

MEMORANDUM

TO: Richard Westlund, OEI/OIC, Collection Strategies Division
Courtney Kerwin, OEI/OIC, Collection Strategies Division

FROM: James Warila, OAR/OTAQ, Assessment and Standards Division

DATE: August 8, 2008

RE: Use of monetary incentives for the ICR "Populations, Usage and Emissions of Diesel Nonroad Equipment"
(Agency Form No. 2156.02,
OMB Control No. 2060-0553).

The collection under this control number was originally approved by OMB in November, 2004. As approved, the approval allowed us to give a monetary incentive to approximately half of the respondents on an experimental basis. The ICR was submitted for renewal in November, 2007 and approved without change in April, 2008.

During fall of 2007, while preparing the package for renewal, preliminary analyses of recruitment results seemed to suggest that the incentive was not having a substantial or statistically significant effect on response rates. Therefore, in preparation of the renewal package, we did not propose to continue use of the incentive. However, more careful analysis performed in the spring of 2008 suggests that the incentive may be having a measurable effect on response at the third sampling stage.

The purpose of sampling for this collection is to acquire access to heavy equipment for purposes of measuring emissions and usage during normal operation. Sampling is conducted in four stages: (1) county, (2) establishment, (3) site(s) and (4) equipment piece(s). In the first stage, a sample of counties was drawn from the four states in the study area. Secondly, with selected counties, samples of establishments are drawn. In the third stage, one or more work sites are selected for each establishment. Finally, in the fourth stage, equipment pieces are drawn from lists of equipment on selected sites.

Following selection of establishments at stage 2, a telephone interview is conducted to verify the respondents' identity and screen for eligibility. For those establishments completing interviews and screening as eligible, the incentive is provided at the outset of recruitment for participation in the field measurements, which occurs at stage 3.

Results of the incentive for two counties fielded during the fall of 2007 are presented in Table 1. In this context, "participation" means that the respondent consented to allow a site inventory or allowed instrumentation of one or more equipment pieces.

Table 1 Results for use of the monetary incentive to recruit respondents for field research (third sample stage)

		H_a : Actual Results			H_0 : No incentive effect			
		Participation			Participation			
		YES	NO		YES	NO		
Incentive	YES	20	9	29	YES	17	12	29
	NO	7	10	17	NO	10	7	17
		27	19	46	27	19	46	
Response Rate		0.74	0.47		0.63	0.63		

Table 1 shows a large apparent difference between the incentive and non-incentive groups of approximately 25%. Based on a chi-square test for the 2×2 tables, this result appears to be marginally significant at the 95% confidence level ($\chi^2 = 3.4138$, with 1 d.f., $p = 0.06$). While the confidence level of these results is acceptable, the power of this test is not quite high enough to be satisfactory, i.e., 60 to 70% for confidence levels of 95 or 90%, respectively (one-sided tests). Prospective calculations suggest that roughly doubling the sample could achieve power in the range of 80 – 90%.

While not conclusive, we consider these results as strongly suggestive of a positive effect for the incentive. We therefore request to continue to offer the incentive during the current approval period, under a reasonable expectation that the results obtained will allow a more definitive outcome for the experiment.

Incentives will be offered in the amount of \$100 to approximately half of the respondents, subsampled on the basis of a binomial selection with $p = 0.50$. The incentive will be offered to approximately 25 respondents per year. We anticipate that use of incentives would result in a cost to the government of approximately \$2,500 per year over the approval period.