

## **CBRC Technical Progress Report – 4; FINAL REPORT**

Report preparation date: 8 June 2007

**CBRC Project Number: 05-CBRC-E19**

**CBRC Project Title: “Community-based social marketing: the tool to get target audiences to use coal combustion by-products”**

### **1.0 Introduction**

The overarching goal of the three-year project is to demonstrate the utility of Community Based Social Marketing (CBSM) as a method for implementing sustainable use of combustion by-products by targeted end users. To achieve this goal, the project has the following objectives: (1) Use CBSM to create a commitment to use a combustion by-product, flue-gas desulfurization gypsum (FGD gypsum), by targeted end user(s), i.e., agricultural communities in Tennessee; and (2) make the CBSM tool understandable and accessible to members of the Combustion Byproduct Recycling Consortium (CBRC) assuring its transferability to other combustion by-product markets.

### **2.0 Summary of Project Accomplishments and Significant Events**

#### **2.1 Introduction**

*Tasks 1 through 6* describe the work set forth in the proposal (pages 18-19) for the first FY of the three-year project. The tasks descriptions are reproduced *verbatim* from the proposal.

#### **“5.0.b Work tasks**

*Task 1:* Identification of program sites. As detailed in **Section 4.0.d**, we aim to develop and pilot two unique CBSM strategies – one in the Northern Tennessee counties neighboring the Paradise plant, and one in the Southern Tennessee counties neighboring the Widows Creek plant. Selection criteria for the counties to be included in each approach will be based on (1) demographic and agricultural data obtained from the Census of Agriculture, (2) census data on the block groups that comprise the relevant counties, and (3) proximity to each plant. This will be done to ensure that the counties included in the Northern TN strategy are equal to the counties included in the Southern TN strategy on all important variables, including number of family farms, number of row crop farmers, land acreage devoted to crop growth, among others. These data will also help identify viable communities for our focus groups and marketing activities.

*Task 2:* *Development of instrument to identify barriers.* Focus group questions will be developed and pilot tested to generate a coherent set of items designed to identify

the key barriers and motivations perceived by Tennessee farmers regarding agricultural uses of FGD-g.

*Task 3: Identify the “Satisfied Farmer.”* A Tennessee farmer who has both used and is satisfied with the use of FGD-g on his/her land will be recruited to participate in the focus groups as a “seed”, collaborating with our research team. The farmer will be instructed to address the barriers identified by the focus group members and act as a credible and vivid example for other farmers.

*Task 4: Conduct Focus Groups.* Participants for the four focus groups (two in Northern Tennessee and two in Southern Tennessee) will be recruited through personal contacts via Dr. Paul Denton and the agricultural agent program through the University of Tennessee. Each focus group will consist of 5-10 row crop farmers. Each focus group session will be approximately one hour long. Focus group sessions will be recorded and transcribed for analysis and reporting purposes. At the end of each focus group, the discussion facilitator (or local agricultural agent) will attempt to gain a commitment from the attending farmers to try FGD-g on a small portion of their cropland.

*Task 5: Pre-FGD-g application planning.* All farmers who agree to apply FGD-g to 3 acres of cropland will be visited in person by a liaison who will show the farmers how to apply the gypsum, discuss potential applications, etc. In addition, the liaison will address many of the barriers identified by the focus groups. Task 5 involves the development of this program. In addition, logistics of shipment, payment of financial incentives, etc. will be addressed as part of this task.

*Task 6: FGD-g application.* The strategies developed in Task 5 will be implemented with interested farmers. Included in this task are the technical issues of storing, hauling, and spreading the material on the fields.”

**Section 5c** in the proposal (page 20) described the time allocation for task completion during year 1. The time allocation table is reproduced below.

Year 1		
July 2006 – August 2006	Task 1: Identification of Program Sites	
September 2006 – November 2006	Task 2: Development and refinement of instrument to identify barriers Task 3: Identify the “Satisfied Farmer.” Task 4: Conduct Two Focus Groups (Paradise)	Quarterly Report (1)
December 2006		Quarterly Report (2)
January 2007 –	Task 4: Conduct Two Focus Groups (Widows	

February 2007	Creek) Task 5: Pre-FGD-g application planning.	
January 2007 – June 2007	Task 6: Initial FGD-g application.	Quarterly Reports (3, 4)

## 2.2 Quarterly report submission

Three quarterly reports were submitted electronically and on time to the CBRC office.

Report	Reporting period	Submitted
1 <sup>st</sup> quarterly report:	1 July – 30 September 2007	3 October 2007
2 <sup>nd</sup> quarterly report:	1 October – 31 December 2007	16 January 2007
3 <sup>rd</sup> quarterly report:	1 January – 31 March 2007	14 April 2007

The quarterly reports summarized the results of the two focus group meetings with farmers in Montgomery/Robertson and Franklin/Lincoln counties, gave samples of the two FGD-gypsum beneficial use handouts, showed a copy of the PowerPoint presentation (by Dr. Paul Denton) describing chemical action of gypsum in soil and historical agricultural benefits (including some local case studies), and reported on the collection of FGD-gypsum from Paradise, KY and Widdows Creek, AL TVA power plants and land spreading (with GIS plots superimposed on aerial photographs of farmers' fields).

## 2.3 Project work during April 2007

By 30 April 2007, all of the FGD-gypsum, intended to be spread this spring, had been spread on both the northern and southern TN sector farms.

<i>Northern Tennessee</i>		<i>Tons delivered</i>
Montgomery County:	1 farm spread; 2 farms to spread in fall	100
Robertson County:	2 farms spread; 1 farm to spread in fall	50
<i>Southern Tennessee</i>		
Franklin County:	6 farms spread (2 farms with 2 sites @)	95
Lincoln County:	3 farms spread; 1 farm to spread in fall	85
<b>Total tons delivered as of 30 June 2007:</b>		<b>330</b>

Spring spreading of FGD-gypsum completes the last task (*task 6*) scheduled for completion during the 4<sup>th</sup> project quarter. All tasks scheduled to be completed by 30 June

2007 have been completed, except for the four farms that plan to spread FGD-gypsum in fall. In these instances gypsum has been stockpiled at each farm, ready for spreading.

### **3.0 Conclusions**

The project team is pleased with farmer enlistment in the first year of the project. In fact, the project is on target. Farmers in Franklin and Lincoln counties became particularly enthusiastic participants. Obviously, CBRC/US Department of Energy financial support of the project was terminated while the project was still in its infancy. The Director of the UT Center for Industrial Services has made discretionary funds available to see the project through to its scheduled completion in June 2009. The TVA has agreed to continue its support and Temple-Inland is considering a commitment.

### **4.0 Acknowledgements**

The project team acknowledges the invaluable contributions of Ms. E. Cheri Miller, recently retired from TVA, who worked arduously in support of both our pre-proposal and full proposal to the CBRC. The financial contributions from both the TVA and Temple-Inland were essential for our proposed project to meet the funding co-contribution required by the CBRC, and we greatly appreciate their support. The project team sincerely thanks Messers: John Bartee, Ed Burns, Rusty Evans, Paul Hart, and David Qualls---UT County Agricultural Extension Agents all---for their thorough and dedicated assistance in garnering farmer's attention to the project, making focus group meeting arrangements, engaging gypsum haulers, and coordinating the collecting and spreading of FGD-gypsum.