BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 99-1	)	
2ND REVISED APPLICATION, JUNE 2001	)	
	)	EXHIBIT _____ (KCG-T)
SUMAS ENERGY 2 GENERATION	)	
FACILITY	)	

PREFILED DIRECT TESTIMONY OF

NW ENERGY COALITION AND WASHINGTON ENVIRONMENTAL COUNCIL

WITNESS: KC GOLDEN

I. INTRODUCTION

Q. Please state your name and business address.

A. K.C. Golden, 322 29th Ave., Seattle, WA 98122.

Q. By whom are you employed and in what position?

A. I am Coordinator of the global warming project for the City of Seattle.

Q. You testified in the first round of hearings in this proceeding. Please remind us of your education and business experience.

A. I earned a BA in Social Sciences from the University of California at Berkeley and a Master's in Public Policy, with an emphasis on energy and the environment, from Harvard University's John F. Kennedy School of Government. I have worked on Pacific Northwest regional energy issues in the public and private non-profit sectors since 1989, including more than three years as Director of the Energy Division for the Washington State Department of Community, Trade and Economic Development. I have served extensively on a variety of task forces and advisory groups related to energy supply, energy facility siting, integrated resource planning, and state and regional energy policy.

Q. What are your current responsibilities for the City of Seattle?

A. I coordinate the City's global warming project. The project consists of 1) efforts to reduce the City's greenhouse gas emissions and the emissions over which City policies and actions have influence, and 2) efforts to support policy, planning, and technology initiatives that advance broader solutions to global climate change.

Q. What will your testimony address?

A. My testimony will address the City of Seattle's policy commitments regarding greenhouse gas reduction and mitigation and Seattle City Light's experience to date in acquiring greenhouse gas offsets.

II. DISCUSSION

Q. Please remind us why the City of Seattle has committed to significantly reducing its greenhouse gas emissions.

A. The City believes strongly that greenhouse gas emissions represent an extraordinarily important environmental challenge with very serious consequences for our community, including water supply disruption, air quality deterioration, and adverse human health impacts. The overwhelming majority of scientists around the world and here at the University of Washington have concluded that climate change has begun and is accelerating at an alarming rate, due in large part to human use of fossil fuels. As an electric energy provider, we have a special responsibility and a unique opportunity to reduce or eliminate greenhouse gases associated with delivering energy service. We take this responsibility very seriously. And we are finding that our efforts to provide energy service without contributing to climate change bring a variety of important benefits to our community, including cleaner air, more efficient homes and businesses, and greater energy security. In addition to reducing our use of fossil fuels, we are also committed to mitigate or offset the emissions associated with any fossil fuels we do use to provide electricity.

Q. During the first round of hearings in this proceeding, you testified about the Seattle City Council's Earth Day Resolution. Please remind us what that does.

A. On April 10, 2000, the Seattle City Council passed Resolution 30144 (Earth Day Resolution) requiring the City's electric utility, Seattle City Light (SCL), to produce zero net greenhouse gas (GHG) emissions in meeting the electricity needs of its customers.

Q. Since you testified in front of EFSEC in August 2000 regarding the proposed Sumas 2 Generation Facility (S2GF), have the City and Seattle City Light taken any additional action with regard to reducing its greenhouse gas emissions?

A. Yes. On October 30, 2000, the Council passed Resolution 30256 requiring SCL to fully mitigate for the GHG emissions associated with its power purchase contract from the Klamath Falls, Oregon natural gas combustion turbine (Klamath) (see Exhibit KCG-1). On January 29, 2001, in partnership with The Climate Trust, SCL issued a Request for Proposals (RFP) for 247,000 metric tons[1] of GHG offsets for the emissions from the first year of power purchases from Klamath. SCL received 77 proposals and is in the final review of the 8 remaining Phase II proposals. On July 23, 2001, the Council passed Resolution 30359 establishing the plan for implementing the Earth Day Resolution, which directed SCL to double the amount of offset purchases related to the Klamath Falls contract (see Exhibit KCG-2). In January 2002, SCL will issue another RFP for 610,000 metric tons to fully satisfy the Earth Day Resolution and thereby produce zero net GHG emissions.

Since the passage of the Earth Day Resolution, SCL has immersed itself in the business of GHG mitigation. We have learned much from our colleagues at The Climate Trust and have extensively reviewed both the standards by which organizations establish their GHG "footprint" and the standards used for purchasing GHG offsets. In addition, we convened an advisory committee comprised of nationally recognized climate scientists and analysts, the director of the regional air quality agency, local business and non-profit

[1] A metric ton is equivalent to 2240 lbs., while a short ton equals 2000 lbs.

representatives. This advisory committee provided guidance for establishing our footprint and offset purchases.

Q. What has SCL learned about greenhouse gas mitigation from these recent efforts?

A. The consensus among SCL's advisory committee, SCL staff, and The Climate Trust, as well as the majority of participants in the development of the "GHG Protocol,"[2] is that a fully mitigated fossil fuel resource does not provide equivalent GHG protection as does a non-fossil renewable energy resource. Mitigation and offsets are potentially subject to a variety of uncertainties with regard to timing, persistence, measurement, and verification. Nevertheless, a mitigation program with clear, consistent standards can substantially and reliably reduce or compensate for the impact of GHGs from fossil-fueled resources. In selecting a mitigation project, several critical criteria must be considered to ensure that the project will in fact achieve the desired offsets. Those criteria include timing, additionality and technology penetration.

First, many GHG offset projects fail to take adequate account of the lapse in time between the occurrence of the emissions and the GHG avoidance, displacement or sequestration associated with the offset. In mitigating for emissions related to the development of the Klamath Falls combustion turbine, PacifiCorp decided to pursue Oregon's monetary path for a portion of its mitigation requirement and directly invest in projects to meet the remainder of its statutory requirement. The Company directly invested in tree sequestration projects, among others. The emissions will take place over the 30-year life of the combustion turbine but the sequestration (emissions recovery) will

take place over the 100-year life of the reforestation project. Emissions recovered 100 years from now will have no impact on the climate changes expected over the next 25-50 years. This lag in timing reduces the emissions mitigation benefit of the chosen sequestration project, potentially undermining efforts to achieve a specified level of emissions reduction. These lags can be accounted for using appropriate discount factors. With regards to the criterion of additionality, confirming that offset investments result in incremental GHG reductions or sequestration that would not otherwise have occurred is also critical. For example, reductions in methane emissions from landfills required by air quality regulations cannot be legitimately purchased as offsets because those reductions occur as a matter of compliance with existing regulations.

Technology penetration also must be examined in selecting mitigation projects. Foreseeable market penetration of technology may reduce the stated mitigation benefit of many projects. For example, there are numerous energy efficiency mitigation projects in the United States, Canada, Europe and Japan. Many of the energy efficiency technologies being used – e.g. cogeneration, power plant upgrades, system efficiencies – are expected to become commonplace over the next 5 to 15 years. Emissions reductions attributed to such projects after the period in which the technologies become standard practice would arguably occur even without the project.

I have provided examples of a few of the important criteria that SCL will consider in selecting mitigation projects to ensure that the final portfolio of projects actually mitigates or offsets our estimated greenhouse gas emissions. Attachment A of Exhibit

[2] The GHG Protocol is a multi-stakeholder initiative convened by the World Resources Institute and the World Business Council for Sustainable Development. Information about the GHG Protocol is available at

KCG-2 provides a more comprehensive list of critical factors to examine when evaluating potential projects. It is important to note that SCL likely will purchase more carbon dioxide (CO2) credits than strictly required by the City's Resolution to account for any remaining uncertainty and ensure that we reach our goals.

Q. You mentioned that SCL is in the final stages of reviewing 8 proposals to mitigate greenhouse gas emissions from the first year of its power purchase contract with Klamath Cogeneration Facility. Please describe what you can about those projects.

A. Specific information about those projects remains confidential. Generally, I can tell you that our current list of 8 possible offset projects that we are seriously considering represent a portfolio of project types from various regions across the U.S. The projects were chosen primarily for their cost effectiveness and credibility. The range of potential average costs of these projects that we currently have on the books is between $2.40-$3.64 per metric ton of CO2. These estimates will change as we narrow our selections and continue negotiations, but we expect the final average cost of the portfolio we choose to be greater than the low end of that range.

Unfortunately, most of the attractive proposals we received are not within our immediate region. Just as The Climate Trust provides some preference for projects that are located within the State of Oregon, we also prefer to place projects within our city, county, region or state. However, we did not receive local proposals that met minimum cost and credibility thresholds. Preference for projects in Washington State is justified because of the many co-benefits that accrue, but such preference may increase the cost of offsets.

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www.ghgprotocol.org

Q. Seattle City Council Resolution 30359 estimates that $5 per metric ton of CO2 is sufficient to cover the cost of the City's offset purchases in each of the next few years. What did the City take into account when developing this estimate?

A. SCL provided the City Council with the $5/metric ton estimate, which was based on several factors.

First, SCL examined actual project bids in response to our January RFP. We also reviewed project price ranges, where available, from other entities conducting searches for GHG mitigation proposals.

Second, SCL staff examined various policy papers by academics, organizations and agencies to get a sense of price per ton and expectations for the future. Their research indicated that the price per ton of GHG emissions mitigation likely will increase over time as methods are developed to more accurately and consistently assess actual project benefits, and as early adopters capture low-hanging fruit.

Third, SCL staff and the City have a strong interest in local projects because of their potential co-benefits, but as I mentioned earlier, those projects tend to be more costly.

Fourth, monitoring and verification costs must also be considered in budgeting for offsets. Offset projects come in many forms, including sequestration, energy efficiency, renewable energy, landfill gas recovery, coalbed methane recovery, materials substitution, biomass production, modification to agricultural practice and others. Each of these projects has different sets of assumptions. Each has different monitoring and verification requirements. Each has different project life times and different discount

factors. Ensuring that these different types of projects are delivering the intended benefits over time can make up a substantial portion of the cost of offsets.

Finally, staff wanted to ensure a price per ton that is realistic yet flexible over the next few years, and that will ensure the City's ability to pursue a portfolio of durable, verifiable projects.

Q. How do you reconcile the City's estimate of $5/metric ton with the current Oregon standard requirement of $0.85/short ton (or approximately $0.95/metric ton)?

A. The new cost of $0.85/short ton for offset projects (plus 5% for administrative costs associated with project selection and contracting) that was recently approved by the Oregon Energy Facility Siting Council (EFSC) is substantially below the true cost of mitigation projects. The $0.85 figure is an artifact of the unique and pioneering process Oregon used to develop its CO2 offset requirement. A substantial body of real-world experience since that time makes it clear that the cost of mitigation is higher. For example, the Climate Trust will pay on average $1.27/short ton of CO2 for its recent selection of mitigation projects and expects to pay closer to $1.88/short ton in its next round (see PGW-T, attachment 4). Through research and direct experience, The Climate Trust and Seattle City Light have documented a range of prices for credible projects up to about $12/ton of CO2.

As with most harmful pollutants, we expect the cost of GHG mitigation to be internalized into the price of power over time. As a power provider, we believe it is prudent to internalize these costs prospectively. By doing so, we reduce our exposure to future regulatory costs and take advantage of early opportunities to secure competitively-priced

offsets. We know from experience that the price of credible, reliable mitigation is significantly higher than the monetary path in the Oregon standard. Yet even at $5 per metric ton, it is substantially less than the "external" cost of the emissions. Based on a review of the available environmental cost literature, for example, Seattle City Light used an external cost estimate of over $27 per metric ton for purposes of analyzing the full cost of energy resources in its 1997 Strategic Resource Assessment. As a power purveyor with a strong commitment to minimize the total (economic and environmental) cost of energy service, we believe that mitigation at $5 per metric ton substantially reduces total costs, because it (at least partially) avoids environmental impacts at least 5 times more costly.

Q. How might Seattle City Light's commitment to reduce greenhouse gases influence its purchase of power resources?

A. As a power purchaser, we are keenly interested in energy resources that minimize or mitigate for environmental costs, and particularly GHGs. Power generators who mitigate their emissions will have substantial leg up on our business. As a City and a utility with a strong commitment to climate protection, we appreciate EFSEC's efforts to ensure that new electric generating facilities in Washington fully and fairly account for and address their environmental impacts, including their greenhouse gas emissions.

Q. When determining the total cost of greenhouse gas emissions mitigation, is it important to fully evaluate all potential emissions?

A. Yes.

Q. In your opinion, has the applicant presented sufficient information to enable the Council to fully assess the amount of emissions that should be mitigated from the proposed power plant?

A. No. The 2nd revised application omits discussion of two critical sources of additional greenhouse gases: sulfur hexafluoride (SF6) and upstream emissions.[3]

Q. Please explain.

The current assessment of GHGs associated with the S2GF does not include SF6 as one of the potential GHGs emitted by the proposed plant (2nd Revised Application, p. 2.11-8). SF6 is a common gas used for large-scale electricity generation operations. SF6 is also the most powerful of GHGs with a global warming potential thousands of times greater than CO2. Even modest amounts of SF6 that escape into the atmosphere create a disproportionate contribution to global climate change. All new generation facilities should provide a full accounting of any and all SF6 that is used and their plan to ensure monitoring, eliminating or reducing leakage, and mitigation or offsets for any unavoidable leakage.

Also, the second revised application contains no reference to upstream GHG emissions. According to the most recent and most definitive study done by the National Renewable Energy Laboratory[4], upstream GHG emissions (e.g., from pipeline leakage) attributable to a typical combined cycle combustion turbine can be as much as 26% of the GHG emissions associated with the fuel the plant actually burns. These emissions are no less

[3] [3] Note also that the applicant's original Greenhouse Gas Offset Strategic Plan refers to the plant emitting 161 tons/year of methane (p. 2-1), but the section on greenhouse gas emissions in the 2nd Revised Application does not mention any methane emissions (p. 2.11-9).

real than the emissions from the smokestack of the power plant and should be counted among the emissions for which the plant should mitigate.

Q. In conducting a life cycle analysis of its greenhouse gas emissions and defining its footprint, how much upstream emissions did SCL choose to mitigate?

A. SCL adopted a figure of 10% additional GHG emissions to the total directly emitted by its power supply. We believe this sets a strong yet realistic standard for addressing upstream emissions.

Q. What do you recommend with regard to SF6 and upstream emissions in this proceeding?

A. At a minimum, the applicant should submit data to the Council regarding the amount of anticipated SF6 emissions and the potential for upstream emissions. The Council should take these data into consideration in determining an appropriate greenhouse gas emissions mitigation requirement for the proposed facility.

Q. Does that conclude your testimony?

A. Yes.

END OF TESTIMONY

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

DATED: September 28, 2001 **By:_____**

K.C. Golden

[4] . Spath, P. L.; Mann, M. K. (2000). Life Cycle Assessment of a Natural Gas Combined Cycle Power Generation System. 55 pp.; NICH Report No. TP-570-27715.