
MEMORANDUM

TO: Robert Chapman, Director of Partnership for a New Generation of Vehicles
FROM: Mirthala Santizo, Contracted Policy Consultant/Analyst for PNGV
SUBJECT: Policy and Administrative Issues and Recommendations for the Partnership for a New Generation of Vehicles Program
DATE: 12/4/2007

Introduction

To ensure the success of any new program, multiple levels of administrative and policy planning are imperative. Not only will the efficient plans create a blueprint for the program, but it will be the foundation to build upon and modify as necessary. The Partnership for a New Generation of Vehicles (PNGV) program began as a way to create a partnership between government agencies and the automobile industry with a common goal of attaining a cleaner environment through fuel-efficient automobiles. With the PNGV program being a new process for the public and private sectors, policy and administrative issues need to be addressed to minimize confusion and avoid costly problems. The five main areas addressing PNGV issues and providing recommendations are (1) Strengthening Policy Goals, (2) Building Efficient Networks within Government Agencies, (3) Creating a Permanent Strong Administrative Section, (4) Assessing Budgeting Issues, and (5) Creating an Evaluation Plan. Addressing these issues will allow for the PNGV initiative to succeed and also, it could set an example of how private-public partnerships can be conducive to both sectors.

Case Summary

In 1992, President Bill Clinton and his administration proposed an initiative that would implement a fuel-efficiency standard mandate on automobiles which would increase the corporate average fuel economy (CAFE) from 27.5 miles per gallon (mpg) to 40-mpg in year 2000 and then up to 45-mpg in year 2015. The US automobile industry strongly lobbied against Clinton's proposed initiative because they knew that this would be very costly, which would cause them to increase auto prices and put them at an even bigger

disadvantage against foreign automobile makers. In an attempt to avoid a mandate, the chief executive officers (CEOs) of the three biggest American automobile companies (Ford Motor Company, the General Motors Corporation and the Chrysler Corporation) decided to work together and approached Clinton and Vice President Al Gore about a potential partnership. The CEOs wanted Clinton and Gore to understand that an immediate mandate would hurt their businesses and could put them even more of a disadvantage in the global market. Unbeknownst to the CEOs, Clinton already started planning a potential government-auto industry partnership. The only catch was that changes to the automobiles would be more extreme than the original proposed increase in fuel-efficiency. Clinton and Gore realized that in order for them to comply with a global warming treaty signed by former President George Bush at the 1992 Earth Summit, they would have to mandate a 300% increase in CAFE. American automobile companies would be fiscally unable to reach that mandate if the government did not intervene.

The negotiations for the partnership did not have too many difficulties. The Clinton Administration's Science Advisor, Jack Gibbons, called Ford's Vice President of Ford's Technical Affairs, John McTague, to get his input on the proposed partnership to develop cleaner cars. With McTague's insight, Gibbons announced to the CEOs the administration's goal – to create a clean car task force with the government and auto industry. Not only would the industry be able to capitalize on additional funding, but they would have the opportunity to work with the Energy Department, NASA, the Defense Department, the Transportation Department and others. The auto industry was unsure at first, but finally agreed.

Although the negotiations began on a positive note, the CEOs and the Clinton administration had different ideas of what the goals would be. The administration wanted the auto industry to pursue an elaborate R&D plan, which would increase fuel-efficiency up to 82- to 110-mpg. The auto industry CEOs did not feel that they could reach the administration's proposed goals without increasing costs (cost vs. auto efficiencies). In the end, the CEOs agreed to increase fuel-efficiency up to 300% with the proposed budget and on September 29, 1993, PNGV began.

PNGV consisted of a team of government and auto industry scientists who worked on specific R&D goals. The government would pay for the long-term R&D and petroleum alternatives projects, while the auto industry would pay for the production of the clean car. PNGV was more than an R&D program. It also required both sectors to reorganize to meet specific goals. The auto industry CEOs had recently established the United States Council for Automotive Research (USCAR), which allowed for an easier segue to reorganization, but the government had more difficulties. Gibbons created a “virtual program” of eight government agencies coordinated by the Commerce Department’s Technological Administration and led by Secretary of Commerce, Mary Good. Since PNGV is a “virtual program,” the \$300 million per year funding it received came from different agencies. Good created a task force to manage the PNGV program.

The PNGV task force faced problems at multiple levels. First, the PNGV task force had to convince government agencies to participate. The Department of Energy (DOE) Office of Transportation Technologies was a huge supporter of PNGV, but NASA, the Transportation Department, the Defense Department and the Environmental Protection Agency were slightly or not at all cooperative. Second, administrating PNGV was another problem. Reorganization of PNGV was not necessary, but strongly encouraged by the National Research Council (NRC) because they felt that the decentralized management was not conducive to the goals of the program. NRC felt that PNGV should (1) have a stronger centralized management, (2) combine and submit budgets for a formal Congress appropriation request, and (3) ask Congress to give PNGV’s director oversight responsibility. Both the PNGV task force and the CEOs were against the NRC’s suggestions to centralize management. Third, the task force faced a potential program cut from Congress. Members of Congress felt that auto industry profits were adequate enough to fund R&D research without the assistance of the government. In the end the PNGV program was not eliminated, but it did face budgetary cuts. The Clinton administration assigned a new chief technical officer to determine available funding from agencies to address the second and third problems. The problems may have been temporarily fixed, but they were far from disappearing.

Regardless of all the problems, PNGV began to produce some technological advances that the US auto industry is now incorporating into their new vehicle productions. Clinton's goal to help the environment through clean cars was slowly becoming a reality.

Issues and Recommendations

PNGV faces many issues from the government side, which could lead to possible programmatic and budgetary cuts or worse, program elimination. The following issues and recommendations not only address the present issues, but can also help prevent future problems.

Issue and Recommendation #1 – Strengthening Policy Goals Surrounding PNGV

Policy Issues – Although the PNGV task force and the “big three” auto industry CEOs were able to save the program from being eliminated, there is a possibility that it will be on Congress' chopping block again unless there is a strong argument to keep the program funded. PNGV was almost cut because a few Congress members felt that the US auto industry had sufficient profits to fund the new R&D projects and, therefore, the government should not be fiscally responsible for developing new technology. Ethically, the opposing Congress members felt that their decision to cut the PNGV program was what was best and fair for the entire nation (Svara, 2007). What these Congress members did not realize was that without government intervention, the outcomes of the PNGV program would probably not be accomplished. The outcome goals are the heart of the PNGV program and it is the job of the task force to convince Congress that a partnership such as PNGV is necessary because they are providing outcomes that are public goods.

Policy Recommendation – The three best ways to show that there is a need to keep a partnership program like PNGV are by defining policy goals, connecting goals to public benefits, and clearly stating how to achieve them. As Stone (2002) stated, ideas for change need to be “mobilized.” Therefore, their program theory needs to be clearly defined. If the PNGV task force does not clearly connect their outcomes to the benefit of the public, then Congress will continue to think it is not the government's responsibility. The line separating

the role of government's responsibility has led to the problem of "fuzzy boundaries" (Kettl, 2002). Ultimately, the PNGV task force needs to prove that no "fuzzy boundaries" exist because providing the policy goals of the PNGV program are considered public goods. A public good has to be nonrival and nonexclusive (Burkhead and Hennigan (1978); Steinemann, Apgar and Brown, 2005). A good is considered nonrival when it is something that one can use without taking away another's right use it as well (Steinemann, Apgar and Brown, 2005). For example, roads and sidewalks are considered nonrival public goods because everyone has the right to use it. A nonexclusive good is something that does not exclude anyone from using it regardless whether they paid for it or not (Steinemann, Apgar and Brown, 2005). For example, the creation and maintenance of Central Park is paid for by the city of New York, but it is enjoyed by many tourists without a fee. The ultimate goals from PNGV's Declaration of Intent are to create a stronger economy, a cleaner environment, more competitive business, more effective government and technological leadership (Buntin, 1997). Making a connection between PNGV's outcome goals to what is considered a public good is one way to prove to Congress that the program is worth supporting.

Proving that new technology is a public good is not entirely a new trend. Currently, the creation and usage of new technology infrastructures as public good has increased. Examples include the creation of universal "WiFi" in Philadelphia, the passing of Proposition J for "WiFi" in San Francisco and the establishment of the National Information Infrastructure (Dugan, Cheverie and Souza, 1996; San Francisco Department of Elections, 2007; Scott, 2005). These are a few of many integrated technologies that provide public goods.

There are many direct benefits to US citizens and the government if PNGV were to be funded with federal funds. One huge benefit is the increase in vehicle sales taxes. By improving US auto industry vehicles, people will be more likely to purchase the new efficient vehicles, which would not only boost the US economy, but increase tax revenue. The additional tax revenue will contribute to each state's general fund and can be used to pay for services that the federal, state or city governments are unable to provide at this time (State of California, 2007). In addition to economic advantage, the technology developed and created

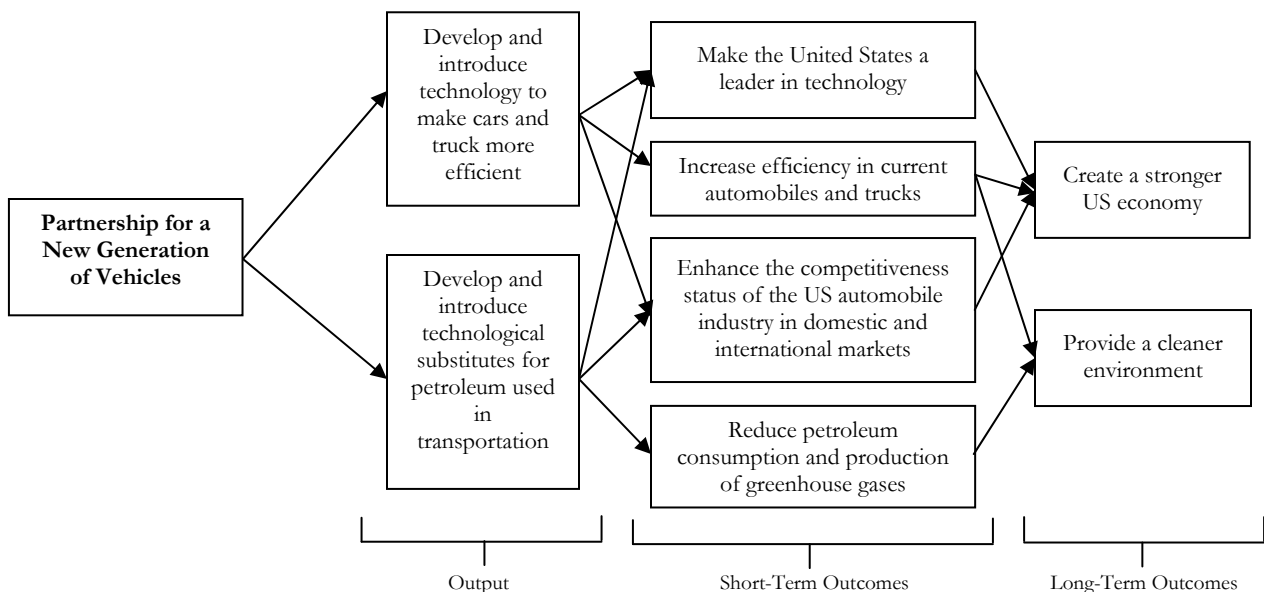
will not only benefit the private corporation, but it can also benefit the public sector. For example, installing the new efficient technology in public buses and trains can help the state and local Departments of Transportation save money in the long run by reducing common maintenance and repairs that older engines would require. Installing technology that uses less petroleum will also help save money. With lower expenditures at the local and state level, the federal Department of Transportation can use the funding for other projects. Not only will the Department of Technology see a reduction in expenses in the long run, but they would also eventually be able to provide the public with (1) reliable transportation vehicles, (2) more transportation options and (3) lower prices. The Department of Defense and NASA could also use the new technology to make their aircrafts, ships, military vehicles and space shuttles perform better. While these transportation vehicles may not seem like they directly serve the community, they allow their corresponding departments to provide universal services such as safety, security, communications and research, which benefit all citizens. These few examples demonstrate how the PNGV program can directly benefit the public by using technology as a public good.

The direct usage of PNGV's technology is not the only way to provide public goods. There are many indirect ways the technology can provide public goods that were not originally considered. One way is that the technology could assist with the development of other products or services that could eventually become public goods. Scientists repeatedly have built off the transferable technology that is available to them. What would prevent PNGV scientists from using the technology to create other machines at a larger scale that could be used in homes, businesses and government buildings? The PNGV program stated that they would like to help produce a cleaner environment through their technology in cleaner vehicles. PNGV's technology could be a foundation for renewable energy machines other than vehicles. The newly invented technology might be a stepping stone to further develop machines that can efficiently and inexpensively transform wind, sun, water, methane gases and/or ethanol into energy for public usage. The examples of improvements and budget savings presented are not inclusive of all the benefits that PNGV's technology could provide the local, state and federal government. By providing a detailed list of concrete benefits for Congress, the PNGV task

force can prove that their goal to provide new technology is definitely a public good that will benefit the people and the government.

In order for any program to succeed, it is imperative that a program theory is developed. The program theory states what the program hopes to provide and how that relates to the social benefit it hopes to accomplish (Rossi, Lipsey and Freeman, 2004). Some of the goals are considered short- and long-term outcome goals. From these outcome goals an organizational plan should be created. The organizational plan will determine what types of services the program will provide to accomplish their specified impact (Rossi, Lipsey and Freeman, 2004). There are two sets of goals that should be determined in the organizational plan – the output goals and outcome goals. The PNGV program already determined their outcomes goals, but they also need to show how that would be achieved. The output goals are specific tasks/inventions that PNGV will deliver, which will lead to accomplishing the outcome goals (S. Gen, classroom lecture, January 24, 2007). Two of PNGV’s output goals are that (1) they will develop and introduce new technology to make cars run more efficiently and (2) they will develop and introduce technology that decreases the US’ dependency on petroleum. An impact theory model (Chart #1) is a clear way for PNGV to show how the output goals can achieve their overall outcome goals.

Chart #1: PNGV Impact Theory Flowchart



Defining policy goals with a sound program theory and proving that the goals are public goods will show Congress that PNGV is a beneficial program.

Issue and Recommendation #2 – Building Efficient Networks within Government Agencies

Networking/Partnership Issue – The Clinton Administration was able to create a strong partnership between the PNGV program task force and the US auto industry; however, the partnership between government agencies has not been entirely successful. There were many problems coordinating tasks (especially surrounding the budget appropriation) and getting some of the departments to participate. If the issues are not addressed, then the problem has the potential to interfere with the success of the PNGV program. The following suggestions are ways that could help build a strong network or multiple networks between the agencies.

Network/Partnership Recommendation – Woodrow Wilson (1887) stated that the government should work together to achieve goals that best serve the public community. Although his ideas are over 100 years old, they are still relevant today. One way to open communication and build goals between the agencies is by creating partnerships with networks. Networks are formal or informal relationships between organizational structures that are based on common interests or goals (O’Toole, 1997). Currently, the agencies do not have much interaction with each other or the PNGV task force. Creating networks for the PNGV program is imperative to its success because creating new technology will require that the agencies adopt innovative concepts and flexibility within their administration (Bogason and Toonen, 1998). Using the PNGV short- and long-term policy goals as the foundation of the partnership, the PNGV task force can work with the agencies to determine what they hope to gain from the program as a network. Specifying smaller and yearly shared goals are also necessary for the network to help the PNGV program. The smaller goals will help the task force quantify the outputs (Callahan and Holzer, 1994). By discussing the shared large and small goals with time points, lines of communication will open up and all partners will know what to expect from each other.

Since the agencies involved have different missions and functions in the public sector, it is very important for the PNGV task force to develop separate goal congruence with each agency and each other. Each agency may have their own idea of what they would like to achieve and what they can contribute to the program. In Goldsmith and Eggers (2004), they state that achieving goal congruence is important to ensure that all parties have a shared outcome. Reaching goal congruence can be achieved by conducting meetings between the PNGV task force and department heads or even something less formal with less people. Either way would work, but it is very important that the PNGV task force and the agencies are in agreement of the shared outcome(s).

Achieving goal congruence is only part of the network process. The next step is to identify the actors and the roles that each agency will play. Identifying the actors and their roles will allow for the agencies to know exactly what part they will play in the program and who else is playing a part in the network (Patton and Sawicki, 1993). By clearly defining the roles, it will help foster communication and procedures, which would eliminate duplication of work and wasted effort (Goldsmith and Eggers, 2004; O'Toole, 1997). In addition, it will also keep the agencies accountable for their role and make the network run efficiently (Goldsmith and Eggers, 2004). Specifying the roles will also encourage the actors to share knowledge and skills between the agencies and private industries (Goldsmith and Eggers, 2004).

Network creation is necessary when multiple agencies are needed to work together and produce an outcome. Not only will networks help provide public goods, they can help eliminate inefficiencies within the public sector.

Issue and Recommendation #3 - Creating a Permanent Strong Administrative Section

Administrative Organization Issue – Once the networks between the government agencies and US auto industry are created, organizing the program will be difficult with the current set up of the PNGV task force. As the PNGV task force currently stands, it could have between two to six rotated employees loaned from other

agencies organizing the administrative tasks and decisions of the program. The PNGV task force does not have (1) enough staff, (2) permanent staff and (3) the skills and knowledge necessary to efficiently organize the network or work with Congress. Organizing the PNGV program and making sure that all partners follow what is needed to reach the output and outcome goals cannot be achieved without creating a permanent strong administrative body. The PNGV task force needs to become a permanent strong PNGV administrative section, which is possible by taking the steps stated in the recommendation.

Administrative Organization Recommendation – According to Goldsmith and Eggers (2004), an effective governance structure will create a mainframe that could provide communication, management and organization between the agencies, US auto industry and Congress. Therefore, it is necessary to create a permanent, knowledgeable and skilled administrative section to run the program efficiently. Since there are so many factors working against the PNGV program, an administrative section needs to be flexible to the political, budgetary and technological twists and turns that could possibly occur. The administrative section's role is to allow for the creation of technology, not be an additional body that impedes it (Klein, 2000).

Before establishing who should be staffed in the PNGV administrative section, the structure of the organizational body needs to be determined. How should the organization administratively function? Will the staff be housed in a physical office or will this be a virtual office? These are important questions that should be answered before the administrative section is configured. The first step to creating and managing an administrative section is to set the goals and objectives (Bowditch and Buono, 2005). What are the goals for the administrative section? How many employees are needed to achieve these goals? The second step is to determine the roles of the employees (Bowditch and Buono, 2005). The PNGV administrative section needs knowledgeable staff to coordinate and determine the budget, communicate goals and guidelines between agencies and the US auto industry, lead the R&D projects and advocate the program progress to Congress. The number of technology projects and yearly programmatic goals will determine the number of staff needed to complete the tasks of the administrative section. The third step is creating policies and procedures for the

employees of the administrative section (Bowditch and Buono, 2005). The policies and procedures will not only give the administrative section guidelines on how to interact with each other, but also state how to interact with the agencies, US auto industry and Congress (Bowditch and Buono, 2005). The final step is to enhance the cohesion/relationships of the administrative section between each other and also, between the agencies and US auto industry (Bowditch and Buono, 2005). The agencies and US auto industry may not be used to working with an outside administrative section and easing them into the transition may be necessary. The organizational set up of the administrative section is imperative to the success of the PNGV program.

Setting up structure of the administrative section can be done in-house through a planning committee or the task force. However, hiring a consultant to determine the best configuration with a thorough evaluation is another option. Consultants can give an unbiased view of the PNGV program's state and make suggestions based on their past experiences (LaBonte and Robinson, 1999). Both approaches are acceptable choices for structuring the administrative section.

Once the best structure for the administrative section has been decided, determining who to hire is the next question. PNGV needs a staff that is knowledgeable in the different areas that will be conducive to the administrative section's goals. Hiring based on PNGV operational and administrative goals is called strategic human resources management (SHRM). SHRM is where human resources activities and policies are structured around the needs and goals of the organization (Pynes, 2003). The SHRM structure would work well for PNGV since their output and outcome goals will differ each year or specified period. The SHRM approach will also help managers forecast their labor needs (Pynes, 2003). Performing position job analyses with a SHRM approach is an appropriate way to manage personnel since the administrative section could grow or shrink based on the projects (Pynes, 2003).

As stated, PNGV needs staff to coordinate and determine the budget, communicate goals and guidelines between agencies and the US auto industry, lead the R&D projects and advocate the program progress to

Congress. However, these positions should not just be simply created at the beginning of the program. A job analyses should be performed as needed to determine the job content, context and requirements of each position (Daley, 2002). The job content states the duties and responsibilities of the position, the job context states the work environment and resources of the position and the job requirements state the necessary skills, knowledge and ability the candidate must possess (Daley, 2002). Performing job analyses will not only give clear guidelines to what type of person should be hired, but it can also show what roles can be combined or separated. Job analyses could also prevent programs from wasting money and time in the recruitment period. Salancik (1977) stated that an employee will be more committed to the organization if they are satisfied with their position. By clearly stating the job content, context and requirements, candidates would have the information they need to decide whether they could not only perform the job, but whether it is a good match (Roberts, 2003). The job analyses can also help a program determine whether they should recruit from within the organization or search on the outside, such as universities, recruitment agencies, professional associations and other institutions (Daley, 2002). Taking the time to determine the roles of the staff can prevent future problems with hiring and organizing.

While the developed technology will be the successful outputs from the program, it cannot be achieved without a strong administrative section guiding and organizing the process.

Issue and Recommendation #4 - Assessing Budgetary Issues Surrounding PNGV

Budget Issues – There are several budgetary issues with the PNGV program. First, since funding for the PNGV program is housed in different agencies and cannot be redirected, it can be difficult to coordinate and allocate money without persuading the agency heads. The second problem is the amount of funding the agencies allocate. If an agency receives a funding cut from the federal government, then funds appropriated for the PNGV program may be cut or used for other programs. Since PNGV does not have control over budgeting, it can be difficult to run a productive program.

Budget Recommendation – When funding for programs come from different agencies, it is difficult to budget, forecast and/or plan. While the PNGV program does have barriers to directly controlling the budget, working on the budget can be achieved through the already-established network. The main goal of creating the networks between agencies is not only to gain goal congruence and buy-in, but to also secure funding for the program and administrative section (Callahan and Holzer, 1994). One way to increase the chance that agencies will consistently fund every year is to clearly communicate the benefit gained from funding the PNGV program (Goldsmith and Eggers, 2004). Stating and restating the output and outcome goals is one way to keep agencies interested. Providing the agencies incentives (collaboration, increased knowledge or technology, technology rights) is another way to keep agencies involved and also, it ensures funding (Goldsmith and Eggers, 2004). Creating a PNGV budget committee with the administrative section, the agencies and the US auto industry heads is another, but more formal and collaborative, way to negotiate funding (Lee, Johnson and Joyce, 2004). Not only will the PNGV administrative section know how much funding they could possibly receive, they would also have some part in the budgeting decision. In addition, they could work together to forecast the budget plans according to the output and outcome goals (Johnson, 1996). If utilizing the network to secure funding does not work, then functional integration budgeting may be an option. A functional integration budget is where technological or programmatic functions (such as certain parts, scientific effort, etc.) can be shared with the responsible agencies (Lee, Johnson and Joyce, 2004). Without the ability to control the budget, being innovative is the best way to fund the PNGV program.

Once the PNGV administrative section has created a budget relationship with the agencies, the budgeting process can continue. Programmatic budget planning is necessary to determine what each agency can contribute and how the funding should be tied with yearly and overall goals. A plan of specific goals with the allocated resources should be created yearly or for a specified time period. Not only should the plan have a bottom line, it should break down the technological goals (with costs) into lower and upper echelons (Sinuany-Stern, 1993). Therefore, depending on the economic environment, the goals in the upper echelons can be protected while the goals in the lower echelons can either be modified or dropped if the budget

changes (Klein, 2000; Sinuany-Stern, 1993). The plan will prepare the PNGV administrative section for any increase or decrease in funding and allow for the program to function without significant delays.

Incremental budget planning is another way to determine what each agency can contribute. The incremental budgeting approach takes the current year's budget and makes slight increases based on program changes, new project initiation, inflation, etc (Johnson, 1996; Lee, Johnson and Joyce, 2004). This approach will not work so well if there are any major programmatic overhauls necessary because it can attract scrutiny (Johnson, 1996). However, it would be harder for agencies to stop funding the PNGV program once it starts and that can be a clear advantage. Incremental budgeting is time-saving and very useful when the level of funding is stable and forecasting would be easier for the administrative section (Johnson, 1996; Lee, Johnson and Joyce, 2004).

Budgeting for the PNGV program is complex, but not impossible. It takes networking, communication and innovative approaches to ensure that the program gets the funding that is needed for the proposed goals. While there is not one right way to determine the budget plan and allocate funds, being flexible is the best way to approach the situation.

Issue and Recommendation #5 – Creating an Evaluation Plan for PNGV

Evaluation Issues – Once the PNGV program is fully operating, determining whether the agreed upon output and outcome goals are attainable will need to be determined. The problem with many programs is that it is difficult to determine whether they are successfully reaching their goals until it is too late (S. Gen, classroom lecture, January 31, 2007). The problem exists simply because program officials do not create any type of evaluative system before they begin (S. Gen, classroom lecture, January 31, 2007). Since PNGV is a controversial program among Congress and has a complex organization (network between public agencies and private sector), being proactive about their output and outcome results is necessary to keep funding and

support active. However, an evaluation plan will not only keep funding and support active, it can give the administrative section important information that will affect their decisions in the future.

Evaluation Recommendation – Planning and performing an evaluation plan are two different tasks of equal importance. The first part of the planning process is identifying and determining the program theory (Rossi, Lipsey and Freeman, 2004). Since this part would already be done as part of the process of defining policy goals (see Issue and Recommendation #1), the next step would be determining what type of evaluation method is needed. PNGV has several types of programmatic goals and each type should be evaluated respectively to whether they are output or outcomes.

According to the impact theory flowchart (Chart #1), there are two types of outputs: develop and introduce technology to (1) make vehicles more efficient and (2) substitute the petroleum used in transportation for other renewable resources. Performing in-house or third-party analyses of the output of technology developed will provide PNGV with a formative evaluation of the program (S. Gen, classroom lecture, March 7, 2007). Since the act of developing technology is not easily quantifiable, there are other types of output measurements that can be performed such as whether the technology reached a certain stage or if a prototype was created or if certain parts of the technology were created during the set timeframe. Another evaluation that needs to be performed is the efficiency of the output. Questions that could be asked are whether PNGV is spending under or over budget and/or whether the created technology was usable. The analyses will show whether the set output goals along with specific time points are realistic to the PNGV program parameters (S. Gen, classroom lecture, March 14, 2007). Performing these analyses over a predetermined evaluation period will allow the PNGV administrative section to see (1) if they are reaching their overall technology output goals and (2) if they are reaching their set target dates and spending limits.

The evaluation of the short- and long-term outcome goals should be measured very differently than how output goals are measured. Outcome goals are dependent on the impact the technology (outputs) has on

society (S. Gen, classroom lecture, March 14, 2007). In order to determine whether the program has reached their outcome goals, analyses of effectiveness and productivity needs to be measured (Burkhead and Hennigan (1978); Osborne and Gaebler, 1993). This type of evaluation measurement is more difficult to obtain not only because PNGV has very different short- and long-term outcome goals, but also because there are outside factors that cannot be controlled (especially in measuring the effect the technology has on the environment). Determining which short- and long-term goal(s) should be measured is the first step. However, selecting which diverse PNGV program outcomes should be measured can be difficult. For example, measuring outcomes under a specific category may be needed when PNGV needs to prove to Congress that the created technology is helping the economy (see table #1).

Table #1 – PNGV Short- and Long-term Outcome Goals by Category

<u>Technological</u>	<u>Economic</u>	<u>Environmental</u>
<ul style="list-style-type: none"> • Increase efficiency in current automobiles and trucks • Make the United States a leader in technology 	<ul style="list-style-type: none"> • Enhance the competitiveness status of the US automobile industry in domestic and international markets • Create a stronger US economy 	<ul style="list-style-type: none"> • Reduce petroleum consumption and production of greenhouse gases • Provide a cleaner environment

Source: Partnership for a New Generation of Vehicles: A Declaration of Intent

The outcome evaluation should be chosen according to what is needed to be measured at the time (Rossi, Lipsey and Freeman, 2004). Not all outcome goals need to be measured at the same time or frequency (Rossi, Lipsey and Freeman, 2004). Whatever is measured should match the need and funding for PNGV at the time.

Once the outcome(s) that should be evaluated have been selected, creating the evaluative tool and measurement is needed. By using the short-term goal “increase efficiency in current automobiles and trucks” as an example, PNGV can determine many ways to see if this goal is being achieved. Performing a time series evaluation is one way to give evaluators the necessary type of information. Checking how automobiles and trucks run at certain time points before and after the new technology is installed is one way to test the efficiency (Rossi, Lipsey and Freeman, 2004). Measurements for this evaluation can include pre- and post-technology measures of mpg, engine wear and/or tire wear on two sets of vehicles – one with the technology

(experimental group) and one without (control group) (Rossi, Lipsey and Freeman, 2004). All information and data gathered could determine whether the new technology is “increasing the efficiency” depending on the measurements and the statistical strength of the evaluation (S. Gen, classroom lecture, April 18, 2007). Outcome evaluation can be performed in-house or using a third-party as long as the evaluator is knowledgeable of how it should be performed and is able to execute it. Performing the outcome analyses over a predetermined evaluation period will allow the PNGV administrative section to see if their technology has an impact on the society, economy, technology and environment.

Program evaluations can gauge whether the program is able to reach their output goals and achieve their short- and long-term outcomes. With PNGV being under scrutiny by Congress, program evaluations are necessary to determine if the program is efficient and effective. More importantly, it allows for the PNGV administrative section to determine what changes (if any) are necessary.

Conclusion

The goals of the PNGV program can be extremely beneficial to the public. Not only will it bring new technology to automobiles, but it will also have a positive impact on the economy and the environment. Although PNGV has many different issues, the solutions are feasible to reach. The five main areas where PNGV are encountering issues are (1) Strengthening Policy Goals, (2) Building Efficient Networks within Government Agencies, (3) Creating a Permanent Strong Administrative Section, (4) Assessing Budgeting Issues, and (5) Creating an Evaluation Plan. There are many recommendations that address each of these issues, but the main overlapping ones are working to specify the program goals and utilizing networks and an administrative section. While certain programs may be great ideas or theories, the failure to plan and execute is why they do not succeed (Klein, 2000). Learning from others mistakes can only help the PNGV program. Private and public partnerships programs are still a fairly new trend in the government, but it has become an innovative way create new products, save money and provide public goods. PNGV has the ability to capitalize on the benefits of building partnerships and truly provide public goods to the citizens of the nation.

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