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# **Draft PMR Technical Note #5**

## **Options and Guidance for the Development of Baselines**

**PMR Workshop #6, Barcelona – May 26, 2013**  
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# Overview of Presentation

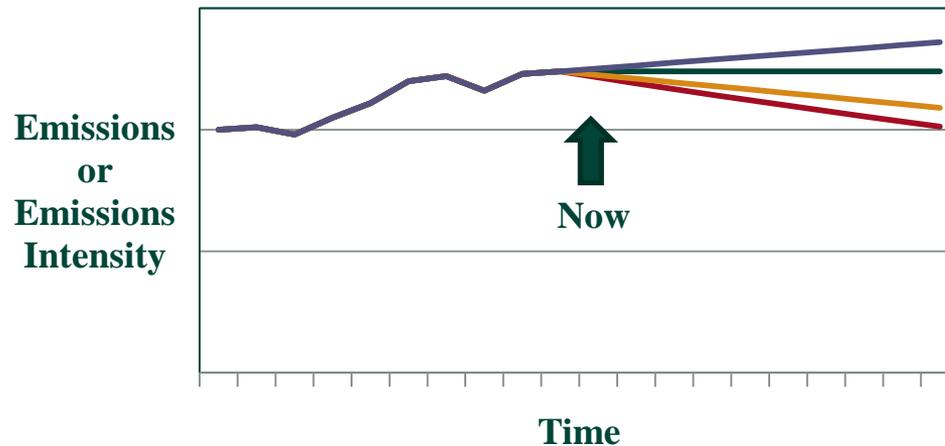
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- 1. Background**
- 2. Feedback and Response on Prior Draft**
- 3. Document Structure and Core Concepts**
- 4. Discussion Questions**

# In the context of this document, a baseline is:

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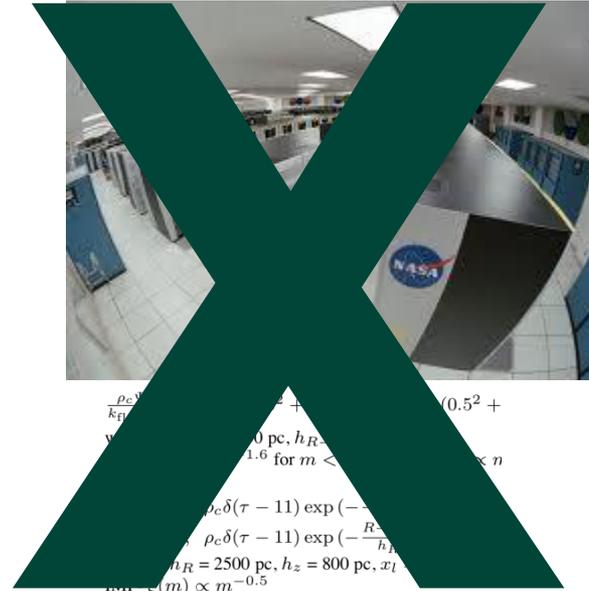
- ◆ “a scenario that describes expected or desired greenhouse gas emissions levels and that can be used as a basis for determining the amount of emissions reductions achieved as the result of a crediting, trading, or other mechanism.”



- ◆ a key aspect of market-based instruments pursued by PMR Implementing Countries

# Tools for developing baseline scenarios

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$\frac{\rho_c \delta}{k_{\text{pl}}} \dots + \dots (0.5^2 +$   
 $\dots 0 \text{ pc}, h_R = \dots$   
 $\dots 1.6 \text{ for } m < \dots \leq n$   
 $\dots \rho_c \delta (\tau - 11) \exp(-\dots)$   
 $\dots \rho_c \delta (\tau - 11) \exp(-\frac{R}{h_R})$   
 $\dots h_R = 2500 \text{ pc}, h_z = 800 \text{ pc}, x_l$   
 $\dots \zeta(m) \propto m^{-0.5}$

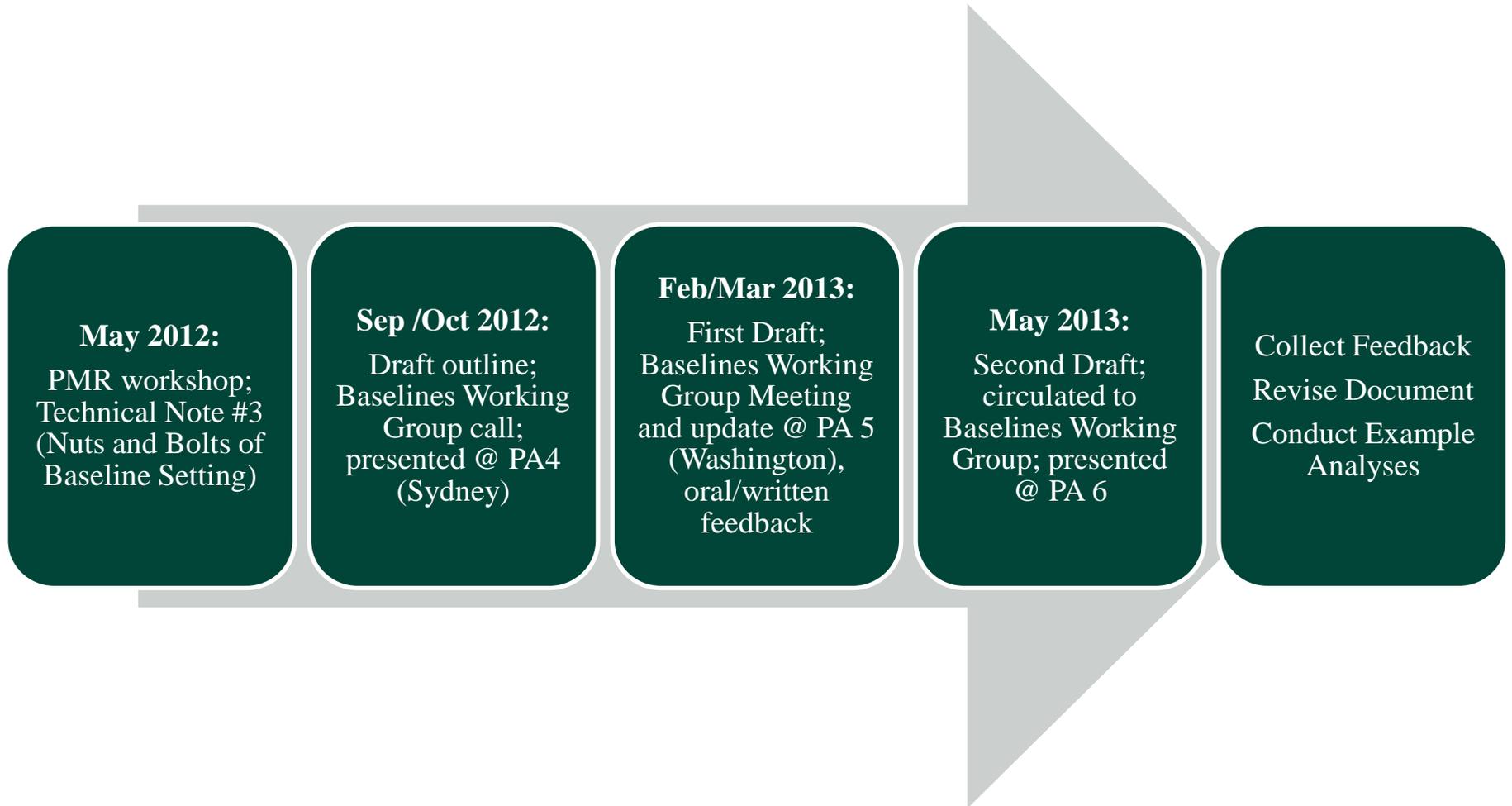
## Goal of document is to:

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- ◆ Assist users in finding appropriate methods for practical and credible baselines, building on existing work to date
- ◆ Support PMR Implementing Countries that are considering the establishment of new mechanisms where baselines play a central role

# Background and Status of Document

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# Feedback and Revisions since the First Draft (1)

Topics/Issues	Feedback	Revisions
<b>Purpose / User</b>	<ul style="list-style-type: none"> <li>• Clarify audience</li> <li>• Focus on options as much as guidance</li> <li>• Reduce immediate focus on case studies</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on PMR pilots, but also broader audience</li> <li>• Now more of an options document, with guidance on how to use in various contexts</li> </ul>
<b>Applicability of guidance</b>	<ul style="list-style-type: none"> <li>• Make the guidance useful in broader set of contexts than (scaled-up) crediting</li> </ul>	<ul style="list-style-type: none"> <li>• Now broadly applicable to crediting, trading, and non-market mechanism (e.g. results-based finance)</li> </ul>
<b>Building on existing work</b>	<ul style="list-style-type: none"> <li>• Don't reinvent wheel</li> </ul>	<ul style="list-style-type: none"> <li>• Overlaps with other work noted and referenced (CDM standardized baselines, EU ETS benchmarks, GHG Protocol)</li> </ul>
<b>Format of document</b>	<ul style="list-style-type: none"> <li>• Make information more accessible and digestible</li> <li>• Enhance logical flow</li> <li>• Minimize jargon</li> </ul>	<ul style="list-style-type: none"> <li>• Several tables and charts added to direct users to key issues, examples, and other materials</li> <li>• Executive Summary and Glossary added; terminology streamlined</li> </ul>
<b>Principles</b>	<ul style="list-style-type: none"> <li>• Refer more to UNFCCC text and CDM work to date</li> <li>• Clarify conservativeness, its practice, and relationship to net mitigation benefit; use of multiple baseline scenarios</li> </ul>	<ul style="list-style-type: none"> <li>• Done</li> </ul>
<b>Scale of mechanism</b>	<ul style="list-style-type: none"> <li>• Show progression among scale of mechanisms and baselines, with pros/cons and examples</li> </ul>	<ul style="list-style-type: none"> <li>• Added discussion in Part I</li> </ul>
<b>Scope and coverage</b>	<ul style="list-style-type: none"> <li>• Clarify role in mechanism design vs. baseline development</li> <li>• Consider level of heterogeneity, existing statistical systems</li> <li>• Emphasize broad segments of the economy</li> </ul>	<ul style="list-style-type: none"> <li>• Added step on defining scope &amp; coverage</li> <li>• Oriented towards broad segments</li> <li>• Clarified heterogeneity and baseline metric considerations</li> </ul>

# Feedback and Revisions (2)

Topics/Issues	Feedback	Revisions
<b>Approach to development of baseline</b>	<ul style="list-style-type: none"> <li>Emphasize multiplicity of options, role of data availability and quality, national circumstances, development objectives</li> <li>Clarify pros/cons of relying on historical data vs. future projections</li> </ul>	<ul style="list-style-type: none"> <li>Considerable elaboration of options in both Part I and II</li> <li>Clarified pros and cons of projection methods</li> </ul>
<b>Importance of BAU scenario</b>	<ul style="list-style-type: none"> <li>Emphasize BAU, which is necessary for any mechanism</li> <li>Clarify relationship between BAU and crediting baseline</li> <li>Elaborate benchmark approaches</li> </ul>	<ul style="list-style-type: none"> <li>Guidance begins with focus on BAU</li> <li>Typology of 3 baseline types makes BAU clearer and required first step</li> <li>Benchmark approaches elaborated in separate section</li> </ul>
<b>Existing policies and mechanisms</b>	<ul style="list-style-type: none"> <li>Elaborate on options for treatment, and challenges</li> </ul>	<ul style="list-style-type: none"> <li>Done</li> </ul>
<b>Relationship to national baselines</b>	<ul style="list-style-type: none"> <li>Clarify potential applicability and limitations of national baselines for guiding mechanism baselines; consider development plans as well</li> </ul>	<ul style="list-style-type: none"> <li>Added discussion in Part I, references to national baseline work</li> </ul>
<b>Additionality</b>	<ul style="list-style-type: none"> <li>Further clarification on distinction and complementarity between baseline and additionality</li> </ul>	<ul style="list-style-type: none"> <li>Sections added on additionality; text revised</li> </ul>
<b>Absolute baselines</b>	<ul style="list-style-type: none"> <li>Elaborate challenges involved relative to intensity-based</li> </ul>	<ul style="list-style-type: none"> <li>Done</li> </ul>
<b>Highlight trade-offs</b>	<ul style="list-style-type: none"> <li>Discuss when and how to address</li> </ul>	<ul style="list-style-type: none"> <li>Trade-offs more actively discussed (e.g. principles in Sec 3)</li> </ul>
<b>Examples</b>	<ul style="list-style-type: none"> <li>Add more examples covering various sectors</li> <li>Consider example that follows all steps</li> </ul>	<ul style="list-style-type: none"> <li>More diverse examples added</li> <li>Fuller case studies to be added later</li> </ul>

# Part I: Context, Concepts, and Considerations

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## Core Concepts:

- ◆ **Baselines are key element in safeguarding environmental integrity and, where relevant, achieving mitigation benefit**
- ◆ **Treatment of existing and planned policies is important & challenging**
- ◆ **Three types of baselines (BAU, performance standard, and net mitigation) can be usefully distinguished for methodological purposes, even if objectives may overlap**
- ◆ **International agreements (e.g. under FVA/NMM), GHG accounting principles (e.g. practicality, transparency), and technical considerations (e.g. data availability, quality) should guide baseline setting**
- ◆ **Guidance Users will need to balance trade-offs among potentially competing considerations and principles**

# How to apply document in various contexts

*Shading connotes what is often referred to as a “scaled-up” mechanism*

Context/ Mechanism	Potential uses of baseline	Credits (or allowances) awarded based on performance of:	Baselines established based on the performance of:	Applications and Status	How to use this guidance....
<b>Crediting</b>	Determine number of credits to issue	<b>Projects</b>	<b>Project-specific conditions</b>		
			<b>Sectors or “groups of sources”</b>		
	Estimate net mitigation benefit	<b>Programs</b>	<b>Programs or “groups of sources”</b>		
		<b>Policies (including some credited NAMAs)</b>	<b>Sectors or “groups of sources”</b>		
		<b>Sectors or “groups of sources”</b>	<b>Sectors or “groups of sources”</b>		
<b>Trading</b>	Set targets  Distribute allowances	<b>Sectors or “groups of sources”</b>	<b>Sectors or “groups of sources”, BAT standards, or national targets</b>		
<b>Results- based Finance</b>	Estimate mitigation benefit  Allocate finance	<b>Any of the above</b>	<b>Any of the above</b>		

*Trimmed-down version of Table 1*

# Baseline Types and Applications

Baseline type	Methodological Options	Role in:		
		Crediting	Trading	Non-Market Mechanism
<b>Business-as-usual (BAU)</b>	<ul style="list-style-type: none"> <li>• Simple projection</li> <li>• Model-based projection</li> <li>• Comparison group approach</li> </ul>	Used or crediting in many traditional programs (with conservatism). Important to estimate in any mechanism.	Used to estimate the emission reductions resulting from meeting the cap	Used to estimate emission reductions attributable to actions.
<b>Performance standard</b>	<ul style="list-style-type: none"> <li>• Performance benchmarking (top X%)</li> <li>• Practice or technology standard</li> </ul>	Used for some standardized baseline methodologies.	Used to distribute allowances, often specific to emissions-intensive, trade-exposed industries.	Could be used if minimum levels of emissions performance are desired.
<b>Net mitigation (or “ambitious”)</b>	<ul style="list-style-type: none"> <li>• Mitigation analysis</li> <li>• Model-based projections</li> <li>• Downscaling nat. targets</li> </ul>	Option to achieve net decrease. Often referred to as a crediting threshold.	Used to set the target or cap.	May be implicit here

*Types of baselines may overlap in practice*

# PART II: The Baseline Development Process

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*Step 1: Define the coverage, scope, and time period of the baseline (Sec 5)*



*Step 2: Identify appropriate metrics for quantifying baseline GHG emissions (Sec 6)*



*Step 3: Develop one or more BAU baseline scenarios (Section 7)*



*Step 4: Develop additional baseline scenarios, as appropriate (Section 8)*



*Step 5: Consider baseline period and updating policies (Section 9)*



*Step 6: Evaluate and select a baseline (Section 10)*

# Step 0: Establish Institutional & Stakeholder Process

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- ◆ **Key to ensuring credibility, acceptance, and effectiveness**
- ◆ **Depends on national circumstances and nature of mechanism**
- ◆ **Review and approval may benefit from:**
  - **Public stakeholder review**
  - **Engagement and consultation with affected sources, industries, sectors, companies, and organizations**
  - **Domestic and international peer review**

# Steps 1-5: Developing a Baseline

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## ◆ Guidance Users should:

- Define the coverage and scope, and time period, of the baseline
- Decide upon metrics that will be used to quantify baseline activity data and GHG intensity
- Assign values for baseline GHG intensity/emissions based on assumptions about future conditions
- Consider developing multiple BAU scenarios
- Consider policies for updating baselines

# Step 3: Selecting a Method

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## Simple Projection Methods

Pros	Cons
<ul style="list-style-type: none"> <li>• Relatively straightforward</li> <li>• Lower cost than other methods</li> <li>• Can be relatively transparent</li> <li>• Can be more flexible with respect to data and capacity constraints</li> <li>• Can be equally credible and/or conservative as more complex models in some situations</li> </ul>	<ul style="list-style-type: none"> <li>• May not adequately reflect the underlying drivers of change in activity levels or GHG intensities</li> <li>• May not be appropriate where future conditions or drivers may differ markedly or in unexpected ways from the past</li> <li>• Credibility depends on sound understanding of the sector and sophistication of assumptions used</li> </ul>

## Simulation Modeling Approaches

Pros	Cons
<ul style="list-style-type: none"> <li>• Can predict future trends more precisely by taking into account more detailed economic, technological, and other factor.</li> <li>• Can control for multiple variables that might affect targeted GHG emissions</li> </ul>	<ul style="list-style-type: none"> <li>• May be less transparent than other approaches, due to complexity</li> <li>• May be costly and resource intensive</li> <li>• May be subject to the same “cons” as simple projection methods (</li> </ul>

## Use of Comparison Groups

Pros	Cons
<ul style="list-style-type: none"> <li>• Can be used to calibrate a baseline scenario based on actual measurements of representative conditions</li> <li>• Useful where activity measured to estimate emissions is not the sole driver of emissions</li> <li>• Can help ensure environmental integrity by avoiding the counting of apparent reductions not attributable to activities</li> </ul>	<ul style="list-style-type: none"> <li>• May be data intensive and costly</li> <li>• Validity depends on identifying comparable “control” groups for monitoring</li> <li>• Suitable comparison groups may be difficult to identify in practice</li> <li>• Requires making ex post adjustments to, or determinations of, baseline activity data or emission factors</li> </ul>

## Step 4: Additional (Non-BAU) Baseline Scenarios

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### ◆ Performance Standard Baselines

- Can be based on either: (1) statistical analysis of the emission rates of baseline technologies; or (2) the emission rate of a single generic reference technology

### ◆ Net Mitigation Baselines

- May be determined by marginal abatement costs and potentials; performance standards; national emission reduction pledges; other factors

### ◆ Both should be below a (conservative) BAU baseline, significantly in the case of net mitigation baseline

# Questions / Discussion Topics

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- ◆ **How much more specific guidance can be provided?  
...without a clearly specified mechanism design? E.g. on:**
  - addressing additionality and safeguarding environmental integrity
  - treatment of policies and measures
  - accounting for uncertainties
  - boundary between conservative BAU and net mitigation baseline in practice
  
- ◆ **Is there agreement on what can be termed “best practice”  
in baselines?**

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**Thanks for your attention!**



## Autonomous Bassline Generator