the PEMBINA institute
Sustainable Energy Solutions

Final Report by the Pembina Institute on TEAM Protocols for Project Case Power Projects and Baseline Grid Emissions

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1.0 Final Feedback

Pembina was contracted by TEAM to review the draft renewable energy project and baseline protocols prepared by the Delphi Group. Feedback was provided in two separate documents, and considered in the two workshops, respectively.

Based on the input provided to date by all participants in the two workshops, and the subsequent recommendations in CSA's Workshop Summary Reports, Pembina is comfortable with CSA's plan to incorporate the feedback into revised protocols. It is felt that all major issues identified were addressed in the two workshops to the extent possible.

This is based on our understanding that all comments will be addressed, and more specifically, the CSA recommendations will be incorporated into the next version of the protocols.

Note that in Section 3.0, under 'Assumptions', we indicate that amortizing greenhouse gas emissions over the life of the project is acceptable for the simplified approach. For clarification purposes, this is not to be interpreted as the 'discounting' of emissions. Rather, it refers to averaging one time emissions (e.g. construction related) over the life of the project on a per year basis. Note 7 in the Wind Generation Protocol notes the two options being considered for GHG allocation. Pembina's ultimate recommendation/guidance is to ensure that the option selected will not impact the likelihood of the project occurring. For example, should project case construction-related emissions be accounted for in the year they occur (say 2008), this may deter investors from investing in the project given that emission reductions would be smaller for that year (but incrementally larger in future years). The protocol may want to simply provide guidance on both options, with final direction provided by the GHG programme itself.

Pembina Institute's input to the two workshops is provided in sections 2.0 and 3.0 below.

2.0 Preliminary Comments by the Pembina Institute on TEAM Protocols for Project Case Power Projects and Baseline Grid Emissions

Roger Peters & Matt McCulloch, February 4, 2005

General Comments

In general, the reviewer feels that the advanced approaches in the Project Case and Baseline Grid Protocols go beyond the requirements and spirit of ISO 14064-2. This standard stresses completeness, but also requires consistency and ease of use.

However, there are inconsistencies in the treatment of 'upstream' (from herein, upstream refers to emissions associated with construction activities) GHG emissions between the Project Case and Baseline Grid Protocols.

The Protocols also attempt to differentiate among "controlled, related and affected" sources of GHGs, but these categories do not appear to be used anywhere in the Protocol.

The Protocols are challenging to use given the amount of information and complexity, and the user is left with far too many options to consider with limited reasoning, guidance, and advice. As well, it is questionable whether some of the methodologies offered in the Baseline Protocol are even obtainable.

Finally the Protocols do not reflect current international practice for renewable energy power systems where upstream and downstream emissions are not included, and a single "combined margin" grid baseline is used for all types and sizes of renewable power systems.

These issues are elaborated in more detail below under the headings provided in the workshop background document.

It is recommended that:

1. The advanced approach be dropped from the Project Case Protocols, and be used only to show how the coefficients for the simplified were obtained.
2. The use of the upstream and downstream coefficients be dropped from simplified approach in the Project Case Protocols like they are in the Baseline Grid Protocol, and in the advanced approach (if it is retained) the language on the optional selection of these coefficients be changed to match that used in the Baseline Grid Protocol.
3. The section on controlled, related and affected sources is dropped from the Project Case Protocol, unless further guidance and rationale can be provided to the proponent as to their value and relevance.

It is also recommended that:

1. The Advanced Approach for the Baseline Grid Protocol be dropped.
2. The Simplified approach in the Baseline Grid Protocol be limited to estimating the weighted average grid emissions coefficient in each Province for all types of renewable energy and energy efficiency projects.
3. The section on controlled, related and affected sources is dropped from the Baseline Grid Protocol.

Three other areas that need to be addressed in both Protocols:

Additionality

GHG reduction protocols are designed to be used by GHG offset programs where the large emitters of GHG emissions invest in renewable energy and other projects instead of reducing their own emissions. The Project Case Protocols must therefore show that they are not normal practice and they face barriers that are preventing their use. A project that has already received an incentive or is part of a program to support Project Case energy would not be eligible. For example:

- A Canadian Project Case Energy project that has received a production or other credit may not be fully eligible as an domestic offset
- A Project Case Project in a developing country wanting to use the CDM, JI or other international GHG program, must show that it faces a prescribed set of barriers.[1]

The Project Case Protocol should at least mention this concept in the introduction and provide some advice to users, so that they do not use the Protocol unnecessarily.

GHG Project Design Versus Verification

The Project Case and Baseline Grid Protocols should make it very clear that they can be used for two purposes:

- Estimation of GHG reductions during project design – the basis of project approval
- Verification of actual emissions once the project has been built – the basis for actual sale or registration of the offset.

Explicit guidance, particularly with the Baseline Grid Protocol, should be provided on how the information should be applied from an estimation perspective versus a verification perspective. Although this is touched upon, the different applications should be made clear and distinct.

[1] Test 1 The project is not business-as-usual and thus additional because an alternative exists for the project that is more economically attractive.
Test 2 The project is not business-as-usual and thus additional because without the sales of carbon credits the project is not economically viable.
Test 3 The project is not business-as-usual and thus additional because several significant barriers exist.

Baseline Grid Emissions Factors

It is most likely that as GHG reduction programmes evolve, individual provinces and countries will publish weighted average CM emission factors at the end of each year for use GHG reduction offset protocols. Some already do. The Protocols should first advise users to obtain these factors when estimating (use emissions factors for design year) or verifying emissions (use emissions factors for verification year), before trying to develop their own emissions factors or using the defaults provided.

Key Protocol Issues

Balancing Technical Rigour /Practicality/Cost Effectiveness

• Does the draft protocol offer a technically rigorous/practical/cost-effective approach to GHG quantification?
• Which components best represent this approach?
• Which component might be refined to better support this approach?

Project Case Protocols:

The protocol does not effectively balance rigor, practicality, and cost effectiveness. Use of the advanced approach requires upstream and downstream information about the Project Case generation system that is both difficult and expensive to obtain. The simplified approach uses default coefficients for these sources based on very few data sources. SSR's from construction and decommissioning are not included in the simplified Baseline Grid Protocol.

Current international practice assumes that GHG sources from upstream and downstream sources in Project Case generation systems are small compared with the emissions reductions that will result from the displacement of baseline grid emissions. As far as the reviewers are aware, no offset protocol or GHG quantification system currently in use in other countries includes Project Case generator manufacturing, transportation and other upstream sources of "embedded" GHGs. The Clean Development Mechanism, the World Bank Prototype Carbon Fund, and EU GHG trading and certificate systems for Project Case energy systems use only the displaced baseline GHGs as a measure of GHG reductions[2].

There is also an imbalance between the degree of rigour and conservativeness required in the Project Case Protocol compared to that required in the Baseline Grid Protocol when it comes to treatment of upstream and downstream embedded GHG emissions. Baseline Grid Protocol section 3.7.1 explicitly allows users to leave out sources to "simplify" the process. No such simplification is allowed in the Project Case Protocols (section 3.5). This results in a gross inconsistency between

[2] For example, the CDM Executive Board has considered several Project Case projects and in no case have they required that upstream and downstream emissions be considered – see http://cdm.unfccc.int

the baseline Grid and Project Case protocols. The aim is to be conservative, but this approach is overly conservative as well as inconsistent.

Baseline Grid Protocol:

The advanced approach in the Baseline Grid Protocol is much too complex, building off an already complex simplified approach, and will not be either practical or cost effective for any user. The simplified approach is complex enough and may itself require information on grid dispatch (in table 1) that is may not be available or is proprietary (ie. commercially sensitive) for some of the cases provided. For example, 5 minute dispatch information from the Ontario grid is not available, and thus it is difficult to obtain dispatch information outside of applying a assumed levelized unit cost for fuel-specific plant types.

The assessment of this Protocol is made more difficult in that the quantification of GHGs for each type of offset has not been completed yet.

There are also too many options provided in the Baseline Grid Protocol. Current international practice is to use only the weighted average plant emissions factor for all types of power projects that displace grid electricity, or some estimate of combined margin, for all types of GHG reduction project [3] [4] [5] . The error in making this assumption for intermittent or small renewable energy projects is small compared to the reductions themselves. The concept of trying to match the dispatchability and output functions of a renewable energy system with the actual plants they displace has been largely abandoned because of lack of appropriate data and the risks of error in its use.

Simplified and Advanced Approaches

• Is the "Simplified-Advanced" model appropriate? Is it useful?
• Are there alternate models or approaches that should be considered?

Project Case Protocols

As note above, the advanced approach in the Project Case Protocols goes beyond the spirit of ISO 14064-2 which while stressing completeness, also requires consistency and ease of use. The simplified approach should be the only one included in the Protocol.

[3] UNFCCC Approved consolidated baseline methodology ACM0002 “Consolidated baseline methodology for connected electricity generation from renewable sources”

[4] OECD/IEA “Practical Baseline Recommendations for Greenhouse Gas Mitigation Projects in the Electric Power Sector”

[5] World Bank Prototype carbon Fund “Liepaja Regional Solid Waste Management Project Monitoring and Verification Protocol”

Baseline Grid Protocol

This advanced approach in this Protocol also appears to exceed the spirit of ISO 14064-2. It also is inconsistent with the Project Case Protocols in not requiring the same rigour when including upstream (infrastructure based) emissions. By being too conservative the Protocol is inconsistent.

A better approach for the Baseline Grid Protocol would be to have a straightforward protocol for estimating the weighted average emissions factor – similar to the World Bank PCF, CDM, etc.

The "How", "Why" and "Why Not" of Decision Making - Justification and Explanation

• Does the draft protocol provide sufficient advice to, as appropriate, justify or explain decisions?
• In what areas might further advice be required to support why decisions were made, how decisions are appropriate for circumstances and why alternative options were rejected?

Project Case Protocols

As noted above, the Protocols do not provide consistent advice when it comes to selecting GHG sources and sinks. It is assumed that the user of the Project Case Protocols will include the GHG emissions from capital infrastructure related activities when in the Grid Baseline Protocol the advice is to only include upstream GHG sources under a limited number of circumstances (Section 3.7.1).

Grid Baseline Protocol

The advice provided in the Protocol is somewhat confusing – mainly because of the large number of options available to the user. These include a wide variety of baseline methodologies (BM, OM, CM) depending on the Province and the type and size of renewable energy project being considered GHG (Table 1), as well as the decision on whether to include upstream GHG emissions. As well, no guidance is provided on how to decide the appropriate weighting between the build margin and operating margin, in order to calculate the combined margin.

If the recommendations provided above are followed, the number of decisions on which advice is needed will be significantly reduced.

Ease of Use

• Does the draft protocol's layout, organization, clarity etc. promote ease of use?
• How might specific components be improved?

Project Case Protocol

The layout of the Project Case Protocol could be greatly improved if a “road map” of the basic objective of the protocol was provided in the Introduction.

Basically the Protocol provides the means to quantify GHG reductions from Project Case projects. The GHG reductions = power generated * grid baseline – GHG emissions associated with the Project Case plant itself.

Leaving out the Advanced approach as recommended above would also make the Protocol much easier to use.

Grid Baseline Protocol

The Baseline Grid Protocol would also benefit from a road map in the introduction that shows the basic equation to estimate GHG emissions:

GHG Emissions = GHG emissions from each upstream, operating and downstream source

The current version of even the simplified version of the Protocol is very difficult to use because no emission factors are provided, and many of the baseline methodologies offered in Tables 1-10 may not even be obtainable and therefore unnecessarily divert the user. Tables 1-10 would be much clearer if only the recommended and easily obtainable methodologies were included for each province and the emissions factors themselves included. For those methodologies that are (or need to be) described, further detail and guidance (specifically around determining the marginal baselines) would be of significant help to the user. For example, there is very limited guidance on how a proponent would create a Load Duration Curve to determine the Dispatch Proxy as a marginal source.

Adherence to Principles

• Is the draft protocol consistent with ISO 14064-2 principles?
• If not, which components require further work to meet the intent of principles?

Project Case Protocol

Completeness: Includes all relevant GHG emissions and removals, but does not adequately address the relative low importance of upstream GHG emissions
Consistency: Is not consistent with baseline grid Protocol as to the relative un-importance of upstream emissions.
Accuracy: Is biased against Project Case because of the implied requirement to include upstream emissions.
Transparency: Information provided is very complete but complexity of advanced option obscures much of the logic.
Relevance: While the Protocol is meant to be policy neutral, it is essential to mention that current practice in GHG offset and trading programs do not require inclusion of upstream GHG sources.

Conservativeness: The Protocol is too conservative in that it implies that upstream GHG sources should be included.

Baseline Grid Protocol

Completeness: Covers all GHG emission sources.
Consistency Not consistent with Project Case Protocol as to inclusion of upstream and downstream GHG emissions
Accuracy: Large number of baseline methodologies included attempts to provide accuracy, but at the loss of ease of use and relevance.
Transparency: As with accuracy, too many options and complexity make user understanding difficult
Relevance Select: While the Protocol is meant to be policy neutral, it is essential to mention that current practice in GHG offset and trading programs do not require inclusion of upstream and downstream GHG sources, and uses only one methodology for all types and sizes of renewable energy project.
Conservativeness The Protocol is sufficiently conservative in the advice given on inclusion of GHG sources. It is too conservative in the way in which the baseline methodology used depends on the size and dispatchability of renewable energy sources. Use of a single methodology such as weighted average emissions for all types of renewable energy project is current international practice and does not significantly over or under estimate emission reductions.

Methodological Consistency Across Sectors

• Are the draft protocols consistent in key methodological approaches, level of detail, analyses and quality/quantity of advice?

Project Case and Baseline Grid Protocols

If GHG emissions associated with upstream embedded energy is included in protocols for Project Case projects, then the corresponding baseline should include the GHG emissions associated with embedded energy in the baseline plants. ISO 14064 Figure A2 states that emissions in the baseline must be consistent and complete or the source cannot be included. The argument that the baseline plants are already built is not valid. To be comprehensive and consistent, any new plant, no matter what size and type, should be treated as replacing capacity at some stage. If the baseline includes upstream and downstream emissions, some form of weighted average grid upstream and downstream GHG emissions would need to be part of the protocol. This is even more impractical than estimating or monitoring the upstream and downstream GHG emissions in the Project Case system. The only practical answer is not include embedded energy at all – which is the way international practice is playing out.

Compatibility with GHG Programmes

• Is the draft protocol compatible with GHG programme applications?
• If not, which components or elements are not compatible?
• How might the draft protocol be improved to be more compatible?
• What additional elements might a GHG programme consider before crediting GHG emission reductions calculating using the draft protocol.

Project Case and Baseline Grid Protocols

The reviewers feel that monitoring or estimating GHGs from construction, transport and construction in Project Case or projects or the corresponding grid baseline is outside the spirit of ISO 14064-2, as it is impractical and contrary to evolving international practice (for the purposes of encouraging GHG reduction activities).

Including GHG from upstream emissions from embedded energy for renewable energy projects is not consistent with international practice – CDM, PCF, EU, UK. Only the production of electricity is used to estimate GHG reductions.

Applicability to Range of Users

• Who might be the primary users of the draft protocol?
• Should the draft protocol better address the needs of other users?

Project Case and Baseline Grid Protocols

The primary users of the Project Case Protocol will be Project Case project developers seeking to participate in GHG offset or trading program and the managers of these programs. Both users will be looking for simple easy to use protocols that do not have too may options, are quick and easy to use, and are consistent with international practice. The current Project Case and Baseline Protocols do not meet these needs unless the above simplifying recommendations are made

3.0 Further Comments by the Pembina Institute on TEAM Protocols for Project Case Power Projects and Baseline Grid Emissions

Matt McCulloch, February 23, 2005

This report follows a previous report to TEAM and CSA providing input into the Project and Baseline protocols under consideration. The following responds to a draft workshop summary report, and provides specific opinions on and responses to questions on the technical aspects of the protocols.

General Comments on the Toronto Workshop Summary Report Draft (received Feb 22/05)

Issue #1 – Use of Approaches

Pembina agrees that providing one single flexible approach is desired for this protocol. It is felt that providing one consistent value for all users is the most practical approach, with the option of using other transparent default values if available. Should a range of values be used under the simplified approach, then clear and effective guidance must be provided on which parts of the range would be used and when.

Issue #2 – Comparability of Project & Baseline SSR's

Regarding public availability of data, this will be of critical importance to what emission factor values are applied. While it is agreed that the default approach should use publicly available data, with the option for more accurate data to be used, it is also felt that certain emission factors will never have available data. For example, the operating margin may never be determined with any certainty, as the level of detailed required may not available in certain jurisdictions do to commercial sensitivity (ie. competitive) reasons. In Ontario and Alberta, although dispatch information is available on an hourly basis, actual dispatch occurs every 5 minutes (touched upon in the baseline protocol). In which case, the margin may have fluctuated up to 12 times over the course of an hour.

Given this, it is suggested that either a) a default value be assumed, with good rationale (conservativeness, capacity based, or bid cost based, for example), or b) that the option of using the marginal value not be discussed in great detail should it not be possible to determine it with any certainty, or c) have the power pool operators in selected provinces calculate and provide (average) marginal values that are not commercially sensitive.

With respect to Recommendation #2, Pembina is in agreement.

Issue #3 – Conservativeness vs. Accuracy

Pembina agrees with Recommendation #3. To further the rationale for this recommendation, and as reflected in the comments above around marginal emission factors, accuracy may not necessarily be compromised by conservativeness if the information is not even available. In which case this argument becomes moot.

Issue #4 – Project Boundaries

The project proponent will certainly require guidance in determining how far upstream or downstream is required for the purposes of their use. Recommendation #4 discusses this in the context of particular GHG programmes. Without the ability to detail the requirements of existing, or future, domestic and international programmes, the Canadian protocol may want to emphasize early on that the user will need to determine their specific programme requirements if different (ie. before getting too far into the advanced option of the protocol).

Issue #5 –Technical Standardization vs. Policy or GHG Programme

As per Issue #4, further clarity around how this protocol fits relative to other GHG programmes could be provided.

Issue #6 – Document Ease of Use

Recommendation #6 will be important to implement, including clearer linkages between the baseline and the project protocols. An important calculation example that the protocol may want to consider including is one (or more) that shows the difference between GHG emission reductions when using a conservative default (simplified) approach compared to a less conservative advanced approach example. While this obviously has to indicate due caution to the user, given its illustrative nature, it provides some guidance on the difference that could exist between the two approaches. This gives the user an initial feel as to whether the detailed approach might be considered, given its potential timely and costly nature. Put differently, it provides an initial feel for the difference between the marginal cost and marginal benefit of using an advanced approach.

Key <u>Technical</u> Issues

A. Cross-Cutting

Data Quality and Assumptions

- *Is valid, up-to-date data used?*
- *Where might better available data be used?*
- *Are assumptions reasonable and valid?*
- *Where might assumptions be improved?*

General:

Overall, the data and assumptions appear to be both reasonable and conservative. One outstanding question is what intention there is to revise and update any data provided and assumptions in these protocols going into the future?

Data:

Based on Pembina's in-house information:

Aluminum Emission Factor:

European (SEAFL) data shows 7.6 t CO2/t aluminum ingot. In which case, the 7 t CO2e/t material used in the protocol is not necessarily conservative.

Concrete Emission Factor:

Appears conservative.

Plastic:

For information purposes, European data (PWMI) shows 2 t CO2/t (not CO2e) of HDPE.

Assumptions

Temporal Accounting for Project Case Emissions:

- It is agreed that for the simplified approach the emissions should be amortized. For the detailed approach, this should be left to the user. However, guidance on the differences with respect to a given GHG programme should be provided. I.e. How does this affect the 'credit', from both a validation and verification perspective?

Transportation:

- Distances considered and transportation modes appear reasonable and conservative (ie. using truck).
- 1.5 L of fuel per km for a utility vehicle appears reasonable. An alternative to consider, which can be more accurate, is using a mass-distance emission factor (Deluchi). However, this would create a barrier to data collection.

Maintenance:

- How was the 2% of the sum of A1 – A3 generated for the Small Hydro Projects protocol?
- How is this consistent with the assumptions applied for maintenance in the Wind project?

Technical Standards and Best Practice

• *Are there additional, relevant technical standards or best practice the draft protocol should take account of or refer to?*

The GHG Protocol and ISO Standard (both for projects) would be the most appropriate standards for reference, which is already included. The list of references appears quite comprehensive.

Life Cycle Approach

• *Is LCA an appropriate approach?*
• *Is LCA the only appropriate approach?*

A life-cycle approach is definitely considered to be appropriate for GHG reduction protocols, assumed that it is used consistently between the project and base cases. Appropriate boundaries to use will be the largest challenge, particularly for the advanced approach. Thus, it is important for the user to know when a more 'streamlined' advanced approach might be effective (i.e. in between simple and advanced), where the entire boundary presented may not need to be considered (or default values could be used where appropriate).

Whether LCA is the right approach is not necessarily the issue, rather how a life-cycle approach can be applied in both an effective and efficient manner. The effectiveness should be addressed to a certain extent by ensuring a conservative approach.

B. GHG Sources, Sinks and Reservoirs (SSRs)

Affected, Controlled and Related GHG Sources, Sinks or Reservoirs (SSRs)

• *Does the draft protocol accurately identify default SSRs?*
• *Does the draft protocol accurately attribute default SSRs as affected, controlled or related?*

Outside of ensuring consistency between protocols (e.g. upstream emissions associated with construction for the baseline), the draft protocol accurately identify default SSRs.

The attributions are generally accurate. For the project cases, it is questionable how much control the project proponent may have over materials and equipment transported to site, given financial and/or location-based realities. For example, if no rail line is near the site, options for the mode of transportation are limited. Similarly, if transportation must be done by truck, the project proponent would likely have limited control over whether the contracting transport company uses a bio-based fuel or more fuel efficient truck. In these cases, the SSR would be more of a 'related' attribution than 'controlled'.

For the SSR's associated with waste management, such as recycling or landfilling, the project proponent may have a certain amount of control over whether materials are either landfilled or recycled. As waste transport is a 'controlled' SSR, then perhaps waste management should be considered controlled as well.

As no SSR's are identified as being 'affected', the protocol may want to provide further guidance on this aspect and address its relevance. Further guidance could be in the form of a list of relevant SSR examples that would be considered 'affected'. Otherwise, there is a concern that this will be considered of little use or value to the proponent, and altogether ignored, given that such an SSR can be more broad and market based in its nature.

Procedure for Determining Relevance and Exclusions

• *Is the relevance procedure and criteria appropriate? Is it justifiable?*
• *How might the procedure be improved?*

In Section 3.3 of the Project Case, the term 'element scale' is confusing without further context or a definition.

In regards to Figure 2, again it may be difficult for any project proponent to identify potential SSR's that are 'affected' without further guidance. This difficulty becomes slightly compounded when considering, in Figure 2, whether the SSR has any material or energy flow into or out of the project. Without specific guidance, any SSR may be considered to have some material or energy input to a certain degree, depending on the perspective of the proponent.

C. Baselines

Baseline Scenarios

• *Whether other approaches to identifying baseline scenarios, for example those defined or accepted by GHG programmes (e.g., control-group baselines), should be included.*

An adequate amount of detail is currently provided on baseline alternatives. As well, Figure 2 addresses whether the relevant GHG program already requires a certain baseline procedure. Thus, it should be left to the proponent to ensure that this procedure is followed. However, the protocol may want to provide guidance to the proponent to ensure they are aware that there project may fall under a specific program. If anything, there is likely a greater concern around providing too many baseline options that can appear complex, as opposed to ensuring the focus is on clear detailed descriptions of the most practical baseline alternatives.

Equivalence of Service

• *Does the draft protocol provide sufficient advice to demonstrate equivalence in type and level of activity and/or products provided between the project and the baseline scenario?*

As previously discussed, the baseline protocol will need to ensure consistency with the project protocol with respect to construction related activities. Otherwise, the project case is unduly penalized, particularly if the alternative is to build more non-renewable electricity facilities.

Barriers Tests for Determining Additionality/Baseline Scenario

- Does the draft protocol use appropriate barriers to test?
- Is a barriers test the only appropriate approach?
- Should additional approaches be included?

The general tests for selecting the baseline scenario appear adequate, however the key issue is ensuring the proponent has a good understanding of how significant these barriers might be. For example, it may be misleading to presume that 5 minute dispatch data could ever be determined (see Appendix 4). As such, without providing direction on how certain information could readily be obtained, it is important that the proponent understands the challenges associated with acquiring certain information.

To this end, the protocol may want to include more detailed guidance for the emission factors more likely to be applied, and not include such detail for the less practical options (at least without guidance on how to get the data, if possible).

D. Data/Information Management

Managing Data Quality and Information

• *Does the draft protocol provide sufficient advice to appropriately manage data quality? In the simplified approach? In the advanced approach?*
• *Should other existing sources of data management best practice exist be referenced?*

Emphasis should be on methods of acquiring data, in order to ensure data quality. Proper guidance is provided in terms of the timeliness of the data for the baseline (ie. from the previous year); however the source of the data will also be key to determining quality. The protocols may want to include a specific section on data management and quality (as per Note 30/16 in the project protocols).

E. Monitoring

Monitoring the Project

• *Are components of the generic monitoring template appropriate and complete?*
• *Are default measurement/calculation methods appropriate?*
• *Which monitoring components might be improved?*
• *Is sufficient guidance provided for monitoring baseline parameters?*

The monitoring template in the project protocols appear to be appropriate and complete. The protocol may want to provide guidance on what affect the 'high' error/uncertain SSR's has on the quality of the overall GHG reduction. Default measurements appear to be appropriate. It is also important to consider the level of uncertainty associated with both the activity level, as well as the emission factor itself.

For the baseline parameters, further guidance in sections 3.8 and 4.0 would aid the proponent in identifying how to obtain the appropriate information. However, this may be the intention for future drafts.