National Electrical Manufacturers Association (NEMA)
Vids for Grids: New Media for the New Energy Workforce

DE-OE0000463

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U.S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

1. Accomplishments with the Goals and Objectives:

All of the specific tasks have been completed per plan, with twelve videos and three podcasts posted on YouTube on the NEMA Vids4Grids channel at www.youtube.com/vids4grids. These deliverables have been very popular and informative. Currently there are 102 subscribers to the Vids4Grids channel and 17,390 video views. We are notified of new subscribers every other week or so, adding 3-5 new subscribers per month. A handful of subscribers ask questions that we pass along to the appropriate company and/or subject matter expert.

NEMA's proposal and updated Project Management Plan noted that "The videos are expected to increase student understanding of electrical engineering concepts, awareness of power systems careers, interest in pursuing power systems careers, and enrollment in classes leading to power systems careers. They will demonstrate a best practice in integrating new media into engineering core curricula." These anticipated results were definitely achieved, although it should be noted that of the myriad electrical engineering programs in the U.S., only a handful currently offer a major in power systems. However, as noted in all of the videos, the need for technical talent within the electrical industry is not limited only to this specific discipline.

These deliverables represent a resource for all the other DOE workforce training projects to utilize in their development activities, permitting easy access to the material. Additionally, the group of human resource managers that participated in the development of the series now serve a resource. We have fielded several requests for follow up that have involved these experts.

2. Discussion of Accomplishments:

The objective of this program was to use a new media – videos posted on YouTube – to augment education about the emerging Smart Grid. The updated management plan contained a detailed and thorough analysis and plan on Risk Management. In retrospect, through detailed planning, extensive discussions before and during filming, substantive coaching of on-screen subject matter experts, and prudent editing, all of the identified risks were avoided. Our experience shows that in fact meaningful, concise videos can be produced at a reasonable expense to significantly augment traditional education at the university level.

Several valuable lessons have been learned during the 18-month period of performance:

- The Smart Grid is a moving target. Our initial student surveys asked a basic question

about their awareness of the Smart Grid. We learned that over 90% of students were not aware of the Smart Grid. Less than one year later, when we posed a similar question, we found essentially the same results from polling students before watching any videos, consistently less than 10% of the students agreed to the statement “I am familiar with the Smart Grid.”

- The uptake of information is rapid, but a single exposure is not sufficient to make one aware of the Smart Grid. We found that when students were polled with the statement “I am familiar with the Smart Grid,” the level of responses in agreement with this statement generally progresses from <10% initially before watching any of the videos, to about 25% after watching one video, to about 35% after watching 2 videos. (These responses differ if the statement is presented before and after watching a video in one session or if the statement is presented in a new setting.)
- These videos targeted a specific subset of students, namely high school seniors and freshmen engineering students. We have learned that the technical content of the videos is not of sufficient detail for upper level engineering students. While some professors have suggested using one or more videos to introduce a specific Smart Grid product, we learned that upper level engineering students cited the lack of technical details about the engineering principles behind several of the products.
- This project generated a large amount of interest in the NEMA community, particularly when member companies are in need of an example of Smart Grid education efforts. Every company involved continues to report that they are very pleased with the results, and have used the videos for their internal newsletters, training, and as part of their promotional material for Smart Grid products. Availability of the videos on the popular YouTube venue continues to be the key to promoting the availability and value of this series.

A few additional NEMA member companies continue to request permission to post the videos on their web sites. This is being done by linking the NEMA Smart Grid YouTube channel directly to these sites.

The Smart Grid graphical interactive map that was first reported in the previous quarterly report, shown in Attachment A, continues to serve the electrical community well. In addition to being posted on the George Mason University School of Engineering web site: <http://ece.gmu.edu/index.php?id=smartgrid> . The diagram will be featured on the soon-to-be-released updated NEMA web site.

A large amount of quantitative information was obtained in the student feedback during the Fall Semester at GMU. Several analyses and reports were made from different professors participating in this effort. These reports are included in their entirety in Attachment B.

3. **Cost Status:**

Actual spending through 29 February 2012 (from the final SF-425 Federal Financial Report):

Object Class Categories	Federal	Non-Federal	Total	29 Feb 2012
a. Personnel	\$34,832	\$21,597	\$56,429	\$47,604
b. Fringe Benefits	\$9,022	\$5,593	\$14,615	\$12,090
c. Travel	\$12,190	\$7,558	\$19,748	\$8,502
d. Equipment	\$0	\$0	\$0	
e. Supplies	\$0	\$0	\$0	
f. Contractual (labor + travel)	\$138,025	\$85,577	\$223,602	\$142,925
g. Construction	\$0	\$0	\$0	
h. Other	\$0	\$0	\$0	
i. Total Direct Charges (sum of 6a-6h)	\$194,069	\$120,325	\$314,394	\$211,120
j. Indirect Charges	\$53,291	\$33,042	\$86,333	\$57,892
k. Totals (sum of 6i-6j)	\$247,360	\$153,367	\$400,727	\$269,012

Discussion: The project was completed well within budget.

Attachment A: Smart Grid Diagram

Note: Each button is hyperlinked to the referenced video. Use Ctrl + Click to follow link.

Attachment B: Related Analyses and Reports

Academic Assessment of "Vids for Grids"

Peter Pollak, PE
Adjunct Professor

Assessment of Effectiveness of Short Videos Designed to Educate Engineering Students about the Smart Grid and Opportunities for Engineering Careers Working in Electrical Equipment Manufacturing

Videos on
Smart Meters
Lithium-ion Battery Storage
Conductors

Assessment of the Vids 4 Grids Videos

Short videos designed to educate engineering
students about the Smart Grid and about career
opportunities in Electrical Equipment Manufacturing

Attachment C: Metrics

George Mason University ENG 107										
Semester	Number of Enrollees						Number of Graduates			
	Reporting Period	# of Seats	Cumulative # of Seats	# of Students (Projected)	Cumulative # of Students	# of Students (Actual)	Reporting Period	# of Grads (Projected)	Cumulative # of Grads	# of Grads (Actual)
Fall '10	FY2010 Q4	0	0	0	0		FY2010 Q4	0	0	
	FY2011 Q1	0	0	0	0	0	FY2011 Q1	0	0	0
Spring '11	FY2011 Q2	0	0	0	0		FY2011 Q2	0	0	
	FY2011 Q3	0	0	0	0	50	FY2011 Q3	0	0	10
Fall '11	FY2011 Q4	200	200	200	200		FY2011 Q4	0	0	
	FY2012 Q1	0	200	0	200	300	FY2012 Q1	200	200	0
	FY2012 Q2	200	400	200	400	0	FY2012 Q2	0	200	0
	FY2012 Q3	0	400	0	400	0	FY2012 Q3	200	400	0
	FY2012 Q4	0	400	0	400	0	FY2012 Q4	0	400	0
	FY2013 Q1	0	400	0	400	0	FY2013 Q1	0	400	0
Northern Virginia Community College EGR 120										
	Number of Enrollees						Number of Graduates			
	Reporting Period	# of Seats	Cumulative # of Seats	# of Students (Projected)	Cumulative # of Students	# of Students (Actual)	Reporting Period	# of Grads (Projected)	Cumulative # of Grads	# of Grads (Actual)
Fall '10	FY2010 Q4	0	0	0	0		FY2010 Q4	0	0	
	FY2011 Q1	0	0	0	0	100	FY2011 Q1	0	0	0
Spring '11	FY2011 Q2	0	0	0	0		FY2011 Q2	0	0	
	FY2011 Q3	0	0	0	0	66	FY2011 Q3	0	0	0
Fall '11	FY2011 Q4	200	200	200	200		FY2011 Q4	0	0	
	FY2012 Q1	0	200	0	200	30	FY2012 Q1	200	200	0
	FY2012 Q2	200	400	200	400	0	FY2012 Q2	0	200	0
	FY2012 Q3	0	400	0	400	0	FY2012 Q3	200	400	0
	FY2012 Q4	0	400	0	400	0	FY2012 Q4	0	400	0
	FY2013 Q1	0	400	0	400	0	FY2013 Q1	0	400	0
12th Grade Teachers										
	Number of Enrollees						Number of Graduates			
	Reporting Period	# of Seats	Cumulative # of Seats	# of Students (Projected)	Cumulative # of Students	# of Students (Actual)	Reporting Period	# of Grads (Projected)	Cumulative # of Grads	# of Grads (Actual)
Fall '10	FY2010 Q4	0	0	0	0		FY2010 Q4	0	0	
	FY2011 Q1	0	0	0	0	0	FY2011 Q1	0	0	0
Spring '11	FY2011 Q2	0	0	0	0		FY2011 Q2	0	0	
	FY2011 Q3	0	0	0	0	0	FY2011 Q3	0	0	0
Fall '11	FY2011 Q4	80	80	80	80		FY2011 Q4	0	0	
	FY2012 Q1	0	80	0	80	100	FY2012 Q1	80	80	0
	FY2012 Q2	0	80	0	80		FY2012 Q2	0	80	
	FY2012 Q3	0	80	0	80		FY2012 Q3	0	80	
	FY2012 Q4	0	80	0	80		FY2012 Q4	0	80	
	FY2013 Q1	0	80	0	80		FY2013 Q1	0	80	