

PUBLIC POLICY PLANNING FOR BROAD DEPLOYMENT OF COLD FUSION FOR ENERGY PRODUCTION IN THE U.S.

GRADUATE INTERNSHIP:

TECHNOLOGY ASSESSMENT OF LENR IMPACTS

Project Plan

Revision 1

May 28, 2012

Prepared by:

John Maxwell, Graduate Research Assistant
Thomas W. Grimshaw, Ph.D., Principal Investigator and Research Fellow
Center for International Energy and Environmental Policy
The University of Texas at Austin
Austin, TX 78712



Contents

1	Introduction	4
2	Scope of Work.....	7
	2.1 Task 1.....	7
	2.2 Task 2.....	7
	2.3 Task 3.....	7
	2.4 Task 4.....	8
	2.5 Task 5.....	8
	2.6 Task 6.....	8
3	Summary of Deliverables.....	11
4	Organization and Management	12
5	Budget	13
	Appendix A. Overview of Low Energy Nuclear Reactions	15



1 Introduction

When major new scientific discoveries or technological developments occur that are generally beneficial to humankind, often they are accompanied by unanticipated adverse consequences. A current example may be cold fusion, which was announced over twenty years ago as a potential source of virtually unlimited and very-low-cost energy, but was for a variety of reasons thoroughly rejected by mainstream science within a year.

Recent favorable developments in the case of cold fusion (also referred to as low energy nuclear reactions, LENR) indicate that the rejected phenomenon may yet fulfill its promise as an important source of energy. In addition to its low cost, cold fusion produces very little waste, has no carbon dioxide emissions, is accompanied by little or no radiation, and may be deployed as small distributed units as well as large centralized power plants.

The Center for International Energy & Environmental Policy (CIEEP) is undertaking an initiative for public policy planning for mitigating potential adverse secondary effects of broad cold fusion deployment. Improvements in cold fusion prospects as an energy source have reached a point that proactive policy planning is now essential. Underpinning the policy planning initiative is reliance on evidence-based policymaking – development of good policy based on good science.

For the summer of 2012, CIEEP will fund a Graduate Research Assistant (GRA) appointment to John P Maxwell to continue the research work of Thomas Grimshaw Ph.D. toward the policy response for deployment of cold fusion products to the general public. This summer internship is a project that will be defined by producing several deliverables with a focus on the recent developments in the Low Energy Nuclear Reactions (LENR) or Cold Fusion (CF) field as well as an evaluation of the LENR field with the policy tool known as Technology Assessment (TA). This internship is an avenue for the introduction to the LENR field, TA methodology and project



management basics to the GRA. The skills that will be developed by the GRA as well as the deliverables completed will provide a mutually beneficial outcome for CIEEP and for the GRA.

LENR or CF has been a contentious issue ever since Martin Flieschmann and Stanley Pons first released their research in 1989. The ability to produce excess heat after a reaction between heavy water and metals exposed to loading has been roundly rejected by the conventional nuclear fusion community. The pomp and circumstance behind releasing results in a news conference type of setting set-up the LENR community for huge failure. Making a tremendous claim that was then publicly rejected made both Flieschmann and Pons into dual pariahs in the scientific community. Attempts have been made ever since 1989 to reproduce the effects of excess heat and to discover the key to cheap and unlimited energy that could be derived from LENR. Research has progressed since 1989 until today when there are two companies that are competing to release the first commercial application of a LENR reactor that can provide heat to produce electricity.

This project will be to develop a mock-up of a Technology Assessment of Low Energy Nuclear Reactions also known as Cold Fusion. The first step in this project will be to research the current field of LENR and also Technology Assessment. After this research is completed, two white papers will be prepared. The first will deal with the research of LENR and where it is prevailing development as of the summer of 2012. The other white paper will cover aspects of Technology Assessment and how the best practices of this tool can be applied to LENR and its potential for disruptive technologic breakthroughs.

After the white papers have been completed, a mock-up of a full Technology Assessment will be completed. This will be completed to have a ready-made project to scale up if the Rossi E-Cats take off. The report will provide a starting point for a full-scale Technology Assessment to be completed if funding becomes available.



1.1 Benefits to Analysis

Will provide the opportunity for CIEEP and the University of Texas (UT) to continue to be at the forefront of the public policy development for LENR impacts. If recent technologic developments come to fruition, there will be large impacts for citizens, governments, corporations and universities throughout the United States. Demonstrating leadership in the subject could lead to CIEEP and UT to shape public policy responses as well as to be in a primary position to receive grant money from work being completed from the outset.



2 Scope of Work

2.1 Task 1. – Project Plan Completion

2.1.1 Work Structure Breakdown

- First draft of Project Plan provided to TWG
- Discussion of initial Project Plan draft
- Second draft of Project Plan to be provided to TWG
- Additional edits made to Second draft
- Completion of Project Plan will set forth the actions contained in the Project Plan
- Use Project Management strategies to bound project to effective procedures

2.2 Task 2. – Update to Changing Landscapes document

2.2.1 Work Structure Breakdown

- Survey the standing of the LENR/CF field as of summer 2012
- Discuss with TWG which developments are important to the field
- Update Changing Landscapes document provided by TWG
- Consider implications of potential broad expansion of LENR/CF technologies
- Produce Task Report to document developments in the field

2.3 Task 3. – Technology Assessment Conceptual Overview

2.3.1 Work Structure Breakdown

- Review influential case studies of TA
- Determine key evaluative criteria of TA with applicability to LENR/CF
- Create second Task Report to characterize most critical aspects of TA concepts



2.4 Task 4. – Distillation of Comprehensive View

2.4.1 Work Structure Breakdown

- Meet with TWG for project status meeting to discuss progress so far
- Determine next steps from the production of the Task Reports
- Evaluate project scope, schedule and budget for remainder of project period

2.5 Task 5. – Preliminary LENR Public Policy Report

2.5.1 Work Structure Breakdown

- Utilize Task Report information to produce report that combines all research developed up to that point
- Report findings to CIEEP leadership team

2.6 Task 6. - TBD

2.7 Research Methods

- Background and historical development of LENR
- Research latest developments in the LENR field
- Development of disruptive science causing revolutions throughout the world
- Analyze case studies of Technology Assessment to provide guide for mock-up of full scale assessment

2.8 Selected Issues Addressed by Project

2.8.1 Recent LENR technologic developments

- Several developments are being pursued at the current time to bring LENR/CF energy forms to the general public as a heat generating unit



2.8.2 Historical disruptive scientific developments

- Technologic breakthroughs lead to changes at rapid rates which few experts can predict. The ability for policymakers to anticipate changes can be the defining factor in developing effective strategies for technologic changes.

2.8.3 Displaced Employment

- Impacts on workers be if the LENR rolls out and upends the current energy distribution paradigm

2.8.4 Environmental Considerations

- Although current research into LENR has no produced “nuclear ash” or other byproducts of traditional nuclear reactions, it may be yet undiscovered waste products to LENR that will need to be disposed of or generate a need for shielding to protect radiation from escaping the reaction vessel
- Palladium or nickel, which are some of the most important inputs in LENR, will need to be produced
 - Regions may be impacted by the increase in mined areas to satisfy an explosion of demand due to the production of E-cats

2.8.5 Regulatory and Taxation Factors

- Regulations
 - Federal and state response to decentralized power generation
 - Disruptions to entire supply chain of centralized electricity delivery
 - With LENR residential units the lack of intermittency makes grid connections almost pointless
 - Net-metering for people with E-cats who could provide excess power back into the grid in the interim before there is wide adoption of the E-cat product
 - Permits for new palladium and nickel mines may need to be approved
- Taxes
 - Disruption of current structure of income taxes from investor-owned utilities and royalties from the production of fossil fuels and electricity
 - Governments will seek new sources of revenue to fill in the gap left by the exit of traditional energy generation
 - Incentives could be provided for low-income people to purchase the E-cat units



2.8.6 Net Energy Assessment

- Assessment may not be needed if the energy produced is as high of quality as some researchers have indicated

2.9 Energy Policy Considerations

- Defense
- Research and Development of other energy sources
- Transportation Systems
- Federal Lands which may contain valuable minerals for LENR



3 Summary of Deliverables

3.1 Two (2) Task Reports

3.1.1 Task Reports

- First task report will cover the recent developments in the LENR field specifically Andrea Rossi, Defkalion and the commercial release of energy catalyzer units for commercial use
- Second white paper will review the tool known as Technology Assessment and will cover the major case studies the tool has been applied to

3.2 One (1) Preliminary LENR Public Policy Report w

3.2.1 Approximate a mock-up of a full-scale current LENR Technology Assessment

- Report Preparation
 - Report for TA will follow established guidelines and format of past TA reports allowing for developments in the field to shape the design of the final mock-up

3.3 Outreach to Policymakers

3.3.1 Development of template of the outreach to stakeholders should be formed to establish an organized response to the government, companies and the general public



4 Organization and Management

4.1 Management

- Dr. Thomas Grimshaw will provide his expertise of the LENR subject matter as well as Technology Assessment to provide focus and clear direction for the project's duration

4.2 Project Organization

- Dr. Grimshaw will supervise GRA John P Maxwell to progress with the research necessary to complete the two white papers as well as the final report TA mock-up.

4.3 Team Communication and Management

- John Maxwell will meet deadlines for the white papers and final mock-up as they are created as the project progresses and ideas are fully formed.
- Dr. Grimshaw can offer feedback as to the optimal management plan to ensure that the deliverables laid out above are met.
- Email will be the primary method of communication of between the project participants
- A Dropbox online storage will provide the central location for the primary documents and research information
- Room 4.120 in the E. P. Schoch building will be the primary meeting room for the duration of the project
- In addition to being the primary meeting room for the project, Room 4.120 will also function as a reference library to store the non-electronic material critical for project completion
- Primary printing requests may be completed by Dr. Grimshaw will his access to resources at the Energy Institute
- Jessica Smith has offered her support in the administrative aspects for the project for actions that include secondary printing, office supplies and other needed materials



5 Budget

5.1 Activities:

5.1.1 Background research on the current state of affairs for the LENR field

- Complete two (2) Task Reports
 - First Task Report will be on current state of LENR field
 - Second Task Report will explore the concepts of Technology Assessment

5.2 Final Report will propose mock-up of Technology Assessment report for LENR

5.3 Schedule:

- Final Report on TA for LENR should be completed by August 17th to allow for editing prior to GRA finishing on Aug 31st.

John Maxwell Hours

6/3/2012	25	
6/10/2012	24	
6/17/2012	22	
6/24/2012	30	101
7/1/2012	20	
7/8/2012	43	
7/15/2012	12	
7/22/2012	20	
7/29/2012	20	115
8/5/2012	20	
8/12/2012	30	
8/19/2012	30	
8/26/2012	34	114
	13	330
Average hr/wk		25.3846