Annotation Agenda #52

AMS-III.AE Shift from high carbon intensive fuel mix ratio to low carbon intensive fuel mix ratio

AMS-III.AE:
Shift from high carbon intensive fuel mix ratio to low carbon intensive fuel mix ratio

- **Baseline fuel mix ratio for electricity production:**

  Heavy Fuel Oil: Natural Gas (NG): Diesel (aux fuel) **69:30:1**

  (Share of NG could not be increased due to technical reasons)

Project fuel mix for electricity production:

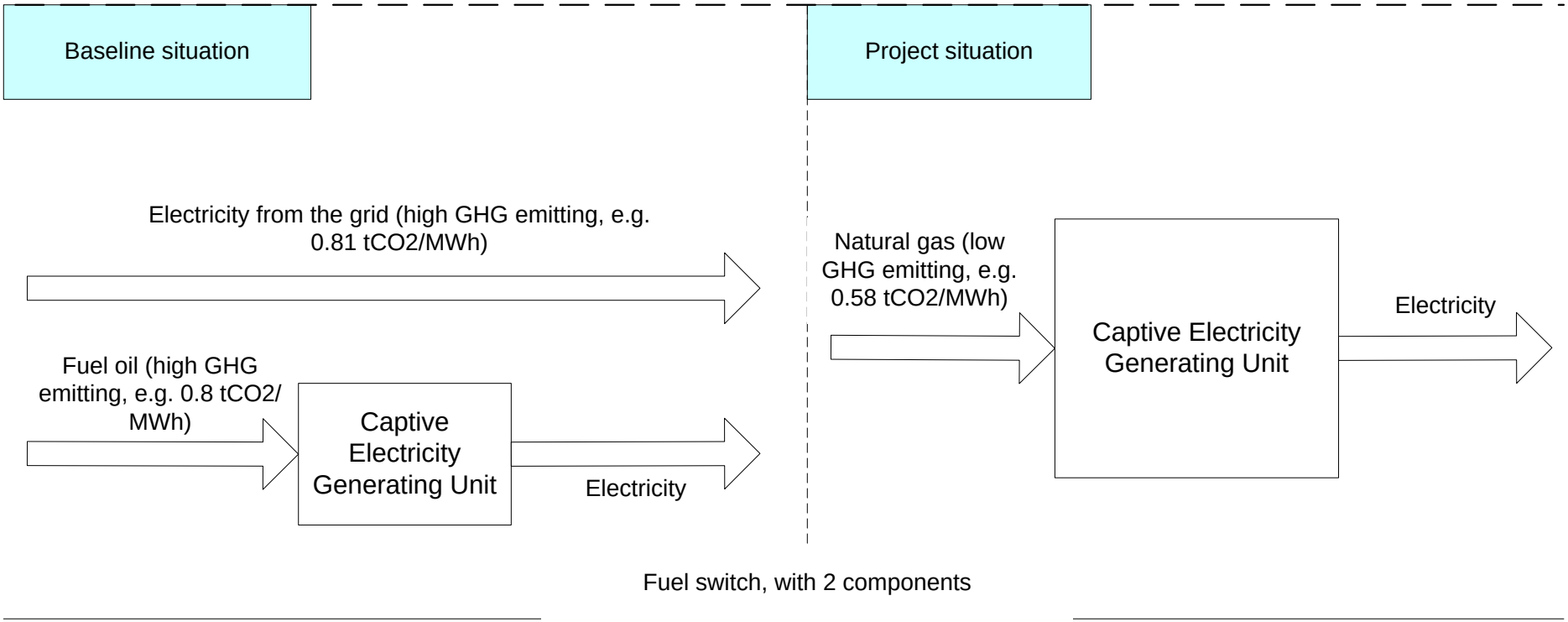
A new gas engine is installed:

- During gas availability period (75% of the year): **0:99:1**
- Gas shedding period: **100:0:1**
- Over the year: **25:74:1**

Annotation Agenda #53

AMS-III.AF Switching from high carbon intensive grid electricity to low carbon intensive fossil fuels

AMS-III.AF:
Switching from high carbon intensive grid electricity to low carbon intensive fossil fuels



Annotation Agenda #55

Revision of AMS-II.J:
Demand-side activities for efficient lighting technologies

Revision of AMS-II.J

- lumen output of the CFL=> incandescent (ICL) being replaced; lumen output of ICL & CFL shall be as per a national/international standard.
- In the case of ICL a table of values are provided; linearly interpreted value to be used for wattages not included in the table
- Destruction of ICL: Proposed method shall allow random verification by the DOE, may include for example collection of ICLs, recording of ICL wattage and destruction in decentralised or centralised locations; evidences such as photographic evidence may be incorporated

Revision of AMS-II.J

- Ex ante baseline survey excluded, fixed usage hours of 3.5 hrs/d i.e. option to use >3.5 hrs/d excluded
  - survey was to determine the technology of the lamps in use (e.g. incandescent, CFLs, tubular), nameplate/rated power (Watts) and daily hours of operation of the lamps through visual inspection and questionnaire on a sample basis
  - Meth specified the use of lower of the following: a) 3.5 hours per 24 hrs period; b) Daily usage hours determined by the baseline survey. To use a different value for 'daily operating hours' continuous measurement of usage hours of baseline lamps for a minimum of 90 days at representative sample households (estimate within 10% of the actual value with a 90% confidence). The days selected for measurement of operating hours shall be representative of the annual variation of daylight hours in the region.

Revision of AMS-II.J

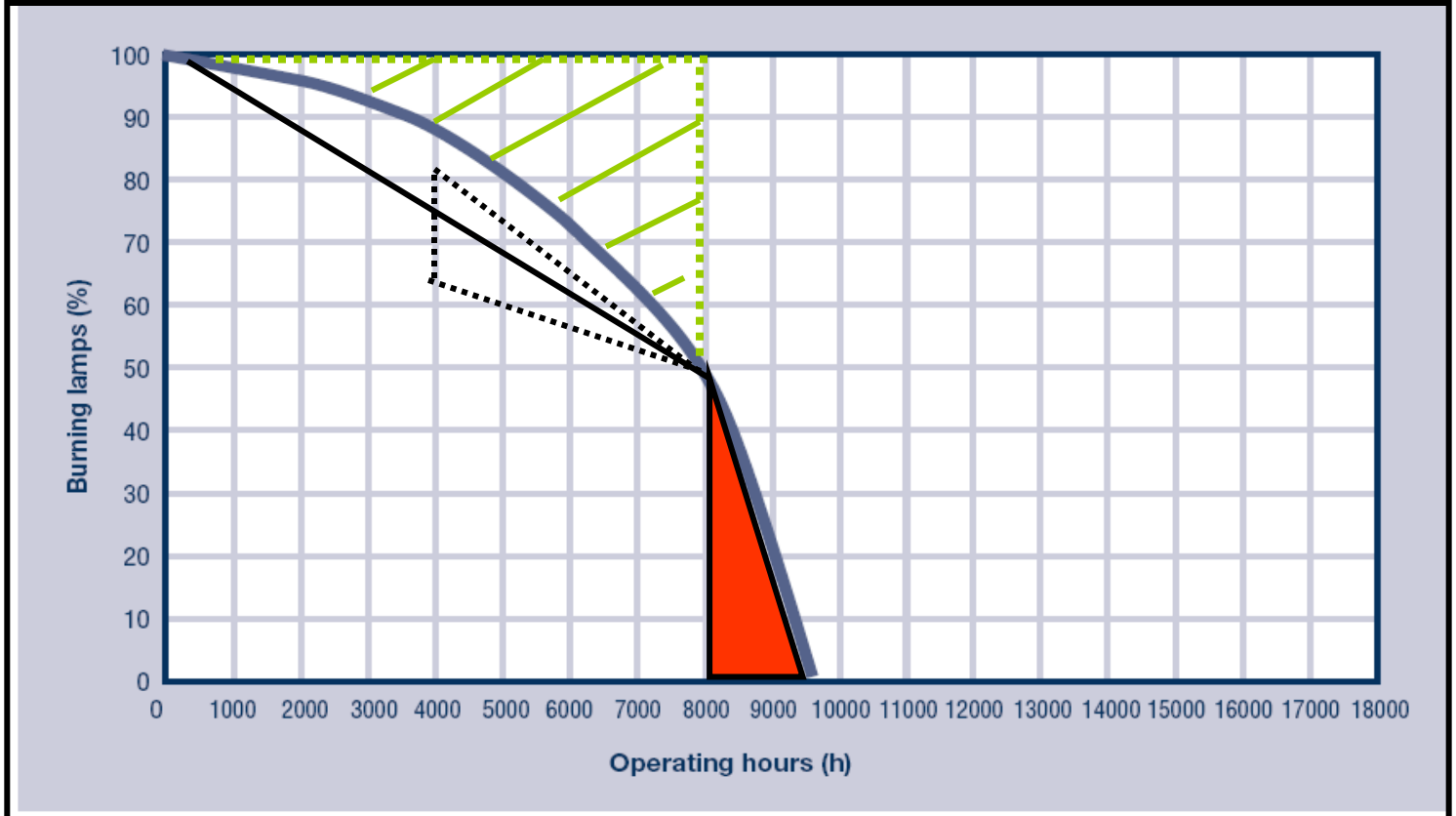
- Baseline Penetration Factor (BP) excluded
  - BP is a measure of free rider
  - NTG, Net-to-gross adjustment factor default value 0.95, already accounts for
    - Free riders
    - Rebound effect
  - Was only applicable to PoAs
  - Large scale meth ‘AM0046 Distribution of efficient light bulbs to households’ does not apply BP
  - Unequal treatment to Demand side EE in lighting? (methodologies for Renewable energy projects e.g. cook stoves, biogas digester, solar lighting systems do not consider BP)

Revision of AMS-II.J

- Cross effects leakage excluded (e.g. increased heating load due to introduction of efficient lighting technologies)
- Net effects are small in residential buildings
- “Calculating lighting and HVAC interaction” (Rundquist, Johnson and Aumann) published in ASHRAE journal of Nov 1993 is applied in AI for commercial lighting
  - In commercial building the heating and cooling profiles are often different from the residential.
  - No reliable studies pertinent to non annex I residential bldg
- Complex simulation (k values, weather data, CDD, HDD), huge uncertainties
- If there is both heating and cooling in the building, cooling effects (positive) outweigh the heating effects

Revision of AMS-II.J

Typical mortality curve of a CFL (8-24 W)



Revision of AMS-II.J

- *Meff = Seff – FReff - LEeff – Peff – Reff*
- *Seff*: Spillover factor is the percentage of lamps installed because the participants or the non participants were influenced by the Program. This is a positive program effect
- *FReff:* Free rider factor captures the percentage of lamps that were distributed by the program and who would have been bought anyway by the participants
- *LEeff* Leakage factor: This factor consider the fraction of existing lamps that will be transferred to others lighting usage and thus will not be truly eliminated from the market
- *Peff* Permanence factor: takes into consideration the percentage of lamps that are removed before the end of their useful life and are not replaced by another efficient lamp
- *Reff :* Rebound factor takes into consideration additional lighting energy usage caused by the perception that using energy efficient lamps is not expensive

Annotation Agenda #56

Revision of AMS-II.C:
Demand-side energy efficiency activities for specific technologies

Annotation Agenda #57

Revision of AMS-III.B:
Switching fossil fuels

Revision of AMS-III.B:
Switching fossil fuels

Further guidance is provided:

- The methodology is applicable where it is possible to directly measure and record the energy use/output (e.g., heat and electricity) and consumption (e.g., fossil fuel) within the project boundary.
- For existing facilities, the most plausible baseline scenario should be demonstrated as the continuation of current practice using steps 1-3 of the latest version of the "Combined Tool to identify the baseline scenario and demonstrate additionality".
- This methodology does not cover switching of multiple fossil fuels and emission reductions on account of shift from use of grid electricity

Expanded applicability:

- Fuel switch in several element processes with different fuel in different element process in the baseline into one fuel type in the project
  - e.g., fuel oil was used in one boiler and Coal in another boiler in the baseline. The project plant uses only natural gas in the boilers i.e., the project plant does not use more than one fuel in one equipment
- Heat or electricity produced under the project activity shall be for on-site captive use and/or export to other facilities included in the project boundary

Annotation Agenda #58

Revision of AMS-III.F:
Avoidance of methane emissions through controlled biological treatment of biomass

Revision of AMS-III.F

$$PE_{y,comp} = Q_y * EF_{composting} * GWP\_CH_4$$

- *EFcomposting:* Emission factor for composting of organic waste (t CH4/ton waste treated). Emission factors can be based on facility/site-specific measurements, country specific values or IPCC default values (table 4.1, chapter 4, Volume 5, 2006 IPCC Guidelines for National Greenhouse Gas Inventories). IPCC default values are 10 g CH4/kg waste treated on a dry weight basis and 4 g CH4/kg waste treated on a wet weight basis.
- *EFcomposting* can be set to zero for the portions of *Qy* for which the monitored oxygen content of the composting process is above 8%. This can be done via sampling with maximum margin of error of 10% at a 95% confidence level. For this purpose a portable oxygen meter can be used with lancets of at least 1 m length. In the case of forced aerated in-vessel and forced aerated pile composting systems continuous measurements may also be done using online sensors.

Annotation Agenda #59

Revision of AMS-III.Z:
Fuel Switch, process improvement and energy efficiency in brick manufacture

Revision of AMS-III.Z

- **Before:** The service level of project brick=>baseline brick (e.g. dry compressive strength, wet compressive strength, density) in accordance with an applicable national building code or standard. Tests in accordance with approved procedures, as defined by the applicable national building code or standard, shall be carried out on statistically valid number of sample project bricks or alternatively 90/10 precision

- **Now:** The service level of project brick=>baseline brick (e.g. dry compressive strength, wet compressive strength, density). National standard is used to identify the strength class of the bricks, bricks with compressive strengths lying outside of the range in the standard are not eligible. Project bricks tested in nationally approved laboratories at 6 months interval (at a minimum) and test certificates on compressive strength made available for verification.

Annotation Agenda #60

Revision of AMS-III.H:
Methane recovery in wastewater treatment

Revision of AMS-III.H

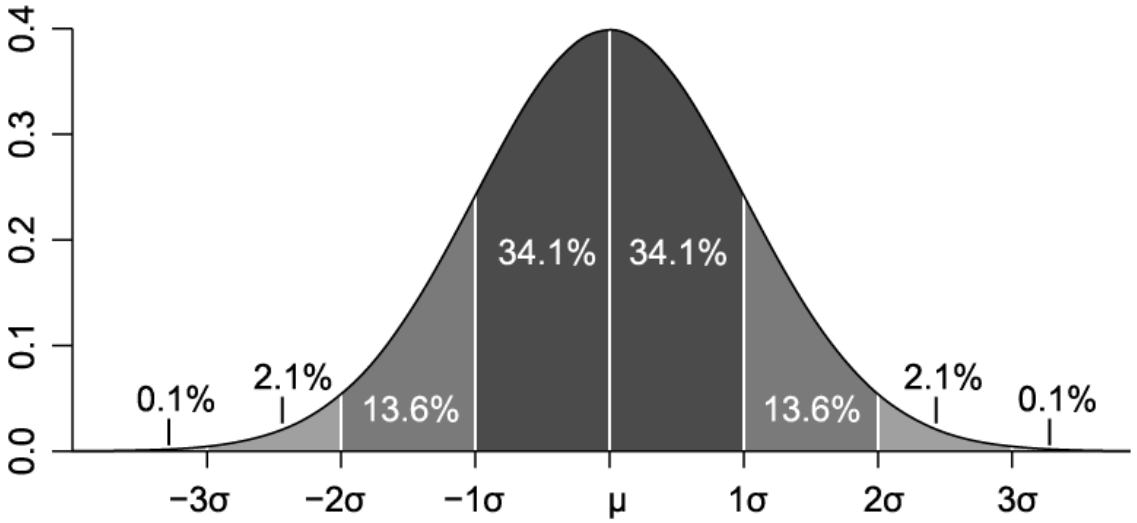
- Before: For domestic waste water, a COD based value of Bo,ww can be converted to BOD5 based value by dividing it by 2.4 i.e., a default value of 0.504 kg CH4/kg BOD can be used. The IPCC default value of 0.25 kg CH4/kg COD was corrected to take into account the uncertainties.

- Now: The IPCC default value of 0.25 kg CH4/kg COD was corrected to take into account the uncertainties. Project activities may use the default value of 0.6 kg CH4/kg BOD, in case the parameter BOD5,20 is used to determine the organic content of the wastewater. In this case, baseline and project emissions calculations shall use BOD instead of COD in the formulas, and the monitoring of the project activity shall be based in direct measurements of BOD5,20, i.e., the estimation of BOD values based on COD measurements is not allowed.

Annotation Agenda #61

Draft general guidance on sampling and surveys for SSC projects :

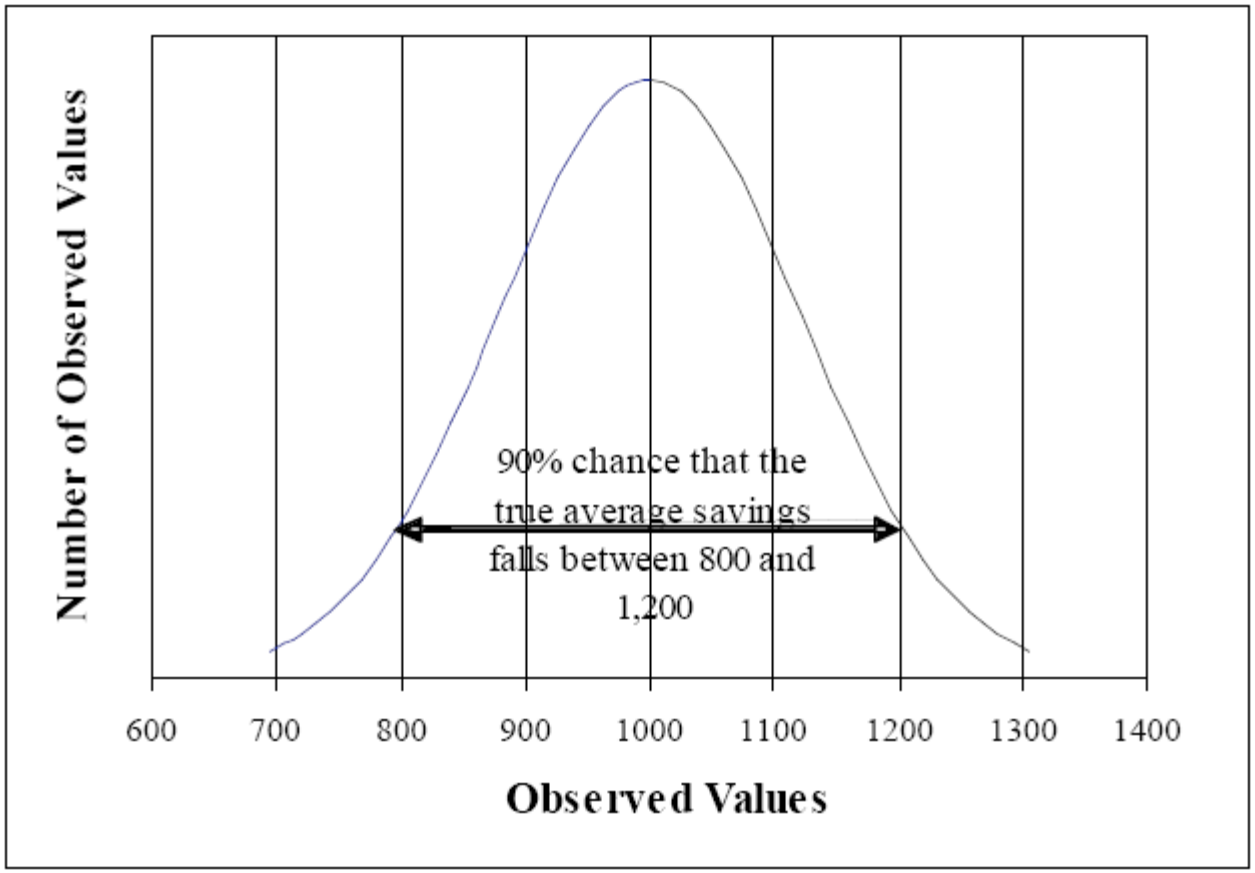
Guidance on sampling and surveys (68-95-99.7% rule)



Guidance on sampling and surveys

- **Determining the Sample size**
- If the sample is too large, resources are wasted in collecting data while if the sample is too small the resulting conclusions may be uncertain.
- The necessary sample size depends on three factors:
  - The level of confidence desired;
  - The allowable margin of error;
  - The variability in the population that is being studied.

Guidance on sampling and surveys



Guidance on sampling and surveys

- Subject to two requirements project participants have broad discretion in the sampling approach they propose to use to obtain the estimates:
  - unbiased estimates (repeated, independent samples would be, on average, equal to the population values)
  - minimum precision levels e.g. 90/10
- Choice a type of sample depends on:
  - types of information to be collected through sampling,
  - the known characteristics of the population,
  - the cost of information gathering.
- Commonly used sampling methods are summarized along with guidelines on circumstances where each is most applicable together with formulas

Guidance on sampling and surveys

- Where there is **no specific guidance** in the approved **methodology**, choose **90/10 precision** as the minimum precision targets for the most important data collection efforts on the **most important data variable** affecting the **emission reductions** of the project activity (e.g. project activity for biogas digesters to displace fossil fuel use for cooking- annually operating biogas digesters directly impacts the emissions reductions of the project activity; therefore the number of households for the sample should be chosen so as to achieve a 90% confidence interval with 10 per cent error margin for the collected data. On the other hand a **90/30 precision** may be adopted for parameters of **outside impact**, indirect impact and verification analysis (For example positive spill over effect of a biogas digester project activity i.e., the number of households outside the boundary of the project activity, who are not project participants but nevertheless installed biogas digesters on their own may be assessed at 90/30 precision).

Guidance on sampling and surveys

- A **simple random sample:** (each individual has the same probability of being chosen at any stage during the sampling process)
- **Systematic Sampling:** (every *k*th element in the frame is selected, chosen sampling interval does not hide a pattern, homogeneous population)
- **Stratified Random Sample:** for relatively homogeneous subpopulations (e.g. the population of participants in a commercial lighting program might be grouped according to building type)
- **Cluster Sampling:** population is divided into sub-groups (clusters), and the sub-groups are sampled (e.g. operating hours of the motors by sampling buildings instead of the motors, and then meter all of the motors in the selected buildings). Area sampling or geographical cluster sampling are variations of cluster sampling
- **Multistage sampling:** In contrast to cluster sampling where all of the secondary units (elements) are measured, data are collected for only a sample of the sub-units

Guidance on sampling and surveys

- Sampling practices to be reported in PDD
  - Defining precisely the sampling objectives, target population and the sample measurements
  - Developing the sampling frame
  - Randomizing cases and drawing sample
  - Selecting the most effective information gathering method
  - Conducting surveys/measurements

Guidance on sampling and surveys

Coefficient of Variation = 1		Confidence Level	
		90%	95%
Precision as Percent of Mean	1%	27060	38416
	5%	1082	1537
	10%	271	384

Coefficient of Variation = 0.5		Confidence Level	
		90%	95%
Precision as Percent of Mean	1%	6765	9604
	5%	271	384
	10%	68	96
	20%	50	50

Annotation Agenda #62

Revision of the "General guidance on leakage in biomass project activities":

Revision of the "General guidance on leakage in biomass project activities":

- SSC General guidance requires **ANNUAL** evaluation of surplus availability of biomass using published literature/official reports/ surveys and leakage is neglected if biomass availability is =>125% biomass qty required for the project
- Revisions clarify this requirement is to be done ex ante once at the beginning of each crediting period
- Analysis of sample of registered CDM biomass projects from different regions shows:
    - In majority of the cases, annual assessment of surplus availability is based on the projection using public data and in some cases where no official statistics available, data from international source (e.g., IEA) is also used.
    - Few PDDs mention annual assessment will be conducted using survey every year; no details are provided how surveys are done and how leakage will be accounted for if found.

Annotation Agenda #63

Providing guidance to the SSC WG concerning CMP.4 request (paragraph 43) on exploring the use of default emission factors for small-scale end-user energy efficiency methodologies, where appropriate:

use of default emission factors for SSC end-user energy efficiency methodologies

- Context: Board request with regard to paragraph 43 of the CMP 4 report concerning "explore the use of default emission factors for small-scale end-user energy efficiency methodologies, where appropriate".
- SSC WG requested guidance if 'default emission factors' can be treated as 'default operating parameters (for example, operating hours for CFLs in commercial applications)' and 'per unit energy savings' (for example, per residential appliance unit annual energy savings)
- Such factors could improve the ease of implementing the CDM methodologies
- Step 1: Defining a process for developing and maintaining a database of CDM energy efficiency default operating parameters and per unit energy savings values, perhaps building on existing data sources using expert inputs.
- Step 2: Development of a first set of default savings values and at least their applicability conditions taking into account expert inputs.

2005 DEER – Residential Non-Weather Sensitive

- **CFL Lighting**
- **Refrigerators**
- **Clothes Washers & Dryers**
- **Water Heating**
- **Swimming Pool Pumps**

2005 DEER – Non-residential Non-Weather Sensitive

- **Interior Lighting**
- **Exterior Lighting**
- **Cooking**
- **Copy Machine**
- **Water Heating**
- **High Efficiency Motors**
- **Agriculture**

DEER experience

- Are deemed databases useful and necessary? Yes.
- Can they be dangerous? Yes!
  – Only as good as the data, analysis, and QC that goes into them
  – Requires experienced oversight to ensure proper use
- Use care not to put the cart before the horse
  – Need good baseline data (saturations, load shapes)
- Watch out for systematic biases
- Ensure transparency and detailed documentation
- Provide a detailed guide on how to use the data
- Don’t re-invent the wheel if you don’t have too
- More national collaboration is needed

Annotation Agenda #64

Providing guidance to the SSC WG with regard to further work on baseline penetration in small scale methodologies

Baseline penetration in SSC methodologies

- The SSC WG requested guidance from the Board with regard to the consideration of baseline penetration (BP) in small scale methodologies.
- Should be BP considered? Yes/No or Not Now
- If yes, as a starting point, the Board may wish to consider the following concepts:
  - Specific methodologies are applicable to countries (or regions of countries where the project activity is implemented) where technology penetration rate is less than X%. ("X" to be determined by the Board in general or per specific technology (ies), statically or dynamically);
  - Technology penetration rate is defined as either market share or percent of total sales of a technology (e.g., residential lamps) sold during the calendar year that occurred two years prior to the start of the project activity or prior to the start of each CPA in a PoA;
  - That technology penetration rates are lower than X% can be determined by national or regional data or studies provided by independent third parties or compiled by project participants.

SSC methodology utilisation

	Validation	Registered
AMS-II.J.: Demand-side activities for efficient lighting technologies	0	0
AMS-III.A.: Urea offset by inoculant application in soybean-corn rotations on acidic soils on existing cropland	0	0
AMS-III.L: Avoidance of methane production from biomass decay through controlled pyrolysis	0	0
AMS-III.S.: Introduction of low-emission vehicles to commercial vehicle fleets	0	0
AMS-III.W: Methane capture and destruction in non-hydrocarbon mining activities	0	0
AMS-II.I.: Efficient utilization of waste energy in industrial facilities	0	0

SSC methodology utilisation

SSC Methodologies validated, but notregistered		
	Validation (not submitted for registration)	**Registration (including registered)**
AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User	5	0
AMS-II.A.: Supply side energy efficiency improvements – transmission and distribution	1	0
AMS-II.F.: Energy efficiency and fuel switching measures for agricultural facilities and activities	3	0
AMS-II.G.: Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass	1	0
AMS-III.J.: Avoidance of fossil fuel combustion for carbon dioxide production to be used as raw material for industrial processes	1	0
AMS-III.M.: Reduction in consumption of electricity by recovering soda from paper manufacturing process	3	0
AMS-III.N.: Avoidance of HFC emissions in Poly Urethane Foam (PUF) manufacturing	3	0
AMS-III.T.: Plant oil production and use for transport applications	1	0
AMS-III.U: Cable Cars for Mass Rapid Transit System (MRTS)	1	0
AMS-III.V: Decrease of coke consumption in blast furnace by installing dust/sludge recycling system in steel works	1	0

SSC meth timelines

	Mean		Minimum		Maximum		No of cases	
	2008	2009	2008	2009	2008	2009	2008	2009
FT Clarification	4.7	4.8	1.1	1.6	9.4	7.9	23.0	6.0
Clarifications	6.9	7.5	0.7	3.1	14.1	18.4	53.0	29.0
Revisions	7.3	6.0	0.3	4.1	15.0	11.1	17.0	18.0
New Meth	21.7	21.3	11.0	16.7	30.6	32.7	12.0	7.0

**All timelines in weeks