

Memorandum

Date: December 3, 2007
To: Mayor Richard Daley, the City of Chicago
From: Krisada Tawee, the Commission on Extreme Weather Conditions
Subject: The City of Chicago and the 1995 Heat Wave

What the heat wave left for the City of Chicago in 1995 was not merely a mountain of dead bodies. A five-day period of extreme heat also unfolded the story of unprepared emergency systems. The death of more than over 700 residents was somewhat a result from improper information systems, unclear existing policies, budget constraints, coordinated responses and people's attitudes and roles of the leader.

This disaster was a common failure. There was no official emergency warning at the beginning, and no political leaders or top public officials realized the full significance of what the heat wave had caused until almost after the fact. Over the duration of the heat wave, meanwhile, many heat-sick patients couldn't get to a hospital due to the shortage of ambulances and the unclear bypass policy. As a result, hundreds of people had died whereas many suffered permanently from the heat wave effect (Klinenberg, n.d.; Varley, 2002). These unlikely results call for the utmost discretion of people involved as to what and how to anticipate such a catastrophe. Provided below are relevant issues and recommendations.

Improper Information Systems.

Information is a matter of concern for decision makers. It helps managers understand events in organizations and environments in order to ensure potential solutions. Through an information system, raw data as an input will be translated through processes into information, which managers can use it in making proper decisions (Starling, 2005, p. 565).

In fact, the City of Chicago has its monitoring system in that the Department of Public Health will be informed any unusual outbreak of illness in the city from its local hospitals. However, the fact that people had been sick and dying from the heat wave didn't get to city officials by this formal monitoring system. By the end of the second day of the heat wave period, the media reported what had happened to people

from the heat wave attack through which the top public health officials then realized what was happening. The significant point is that heat sickness was not recognized as a communicable disease so it was not mandatory for local hospital agencies to report (Varley, 2002, p. 18).

Unclear Existing Policies.

Public policy is what government wants to do, and it involves all levels of governments and agencies to achieve its goals and objectives (Theodoulou & Cahn, 1995). The clear-cut policy is critical for public officials who are responsible for implementation. For example, a policy that is too hazy and broad can result in implementation's uncertainty, whereas a policy that is too specific and narrow may restrict agency discretion as well as improvement of policy itself (Theodoulou & Kofinis, 2004, p 169).

From this case, there are three existing policies that underlie the heat wave disaster.

1. The Emergency Plan. The crisis management plan (CMP) should include the steps and persons who take responsibility in a crisis and also provide all contact information for key members of the city and other important agencies and persons. Especially, a communication plan that indicates a crisis command center should be a major part of the CMP (Starling, 2005, p. 235-236).

On paper, the City of Chicago had its own emergency policy to prevent such a disaster. As for its details, whenever the heat index reaches a certain point, the City Department of Public Health would announce a formal "Heat Emergency" and then open "cooling centers" to provide public advisories of how to deal with high temperatures. With only two pages, however, the plan for responding to a Heat Emergency was perfunctory giving general instructions of opening "cooling centers" but didn't say what and how to do anything after that. An emergency plan without complete details cannot provide a comprehensive solution. Moreover, the city didn't fully utilize its own heat emergency plan until the mayor declared an official "Heat Emergency" on Sunday, July 16, after a large number of dead bodies had already been found in apartments and then delivered to the Medical Examiner's office (Klinenberg, n.d.; Valey, 2002, p.18).

2. The Emergency Department Bypass Policy. Under a policy adopted by the Emergency Medical Service Commission of Metropolitan Chicago in 1981, Chicago-area hospitals were allowed to declare an emergency bypass if overwhelmed by patient demand, so incoming ambulance patients had to go to another emergency department. The main purpose of this policy was to help relieve overload hospitals and re-route incoming ambulance patients to the next nearest hospital. However, such a policy was nebulous in that there were no criteria for what exact situations should exist before. Moreover, there also was no system to monitor the hospital bypass situation as a whole. At one point in this case, eighteen hospitals were simultaneously calling for bypass, refusing new emergency patients. This incident created direct and indirect effects on patients and other agencies involved.

Over the heat wave period, thousands of Chicagoans had called for ambulances due to severe heat-related illnesses, but paramedics couldn't adequately respond to the needs of those calls. One of the reasons was because the city hospitals were overwhelmed and went on bypass status, putting some ambulances under the pressure of driving around and looking for an open emergency department. As a result, there were many reports of death on arrival and permanent adverse health affects for heat-sick patients (Klinenberg, n.d.; Valey, 2002, p. 8-10).

3. The Mutual Aid Policy. There already was a warning for years from the Chicago Fire Department's Emergency Medical Service ambulance crews that the 59 ambulances the city had couldn't cope with the growing demand of emergency calls (Varley, 2002, p 12). The front-line public employees who knew best in their own area raised a concern of a working issue, but nobody heard or did anything (Lipsky, 1980; Maynard-Moody & Musheno, 2003).

During times of the heat wave attack, there were more or less one thousand emergency medical calls—roughly 50-90 percent above usual (Varley, 2002, p. 12). Compounding these enormous call volumes with the unsystematic bypass policy, ambulance providers had to spend more time in responding to heat-sick patients, resulting in higher rates of dead-on-arrival and permanent adverse health affects (p. 1-2). The shortage of ambulances was obvious evidence of the tragic event. But we also have to look at the fact

that the Chicago Fire Department did have a mutual aid program that allowed the Fire Department to call in extra ambulance help from the Chicago suburbs or private ambulance companies in the city.

However, this program was not practical. The Fire Department, therefore, chose not to call in additional ambulance help. One reason was because EMS ambulances in the suburbs were also under strain in response to their own heat-sick patient demand and would be unfamiliar with the city. Another reason for not calling in the private companies was because there were no rules and protocols between the city and the companies of how to provide the service under the mutual aid program. To avoid an awkward position and a problem of different rules and financial arrangements, the Fire Department then ignored additional help and provided the service by itself with the inadequate resource. The mutual aid program which should help release the burden had done nothing because there was no comprehensive detail (Varley, 2002, p. 12-14).

Budget Constraints.

Budgeting is simply to make and control a plan of any organization showing how to obtain and distribute resources in order to achieve its objectives. It also indicates the extent to which an organization will operate. With budget constraints, the agencies have no incentives to go above and beyond their objectives since they have to survive their organizations first (Finkler, 2005).

From this case, there was a question on what sort of resources should be made available for future disasters. There was widespread acceptance that Chicago hospitals lacked the medical equipment and staff resources. Then it was usual for them to call for a bypass. The Fire Department's Emergency Medical Service provided services with the small number of ambulances compared to the growing population. Meanwhile, the Medical Examiner's Office complained about the body transportation job that there were no enough vehicles to cover the whole city, stating that "the county will only budget you for what you routinely need—they don't budget you for emergencies" (Varley, 2002, p 12).

The city already received the request of additional resources but couldn't do anything much mainly because of budget constraints. However, the facts that eighteen local hospitals were on bypass status at

the same time and that 59 ambulances couldn't cope with emergency calls over the heat wave period exacerbated the situation (Varley, 2002). To anticipate the problem of inadequate resources, the city should reconsider its own budgeting.

Coordinated Responses.

Coordination is to organize the different parts of an activity and the people involved in it so that it works well. It helps the system to run faster in a consistent way, resulting in better effectiveness. In the analysis of the 9/11 terrorist attack, the coordination was a major problem. The complexity and diversity of organizations involved didn't allow a well coordinated response (Goldsmith & Eggers, 2004, p. 47; Kettl, 2002, p. x). There were no communication channels for the flow of information, no shared strategies and knowledge among the organizations, and especially no monitor to look around the situation as a "big picture" (Goldsmith & Eggers, 2004, p. 94). This fragmented structure doesn't put each piece in the right position to create a unified body (Denhardt, 2006, p. 167).

From this case, it was almost too late by the time the mayor and top public officials received the information of people developing severe heat sickness and rushing to the hospitals, and they received it not from the established system. Without clear-cut criteria, local hospitals called for bypass status at the same time, creating a big burden for paramedics. Meanwhile, in the aftermath the Fire Commissioner accepted that the Fire Department command staff didn't know the facts that there were not enough ambulances to provide services at that time, and that 18 hospitals simultaneously went on bypass. So they didn't call for extra ambulance help. In addition, the Chicago police ran out of squad rolls partly because they have to wait to transfer body to the county (Varley, 2002).

These incidents can prove that there was no coordination mechanism to monitor the situation and connect each organization together. These disparate groups didn't share information to create a synchronized response. Therefore, the information stuck at one point didn't get through the decision makers who should allocate resources to alleviate the problems.

People's Attitudes and Roles of the Leader.

Leadership involves mobilizing people to confront tough problems (Heifetz, 1994), and it is a two-way event in which “a leader affects and is affected by followers” (Northouse, 2004, p. 3). In approaching a problem, a leader provides his or her vision that communities accept as a common direction (Heifetz, 1994, p. 14), and he or she will then play the pivotal roles of clarifying goals and arranging structure suitable for the situation (Bolman & Deal, 2003). In addition, the role played by the leader is a fundamental factor to influence behaviors and attitudes of the follower (Galford, 2006; Starling, 2005, p. 23).

However, to play a role as an insightful decision maker must be accompanied with political instincts. In the past, for example, John and Robert Kennedy applied political instincts to shape the key decision on the Cuban missile crisis, even though many consultants insisted in the rational model and standard operating procedures, which might lead to a nuclear war (Kettl, 2002). This incident shows the leader's visions and instincts contrasting to others' attitude.

From this case, our leader's focus was too narrow in responding to the heat wave while the attitude of people toward the heat wave was too shallow (Bowman, 2004; Galford, 2006). The fact that the heat wave didn't affect images of environment as tornadoes or other natural disasters do, and that Chicago had been through a heat wave many times might make people accustomed to it.

Chicago, in fact, had previously received information about the heat wave, including its impact from other cities, but the people looked at it as an acceptable risk. The local newspaper columnist, for example, spent time sunbathing during the heat wave period and then proudly reported his activity to the public. Meanwhile, instead of warning people to the possibility of danger, the mayor gave an interview that the heat wave was only a little problem, stating that “It's hot. It's very hot. We all have our little problems, but let's not blow it out of proportion. It's like getting real cold weather. Yes, we go to extremes in Chicago, and that's why people like Chicago. Lets just all work together and calm down” (Varley, 2002, p 4). This idea insisted in the traditional public administration through structure and process (Kettl, 2002,

p. 12). Also, it implied a degree of downplaying the situation and encouraged the public unawareness. In this case, the heat index reached the maximum point of Chicago's record history (Varley, 2002, p. 4). Therefore, "historical processes, current organizational charts, or existing capabilities" cannot routinely apply to accomplish a special task (Goldsmith & Eggers, 2004, p. 91). This is not to blame anyone but to point out the way to anticipate future disasters that the role of the leader is very significant in shaping public values.

Recommendations

Redesign the relevant City-wide Emergency Policies and Systems.

This attempt is to provide a comprehensive system for handling man-made and natural disasters. Before, our policies relevant to the crisis were separate and unclear, making unlikely results. To create a comprehensive emergency response plan, we should do as the following.

1. Expand the monitoring system. From now on, the city will respond to the heat wave through reporting from the National Weather Service. The mayor or the chief of the Emergency Command Center will activate the city emergency response plan, depending on levels of imminent disasters. The Command Center will then declare a Heat Emergency to the media and the public as well as coordinate and provide guidance to organizations involved (details in the Command Center).

Another point to be considered is reporting communicable diseases from local hospitals. Our monitoring mechanism was improper and impractical to channel the information flow. The network the Department of Public Health created didn't designate the widespread heat-wave casualties as an emergency since heat sickness was not a reportable disease (Varley, 2002, p. 18). To prevent such a situation, the Public Health Department should expand the condition of reportable diseases to cover unusual syndromes and events (Varley (B), 2002, p. 5) and then publish handbooks for easy reference. The department should also hold a meeting to make clear of what should be reported to local hospitals and then establish a 24-hour hotline for better access.

2. Amend Bypass Policy. The problem of calling for bypass for Chicago-area hospitals is mainly because there were no criteria for defining when bypasses could be declared. The emergency departments then might slightly bend the rule for their favor. Over the heat wave period, however, eighteen hospitals simultaneously called for bypass status, creating a big burden to paramedics and other hospitals (Varley, 2002, p. 8-10). To prevent such an incident, the bypass policy should be reconsidered, especially during crises.

The Department of Public Health and local hospitals should cooperate closely in the new practical criteria covering what conditions should have occurred before bypass status is declared, and also develop a procedure of what should be done after that. Hospitals have to directly report and explain reasons to the state Department of Public Health's Emergency Medical Services whenever they go on bypass. The state EMS division then has to check bypass status for the city as a whole and assumes authority to withdraw such a request if necessary. The major point is that the EMS division has to be stricter about the rule and also look at the big picture to prepare the city-area hospitals for crises (Varley, 2002 (B), p. 7-8).

3. Partner with private ambulance companies and rearrange ambulance assistance program. The 59 ambulances the city had couldn't cope with the demand over the crisis. The Fire Department, however, chose not to call in additional ambulance help for two main reasons. First, EMS ambulances in the suburbs were also under strain in response to their own heat-sick patient demand and would be unfamiliar with the city. Second, there were no details and protocols between the city and the companies of how to provide the service under the mutual aid program (Varley, 2002, p. 12-14). According to the above reasons, the Fire Department should obtain more ambulances and amend the Mutual Aid Policy to be more practical, particularly in workable systems to call in extra ambulance help (Varley (B), 2002, p. 6).

Given the fact that private sector paramedics receive the same training as the Chicago Fire Department paramedics and are already familiar with the city, a network of interlocked public-private partnerships is an appropriate idea (Ehrenhalt, 2005; Frederickson, 2005; Goldsmith & Eggers, 2004, p. 4). To obtain additional ambulance help over crises, the city should then develop public-private networks through the Ad Hoc type: It is a network often in response to a specific event especially for an emergency or a disaster

(Goldsmith & Eggers, 2004, p. 69). The city should make a contract with private ambulance firms to enhance the ambulance delivery for use in emergencies and also establish a clear and simple procedure of how to delivery the service, including its cost. This collaborative venture will make the ambulance service over crises more flexible and faster (p. 31).

Another matter of concern is to amend the Mutual Aid Policy. During times of the heat wave attack, the program proved useless to help release the ambulance service burden. The Fire Department accepted that there was no system to make use of this program. Under the old procedure, the department had to call around to ask for ambulance help from other fire departments. There also was a constraint that those ambulances were not accustomed to the city (Varley, 2002, p. 12-14). Therefore, the new Mutual Aid Policy should establish a clear-cut system of calling for additional ambulance help by creating a waiting list for available ambulances among cities in each day from which the department would call in extra ambulances. In doing so, we can apply Geographic Information Systems (GIS) to help monitor and record available ambulances (Pamuk, 2006).

Also, there should be staff training in providing additional ambulance help among cities to make ambulance crews familiar with cities' locations. In addition, the Fire Department should consider ambulance locations. They had been established in fire stations for many years but the city has since experienced enormous change. The units might be located disproportionately when compared with the present population in that area. The department, therefore, should place ambulances in the areas with the highest call demand (Kuhn & Nagaraj, 1991).

The Comprehensive Emergency Plan through the Use of Geographic Information Systems, Web-Based Participative Planning and Survey and Focus Group Research.

The current heat wave emergency plan lacks significant details of how to perform after declaring a formal citywide "Heat Emergency" and opening "the cooling center." The only two-page plan describes unclear directions to cope with high heat (Varley, 2002, p. 2). Over the heat wave period, there was no formal center to communicate between the city and the public and to coordinate among the citywide

organizations themselves. The situation was getting worse because no one could do anything when outages occurred.

The domino effect of power failure started from the local hospitals simultaneously announcing bypass status, the ambulances aimlessly looking around for open emergency departments, the police running out of squad rolls due to a bottleneck developing in front of the county morgue, to the death toll of more than 700 lives (Varley, 2002). These incidents pointed out to the state of the city's unpreparedness. The major concern of this case is to revise our emergency plan to cover every aspect and provide precise instructions.

The crisis management plan (CMP) should detail the steps and persons who take responsibility in a crisis including their contact information and also provide particular directions if unexpected situations occur. Especially, there should be a communication plan that indicates a crisis command center (Denhardt, 2006, p. 201; Starling, 2005, p. 235-236). In so doing, the city can use Geographic Information Systems, Web-based participative planning and survey and focus group research as powerful tools to develop the comprehensive emergency plan.

1. Geographic Information Systems (GIS). GIS is a combination of computer hardware, software, and geographic data for "capturing, managing, analyzing, and displaying all forms of geographically referenced information." GIS will integrate information (attributes) with location data and then show them in the form of the database view, the map view and the model view (<http://www.gis.com>).

GIS is a powerful tool for government especially in urban planning, public service delivery, transportation development, environmental protection, and emergency management (O' Loony, 2000; Greene, 2000, as cited in Pamuk, 2006, p. 70).

There are two major categories of GIS applications.

First, inventory applications are to locate housing information, showing its detail in maps with location data. In emergency response, for example, GIS is used to show thematic maps and relevant data to calculate on the emergency response times. It also can tell information of emergency calls and rescue cars' distribution. Second, policy analysis applications encompass thematic mapping and proximity

analysis. GIS, for example, helps design urban plans and policies by providing a spatial and analytical understanding of cities' infrastructure, housing and population's patterns. We will know the number of houses in that area, including its population to place the fire station in proportion (Zink, 2000; Pamuk, 2006, p.70). Moreover, it can depict the location that would result from man-made or natural disasters, which is very helpful in emergency response and recovery (<http://www.gis.com>). In a nutshell, GIS will give a big picture of the situations and help coordinate emergency mechanisms.

Therefore, in creating the comprehensive emergency plan, GIS will be a powerful tool of pre-incident planning, emergency response management and post-crisis recovery. With information of population's distribution and the city's structure GIS provides, we can make trend analysis and comparison of the city's areas as for the distribution of emergency forces such as ambulances and police patrols and the arrangement of traffic patterns. We will know where to put fire stations, how to get to the call's location with the least time and which areas with certain groups of people such as the elderly are more at risk than others (<http://www.gis.com>).

2. Web-Based Participative Planning. In the wake of 9/11 attack, New Yorkers enthusiastically offered their opinions of how to respond to emergencies through face-to-face participation and the Web site of the city. The "Listening to the City" project, for example, held a one-day meeting to discuss in small round tables about what the comprehensive emergency plan should be while another people can also put their ideas through the Web site of the city (Denhardt, 2006, p. 198).

Web-based participation is very effective in collaboration among the institutional and noninstitutional player involved (Denhardt, 2006, p. 198; Theodoulou & Cahn, 1995, p. 201). This strategy is direct to the point of what people want, encouraging innovative ideas and including everyone into establishing the city emergency plan. The city then should include Web-based participation in the process of making the new emergency plan. In so doing, the city can employ the existing city's Web site as a place to receive people's ideas and also share information of the comprehensive emergency plan development.

3. Survey and Focus Group Research. In order to best develop the new comprehensive emergency plan of the city, we should conduct a survey to gain actual information. Questionnaires and interviews will

gather information from the community about what it actually needs (O' Sullivan, et al, 2003, p. 207).

Also, focus groups are useful in obtaining in-dept information especially for the public sector in defining the services clients need. To obtain such quantitative and qualitative data, survey research and group interaction are significant keys (O' Sullivan, et al, 2003, p. 42).

The city should design a questionnaire to acquire the answers of what we lost, why it happened and what we should do to prevent such a calamity from the public as a whole (Denhardt, 2006, p. 198). At the same time, we should develop public workshops to obtain a variety of potential ideas toward the comprehensive emergency plan. More important, the survey research and workshops will involve people and make them as part of the planning process.

The Command Center for Communication and Coordination.

Even though there is an absolute plan to cope with a crisis, it does not mean we can achieve success without fine management. To put an emergency plan into practice, crisis management is thus far important. It is, by definition, a systematic effort to avoid or get through difficult situations, which especially threatens "the viability of organizations" or human life (Pearson & Clair, 1998 p. 60-61).

According to the Federal Emergency Management Agency (FEMA), there are four phases in crisis management. They are: 1) the planning of emergency management; 2) preparedness including training emergency response and arranging resources for the emergency use; 3) immediate response to the emergency involving situation and resource assessment, and command and control; and 4) post-crisis recovery (Wallace & Balogh, 1985, p. 135).

During crises, communication breakdown and erroneous information will distract ability to make logical decisions. A crisis command center as a main part of the crisis management plan will coordinate information flow and provide guidance to other organizations. It is a major place for gathering emergency data in which the key decision makers can monitor a situation, coordinate emergency systems and inform the media and the public thoroughly of the situation. Its objective is to integrate each part of the

emergency mechanisms into a big picture so that every information and movement will be on hand of the decision makers to better rearrange resources or make a new decision (Starling, 2005, p. 236).

The command center is practical and widely accepted. NASA, for example, has the Mission Control Center (MCC) as a central place to accomplish aerospace flights, in which there are about 50 people on a team with high tech equipment to handle any unexpected problem (<http://spaceflight.nasa.gov/shuttle/reference/faq/mcc.html>). As for the business sector, Dell Corporation has created Dell Enterprise Command Center (ECC) to provide faster problem resolution in both online and delivery services, even during a natural disaster. (<http://www.dell.com/content/topics/global>).

To optimize the use of the command center, there are four principles as the basis for an efficient emergency management operation (Wybo & Kowalski, 1998).

1. Ability distribution and communication: There should be responsible experts in the command center, each of whom has a specialized skill and feel free to communicate and create mutual knowledge.

2. Adaptability: A command center should be flexible in which experts can be added in or removed from the group. Its function should continue working regardless of whoever coming in or going out of the center.

3. Classification of the actors: The actors in the command center can be classified into four groups: perception, analysis, communication, and information. And they have their own decision capabilities.

- The first group functions as “eyes and ears” of the command center. Its duty is to collect relevant data and translate them into useful information for another actor.

- The second group is the analysis actor. Its responsibility is to propose action alternatives after analyzing a situation.

- The third group is the communication actor. It communicates with officials outside the command center.

- The last group of actors is the information actor. Its concern is to inform the public, the media or any person who wants to know the fact of the crisis.

4. **Distribution of tasks:** Prioritizing problems and setting tasks are the first concern of the center. The key members should combine all necessary tasks and include everyone in the process. Each individual must be assigned a specific task according to his or her ability (p. 132-134).

Given our experience from the heat wave attack, there was no such coordination to unify our fragmented organizations. The Crisis Command Center, therefore, should be permanently established as part of our city. According to our new crisis management plan, the command center will be a central place to command, control and inform organizations involved and the public whenever a man-made or natural disaster happens until the end (Varley, 2002 (B), 13-14).

The chief of the center can be the mayor or one of the commissioners from the public organizations involved. Whenever there is a crisis or likelihood of that happening, the responsible experts who have decision capabilities will be summoned to the center. After prioritizing problems and setting tasks, the key members will monitor the crisis situation, exchange information and provide resources and guidance to other organizations (Varley, 2002 (B), 13-14).

At the command center, decision support tools are very significant. They should meet the actual need of decision makers and help provide better choices. There are three sets of powerful tools.

1. A decision support system (DSC): It simply is a computer network, including hardware and software, gathering important data to help provide action alternatives (Wallace & Balogh, 1985, p. 134-135).

2. Emergency hot lines: There should have direct and immediate telephone lines among organizations and the public, as for use in a crisis.

3. Geographic Information System (GIS): It is a computer program providing information and graphics of “what is where on the Earth’s surface” (<http://www.gis.com>). It is useful to show thematic maps with details to monitor and analyze situations as a whole (Pamuk, 2006).

As a result, the command center with proper equipment will provide better communication to create synchronized responses and also help distribute information to the media and the public.

Modified Zero-Based Budgeting for the Arrangement of Resources.

There already was evidence of insufficient resources in responding to the heat wave. A widely accepted reason was the city was on a tight budget that constrained ability to afford requested medical equipment, ambulances, transportation vehicles and personnel. It is therefore not surprising that our mechanism to handle crisis situations was somewhat flimsy. To increase our capability of emergency response, the city must acquire more necessary resources.

The modified zero-based budgeting is an attempt to overhaul overall spending of an organization, adapted from the zero-based budgeting. It is “what-if” budgeting, purposely raising a question on “What if a program were to be eliminated?” (Lee, Jr., Johnson & Joyce, 2008, p. 153). Its objective is for managers to justify existing programs, looking for possibilities for eliminating or reducing their unnecessary costs (Pyhrr, as cited in Denhardt, 2006, p. 264).

Even though the zero-based budgeting consumes time and requires a lot of paperwork, it is an efficient technique to make the budget cuts with the least harmful effect on the city as a whole (Flinker, 2005, p. 92). It allows us to explore what actual programs and resources we need and also provides better choices for efficient spending (Mankiw, 2004; Steinemann, et al, 2005). With higher today’s technology in documentation and commitment from our citywide organizations, we can get through this and then have a complete picture of the city’s expenditures including alternatives (Lee, Jr., Johnson & Joyce, 2008, p. 154). In doing so, the city will start the modified zero-based budgeting as the following.

- The modified zero-based budgeting is different from its original in that it requires an organization to propose a new budget reduced to a 70-85% level from the last fiscal year (Morgan, 2002, p. 118). Meanwhile, the zero-based budgeting will start from zero, pretending that the program never exists before (Finkler, 2005, p. 92).
- All current and proposed programs will be reviewed and analyzed as decision packages which top managers will rank them through the use of cost-benefit analysis (Mankiw, 2004; Morgan, 2002, p. 124; Steinemann, et al, 2005; Starling, 2005, p.532).

- Resources will be allocated through the priority of this ranking (Starling, 2005, p.532).

The modified zero-based budgeting can be applied for the whole citywide organizations or be specific to any department or program. By looking at different decision packages and their cost-benefits, we can efficiently allocate limited resources and have more money left to acquire necessary tools especially in response to crises (Finkler, 2005). In addition, the city, of course, should request more budgets from higher levels of government to support the city emergency response. Also, we can raise public donations for funding the emergency response equipment through the city's network (Goldsmith & Eggers, 2004).

Mobilize People's Attitudes.

It is an attempt to influence relevant players in order to achieve the aimed result (Theodoulou & Kofinis, 2004, p. 161). The fact that the city and people were unaware of preparing themselves and that the media made a joke of high heat showed a remarkable ignorance of actual heat wave impacts. To mobilize people's attitude toward heat wave preparedness, the city can apply the symbolic frame to unify the community spirit. It is a strategy to make use of a symbol as a powerful tool to pave the way of seeking the desired objective. Underlying the symbolic perspective or framework are some core assumptions, two of which most apply to this situation (Bolman & Deal, 2003; Morgan, 2006).

1. "In the face of widespread uncertainty and ambiguity, people create symbols to resolve confusion, increase predictability, find direction, and anchor hope and faith.
2. "Culture is the glue that holds an organization together and unites people around shared values and beliefs" (Bolman & Deal, 2003, p.242-243).

In order to best execute the goals of the comprehensive emergency plan, the city and people must come together as a unified body. The city then should establish "the Heat Wave Memorial Day" to remind people of what had happened in the past and mobilize and inspire them to the state of preparedness. This is a good opportunity to unite people and the city in the aim of synchronized emergency responses. In that day, the city should have a meeting and activities as the following.

1. The ceremony to remember those who had died from the heat wave attack.

2. The education and information giving people the direction of how to prepare themselves and respond to heat wave situations (Wilson, 1887).
3. The visual displays of the emergency response system presenting through the citywide organizations' boards and Web sites, televisions and the media.
4. The mayor then should exercise leadership to confirm and convince people of what the city has done in response to the heat wave and also give an opportunity for people to share their values.

The Heat Wave Memorial Day uses the history to reinvigorate a sense of unity. By having interactions with one another, people will feel connected with the community. The Heat Wave Memorial Day should be held as an anniversary. The event will include bonding activities that will serve to remind the city and people as a whole of their commitment to prevent such a past disaster.

In sum, the 1995 heat wave attack had passed, but the remaining memory of its chaos has still reminded people what the city hadn't done in full force to prevent its deadening impact. The city has learned from the past experience and tried best to do what should have done before.

The improper information system didn't channel the flow of information on what the heat wave did to people. The unclear emergency plan, the bypass policy and the mutual aid program severely aggravated the situation. The budget constraint undermined the capacity of emergency response. The synchronized emergency response didn't happen due to the lack of the command center. And the role acted by the leader and people's attitudes pointed out to the state of unpreparedness as a whole. These significant issues had combined to form the worst weather-related case.

Provided with this memo are the recommendations to resolve the aforementioned factors. To resolve the problem of the improper information system, expand its monitoring mechanism to cover all aspects of reportable situations. To make clear of the existing policies, revise and restrict the bypass status, partner with private ambulance companies and rearrange the ambulance assistance program. To create the synchronized response, establish the command center and the comprehensive emergency plan through the use of GIS, Web-based participation and survey and focus group research. To gain more necessary resources in response to the heat wave, modified zero-based budgeting, more budgets from the higher

level government and public donations should be very helpful. Lastly, to mobilize the spirit of the city and people, the Heat Wave Memorial Day will remind everyone of the heat wave tragedy to be fully alert.

These recommendations might not be successful if without commitment. The crisis, however, provides an opportunity to increase the preparation capability. The role of the leader is then far more important to encourage people toward a deep sense of security. Also, everyone has to be aware of each role toward the comprehensive emergency plan and make it possible to prevent such a devastating disaster.

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