finally, I will share my opinion on the
20 applicant's greenhouse gas offset strategy and how it compares to efforts to address the issue
21 elsewhere.

22
23 **Q.** Will you please summarize your professional and educational background?

24 **A.** I have served as the Dean of Huxley College of Environmental Studies for the past six
25 years. Prior to this I was with the US Environmental Protection Agency in Washington DC.
26 While at EPA, I served as a Special Assistant to the Administrator and as the Director of the

1 Office of Environmental Education. I hold a Ph.D. from the School of Natural Resources and
2 the Environment, University of Michigan. I have consulted in the area of carbon sequestration,
3 specifically in exploring the opportunities in Whatcom County. My publications include
4 *Environmental Science: A Study of Interrelationships* 7th ed. (McGraw-Hill). I serve on many
5 advisory boards and commissions locally, nationally and internationally. My resume, Exhibit-
6 (BS-1) provides more detail.

7
8 **Q.** What information did you review in preparation for this testimony?

9 A. I reviewed the relevant portions of the application, the Jones and Stokes Technical
10 Review and Threshold Analysis dated April 9, 1999, the DEIS, the applicant's Greenhouse Gas
11 Offset Strategy and the wealth of information I have collected on the topic of global warming.

12
13 **Q.** Would you please tell us, what is global warming?

14 A. The first evidence of anthropogenic atmospheric changes resulted from the International
15 Geophysical Year in 1957. As part of that study, an observatory was established on top of
16 Mauna Loa volcano in Hawaii to study air chemistry in a remote environment assumed to be
17 relatively pristine and unaffected by human activities. CO₂ measurements, however, showed
18 two striking trends. The first trend was a strong annual CO₂ cycle, even in the middle of the
19 ocean. The other trend in the Mauna Loa data is a steady CO₂ increase from about 315 ppm by
20 volume in 1958 to nearly 360 ppm in 1994. The extra CO₂ added to the atmosphere each year is
21 thought to come primarily from human actions. Burning fossil fuels, burning biomass and other
22 activities release about 8.5 billion metric tons of CO₂ per year into the air. The result is a 0.5
23 percent annual increase in atmospheric CO₂ concentrations. If current trends continue, CO₂
24 concentrations could reach about 500 ppm (approaching twice the pre-industrial level of 280
25 ppm) by the end of the twenty-first century. Because CO₂ is a greenhouse gas, one that absorbs
26

1 infrared radiation and warms surface air, this change could increase mean global temperatures
2 significantly

3
4 **Q.** What are greenhouse gases?

5 A. Carbon dioxide is not the only anthropogenic gas causing global warming. Methane
6 CH₄, chlorofluorocarbons, CFC's, and nitrous oxide (N₂O) also absorb infrared radiation and
7 warm the atmosphere. Although rarer than CO₂, some of these gases trap heat more effectively.
8 Methane, absorbs twenty to thirty times as much infrared and is accumulating in the atmosphere
9 about twice as fast as CO₂. CFC releases have declined in recent years as substitutes have
10 replaced them in many uses. Nitrous oxide is produced by burning organic material and soil
11 denitrification. Together, these minor greenhouse gases have warming effects almost equal to
12 that of CO₂.

13
14 **Q.** What causes global warming?

15 A. Burning coal, oil, and natural gas produces carbon dioxide and other gases as by-
16 products. Deforestation and clearing of land also release significant quantities of such gases.
17 Over the last century, we have been emitting gases such as CO₂ and methane to the atmosphere
18 faster than natural processes can remove them. During this time, atmospheric levels of these
19 gases have climbed steadily and are projected to continue their steep ascent as global economies
20 grow.

21
22 **Q.** What are the likely consequences of global warming?

23 A Consequences include: Worsening human health effects, rising sea levels, disruption of
24 the water cycle, changing forests and natural areas, and challenges to agriculture and the food
25 supply.

1 Q. How can the effects of global warming be addressed?

2 A. There are several prevention strategies including using less fossil fuels and increasing the
3 use of renewable resources. There is also an increasing awareness of how trading in emissions
4 can address the global consequences in a dramatic way. Following the Kyoto summit by the
5 Framework Convention on Climate Change (FCCC) in December of 1997, the United States and
6 154 other nations agreed to focus on a climate agreement that sets a realistic, verifiable and
7 binding medium-term emissions target [and] continue to work toward a longer-term
8 concentration goal (e.g. next 50-100 years). The Stanford University Energy Modeling research
9 projected the costs of stabilizing emissions of CO2. The report states that a global program to
10 stabilize emissions at 1990 levels could cost about 1% of world GDP by 2010; the cost could be
11 about 2.5% by 2050. The latter scenario would equal about \$3.6 trillion per year.

12
13 Q. Are you familiar with the North West Public Planning Council (NWPPC)?

14 A. Yes, they are the four state organization authorized by Congress to address energy and
15 fish and wildlife issues for the area.

16
17 Q. Recently, the NWPPC stated "While scientific consensus appears to be emerging that
18 human activity is affecting the global climate...there is still great uncertainty regarding the
19 degree of climate change we face, its costs and the effects of efforts to mitigate such
20 change...scientists disagree about the mechanisms at work and the damage that may result..."

21 What is your opinion about this statement?

22 A. I think the point the author is trying to make is CO2 emissions from power plants are an
23 important and well-recognized contributor to global warming and adverse global climate change.
24 However, there may be a question regarding the specific cause and effect in the Northwest
25 region.

1 A. There is a lot of discussion about the preciseness of our ability to calculate the results and
2 costs. However, in my opinion, there is no credible debate about the existence of the problem or
3 the impact of CO2 to the problem. Based on my review of the applicant's information they do
4 not appear to disagree that there is a problem and that their plant, though far cleaner than other
5 more dated technologies, is a contributor to the problem.

6
7 **Q.** Turning to the proposed Sumas Energy 2 plant, what in your opinion would be the impact
8 of this facility on the greenhouse gas effect?

9 A. Based on the Jones and Stokes report dated April 9, 1999 (pages 2-8), "there will be
10 significant carbon dioxide emissions from the project. Rough estimates are that CO2 emissions
11 will equal approximately 500,000 automobiles. The impacts of CO2 emissions from this plant
12 are unknown, global in perspective, and may be positive if other fossil fuel sources are displaced,
13 or even more negative if hydropower is displaced. Such impacts are not sensitive to location but
14 are absolute impacts.

15
16 **Q.** How could Sumas 2 address this impact?

17 A. My recommendation would be through carbon off setting. Specifically a land-based
18 carbon sequestration project in Whatcom County.

19
20 **Q.** Sumas 2 has volunteered to invest 1 million dollars over the first 10 years of its operation
21 to a voluntary program, will this cover the impact?

22 A. I would estimate a greater cost.

23 **Q.** Is there any reason for Sumas Energy 2 plant to consider doing more than it is voluntarily
24 agreeing to in their offset strategy?

25 A. Sumas Energy2 could develop a carbon offset pan that could be a national or
26 international model. Leadership has its costs as well as its benefits.

1 **Q.** What specific ideas do you have that could address the greenhouse gases which the
2 Sumas Energy 2 plant will emit?

3 **A.** As stated previously, I would suggest a land-based carbon sequestration project in
4 Whatcom County. This would entail the purchase of land in the county that would be set aside
5 from future development. This would serve as a sink for carbon. As stated, the issue is global in
6 nature but solutions can be local. To date most of the set asides from carbon have involved land
7 in Central or South America. There is no reason that they could not be in the same county. I
8 believe it would be a first.

9
10 **Q.** Will these mitigation efforts solve the problem?

11 **A.** There is no simple answer such as “solve”. Carbon offsetting is not sensitive to location
12 but is measured as absolute impacts.

13
14 **Q.** What in your opinion is the likely impact of EFSEC's failure to address the impact of
15 greenhouse gas in citing decisions?

16 **A.** The global problems associated with greenhouse gases will continue on. Steps need to be
17 taken globally to reverse this trend. While Sumas Energy 2 will not alone reshape our collective
18 future, it is the responsibility of industry and government to pay a fair share and provide
19 leadership in addressing the issue.

20
21 **Q.** Is this problem unique to the topography of the Whatcom county region, Washington
22 State or the NW region generally?

23 **A.** It is a global issue and thus an issue to Whatcom county, Washington State and the
24 Northwest.

END OF TESTIMONY

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I declare under penalty of perjury that the above testimony is true and correct to the best of my knowledge.

DATED this _____ day of May, 2000

By _____

BRADLEY SMITH