

House Annual Report on Forward Engagement in the Congress
Washington DC 20515

May 10, 2006

House Annual Commission
On Forward Engagement
United States Congress
Washington DC 20515

Dear Commission Chair:

We are pleased to submit to you the attached "House Annual Report on Forward Engagement." Upon appointment of the committee in January 2006, we began a thorough review of the findings of past forward engagement panels. We built upon the work of our predecessors and incorporated a variety of forecasting techniques to critically examine potential future events, trends, and issues through the prism of Public Law 6414. Moreover, we examined how Members of Congress could better orient themselves to deal with future issues and subsequently composed a list of amendments to PL 6414 based on our findings.

This report explores the concept of "forward engagement" and the complexity that the future presents to lawmakers. Additionally, it provides a detailed list of eight Future Contingencies of Interest and associated issues for governance that we believe warrant further examination pursuant to the procedures outlined in Public Law 6414. Should the House of Representatives utilize the recommendations of this Commission, we believe the U.S. government can succeed in taking the next steps toward improving its ability to identify and plan for events and trends that seem far off today, but may become current issues in the future. It is therefore our contention that contained within this report are the tools necessary to provide the House of Representatives with a Forward Agenda for the Congress.

While this panel was given a mandate to focus exclusively on the Legislative Branch, its work is part of a broader effort to impart foreword thinking on the entire U.S. government and on the broader American public. For recommendations regarding parallel changes to the Executive Branch, please refer to the reports submitted by previous panels.

Please forward all comments and questions to the undersigned. We thank you in advance for your feedback.

Sincerely,

Jordan G. Heiber
Staff Director

Enclosure

[SIMULATION: For Classroom Purposes Only]



Annual Report on
Forward Engagement in the Congress

House Annual Commission on Forward Engagement

May 2006

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EXECUTIVE SUMMARY	1
INTRODUCTION: THE CASE FOR FORWARD ENGAGEMENT	3
Current Environment.....	3
Governmental Responsibility	3
The Report	5
EXPLANATION OF METHODOLOGY	6
Selecting Future Contingencies of Interest.....	6
Prioritizing the Need for Action	6
Impact	8
Probability.....	8
Time Horizon	8
Selecting Issues.....	9
FUTURE CONTINGENCIES OF INTEREST	10
China and India Emerge as Global Superpowers.....	11
Scenario	11
Ramifications.....	11
Governance	11
Economics.....	12
Environment.....	12
Technology	12
Security	13
China & India Emerge as Economic Superpowers: ISSUES.....	14
Preparing for this trend	14
Global Warming Causes Drastic Climate Change.....	15
Scenario	15
Ramifications.....	15
Governance	15
Economics.....	16
Environment.....	16
Technology	16
Security	17
Global Warming Causes Drastic Climate Change: ISSUES.....	18
Preparing for this trend	18
Pervasive Computing Redefines Human Activity.....	19
Scenario	19
Ramifications.....	19
Governance	19
Economics.....	20
Environment.....	20
Technology	20
Security	21
Pervasive Computing Redefines Human Activity: ISSUES	22

Preparing for this trend	22
America Ages, Stops Senescing	23
Scenario	23
Ramifications	23
Governance	23
Economics	24
Environment	24
Technology	24
Security	25
America Ages, Stops Senescing: ISSUES	26
Preparing for this trend	26
Nuclear/Biological/Chemical (NBC) Attack	27
Scenario	27
Ramifications	27
Governance	27
Economics	28
Environment	28
Technology	28
Security	28
Nuclear / Biological / Chemical Attack: ISSUES	29
Preventing this event	29
Responding to this event	29
Iran Becomes a Regional Hegemon	31
Scenario	31
Ramifications	31
Governance	31
Economics	32
Environment	33
Technology	33
Security	33
Iran Becomes a Regional Hegemon: ISSUES	35
Preventing this event	35
Responding to this event	35
Nuclear Fusion Becomes a Viable Source of Energy	37
Scenario	37
Ramifications	37
Governance	37
Economics	37
Environment	38
Technology	38
Security	38
Nuclear Fusion Becomes a Viable Source of Energy: ISSUES	40
Promoting this event	40
Responding to this event	40
U.S. Credit Implodes	41
Scenario	41
Ramifications	41
Governance	41
Economics	42
Environment	42

Technology	43
Security	43
U.S. Credit Implodes: ISSUES	44
Preventing this event.....	44
Responding to this event.....	44
LESSONS LEARNED.....	45
Internal Changes to the HACFE	45
Reorganize groups based on STEEP Model	45
Employ the Component-Level Implementation Process (CLIP)	46
Outreach.....	48
Possible Amendments to PL-6414	49
Appointments.....	49
Budget.....	51
Suggestions for Future Consideration	51
Expand the HACFE and the SACFE into a JCC (Joint Congressional Committee)	51
Establish Center for Future Studies (CFS).....	52
APPENDIX: PUBLIC LAW 6414	54
SEC 1. SHORT TITLE	54
SEC 2. ESTABLISHMENT OF COMMISSION	54
SEC 3. PURPOSES OF THE COMMISSION.....	54
SEC 4. COMPOSITION OF THE COMMISSION	55
SEC 5. FUNCTIONS OF THE COMMISSION	55
SEC 6. POWERS OF COMMISSION.....	56
SEC 7. NONAPPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT	57
SEC 8. STAFF OF COMMISSION	57
SEC 9. SECURITY CLEARANCES FOR COMMISSION MEMBERS AND STAFF.....	58
SEC 10. APPROPRIATIONS FOR COMMISSION	58
SEC 11. COMPENSATION AND TRAVEL EXPENSES.....	59
SEC 12. REPORTS OF COMMISSION; TERMINATION	59
SEC 13. PRINTING AND BINDING COSTS	60

Executive Summary

The Joint Congressional Task Force on Responsiveness to Future Challenges convened the Blue Ribbon Panel on Forward Engagement in fall 2005. The Panel's mission was twofold: first, to improve the consistency and "forwardness" of the **Future Contingencies of Interest (FCIs)**; and second, to prepare draft legislation embodying previous panels' recommendations for institutional innovations in the Congress. This legislation, calling for the creation of a House Annual Commission on Forward Engagement (HACFE) and a Senate Annual Commission on Forward Engagement (SACFE) was put into law last year as **PL 6414** (see appendix).

Pursuant to the mandates in PL 6414, our ultimate task in HACFE has been to prepare the way for the first Congressional Forward Engagement Session (CFES), which will take place on the floor of the House of Representatives in December 2006. As prescribed by the law, the agenda for the CFES is to be developed from this **Annual Report on Forward Engagement in the Congress**.

To this end, our staff has spent the last five months researching and analyzing numerous Future Contingencies of Interest and the issues that the onset of these FCIs presents to Congress, both at present and in the future. We have subsequently selected eight FCIs that we believe warrant the immediate attention of the House of Representatives. Additionally, our staff has generated a list of "Lessons Learned" that we

Future Contingencies of Interest (FCIs) are potential future developments that would have a profound effect in all realms of the human experience, such as in science and technology, governance, security, and economics. FCIs fall into two conceptual categories. The first involves projections and extrapolations of current trends, concentrating on a tipping point at which these trends cascade through the human experience and result in transformative change. The second category involves breakthrough change, in which developments that are largely unanticipated result in transformative change pervading the human experience.

recommend be incorporated into future HACFE projects. Of principal importance is the introduction of a nodal analysis group to the HACFE process and utilizing the Component-Level Implementation Process (CLIP). A nodal analysis group would allow HACFE to monitor the interactions *between* FCIs and investigate the ripple effects of *individual* FCIs, while CLIP would serve to examine long-term developments, break them down into nearer term components, and then consider the broader relevance of those components.

Society stands on the precipice of great change unprecedented in both scale and velocity. Technological advancements, shifting global climate patterns, and alterations of the geopolitical environment will continue to present the federal government with an increasing number of challenges that will require further attention and additional resources. Therefore, the objective of the House Annual Commission on Forward Engagement has been to utilize Public Law 6414 as a forum to encourage a more profound and continuous interaction between long-range forecasting and long-range policy-making. Facilitating this development is necessary to assist the government (1) in creating safeguards that will shield our society from unanticipated

strategic threats and (2) harnessing the power and potential of future technological advancements.

The Legislative Branch of government has been branded as an 18th century organization struggling to keep pace with 21st century technology and change. Last year's passage of Public Law 6414 was the Congress' first step in addressing this concern of the American people. Successful implementation of the ideas contained in this report will take that process one necessary step further.

Introduction: The Case for Forward Engagement

CURRENT ENVIRONMENT

We argue that social change is accelerating, evident in the dramatically quickened pace of scientific and technological change in the modern era. The rate of change shows no signs of slowing. In fact, multiple fields of science and technology are undergoing convergence, an occurrence when innovations in separate fields build upon each other to create exponential growth. The government must not be overtaken by this rate of change. Being overtaken means missing opportunities for advancement and opportunities to mitigate the societal dislocations from accelerating technological advancement.

A second argument of this report is that the monumental changes facing our society have complex interactions that mandate a new approach for examining and making policy. Our existing institutions of governance must be reformed to adapt to the accelerating rate and inherent complexity of such change.

GOVERNMENTAL RESPONSIBILITY

The future challenges faced by the United States require innovative planning and preparation. The government of the United States has an ultimate responsibility to its citizens to identify, assess, and plan for the critical changes that it will have to face in the next decade. No other institution in the country has as much potential to contend with the coming challenges as the federal government, but the government today still has few structures that are prepared to deal with fast-moving, far-reaching changes.

With the introduction of PL-6414, the U.S. Congress took an important step towards preparing the U.S. Government for the challenges of the future. The law formed several institutions that were intended to help Congress systematically incorporate foresight into the governing practices of the United States. Early warning will enable Congress to create legislation quickly and authoritatively to address future developments in technology as well as rapid social, political, environmental and economic change. In turn, the broader federal government will be able to take the directions of Congress and evolve a national strategy for addressing each future contingency of interest. Therefore, this report outlines a set of future contingencies that have the potential to impact the well-being of the citizens of the United States and forms a definitive methodology for assessing and evaluating these future contingencies of interest. The report also outlines sets of public policy issues arising from these contingencies that the staff believes legislators will want to consider as they move to policymaking. Finally, the report suggests possible amendments to PL-6414 in order to present more apt mechanisms for the forward engagement process.

The U.S. Congress is the U.S. government institution most suited to prepare the government and the populace for rapidly approaching social, political, and economic change. PL-6414 enhanced Congress' institutional ability to practice effective forward engagement and attempted to solve several of the problems that previously prevented the legislature from adequately addressing Future Contingencies of Interest (FCIs). One of the main problems Congress faced before PL-

6414 was a structural inability to adequately prioritize the many pressing issues facing the United States. Because Congress lacked a mechanism to prioritize future threats, the legislature tended to favor the problems and opportunities brought to its attention by lobbyists or special interests. Members of Congress had little time to look beyond the interests of their constituents. Future Contingencies of Interest, by their very nature, often have no constituency and no lobbyists. Representatives had little incentive to turn from the pressing issues of their constituents to consider amorphous global threats. Constituents do not elect their representatives with the expectation that they will ignore their specific localized needs. However, constituents do expect their representatives to adequately prepare national and local governments to face technological changes and societal and economic upsets. In order to fulfill this expectation, representatives must be aware of FCIs, and the resolution voted into law last year helped bring these to members' attention.

In addition, PL-6414 also helped Congress decide which threats or opportunities are outdated or have already occurred. Before the law, members and their staffs were too busy with already pressing emergencies—a problem magnified by the 24-hour media cycle—to truly ponder other threats properly within the purview of Congress. Many issues only came to the attention of Congress after it was too late to adequately and effectively address them. With the FCIs and issues highlighted in this report, representatives will have a chance to look into the future and confront emerging problems or opportunities that have not yet become reality.

Another crucial problem that prevented Congress from adequately addressing future problems before PL-6414 was time limitation. Each session of Congress is tightly scheduled, and little time exists to raise new issues or threats that the body must consider. With the Congressional Forward Engagement Session (CFES) provided for in PL-6414, Congress will now be able to consider FCIs at length.

Despite the problems noted above, with PL-6414 Congress has become a powerful driver of forward engagement. The United States government must adapt and evolve in order to face the challenges of the future, and Congress is a critical part of the government's infrastructure and perfectly positioned to drive the necessary governmental change. Congress has a unique ability to connect to the public of the United States, and thus possesses a ready-made facility for publicizing and explaining the actions that the government will take to confront Future Contingencies of Interest.

With this in mind, the two parallel commissions proposed by PL-6414—the House Annual Committee on Forward Engagement (HACFE) and the Senate Annual Committee on Forward Engagement (SACFE)—are now able to provide Members with an institutional awareness of forward engagement. With expertise drawn from the public and private sectors, HACFE and SACFE are becoming informed agents of change, enabling Congress to push the government to make necessary adjustments to deal with onrushing future contingencies of interest. The FCIs and issues we highlight in the following report are intended to help Congress prioritize of the policies and reforms it must produce in order to prepare the government for critical transitions over the next decade.

THE REPORT

To address the topics described above, the Panel has divided this paper into five sections: Section 1 has described the mission of the proposed institutions; Section 2 outlines the methodology used for consistently selecting FCIs and defines key terms; Section 3 describes the eight FCIs collated by the Spring 2006 panel, examines the positive and negative implications of the FCIs in the fields of economics, security, science and technology, governance and the environment, and identifies the public policy issues that lawmakers can expect to face from each FCI; Section 4 provides recommendations for amendments to past legislation; an appendix containing Public Law 6414 can be found in Section 5.

Forward Engagement:

“Forward engagement is a process of thinking systematically about the longer-range future, and about ways in which public policy might engage the future sooner, rather than later. Forward Engagement conveys a three-part thought: (1) we are facing an acceleration of major historical events, some of them carrying the potential for major societal and international consequences; (2) society in general and government in particular, need to address such possibilities as far in advance as possible, in terms of policies and resources; and (3) there needs to be a system to help government visualize more consistently what may be approaching from the longer-range future, and to deliberate in a more timely way about possible responses. Forward Engagement seeks to comprehend major future developments in the broad categories of defense, economics, science and technology, and governance and to strive to understand how these developments interact and influence each other.”

--Leon Fuerth

Explanation of Methodology

The Commission has been charged with a significant challenge: planning for Future Contingencies of Interest and managing the issues stemming from them.

The Commission quickly realized that the selection of FCIs for this report proved difficult due to the overwhelming number of potential FCIs. This section of the report addresses how the Commission dealt with that challenge.

SELECTING FUTURE CONTINGENCIES OF INTEREST

The Commission has divided the FCIs into two broad categories—trends and events. We realize that this distinction is somewhat arbitrary due to the complex nature of these FCIs and the number of different ways in which they can be realized. The distinction, however, is helpful in both organizing our understanding of the types of FCIs that we face as a nation and in organizing the ways in which we may respond to or prepare for them.

For the purpose of this study, we have categorized a *trend* FCI as occurring gradually over time: we can modulate its effects and even influence its trajectory, but absolute prevention is not within our power. An *event* FCI is one that occurs over a relatively short period of time: we can anticipate how to respond to its outcome and we have the possibility of either preventing or promoting it.

***Trend* FCIs:** Generate only preparatory governance issues.

***Event* FCIs:** May generate modulatory and/or reactive governance issues.

Prioritizing the Need for Action

In recognition that Congress must always prioritize the issues upon which to focus, the Commission has made an effort to present FCIs based on the need for near-term policy action. The Commission selected the FCIs included in the report because they show the most promise of benefiting from such action, either because they require urgent attention to avoid potential negative impacts or because they are likely to create considerable positive effects. In order to make comparisons across the wide range of potential FCIs under consideration, a formula has been adopted that estimates the need for action. This ***Action Index*** is a qualitative measure that considers three factors: 1) time horizon for onset of the FCI; 2) the probability it will come about; and 3) its potential impact. The formula is based on the Risk-based formula used by the Department of Homeland Security.¹ For our purposes, the Action Index was calculated for each FCI as a multiple of these three factors:

¹ See “DHS Introduces Risk-based Formula for Urban Areas Security Initiative Grants” at <http://www.dhs.gov/dhspublic/display?content=5317>. The DHS formula considers three primary variables: consequence, vulnerability, and threat. They apply their formula to determine allocation of grants based an assessment of the risk, incorporating many factors (e.g., length of border, presence of ports, transportation, and population density).

$$\text{Action Index} = \text{Impact} \times \text{Probability} \times \text{Time Horizon}$$

Impact and Probability were assigned numbers on a scale of one (1) to ten (10). The Time Horizon was assigned a number value on a scale of 1.1 to 1.6 as follows:

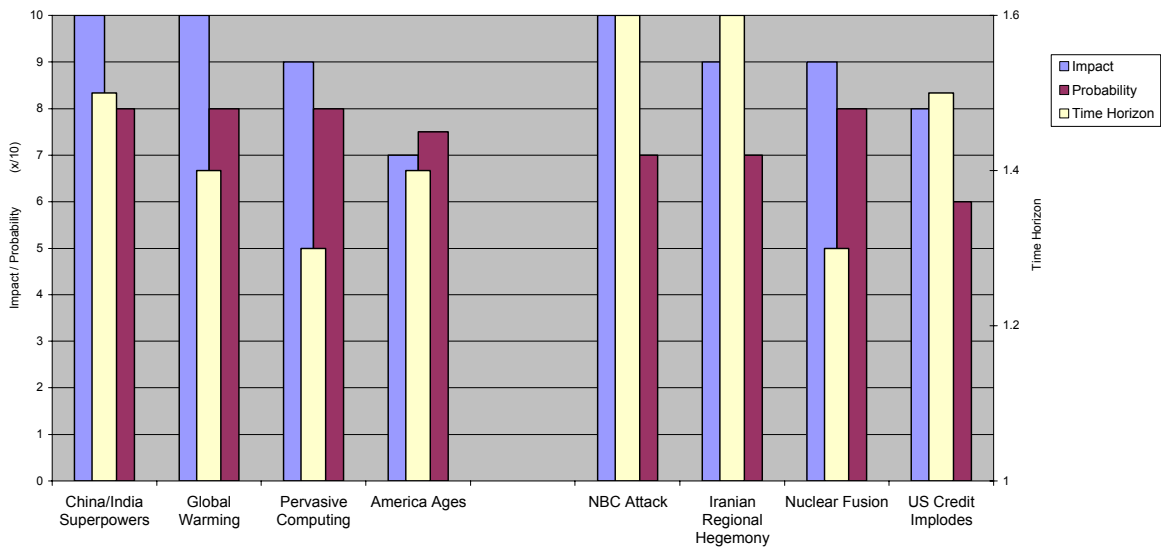
0-5 years:	1.6 points
5-10 years:	1.5 points
10-15 years:	1.4 points
15-20 years:	1.3 points
20-25 years:	1.2 points
25-30 years:	1.1 point

The highest potential Action Index number is 160.

While these scales are by definition subjective, they were applied consistently across all FCIs considered. Assignment of values was made through a consensus process involving the entire staff after receiving expert input from many perspectives. This gives the Commission some degree of confidence in the ultimate ranking that resulted. *However, an important aspect of the future engagement process is a regular reassessment of the need for action to address an FCI.* This reassessment is necessary to account for advances in technology, changes in the global economy, shifts in the geopolitical situation and other factors that may affect an FCI. The Commission wants to stress to the Members that all of the FCIs in the report deserve attention. However, we also wish to provide some guidance on the need for action, given the reality that limited resources require prioritization.

Note that by using this formula, a highly improbable event may still be worth consideration if the impact is extreme. It is not always a matter of selecting the most likely FCIs. Programs such as the Strategic Defense Initiative intended to create a “shield” against ballistic missiles can be justified based on their high degree of impact, even though they have a low probability. We should also stress that some FCIs with a higher degree of impact may have ranked lower because the likely time horizon for their onset is still judged to be distant. Delaying policy action for the present should not, in these cases, necessarily jeopardize the ability for effective policy action to be taken at some future date. As an example, the Global Warming FCI has risen to one of the highest ranked FCIs not only because of a better understanding of the potential consequences it may bring, but also because of signs of an acceleration in the onset of those consequences. While delaying policy action may have been viable previously, the Commission’s analysis revealed that this no longer appears to be the case.

The following chart illustrates the interplay between the three factors driving our consideration of these FCIs. *Trend* FCIs are located on the left, *event* FCIs on the right:



Impact

Some FCIs may be highly unlikely to occur, but should they transpire, they have the potential to change the country (and world) in fundamental ways. Consequently, even very low probability FCIs may require considerations based on their degree of impact. Impact was measured by the Commission based on a number of factors: potential loss of life, damage to economic and social infrastructure, effects on the environment, economic change, and potential for disruption of governance.

Probability

Some FCIs are more likely to occur than others. For example, the probability that a “tipping point” will be reached as the United States deals with decreasing global supplies of oil and concomitant rising prices appears increasingly likely to occur based on current estimates of oil reserves around the world and diminishing returns from technology improvements for further extraction. The probability of an FCI was estimated using a number of criteria, including estimates of the current pace and direction of science and technology, the geopolitical situation, direction of global economy, etc. The probability of an FCI can (and is in fact likely to) change over time (e.g., from potential affects from scientific and technological advances), thus it should be reevaluated on an annual basis to make any necessary adjustments.

Time Horizon

With so many FCIs to ponder, the government has a responsibility to address those which are still far off enough such that modulating policy action could have a significant impact on addressing them, but which are close enough that reasonable analyses can be made to determine, with some degree of confidence, what action to take. Therefore, this Commission looks ahead up to 30 years.

SELECTING ISSUES

The management of trend and event FCIs differs in that a *trend* FCI only generates preparatory public policy issues—i.e., issues on how the country can prepare for the eventuality of the FCI or some form of it so that we are capable of responding to it. An *event* FCI may generate modulatory or responsive public policy issues. Modulatory issues address how the government might either prevent or promote this FCI from occurring depending on whether the expected impact is negative or positive, respectively. Responsive issues deal with how the government might respond if the FCI were realized in the future. It is important to note, however, that these are ‘emergency plans’ that can the government can generate *now* so that if the FCI were to occur, the government will have a response plan. The Commission chose issues and organized them according to whether they were most related to governance, economics, the environment, technology, or security (GEETS).²

Issues: Issues represent the challenges presented to lawmakers as they try to harness or mitigate the impact of an FCI’s onset.

The Commission has chosen a methodology for a broad-based conceptual exploration of the issues raised by the FCIs as part of a concerted effort to inform policy makers. By focusing on issues in the form of questions that need to be resolved, rather than on the solutions themselves, the Commission seeks to explore contrasting governance possibilities that incorporate as many different values, concerns, goals, and priorities as possible.

In this section, therefore, it is important to note that the issues are not trying to prescribe, recommend, or hint at policy options; rather, it is a compiling of questions and concerns that the commission feels Congress should address as they think about forward engagement.

² The Commission’s experience at applying the GEETS model for selected issues led us to conclude that a better model was possible. Consequently, staff members developed the STEEP+N model described in the “Lessons Learned” section, which we recommend be incorporated into the HACFE procedures.

Future Contingencies of Interest

The Commission staff developed an array of Future Contingencies of Interest (FCIs) that we feel warrant particular attention. As described above, the FCIs fell into two categories according to their degree of suddenness, our ability to adjust to them in advance, and our incentive to prevent or promote them.

The most compelling *trend* FCIs that we studied included a geopolitical shift (“China and India Emerge as Global Superpowers”), environmental disruption (“Global Warming Causes Drastic Climate Change”), technological revolution (“Pervasive Computing Redefines Human Activity”), and an extended healthy lifespan (“America Ages, Stops Senescing”). The most compelling *event* FCIs that we studied included terrorist activity on American soil (“Nuclear/Biological/Chemical Attack”), energy innovation (“Nuclear Fusion Becomes a Viable Source of Energy”), another geopolitical shift (“Iran Becomes a Regional Hegemon”), and economic failure (“U.S. Credit Implodes”).

Applying the formula laid out in *Methodology*, we constructed the following Action Index to assist Congress in prioritizing the FCIs, given the constraints of the legislative system. They are arranged in descending order according to category:

TRENDS	Action Index	EVENTS	Action Index
China/India Superpowers	120	NBC Attack	112
Global Warming	112	Iran Regional Hegemony	101
Pervasive Computing	94	Nuclear Fusion	94
America Ages	74	U.S. Credit Implodes	81

It should be noted that even the lowest ranking FCI, “America Ages, Stops Senescing,” merits careful attention: it is an extension of the same trend responsible for lively debate in the 109th Congress over Social Security.

Each FCI triggered a list of *issues* that policymakers may face. As indicated above, these issues take the form of questions rather than policy solutions in an effort to present to Congress the broadest possible perspective.

The first four (4) FCIs are categorized as *trends*.

CHINA AND INDIA EMERGE AS GLOBAL SUPERPOWERS

	Action Index
Time Horizon	120
1.5 (5-10 years)	
Probability	
8	
Impact	
10	

Scenario

It is the year 2030. The economies of China and India have been growing steadily throughout the last decade. As these countries have become wealthier, their citizens have begun to consume more and imitate the patterns of consumption common in OECD countries for decades. China, for example, is expected to consume beef at what was the per-capita level of the US consumed in 2000, around 65 kilograms. Because the additional beef will come from feedlots, it will take over 350 million tons of grain to feed these animals, a quantity equivalent to the entire U.S. grain harvest. The pressure put on world demand by growth rates in China and India is exhausting many other resources. Oil supplies are in jeopardy; water scarcity has reached its threshold.

The world economy has used up available natural resources to the point where many commodity prices have increased dramatically. This increase in the price of the inputs of production has caused recessions, with dramatic increases in unemployment. Conflicts over natural resources have broken out across the world. China and India have built up militarily, thanks to their economic growth, now posing a direct security threat to the territory of the United States.

Globally, the world is witnessing the shift of geopolitical power to Asia, with China and India determining the allocation of resources and the direction of production worldwide. Their advantage relative to the rest of the world is still growing; indeed, thanks to better salaries in China and India, the world is experiencing a reversed brain-drain, from the US and other western economies to Asia.

Ramifications

Governance

Negative

- Because China and India make up over one third of the world population, and as they become economic superpowers, their political significance in the international system may also increase.

- We may witness a **shift in the geopolitical balance of power towards Asia.**
- The unrest caused, domestically, by the slowdowns of the economies may take a toll on democratic governance and civil liberties. **Governments around the world will be tempted to adopt more authoritarian approaches to societal tensions.**
- Xenophobia may transfer from the citizens to government policies, such as building walls and fences to keep the immigrants out.

Economics

Negative

- The global economy may use natural resources so intensely to cause inputs of production to become scarce and their prices to rise to a level which inhibits further growth. Oil prices, for example, have already been going up.
- **The scarcity of energy resources and the increase in prices may force economies to slow down and enter recessions.**
- Economic downturns may cause high levels of unemployment.
- An increase in prices, combined with higher rates of unemployment, may first and foremost affect the poorest of the poor. They may not be able to afford food, clothing and shelter anymore.
- The existing, and already growing, **gap between the rich and the poor may reach unmanageable levels.**

Positive

- The increase in income available to Chinese and Indians may increase world demand. In 2005, per capita annual income in China was \$6,300. In India it was \$3,400. As these countries attain a closer PPP to the \$42,000 of the U.S., huge markets of new consumers may emerge.

Environment

Negative

- **The world's natural resources may not sustain increased growth and consumption in China and India.** If China matched U.S. per-capita oil consumption, it would need 80 million barrels per day. Current global output is around that amount.
- **Energy resources, as known today, may be exhausted.**
- Issues of **water scarcity may arise**, as well as problems of waste management.
- The increased level of production may **trigger negative effects on global warming.**
- An increase in consumption levels in developing countries, because consumption and waste are directly and positively correlated, will cause an **increase in waste, the management of which might become unachievable.**

Technology

Negative

- China and India emerging as economic superpowers may cause a “brain drain” from the U.S. if these countries are able to pay higher salaries to researchers.

Positive

- The rise in consumption and shortage of materials may cause an **increase in U.S. R&D spending**, in a final push to discover new sources of energy and develop new technologies.

Security

Negative

- Scarcity of natural resources and means of production may lead to **economic, political or even military wars over energy and water**, with the terrifying consequences of nuclear proliferation.
- China and India emerging as economic superpowers may translate into increased military power; a security threat to the U.S. China's military spending is going up.
- The increasing gap between the rich and the poor may lead to mass migration.
- It may engender xenophobic reactions in the developed world.
- Stability will be challenged by the dissatisfaction and upheavals that will spread out to societies everywhere, as resource scarcity becomes a reality.
- Maintaining international security will also become problematic, with **migration taking place as people try to move wherever the last bit of resources seems to be available.**

Positive

- Sustainable economic development may yield stability as increase standards of living in the developing world may help decrease international tensions and reduce breeding ground for terrorist organizations.

China & India Emerge as Economic Superpowers: ISSUES

Preparing for this trend

- As India and China's populations grow and as those populations "come online" they will use large amounts of energy, which will have global implications in several categories. How should the U.S. engage China and India on their energy policies?
- Thus far, democratization has been a major foreign policy objective for the United States. China has remained largely reserved about outside influences in its domestic politics. How much should the government push for democratization in China?
- China and India are seen largely as economic competitors, but both nations have large and strong armies as well. How should the government respond to China and India's increased military spending? For example, do we engage China and India in an arms race by preemptively updating our militaries to react to a potential threat from them? What are the consequences of such a race?
- How will the ascendancy of China and India alter the United States' perception of its roll as the leader of global economic affairs? How will this impact the formulation of our international economic strategy?
- As the GDPs of these countries increase and their populations have more money to spend, they will want to buy consumer products. How can the United States utilize that opening? What industries does the U.S. need to promote or protect to take advantage of their growing markets? How do we engage the demand of their domestic consumers?
- Both India and China will have increasing demands in terms of energy, water, food, technology, etc. How do we deal with increased competition for resources?
- Do we engage regional allies to try and balance India and China?
- As the economies of these countries grow (especially their hi-tech markets), how does the United States prevent a brain drain from the U.S. to China and/or India where the lower cost of living might attract bright minds?
- With future trade agreements between the U.S. and China and/or India, what emphasis, if any, should be put on labor rights and environmental standards?

GLOBAL WARMING CAUSES DRASTIC CLIMATE CHANGE

	Action Index
Time Horizon	112
1.4 (10-15 years)	
Probability	
8	
Impact	
10	

Scenario

It is 2020 and the scenarios that NASA scientists and environmental scholars predicted during the early part of the century have come true. In 2005, NASA scientists found that during the past century, global measurements of the temperature at the Earth's surface indicated a warming trend of between 0.3 and 0.6 degrees C.³ This warming trend continued during the decades preceding 2020 and was compounded by increases in world population and humanity's need for carbon-based fuels. Although governments across the globe planned to fund research that would create the necessary technologies to avoid global warming and climate change, their efforts failed. Earth is uncomfortably warm. Coastal areas were inundated when large masses of the polar ice fields melted or fell into the ocean. The rising sea levels and warmer ocean temperatures continue to create major storms that destroy valuable infrastructure and human lives. Agricultural output declined due to the dramatic fall in water tables, and an increase in evaporation world-wide. Global water scarcity is causing intra and inter-state water wars. "Environmental deterioration and economic decline are feeding into each other, pulling everything into a downward spiral of disintegration."⁴

Ramifications

Governance

Negative

- Global warming is causing increased melting of the polar ice fields. The melting of polar ice fields causes a rise in sea levels, which are **predicted to threaten coastal areas and inundate entire cities.**
- The first village community (Shishmaref, Alaska) is being moved this summer due to rising waters: estimated cost is \$180 million dollars.

³ NASA. 'Accurate Thermometers in Space'. http://science.nasa.gov/newhome/headlines/essd06oct97_1.htm

⁴ Newbold, Heather. *Life Stories; World Renowned Scientists Reflect on their Lives and the Future of Life on Earth.* University of California Press, Ltd. London, England. 2000.

- Major shifts in temperature may cause ocean currents to shift. These shifts would **drastically change meteorological patterns that presently exist in Europe, North and South America, and South Africa causing profound effects on agricultural activities.**

Economics

Negative

- Global warming models predict faster temperature increases at higher global latitudes. This will significantly affect the U.S. because **high temperatures throughout the U.S. may reduce U.S. agricultural productivity.**
- Global Warming **may cause water scarcity in all regions of the world.** According to global warming models, the inland areas of the northern hemisphere are expected to receive less moisture, meaning lake and river levels will be lower. Some reports predict the level of the Great Lakes will drop between 2 and 8 feet.
- Increased Earth temperatures will directly and indirectly affect human health.
- Higher temperatures increase the level of ozone at ground level. **Even modest exposure to ozone can cause healthy individuals to experience chest pains, nausea, and pulmonary congestion.**
- Increased temperatures will increase the risk of some infectious diseases, especially those that typically thrive in warm areas. **Diseases that are spread by mosquitoes and other insects could increase in the U.S. as it warms.**

Positive

- The U.S. has the possibility to invent and control an “Earth-Friendly” market that utilizes U.S. comparative advantage in science and technology.

Environment

Negative

- Higher temperatures will cause evaporation to occur much quicker; rain produced by evaporation will be more acidic due to the increased air pollution. Acid rain will contaminate and hinder agricultural/environmental processes and freshwater sources.
- Increased temperatures will cause **more intense forest fires** which will result in a major loss of biodiversity.
- When species interactions are changed or broken, the overall ecosystem function is at risk; **there exists a threshold over which the ecosystem as a whole can no longer function.**
- The slash and burn technique used for clearing rainforest acreage are increasing the release of greenhouse gases and decreasing carbon dioxide sinks.
- When enough forest is felled in diverse areas of the Amazon, the **greenhouse effect will be compounded and extremely difficult to reverse.**

Technology

Negative

- Science will lose important species of plants and animals that could have been used for medicinal purposes.

- Funding for Science and Technology may be transferred to emergency response funds, and thus loss of R&D in S&T will hamper future innovation and jeopardize the U.S.' position as the world's scientific and technological leader.

Positive

- Technology has the opportunity now to create cleaner carbon emissions systems in order to diminish severe global warming effects.

Security

Negative

- Rising sea levels and warming oceans will cause larger storms. **Experts believe that global warming could increase the intensity of hurricanes by over 50 percent.**
- Water insecurity will increase with large storms. The tendency for rainfall to be more concentrated in large storms as temperatures rise will increase river flooding, without increasing the amount of freshwater available.
- Water tables will fall below well depths causing millions to migrate or suffer and die from dehydration and starvation. **Malnutrition and lack of potable water will increase the quantity, contagion, and severity of diseases.**
- Agriculture uses 70% of the world's freshwater, 1/3 of the world's food crops are produced by irrigated agriculture; it is possible that **food scarcity will be a way of life for everyone, rich and poor.**
- Water wars may become common, as 45.3% of freshwater basins on Earth include political boundaries of 2 or more countries. These freshwater basins service 40% of the world's population, and account for 60% of global river flow.

Global Warming Causes Drastic Climate Change: ISSUES

Preparing for this trend

- Keeping in mind that the causes and effects of global warming are confined to political boundaries, how will the U.S. work with allies and International Organizations to address this issue? Will/how will the U.S. policy on international environmental treaties change?
- Global warming will change temperatures in the soil and in the atmosphere, which will in turn lead to either new diseases or mutations of other diseases. What will the government's response to new health epidemics be? To new or mutated infectious diseases? How can the government prepare vaccines or treatments in anticipation of such events?
- Global warming has the potential to both increase the water levels in the oceans and change storm patterns in the United States—both of which have huge implications for coastal and low lying areas. How do you prepare coastal areas faced with flooding, etc?
- Global warming has the potential to change weather patterns around the world—making storms both more severe and more frequent. How do you deal with the increase in magnitude and frequency of natural disasters?
- Global warming may also increase desertification of lands and change soil temperatures, impacting the type of agriculture that can be done on a plot of land. How will the government address these impacts on agricultural industries around the world?
- What will American policy be toward the poor who are impacted by this—those driven off of their land, those who depend on subsistence agriculture who are no longer able to farm on their land?
- If global warming is driven by pollutants, how can the government change our environmental policy to reduce our environmental impact?
- Areas like New Orleans, low lying coastal areas, etc are in higher danger of being impacted by the effects of global warming. What should our attitude be towards zoning policies and continued human development and settlement in areas deemed to be of high risk?
- After the terrorist attacks of September 11th and Hurricane Katrina, insurance companies around the country reevaluated what areas they could afford to insure based on the level of risk. How do you deal with insurance policy in high risk areas?

PERVASIVE COMPUTING REDEFINES HUMAN ACTIVITY

	Action Index
Time Horizon	94
1.3 (15-20 years)	
Probability	
8	
Impact	
9	

Scenario

It is 2025. The data storage capacity of computers has consistently increased while the size of the machines that store this information has decreased. Computers have evolved from mainframes to minicomputers to microcomputers to the current era of nanotechnology. Machines are being integrated into the human body.

At present, the majority of the six billion people on the planet are involved in activities that do not require higher levels of thought. From subsistence farming to toll collecting, humans use their bodies far more than their minds. This has been true since the beginning of our species. For each Da Vinci or Einstein—the “Brains”—there have been millions of people engaged in labor-intensive, simple thought activity—the “Brawns.” In the future, technology might engender a world where every bit of human knowledge can be captured creating an enormous and constantly expanding pool of data that could be stored in machines. Given the potential impact of nanotechnology, that entirety of human knowledge might be stored in a device small enough to be implanted into the human brain, and equipped with a processor that allows for instantaneous downloading of this information. Every person in the world, regardless of age, gender, or nationality, would speak Arabic, understand quantum physics, know what a sunrise in Antarctica looks like, and be able feel simultaneously the naivety of youth and the wisdom of maturity. Simply put, everyone would know everything.

Ramifications

Governance

Negative

- Privacy concerns become a real issue (tracking devices, medical records, government access).
- Social unrest as a result.
- **Global distribution of knowledge may incite developing countries to rise up, perhaps violently, to demand their share of the wealth.**

Positive

- **Pervasive computing allows for better, more efficient data sharing between government agencies.** This reduces costs and allows for more prompt, more informed decision making.
- Citizens can vote from anywhere, pay taxes "as they go" and do other civic duties conveniently and in real time.

Economics

Negative

- Redistribution of world-wide wealth is necessary. As control of knowledge leaves the hands of the developed world, the developing countries will demand their fair share of the pie.
- Pervasive computing will make proprietary knowledge less so. **The idea of competitive advantage might disappear.**

Positive

- **Greater efficiency in all types of systems.** Medical records are an example. If medical records in the United States were all digitally captured, it is estimated that it would save over \$100B in medical costs.
- Future brain implants, allowing human beings to "know everything," **increases the intellectual horsepower of the human race**, allowing new ideas to develop rapidly and be brought to the market faster. The society that controls the knowledge will have an economic edge.

Environment

Negative

- Worldwide distribution of knowledge creates demand for more equal standard of living. This causes further consumption and depletion of natural resources.

Positive

- Pervasive computing should lead to more efficient use of resources. **Greater accuracy means less waste.**
- The more digital the world is, the less reliant it will be on paper. At present, most of the world is on the other side of the digital divide.

Technology

Negative

- Long-term economic consequences sound a bit like science fiction. But what if a data chip, continuously updated, could be installed in the human brain, allowing everyone to know virtually everything. If not everyone had equal access to this chip, **the world would be separated into Brain and Brawn.**

Positive

- A true age of enlightenment begins whereby **the speed with which discoveries are made increases rapidly and the magnitude of discoveries, built on each other,**

increases exponentially. More human beings are involved in substantial and significant mental activities than physical ones for the first time in our history.

Security

Negative

- **Security goes too far.** Tracking devices, monitoring of medical records, phone calls, and other personal information by corporations and government spins out of control, creating a 1984 scenario.

Positive

- **Monitors everywhere can help stop crimes and catch criminals more quickly.** Already we are seeing computer monitors in use in speed traps and car's can be tracked via EZ-Pass.
- Seamless data networks and sensors can track the movements of everyone. A crime victim dies, their implanted chip emits a signal to authorities, who check the woman's home security system, which, through infrared scanning technology, picked up the digital signature emitting from the chip implanted in the intruder. The intruder then is tracked and captured quickly.

Pervasive Computing Redefines Human Activity: ISSUES

Preparing for this trend

- As information becomes equitably and easily available, how can the United States deal with “smarter” criminals? How will the government adapt laws? Adapt crime fighting? Adapt the police force?
- How does the government change military doctrine to utilize and manipulate pervasive computing?
- What are the ethical boundaries, if any, of knowledge acquisition?
- What are the global implications? Can or should we not use knowledge produced elsewhere we consider unethical?
- How do we balance our desire for improving safety and increasing security with the need for privacy?
- What if the scenario does not produce utopian results—how will the government handle access to constant information? What regulations will be necessary?
- How does it change productivity and efficiency in the workplace, and how does government policy adapt to this change?

AMERICA AGES, STOPS SENESCING

	Action Index
Time Horizon	74
1.4 (10-15 years)	
Probability	
7.5	
Impact	
7.0	

Scenario

The year is 2025, and the face of America has changed. The full transition to a retired baby-boomer generation is almost at its end. Yet, medical advances have continued to increase our lifespan and our livelihoods: the *War on Aging* is in full throttle. New discoveries unlock access to the aging process and scientists develop an economic means to combat the physiological effects of aging thus making an unprecedented leap in the evolutionary process. Soon, Americans are not only living longer, but healthier. The average lifespan has jumped to 50% greater than it is today; the average American lives to be over 116 years old and remains healthy well past 100. The result, in conjunction with the baby-boomer generation, is a demographic shift. America becomes a nation of the elderly with two full new generations added at the end of the age spectrum.

Ramifications

Governance

Negative

- The U.S. government itself gets older. **Policy makers become “stuck in their ways.”** Congress and the Supreme Court are most affected, as “new blood” has difficulty infiltrating these branches.
- The government will be forced to **allocate increased funds to support an elderly population at the direct cost of other programs.** Of greatest concern will be Social Security and Medicare/Medicaid.
- **The elderly will gain a disproportionate influence in the country.** They already vote in large numbers, thus the demographic shift will increase their relative power and the attention that they command.

Positive

- Older members of government prove wise in their age. **Older decision-makers translate into more informed and wiser governance.** This may even improve our image abroad, as more calculating policy-makers may be more cautious in their foreign engagements.

Economics

Negative

- As the general population ages, **the relative number of retirees will increase, while that of active workers will decrease.**
- This will undisputedly cause the costs of Social Security programs to go up, while revenues will likely diminish. SSA is mostly financed through the taxes paid by workers. This entails that the financial feasibility of the system is dependent on the ratio of retirees to workers.
- The increasing drains on the system that will follow raise **doubts on the ability of the Social Security Administration (SSA) to meet society's demands for benefits.**
- The elderly will require treatment to combat both aging, and diseases. As people live longer, they will have an increased chance of becoming sick from common diseases. **The increased numbers of seniors will likely require more care based solely on their numbers.⁵ Medicare/Medicaid will thus be significantly strained.**
- If people retire at relatively young ages (75-85 in this scenario), we could witness a shrinking of the labor force.
- **An older workforce may not be a productive workforce.**
- Poorer families may face an increased burden of caring for the elderly.

Positive

- **New markets will develop for the new elderly.** Active centenarians may not only require new medical products, but will be able to more actively participate in society. Vacation packages, continuing education, gadgetry and various other consumer markets will gain a new clientele.
- Medical advances may create a healthier population that requires less health care.
- If adults are able to live longer and healthier, they will also be able to stay in the workforce longer. This could provide an **economic stimulus by increasing the potential labor force.**

Environment

Negative

- **Growing population produces more waste and uses more resources.** This will be especially prevalent in the increased number of drivers.

Positive

- Increased funding for science and technology could **spawn discoveries that aid the environment.**

Technology

Negative

⁵ O'Shaughnessy, Carol, Bob Lyke and James Storey. "Long Term Care: What Direction for Public Policy?" [CRS Report](#) 18 December 2002.

- The medical procedure to combat aging may only be available to a select few that can afford it at first.
- This **could exacerbate economic disparities** within the nation and also breed anti-American sentiment abroad if our country is the first to gain access to said technology.

Positive

- In conjunction with the negative factor, the government may be motivated to increase funding for research and development to make the process more widely available. As such, the sciences as a whole should benefit.

Security

Negative

- **Immigration may increase to gain access to anti-aging processes.**
- The **gap between rich and poor nations may become exacerbated** as a result of the technology thus spawning new anti-America sentiments. The view that Americans are leading even more decadent lives may spur this phenomenon.
- **The youth may become increasingly disenchanted with a country over-focused on the elderly.** In the extreme, this could lead to revolts.

Positive

- **Increased immigration may fund a depleted Social Security system** and increase the productivity of our labor force.

America Ages, Stops Senescing: ISSUES

Preparing for this trend

- How will the government meet the needs of a growing elderly population financially, medically and socially as society as a whole becomes older?
- How should the government deal with implications for government structures (e.g. lifetime appointments to government offices, term limits for Congressional and other elected seats, changes in district representation as the age distribution changes)?
- Should the government fund research into anti-aging methods, applications? What are the ethical implications of doing so? Alternately, what are the potential drawbacks for not leading this research, especially with regard to competition from other countries?
- As this technology has the potential to change demographics across the nation and around the world, should the government play a role in regulating who has access to this type of technology to ensure equity or mitigate manipulation?
- How will the government adapt Social Security to address the new demographics and projections?
- How will/should the government balance the needs of the youth with the needs of the elderly as the proportion of youth to elderly change as people live longer—especially since the needs of the young and the old are likely to be divergent.
- Should/ how will the government act in order to dampen environment stress based on an expanding population—e.g. house shortage and the implications of urban sprawl on the environment as the population increases.
- Should/ how can the government adjust immigration policy, given that young immigrants will be entering the workforce?

The last four (4) FCIs are categorized as *events*.

NUCLEAR/BIOLOGICAL/CHEMICAL (NBC) ATTACK

	Action Index
Time Horizon	112
1.6 (0-5 years)	
Probability	
7	
Impact	
10	

Scenario

The year is 2009. A series of biological weapons attacks has severely disrupted daily life in America. We live in fear of another attack, biological, chemical, or even nuclear. The strength of these blows to the American psyche can be seen in the staggering financial institutions, interrupted government activity and services, reckless exploitation of resources, suspended educational activity, and overtaxed health systems unable to prevent the loss of life. We are reminded of the revelations of the 9/11 Commission and government tests that demonstrated the ease with which terrorist organizations can penetrate the United States' national security system. These biological attacks are testing the current U.S. national security response system and highlighting the weaknesses that remain, despite the many post-September 11 reforms. We are once again inadequately prepared to manage the chaos, and the result is tragic.

Ramifications

Governance

Negative

- Government surveillance over citizens and residents that it deems suspicious will increase greatly.
- **Civil liberties will be increasingly challenged.** National security will often be prioritized over civil liberties. Legislation providing for increased search and seizure powers for the federal government will almost certainly be passed.
- There is a strong possibility that **martial law will be imposed in the immediate aftermath of the series of attacks.**
- The functioning of federal, state, and/or local government bodies and agencies may be impaired.

Economics

Negative

- Economic sanctions may be imposed on states suspected of harboring or supporting terrorists, specifically the terrorist organization (if known) that implemented the multiple attacks.
- **The U.S. stock markets will drop and may close.** Stock markets in other countries will probably follow a similar pattern.

Positive

- Subsidies for the biomedical sector will increase and be pushed more easily through Congress.

Environment

Negative

- **The water supplies of various states and counties could be contaminated.**
- A component of the U.S. food supply could be contaminated.
- U.S. rivers and lakes could be contaminated.
- Demand for “natural” antidotes derived from plants will increase.

Technology

Negative

- Demand for certain antidotes will increase significantly. The post-9/11 highly elevated demand for Cipro, a medication that can reverse the effects of anthrax, demonstrates this phenomenon.

Positive

- Research into the detection of chemical and biological agents will receive a significantly increased amount of government funding.

Security

Negative

- Domestic security measures, such as the presence of soldiers and increased security in transportation nodes such as airports and subway stations, will increase.
- **U.S. borders will be tightened.** Security around nuclear power plants will increase significantly.
- U.S. domestic (i.e., FBI) and international (i.e., CIA) agencies will respectively increase domestic and international surveillance of individuals, organizations, and nations that they deem suspicious.

Nuclear / Biological / Chemical Attack: ISSUES

Preventing this event

- Biological attacks will require terrorist organizations to get a hold of biological agents. Therefore, what can the United States do in order to safeguard bio-labs in both the United States and abroad?
- The same is true for chemical agents—how can the United States ensure that chemical agents do not fall into the hands of terrorists?
- Terrorist attacks of this nature will require large numbers of people to plan and coordinate. What improvements can the government make in intelligence capabilities in order to better track any plans before they are realized?
- The likelihood is that WMDs will be smuggled into the United States by a terrorist organization. In order to prevent an attack, how can the government better secure our borders and ports? How can the government balance the need for security with the needs of commerce?
- Emergency situations create chaos. Clear authority is necessary to ensure that procedures run smoothly. How can the government establish a clear chain of command so that emergency response runs as smoothly as possible?

Responding to this event

- Both the experiences after September 11th and after Hurricane Katrina have taught the United States that emergency preparedness plans are vitally important to run the country. These plans have to be put in place prior to an event. Therefore, how do we ensure that government agencies will run efficiently under their respective established COOP (Continuity of Operations) programs in the event of multiple, devastating, WMD attacks?
- In emergency situations, local law enforcement agencies can become overwhelmed. The military, on the other hand, is specifically trained to deal with situations like WMD attacks. However, the military has traditionally not played a role in domestic operations (although that was changed after September 11th.) The government should come up with emergency plans that deal with the issue of the role of the military in domestic operations. For example, what role will the military play domestically? How do we deal with civil-military relations? Will civil-military relations be changed permanently or only in the case of a specific emergency?
- Attacks by WMDs will also take a toll on the environment and the government will need a plan to respond to contamination of resources and environment. What will this plan look like?
- With vital systems down and mass chaos, how will the government disseminate information to a panicking, dispersed public?
- In the case of a biological attack, how will the government meet demand for antidotes, vaccines? How will the government ensure that the vaccines and antidotes are distributed equally?
- Hurricane Katrina demonstrated how difficult it is to care for the needs of displaced persons. Considering the magnitude of the WMD attacks, how will the government deal with internally displaced persons? IDP policy?

- If areas are contaminated, will the government quarantine parts of the nation based on fall-out areas? If so, how will the government provide for a quarantined population?
- The WMD attack will undoubtedly impact the economy. How will the government deal with economic fall out immediately after the attack?
- An attack of that magnitude will require a response by the United States. How should the government deal retaliatory impulses?
- In the longer term, the public's faith in the government will be shaken and they will fear for their physical safety. What steps and programs can the government implement in order to re-instill people's faith in government's ability to protect the public?

IRAN BECOMES A REGIONAL HEGEMON

	Action Index
Time Horizon	101
1.6 (0-5 years)	
Probability	
7	
Impact	
9	

Scenario

It is 2014 and the fears and worries of the Western world have come true. After continuing to rebuke international efforts to contain the growth of its power, Iran has become a regional hegemon, upsetting the delicate balance of power in the Middle East. Though initially unified in it's the reprove of Iranian efforts, the U.N. Security Council, impaired by a deepening rift between the United States, China and Russia, was unable to present a unified front towards the latter part of the decade. Exacerbating this was a decline in the U.S. capacity to respond to overseas crises. Initially countered by U.S. missile strikes and sanctions in 2006 and 2007, the collapse of Iraq into a brutal civil war that spread beyond its borders forced the U.S. to invest an unforeseen amount of resources in containing the violence and protecting its vital interests in the Persian Gulf. Seeking Iranian assistance in the stabilization of the Persian Gulf area, the U.S. has little choice but to accept Iranian technological developments. Fueled by increasing petroleum production and global oil costs, Iran is able to exploit its natural resources for economic gain. This is augmented by an alliance between Tehran and the Shi'a population in the South of Iraq. With the advent of Iranian intermediate-range nuclear capabilities, Iran stands at the center of a Middle East that is quickly unraveling into political rivalry. The future appears anything but certain.

Ramifications

Governance

Negative

- The growth of Iran as a regional hegemon would precipitate **increased alienation from the larger international community**. This may **fuel additional resentment on the part of the Iranians and encourage further antagonism**. It is a Catch-22: the international community does nothing and Iran continues on its present course; **the international community engages Iran through the possibility of sanctions, solidifying anti-Western resolve**.

- **Radicalization of Iranian Islamic cultural structures through gains in domestic and international power leads to increased militancy.**
- Iraqi Shi'a groups align with Iranian Shi'a power structures, unifying governing structures along the Persian Gulf. As figure 2 indicates, the red areas illustrate regions with a significant Shi'a population. **United by common religious backgrounds, Tehran is likely to provide economic & military aid to Shi'a groups in these areas; disrupting patterns of governance in the region.**
- Internally, **the radicalization of domestic elements along nationalistic lines will occur as Iranians perceive an increase in national power to allow for a progressively more assertive stance by Tehran.** Externally, the rise in Iranian power is like to antagonize Europe, Russia, Pakistan and India. **Governance is affected in several international contexts.** Questions begin to arise as to how the United Nations, World Bank, IMF, IAEA and Arab League will deal with this.

Positive

- The combined positive effects of science & technology and governance could compel yield for **increased democratization in the area.** As the Shi'a population becomes wealthier, metrics such as increased public savings and a privatized economy will yield greater political freedoms.
- **Increased trade to the larger region could create greater regional stability.**
- **A wealthy, stable and powerful Iran could be a positive influence on an Iraq** still torn apart by internal factions, economy deprivation and degenerative security structures.

Economics

Negative

- Development of Iranian economic and commercial power (especially vis-à-vis the Black Sea & Persian Gulf regions) leads to a **shift in the economic balance of power.**
- Increase in Iranian visibility through **exploitation of regional oil & gas reserves causes increases in foreign investment.**
- Alienation of regional oil-dependent states, such as the UAE, has a cross-over effect in radicalizing domestic elements in surrounding states.
- **The growth of Iranian power is likely to impact international oil markets.** Alongside the rise in oil prices and diminishing oil reserves, Iran will continue to exploit existing oil & natural gas resources in the Persian Gulf to fund its technological, military and economic initiatives. Given its proximity to Russia and the Caspian Sea region, **Iran will likely leverage its energy resources and ocean access in the south for preferential trade & security agreements** with Russia and the former Soviet Republics in the north. The United States stands to lose economic investments and political influence should the Middle East degenerate into a new power rivalry.
- Access to the Persian Gulf, along with refining and oil platforms, allows Iran the possibility of monopolizing petroleum trade in the area through threat of force.

Positive

- A stronger Iranian economy could have important positive externalities for the greater region. Increased trade between its northern neighbors would **generate greater trade liberalization and income into the former Soviet Republics.**

Environment

Negative

- Increase in oil refining & exploitation in the Persian Gulf region to pay for military & economic development leads to **environmental degradation**, with the an **increased possibility of oil spills**.
- Race to acquire nuclear technologies leads to **lack of regulatory controls on nuclear fuel production**. Heightened possibility of nuclear pollution due to waste as well as the acute **risk of meltdown due to inadequate safeguarding mechanisms**.
- Associated expansion of energy grid, particularly with petroleum and natural gas pipelines to the Northeast and Northwest, leads to **environmental exploitation for economic gains**.

Technology

Negative

- Development of high-grade nuclear weapons has externalities in other technology areas.
- Combined with technology sharing with its energy allies (such as Russia, and the former Soviet Republics), **Iran will be able to increasingly leverage technological and scientific developments for economic and military gain**.
- Sharing of technologies & expertise with Russia and other Eastern European states allows for advancements in IT, missile and communications technology.

Positive

- The development of nuclear technologies will allow Iran to **explore symbiotic technology transfers in other sectors**. This will impact medicine, health care, education and information systems. Generally, this could have the effect of liberalizing the population, interfacing between Iranian and other cultures, and increasing universal literacy in Iran.

Security

Negative

- Iranian refusal to cooperate with IAEA and international institutions leads to **increased geopolitical tension** – breaking point will be reached by failing to acquiesce to diplomatic demands.
- Increased geo-political fracturing along ethno-cultural lines in the Middle East, primarily between Shi'a and Sunni, leads to new power foci. This generates **increasing friction between Iran, Israel and the Arab world**. A growth in Iranian power is likely to antagonize an array of Middle Eastern states such as Israel, Lebanon, Afghanistan, Egypt, Oman, Turkey and the UAE. The rise of Iran as a major regional power broker will impact these states on a multiple of security grounds.
- If suspecting major shifts in the Middle Eastern balance of power, it is **likely that Israel will act preemptively**. This will certainly be the case should Tel Aviv perceive Iranian nuclear weapons development to be an inevitability. This represents a wild card and could lead to either Arab coalescence around Tehran or the effective break-up of the Middle East into three geo-political factions. These factions would be the Israeli-Western

camp, the Arab camp and the Persian camp. Given a triggering event, it is likely that **increased tension between these factions would lead to catastrophic conflict that could draw in most of the world's states.**

- Proceeds from increased energy production, especially to Russia, East Asia, and the Caspian Sea region, would allow for the production and acquisition of new weapon systems. Especially given closer bonds between Russia, the former Soviet Republics, and China, **Iran could benefit from an arms-for-fuel arrangement.**
- Increased migration between Iran and its Northern neighbors would facilitate a brain-gain and allow for the greater fertilization of foreign technologies & expertise for Iranian growth.
- **Funding for external insurgency & militant groups, such as Hezbollah, increases.**

Positive

- Growth of Iranian power could potentially **balance against destabilization in the Iraqi and Pakistani areas.** In this role, Tehran could reduce the potential exploitation of the power vacuum by jihad fundamentalists and terrorist groups. State-sponsored terrorism will likely prevail but can at least be understood with a greater degree of intelligence and anticipation than the shadowy Al-Qaeda groups.
- **Iranian power could be a stabilizing element** in the immediate region area impacting governance within southern Iraq as Tehran is able to influence political control in Shi'a majority areas.

Iran Becomes a Regional Hegemon: ISSUES

Preventing this event

- The United States has been trying to contain Iran by largely isolating Iran from the larger international community—diplomatically, politically, and economically. However, as India and China’s power grows, how should the government deal with China and India relationship with Iran, especially if they move to strengthen their relationship based on energy concerns?
- The United States has several strong allies in the Middle East. Should the government realign our interests in the Middle East to balance Iran’s growing influence in the region? For example, should the government provide Saudi Arabia with nuclear technology and/or military equipment so that Saudi Arabia can effectively balance Iran’s growing power in order to stop its accession to the status of a regional hegemon?
- In addition, there are at least a few Iranian opposition groups who opposed the current regime and are more inclined to support the United States. Many of these groups have a long history of cooperating with the United States, stemming back to the time of the Shah. Should the United States support opposition forces both within and outside of Iran as a means to destabilize the current regime in hopes that it will reduce Iran’s growing influence?
- The IAEA has established that Iran was able to procure much of its nuclear technology through illegal proliferation networks. Iran has recently commented that it would be willing to share that type of technology with other nations. Since much of Iran’s growing power is connected to nuclear status, how should the government deal with Iran’s potential nuclear proliferation activities?
- The Bush Doctrine clearly established the right of the United States to take pre-emptive action in order to maintain our security. Iran as a regional hegemon has immense potential security and geopolitical ramifications for the United States. Therefore, should military preventive measures against Iran be taken?

Responding to this event

- If Iran reaches the status of regional hegemon and if its posture toward Israel does not change, how will this impact United States policy vis-à-vis Israel?
- Iran and the Arab world, in which the United States has many strategically important allies, have a history of hostility and animosity. Iran as a nuclear armed regional hegemon has many of them concerned for their own security. How should the United States allay the fears of our allies, especially in order to retain them as allies?
- Alternately, for decades, Iran was one of the United States’ closet allies and that shaped the American position in the entire Middle East. As the Middle East is a vital region for American security, how will having an Iranian hegemony change United States relations with the Arab world?
- Prior to the 1998 nuclear tests, the United States was incredibly wary of India’s nuclear program. However, recently the President has said that India is a nuclear power and that the United States must accept that and has built a growing relationship with India on that premise. Should/will the United States policy on Iran’s nuclear stance change once Iran’s

hegemony is established? For example, will the U.S. consider civil nuclear agreements with Iran modeled after the India deal?

- With Iran's declaration of its nuclear capability, Iran will also attempt to secure new military equipment to ensure Iran's military prowess. How will the U.S. react to new Iranian military equipment—especially those that can be equipped with nuclear warheads?
- Thus far, democratization has been a major foreign policy plank for the United States. The United States has also pushed for regime change in Iran. How will Iran's status as a regional hegemon influence our attitude towards regime change (i.e. democratization) in Iran, especially if regime change has the potential of destabilizing a nuclear armed country?
- How should the United States respond if a triangular strategic relationship develops among Iran, China, and Russia?

NUCLEAR FUSION BECOMES A VIABLE SOURCE OF ENERGY

	Action Index
Time Horizon	94
1.3 (15-20 Years)	
Probability	
8	
Impact	
9	

Scenario

It is the year 2030. With the rising costs of oil, and the effects that widespread use of fossil fuels have had on the environment, governments of wealthy nations have invested in research into alternative sources of fuel. This investment has culminated in the discovery of a method for producing nuclear fusion at room temperature. The reaction requires only salt water for fuel, producing massive amounts of energy and very little waste. Scientists, politicians, and American citizens as a whole are relieved to find that the environmental effects of fusion are minimal and the reaction itself is as safe as expected. Unfortunately, poorer nations cannot currently afford the start-up costs of this process, and international organizations are voicing the concerns of many over the increased wealth gap. The combination of developing world unrest and oil-producing countries without revenue is translating into geopolitical rumblings. While this is occurring, the industrialized nations are eagerly riding the wave of the new technology, restructuring energy infrastructure and beginning to produce large amounts of cheap, available, and clean energy.

Ramifications

Governance

Negative

- Developing countries miss out on the energy boom causing **increased instability due to anger directed at developed world.**
- **The governments of oil producers can no longer provide for their people.**

Positive

- **Industrialized nations benefit greatly and are buoyed by rapid economic growth.** Popular satisfaction is high.
- Industrialized nations are free to work on reducing inequalities with the third world.

Economics

Negative

- The market is hurt by a **severe drop in oil prices**.
- Countries that rely on fossil fuels to empower their economies fall into deep depressions.
- **The cost of building a nuclear reactor prevents poorer countries from using the new technology.** These countries then fall further behind industrialized nations.
- Needed changes in infrastructure bring **high start-up costs, even for wealthy countries**.

Positive

- **Cheap and abundant energy reduces costs for consumers.**
- Goods and services become cheaper as companies save money on overhead.
- The market becomes less affected by oil prices.
- Cheap energy results in **strong economic growth**.
- Productions increases and expenses decrease.

Environment

Negative

- Prevalent amounts of available energy lead to **increased urban sprawl, harming as yet untouched parts of nature**.
- Widespread use of nuclear technology could endanger the environment, although nuclear fusion is thought to be safe.
- Poorer countries continue to pollute with fossil fuels.
- Automobiles continue to pollute.

Positive

- With the transition away from fossil fuels, **carbon dioxide and other pollutants are greatly reduced from the atmosphere**.
- Since fusion is relatively clean, little pollution is added to the environment.
- There is **little likelihood of meltdown or other catastrophe at power plants**.
- **Waste is minor, manageable, and short-lived**.

Technology

Negative

- **Attempts at efficiency are abandoned due to the ready supply of energy.**
- Fusion is viewed as a panacea.

Positive

- Energy infrastructures are widely expanded.
- Energy is cheap and readily available.
- Access to cheap energy fuels **increased scientific and technological research**.

Security

Negative

- Those countries reliant on the oil market suffer as their economies crash. This causes **increased instability especially in areas such as the Middle East**.

- The governments in these countries can no longer provide for their people and thus lose the remnants of their legitimacy.
- **Developing nations, missing out on the energy boom, become further dissatisfied with the opulence of industrialized states.**
- **Increased access to energy allows rising nations, such as China, to quickly increase their military capabilities.**

Positive

- Most countries no longer disagree over access to energy.
- **Many territorial disputes are resolved.**
- Exploitation of oil producing states comes to an end.
- Energy sharing increases.
- Increased assistance is given to developing nations.

Nuclear Fusion Becomes a Viable Source of Energy: ISSUES

Promoting this event

- Nuclear fusion has incredible potential for energy. However, there are drawbacks to the use of nuclear energy and implications for military use. How does the government evaluate and communicate the tradeoffs of this technology?
- Nuclear fusion technology presents great possibilities. However, an incredible amount of research, and therefore research money, has to go into it. How active does government want to be in R&D in this field?
- Nuclear technology is not safe. Therefore, the government has to be prepared to deal with problems. What safeguards/emergency response mechanisms need to be in place if there is nuclear fusion disaster? How will this change the government's application of this technology?
- Even as the technology is being developed, there are security concerns. How does the government safeguard this technology, especially in light of recent nuclear proliferation scandals?

Responding to this event

- In the event that Nuclear Fusion replaces hydrocarbons as the main source of energy how do we deal with the resulting instability in affected oil producing states.
- Nuclear fusion will be a clean energy source. How will environmental budgets be redistributed to account for this energy change?
- As this energy changes, people might move further out into suburbs. How will urban sprawl change crime? Law enforcement? Our ability to plan for emergencies?
- As goods become cheaper due to decreased energy costs, how will increased consumption impact the environment? How will the government regulate that? How will the U.S. respond to increased consumption in other countries—especially China and India?

U.S. CREDIT IMPLODES

	Action Index
Time Horizon	81
1.5 (5-10 years)	
Probability	
6	
Impact	
9	

Scenario

The year is 2015 and the U.S. dollar has fallen to one-tenth of its pre-depression value. The worldwide recession is deepening, especially in those countries that held the billions of dollars of outstanding U.S. Treasury bills that the government is no longer able to repay. Unrest and riots continue in major U.S. cities, as the millions of people who lost their jobs following the widespread bankruptcies precipitated by the dollar's fall and those who lost their life savings in the stock market crash are becoming increasingly desperate. Scientists and researchers have left the U.S. for more stable environments abroad and the once all-powerful U.S. economy has ground to a halt. Looking back, there were signs that the U.S. national debt and the interest payments associated with it were growing to potentially unsustainable levels. Unfortunately, no one believed that foreign governments and investors would decide that the U.S. was no longer able to pay back the interest associated with the debt or that they would stop purchasing U.S. Treasury Bills and demand the repayment of those that matured. When the government defaulted on its loan repayments in 2013, this led to a "race to the door" as everyone with assets valued in U.S. dollars scrambled to unload them. Now, the outlook for the U.S. following this massive loan default and subsequent dollar devaluation is not good. The loss of wealth by U.S. and foreign investors as well as ordinary citizens has sparked a worldwide recession coupled with a stock market crash, massive job losses and bankruptcies and an overall loss of U.S. economic dominance. Furthermore, the inability of the U.S. government to borrow in order to finance its operations and programs has led to enormous reductions in military and S&T spending as well as sweeping changes in U.S. government policies, programs and budget allocation procedures. Whether or not the economy can ever fully recover is a topic hotly debated around the country and around the world.

Ramifications

Governance

Negative

- Loss of borrowing ability forces the government to **increase taxes to pay for government spending.**

- **Massive budget cuts for U.S. programs** would have to occur to balance the budget.
- **All aid foreign aid programs would have to be cut** as the government focuses its attention inward on its core responsibilities.
- Reduced ability for the U.S. government to influence worldwide events and issues due to loss of funding for foreign interventions.
- Possible **reduction in government emergency reaction time** because budget shortfalls preclude quick responses.

Positive

- **Balanced budgets would be necessary** since there would be no chance for government borrowing to cover any budgetary shortfalls.
- End of pork-barrel politics and catering to special interests because unnecessary or non-critical programs would have to be cut.
- **Increased government accountability with respect to budgetary and spending decisions** since all expenditures would have to be properly justified.

Economics

Negative

- **Massive devaluation of the dollar** as people look to sell off all U.S. valued assets.
- **Major recession in the U.S. and around the world.**
- **Widespread bankruptcies** of businesses and individuals.
- Enormous **job losses** due to bankruptcies.
- **Loss of equity and savings** of both U.S. and worldwide investors because dollar denominated assets lose their value.
- Stock market crash due to the loss of faith in the dollar.
- **Housing market failures** as credit is no longer available and dollar devaluations increase the risk associated with buying a house.
- Increasing interest rates as lenders cope with dollar devaluation.
- **Loss of purchasing power** of U.S. citizens because of dollar devaluation.
- Increased relative costs of foreign goods because of dollar devaluation.
- **Loss of U.S. economic dominance.**
- Foreign companies and governments buy up strategic resource reserves around the world.
- Potential run on banks if people lose faith in the banking industry.
- Possible growth of black markets.
- There is **capital flight as investors look to other markets and opportunities.**

Positive

- **U.S. exports increase** because the fall in the dollar's value makes them more competitive.

Environment

Negative

- Loss of government resources directed at protecting the environment.

- **Possible easing of environmental standards and enforcement to spur business growth.**

Positive

- Loss of income by U.S. consumers forces a **reduction in consumption, particularly gasoline for automobiles.**
- Bankruptcies of U.S. firms reduce the amount of pollution being produced.

Technology

Negative

- Massive **reductions in government financing for R&D programs.**
- Loss of wealth by U.S. investors causes reductions in R&D spending.
- **Business failures reduce S&T research** in the U.S.
- Reductions in U.S. R&D lead to loss of comparative advantage and possible shift of S&T supremacy to other countries.
- **Brain drain** as U.S. scientists and researchers move overseas to more affluent countries.
- Loss of foreign students who no longer come to the U.S. to attend college reduces R&D occurring at universities.

Security

Negative

- Massive reductions in military and security spending because of budgetary problems.
- **Decline in U.S. military power over time because of a lack of funding.**
- Reduction in spending on new military technologies due to resource shortages.
- Possible crime sprees due to the loss of wealth and increases in poverty by U.S. citizens.

Positive

- **Possible end to the wars in Iraq and Afghanistan because they are no longer affordable.**

U.S. Credit Implodes: ISSUES

Preventing this event

- How can/should the government reassure foreign investors that the dollar is strong and stable in order to prevent the realization of the FCI?
- How can the government prevent capital flight in order to mitigate the implosion of the U.S. credit?
- How do we create safeguards to ensure that our economy is not susceptible to predatory attack by other nations to ensure that no country can manipulate our current trade deficits? (e.g., if China chooses to recall our debt are there automatic mechanisms that we can put in place to safeguard our economy.)
- How can the government protect our strategic oil reserves to ensure that they do not succumb to the manipulation of foreign powers regardless of the value and worth of the dollar?

Responding to this event

- How will the implosion in U.S. credit and the subsequent reduction in funds available to the government affect American tax policy?
- If the U.S. dollar loses value worldwide and if the U.S. government is faced with tough budgeting decisions at home, what happens to foreign aid programs and how might that effect the United States' relationship and alliance with countries around the world?
- As industries are impacted, should the United States government do anything to protect key industries? If so, how does the government protect U.S. companies faced with bankruptcy?
- After the credit implosion, what will the U.S.'s role be in international financial organizations and other international arrangements? How will it impact NATO and the UN, both of whom rely heavily on U.S. dues? How can the United States ensure that our interests in these organizations continue to be met despite our decrease in economic power? How might this impact the free trade agreements that the United States has signed with various countries?
- How should the government deal with the subsequent massive unemployment?
- How will/should the government respond to the development of a black market and the increase in crime as goods become more scarce or simply too expensive?
- As this FCI affects the budget and if military programs are cut, how should/will the government deal with a decline of U.S. power due to reduced military power?

Lessons Learned

The final section of this Report outlines recommendations for future Forward Engagement Commissions to consider based on the lessons we have learned from this inaugural process. We have grouped our “lessons learned” into three categories: 1) proposals for internal reforms for Members to consider that are based on our experience in applying PL-6414; 2) actual amendments to PL-6414 that could be made within the existing authority of the Commission; and 3) suggestions of changes that are global in scope affecting the fundamental composition of the institution. While some of these changes may seem radical, we urge Members and staff to explore them fully. After spending one year working intimately with this process, we are grateful to Congress for the opportunity to initiate this project. What follows are our guidelines for establishing a more effective forward engagement project. We have drawn heavily on the reports produced by the past four Panels, incorporating some of their suggestions while adding our own. We feel strongly that the implementation of these changes will make for a more efficient and comprehensive mechanism of forward engagement.

INTERNAL CHANGES TO THE HACFE

Reorganize groups based on STEEP Model⁶

Social (Psychological, Cultural)
Technological
Economic
Environmental
Political
+
Nodal Analysis

We believe that introducing the STEEP model as an organizing principle for the Commission’s working groups would better serve the goals of forward engagement. The HACFE is currently divided into four working groups: security, governance, science and technology (S&T), and economics. In our experience working within these groups, we have discovered three major problems with these divisions. First, the overlap between security and governance was significant. While one could make the case to keep these as separate entities, it detracts from other areas worthy of consideration. In our suggested format security would not be eliminated but absorbed along with governance into the political working group. Second, the working groups tended to overlook environmental issues, forcing us to address them later on by diverting resources from the existing groups. We feel that establishing an environmental working group from the outset will allot the corresponding issues their due attention. Third, the HACFE staff

⁶ A common analytical tool for market research

did not directly address social factors at any time during the Session. We therefore suggest, in accordance with a recommendation from the Forward Engagement Blue Ribbon Panel of 2004, that the “human factor” be included in Forward Engagement by way of establishing a social working group. The group would not only address changes to our society, but changes to our psychology, social organization, culture, language, and perception. The STEEP model was introduced as a comprehensive analysis method, but was not enforced. By rearranging the working groups as such, Forward Engagement will assume a more complete structure.

Additionally, we recommend the establishment of a **nodal analysis group**. This group will be the **most vital component in achieving a full analysis of FCIs**. After the working groups have completed their analyses and identified their respective FCIs, one expert from each of the groups will join together to form the nodal analysis group. This group will serve two functions. First, it will **monitor the interaction between FCIs**. We recommend that the nodal analysis group organize the FCIs into categories and then analyze them. For example, the nodal analysis group could examine FCIs that change Americans’ quality of life. Assuming that life spans are significantly increased, one might look at how pervasive computing could improve the productivity of an older workforce. Some less obvious linkages might also be examined. It is less apparent that a WMD attack and nuclear fusion are directly related. However, should we suffer a nuclear attack after having mass produced cheap nuclear energy, the country might find itself in the midst of a strong anti-nuclear movement that could cause nuclear energy programs to lose support. The group should attempt to realistically analyze how FCIs might resonate with each other to create additional unforeseen circumstances. The second duty of the nodal analysis group would be **to investigate the ripple effects of individual FCIs**. The goal here is to analyze the indirect effects that FCIs might have in the long term. For instance, an aging population might eventually cause the US to loosen its immigration policy in order to invigorate its workforce. In essence, the group would look at the secondary effects of FCIs within the STEEP framework.

Finally, we recommend institutionalization of a capacity to consider both positive and negative FCIs. In terms of policy, legislators must be aware of not only how to hedge against negative effects but how to harness the positive ones. We feel strongly that forward engagement will not be a complete process until all three of these concepts are adopted in full.

Employ the Component-Level Implementation Process (CLIP)

The Fall 2004 Panel offered another innovation in its Report that we believe would be highly beneficial to adopt: the Component-Level Implementation Process (CLIP). This process would serve to:

“Examine long-term developments, break them down into nearer term components, and then consider the broader relevance of those components. The Members of the JFEC [Joint Forward Engagement Committee] then will present the components as contemporary policy issues that the rest of Congress will see fit to consider during the same fiscal year or at least during the current election cycle.”

The essence of CLIP is that **breaks FCIs into manageable policy components, each of which is valuable in its own right.** Therefore, if the ultimate policy goals are never realized, the steps that were taken to achieve them will still yield benefits. The benefit of the CLIP is that individual Members of Congress can mitigate the political risk inherent in introducing legislation that allocates large amounts of spending on issues whose outcomes will not be seen for decades to come.

Most importantly, the near-term components of the CLIP are presented as desired outcomes in and of themselves. To further illustrate the merits of the CLIP, we briefly describe a scenario in which it could be applied below. The scenario represents a potential policy that addresses the FCI, “Global Warming Threatens Human Life” outlined in the previous section of this Report.

GOAL: To reduce greenhouse gas (GHG) emissions and dependency on foreign oil imports by transitioning from a hydrocarbon economy to a hydrogen economy.

A Four-Phased Approach⁷:

Progress in technologies, policies, and markets: R&D funding for pre-commercial ends; hydrogen use in internal combustion engines to build support for infrastructure development; testing and development for hydrogen use in portable devices and in heating and powering buildings; creation of hydrogen-related policies on energy and environment; implementation of international standards for safe hydrogen use; complete restructuring of gas and electric markets in U.S. for eventual installation of distributed energy systems.

Transitioning to the marketplace: Cost reduction of fuel-cells through development of large-scale manufacturing; advances made to lower the costs of hydrogen production and storage; fossil fuels still used in hydrogen production; hybrid technology are more available and more frequently used; increasing governmental role as “first use” customer in markets.

Expansion of markets and infrastructure: Technology advancements in hydrogen extraction to reduce costs and expand market share; emphasis on expanding from local pockets of hydrogen use to an established nation-wide hydrogen infrastructure; more advanced hydrogen-related technologies in mass production; streamlined government policies.

Realization of the Hydrogen Vision: Hydrogen overtakes fossil fuels for most end-use energy market applications; hydrogen extraction becomes increasingly economical and environmentally friendly; carbon capture limits emissions; national infrastructure for hydrogen as fuel and electricity generation is in place; U.S. companies that spend decades on development begin to export to foreign markets.

⁷ United States Department of Energy: *A National Vision of America's Transition to a Hydrogen Economy – 2030 and Beyond.* February 2002.

This scenario describes the various short-term components that Congress could support in order to achieve a long-term goal, that is, the realization of a hydrogen economy that could take as long as fifty years to realize. It is vital to note that all of the short-term components are desired outcomes in their own right. We strongly endorse the HACFE's adoption of the CLIP as a means of maximizing the possibility for success of long-term policymaking efforts in Congress.

Outreach

We are concerned that, in its current form, PL-6414 will be unable to achieve one of the key goals of the forward engagement project: **promoting the concept of forward engagement**. Since forward engagement is unfamiliar to both legislators and the public, an effective promotion campaign is essential to spur public interest, encourage Congressional funding, force governmental attention, and increase analysis from the private sector. **Transparency** is vital. The public should be fully aware of possible future issues so that the private and non-profit sectors (research NGOs in particular) can react accordingly. Only with **public support** is the forward engagement project likely to thrive.

We propose the following additions to the Congressional publication. First, all members and their staff should be provided with two forms of the Forward Engagement Report. The first report will be an executive summary, a condensed version that all members (and the general public) will be more likely to read. It will consist of no more than 20% of the length of the official report. This will allow an increased number of interested parties to briefly examine the issues at stake. The second report will be a comprehensive analysis of the work of the Forward Engagement Commissions to be prepared at the end of each cycle. The report will be published online like other major government reports, providing the public with free access to its findings. The full report will also be presented as part of the Forward Engagement Cycle. We propose that this presentation occur during a **special joint session** of the House and Senate. While this may be an ambitious goal, a joint session is more likely to get the full attention of all members of the legislative branch than a presentation to only the members of HACFE or SACFE.

We also suggest promoting significant **media coverage** of the event. Making a formal presentation before the public will not only publicize Forward Engagement as a political process, but add to its legitimacy as well. Finally, as a means of further publicizing the work of the Commissions, we recommend establishing a **press officer and webmaster** charged with periodically writing news releases on the progress of the Commissions. Establishing a website will allow transparency and transmit information to the public and all interested parties. The website will also generate feedback, which could be helpful in the long term.

POSSIBLE AMENDMENTS TO PL-6414

Appointments

The Fall 2005 Blue Ribbon Panel on Forward Engagement, implementing the vision of the Spring 2005 Panel, proposed draft legislation that established a 12-month Forward Engagement Cycle. The HACFE staff, having been deeply immersed in the work of forward engagement for the past year, recognizes that long-term thinking and policymaking require more time than the 12-month cycle allows. However, we must operate within the temporal constraints of the Congressional election cycle. **We therefore recommend that members only receive appointments in the first year of their terms.**

Our experience in applying PL-6414 moves us to be realistic about the demands of the election cycle upon the HACFE Members. We are aware that Members are often more able and willing to devote their energy, time, and resources to the work of the HACFE in the beginning of their terms as opposed to the latter portion when reelection may be the preeminent concern. Therefore, we propose that Members amend PL-6414 to explicitly stipulate that Members receive their appointments to the HACFE at the onset of their term in the House. This will also have the effect of allowing Members to tout the achievements of the HACFE to their constituents during their elections, thus creating the opportunity for Forward Engagement to be a topic of political debate, and thereby engaging the public.

Modify the HACFE Forward Engagement Cycle

PL-6414 currently stipulates the temporal guidelines of the Forward Engagement Cycle. We propose an amendment to modify the Cycle to allow for additional time to devote to the nodal analysis theme described above. Specifically, we propose a period of 2 months be inserted in the process between the discussion on FCIs of concern and the preparation of the Report. While it would be ideal to simply extend the Cycle, we recognize the need to transmit the Report to Congress soon after the bodies reconvene to take full advantage of Congressional deliberations on the budget. Therefore, the duration of the Cycle would remain 12 months. Furthermore, since we intend for Members to receive their appointments at the onset of their terms, we must also amend the Deadline for Appointment and Initial Meeting as stipulated by PL-6414.

The amended “Forward Engagement Cycle” would be as follows:

January - February: Appointments would be made. The HACFE would dedicate time to self-organize and plan the Forward Engagement (FE) Sessions - preparation for the hearings during the FE Sessions would deal with forward-thinking issues identification and FCIs of concern.

March – April: The HACFE would run the Forward Engagement Session on FCIs of concern (the most critical, plus other FCIs in the framework of the continual process evaluation). Each FCI would be the subject of a dedicated session. Each Forward Engagement Session lasting for a

half a day would cover the multi-dimensional aspects of each FCI (social, technological, economic, environmental, and political).

May-June: The HACFE would address nodal interactions and the ripple effects of the FCIs.

July - September: Drawing from the lessons learned during the FE Session, the HACFE would spend this period preparing its report outlining priority FCIs and adequate policy recommendations.

October: The HACFE and the SACFE would meet to discuss their reports. A final report - the Report on Forward Engagement in the Congress - would be prepared. This report would summarize the findings of the Forward Engagement Session and incorporate follow-up findings.

November - February: The HACFE and the SACFE while promoting the results of the FE sessions would identify the FCIs of concern to be considered in the following year. A formal presentation of both commission's findings would occur in January when Congress reconvenes. The final reports would be published to correspond with the presentation.

We understand that the SACFE is considering lengthening their Forward Engagement Cycle. We wholeheartedly support this. The Senate, operating on a 6-year election cycle, should take full advantage of the longer terms in that body. Not only do we endorse a lengthening of the SACFE's Forward Engagement Cycle, but we would also endorse a commensurate lengthening of term limits for commission members. For the other body, we recommend at least a 30-month cycle to allow for an extended analysis of FCIs.

The HACFE supports an expanded timeframe based on the following reasons learned from firsthand experience: 1) Working with FCIs and Issues should not be rushed unnecessarily because hastiness could stunt the exploratory and analytical process; 2) the HACFE Members are currently forced to plan the FE session, study and digest the work of previous Committees, interface with outside entities, identify FCIs and prioritize them, and prepare a comprehensive report to Congress, all in the space of 12 months. In light of the ambitious agenda before them, we feel that Members ought not to be forced to operate under unnecessarily strict time limitations; 3) Incorporating the work of experts and conducting any necessary studies is time-consuming when done effectively; and 4) the reorganization of the groups, along with the nodal analysis group proposed by HACFE staff will require that the duration of the session be lengthened. In sum, we feel that it is vital to the success of forward engagement that these issues be sufficiently analyzed in order to prepare not just any response, but the best response.

While our endorsement of the lengthening of the Forward Engagement Cycle in the SACFE does not constitute an amendment to PL-6414, we conclude that such a reform would create a more effective forward engagement project. We also propose that HACFE members and staff, together with SACFE members and staff, coordinate any reforms made in this area so as to develop legislation on how the two bodies can integrate their respective Forward Engagement Cycles if in fact the bodies diverge in terms of their cycle durations. Harnessing the links between the two bodies is an area we recommend for future consideration.

Budget

The HACFE staff recommends that its annual budget of \$4,000,000 be reexamined. We submit that the \$4,000,000 annual budget mandated by PL-6414 is insufficient to cover the costs of salary and other forms of compensation in addition to apportioning grants and performing studies related to FCIs. Furthermore, in light of the internal reorganization, implementation of the CLIP, and expanded outreach program that we have proposed, we anticipate that the budget will have to increase commensurate with the HACFE's duties. PL-6414 should be amended in accordance with a budget that reflects the HACFE's expanded operations.

SUGGESTIONS FOR FUTURE CONSIDERATION

Expand the HACFE and the SACFE into a JCC (Joint Congressional Committee)

The staff of the HACFE has, like the Panels before it, struggled with the question of what institution is best suited to enhance the ability of Congress to address FCIs while also affecting policy changes. Thus, we propose that Members propose legislation to consolidate and expand the current bicameral Commission structure into a Joint Congressional Committee (JCC). We recommend that Members hearken back to the "Interim Report of the Blue Ribbon Panel on Forward Engagement" of Fall 2004 and implement that report's vision of a **Joint Forward Engagement Committee (JFEC)**.

The Fall 2004 Panel provided a number of compelling arguments for a JCC as the ideal body to *"ensure that both the House and the Senate have an equal roll in engaging the future and participating in a newly designed, multivalent policy process that is intended to help reshape how Congress as a whole thinks about long-term policy issues."* As the previous panel noted the concept of a JCC has a long-standing precedent in Congress embodied in committees such as the Joint Congressional Intelligence Committee, the Joint Committee on the Library of Congress, the Joint Committee on Taxation, and the Joint Economic Committee. The 2004 Panel recommended that the JFEC have legislative authority, and that it have access to the authorizations and appropriations process. Such access would allow the JFEC to *"actualize the changes necessary to address the pressures brought on by the FCIs."*

We strongly believe that a JCC with the power to initiate legislation and affect the budgetary process would dramatically enhance both the stature and effectiveness of the HACFE/SACFE. Whereas under its current authority, HACFE mainly transmits a Forward Engagement Agenda to Congress, a JCC would provide the institutional capacity necessary to stimulate the legislative and budgetary processes. We also believe that membership in a joint committee will be more attractive to Members of Congress than the current Special Commission structure.

A standing Committee is preferable given the temporal demands of engaging in long-term forecasting and policymaking. However, in a departure from the succession policies of other Congressional Committees, which allow Members to serve for as long as they remain in

Congress, we propose term limitations for the Members of the JFEC. This would guarantee that the Committee is regularly infused with new ideas and energy while maintaining the necessary institutional memory. We propose that membership in the JFEC carry a duration of up to 48 months, dependent on the Member's reelection to the succeeding Congress.

Therefore, the President of the Senate and the Speaker of the House of Representatives should, on the last day of a Congress, appoint members of their respective Houses who have been elected to the succeeding Congress to fill vacancies that may then occur on the Committee. The appointees and members of the Committee who have been reelected should continue until their successors are chosen or until their 48-month term is completed.

In a departure from the Fall 2004 Panel's recommendation, we propose to expand the membership of the JFEC to 20 members. Ten members should join from each House with the majority party from each House holding 6 seats and the minority party holding 4 seats. This expansion is warranted both by precedent – the Joint Economic Committee has 20 members – and by virtue of the expanded scope that we have proposed.

The creation of the HACFE and SACFE were momentous leaps forward in enhancing Congress' ability to consider long-term policy issues. The Special Committees have been successful in introducing Forward Engagement to Congress. We feel that the creation of a joint committee would only increase Congressional capabilities in forward engagement.

Establish Center for Future Studies (CFS)

The expressed goals of the forward engagement process cannot be achieved solely through Congressional mechanisms. We therefore propose that the Forward Engagement Committees consider establishing a Center for Future Studies. The Center would accomplish two important objectives. First, it **would institutionalize a process for soliciting expert advice in the formulation of FCIs**. Second, it would create a **mechanism to promote forward engagement**.

Formally, the Center will be a GONGO (Government Operated Non-Governmental Organization). It will be directly funded, organized and directed by the Congressional Forward Engagement Committees. However, it will remain an NGO, thus allowing its members the intellectual freedom to research FCIs without significant interference. Moreover, the NGO will be eligible for outside funding. CFS will be divided into three departments: research, public affairs and consulting.

The **research department** will be charged with researching the FCIs as determined by Congress. In accordance with the Forward Engagement Cycle, the Center for Future Studies will contract the appropriate experts to research FCIs and prepare reports to augment the work of the Congressional staffs. Ideally, CFS will provide student grants to encourage university work on forward engagement. It will also be encouraged to take on student interns to each research project.

The **public affairs department** will assume the responsibilities of keeping the public aware of and interested in forward engagement. A key component will obviously be web-related. The internet not only provides a key means to inform a large audience, but it is also well suited to promote interactivity and feedback. Public affairs will not be limited to passive online promotion; it will include active efforts such as magazine publications, article writing, lecture series, dinners, events, etc. Other marketing possibilities may include television promotions, video games, concert series, and the like.

An important aspect of the public affairs program will be to bring forward engagement to schools in order to begin training forward-minded thinkers at younger ages. At the middle-school level, this might consist of essay contests. At the high-school level, this could consist of a scholarship program. At the university level, the Center will promote internships and research assistant positions for students as well as grant funding.

The goal and the challenge will be reaching as wide an audience as possible and engaging them in a manner they find intriguing and applicable to their lives. Not everyone may benefit from attending a lecture from futurist Ray Kurzweil, nor will everyone benefit from a video game. Yet, by producing a diverse methodology, more Americans can be reached. Public awareness and support will not only bolster the work of the Committees, but will also encourage people to demand that their representatives pay attention to long-term issues.

Finally, the Center for Future Studies will serve as a **consulting service** to both the public and private sectors. Businesses and governments alike will be able to contract CFS's services to help them establish their own forward engagement projects. Ideally, the goal of the consulting branch will be to spread forward engagement systematically into American society. It will promote the process to state and municipal governments and will aid the business sector as well. It is long-term hope that CFS will serve to model the congressional forward engagement project to the rest of the nation.

Funding will obviously be a major factor in the establishment of CFS, yet we hope that as forward engagement becomes legitimized through Congress more money will become available. Moreover, the GONGO structure will allow funding from outside sources. We feel that the CFS will effectively engage the public and thus will be vital to legislative success. As Americans begin to expect forward thinking from their representatives and engage in it themselves, this project will become more and more vital to the long-term success of forward engagement.

Appendix: Public Law 6414

IN THE HOUSE OF REPRESENTATIVES

December 13, 2005

A BILL

To establish a House Commission to identify, investigate and inform Congress on future contingencies that may have transformative positive or negative effects on all realms of the human experience, specifically on science and technology, governance, security, and economics.

Be it enacted by the House of Representatives of the United States of America in Congress assembled,

SEC 1. SHORT TITLE

This Act may be cited as the House Annual Commission on Forward Engagement

SEC 2. ESTABLISHMENT OF COMMISSION

There is established in the legislative branch the House Annual Commission on Forward Engagement (in this title referred to as “Commission”).

SEC 3. PURPOSES OF THE COMMISSION

PURPOSES.—the purpose of the Commission is to—

- (A) Investigate and identify national and global future contingencies that would have transformative positive or negative effects on all realms of the human experience, specifically on science and technology, governance, security, and economics.
- (B) Gather information through research, expert testimony, committee hearings, and past Commission reports on the identified future contingencies.
- (C) Make projections on the positive or negative scope and impact of identified future contingencies.
- (D) Report to Congress on the Commission’s findings, allowing for the legislative opportunity to respond efficiently, intelligently, and authoritatively to opportunities and threats that lie beyond traditional means of forecasting.
- (E) Enhance public perception of the relevance and criticality of potential human benefits or repercussions of identified future contingencies and the import of a governmental mechanisms designed to preemptively address these issues.

SEC 4. COMPOSITION OF THE COMMISSION

(a) **MEMBERS.** The Commission shall be composed of 8 members, of whom—

1 member shall be appointed by the majority leader of the House of Representatives, who shall serve as chairperson of the Commission;

1 member shall be appointed by the minority leader of the House of Representatives, who shall serve as vice-chairperson of the Commission;

3 members shall be appointed by the senior member of the leadership of the House of Representatives of the Republican Party, who shall serve as members of the Commission;

3 members shall be appointed by the senior member of the leadership of the House of Representatives of the Democratic Party, who shall serve as members of the Commission

(b) **QUALIFICATIONS:**

(1) **DEADLINE FOR APPOINTMENT.**—new members of the Commission shall be appointed on or before June 1 of each year.

INITIAL MEETING.—The Commission shall meet and begin the operations of the Commission on or after September 1 of each year.

CONGRESSIONAL FORWARD ENGAGEMENT SESSIONS.—The Commission will meet before February 1st of each year to separately address each identified future contingency and its implications for science and technology, governance, national security, and the economy.

QUORUM; VACANCIES—after its initial meeting, the Commission shall meet upon the call of the chairperson or a majority of its members. Five members of a Commission shall constitute a quorum. Any vacancy in a Commission shall not affect its powers, but shall be filled in the same manner in which the original appointment was made.

TERMS; TERM LIMITS.—Members will serve the Commission for no more than 1 year beginning in September of each year. Any member may be reappointed to membership of the Commission consistent with 4a of this title, with the exception that no member shall serve more than 1 year consecutively.

SEC 5. FUNCTIONS OF THE COMMISSION

(a) **IN GENERAL**—the functions of the Commission are to—

(1) Conduct an investigation that:

(A) Identifies national and global future contingencies that would have a transformative positive or negative effects on all realms of the human experience, and may include relevant facts and circumstances relating to—science and technology; governance; security; economics; and other areas of the public and private sectors determined relevant by the Commission for their inquiry.

(B) Reviews, evaluates, and determines the likelihood and timeframe of the realization of identified future contingencies identifies structures or mechanisms are already in place that may be able to exploit the opportunities or minimize the threats of identified future contingencies.

(C) Submits to the Congress such reports containing such findings and conclusions as are required by Section 12 of this title.

RELATIONSHIP TO PREVIOUS COMMISSION'S PRIORITIES.—when investigating facts and circumstances relating to the future contingencies, the Commission shall

(1) First review the information compiled by, and the findings, conclusions, and recommendations of the previous Commission; and

- (2) After that review pursue any appropriate area of inquiry if the Commission determines that—
- (A) The previous Commission had not investigated that area
 - (B) The previous Commission’s investigation of that area had not been complete, or
 - (C) New information not reviewed by the previous Commission had become available with respect to that area.

SEC 6. POWERS OF COMMISSION

(a) **IN GENERAL—HEARINGS AND EVIDENCE.** The Commission or, on the authority of any member thereof, may, for the purpose of carrying out this Title shall:

(A) Hold such hearings and sit and act at such times and places, take such testimony, receive such evidence, administer such paths; and

(B) subject to paragraph (2)(A), require, by subpoena or otherwise, the attendance and testimony of such witnesses and the production of such books, records, correspondence, memoranda, papers, and documents as the Commission or such designated subcommittee or designated member may determine advisable.

(b) **SUBPOENAS—**

(A) **ISSUANCE.—**

(i) **IN GENERAL—**a subpoena may be issued under this subsection only

(I) by the agreement of the chairperson and the vice-chairperson; or

(II) The affirmative vote of 5 members of the Commission.

(ii) **SIGNATURE.—**Subject to clause (i), subpoenas issued under this subsection may be issued under the signature of the chairperson or any member designated by a majority of the Commission, and may be served by any person designated by a majority of the Commission.

(B) **ENFORCEMENT.—**

(i) **IN GENERAL.—**In the case of contumacy or failure to obey a subpoena issued under subsection (a), the United States district court for the judicial district in which the subpoenaed person resides is served, or may be found, or where the subpoena is returnable, may issue an order requiring such person to appear at any designated place to testify or to produce documentary or other evidence. Any failure to obey the order of the court may be punished by the court as contempt of that court.

(ii) **ADDITIONAL ENFORCEMENT.—**In the case of any failure of any witness to comply with any subpoena or to testify when summoned under authority of this section, the Commission may, by majority vote, certify a statement of fact constituting such failure to the appropriate United States attorney, who may bring the matter before the grand jury for its action, under the same statutory authority and procedures as if the same statutory authority and procedures as if the United States attorney had received a certification under sections 102 through 104 of the Revised Statutes of the United States (2 U.S.C. 192 through 194).

(c) **CONTRACTING.—**The Commission may, to such extent and in such amounts as are provided in appropriations for this Title, enter into contracts to enable the Commission to discharge its duties under this title.

(d) **INFORMATION FROM FEDERAL AGENCIES—**

(A) **IN GENERAL.**—The Commission is authorized to secure directly from any executive department, bureau, agency, board, commission, office, independent establishment, or instrumentality of the Government, information, suggestions, estimates, and statistics directly to the Commission, upon request made by the chairperson, the chairperson of any subcommittee created by the majority of a Commission, or any member of designated by a majority of a Commission.

(B) **RECEIPT, HANDLING, STORAGE, AND DISSEMINATION.**—Information shall only be received, handled, stored, and disseminated by members of the Commission and its staff consistent with all applicable statutes, regulations, and Executive orders.

(e) **ASSISTANCE FROM FEDERAL AGENCIES**—

(A) **GENERAL SERVICES ADMINISTRATION.**—The Administrator of General Services shall provide to the Commission on a reimbursable basis administrative support and other services for the performance of the Commission's functions.

(B) **OTHER DEPARTMENTS AND AGENCIES.**—In addition to the assistance prescribed in paragraph (1), departments and agencies of the United States may provide to the Commission such services, funds, facilities, staff, and other support services as they may determine advisable and as may be authorized by law.

(C) **GIFTS.**—The Commission may accept, use and dispose of gifts or donations of services or property.

(D) **POSTAL SERVICES.**—The Commission may use the United States mails in the same manner and under the same conditions as departments and agencies of the United States.

SEC 7. NONAPPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT

(A) **IN GENERAL.**—the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Commission.

(B) **PUBLIC MEETINGS AND RELEASE OF PUBLIC VERSIONS OF REPORTS.**—The Commission shall-

(1) Hold public hearings and meetings to the extent appropriate; and

(2) Release public versions of the reports required under Section 12 (b) of this Title.

(C) **PUBLIC HEARINGS.**--Any public hearings of the Commission shall be conducted in a manner consistent with the protection of information provided to or developed for or by the Commission as required by any applicable statute, regulation, or Executive order.

SEC 8. STAFF OF COMMISSION

(a) **IN GENERAL.**—

(A) **PERSONNEL AND ADMINISTRATION COMMITTEE**—The Commission shall have a Personnel and Administration Committee composed of the chairperson, the vice-chairperson, and the senior ranking Commission member.

(B) COMMITTEE FUNCTIONS.—All decisions pertaining to the hiring, firing, and fixing of pay of Commission staff personnel shall be by a majority vote of the Commission, except that-

(i) The chairperson shall be entitled to appoint and fix the pay of the executive director, and the vice-chairperson shall be entitled to appoint and fix the pay of his senior staff person; and

(ii) The chairperson and vice-chairperson each shall have the authority to appoint, with the approval of the Commission, at least five professional staff members who shall be responsible to the chairperson or the vice-chairperson (as the case may be) who appointed them. The Commission may appoint and fix the pay of such other staff personnel as it deems desirable.

(iii) **COMPENSATION.**—Commission staff will be hired without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no rate of pay fixed under this subsection may exceed the equivalent of that payable for a position at level V of the Executive Schedule under section 5316 of title 5, United States Code.

(b) PERSONNEL AS FEDERAL EMPLOYEES

(A) IN GENERAL.—the executive director and any personnel of the Commission who are employees shall be employees under section 2105 of title 5, United States Code, for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title.

(B) MEMBERS OF COMMISSION.—Subparagraph (A) shall not be constructed to apply to members of the Commission.

(C) DETAILEES.—Any Federal Government employee may be detailed to the Commission without reimbursement from the Commission and such detailee shall retain the rights, status and privileges of his or her regular employment without interruption.

(D) CONSULTANT SERVICES.—The Commission are authorized to procure the services of experts and consultants in accordance with section 3109 of title 5, United States Code, but at rates not to exceed the daily rate paid a person occupying a position at level IV of the Executive Schedule under section 5315 of title 5, United States Code.

SEC 9. SECURITY CLEARANCES FOR COMMISSION MEMBERS AND STAFF

(a) IN GENERAL.—The appropriate Federal agencies or departments shall cooperate with the Commission in expeditiously providing to the Commission members and appropriately cleared staff to the extent possible pursuant to existing procedures and requirements, except that no person shall be provided with access to classified information under this title without the appropriate security clearances.

SEC 10. APPROPRIATIONS FOR COMMISSION

(a) AUTHORIZATION; DISBURSEMENTS

There are authorized to be appropriated to the Commission for each fiscal year such sums not to exceed \$4,000,000 for purposes of the activities of the Commission under this Title.

Appropriations to the Commission shall be disbursed on vouchers approved –

(A) Jointly by the chairperson and the vice-chairperson, or

(B) By a majority of the members of the personnel and administration committee established pursuant to section 8(a) of this Title.

(b) Official reception and representational expenses not to exceed \$15,000 of the funds appropriated to the Commission for each fiscal year may be used for official reception and representational expenses.

(c) **FOREIGN TRAVEL FOR OFFICIAL PURPOSES**—foreign travel for official purposes by Commission members and staff may be authorized by either the chairman or the vice-chairman.

SEC 11. COMPENSATION AND TRAVEL EXPENSES

(a) **COMPENSATION**.—Each member of the Commission may be compensated at not to exceed the daily equivalent of the annual rate of basic pay in effect for a position at level IV of the Executive Schedule under section 5315 of title 5, United States Code, for each day during which that member is engaged in the actual performance of the duties of the Commission.

(b) **TRAVEL EXPENSES**.--While away from their homes or regular places of business in the performance of services for the Commission, members of the Commission shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703(b) of title 5, United States Code.

SEC 12. REPORTS OF COMMISSION; TERMINATION

(a) **INTERIM REPORTS**.—The Commission may submit to committees of Congress or the entire body of the House of Representatives interim reports containing such findings, and conclusions as have been agreed to by a majority of Commission members.

(b) **FINAL REPORT**.—Not later than July of each year, the commission shall submit to the Congress a final report containing such findings and conclusions as have been agreed to by a majority of Commission members.

(c) **TERMINATION**.—

(1) **IN GENERAL**—The Commission, and all the authorities of this title, shall terminate upon a majority vote for its termination in the House of Representatives.

(2) **ADMINISTRATIVE ACTIVITIES BEFORE TERMINATION**—The Commission may use a 90-day period for the purpose of concluding its activities, including providing testimony to relevant committees of Congress concerning its reports and disseminating the final report.

SEC 13. PRINTING AND BINDING COSTS

(a) For purposes of costs relating to printing and binding, including the costs of personnel detailed from the Government Printing Office, the Commission shall be deemed to be a committee of the Congress.