Consideration of Non-Annex A gases

I. *Project activity: Replacing existing chillers with more **efficient** chillers.*

II. *Emissions reduction Claimed: reduction in electricity consumption between project and baseline chiller (ER 500tCO_2/MW chiller capacity)*

III. *Existing chillers use CFC – Non Annex A gas – as refrigerant*

IV. *Project chillers can use any of the following refrigerants*

I. *HCFC-22, HCFC-123 – Non Annex A gases*

II. *HFC-134a, CO2 – Annex A gases*

} All are GHGs

I. The key issue

- *The methodology does not account emissions from use of refrigerants, which are GHGs in project activity.*
- *The issue: which GHGs should be accounted in Project and Leakage emissions:*
  - ✓ *Only Annex A GHGs (HFC-134a, CO2, etc.) be accounted*

  Or

  - ✓ *all GHGs be accounted (HCFC-22, HCFC-123, HFC-134a, CO2)*
- *Present M&P rules*
  - ✓ *Baseline – only Annex A GHGs to be accounted*
  - ✓ *Project and Leakage emissions – NO guidance*

Emissions from use of Refrigerants

- *Key emissions from use of refrigerant:*
  - ✓ *Project emissions – Leakage of refrigerant from equipment*
  - ✓ *Leakage emissions – emissions in production of refrigerant. For HCFC-22 this includes emissions of HFC-23.*
  - ✓ *NOTE: BASELINE CFC LEAKAGE FROM EQUIPMENT IS NOT ACCOUNTED AS IT IS a NON ANNEX A GHG*
  - ✓ *Table on the next slide only discusses the above emissions and does not show the baseline and project emissions from use of electricity.*
  - ✓ *Please note electricity consumption of project chillers varies marginally with refrigerant used in the project case. Therefore, the emissions from electricity consumption in baseline and project case are assumed to be the same for all cases, and not presented here.*

Implication of Proposed Options (tCO_{2e}/MW)

Options	B/L emissions	Project and Leakage emissions (tCO_2/MW chiller capacity)				Beneficial for MP
	CFC	HCFC-22	HCFC-123	HFC-134a	CO2	
A (a/c only Annex A GHGs)	0	12 (from HFC-23 from HCFC-22 production)	0	22	1	X
B (a/c all GHGs)	0	39	**6**	22	1	X
C (refrigerant emissions not accounted. Project ref. GWP < B/L ref.)	0	2000< 10600	120<4600	1300 < 10600		X
D (MP Gases Not Allowed)	0	Not eligible	Not eligible	22	1	

Blue color indicates non-Annex A GHG and MP controlled gas

Benefits from Climate Change perspective

the actual GHG emissions reduction, as seen by the atmosphere, due to project activity are positive

tCO_2/MW chiller capacity	CFC	HCFC-22	HCFC-123	HFC-134a	CO2
emission B/L	531				
Pr/Leakage		39	6	21	1
Net reduction as Atmosphere sees		492	525	510	530

Assumption: CFC recovered from replaced chillers is recovered and destroyed or reused