Materiality in the CDM

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Background

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- Materiality is a concept that is widely applied in data auditing and verification circles
- It is used as a means of helping verifiers to define the audit schedule and as a means of dealing with minor (immaterial) “issues” with data sets
- PPs and DOEs have tried to explain materiality to the EB on several occasions, failing miserably
- The application of materiality that I am presenting is NOT the full scope of materiality, but it is what the Parties have accepted to date

- If DOEs have a different view, they need to engage with the Parties before and at SB and CMP meetings and do a better job of explaining materiality

Materiality and Environmental Integrity

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- At present, there is no consistent or accurate means of dealing with minor issues with data sets.
- When such issues are detected, values are zeroed out / set at 100% capacity or we have to request a deviation; DOEs are reluctant to do anything that is not the most conservative option
- Zeroing out values actually serves to introduce more errors into a verification; is un-necessarily conservative and means that in some cases ERs do not equal BE-PE-LE
- Different DOEs deal with these issues differently and there is no reporting of such issues
- Applying materiality, identifying and quantifying such errors ADDS integrity and transparency to the process.

Guidance from CMP

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- *Defines* material information as a piece of information the omission, misstatement or erroneous reporting of which could change a decision by the EB

- Or alternatively, immaterial information is a piece of information the inclusion, correction or estimation of which would NOT change a decision by the EB.

- *Also decides* that information related to a clean development mechanism project activity shall be considered material if its omission, misstatement or the non-compliance with a requirement might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a clean development mechanism project activity equal to or higher than [the following thresholds]

- If you look at the size of the thresholds, its clear that the CMP do not expect materiality to be applied to help define an audit schedule – you need 5% materiality to do this

Purpose and application of the guidance

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- The purpose of this guidance is to simplify the process of verification without impacting upon the environmental integrity of the CDM.

- In applying the guidance, DOEs are empowered to accept replacement values such as estimated values, which can be corroborated using other verifiable information, to the extent that the aggregated value of the data in question does not exceed the given thresholds.

  - For example, when a meter fails for a short period of time but there is evidence to show that the plant was otherwise operating normally, the PP can fill the gap with the average of before and after values; DOE can corroborate the assumption of continuous operation from other data and accept the estimated values

- Such replacement values do NOT need to be calculated using procedures which are included in the monitoring report

Application of the guidance cont.

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- Such corrections can be made to data relating to both baseline and project emissions because in calculating the materiality, the value of the data is aggregated (i.e. whether its an increase or decrease in emissions is irrelevant).

- The materiality threshold is calculated as the aggregated value of the corrected baseline emissions plus corrected project emissions divided by aggregated value of the entire baseline ad project emissions for the reporting period in question, expressed as a percentage.

- An example follows:

Table 1: Special events during Duerping MR5

Example from a real monitoring plan

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Five different types of failures were identified.

1) Communication disconnect between Flare PLC and central PLC, flare CH4% and flame temperature signal are lost

- We do not have a back up means of confirming that the flare was operating therefore we cannot prove that this was just a signal failure and provide an estimated reading.
- This error lost an estimated 196 CERs

2) No.1 and No 3 engine running but gross power and differential pressure data both are missing.

- Again, cannot prove plant was operating
- Estimated loss of CERs – 36

3) Replacement of relative pressure with absolute pressure at the outlet of phase 2 pre-treatment

- Change algorithim, no impact on CERs

Event	Start Time (GMT)	End time (GMT)	Event / Cause	Action taken	Impact on CERs
1	2010-11-15 14:11:30	2010-11-16 2:29:30	Communication disconnect between Flare PLC and central PLC, flare CH4% and flame temperature signal are lost	Impossible to prove that flare was running therefore	Reduced by 138 CERs, estimated based on before and after readings
	2010-11-16 2:56:00	2010-11-16 6:58:00			Reduced by 52 CERs, estimated based on before and after readings
	2010-11-17 2:40:30	2010-11-17 3:19:00			Reduced by 6 CERs, estimated based on before and after readings
2	2010-12-4 3:19	2010-12-4 06:42	No.1 engine is running but gross power and DP data both are missing.	Impossible to verify by any means	Reduced by 36 CERs (for both engine 1 & 3), estimated based on before and after readings
	2010-12-4 3:07	2010-12-4 06:45	No.3 engine is running but gross power and DP data both are missing.	Impossible to verify by any means	
3	2010-12-24 4:29:00	2010-12-24 4:48:00	Replacement of relative pressure trans from absolute pressure at the outlet of phase 2 pre-treatment	Change ER algorithm	No impact
4	2011-1-4 3:10:30	2011-1-4 4:37:00	No.2 engine keep running but DP=0Kpa because of DP trans sample pipe frozen.	Back calculation from Gross Power output, conservative, 4 m3 pure methane per kWh GP, based on manufacturers specifications	Total impact 324 CERs based on back calculation from GP output
	2011-1-4 17:08:00	2011-1-6 3:56:00	No.2 engine keep running but DP=0Kpa because of DP trans sample pipe frozen.		
	Numerous events		Causing lost readings of methane volume to one or more gensets		
5	2011-3-17 14:31:00	2011-3-18 4:12:00	35KV system communication was lost and power meter reading displayed Zero.	No action because power meter reading back to normal display while 35KV communication reconnection.	No impact

Example cont.

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4) No.2 engine running but DP=0Kpa because DP trans sample pipe is frozen.

- Multiple events totaling 324 CERs
- Evidence is available that the engine is running on the basis of gross power output
- Gas consumption can be estimated from gross power output using manufacturers specifications

5) 35KV system communication was lost and power meter reading displayed Zero.

- No action required because when connection was re-established meter read the correct total
- No impact on CERs

- So, out of five types of error, one could be corrected, two had no impact and two resulted in loss of CERs

Calculation of materiality

Table to the right shows the different values obtained for volumetric flow of methane in m3 per month with corrected and uncorrected data related to error number 4

Date / Time Stamp		A1	A2	A	A'
Parameter		Volumetric Flow Rate CMM m3/month	Average month CH4%	Corrected Volumetric Flow Rate CH4 m3/month	Uncorrected Volumetric flow rate CH4 / month
from	To	A1 = A / A2	A2	A	
27-Oct-10	26-Nov-10	1,883,720	38	709,727	707,568
27-Nov-10	26-Dec-10	2,440,248	37	897,105	895,365
27-Dec-10	26-Jan-11	3,093,550	39	1,194,289	1,178,119
27-Jan-11	26-Feb-11	3,108,500	42	1,304,916	1,302,472
27-Feb-11	26-Mar-11	3,386,419	39	1,333,815	1,331,420

Calculation of materiality

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This table shows the Baseline and Project emissions under both scenarios

The difference in the aggregated value is 425 out of a total data set of 133407

The percentage of data which is impacted is

425 / 133407 = 0.32%

Materiality threshold for this project is 1%.

Corrected		BE	PE	Total
from	to			
10/27/2010	11/26/2010	22459	3515	25974
11/27/2010	12/26/2010	21586	2831	24417
12/27/2010	1/26/2011	23408	2430	25837
1/27/2011	2/26/2011	25917	2655	28572
2/27/2011	3/26/2011	26318	2713	29031
	TOTAL	119688	14144	133832
Uncorrected		BE	PE	Total
from	to			
10/27/2010	11/26/2010	22426	3511	25937
11/27/2010	12/26/2010	21560	2828	24388
12/27/2010	1/26/2011	23165	2397	25561
1/27/2011	2/26/2011	25881	2650	28530
2/27/2011	3/26/2011	26282	2709	28991
	TOTAL	119313	14094	133407
	Aggregate corrected data			425
		Materiality		0.32%

Conclusion

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- DOE is able to verify the estimated values as being a more accurate determination of CERs compared to zeroing them out
- PP gets the CERs which they have generated
- Errors and failures in the monitoring system are better understood
- PP should now consider whether to implement procedures or invest in more equipment to monitor the operation of the flare. Can evaluate the likelihood of breaching the threshold and the financial penalty
- The monitoring system, data and errors are better understood and more transparently explained, leading to greater environmental integrity

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Thank you for listening

The Project Developer Forum (PD-Forum) is a collective voice to represent the interests of companies developing greenhouse gas (GHG) emission reduction projects in international markets under the Clean Development Mechanism (CDM), Joint Implementation (JI) and other carbon emission reduction schemes and programs.

See our members at: www.pd-forum.net