

## **MONITORING REPORT**

### **Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America GS PoA Project No. 1988**

#### **First VPA for Distribution of Dos por Tres Cookstoves in Honduras**

**Sixth verification period: 1 December 2014 – 30 November 2015  
Version 02: 9 December 2015**

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## SECTION A. General description of the project activity

### A.1. Brief description of the project activity: >>

#### 1. Purpose of the project activity and the measures taken to reduce greenhouse gas emissions.

The objective of our non-profit cookstove project, Proyecto Mirador (“Mirador”), is to grow an organization that utilizes carbon finance, a market based solution, to disseminate fuel-efficient stoves that address the problems of forest degradation, indoor air pollution, global warming, and slow economic development through the creation of microenterprises in rural Honduras. Mirador has proven its ability to serve as a model for other cookstove projects by monetizing certified carbon savings and greatly accelerating the dissemination of fuel-efficient stoves in rural Central America where degraded conditions of forests, indoor air pollution and rural poverty exceed acceptable levels.

Mirador disseminates the Dos por Tres (“2x3”) cookstove, which is Mirador’s adaptation of the original La Justa stove. The original model La Justa stove was pioneered by the Aprovecho Research Lab and was engineered to burn hotter and use 1/2 to 1/3 the wood of traditional *fogón* stoves, thus reducing the time devoted to wood collection and/or money spent on wood. Both the La Justa and the Dos por Tres efficiently vent smoke outside of the house, helping to prevent respiratory and other illnesses caused by excessive exposure to toxic gases and particulate matter emitted by burning wood.

La Justa cookstoves have long been shown to reduce emissions of greenhouse gases (GHG) that are causing the Earth’s average temperature to rise to dangerous levels. A field study was conducted by Professor Robert Bailis, PhD, author of the Kitchen Performance Test (the Gold Standard baseline methodology for cookstoves, hereinafter referred to as “KT”), and an assistant professor at the Yale School of Forestry and Environmental Studies (FES), in June and July of 2007. This study, hereinafter referred to as the “Yale 2007 Study,” showed that the replacement of one traditional *fogón* stove with one La Justa stove reduces GHG emissions by between 1.2 and 1.7 mtCO<sub>2</sub>e /year.

Subsequent to the Yale 2007 Study, Mirador made several design improvements to the original La Justa stove with assistance from Aprovecho Research Center. The Aprovecho Center studies methods for designing, building, and disseminating cooking and heating technology by using vernacular (locally available) low cost materials that can be found easily in the towns and villages where improved stoves are needed.

A study completed by Nordica MacCarty of Aprovecho Research Center on April 28, 2009, showed that the improved “La Justa Model 2x3” (now called the Dos por Tres) generates even greater wood savings than the original La Justa. Further, laboratory tests showed that the Dos por Tres reduced Carbon Monoxide emissions and particulate matter by 79%, CO<sub>2</sub> by 43% and CH<sub>4</sub> by 94% compared to traditional stoves (McCarty, N., Apr. 2009). The Dos por Tres is the stove installed throughout the Sixth Verification Period.

Since the 2009 Aprovecho lab test, and in accordance with a Forward Action Request issued by the Gold Standard as part of the final Registration Review in June 2010, Proyecto Mirador completed a

paired sample, n=55 quantitative Fuelwood Consumption Study (July-September 2010) indicating that each stove reduces GHG emissions by 2.73 mtCO<sub>2</sub>e /year. This study was conducted under the supervision of Professor Robert Bailis, with data collected from July to September 2010.

In 2012 Proyecto Mirador submitted a Design Change Request that was approved the Gold Standard. The Design Change Request asked for approval to use the Gold Standard methodology described in “Technologies and Practices to Displace Decentralized Thermal Energy Consumption” (11/04/2011), Annex 1, Section A1.3, “NRB Assessment similar to approach of CDM methodology AMS-IIG” to calculate the NRB fraction (an “NRB Exception”). In accordance with the approved 2012 Design Change Request, and in agreement with the approved Monitoring Report for the Third Verification (2012), this Monitoring Report uses the per-stove emissions reduction figure of **3.31 mtCO<sub>2</sub>e/year** to reflect an updated NRB of 77% using CDM Methodology AMS-IIG. The stove design has not changed and all other factors previously established remain valid.

A revision to the cluster definition was also approved as part of the 2012 Design Change Request in order to accommodate a boundary expansion to include all of Honduras.

In 2014 the Gold Standard granted registration for Mirador’s Programme of Activities under the name “Proyecto Mirador Enhanced Distribution of Improved Cookstoves in Latin America” and the project activity initiated in 2009 was assumed under the PoA as the First VPA. This Sixth Verification marks the final verification under the original methodology, “Methodology for Improved Cook-stoves and Kitchen Regimes, Version 01”; future issuances will be requested subsequent to Revalidation of the First VPA under “Thermal Practices to Displace Decentralized Thermal Energy Consumption, Version 2.0.”

## **2. Brief description of the installed technology and equipments.**

The Dos por Tres stove design is an adaptation of the original La Justa model and consists of a ceramic firebox for the stove mouth, a steel plancha (cooktop), a chimney, and a sophisticated system of insulated interior walls constructed from adobe blocks or ceramic bricks that channels the heat under the plancha and smoke and particulates out the chimney.

Mirador has made several structural modifications to improve the efficiency of the original La Justa stove. The result is Mirador’s own unique model called the “Dos por Tres,” which is the model covered in this Monitoring Report. The structural modifications reflected in the Dos por Tres include the following: First, the grate in the stove mouth has been elevated slightly in order to raise the fuel off the stove floor, thus making the wood burn more thoroughly and efficiently. Second, the dimensions of the plancha have been changed, allowing the plancha to heat up faster and distribute the heat more evenly than before. Third, the plancha has been lowered closer to the level of the wood ash insulation in order to use the firepower of the stove more efficiently. From the user’s point of view the Dos por Tres is functionally the same as the traditional *fogón*, and Mirador has observed that the Dos por Tres has been positively received by the beneficiaries.

Mirador donates to each beneficiary the steel cooktop (plancha), the chimney and chimney top, and the six custom ceramic pieces for the stove mouth or firebox, and the installation and training. These components are sourced and manufactured locally in Santa Barbara Department, Honduras, creating local jobs through 8 material provider businesses. Beneficiaries contribute the remaining components, including cement, rebar, bricks, adobe blocks and wood ash, all of which are common items available in all villages of Honduras. This cost-sharing arrangement is part of Mirador’s philosophy of “*No Cuesta, No Cuida*,” which asserts that beneficiaries will better care for their donated stove if they invest some of their own resources in its acquisition.

As a precondition for the installation of ICS, beneficiaries are required to remove the traditional stove that is being replaced. Beneficiaries are made aware of the requirement to remove the traditional cookstove at the

time they sign up to receive the stove. Also, during Mirador's training exercises, Stove Technicians are instructed to require the beneficiary to remove the traditional stove. Supervisors return later to ensure the stove has actually been destroyed, making a note on the account to follow up if that has not yet happened.



Traditional La Justa stove



New Estufa Dos por Tres stove

**3. Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.).**

Construction of stoves under the Gold Standard crediting period began on May 1, 2009 and will continue through April 30, 2019. Construction of fuel-efficient stoves by Proyecto Mirador began in June, 2004.

439 qualitative surveys conducted by Mirador between 12/9/14 and 10/2/15 indicate Dos por Tres cookstoves are used in homes an average of 8.39 hours per day, every day. We expect stoves to operate in homes for the duration of 5-7 years.

The stoves are not all installed at the start of the project, but are installed progressively during the 7-year crediting period. The chart on the following page reflects an actual installation rate for stoves installed from 1 May 2009 until the end of the current Verification Period, and subsequent years adjusted according to current projections. Our estimates reflect Mirador's growing experience as an organization, and also the success of Mirador's "Programa de Ejecutores" in scaling the project. In this microenterprise program, entrepreneurs (whom we call Ejecutores) are trained and paid by Proyecto Mirador to manage construction teams that build and install Dos por Tres cookstoves under Mirador's leadership and careful monitoring. Actual construction is carried out by Stove Technicians that are directly employed by the Ejecutores, but are trained and monitored under Mirador's auspices. As of October 2015, 6 Ejecutores and 45 Stove Technicians operate under Mirador's workforce. Scaling the project at currently projected rates will create additional jobs for more Ejecutores and Stove Technicians; middle managers; Proyecto Mirador supervisors; material suppliers; IT providers and other support organizations. Mirador relies on proceeds from the sale of Gold Standard certified carbon credits to fund the added employees and keep pace with the stove building materials required to meet growth objectives.

In this way Mirador will continue to expand its own operations and support our partners through the *Programa de Ejecutores*. Using carbon finance we are empowering stove builders to expand their operations, ultimately resulting in an overall expansion of the stove industry.

**Total emission reductions estimated for the crediting period.**

The results of the 2010 Paired Fuelwood Consumption Study, determined that each Dos por Tres cookstove generates an actual emission reduction of 3.31 mtCO<sub>2</sub>e/year (applying a revised NRB of 77% in accordance with the methodology approved in the approved 2012 Design Change Request). Correspondingly, all calculations set forth herein are based on an emission reduction figure of 3.31 mtCO<sub>2</sub>e/year per stove. Verification under this Monitoring Report will be confined to the figures presented in Section E.4 below.

| <b>Crediting Term</b>                                                                  | <b>Average Number of Net Stoves in Operation</b> | <b>Annual estimation of emission reductions (mtCO<sub>2</sub>e)</b> |
|----------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------|
| 1 May 2009 - 30 Nov 2010                                                               | 2,851                                            | 12,368 (actual)                                                     |
| 1 Dec 2010 - 30 Nov 2011                                                               | 10,292                                           | 28,229 (actual)                                                     |
| 1 Dec 2011 - 30 Nov 2012                                                               | 23,842                                           | 78,023 (actual)                                                     |
| 1 Dec 2012 - 30 Nov 2013                                                               | 40,961                                           | 129,911 (actual)                                                    |
| 1 Dec 2013 - 30 Nov 2014                                                               | 58,652                                           | 189,486 (actual)                                                    |
| 1 Dec 2014 - 30 Nov 2015                                                               | 66,833                                           | 235,335 (actual)                                                    |
| 1 Dec 2015 - 30 Apr 2016                                                               | 75,000 (estimated)                               | 120,000 (estimated)                                                 |
| Total estimated reductions for the crediting period (mtCO <sub>2</sub> e)              |                                                  | <b>793,352</b>                                                      |
| Total number of crediting years                                                        |                                                  | <b>7</b>                                                            |
| Annual average over the crediting period of estimated reductions (mtCO <sub>2</sub> e) |                                                  | <b>113,336</b>                                                      |

**Table 1**

Table 1 above shows the total estimated emission reductions of the project activity in the 7-year crediting period (1 May 2009 - 30 April 2016), with Year End adjusted to 30 November to match the ongoing project verification cycle. This was necessary to ensure accurate reporting given the upward shift in 2011 of emission reductions per stove following the raise of NRB to 77%. The period from 1 December 2015 through 30 April 2016 has been left off, as it will be included in the first verification under the renewed crediting period following Revalidation. The figures in Table 1 are revised to reflect realistic expectations of capital and project capacity. The reduction of GHG emissions per stove is raised to 3.31 mtCO<sub>2</sub>e/year per stove from December 1, 2011 forward to reflect an adjusted NRB of 77%, per the approved 2012 Design Change Request.

Beginning December 1, 2013 all emission reductions are generated under Proyecto Mirador's PoA approved in 2014 under Gold Standard Project #1988. A large scale VPA is also approved to assume all residual emission reductions generated from cookstoves built up to 1 December 2013 under the original PDD (project GS690) as well as new cookstoves built from 1 December 2013 forward.

The estimates above also account for leakage, drop-off rates, and stove aging factors increasing appropriately by year. The numerical analysis can be found in the attached "Annex\_01\_Financing Plan 2015.xlsx." (Average Number of Net Stoves in Operation is calculated by averaging monthly figures according to crediting term, in the "Monthly Results" spreadsheet, Row 116.) Actual emission reductions for the Sixth Verification Period are calculated and reported in Table 2 in Section E.4 of this Monitoring Report. Degradation (stove aging) and abandonment (drop-off) rates are substantiated in Section E.4.

## **A.2. Project Participants**

Project Participant is a non-profit organization, Proyecto Mirador Foundation, which uses the sale of VERs along with donations to install improved stoves in Honduras. In 2004, the Overlook International Foundation (OIF), a U.S.-based 501(c)3 corporation, created Proyecto Mirador LLC (PM), a non-profit organization registered in the U.S. and Honduras and led by its Director, Doña Emilia Giron de Mendoza. Together the two organizations initiated a program to reduce indoor air pollution by disseminating improved Dos por Tres cookstoves into poor, rural homes in the highlands of Western Honduras with operational headquarters in Santa Barbara Province.

In 2010 the corporate structure was revised as follows: Proyecto Mirador Foundation was established as a separate entity with \$2M in capital (\$1M from The Grantham Foundation for the Protection of the Environment and \$1M from the Overlook International Foundation). Proyecto Mirador Foundation, a U.S. 501(c)3 non-profit organization, subsequently replaced OIF as the Sole Member and funding entity for Proyecto Mirador LLC. Proyecto Mirador Foundation's official date of establishment as a 501(c)(3) non-profit organization is June 10, 2010.

Since inception in early 2004 PM has installed over 83,000 stoves for individual families, built an efficient organization that provides employment for 123 direct and indirect employees, and overcome the challenges of executing a successful stove project.

Richard H. Lawrence Jr., Managing Director of Proyecto Mirador Foundation, is also the Executive Director of Overlook Investments Limited, an investment management business headquartered in Hong Kong. Richard founded the organization over 23 years ago. Overlook Investments Limited invests in public listed equities in Asia. Dee Lawrence, Co-director, and Esther Adams, Program Manager, also help manage the U.S. based operations of Proyecto Mirador.

### A.3. Location of the project activity:

***Complete information of the location of the project activity: town, city, country and GPS coordinates.***

Country: Honduras

Region: All of Honduras (as per the boundary expansion approved by the Gold Standard in association with the 2012 Design Change Request)

GPS Coordinates for the center of operations for the project in Santa Barbara, Honduras, are:

Latitude 14° 55' 26" N

Longitude 88° 13' 44" W

The following statistics are quoted from the CIA World Factbook in 2015:

#### **Honduras**

Population: 8,746,673

Capital – Tegucigalpa (Department of Francisco Morazán)

Area: 112,090 km<sup>2</sup>

Geographic Coordinates: 15° 00' N, 86° 30' W

(<https://www.cia.gov/library/publications/the-world-factbook/geos/ho.html>)



#### A.4. Technical description of the project

##### ***Description of the technology applied in the project activity and detailed technical process, including diagrams.***

The following basic design description is based on the original La Justa cookstove. Mirador installs the Dos por Tres, to which the same basic design principles apply.

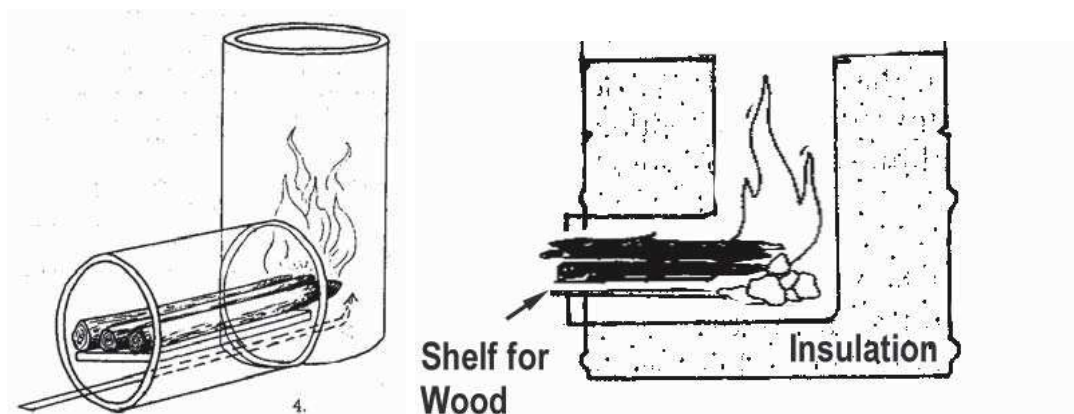
The original La Justa fuel-efficient stove was invented by Dr. Larry Winiarski of Aprovecho Research Center in association with Trees, Water and People, a non-profit organization headquartered at Fort Collins, Colorado. The La Justa stove was specifically designed for Honduran cooking habits and optimizes cooking temperatures by placing the plancha (reinforced steel rectangle cooktop) at the hottest point above the combustion chamber, and using the conductivity of the metal plancha to spread the heat evenly over the cooking surface. Compared with other stove alternatives, the La Justa stove is an effective and easily assimilated replacement for the traditional *fogón* type of stove already prevalent in Honduras.

The La Justa stove combines an adaptation of clean combustion principles (known as Rocket Elbow technology) to the local cooking practices of Honduran families. The rocket elbow is an easy-to-build, highly adaptable and inexpensive cooking device characterized by a hollow, L-shaped shaft made of ceramic that acts as the combustion chamber. The firebox sits in an adobe or brick container and the space around the elbow and within the container is filled-in with wood ash or other lightweight insulation.

Rocket Elbow technology uses a grate under the fire to enable air to pass under the fuel source. Optimum results are achieved when the air passes under the shelf and through the coals so that when it reaches the fire it is preheated to help the gases reach complete combustion.

The key advantages of the La Justa stove technology are:

- 1) The design promotes the flow of air across the wood, into the firebox and out the chimney. This improves the efficiency of the combustion and removes the smoke from the house.
- 2) The small size of the firebox encourages beneficiaries to utilize small pieces of wood or alternative fuel sources such as corncobs and reduces wood consumption.
- 3) The La Justa allows beneficiaries to use identical cooking habits, which permits quick and easy cultural adoption of the stove.



More information can be found in the Aprovecho publication, “Design Principles of Wood Burning Cook Stoves,” at the following address: <http://www.aprovecho.org/lab/pubs/arcpubs>.

The Dos por Tres uses all the principles of Larry Winiarski's technology, but with a few important design and structural improvements that maximize the reduction of GHG emissions reduction. First, the grate in the stove mouth has been raised slightly in order to raise the fuel off the stove floor, thus making the wood burn more thoroughly and efficiently. Second, the dimensions of the steel cooktop (plancha) have been adjusted, allowing the plancha to heat up faster and distribute the heat more evenly than before. In addition, the plancha has been lowered closer to the level of the wood ash insulation in order to use the firepower of the stove more efficiently. Also, a maintenance tool called the *Cinco* has been introduced to help stove users carry out the comprehensive cleaning and maintenance of the stove. Lastly, stove beneficiaries are thoroughly educated on the use of the stove during three or more separate training sessions, and through written materials that are left behind. From the user's point of view, the Dos por Tres functions the same as the traditional *fogón* and Mirador staff have observed that it has been positively received and easily assimilated by the beneficiaries.

**A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:**

According to the Gold Standard Tool Kit the project fits into the category of:

**End-use Energy Efficiency Improvement category is defined as the reduction in the amount of energy required for delivering or producing non-energy physical goods or services.**

The PoA and VPA are validated according to the Gold Standard approved baseline and monitoring methodology: *Methodology for Improved Cook-stoves and Kitchen Regimes*, Version 01 ("Methodology v.01"). The Gold Standard has approved that the First VPA continue under the Methodology v.01 until the first renewal of the 7-year crediting period. Revalidation for the PoA and VPA are both currently underway.

The Methodology v.01 is applicable to programs or activities introducing improved cookstoves and practices to households within a distinct geographical area. The project activity is implemented by a project coordinator who acts as a project participant. The individual households will not act as project participants.

The methodology addresses the switch from cookstoves and kitchen regimes used in domestic homes having significant greenhouse gas emissions to those having considerably less or zero emissions.

**Reference and version of the baseline.**

The baseline scenario reflects that each household uses a traditional *fogón* stove prior to becoming a project beneficiary, and assumes that installation of the new improved stove has not yet occurred. This scenario is captured by assessing fuelwood supply, wood consumption patterns and environmental behaviors among households that use traditional wood stoves for cooking. These data define the baseline situation, which we use to characterize conditions that would prevail in the absence of the project activity. The baseline is defined based on the assumption that, in the absence of PM's activity, all households in the target population would continue to utilize the traditional *fogón*. Their fuel consumption is measured using the Kitchen Performance Test, and is applied to the entire population.

The population sampled in quantitative field-testing in the 2010 n=55 Paired Fuelwood Consumption Study showed a mean household size of 3.64 adult equivalent persons. Baseline fuelwood consumption totaled 1.26 kg per adult equivalent person-meal (as opposed to the project scenario figure of 0.59 kg). Raw data for both baseline and project scenarios are attached in "Annex\_02\_PM Fuel Usage Study Data 2010.xlsx" and a summary description of the study is attached in "Annex\_03\_PM Fuel Usage Study Summary Report 2010.pdf."

The original KPT data collection sheet used in each study is provided as “Annex\_04\_PM Fuel Usage Study Data Sheet SPANISH.pdf” and an English translation of the data collection sheet is attached as “Annex\_05\_PM Fuel Usage Study Data Sheet ENGLISH.pdf.” The 2010, 2011, 2012 and 2013 studies were all conducted according to guidelines provided to Mirador by Prof. Robert Bailis of the Yale School of Forestry & Environmental Studies and those guidelines are attached as “Annex\_06\_PM Fuel Usage Study Guidelines.pdf.”

The original estimate of 2.23 mtCO<sub>2</sub>e/year as stated in the PDD v.4, the version accepted at Registration, was based on prior baseline studies (Yale, 2007, and Aprovecho, 2009), as the 2010 Paired Fuelwood Consumption Study had not yet been undertaken at the time of project submission for Registration to the Gold Standard. Approval of our First Verification confirms that the results of the 2010 Paired Fuelwood Consumption Study should replace all previous data as contained in the PDD v.4, for both baseline and project scenarios, as it confirms accurate fuelwood savings at a greater confidence level than any previously available data due to the larger sample size, paired design, and carefully planned field testing.

In 2012 the cluster was redefined as “One cluster for poor, rural households in Honduras, defined as traditional *fogón* users that rely on woody biomass fuels, and the project focuses on this cluster exclusively.” This change, which is reflected in the PDD v.5 (2012), enabled a boundary expansion into other areas of Honduras, outside the 4 Departments approved in the original PDD, wherever baseline conditions are similar. Since the baseline social, economic, and environmental conditions are not likely to consistently improve during the crediting period, a fixed baseline will be used for the duration of the crediting period.

|                                                        |
|--------------------------------------------------------|
| <b>A.6. Registration date of the project activity:</b> |
|--------------------------------------------------------|

29 June, 2010

|                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------|
| <b>A.7. Crediting period of the project activity and related information (start date and choice of crediting period):</b> |
|---------------------------------------------------------------------------------------------------------------------------|

The 7-year crediting period for the First VPA is May 1, 2009 through April 30, 2016.

|                                                        |
|--------------------------------------------------------|
| <b>A.8. Name of responsible person(s)/entity(ies):</b> |
|--------------------------------------------------------|

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## **SECTION B. Implementation of the project activity**

### **B.1. Implementation status of the project activity**

- 1. The starting date of operation of the project activity. For project activities that consist of more than one site, the report shall clearly describe the status of implementation and starting date of operation for each site. For GS project activities with phased implementation, the report shall indicate the progress of the proposed GS project activity achieved in each phase.***

The starting date of operation of the project activity was 1 May, 2009. The geographic scope of the project is limited to the defined project boundary. The project boundary for the distribution of the Dos por Tres stove is Honduras.

- 2. The information regarding the actual operation of the project activity during this monitoring period, including information on special events, for example overhaul times, downtimes of equipment, exchange of equipment, etc.***

The original PDD assumed a project build rate of 3,500 stoves during the first year of the crediting period, with the build rate increasing by 8% per year for each subsequent year of the crediting period. The project is ahead of schedule in meeting its objectives as stated in the original PDD, and the First VPA reflects updated projections.

The projections stated in the First VPA are adjusted to reflect a year end of November 30 to match the Verification cycle, a revised NRB of 77% starting December 1, 2012, and an appropriate rate of drop-off and degradation consistent with new data. Actual numbers have been used in the ER Projections chart in section A.1 above for stoves installed from May 1, 2009, through November 30, 2014 (a period that encompasses the first five Verification Periods). Figures for subsequent years are adjusted according to current growth projections. The numbers used for emission reduction calculations in this document are based on net stoves in operation (rather than the gross number of stoves built), and adjusted for drop-off and stove degradation rates, increasing appropriately by year.

- 3. A brief description of: (i) events or situations that occurred during the monitoring period, which may impact the applicability of the methodology, and (ii) how the issues resulting from these events or situations are being addressed.***

The project has always been, and will continue to be, subject to typical monthly variability resulting from factors such as: (1) availability of raw materials; (2) weather; (3) holidays; (4) project cycle for building and installation; (5) research activities in line with Gold Standard requirements; and (6) availability of personnel. We consider the above variables to be normal in scope, and none should impact the applicability of the Monitoring Methodology.

#### **B.2. Revision of the monitoring plan**

There are no changes to the monitoring plan as specified in the First VPA.

#### **B.3. Request for deviation applied to this monitoring period**

The approved 2012 Design Change Request includes the approval of a revised cluster definition, as applied to the PDD v.5 (2012), as follows: “One cluster for poor, rural households in Honduras, defined as traditional *fogón* users that rely on woody biomass fuels, and the project focuses on this cluster exclusively.” The 2012 Design Change thus enables the project’s expansion into areas of Honduras other than the four Departments approved in the original PDD, wherever baseline conditions are otherwise similar.

#### **B.4. Notification or request of approval of changes**

There have been no changes in the project activity and thus, no request for approval of changes.

## **SECTION C. Description of the monitoring system**

In 2011 Proyecto Mirador hired Tact L3C to build an electronic monitoring system on the Salesforce.com platform to track all data associated with stove installations. The system is fully operational and serves as the source for the majority of data associated with Verification, including everything from basic household and contact information to survey data. Mirador's Salesforce.com database is designed to accept survey data both on- and offline through a handheld interface, with back-end reporting and workflow managed on laptop computers.

The Monitoring Plan is intact as specified in the First VPA.

### *Sales Record/Installation Record/Stove Database*

Mirador keeps a sales record (installation database) of every stove constructed. The sales record is kept on Salesforce.com and includes the beneficiary name, government ID number, stove ID number (serial number), locating information and date of construction for all the households that receive a stove. This information has been tracked since the inception of the project in 2004, and all stoves installed during the Gold Standard crediting period have been entered into Salesforce.com. Homes in rural Honduras do not have specific street addresses, and most do not have fixed telephone lines. Thus the majority of the households are not identified by street as much as by village, neighborhood, and surname, and for stoves installed recently, the GPS mark. (The GPS marking system was fully implemented as of August 2012; stoves constructed prior to that date may not show corresponding GPS marks in the Salesforce system.) Mobile phone numbers are collected from beneficiaries when available; however, we have found that phone numbers are subject to frequent change because most plans are prepaid and renewal is inconsistent.

Our sales record for the Sixth Monitoring Period has been exported directly from Salesforce.com to an Excel file and the raw data is attached as "Annex\_07\_Sales Record 120114-113015.xlsx." Also attached as "Annex\_08\_Stoves Installed by Month 120114-113015.pdf" is a summary of stoves installed by month from 1 December, 2014, through 30 November, 2015. The latter file is a screen shot taken directly from Salesforce.com.

The number of stoves built during the Sixth Monitoring Period (1 December 2014 through 30 November 2015) is 18,338.

### *Survey Data*

The Monitoring System includes routine inspection of stoves as well as systematic data collection and reporting of surveys to assess Leakage and Sustainability. Additional studies are carried out to maintain the accuracy of emissions reduction reporting, including an Aging Stove KT (Kitchen Performance Test) to assess quantitative fuelwood consumption and a Usage Survey to assess drop-off (abandonment).

When Mirador conducts any type of survey in a given household, the survey is created inside Salesforce.com from within the household account record and is thus automatically associated with that household in the Salesforce.com database. Multiple surveys can be amassed over time in association with a single household (see *Training of Beneficiaries, Leakage and Sustainability Studies* and *Additional Studies* below).

### *Training of Beneficiaries*

Proyecto Mirador's Monitoring System includes extensive training of stove beneficiaries at various stages in the process, including Community Meetings staged before construction; direct training at the time of stove construction; and follow-up visits after stove construction. The Ejecutores perform the up-front communication, organization and training to prepare the villages for installation; Stove Technicians perform direct training to beneficiaries at the time of construction; and Supervisors are responsible for all subsequent follow-up and training visits to the beneficiaries.

Prior to the commencement of stove construction in each community, the Ejecutores conduct a Community Information Meeting to prepare the beneficiaries for installation. At that meeting the Ejecutores introduce stove beneficiaries to the structural and functional aspects of the Dos por Tres and provide an initial overview of stove use and maintenance. The Ejecutores collect a list of specific beneficiaries who are scheduled to receive stoves. In order to be included on the list, beneficiaries must confirm that they are using a traditional cookstove, agree to destroy the old cookstove upon installation of the 2x3, and agree to relinquish any claims to the emission reductions generated following installation of the 2x3. During the meeting the beneficiaries also receive instructions to obtain the materials they must contribute for stove construction. The list of beneficiaries is entered into Salesforce.com, creating a new household record and associated contact entry for each planned stove. The Stove ID Number (serial number) is automatically assigned by the system in permanent association with the household.

On entry all stoves are marked by default as being in the “Planning” stage. The stage is updated in Salesforce.com by the Ejecutores only after stoves are actually built; at that time stoves are marked as “Construction Complete” and become permanent records in the database. If a stove originally planned does not reach construction, it will receive a stage of “Construction Stopped” or “Not Built.” All stoves originally planned that did not reach the final stage of “Construction Complete” are removed by the Ejecutores, and only stoves marked “Construction Complete” are listed on the Sales Record.

Upon stove installation the Stove Technician trains the stove beneficiary extensively in the use and maintenance of the Dos por Tres, reinforcing the training previously conducted in the initial Community Meeting (<http://www.proyectomirador.org/stove-program/training>). At that time the Technician also leaves training materials behind with each beneficiary (see “Annex\_09\_Training Brochure.pdf”), along with the *Cinco* maintenance tool described below. All training materials are visually oriented to accommodate for the high rate of illiteracy among stove beneficiaries. The photo below shows a new Dos por Tres owner holding the training brochure provided by PM upon stove installation.



Four to six weeks after construction is completed in each community, Supervisors perform an initial Follow-up Visit to the home of each stove beneficiary. In these visits, Supervisors review the training initially provided by the Technicians upon installation and address all individual concerns and issues that may arise. At that time supervisors also use handheld devices to complete a Maintenance Survey in order to (1) determine drop-off if applicable and (2) ensure that the stoves are functioning properly. The Supervisors collect data on stove condition and maintenance using the Maintenance Survey module, which functions both on- and offline. When necessary, Supervisors either replace defective stove parts or instruct Ejecutores and Stove Technicians to do so.

Supervisors also carry out a statistically significant number of more extensive surveys in order to assess leakage and ensure continued compliance with the Gold Standard's sustainability requirements. These surveys are further elaborated below in the section *Installation Record, Leakage & Sustainability Monitoring*.

#### *Coordination of Follow-up Visits*

All Follow-up Visits are scheduled systematically following Proyecto Mirador's stove installation cycle to ensure proper timing for follow-up. PM's Coordinator of Supervisors uses Salesforce.com to manage the Supervisors' assignments, with Follow-up Visits scheduled at specific intervals relative to the date of stove installation. Follow-up Visits are grouped geographically using a mapping system linked with Salesforce.com, which maximizes the Supervisors' efficiency. Supervisors have access to dynamic maps through their handheld devices, and the GPS locations of the households assigned for Follow-up Visits are accessed at a simple touch of the screen.

#### *Training, Manual of Procedures and Audit of Proyecto Mirador Representatives*

Before conducting any meetings or surveys, our Supervisors as well as our Ejecutores and Stove Technicians are extensively trained. They spend ample time in the field learning to build stoves and learning all aspects of the stove's operation and the management of Mirador. In addition, our Mirador's Director of Training and Human Resources provides training to every employee to cover a wide range of issues such as safety, communication, efficiency and protocols. This training process generally takes longer than a month to complete. Training Materials have been developed to facilitate the training process; and training procedures are constantly under review for further improvements. A manual of operational procedures is in place to ensure that all proceedings are applied uniformly throughout the organization.

The work of the Supervisors is monitored by the Manager of Supervision, Carlos Daniel Flores. Ejecutores are monitored by Elder Mendoza, Chief Operating Officer and subject to review by Emilia Mendoza, Director. The objective of the reviews is to ensure that the stove construction, training of the beneficiaries, and the collection of monitoring information are being completed in an accurate and timely manner, as well as to support any ongoing third party verification as part of the Gold Standard certification.

#### *Scale of the Organization*

The number of Ejecutores and the project build rate expand in direct proportion to each other, and a proportionate number of Mirador Supervisors are hired to accommodate increased need for Follow-up Visits. Thus, we have the capacity to provide timely follow-up and monitoring for all beneficiary communities, with the first Follow-up Visits conducted four to six weeks following completion of stove construction in each community.

At the current stove build rate, six Supervisors plus one Head of Supervisors are sufficient to sustain the collection of Leakage and Sustainability and stove drop-off data at a statistically significant level, and to keep up with the ongoing maintenance inspection of existing stoves. As the capacity of each Supervisor is reached, Mirador will continue to employ additional personnel to meet operational standards. When necessary, Mirador will also employ outside resources to assist with research and analysis. Such resources may include the Regional Stove Testing Center at Zamorano University, Aprovecho Research Center and Yale University, to name a few.

Since ongoing research and stakeholder consultation are vital components of a successful Gold Standard project, having solid “on-the-ground” resources is a critical advantage for PM. Recommendations from the beneficiaries as to functional improvements are explored and researched, then implemented if appropriate. Furthermore, as Mirador expands into new areas of Honduras, local leaders and NGOs are informed and consulted on an ongoing basis. Stakeholder feedback is channeled through the Ejecutores or Supervisors to Mirador’s management and Mirador’s responses are documented. If appropriate, significant concerns are reviewed by the Director and Chief Operating Officer and procedures may be adjusted accordingly.

#### *Leakage & Sustainability Monitoring:*

Mirador’s Supervisors carry out a statistically significant number of more extended Leakage and Sustainability Surveys in order to assess Leakage and Sustainability issues as recorded in the PDD (Sections a, b, d, and e) and Passport Section G (#1, Air Quality; #7, Livelihood of the Poor; and #9, Human and Institutional Capacity).

Examples of questions covered with the Leakage and Sustainability Surveys are as follows:

- Number of People in home
- Estimated wood consumption per day (with the traditional *fogón* vs. the new Dos por Tres)
- Length of time the Dos por Tres stove is in use each day
- Presence of any other alternative type of stove in the house
- Source of wood (bought or collected)

The Leakage and Sustainability Surveys were designed with the assistance of Professor Robert Bailis at the Yale School of Forestry and Environmental Studies and Professor Timothy Longwell from Zamorano University in Honduras, and PM, and are collected by Supervisors using iPhones using the Leakage and Sustainability Survey module, which functions both on- and offline.

439 monitoring surveys have been conducted during the Sixth Verification Period that include leakage, sustainability and qualitative fuelwood use data. The results of these surveys have been exported directly from Salesforce.com to Excel and summarized in Excel, and are attached as “Annex\_10\_Leakage Sustainability Results 2015.xlsx.”

#### *Sustainability Analysis*

Since inception Proyecto Mirador has been a clear leader in sustainable development. First, beneficiaries enjoy the health benefits of reducing indoor air pollution as smoke is diminished by cleaner burning stoves and channelled outside the home through effective chimneys. Second, Proyecto Mirador continues to create stable, safe jobs with competitive salaries within communities where opportunities for full-time employment are exceedingly rare and working conditions are generally substandard at best. Proyecto Mirador currently supports 14 Honduran microenterprises in addition to its direct employees. Third, deforestation is slowed due to the reduction in fuelwood of the Dos por Tres. This is particularly important in Honduras, where deforestation is occurring at an alarming rate. Beneficiaries enjoy a greater amount of time to devote to activities other than collecting wood, and/or are relieved of a corresponding part of the financial burden of purchasing wood.

In addition to the benefits listed above, it should be noted that there is no evidence that Proyecto Mirador has any negative effects on sustainability. All sustainability parameters will be monitored as specified in Parameters ID 14 through 19 of this Monitoring Report.

Annually, Proyecto Mirador’s Management Team will report on the Passport’s Sustainability Monitoring Plan, Section G, including assessment of #6, Quality of Employment, by means of an

annual employee survey, and #10, the Quantitative Employment and Income generation of the project, is addressed in an annual report on the quantity and type of jobs created by the project. Income figures are confidential and, as such, are not included in this report; however, all employees are paid at or above the minimum wage and Proyecto Mirador agrees to provide the Verifier with a Quantitative Employment report with complete list of current salaries by employee type.

The results of our September/October 2015 annual employee survey are attached in the file “Annex\_11\_Employee Survey Export.xlsx.” The survey templates for employees and Ejecutores are both attached in the file “Annex\_13\_Employee Questionnaires.pdf.” Quantitative Employment is reported in “Annex\_14\_Quantitative Employment 2015.xlsx.”

#12, Technology Transfer, includes training on stove use, stove technology and stove installation. Proyecto Mirador conveys sustainable technology to its employees through on-the-job training. Employees who construct stoves all undergo a paid training period. In addition, the implementation of the new Salesforce.com based monitoring system means that Technicians are now trained in the use of GPS devices; Supervisors are trained in the use of survey modules and digital mapping and navigation using Salesforce.com on the iPhone platform; Ejecutores are trained on the use of laptops, sophisticated mapping techniques, and a broad range of reporting and analysis tools available in Salesforce.com; and office staff are trained to use Salesforce.com to manage the scheduling of employees to accomplish stove installation, Follow-up Visits and survey collection as efficiently as possible.

Stove beneficiaries also receive training and instruction in the new stove technology, up to as many as five times, to ensure proper use and maintenance of the Dos por Tres. Proof of technology transfer to beneficiaries lies in the fact that they are able to keep stoves working well because they understand how the stoves work. Training is performed on an ongoing basis for all stove recipients as follows:

- The first round of training is conducted by the Ejecutores at the time the community is first introduced to Proyecto Mirador and the Dos por Tres. This takes place at the Community Information Meeting, at which the major components of maintenance are introduced and beneficiaries are informed of the requirements for receiving a stove, as well as their responsibilities to correctly operate and maintain the stove.
- The Technicians carry out the second round of training. The Technicians, who build the stoves, are in charge of providing Beneficiaries with a comprehensive training on the use of the stoves upon installation. Technicians carry notes to assist with following a standard training procedure, and brochures are left behind with full details of the stove’s operation and maintenance.
- Supervisors carry out the third round of training in a series of house to house Follow-up Visits, four to six weeks after the completion of construction in each community, to review the training provided by the Technicians and ensure that the stoves are functioning properly. Checklists and surveys are used at this time to address all concerns and issues that may arise and insure the beneficiaries are following continued proper maintenance of the stoves.
- Supervisors continue to follow up with stove beneficiaries as needed, up to two additional times beyond the third round of training, in order to ensure that stoves are being properly used and maintained.

Project beneficiaries are consistently informed that Proyecto Mirador owns all carbon credits issued as a result of emission reductions from all stoves installed. This is first articulated at the Community Meetings staged before stove construction begins in each area, then reiterated when beneficiaries are individually trained. The PM Training Brochure, which is given to stove beneficiaries after stove installation, also includes a written statement of Proyecto Mirador’s ownership of carbon credits, and the consent of all beneficiaries is required as a precondition to stove installation. The training

brochure is attached as “Annex\_09\_Training Brochure.pdf” and the translation of the relevant clause (at bottom of the brochure) is as follows:

"By accepting a new stove from Proyecto Mirador, you agree that any reductions in CO<sub>2</sub> emissions created by the stove are the property of PM."

### **Additional Studies:**

#### *Aging Stove KT Survey: Quantitative Fuelwood Consumption Study*

A quantitative Fuelwood Consumption Study will be conducted biennially in order to determine whether there is a decline in stove efficiency as determined by a change in fuelwood usage. An appropriately sized sample group is drawn in part from the same 55 homes surveyed in the original 2010 Paired Fuelwood Consumption Study described above, and supplemented by other households in these communities. The biennial follow-up survey will account for any changes in the number and ages of household members. We will ask questions including: "What is your family size?" and "What is the age and gender of each household member?" and will also perform wood weighing over 4 days, similar to the original study, to determine if fuel use patterns have changed.

We completed the first such follow-up survey in 2011, then repeated the survey again in 2012, 2013 and 2015 to include older stoves.

#### *Aging Stove KT Survey: Emissions Test*

Emission factors for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O were determined in the Aprovecho lab tests for traditional and La Justa stoves.

Gold Standard Methodology states as follows: “If IPCC defaults are not used, testing of EFs of new stoves is only required if there is evidence that the new stove may give rise to significantly different EFs leading to possible over-estimation of emission.” (“Methodology for Improved Cook-stoves and Kitchen Regimes V.01,” footnotes for pp. 24 & 25.)

Thus, further monitoring is not required, as the fixed baseline emission factors remain constant throughout the project period.

#### *Usage (Drop-off) Survey*

As per Gold Standard methodology, Mirador will conduct a biennial Usage Survey of a statistically relevant number of beneficiaries with stoves that were built during the First Verification Period (1 May, 2009, to 30 November, 2010) and forward to determine whether or not they are still using the La Justa stove, and to assess why or why not. The quantification of carbon emissions will systematically account for usage drop-off according to the results of the Usage Survey.

## SECTION D. Data and parameters

### D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

| Data / Parameter:                                                                                          | ID 1/ $X_{nr,bl,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit:                                                                                                 | %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description:                                                                                               | The non-renewable fraction of the woody biomass harvested in the project collection area in year y in the baseline scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source of data used:                                                                                       | Berkeley Air 2011 NRB Analysis (“Annex_15_Berkeley Air NRB Analysis 2011.pdf”); Yale 2007 Study and Yale 2009 Study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Value applied:                                                                                             | 77%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)                      | Baseline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | <p>Pursuant to the approved 2012 Design Change Request, NRB was reassessed by Berkeley Air Monitoring Group in 2012 according to “NRB Assessment similar to approach of CDM Methodology AMS-II.G” as follows, with the result of 95.4%:</p> $f_{NRB} = \frac{NRB}{NRB + DRB}$ <p>Favoring a conservative approach, we based our ER Calculations for the Third Verification Period on an NRB fraction of 77%, which is the midpoint between the 59% originally estimated by Yale and the 95.4% estimated by Berkeley Air Monitoring Group.</p> <p>NRB was thus reassessed, verified by the DOE, and approved by the Gold Standard at 77%, the figure used to calculate emission reductions for the Fourth, Fifth, and Sixth Verification Periods.</p> |
| Any comment:                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Data / Parameter:                                                                                          | ID 2/ $B_{bl,y}$                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit:                                                                                                 | T woody biomass/year/household                                                                                                                                                                                                                              |
| Description:                                                                                               | The mass of woody biomass consumed during cooking in the baseline scenario                                                                                                                                                                                  |
| Source of data used:                                                                                       | 2010 Paired Fuelwood Consumption Study                                                                                                                                                                                                                      |
| Value applied:                                                                                             | 3.87 tonnes per household                                                                                                                                                                                                                                   |
| Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)                      | Baseline                                                                                                                                                                                                                                                    |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | Data obtained during the 2010 Paired Fuelwood Consumption Study. The number 3.87 was calculated by taking the average fuelwood consumption for the baseline scenario expressed in kg per day, multiplying by 365 days/year and converting to metric tonnes. |

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| Any comment: |  |
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|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                                                                   | <b>ID 3/ EF<sub>bl,bio,co2</sub></b>                                                                                                                                                                                                                                                                                             |
| Data unit:                                                                                                 | tCO <sub>2</sub> /t woody biomass                                                                                                                                                                                                                                                                                                |
| Description:                                                                                               | The CO <sub>2</sub> emission factor for use of the biomass fuel in the baseline scenario                                                                                                                                                                                                                                         |
| Source of data used:                                                                                       | Aprovecho Stove Test (28 April 2009)                                                                                                                                                                                                                                                                                             |
| Value applied:                                                                                             | 87.6 g/MJ is the emission factor measured in laboratory testing of traditional fogón stoves.                                                                                                                                                                                                                                     |
| Indicate what the data are used for (Baseline/Project/Leakage emission calculations)                       | Baseline                                                                                                                                                                                                                                                                                                                         |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg., the calorific value listed for Red Oak (the common fuel used in Honduras) in Cheremisinoff, N. (1980), <i>Properties of Wood; Wood for Energy Production</i> . Ann Arbor, MI, Ann Arbor Science: 31-43 (also cited in Aprovecho 2009 Study, p. 2). |
| Any comment:                                                                                               |                                                                                                                                                                                                                                                                                                                                  |

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|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                                                                   | <b>ID 4/ EF<sub>bl,bio nonCO2,CH4</sub></b>                                                  |
| Data unit:                                                                                                 | tCH <sub>4</sub> /t woody biomass                                                            |
| Description:                                                                                               | The CH <sub>4</sub> emission factor for use of the biomass fuel in the baseline scenario     |
| Source of data used:                                                                                       | Aprovecho Stove Test (28 April 2009)                                                         |
| Value applied:                                                                                             | 0.47 g/MJ is the emission factor measured in laboratory testing of traditional fogón stoves. |
| Indicate what the data are used for (Baseline/Project/Leakage emission calculations)                       | Baseline                                                                                     |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg.                 |
| Any comment:                                                                                               |                                                                                              |

|                                                                                      |                                                                                           |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                                             | <b>ID 5/ EF<sub>bl,bio,nonCO2,N2O</sub></b>                                               |
| Data unit:                                                                           | t N <sub>2</sub> O /t woody biomass                                                       |
| Description:                                                                         | The N <sub>2</sub> O emission factor for use of the biomass fuel in the baseline scenario |
| Source of data used:                                                                 | Aprovecho Stove Test (28 April 2009)                                                      |
| Value applied:                                                                       | 0                                                                                         |
| Indicate what the data are used for (Baseline/Project/Leakage emission calculations) | Baseline                                                                                  |
| Justification of the                                                                 |                                                                                           |

|                                                                                       |                                            |
|---------------------------------------------------------------------------------------|--------------------------------------------|
| choice of data or description of measurement methods and procedures actually applied: |                                            |
| Any comment:                                                                          | N <sub>2</sub> O emissions are de minimis. |

|                                                                                                            |                                                                                                      |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                                                                   | <b>ID 6/ EF<sub>pe,bio,co2</sub></b>                                                                 |
| Data unit:                                                                                                 | tCO <sub>2</sub> /t woody biomass                                                                    |
| Description:                                                                                               | The CO <sub>2</sub> emission factor for use of the biomass fuel in the project scenario              |
| Source of data used:                                                                                       | Aprovecho Stove Test (28 April 2009)                                                                 |
| Value applied:                                                                                             | 98.3 g/MJ is the emission factor measured in laboratory testing of Estufa Dos por Tres model stoves. |
| Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)                      | Project                                                                                              |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg.                         |
| Any comment:                                                                                               |                                                                                                      |

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|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                                                                   | <b>ID 7/ EF<sub>pe,bio nonCO2,CH4</sub></b>                                                  |
| Data unit:                                                                                                 | tCH <sub>4</sub> /t woody biomass                                                            |
| Description:                                                                                               | The CH <sub>4</sub> emission factor for use of the biomass fuel in the project scenario      |
| Source of data used:                                                                                       | Aprovecho Stove Test (28 April 2009)                                                         |
| Value applied:                                                                                             | 0.05 g/MJ is the emission factor measured in laboratory testing of traditional fogón stoves. |
| Indicate what the data are used for (Baseline/Project/ Leakage emission calculations)                      | Project                                                                                      |
| Justification of the choice of data or description of measurement methods and procedures actually applied: | Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg                  |
| Any comment:                                                                                               |                                                                                              |

## D.2. Data and parameters monitored

| Data / Parameter:                                                | ID 8 / Stove Sales                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit:                                                       | Number of stoves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description:                                                     | Identification of household that has received an Estufa Dos por Tres stove.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Measured/Calculated/Default:                                     | Measured                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source of data to be used:                                       | Installation record database (“Database of Beneficiaries”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Value(s) of monitored parameter:                                 | <p><b>101,900</b> total stoves, as follows:</p> <ul style="list-style-type: none"> <li>• 6,621 stoves installed in the First Verification Period (1 May 2009 – 11 November 2010)</li> <li>• 10,509 stoves installed in the Second Verification Period (1 December 2010 – 30 November 2011)</li> <li>• 17,000 stoves installed in the Third Verification Period (1 December 2011 – 30 November 2012)</li> <li>• 24,484 stoves installed in the Fourth Verification Period (1 December 2012 – 30 November 2013)</li> <li>• 24,948 stoves installed in the Fifth Verification Period (1 December 2013 – 30 November 2014)</li> <li>• 18,338 stoves installed in the Sixth Verification Period (1 December 2014 – 30 November 2015)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description of measurement methods and procedures to be applied: | <p>The electronic database will hold the following information for each household:</p> <ul style="list-style-type: none"> <li>- Installation record</li> <li>- Date of installation</li> <li>- Location of installation</li> <li>- Name of beneficiary</li> <li>- Note presence of old stove in the household if applicable</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| QA/QC procedures to be applied:                                  | <p>Data integrity is checked and maintained in Salesforce.com by the Director of Technology in Honduras on an ongoing basis. Because of the high-touch model of Proyecto Mirador, there are many checkpoints along the process to gather and verify data from individuals getting a stove:</p> <ol style="list-style-type: none"> <li>1) All villagers meet with an Ejecutor to understand who will receive a stove. At that point key data is entered into the system such as government ID, Name of Person and number of residents.</li> <li>2) When a Technician arrives at the house to build the stove the Technician will verify, using a list provided to them on paper by the Ejecutores, that the contact information for each household is correct and make sure they are building the house under the right record/account in Salesforce. The Technician will also gather accurate GPS coordinates that are recorded with the household &amp; stove record in Salesforce.com.</li> <li>3) On data creation, all forms have data validation to require completion of any fields that are basic and indispensable.</li> <li>4) At scheduled intervals, a Supervisor will visit the house to survey the stove and its use and performance, verify that GPS and contact information are correct, and make sure the stove is recorded in the correct account in Salesforce.</li> </ol> |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>5) The office team, under the supervision of the Director of Technology, checks for Government ID duplicates and checks survey dates for consistency.</p> <p>6) “Dashboards” that visually summarize key reports are distributed to all levels of PM management and reviewed weekly.</p> <p>All data is verified or updated through this process including adding additional contacts and their relevant information into the system. Simply having different team members checking and verifying the data provides a high level of quality control. In the first year, up to 5 different people might visit a single home to verify and update data.</p> <p>Throughout the process by which data is gathered and verified in the field, the office team, under the supervision of the Director of Technology, cross checks and reviews the data with various data de-duplication tools, checking the data for quality, eliminating duplicates if found, and making sure that the required data is being captured on all records. Certain controls exist in the Salesforce.com system that restrict certain users from modifying data or changing the status of a household. For example, after the Ejecutor and Technician are paid for installing a stove, they are automatically locked out from modifying that stove record going forward.</p> <p><u>Salesforce.com Technology:</u><br/>The PM Salesforce.com database is automatically backed up on a weekly basis. If any data is modified or changed, a record history is tracked. Salesforce provides redundancy and backup in their clean data rooms located internationally. See this link for specific details: <a href="http://trust.salesforce.com/trust/security/">http://trust.salesforce.com/trust/security/</a></p> |
| Any comment: | All stoves installed during the Gold Standard crediting period will be the “Estufa Dos por Tres” (formerly named the “La Justa Model Dos por Tres”) and all will replace a traditional <i>fogón</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                         | <b>ID 9 / B<sub>pi,v</sub></b>                                                                                                                                                                                                                                                                                                             |
| Data unit:                                                       | kg                                                                                                                                                                                                                                                                                                                                         |
| Description:                                                     | Fuelwood consumed per household per year (This is the mass of woody biomass consumed during cooking in the project in year y in tonnes per year per household by users of the Estufa Dos por Tres stove aged one year or less.)                                                                                                            |
| Measured/Calculated/Default:                                     | Measured                                                                                                                                                                                                                                                                                                                                   |
| Source of data to be used:                                       | Biennial Fuelwood Consumption Study (Aging Stove KT).                                                                                                                                                                                                                                                                                      |
| Value(s) of monitored parameter:                                 | 2,126.47 kg                                                                                                                                                                                                                                                                                                                                |
| Description of measurement methods and procedures to be applied: | Biennial survey of tonnes of woody biomass per year per household consumed by beneficiaries, to determine whether there is a decline in stove efficiency as determined by a change in fuel wood usage. An appropriately sized sample group will be drawn from the same 55 homes as surveyed in the 2010 Paired Fuelwood Consumption Study. |
| QA/QC procedures to be applied:                                  | We will ask questions including: "What is your family size" and "What is the age and gender of each household member?" and will also perform wood weighing over 4 days, similar to the original                                                                                                                                            |

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|              | study, to determine if fuel use patterns have changed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Any comment: | <p>We acknowledge an error in the PDD, in which 2.73 mtCO<sub>2</sub>e/yr was reported as the Value of the Monitored Parameter for ID 9. This error was pointed out by SGS and we have adjusted the above value accordingly.</p> <p>The original ER-per-stove value of 2.73 mtCO<sub>2</sub>e/yr was calculated on the basis of 2,126.47 kg; therefore, the monitored parameter of 2,126.47 kg was moved to the “Value of Monitored Parameter” section above for the First Monitoring Report and forward.</p> <p>As described in Section A.1 above, the value 2.73 mtCO<sub>2</sub>e/yr per stove was subsequently replaced with 3.31 mtCO<sub>2</sub>e/yr to reflect a 77% NRB ratio.</p> |

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| <b>Data / Parameter:</b>                                         | <b>ID 10/ EF<sub>pi.bio.co2</sub></b>                                                                                                                                                                                                                                            |
| Data unit:                                                       | tCO <sub>2</sub> /tonne woody biomass                                                                                                                                                                                                                                            |
| Description:                                                     | The CO <sub>2</sub> emission factor for use of the biomass fuel in the project scenario in tonnes CO <sub>2</sub> per tonne of woody biomass fuel.                                                                                                                               |
| Measured/Calculated/Default:                                     | Calculated                                                                                                                                                                                                                                                                       |
| Source of data to be used:                                       | If the Verifier deems it necessary (as indicated by the Verifier’s belief that there has been a significant change in this parameter), a laboratory study will be conducted to measure the CO <sub>2</sub> emission factor of woody biomass consumption in the project boundary. |
| Value(s) of monitored parameter:                                 | 98.3 g/MJ is the emission factor measured in laboratory testing of Estufa Dos por Tres model stoves.                                                                                                                                                                             |
| Description of measurement methods and procedures to be applied: | Data is obtained by use of the net calorific value (NCV) of wood 18.6 MJ/kg. Value will be measured by same method biennially only if Verifier determines it necessary.                                                                                                          |
| QA/QC procedures to be applied:                                  | N/A                                                                                                                                                                                                                                                                              |
| Any comment:                                                     | Per Gold Standard Methodology: “If IPCC defaults are not used, testing of EFs of new stoves is only required if there is evidence that the new stove may give rise to significantly different EFs leading to possible over-estimation of emission.”                              |

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| <b>Data / Parameter:</b>                                         | <b>ID 11/ Stoves in use</b>                                                                                                                                                                       |
| Data unit:                                                       | Households                                                                                                                                                                                        |
| Description:                                                     | Drop off rate                                                                                                                                                                                     |
| Measured/Calculated/Default:                                     | Measured                                                                                                                                                                                          |
| Source of data to be used:                                       | Survey and visual observation                                                                                                                                                                     |
| Value(s) of monitored parameter:                                 | 7.5%                                                                                                                                                                                              |
| Description of measurement methods and procedures to be applied: | Proyecto Mirador determines drop-off by conducting usage surveys for each Verification Period on a sample group of at least 30 households for each age category of stove by year.                 |
| QA/QC procedures to be applied:                                  | Survey shall include the questions: “Have you stopped using your Estufa Dos por Tres?” and “Has the stove mouth been removed?” A positive response to either question constitutes stove drop-off. |

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| Any comment: | <p>For the First Verification Period, a 7.5% drop-off rate was approved by SGS based on surveys taken by SGS during onsite verification with the assistance of Zamorano University, also during onsite verification.</p> <p>For the Second Verification Period, the following non-cumulative drop-off rates were approved and verified:<br/> First year: 3%<br/> Second year: 4%<br/> Third year: 5%</p> <p>For the Third Verification Period, the following non-cumulative, monitored drop-off rates were applied:<br/> First year: 4%<br/> Second year: 5%<br/> Third year: 13%<br/> Fourth year: 6%</p> <p>For the Fourth Verification Period, the following non-cumulative, monitored drop-off rates were applied:<br/> First year: 8%<br/> Second year: 6%<br/> Third year: 6%<br/> Fourth year: 6%<br/> Fifth year: 19%</p> <p>For the Fifth Verification Period, the following non-cumulative, monitored drop-off rates were applied:<br/> First year: 15%<br/> Second year: 4%<br/> Third year: 2%<br/> Fourth year: 8%<br/> Fifth year: 31%<br/> Sixth year: 19%</p> <p>For the Sixth Verification Period, the following non-cumulative, monitored drop-off rates were applied:<br/> First year: 10%<br/> Second year: 4%<br/> Third year: 13%<br/> Fourth year: 0%<br/> Fifth year: 3%<br/> Sixth year: 8%</p> <p>Drop-off rates for the Sixth Verification Period are substantiated in Section E.4 below and supporting data is provided in “Annex_16_Dropoff Data 2015.xlsx.”</p> |
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| <b>Data / Parameter:</b> | <b>ID 12 / Leakage</b>                                                                                                                                                                                                                                                                |
| Data unit:               | Households                                                                                                                                                                                                                                                                            |
| Description:             | <p>Assess agreement with statements regarding possible leakage effects, including:</p> <ol style="list-style-type: none"> <li>Rebound Effect</li> <li>Stimulation of increased use of a high emission fuel</li> <li>Promotion of new stove type stimulates substitution of</li> </ol> |

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|                                                                                                  | <p>a cooking fuel or stove type with relatively high emissions</p> <ul style="list-style-type: none"> <li>d. Loss of space heating causes users to use alternative sources of (and thus, a greater amount of) fuel</li> <li>e. Traditional stoves are reused</li> <li>f. Other types of stoves are present in the household</li> <li>g. Length of time auxiliary stoves are used each day</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Measured/Calculated/Default:                                                                     | Measured                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Source of data to be used:                                                                       | Ongoing Leakage and Sustainability Survey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Value of data applied for the purpose of calculating expected emission reductions in section B.5 | 0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Description of measurement methods and procedures to be applied:                                 | Survey, on an ongoing basis, a statistically significant number of Dos por Tres stove owners. (Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary.) Questionnaires to be administered by Proyecto Mirador's Supervisors and Community Organizers. Determine the number of Dos por Tres users who report that they did not use a woodstove prior to installation of the Dos por Tres.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| QA/QC procedures to be applied:                                                                  | Questionnaires include questions to assess agreement with statements a-g under "Description" above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Any comment:                                                                                     | <p>- There are cases when the beneficiary has not destroyed the traditional fogon, particularly among the oldest age groups of stoves. In those cases, the <i>fogon</i> is either not in use, or is used minimally – i.e., up to twice a month for a couple of hours, and only for toasting coffee. This means average use of the auxiliary <i>fogon</i> is roughly equivalent to 0.15 hours per day for <i>fogon</i> users, and far less for the overall population, which is <i>de minimis</i>.</p> <p>- PM's approach values training the beneficiaries on conservation practices. To remain conservative, however, our emission reduction calculations are based on relative wood savings between the <i>fogón</i> and the Estufa Dos por Tres. We do not assume an increase in emission reductions based on improvements in conservation practices among the beneficiaries. Furthermore, as we have carefully measured absolute fuelwood consumption before and after the introduction of the Estufa Dos por Tres, any possible rebound effect would have been captured in absolute terms and reported in the 2010 Fuelwood Consumption Study in comparing baseline with initial project scenario. Therefore, we do not anticipate any effect on leakage.</p> <p>- Though some people have reported using paper, corn or cardboard as supplementary materials with their stoves, these were used minimally, primarily as fire starters, and used exactly as before the installation of the Estufa Dos por Tres. Further, the method of starting the fire is exactly the same for the Estufa Dos por Tres and the <i>fogón</i>. Thus, these auxiliary materials have no effect on leakage.</p> |

**Data / Parameter:****ID 13 / Leakage due to Transportation**

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| Data unit:                                                                                       | Kilometers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description:                                                                                     | Assess agreement with statement regarding possible leakage effects described in the PDD: “f. Significant emissions from transportation or other suggest more impact than if project did not exist.”                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Measured/Calculated/Default:                                                                     | Measured                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Source of data to be used:                                                                       | Mileage records; Sales Database (for total # of stoves built per year).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Value of data applied for the purpose of calculating expected emission reductions in section B.5 | 43,088 km driven within the First Verification Period.<br>122,259 km driven within the Second Verification Period.<br>168,541 km driven within the Third Verification Period.<br>320,356 km driven within the Fourth Verification Period.<br>407,622 km driven within the Fifth Verification Period<br>205,949 km driven within the Sixth Verification Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Description of measurement methods and procedures to be applied:                                 | Annual report to assess changes in mileage from year to year. Reported annual mileage (reported in km) is to be compared with the number of stoves built within the same year to see if mileage is increasing significantly beyond the relative increase in project activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| QA/QC procedures to be applied:                                                                  | Mileage records track kilometers driven on an ongoing basis for each vehicle, and the results are tabulated annually.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Any comment:                                                                                     | <p>Transportation results for the First Monitoring Period are reported in “Annex_17_Transportation Summary 2014.xls.”</p> <p>For the First Verification Period a ratio of 15.61% was determined using the total number of stoves constructed : total kilometers driven. It was approved that this 15.61% ratio would serve as the baseline for further monitoring of leakage due to transportation.</p> <p>For the Second Verification Period this ratio has decreased to 8.81% signifying an even more insignificant impact on leakage. Hence 122,259 km represents &lt;1% of total ER and is <i>de minimis</i> per Gold Standard methodology.</p> <p>For the Third Verification Period the ratio is 10.16%, well below the 15.61% baseline established in the First Verification Period.</p> <p>For the Fourth Verification Period the ratio is 7.64%, well below the 15.61% baseline established in the First Verification Period.</p> <p>For the Fifth Verification Period the ratio is 6.57%, well below the 15.61% baseline established in the First Verification Period.</p> <p><b>For the Sixth Verification Period the ratio is 8.90%, well below the 15.61% baseline established in the First Verification Period.</b></p> <p>The Gold Standard approved PDD and the First Monitoring Report were both approved assuming 0 leakage due to transportation. Based on the reduced ratio of 8.90% for the Sixth Verification Period, PM is again reporting 0 for the Sixth Monitoring Report.</p> <p>PM will continue to assume 0 leakage from transportation going</p> |

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|  | forward if the transportation does not increase significantly beyond the relative increase in project activity. Thus, it is the ratio of stoves constructed : km driven that is primarily relevant to our assessment of leakage, rather than raw annual mileage. |
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| <b>Data and Parameters used to assess Sustainability.</b>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>Data / Parameter:</b>                                                                               | <b>ID 14 / Number and percentage of individuals</b>                                                                                                                                                                                                                                                                                                                                                                          |
| Data unit:                                                                                             | <b>Individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                           |
| Description:                                                                                           | Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport: Issue #1, Air Quality.                                                                                                                                                                                                                                                                                                                |
| Monitored /Calculated /Default:                                                                        | Responses to questionnaire.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Value (s) of monitored parameter:                                                                      | 439 Leakage and Sustainability Surveys collected during the Sixth Verification Period returned the following results. Cell references below pertain to the “Reported Results” worksheet within the file “Annex_10_Leakage Sustainability Results 2015.xlsx.” <ul style="list-style-type: none"> <li>99% of respondents reported the air is cleaner in their homes with the new Dos por Tres cookstove (Cell C30).</li> </ul> |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire administered by Supervisors.                                                                                                                                                                                                                                                                                                                                                                                   |
| Measuring/Recording frequency:                                                                         | Survey, on an ongoing basis, a statistically significant number of Estufa Dos por Tres stove owners.                                                                                                                                                                                                                                                                                                                         |
| Source of data:                                                                                        | Survey.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Calculation method (if applicable):                                                                    | Data tabulation and report issued on an annual basis.                                                                                                                                                                                                                                                                                                                                                                        |
| QA/QC procedures applied:                                                                              | Sufficient sample size. Questionnaires administered by both local community organizers and PM. Leakage and Sustainability survey data collected on handheld devices, stored in Salesforce.com monitoring system and reviewed by office staff in Honduras and U.S. offices.<br><br>Randomness of the sample is maintained by surveying every <i>n</i> th beneficiary who receives a post-installation training session.       |
| Any comment:                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |

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| <b>Data / Parameter:</b>          | <b>ID 15 / Number and percentage of individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Data unit:                        | <b>Individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description:                      | Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport: Issue #7, Livelihood of the Poor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Monitored /Calculated /Default:   | Responses to questionnaire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Value (s) of monitored parameter: | 439 Leakage and Sustainability Surveys collected during the Sixth Verification Period returned the following results. Cell references below pertain to the “Reported Results” worksheet within the file “Annex_10_Leakage Sustainability Results 2015.xlsx.” <ul style="list-style-type: none"> <li>99% of respondents who collect their own wood reported that they have more free time since having the Dos por Tres (Cell C34). Respondents reported saving an average of 2.68 hours per week (Cell C37), representing a reduction of 45% in time spent collecting wood (Cell C38). 61% of those respondents reported that they invest the time saved from collecting fuelwood to work in the fields (Cell C41). Other reported uses of extra time include setting up a business (1%); attending school (1%); helping their partner (7%);</li> </ul> |

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|                                                                                                        | <p>resting (13%), taking better care of children (11%), “nothing” (2%) and other activities (3%) (Cells C42-C48).</p> <ul style="list-style-type: none"> <li>76% of respondents who purchase their fuelwood reported using the funds saved after installation of the 2x3 to purchase food (Cell C57). 3% reported using the funds to pay for electricity (Cell C58) and 21% reported other uses (Cell C59).</li> </ul> |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire administered by Supervisors.                                                                                                                                                                                                                                                                                                                                                                             |
| Measuring/Recording frequency:                                                                         | Survey, on an ongoing basis, a statistically significant number of Estufa Dos por Tres stove owners. (Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary.) Questionnaires to be administered by Supervisors.                                                                                                                                                                       |
| Source of data:                                                                                        | Survey.                                                                                                                                                                                                                                                                                                                                                                                                                |
| Calculation method (if applicable):                                                                    | Data tabulation and report issued on an annual basis.                                                                                                                                                                                                                                                                                                                                                                  |
| QA/QC procedures applied:                                                                              | Sufficient sample size. Questionnaires administered by both local community organizers and PM. Leakage and Sustainability survey data collected on handheld devices, stored in Salesforce.com monitoring system and reviewed by office staff in Honduras and U.S. offices.                                                                                                                                             |
| Any comment:                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                        |

| <b>Data and Parameters used to assess Sustainability.</b>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Data / Parameter:</b>                                                                               | <b>ID 16 / Number and percentage of individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Data unit:                                                                                             | <b>Individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description:                                                                                           | Assess agreement with statements in Sustainability Monitoring Plan Sections, Passport: Issue #9, Human & Institutional Capacity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Monitored /Calculated /Default:                                                                        | Responses to questionnaire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Value (s) of monitored parameter:                                                                      | <p>439 Leakage and Sustainability Surveys collected during the Sixth Verification Period returned the following results. Cell references below pertain to the “Reported Results” worksheet within the file “Annex_10_Leakage Sustainability Results 2015.xlsx.”</p> <ul style="list-style-type: none"> <li>99% of respondents who collect their own wood reported that they have more free time since having the Dos por Tres (Cell C34). Respondents reported saving an average of 2.68 hours per week (Cell C37), representing a reduction of 45% in time spent collecting wood (Cell C38). 61% of those respondents reported that they invest the time saved from collecting fuelwood to work in the fields (Cell C41). Other reported uses of extra time include setting up a business (1%); attending school (1%); helping their partner (7%); resting (13%), taking better care of children (11%), “nothing” (2%) and other activities (3%) (Cells C42-C48).</li> <li>96% of respondents reported they cook faster with the Dos por Tres (Cell C52), indicating that women have more time to participate in the activities previously listed.</li> </ul> |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire administered by Supervisors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Measuring/Recording frequency:                                                                         | Survey, on an ongoing basis, a statistically significant number of Estufa Dos por Tres stove owners. (Randomness of the sample will be maintained by surveying every <i>n</i> th beneficiary.) Questionnaires to be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|                                     | administered by Supervisors.                                                                                                                                                                                                                                               |
| Source of data:                     | Survey.                                                                                                                                                                                                                                                                    |
| Calculation method (if applicable): | Data tabulation and report issued on an annual basis.                                                                                                                                                                                                                      |
| QA/QC procedures applied:           | Sufficient sample size. Questionnaires administered by both local community organizers and PM. Leakage and Sustainability survey data collected on handheld devices, stored in Salesforce.com monitoring system and reviewed by office staff in Honduras and U.S. offices. |
| Any comment:                        |                                                                                                                                                                                                                                                                            |

| <b>Data and Parameters used to assess Sustainability.</b>                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Data / Parameter:</b>                                                                               | <b>ID 17 / Number of individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Data unit:                                                                                             | <b>Individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description:                                                                                           | Assess agreement with statements in Passport Sustainability Monitoring Plan Sections regarding wider social and economic impact of the project: #6. Quality of Employment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitored /Calculated /Default:                                                                        | Responses to questionnaire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Value (s) of monitored parameter:                                                                      | % of employees receiving more than minimum wage: 92%<br>% of employees over the age of 16: 100%<br>% of employees that report familiarity with work regulations: 100%<br>% of employees who receive 1 day of rest per week: 100%<br>% of full-time employees who receive paid vacation commensurate with labor law requirements (after 1 year of employment): 100%<br>% of complaints about sleeping/eating conditions when traveling: 0%<br>% of employees reporting they are required to carry >50 kg.: 0%<br>% of employees reporting working conditions better than other people in their communities: 100%<br>% of employees who report they are satisfied with their job: 92% |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Measuring/Recording frequency:                                                                         | Annual                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Source of data:                                                                                        | Surveys of employees, management report on number of employees, and copies of training materials used by employees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Calculation method (if applicable):                                                                    | Annual written report of number of employees and record of employee surveys. No calculation needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| QA/QC procedures applied:                                                                              | Results for Quality of Employment are tabulated in the attached “Annex_11_Employee Survey Export.xlsx”                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Any comment:                                                                                           | Though income figures are confidential, “Annex_11_Employee Survey Export.xlsx.” reflects that Proyecto Mirador employees are compensated with minimum wage or greater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| <b>Data and Parameters used to assess Sustainability.</b> |                                                                                                                                                                                                     |
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| <b>Data / Parameter:</b>                                  | <b>ID 18 / Number of individuals</b>                                                                                                                                                                |
| Data unit:                                                | <b>Individuals</b>                                                                                                                                                                                  |
| Description:                                              | Assess agreement with statements in Passport Sustainability Monitoring Plan Sections regarding wider social and economic impact of the project: #10. Quantitative employment and income generation. |
| Monitored /Calculated                                     | Responses to questionnaire.                                                                                                                                                                         |

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|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /Default:                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Value (s) of monitored parameter:                                                                      | <p><i>Quantitative Employment and Income Generation:</i></p> <p># of direct employees of PM at 1 May 2009 (start date of Gold Standard Crediting Period): 16</p> <p># of direct employees of PM at end of 1<sup>st</sup> year of crediting period: 29</p> <p># of direct employees of PM at end of 2<sup>nd</sup> Verification Period: 38</p> <p># of direct employees of PM at end of 3<sup>rd</sup> Verification Period: 10</p> <p># of direct employees of PM at end of 4<sup>th</sup> Verification Period: 14</p> <p>Total full time employees (both direct and indirect) – 4<sup>th</sup> VP: 118</p> <p># of direct employees of PM at end of 5<sup>th</sup> Verification Period: 21</p> <p>Total full time employees (both direct and indirect) – 5<sup>th</sup> VP: 124</p> <p><b># of direct employees of PM at end of 6<sup>th</sup> Verification Period: 23</b></p> <p><b>Total full time employees (both direct and indirect) – 6<sup>th</sup> VP: 123</b></p> |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measuring/Recording frequency:                                                                         | Annual                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source of data:                                                                                        | Surveys of employees, management report on number of employees, and copies of training materials used by employees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Calculation method (if applicable):                                                                    | Annual written report of number of employees and record of employee surveys. No calculation needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| QA/QC procedures applied:                                                                              | <p>Results for Quantitative Employment are tabulated in the attached “Annex_14_Quantitative Employment 2015.xlsx.”</p> <p>Employee surveys conducted by Human Resources Manager in Honduras and reported and reviewed by U.S. office.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Any comment:                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| <b>Data and Parameters used to assess Sustainability.</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter:</b>                                  | <b>ID 19 / Number of individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Data unit:                                                | <b>Individuals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Description:                                              | Assess agreement with statements in Passport Sustainability Monitoring Plan Sections regarding wider social and economic impact of the project: #12. Technology Transfer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitored /Calculated /Default:                           | Responses to questionnaire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Value (s) of monitored parameter:                         | <p><i>Technology transfer to users:</i></p> <p>Technology is transferred to beneficiaries in the Community Meetings prior to stove construction as well as the Follow-up Visits conducted after stove installation. Each time a follow-up visit is conducted, a Maintenance Survey is recorded.</p> <p>Number of maintenance surveys in 6<sup>th</sup> Verification Period: 60,764</p> <p><i>Technology transfer to employees:</i></p> <p>Technology transfer to employees ranges from stove building practices to the use of state-of-the-art technology using Salesforce.com and hi-res GPS mapping on both iPhones and laptops.</p> <p>% of employees that report familiarity with work regulations: 100%</p> |

|                                                                                                        |                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                        | % of employees who received job training in the past year: 77%                                                                                                                                                                                                           |
| Monitoring equipment (type, accuracy class, Calibration frequency, date of last calibration, validity) | Questionnaire                                                                                                                                                                                                                                                            |
| Measuring/Recording frequency:                                                                         | Annual                                                                                                                                                                                                                                                                   |
| Source of data:                                                                                        | Surveys of employees, management report on number of employees, and copies of training materials used by employees.                                                                                                                                                      |
| Calculation method (if applicable):                                                                    | Annual written report of number of employees and record of employee surveys. No calculation needed.                                                                                                                                                                      |
| QA/QC procedures applied:                                                                              | Maintenance survey data collected on handheld devices, stored in Salesforce.com monitoring system and reviewed by office staff in Honduras and U.S. offices. Employee surveys conducted by Human Resources Manager in Honduras and reported and reviewed by U.S. office. |
| Any comment:                                                                                           |                                                                                                                                                                                                                                                                          |

## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

>>

*Shall include the formulae used and description to calculate the baseline emissions.*

Emissions reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (10)$$

|                 |                                                         |
|-----------------|---------------------------------------------------------|
| ER <sub>y</sub> | Emission reductions in year y in tCO <sub>2</sub> /year |
| PE <sub>y</sub> | Project emissions in year y in tCO <sub>2</sub> /year   |
| BE <sub>y</sub> | Baseline emissions in year y in tCO <sub>2</sub> /year  |
| LE <sub>y</sub> | Leakage emissions in year y in tCO <sub>2</sub> /year   |

### E.2. Project emissions calculation

As described in Section A.5 above, an estimated emissions reduction of 2.23 mtCO<sub>2</sub>e/year was reported in the PDD, which was completed prior to the 2010 Paired Fuelwood Consumption Study. As the 2010 study provides data at a much higher confidence level than any data previously available, for the purposes of the First and Second Verification Periods we modified our Emission Reduction Calculations accordingly and arrived at an adjusted estimate of 2.73 mtCO<sub>2</sub>e/year. Now, for the Third Verification, we have again adjusted the Emission Reductions per stove to 3.31 mtCO<sub>2</sub>e/year to reflect a 77% NRB ratio.

For the calculation of 3.31 mtCO<sub>2</sub>e/year, we refer you to “Annex\_18\_ER Calculations 2015.xls” (“ER-La Justa Improved” Worksheet, Cell C4).

### E.3. Leakage calculation

The emissions reductions calculation assumes an estimated leakage of 0%. This value will be substantiated by qualitative surveys referenced and articulated in the table “ID 12 / Leakage” above. Accordingly, the surveys (which will be conducted in a statistically significant number of households receiving the Estufa Dos por Tres, with randomness of the sample maintained by surveying every *n*th beneficiary) will assess agreement with statements regarding possible leakage effects, including:

- Rebound Effect
- Stimulation of increased use of a high emission fuel
- Promotion of new stove type stimulates substitution of a cooking fuel or stove type with relatively high emissions
- Loss of space heating causes users to use alternative sources of (and thus, a greater amount of) fuel
- Traditional stoves are reused
- Receipt of a Dos por Tres cookstove in replacement of gas or electric primary stoves

#### E.4. Emission reductions calculation / table

Table 2 below is based on an initial emissions reduction of 3.31 mtCO<sub>2</sub>e/year per stoves in their first year of operation, multiplied by the average number of stoves in operation on a monthly basis (adjusted for aging and drop-off) as set forth in “Annex\_01\_Financing Plan 2015.xlsx” for the Sixth Monitoring Period (1 December 2014 – 30 November 2015). Further explanation is provided below the following chart. Row references in the chart pertain to the Monthly Results worksheet within the above file.

| Crediting Month                             | Average Number of Net Stoves in Operation (Row 116) | Estimation of leakage (tCO <sub>2</sub> /year) | Monthly estimation of emission reductions (mtCO <sub>2</sub> e) (Row 145) |
|---------------------------------------------|-----------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|
| Dec-14                                      | 65,329                                              | 0                                              | 17,778                                                                    |
| Jan-15                                      | 65,230                                              | 0                                              | 17,805                                                                    |
| Feb-15                                      | 65,680                                              | 0                                              | 17,951                                                                    |
| Mar-15                                      | 66,606                                              | 0                                              | 18,283                                                                    |
| Apr-15                                      | 66,922                                              | 0                                              | 18,463                                                                    |
| May-15                                      | 67,588                                              | 0                                              | 18,764                                                                    |
| Jun-15                                      | 68,003                                              | 0                                              | 19,030                                                                    |
| Jul-15                                      | 67,784                                              | 0                                              | 19,167                                                                    |
| Aug-15                                      | 67,779                                              | 0                                              | 19,385                                                                    |
| Sep-15                                      | 67,328                                              | 0                                              | 19,463                                                                    |
| Oct-15                                      | 66,822                                              | 0                                              | 19,510                                                                    |
| Nov-15                                      | 66,922                                              | 0                                              | 19,737                                                                    |
| <b>Total (tCO<sub>2</sub>) (Cell CC149)</b> | (Avg. 66,833)                                       | <b>0</b>                                       | 225,335                                                                   |

**Table 2**

Total emission reductions achieved during the Sixth Monitoring Period: **225,335 tCO<sub>2</sub>** (adjusted for rounding error) as displayed in “Annex\_01\_Financing Plan 2015.xlsx,” in the “Monthly Results” spreadsheet, Cell CC149.

We have arrived at the above calculation of total emission reductions based on the total of 18,338 stoves built in the Sixth Verification Period. The value of **225,335 tCO<sub>2</sub>** is calculated on a monthly basis, not an annual average.

The stoves in operation by month are reduced by the drop-off rates described further down in this section. The emissions reductions are further reduced to account for a reduction of 6% in the

efficiency of the stoves that are in their second and subsequent of operation (“degradation rate”), as described below. Correspondingly, the calculation of the emission reductions for stoves in operation for 12 months or less utilizes 3.31 mtCO<sub>2</sub>e/year as set forth in “Annex\_18\_ER Calculations 2015.xlsx.” The assumptions are included in “Annex\_01\_Financing Plan 2015.xlsx” (see “Assumptions” worksheet, Cells C6-C12 and C16-C21).

For formulae used to calculate the emission factor of 3.31 mtCO<sub>2</sub>e/year, please refer to “Annex\_18\_ER Calculations 2015.xlsx.” For the calculation of the average number of net stoves in operation by month, as well as the monthly estimation of emission reductions, we refer you to the “Monthly Results” worksheet in “Annex\_01\_Financing Plan 2015.xlsx.” The numbers for net stoves in operation by month are shown in Row 116; the emission reduction totals by month are stated in Row 145.

### *Aging Calculations*

The following aging factors are reported for the 6th Verification Period (note the numbers remain unchanged since the Second Monitoring Report):

- Year 2 stoves: 6%
- Year 3 stoves: 6%
- Year 4 stoves: 7%
- Year 5 stoves: 10%
- Year 6 stoves: 13%

The aging factor of 6% for Year 2 stoves was calculated in 2011 according to the 2011 Aging Stove KT by Professor Rob Bailis of Yale University and approved by the DOE. In 2012 we repeated the Aging Stove KT and Professor Bailis again conducted the analysis. The 2012 Aging Stove KT was performed on Year 3 stoves in 78 households, with 30 of those households taken from the original group of households studied in the 2010 Paired Fuelwood Consumption Study (the baseline study currently in use) and the rest randomly selected from the same four communities. Professor Bailis performed several comparisons based on both paired and unpaired data, and between 2010, 2011 and 2012 project scenarios relative to baseline. Professor Bailis concluded the following:

“The results, shown in Figure 2, indicate that there were slight increases in all measures of wood consumption between 2010 and 2011, but these either leveled off or fell slightly between 2011 and 2012. In addition, few differences are statistically significant... Notably, none of the comparisons between fuel consumption per meal are significant. Thus we can conclude there is little degradation of stove performance in this sample of households.”

Based on Professor Bailis’ analysis there was no reportable degradation between stoves surveyed in 2011 and 2012 despite the stove age difference of one year. However, to maintain conservativeness, we reported 6% stove degradation rates for the Third and Fourth Verification Periods, for both Year 2 and Year 3 stoves.

The next Aging Stove KT, conducted in 2013, compared Year 4-5 stoves against the 2010 baseline. The study included a total of 65 households, 29 of which were paired against the original 2010 Fuelwood Consumption Study.

When viewing the results as unpaired, the 2013 KT showed an average 43% reduction in fuelwood consumption against the 2010 baseline. When considering only the paired results, the reduction was much lower at 35%. Both the paired and unpaired results show a high level of statistical confidence. However, on further investigation, it is clear that the specific 29 households paired in 2013 happened to show a much lower baseline fuelwood consumption than the average calculated in the 2010 baseline study. The average daily dry wood use per person meal among these 29 households in 2013 was only

0.9 kg, whereas the 2010 baseline average was 1.09 kg. This suggests that the 35% result may be skewed and overly conservative.

The attached file “Annex\_20\_Aging Stove KT Data 2013” shows the following comparisons against the 2010 baseline:

| Study years compared (baseline vs. project) | Fuelwood reduction: Paired results | Fuelwood reduction: Unpaired results | Most conservative figure used | Aging factor (YoY) |
|---------------------------------------------|------------------------------------|--------------------------------------|-------------------------------|--------------------|
| 2010-2010 (Yr 1-2 stoves)                   | 47%                                | Not calculated                       | 47%                           | N/A                |
| 2010-2011 (Yr 2-3 stoves)                   | 48%                                | 41%                                  | 41%                           | 6%                 |
| 2010-2012 (Yr 3-4 stoves)                   | 49%                                | 40%                                  | 40%                           | 1%                 |
| 2010-2013 (Yr 4-5 stoves)                   | 35%                                | 43%                                  | 35%                           | 5%                 |

As shown above, even if we use 35% as the fuelwood reduction figure for Year 4-5 stoves, we get an incremental aging factor of 5%. Additionally, the 6% aging factor reported for Year 3-4 stoves is very conservative against the 1% shown above. Thus, the 7% aging factor for Year 4-5 stoves can be considered extremely conservative under any scenario.

In 2014, due to operational transitions, including the implementation of a call center and specialized enhancements to our supervisory team, we did not perform a KPT for aging stoves. The Gold Standard gave advance approval in September 2014 for us to adopt conservative values of aging factors based on past findings, with the condition to “raise a FAR for future issuance to account for the variation in efficiency (on higher side only, if there is any).”

Accordingly, in 2015, we performed a KPT on stoves aged (5.5 years on average) and found fuelwood savings had declined only 8% against the savings achieved by the new project stoves surveyed in 2010. Thus we are using the following aging factors for the 6<sup>th</sup> Verification Period:

- Year 2 stoves: 6%
- Year 3 stoves: 6%
- Year 4 stoves: 7%
- Year 5 stoves: 10%
- Year 6 stoves: 13%
- Year 7 stoves: Not included in ER claims for 6<sup>th</sup> Verification Period

The following chart shows a comparison between monitored vs. reported degradation factors and confirms all reported results to be conservative.

| Monitored Degradation Factor (year on year) | Reported Degradation Factor | For Stove Ages |
|---------------------------------------------|-----------------------------|----------------|
| 0%                                          | 0%                          | Year 0_1       |
| -3%                                         | -6%                         | Year 1_2       |
| -4%                                         | -6%                         | Year 2_3       |
| 1%                                          | -7%                         | Year 3_4       |
| NA                                          | -10%                        | Year 4_5       |
| -8%                                         | -13%                        | Year 5_6       |
| NA                                          | NA                          | Year 6_7       |

Source: *Annex\_20\_Aging Stove KT Data 2015.xlsx*

The following documents are provided as substantiation:

- Annex\_19\_GS Aging Approval Email.pdf – email from Ivan Hernandez dated 9/11/14 approving the reporting of conservative aging factors for the 5<sup>th</sup> VP absent a 2014 KPT against baseline.
- Annex\_20\_Aging Stove KT Data 2015.xlsx – includes both paired and unpaired comparisons of 4 age groups, with the oldest age group averaging 5.5 years, of stoves against 2010 baseline (Rob Bailis, Yale University)
- Annex\_21\_Aging Stove KT Report 2012.pdf – Comparison of 2010 baseline and 2012 KPT, showing statistically insignificant degradation between 2011-2012 (Rob Bailis, Yale University)
- Annex\_22\_Aging Stove KT Report 2011.docx – Report on (year 2) stove degradation between 2010-2011 (Rob Bailis, Yale University)

Our aging projections have been consistently overstated (overly conservative), and we have used a conservative figure in order to factor in the possibility of fluctuations in KPT results across the project area. We believe the estimates reported for the 6<sup>th</sup> Verification Period to be conservative.

#### *Drop-off Calculations*

PM reports the following monitored drop-off rates for the 6<sup>th</sup> Verification Period:

|         |     |
|---------|-----|
| Year 1: | 10% |
| Year 2: | 4%  |
| Year 3: | 13% |
| Year 4: | 0%  |
| Year 5: | 3%  |
| Year 6: | 8%  |

The attached “Annex\_16\_Dropoff Data 2015.xlsx” shows the data that supports these drop-off rates. All raw data, exported directly from Salesforce.com, is included in worksheets within the file, labeled according to stove year. Pie graphs showing cumulative drop-off figures are also included with each corresponding raw data report; these graphs are direct screen-shots from our Salesforce.com monitoring database.

Drop-off rates for Years 1-5 were calculated as follows:

#### **Year 1 – 10%**

Mirador routinely conducts maintenance surveys on stoves at or around 14 months of age. Based on 11,267 surveys taken during the Sixth Verification Period on stoves that were aged between 12-14 months at the time of the survey, the drop-off rate is 13.0%. Although we call these our “1-year surveys,” all of those surveys were in fact conducted on stoves aged between 12 and 14 months old at the time of the survey. Because it would be inaccurate to base our 1-year drop-off numbers on stoves aged mostly over 13 months, we also performed 202 surveys on stoves aged 10-12 months from a random sampling of villages in our project area. The result was a drop-off rate of 6.4%. Averaging the rate for 10-12 month stoves together with the rate for 12-14 month stoves, we get an overall rate for 1-year stoves (12 months  $\pm$  2 months) of 10%. This is the figure used in our emission reduction calculations.

#### **Year 2 – 4%**

Based on 60 surveys taken during the Sixth Verification Period on stoves that were aged between 22-26 months (=2 years  $\pm$  2 months) at the time of the survey, the cumulative drop-off rate is 8.3%. This number can be understood as cumulative, because every time Supervisors approach a village, they

survey the universe of stoves installed without avoiding households that were marked as abandoned during previous visits. Thus, each village visit shows an accurate snapshot of total drop-off at the time of the visit. It should be noted that the calculations in the Financing Plan use drop-off rates that are distinct by year, rather than cumulative (see “Assumptions” worksheet, Cells C6-C12).

However, when we subtract the Y1 rate of 10% from 8.3% we get a negative number, which cannot be used. In order to determine a more accurate figure for Year 2, we took the average of the monitored drop-off rates for Year 3 (17.4%) and Year 1 (10%) to arrive at a cumulative drop-off rate of 13.5% (~14%). (The DOE determined a rate of 11% during the 2015 Verification, so we can assume our monitored rate is conservative.) We then subtract the Year 1 cumulative rate of 10% from 14% to get a reported drop-off rate of 4% for Year 2.

#### **Year 3 – 13%**

Based on 23 surveys taken during the Sixth Verification Period on stoves aged 34-38 months (=3 years ± 2 months), the cumulative drop-off rate was monitored by Mirador as 17.4%. However, during the 2015 Verification the DOE determined a rate of 27%. In order to ensure our figures are conservative, we have adopted the DOE’s monitored rate of 27%. We then subtract the Year 2 cumulative rate of 14% from 27% to get a reported drop-off rate of 13% for Year 3.

#### **Year 4 – 0%**

Based on 71 surveys taken during the Sixth Verification Period on stoves aged 46-50 months (=4 years ± 2 months), the cumulative drop-off rate is 19.7%. DOE surveys during the 2015 Verification confirmed a drop-off rate of 20% for Year 4 stoves. However, since the DOE measured a higher rate for Year 3 than Year 4, we have adjusted our Year 4 rate upward to 27% in order to avoid a negative drop-off figure for Year 4. We then subtract the Y3 cumulative rate of 27% from 27% to get a reported drop-off rate of 0% for Year 4.

#### **Year 5 – 3%**

Based on 33 surveys taken during the Sixth Verification Period on stoves aged 58-62 months (=5 years ± 2 months), the cumulative drop-off rate is 21.2%. However, during the 2015 Verification the DOE determined a rate of 30%. In order to ensure our figures are conservative, we have adopted the DOE’s monitored rate of 30%. We then subtract the Y4 cumulative rate of 27% from 30% to get a final monitored drop-off rate of 3% for Year 5.

#### **Year 6 – 8% (E)**

Based on 67 surveys taken during the Sixth Verification Period on stoves aged 70-74 months (=6 years ± 2 months), the cumulative drop-off rate is 19.4%. However, during the 2015 Verification the DOE determined a rate of 38%. In order to ensure our figures are conservative, we have adopted the DOE’s monitored rate of 38%. We then subtract the Y5 cumulative rate of 30% from 38% to get a final monitored drop-off rate of 8% for Year 6.

### **E.5. Comparison of actual emission reductions with estimates in the VPA-DD**

A quantitative Fuel Consumption Study, requested by the Gold Standard, was completed in 2010 to confirm actual fuelwood consumption rates of the Estufa Dos por Tres. The results of the 2010 Paired Fuelwood Consumption Study, with a revised NRB figure of 77% (2012), indicate emissions reduction of 3.31 mtCO<sub>2</sub>e /year as reflected in the VPA-DD.

### **E.6. Remarks on difference from estimated value in the VPA-DD**

Emission projections have been adjusted to reflect moderate projected growth in 2015 and 2016.

## LIST OF ANNEXES

### Monitoring Report - Sixth Verification Period

| <b>Annex #</b> | <b>File Name</b>                                     | <b>Description</b>                                                                    |
|----------------|------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1              | Annex_01_Financing Plan 2015.xlsx                    | Carbon credits calculated based on net stoves in operation over the crediting period  |
| 2              | Annex_02_PM Fuel Usage Study Data 2010.xlsx          | 2010 Fuelwood Consumption Study - raw data                                            |
| 3              | Annex_03_PM Fuel Usage Study Summary Report 2010.pdf | 2010 Fuelwood Consumption Study - summary report                                      |
| 4              | Annex_04_PM Fuel Usage Study Data Sheet SPANISH.pdf  | Fuelwood Consumption Study/Aging Stove KT - data collection sheet in Spanish          |
| 5              | Annex_05_PM Fuel Usage Study Data Sheet ENGLISH.pdf  | Fuelwood Consumption Study/Aging Stove KT - data collection sheet in English          |
| 6              | Annex_06_PM Fuel Usage Study Guidelines.pdf          | Fuelwood Consumption Study - Guidelines provided by Prof. Robert Bailis               |
| 7              | Annex_07_Sales Record 120114-113015.xlsx             | Stove installation database for the Sixth Verification Period                         |
| 8              | Annex_08_Stoves Installed by Month 120114-113015.pdf | Monthly summary of stove installation database for the Sixth Verification Period      |
| 9              | Annex_09_Training Brochure.pdf                       | Brochure given to beneficiaries when trained in stove use and maintenance             |
| 10             | Annex_10_Leakage Sustainability Results 2015.xlsx    | Results and summary totals for monitoring surveys conducted 1 Dec 2014-30 Nov 2015    |
| 11             | Annex_11_Employee Survey Export.xlsx                 | Summary of 2015 employee questionnaires (for PM employees)                            |
| 12             | Annex_12_Employee Survey Export Ejecutores.xlsx      | Summary of 2015 employee questionnaires (for Ejecutores)                              |
| 13             | Annex_13_Employee Questionnaires.pdf                 | Sample employee questionnaire (for PM & non-PM employees) in Spanish & English        |
| 14             | Annex_14_Quantitative Employment 2015.xlsx           | Report on number of employees and salaries by employee type (as of October, 2015)     |
| 15             | Annex_15_Berkeley Air NRB Analysis 2011.pdf          | NRB study done by Berkeley Air Monitoring Group using CDM AMS II-g                    |
| 16             | Annex_16_Dropoff Data 2015.xlsx                      | Data to substantiate 2015 monitored dropoff figures.                                  |
| 17             | Annex_17_Transportation Summary 2015.xls             | Report on mileage for all vehicles used during the Sixth Verification Period          |
| 18             | Annex_18_ER Calculations 2015.xls                    | Calculations for emission reductions <i>per stove</i> (3.31 mtCO <sub>2</sub> e/year) |
| 19             | Annex_19_GS Aging Approval Email.pdf                 | Email from Ivan Hernandez approving the reporting of aging without a 2014 KPT         |
| 20             | Annex_20_Aging Stove KT Data 2015.docx               | Aging Stove KTs - raw data. Includes comparative data for all KTs to date.            |
| 21             | Annex_21_Aging Stove KT Report 2012.docx             | 2012 Aging Stove KT - summary report from Rob Bailis.                                 |
| 22             | Annex_22_Aging Stove KT Report 2011.docx             | 2011 Aging Stove KT - summary report from Rob Bailis.                                 |

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#### History of the document

| Version                                                                                                          | Date          | Nature of revision                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01                                                                                                               | 1 Nov., 2015  | Initial submission of 6 <sup>th</sup> Monitoring Report Draft 1 to Earthood                                                                                                                   |
| 02                                                                                                               | 10 Dec., 2015 | Revision submitted to DOE following 2015 site visit for 6 <sup>th</sup> Verification. Updated to include final stove construction & drop-off figures for 6 <sup>th</sup> Verification Period. |
|                                                                                                                  |               |                                                                                                                                                                                               |
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| <b>Decision Class:</b> Regulatory<br><b>Document Type:</b> Guideline, Form<br><b>Business Function:</b> Issuance |               |                                                                                                                                                                                               |