OFFICE OF ENERGY TESTIMONY
PROPOSED RULEMAKING FOR THE
MONETARY OFFSET RATE OF THE CARBON DIOXIDE STANDARD

August 27, 2001

OAR- 345-024-0580 provides the criteria that the Energy Facility Siting Council ("Council") must consider for changing the monetary offset rate, pursuant to ORS 469.503(2)(c)(C). OAR 345-024-0580 permits the Council to change the monetary offset rate by up to 50 percent after June 27, 2000. The rate is currently $0.57 per short ton of CO_2 emission. A 50 percent increase would raise the monetary offset rate to $0.85 per short ton of CO_2 emissions.

Application to Different Types of Facilities

The legislation that created the CO_2 standard set the original monetary offset rate at $0.57 per ton of carbon dioxide emissions for base load gas plants. When the Council adopted the rules for non-base load plants and non-generating facilities, it applied the $0.57 monetary offset rate to those facilities as well. The monetary offset rate of $0.57 per ton/$CO_2$ is stated in the compliance sections of the CO_2 rules for base-load gas plants, non-base load plants, and non-generating facilities at OAR 345-024-0560(3), -0600(3), and –0630(3), respectively.

The Council did not write separate rules for changing the monetary offset rate for the different types of facilities. Any rule change in the monetary offset rate should, therefore, apply to all facilities. For simplicity, the proposed rules specify the monetary offset rate in OAR 345-024-0580 and cross-reference the three separate compliance sections for different types of facilities to that rule.

Offset Costs Based on Experience

The first criterion for changing the monetary offset rate is that a change must be based on empirical evidence of the cost of CO_2 offsets. The Office of Energy ("Office") submits evidence it obtained from The Climate Trust and Trexler and Associates.

Michael Burnett, executive director of The Climate Trust, a qualified organization pursuant to OAR 345-001-0010(45), has stated that The Climate Trust's first $1 million portfolio of projects, using funds provided by the Klamath Cogeneration Project ("KCP"), cost on average $1.27 per ton of CO_2 offset.

Similarly, Dr. Mark Trexler and Ms. Meredith Benton of Trexler and Associates provided information to the Office with representative examples of some of the CO_2 offset transactions of which Trexler and Associates is aware. The costs for twelve projects varied from $1.04 to $8.12. The average of those costs is $3.74 per ton.

Trexler and Associates was the consulting firm for KCP that created the original offset portfolio that cost KCP $0.57 per ton to acquire. It was the cost of that portfolio that was the basis upon which the legislature set the original monetary offset rate of $0.57.

The Council originally approved the KCP $0.57 per ton offset portfolio in 1996. The Office believes that the experiences of The Climate Trust and Trexler and Associates demonstrate that cost of acquiring offsets has increased since the Council approved that portfolio. The information they provided further demonstrates that a monetary offset rate of $0.85 per ton of CO_2 emission would still be below the likely cost of acquiring a ton of CO_2 offsets today.

At The Climate Trust's reported cost of $1.27 per ton for CO_2 offsets, $0.57 secures only 45 percent of the anticipated offsets. Even raising the monetary offset rate to $0.85 per ton of CO_2 would have only achieved 65 percent of the anticipated CO_2 reductions at an acquisition cost of $1.27 per ton.

The discrepancy between the amount of offsets the monetary offset rate can buy versus the credit for offsets that the site certificate holder receives by paying $0.57 per ton undermines the CO_2 emissions standard that the legislature set. While the Council cannot close the gap completely between actual costs and the monetary offset rate, it can bring the likely achievable offsets more closely in line with the offsets anticipated by the carbon dioxide standard.

The intention of the design of the CO_2 standard was that there would be multiple paths to achieving the standard that were equally effective in meeting it. The monetary path was designed to achieve the same amount of offsets as the other paths.

The monetary path is a procedural alternative. Its purpose was to relieve the energy facility developer from the responsibility of finding offset projects, obtaining Council approval of the projects during the site certificate application process, and then implementing offset projects over the years an offset project would run.

The monetary path was not intended to be a substantive alternative to achieving the offsets necessary to meet the standard. It was not intended to create a cheaper path that would fail to provide the offsets required to meet the net emissions rate set by the standard. However, that is what it has become. In the four years that the legislation has been in effect and in the five years since the Council found that a developer could achieve offsets for $0.57 per ton, the difference in the monetary offset rate and the actual cost of acquiring them has diverged significantly.

Economically Achievable

The second criterion for modifying the monetary offset rate is that the Council must find that the new rate is "economically achievable" for a gas plant, pursuant to ORS 469.503(2)(c)(C) and OAR 345-024-0580. The Office recommends that the Council look at the costs of compliance for plants under construction or recently completed and plants for which an application has been filed to project the costs that a developer of a new plant would likely see.

Table 1 shows two basic assumptions on the costs of using the monetary path for a 500 MW plant. It shows the costs compared to the heat rate for two representative plants. One is the heat rate of KCP, which is on-line and is representative of plants under construction. For consistency, all plants are set at a capacity of 500 MW, rather than various specific capacity of the particular plants. The guaranteed heat rate of KCP is 6,795 Btu/kWh (HHV). The certified heat rates for the Hermiston Power Project and Coyote Springs Cogeneration Project, Unit 2, are within a few Btu of the KCP rate. Second, Table 1 looks at the estimated heat rate for the Umatilla Generating Project, which is in the final stages of review for a site certificate. Its estimated heat rate is 6,639 Btu/kWh. These heat rates of plants under on-line, under construction or proposed are examples of the monetary path payment costs a developer today would face to build a 500 MW gas-fired plant.

A fundamental question for economic feasibility is whether the increased cost of using the monetary path would prevent gas-fired power plants from being built in the state. That was a key question in designing the standard initially. As Table 1 shows, an increase to $0.85 per ton would increase the net present value of total construction and operating costs by about 0.1 percent. It would add about $2 to $2.3 million to the construction cost, which is an increase of about 0.7 percent of construction cost.

It is not likely that a change of 0.1 percent in construction and operating costs would discourage a developer from locating in Oregon, given the much higher risks in fuel costs that developers must accept in the current market and the potentially higher revenues in a volatile electricity market. The magnitude of the change in the offset fund rate is small compared to the uncertainty inherent in calculations of the economic feasibility of building a plant anywhere in the Northwest. Likewise, because access to natural gas supplies, taxes, siting costs, and regulations are so different in California and Washington, the small increase in monetary offset rates is not a significant deterrent to building in Oregon.

The proposed rules change also applies the $0.85 monetary offset rate to all non-base load facilities that are required meet the carbon dioxide standard. The change would add construction and operating costs to such facilities, but there is no representative plant upon which to base an assumption of the financial impact on such facilities because of the wide variation in operating hours and efficiencies of such non-base load plants.

This rule proposes to apply the rate change to non-generating facilities as well. Table 2 shows how an increase to $0.85 per ton would change the compliance costs for installing a 5,500 horsepower compressor that runs on average 6,100 hours per year, or 70 percent of the time. It would increase the net present value of the total construction and operating costs by about 0.3 percent. It would add about $85,000 to the construction costs. While the rule does not require the Council to consider the economic feasibility of the change for non-generating facilities, the relative change in operating and construction costs is minor. It should have no noticeable impact on residential ratepayers.

Table 1. Comparison of Monetary Offset Rates for Base Load Gas Plants

A. Base Load Gas Plant Standard	
6,795	Btu/kWh net heat rate, Klamath Cogeneration Project (KCP)
6,639	Btu/kWh net heat rate, most efficient plant under review in Oregon (UGP)

B. Base Plant (Economic data from Jeff King, NWPPC)			
500	MW base load combined cycle gas plant		
30	years		
$ 32.26	dollars per MWh real levelized (also mills/kWh) 2001 start date in 1997$		
$ 130	Annual Cost ($M/yr) @ Cap. Fac =	92%	
$ 1,728	Present Value Costs (1997 $M) @	6.33%	(Nominal 8.98%)
	GDP Defl. 1997 and 2001 (DRI, 5/01)	1.020	1.097
$ 1,858	Present Value Costs (2001 $M)		
$ 597	1997 dollars per kW assumed for total construction and licensing (overnight)		
$ 298.5	Construction Cost (million 1997 dollars)		
$ 321.0	Construction Cost (million 2001 dollars)		

C. Compliance Costs for Monetary Path	Monetary Offset Rate ($0.57)		Proposed Rate ($0.85)	
	KCP Heat Rate	UGP Proposed	KCP Heat Rate	UGP Proposed
Total Monetary Path Requirement ($ million)	$ 4.7	$ 4.0	$ 7.0	$ 6.0

D. Percent of Costs				
Monetary Path as % of Present Value (including fuel)	0.3%	0.2%	0.4%	0.3%
Monetary Path as % of Construction Cost	1.5%	1.2%	2.2%	1.9%
			Difference from $0.57 rate (million)	
			$ 2.3	$ 2.0

Table 2. Comparison of Monetary Offset Rates for a Compressor

	Current Rate $ 0.57	Proposed Rate $ 0.85
Nominal Power (hp)	5,500	5,500
Time on Fuel (hr/yr.)	6,100	6,100
Heat Rate (Btu/hphr)	9,134	9,134
Total offset costs	$ 172,434	$ 257,139

Fuel cost per therm	$ 0.35	$ 0.35
Annual fuel cost for natural gas	$ 1,072,560	$ 1,072,560
Project Capital Costs (million $)	10	10
Real Discount Rate	0.0633	0.0633
PV of 30 years of Fuel Cost (million $)	$15	$15
Total PV of Capital and Energy (million $)	$25	$25
Offsets as % of Capital Cost	1.7%	2.6%
Offsets as % of Total Cost	0.7%	1.0%
30-year Annualized Offset Cost ($/yr)	12,200	18,194
NW Natural 1999 Oregon Rev. ($/yr)	426,141,928	426,141,928
Percent increase from Offset Cost	0.0029%	0.0043%
1999 average residential gas bill ($/yr)	$ 563.60	$ 563.60
Increase in average annual bill ($/yr)	$ 0.02	$ 0.02