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Re: FOA-152 Technology Transfer Analysis (Data Collection Concepts Overview)

CONTEXT

This DRAFT document - Data Collection Concepts ("DCC") - provides the next level of detail related to work to be performed by XBIG6COM, LLC ("XBIG6") related to Technology Transfer Analysis ("TTA") as initially described in the Statement of Work ("SOW") dated July 25, 2010. This document does not address the White Paper requirements. White Paper requirements will be addressed in a separate document at a future time.

- Project Name: Topic A Keystone Smart Grid Fellowship Program
- Lead Organization: Lehigh University, Bethlehem, Pennsylvania
- Collaborating Organizations:
  - University of Pittsburgh, Pittsburgh, PA
  - PPL Electric Utilities, Inc.
  - PECO Energy
  - Northampton Community College
  - Luzerne County Community College
- Project Duration: 36 months with a plan to be self sustained in 36 months
- Originally, the Lead Project Manager/Principal Investigator: Andrew J. Coleman, Ph.D.; Our understanding is this point of contact will change within the next few weeks.

DRAFT September 8, 2010

CONTEXT (continued)

TECHNOLOGY TRANSFER ANALYSIS (EXTRACTED FROM SOW AS REFERENCE)

Scope of Work
This analysis will draw from the program's (i) Overarching Training Goals and (ii) Project Objectives, both described in the SOW. In particular, the analysis will answer and evaluate the technology transfer ("Tech Transfer") issues identified here:

1. Reporting as to whether the program has successfully identified and recruited Fellowship candidates from the targeted pool (community college professors, K-12 science and math teachers, recent B.S. graduates and engineering candidates).

2. Reporting the degree to which the program provides development and delivery of Lehigh's Transmission and Distribution/Smart Grid core course to train utility workers at PPL with eventual availability of the course for other electric utility companies.

3. Reporting the degree with which various research opportunities have been created.

4. Reporting the degree with which potential technology breakthroughs in Smart Grid have been spawned.

Approach
Our method of reporting will include multiple methods of gathering information including: administration of on-line surveys to selected stakeholder groups, facilitated discussions, and individual interviews. We anticipate collecting the information from the enrolled students (future "Fellows") and the Collaborating Organizations listed above. Over the course of time, the information may additionally be collected from "other electric utility companies" not yet identified.

- Online surveys
- Facilitated discussions
- Individual interviews

Deliverable
Because the program spans 36 months, we anticipate this Tech Transfer analysis to be periodically refreshed and compared to an original "Baseline".

We expect the Baseline surveys, facilitated discussions, and interviews to be concluded within the first several weeks of the Fall semester in 2010. Frequently, anonymity may be required for some information gathered and reported. Typically, information will be presented as a "roll-up" summary of demographic data and high-level themes.

A typical outline is presented here:
- Summary of Findings
- Approach and Methods Used
- Data and Analysis
- Supporting Documents

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STAKEHOLDER GROUPS

Following a conference call discussion on September 7, 2010 with participants Andrew Coleman, Liang Cheng, Andrew Zimmer, and John Honeycutt, two distinct stakeholder groups have been identified for the TTA effort. The two groups can loosely be described as (1) students and (2) future/potential employers of students. For clarity, more tightly described definitions are offered below:

Students — *This group includes students enrolled at Lehigh University for the school years of 2010-2011, 2011-2012, and/or 2012-2013. More specifically, this group includes only those students who are in-pursuit of a Masters of Engineering degree in Smart Grid. Likely, these students will have completed, be enrolled in, or plan to enroll in three specific courses identified during the recent conference call (Power Generation, Communication Networking, and Engineering Systems). At any given point-in-time, this group will likely be comprised of about twenty to thirty individuals enrolled – and may equal up to a total of sixty to ninety individuals over the three-year period.*

Employers — *This group encompasses Energy Sectors employers and Manufacturing Sector employers with an emphasis in one or more energy-related product line. More specifically, this group includes only those employers having operations within a regional geographic scope to have a regionally-vested interest in the success of the Keystone Smart Grid Fellowship Program. Ideally, entities identified to be part of this group will have had an existing, and on-going relationship with Lehigh University. Electric Power, Natural Gas, and Infrastructure Utility organizations are candidates for this group. Manufacturing organizations producing solar cells/technology, battery/storage technology, wind energy technology, biofuel technology, or other renewable/sustainability technologies are candidates for this group. As additional guidelines for selection of organizations to be part of this group, the minimum number of full-time employees will be 50 with a preference/bias toward organizations having 250+ total full time employees. Ideally, this group will be comprised of at least ten (10) organizations, but no more than thirty (30), with twenty (20) being the target number. Each organization identified must have a named point-of-contact – likely an operations executive or human resources professional – who can serve as the point of contact between XBIG6 and the organization for the duration of this effort for the purpose of reviewing information and proving input and insight.*

APPROACH – DETAILED CONCEPTS

The focus of data collected from each of the stakeholder groups will vary (see Table 1).

Table 1: Emphasis Table

Student	Employer	Technology Transfer Issues to be Assessed
Yes	No	1. (TTA-01) Reporting as to whether the program has successfully identified and recruited Fellowship candidates from the targeted pool (community college professors, K-12 science and math teachers, recent B.S. graduates and engineering candidates).
No	Yes	2. (TTA-02) Reporting the degree to which the program provides development and delivery of Lehigh's Transmission and Distribution/Smart Grid core course to train utility workers at PPL with eventual availability of the course for other electric utility companies.
Yes	Yes	3. (TTA-03) Reporting the degree with which various research opportunities have been created.
Yes	Yes	4. (TTA-04) Reporting the degree with which potential technology breakthroughs in Smart Grid have been spawned.

Generalized Exploratory Questions (Framework)

TTA-01 (Student) Baseline Questions

This set of questions will be demographic in nature. Care will be taken to not retain or reveal personal information collected. Questions may be presented in such a way as to provide anonymity of the source respondent. Likely, students will participate to provide a full set of data, although this approach to polling has the risk of falling short of 100% response rate. To the extent possible and practical, it will be beneficial to collect data over the course of time. An initial "baseline" set of questions may be appropriate for in-coming students; and a separate, but related, set of "on-going" questions may be appropriate for Fellows.

Example questions include (*illustrative – not approved*):

- Gender?
- What year were you born? (Broad ranges of years will be used for choices: *This will be used to group responses into broad generational sub-groups*).
- Which of the following best characterizes your undergraduate degree? (Liberal Arts, Education, Mathematics/Science, Engineering).
- Have you ever received an Engineering Degree of any type from an accredited university? (yes/no).
- Have you ever been employed as a professional instructor at any of the following types of institutions (public high school, private high school, or community college)? (yes/no).

- Within two years following completion of this program, do you intend on seeking employment as a professional instructor at any of the following types of institutions (public high school, private high school, or community college)? (yes/no).

- Have you ever been employed within the Energy Sector or by and manufacturing organization which primarily serves the Energy Sector? (yes/no)

- Within two years following completion of this program, do you intend on seeking employment within the Energy Sector, or by a manufacturing organization which primarily services the Energy Sector? (yes/no).

- Following completion of this program, I expect to apply the knowledge in the following ways (ranking)

    - To instruct/teach others about Smart Grid
    - To apply Smart Grid concepts to my existing employer
    - To apply Smart Grid concepts to a new employer
    - To identify and create innovations related to Smart Grid
    - Other _____ (please describe)

TTA-01 (Student) On-Going Questions

tbd