

Integrating Research on Public Attitudes and Behavior into Energy Contingency Planning

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As part of the development of a contingency plan for oil shortages, the Ontario Ministry of Energy undertook a study to identify and develop research methodologies that could be used before, during, and after a shortage to monitor public attitudes and behavior. The study consisted of an information needs assessment, methodology development, and implementation plan. The needs assessment was based on contingency management experience in Ontario and elsewhere, and on a shortage simulation session in which the utility of hypothetical research results was evaluated. Methodological development involved the review and modification of existing survey methods with which public response to a shortage and demand restraint interventions could be assessed. These included a home interview survey and an interview-game method—both directed at households and with a major emphasis on gasoline consumption—and a telephone survey directed at individual consumers. In addition, a brief driver interview conducted in service stations was developed to monitor problems at the retail level. The study further specifies the use of both public and expert panels to provide information when contingency events make more formal research methods difficult to implement, and proposes a design for an organized network of key informers to keep emergency operations staff up to date. These methodologies are not all active at the same time. The implementation plan assigns different sets of methods to six shortage stages for evolving contingencies, and to four stages for shock contingencies.

There is now modestly extensive literature available to energy planners on how the public responds to energy shortages. Many of the data cited come from retrospective surveys in which the public is asked to report how it coped during the shortages of 1973–1974 or 1979 (1, 2). Other research (3, 4) has focused on measuring reactions to hypothetical future shortages. In addition, there are examples of the application of behavioral theory (5) and policy analysis (6, 7) to the study of consumer response to energy shortages.

Many of these sources contain serious cautions about the extrapolation of their findings. Often, the energy planner must interpret findings in the light of idiosyncratic circumstances of geography, supply, public information, and government posture at the time the study was completed. In this paper, an effort to address these limitations by making behavioral research an integrated and concurrent part of energy shortage management for a Canadian province is described. In support of Canadian

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federal oil emergency planning and in recognition of the responsibility of provincial governments to ensure public health and welfare during a serious oil supply shortfall, the government of Ontario undertook the development of a contingency plan for oil shortages. The work has progressed over the past few years, and in September 1985, it was decided to conduct a research methodology study as input to the final stages of plan development. The need for such a study arose from the recognition that the successful development and implementation of this plan depends on public willingness and ability to change fuel use behaviors abruptly. The primary task was to develop a package of quantitative and qualitative methodologies appropriate to the assessment of public attitudes and behavior before, during, and after an oil shortage.

NATURE OF THE PROBLEM

To integrate behavioral research into contingency planning implies a flexible approach to the implementation of countermeasures. Idealistically, research is a way to improve the government's up-to-the-moment understanding of the actual and potential impact of an oil shortage on different population sectors, and to enable it to respond to real and perceived distress in the most equitable, efficient, and effective manner. While the practical reality may fall far short of this intention, contingency planning is a learning-planning cycle par excellence, and the research methods used should serve the goal of understanding past errors. The Ontario contingency planning effort has profited from published research on past shortages but has at the same time recognized that a well-planned set of research activities at all stages of a future shortage would make subsequent shortage management much more likely to succeed.

The potential for serious error on the part of governments in oil shortage management is high. Perhaps this helps explain why, according to a 1983 international review of oil shortage policy, many countries have announced their intention to "leave the problem to market forces." Nevertheless, most governments recognize that extreme shortages will ultimately require intervention (8). Perhaps the most compelling reason for research on public attitudes and behavior is to be found here. Governments have now tasted the central policy dilemma in contingency planning: identifying the right level of intervention. Either too little or too much intervention can have profound economic and political consequences. The dilemma can

be concretely illustrated by the following proposition about a gasoline shortage:

The nature and extent to which a government must intervene in a gasoline shortfall depends critically on the extent to which the public is motivated to voluntarily reduce usage, and is not self-evident for any given size of shortfall.

Those responsible for emergency management know that this proposition is not as obvious as it sounds. A number of jurisdictions in the United States reacted to the 1973–1974 and 1979 shortages by announcing that certain types of voluntary and mandatory demand restraint would be introduced if the shortage reached given levels. They did this with the best of intentions to warn the public up front, as clearly as possible, that X percent shortage would mean intervention Y. What happened was that different levels of voluntary response made the planned interventions quite unnecessary in some cases, and too feeble in others. One state energy emergency office administrator has helped conceptualize the resolution of this policy dilemma. She described an alternative approach as “knowing where the public mood is heading,” and “negotiating openly with them to postpone intervention in exchange for some voluntary, short-term sacrifices” (9). Contingency planning can be improved by finding ways to measure “public mood” in all stages of a shortage, including when there is no expectation of a shortage, and by finding ways to predict major trends in the willingness and ability of the public to cope with a shortage.

Attitude and behavior research also has a role in keeping contingency planning up to date with respect to major changes in life-style and the population itself. It is increasingly recognized from research into consumption that demand for goods and resources cannot be interpreted without reference to values and life-style. Although contingency research need not include elaborate marketing strategies, such as VALS (10), Canadian work in this area suggests that differences in coping response are most effectively characterized by using life-style categories (11). Of major importance is the fact that the scope for coping with energy shortages is changing because life-styles are not frozen, and the flexibility has much to do with ongoing changes in the division of labor and responsibilities in the household. Contingency research should help the questioning of assumptions about who is able to take the initiative in shortage, within households as well as between households. An important related point for Canada is the need to understand how coping with an energy shortage is perceived in the growing number of ethnic communities.

The nature of the problem of shortage management is summarized as the need to follow a fast-moving target, the shape of which is slowly changing. This definition provides an initial framework for a contingency research program. The instruments and methods adopted must include techniques for the rapid assessment of changing public attitudes and behavior throughout a period of crisis, and techniques for understanding how attitudes and behavior related to a shortage situation are evolving over time. However, it must be recognized that such a program of research support must be applied in the expectation of limited resources, especially during periods when oil shortages are remote from the public policy agenda.

SHORTAGE TYPES AND STAGES: A FRAMEWORK FOR RESEARCH

A major source of complexity in designing research support derives from the different types of shortage that may occur. It is possible that research methods that are appropriate in one situation will not work in another. Contingency plans are sometimes built around a multiplicity of scenarios characterized by differences in severity, speed of onset, geographical extent, and degree of advanced warning. After a number of scenarios that might affect Ontario were considered, there were only two classes of scenario for which it was appropriate to develop distinctive research approaches:

1. Evolving shortages: slowly evolving or relatively long-lasting shortages, probably international in origin and possibly involving perceived shortages before a shortfall has worked its way through the supply system, and
2. Shock shortages: very abrupt, severe shortages of short duration, notably as a result of major pipeline disruption or industrial action.

For research design purposes, the rapidity of onset and lack of advance warning set the second scenario apart more than the size of the shortfall.

Further, there are different stages in the development of any shortage that may generate different public response characteristics. Federal and provincial officials have distinguished four shortage stages applicable to Canadian conditions.

- Preemergency: A period of growing concerns and alertness about tightening supplies, accompanied by increased shortage readiness and publicity advocating conservation.
- Perceived Shortfall: Stage I—a period of no real shortage, but some potential supply imbalances following reaction to media reports; invocation of mandatory countermeasures within the public sector, and voluntary measures within the private sector and the public.
- Moderate Shortfall: Stage II—actual shortage up to 7 percent of supplies, with the continuation of Stage I countermeasures and the introduction of mandatory countermeasures for the private and public sector.
- Severe Shortage: Stage III—shortage more than 7 percent of supplies, with the invocation of federal emergency powers, involving product allocation and end-user coupon rationing if needed; strict enforcement of a full range of mandatory countermeasures for everyone, and other actions necessary to protect public health, safety, and welfare.

The two classes of shortage scenario, and six stages—comprising the four listed, plus normal times and a postshortage recovery period—offered the best framework for the design and implementation of appropriate research methodologies. However, as shock scenarios were conceptualized as developing rapidly from preemergency conditions into a severe shortage, research support for Stages I and II was developed only for the evolving class of shortages.

ASSESSMENT OF CONTINGENCY PLANNING RESEARCH INFORMATION NEEDS

This study attempted to answer the question “What do we really need to know about public attitudes and behavior to

effectively manage each stage of an oil shortage?" Recalling that the shortages of the 1970s had only minor impacts on Canada, the question is not easily answered from experience. The assessment of research information needs had three components: an analysis of the Energy Contingency Planning Program (ECP) activities, a series of interviews with state and provincial officials who held positions of responsibility during the shortages of 1973–1974 and 1979, and a simulation exercise to evaluate the utility of different types of hypothetical research results during a shortage in a mythical province of Canada.

ECP Activities

Ontario's ECP activities are broad in scope and include the areas of communications, emergency management, planning and analysis of countermeasures for use by both public and private sectors, and analysis of legislation. The study consultants initially outlined a range of attitudinal and behavioral research applications pertinent to each of these areas. Then, in joint review with the Ministry, priorities were set among types of research to be developed in support of ECP activities, both now as part of plan development and during each stage of a shortage once the plan is implemented.

The major outcome of this part of the assessment was an initial emphasis on these categories of research information: public perceptions of government efforts to support coping by individuals and households, preferences among different mandatory and voluntary fuel reduction options, and any data that would help judge when the introduction of mandatory measures would be seen as the only fair way to deal with a serious shortage.

Interviews with State and Provincial Energy Officials

A limited number of officials who held positions of responsibility during the shortages of the 1970s were contacted in various parts of North America. In addition, information gathered in New Zealand, Australia, and Europe for a study on demand restraint policy was reviewed.

Part of the reason for emphasizing the distinction between the evolving and shock classes of scenario comes from observations on several sudden shortages experienced in New South Wales in 1979–1982 and in South Australia in 1980 as a result of industrial action. Their time frame for response was days, not months, and it is clear that government actions under such circumstances were quite different from those planned for use in a protracted international shortage situation. The type of information needed on public response reflected a preoccupation with panic and rumor control, especially for the first such shock shortage.

By contrast, information needs in the "Evolving" class of scenario can be seen to have much more to do with strategy and tactics for restraining demand and helping the public cope. But this is not to say that there is agreement on the value of intervention. Most of the North American officials contacted, and especially those in the United States, focused first on the need to understand how the retail market was functioning and

second, if at all, on measuring public attitude and behavior. These responses must be read in the light of the decline of much contingency planning in the United States since 1980.

Two stereotypical views of public response information needs emerged from these discussions. The first view is that there is little for the government to do except develop a good baseline picture of the energy market and to work closely with the energy industry to help each sector understand how the market must adjust to the new supply realities. In this view, publicizing supply facts and helping people identify the price level at which they will cut their usage are much more important than asking how the contingency is affecting them. Thus the public response information priority is to detect whether perceptions about the supply shortfall are realistic, with a view to correcting these perceptions if necessary. But the government should be little more than an impartial and credible source of information.

The second view is that government must pay most attention to geographic and demographic inequities. From this view, mere tracking of fuel use behavior in normal times is of little value unless it is accompanied by some study of adaptive slack in the system, such as unfulfilled ridesharing potential. In a shortage, the first priority is the coordinated collection of the best supply and price data available, together with information on the consequences of inequitable supply. Initially, the consequences monitored should be the most visible (e.g., gasoline lineups and residences without heat), and the most threatening to the economy (e.g., collapse of tourism and loss of employment). However, there should also be efforts to survey individuals and households on their responses (e.g., queueing, price paid, and new ways adopted to save fuel), and on the consequences of the shortage (e.g., discomfort, impact on family activities, and opportunity costs of high fuel prices). The second view assumes that potential government interventions from a variety of ministries or departments will then be weighed on their merits.

The second (and more interventionist) viewpoint is closer to Canadian conditions, and is based, in part, on views collected in Canada. These reviews provided initial guidance on the policy objectives that could best be served by collecting information on public response. Perhaps the major lesson from earlier shortages may be inferred from the sense, common to both viewpoints, that the public should be allowed as much flexibility as possible in choosing how to cope with a shortage.

Simulation Exercise

The simulation exercise served well to get at a variety of viewpoints on priority public response information needs. It consisted of a series of focusing exercises based on the critical success factors techniques developed by Rockart (12) and a two-round simulation of a provincial government "war room" during an oil shortage that reached Stage III over a period of 6 months. The simulation, developed especially for the exercise, involved the preparation of scenario information for a mythical province and written digests of results for some 22 imaginary research projects carried out in support of contingency planning and management. Players were provincial government officials assigned roles in a Division of Emergency Preparedness. The major activity of the simulation consisted of the

requisitioning of research information and evaluating its usefulness in writing and in a group debriefing. The first priority of the session leaders was to observe and follow up the characteristics of the research information seen as necessary to the successful management of the shortage. The imaginary research digests prepared for this exercise were systematically chosen to cover

1. At least one example of each of the categories of information previously identified for each ECPP area, and

2. Examples of both hard and soft information sources gathered under the described scenarios during five contingency stages—normal times, preemergency, and Stage I–III shortfalls. (N.B.: “hard” here indicates methodological rigor but not necessarily quantitative results.) The exercise was based on an evolving type of scenario so that all shortage stages could be included.

The participants provided a substantial amount of written feedback during the exercise and after reflecting on it for a day or two. From the synthesis of the needs expressed by each role (i.e., organizational position) in the simulation, the following generalizations were made:

- Although roughly equal amounts of hard and soft information were matched to the requests, a majority of evaluations as to what would be more useful indicate that up-to-date soft information is preferable to more rigorously collected but slightly older data, and that this trend gets stronger as the shortage worsens.

- Even allowing for an artificial thirst for detail after reading only a brief history of a crisis, the simulation demonstrated that there is a strongly perceived need to have a view of the crisis and the government’s response to it through the eyes of the public, region by region.

- There was a consensus that government should be an honest broker of information about the crisis, not only on supply issues but also on the immediate and secondary effects it is having on the economy and the province’s way of life, and that such information should be systematically sought out.

- Baseline information about energy consumption and conservation tended to be overlooked in the heat of crisis developments.

- Several role players said that, in a real shortage, more effort than was made in the exercise would be needed to pool information resources with others.

- Two role players wanted public response information from other provinces for comparison purposes; information was also requested on current and past shortages in the United States.

As a result of the simulation session, the priorities were adjusted in two related ways. First, the importance of sources of detailed, up-to-date information on public attitudes and behavior was upgraded. This action meant that soft methods got more attention and development effort. Second, the view of the purposes to be served by research information in the severest levels of the crisis was modified. It is not enough to seek feedback on demand restraint and allocation programs: it is also necessary to gather intelligence on what different sectors of the public expect of the government in the shortage.

Synthesis

The assessment of ECPP research information needs was synthesized as a series of six purposes, each of which was given a level of priority in each stage of a shortage. The purposes, and the priorities, are given in Table 1. The purposes are numbered in Table 1 more or less in the chronological order in which they take on high priority as a shortage develops. Thus Purposes 1 and 2 aid preparation of the details of the contingency plan, Purposes 3–5 focus on the dynamics of public response in a shortage, and Purpose 6 is the “postmortem.” The next step was to identify and develop a set of methodologies that could fulfill the higher-priority purposes in each stage both of evolving and shock shortages.

TABLE 1 IMPORTANCE OF ECPP RESEARCH PURPOSES BY STAGE

Purpose	Stage of Shortage					
	N	PE	SI	SII	SIII	R
Investigate the relationship between evolving family life-styles and potential ability/willingness to adapt to a shortage, with or without government intervention	H	M	L	—	—	M
Measure anxiety about energy supply, and sensitivity to contingency events	M	H	H	H	M	M
Evaluate the human impact of supply inequalities and high energy cost, and the behaviors adopted to cope	—	L	M	H	H	M
Provide frequent feedback on changing public response to demand restraint and allocation programs, and on associated communications	—	H	H	H	H	—
Provide up-to-the-moment intelligence on what different population sectors expect of government and industry in the shortage	—	L	M	M	H	—
Synthesize what was learned in the shortage about reducing demand and minimizing public inconvenience and distress	—	—	—	—	—	H

NOTE: H = high, M = medium, L = low, N = “normal times,” PE = pre-emergency, SI = perceived shortage, SII = moderate shortage, SIII = severe shortage, and R = recovery.

TYPES OF RESEARCH METHODOLOGY FOR USE IN ENERGY CONTINGENCY PLANNING

It became clear that three types of methodology were needed: survey instruments, soft data collection methods, and selected reuse of existing research information. The development work built, to the maximum extent possible, on methodologies that had been applied to energy issues in Ontario and elsewhere.

Survey Instruments

The need was identified both for in-depth techniques suited to understanding evolving trends in the public’s willingness and

ability to respond to an oil shortage and for rapid-response barometers of public opinion for use during an actual shortage. Four techniques were modified or developed as follows:

- **Telephone Contingency Tracking (TCT):** This is a modification of a 34-question instrument aimed at measuring changes in public attitudes to various aspects of fuel shortages over time. A set of core items makes it particularly useful for tracking the level of public anxiety and satisfaction with government and industry responses from stage to stage in a shortage. Transitory items can be inserted to provide limited feedback on specific policies or events. TCT is applied to province-wide random samples, with new selection for each wave. This survey offers the advantages of implementation at very short notice and the provision of results within hours of completing the interviews.

- **Home Interview Tracking (HIT):** Home interview surveys are already used for other ministry purposes, and a set of items relating to participation by household members in identified fuel-saving actions as well as some prospective shortage questions have been developed for such surveys. The items use a procedure in which a respondent evaluates the significance of fuel-saving actions for the household by sorting cards into piles. However, the main focus is to infer the level of participation by different household members in fuel conservation. The prospective shortage questions include views on government and employer roles. The HIT instrument is for use with province-wide stratified random samples, with a recommended oversampling of subjects shown from a previous Canadian study (13) to be important contributors to conservation, or for whom fuel saving presents unusual difficulties.

- **Interview-Game Method (IGM):** This is the latest version of an instrument known as Car Use Patterns Interview-Game (CUPIG), which was used in 1984 and 1985 for two federal studies on transportation energy use in Canada. The methodology is described by Lee (4). This technique permits careful validation of what households believe they could change during a gasoline shortage. It is structured around 7 days of trip data logged in each of the household's vehicles, which are presented during the game as a detailed time-trace chart. The logged trip data are also summarized as a fuel budget, using an accounting board on which poker chips represent fuel used by each vehicle and activity served. Householders are asked to retrofit constraints imaginable in a simulated shortage on to this concrete picture of recent car use, and the implications of all suggested coping actions are fully explored in a 1–3-hr interview. A cumulative record of actions adopted and fuel saved is displayed on the time-trace chart and the accounting board. The technique is applied to quota samples of 36 households or more. The major output from the CUPIG technique is a considerable amount of qualitative data about the choice of different demand restraint methods and the factors associated with those choices among different types of household. The method also provides important insights into the role of different family members in making decisions about automobile and energy use, attitudes of households toward energy shortages and the role of government intervention, and the distribution of voluntary savings across the population.

- **Service Station Survey (SSS):** This completely new instrument was developed as an off-the-shelf rapid-response

technique that can be used at times of severe shortage to gauge the public's mood on problems associated with retail shortages of gasoline. It consists of a 3–4 min "clipboard" personal interview of drivers at retail points of sale. A few data elements are also collected by observation of the vehicle and of the pump. The data sought are those needed to assess the seriousness of public concerns about delays and uncertainty of supply experienced by motorists, price fluctuation and gouging, voluntary suppression of long automobile trips, and tank topping. In addition, information is sought on coping actions adopted since the shortage began. No demand restraint (DR) measures are specifically covered. However, if queue management and DR interventions are in force or anticipated, the instrument can be modified to capture feedback on them.

Soft Data Collection Methods

Specifications were developed for three soft data methods, the first two of which involve the use of groups. Groups with special interests or expertise can operate in a consultative role to substitute for incomplete research information and to help interpret what is known in a crisis. The objectives of general public panels (GPPs) and expert groups (EXGs) are related, but not identical. In both cases, the aim is to gain insights into public mood and response by talking directly to selected groups of individuals, knowing from the outset that this is not a source of statistically representative data.

There are two main reasons for including these group techniques. First, this is a valid way of making sure that the researcher's assumptions about public behavior and attitudes do not filter all the information gathered. Such assumptions are a necessary part of the design process and inevitably constrain the results obtained with a more formal instrument such as TCT or HIT—or even with the simulation approach of IGM. The group techniques, however, depend on listening in an open way to what people have to say about what has been done, and might be done, to help deal with the shortage. This process provides a much needed reality check on conclusions drawn from the formal instruments. Second, the group techniques are ideally suited to the exploration of changes in public mood on fairly complex issues. The group meetings may be implemented and analyzed within 2 to 4 days if necessary and thus can help quickly interpret public response in an evolving situation.

- **General Public Panels (GPPs):** The GPPs would perform two major functions. The first would be to check on the meaning of findings from the earlier IGM, HIT, and TCT work. In particular, they should examine conclusions about to whom in the household communications should be addressed and about the underlying reasons for the way different groups of people cope with the shortage. The second major function is to get public input on the language used to explain regulations, voluntary restrictions, and the status of the shortage.

- **Expert Groups (EXGs):** At least two roles exist for organized groups of experts to help the Ministry evaluate the probable consequences of policy options during serious, and especially, rapidly developing shortages. Perhaps the more important role is one of pooling judgments about the government's options in the light of incomplete information. This role

would come into effect only in a Stage III situation. Although it is clear that a number of government experts and industry representatives would in any event be available to those managing a severe shortage, planning for group activity is recommended. The other role for expert groups occurs earlier: there is considerable value in having a small number of interest groups work with the government on a consultative basis.

In contrast to the role of these two types of group in interpreting soft data, organized networks were also specified to take an information-gathering role under circumstances in which traditional survey methods would be insufficient.

- **Key Informer Intelligence Network (KIN):** KIN is a planned hierarchical system for obtaining recent information on public attitudes and behavior in the later stages of a shortage. The objective of KIN is to make the best possible use of people placed in key positions around the province to synthesize the impact of the shortage and the direction of public sentiment. The network should give early warning of incipient problems and, in particular, help identify the incidence of distress among those who had only limited organized political voice. The role of information gathering is preeminent except in the special case of preemergency conditions for a shock type of shortage, when KIN also has a more interpretative role. It is necessary to include in the network a representative range of sources, but the intention is not to be fully representative in the parliamentary sense. When there are groups of people who have a legitimate interest in becoming part of the network, such as municipal energy emergency coordinators, the principle should be to try to find someone who can summarize the current thinking for a peer group. KIN should, in general, build on existing channels rather than trying to be an all-purpose network for everybody involved in managing the shortage in all sectors and regions. It is thus a type of clearinghouse for current intelligence, and as such an important decision must be made as to whether the information flows only in one direction. It is suggested that some level of feedback be provided to the participants, although it is clear that alarming information needs careful handling. A related decision is whether the existence of the network is tied in some visible way to a rumor control system through which the government helps the news media avoid false or exaggerated reports of problems.

Reuse of Existing Research Information

- **Demand Trend Analysis (DTA):** Several existing or potential sources of fuel demand data for population sectors were identified.
- **Review Other Research (ROR):** Three classes of research in related fields that are helpful background to the planning of contingency measures were suggested: consumer behavior and income dynamics studies, studies of ethnic communities, and research on family roles.

IMPLEMENTATION

The need to implement ECPP research within the framework of evolving scenarios versus shock scenarios and six stages in the development of a shortage have been discussed. These two dimensions are presented in matrix form in Table 2. Recall that of the twelve cells, two are eliminated by definition: shock

shortages do not have a perceived or moderate phase for long enough to justify delaying the implementation of methods appropriate to a severe shortage.

The importance of different ECPP research purposes by stage is demonstrated in Table 1. In Table 2, all the instances of high or medium importance in Table 1 are given in conjunction with the allocation of the nine research methods, by stage and scenario. A method may serve more than one purpose, and it may serve different purposes in different cells. When a method serves two or three purposes in a single cell, it is shown as high importance if any one purpose is of high importance. The most important purpose is cited first in the table.

Summary of Implementation Approach for Normal Times

These research methods must, of course, serve contingency planning for both types of shortage scenarios. The IGM and HIT surveys provide a baseline on fuel saving experience and attitudes and, in the case of gasoline, for anticipated shortage behavior. A province-wide IGM survey would provide an up-to-date understanding of the willingness and ability of different population sectors to reduce fuel use in a shortage (Purpose 1). Findings about who is primarily involved in effecting fuel savings within different classes of household, and about efficient target groups, could be checked with a random sample by using HIT techniques. Of lesser importance is the use of HIT to report on anxiety levels (Purpose 2), thus providing a comparison for the later TCT questions in the same area. At the same time, it would be worthwhile although of less direct significance to check on available demand data by population subgroup (DTA) and on relevant other research (ROR). Taken together, these four methods provide the best possible check on the assumptions that underlie the most difficult aspects of contingency planning — the choice, sequencing, and publicizing of demand restraint interventions and controls.

Summary of Implementation Approach for Evolving Shortages

Survey methods dominate the preemergency and perceived shortage stages. HIT and IGM are focused on evaluating demand restraint policy options and potential government and employer interventions, as well as assessing the adaptive slack in households' views of their energy use (Purposes 4 and 1). The first wave of the TCT survey occurs in the preemergency stage to provide a common measure of public anxiety throughout the shortage.

TCT is the only survey technique used in the moderate shortage stage. By this time, the emphasis has shifted to the GPP panels, which had their start in the perceived shortage stage. The mandate also shifts away from investigating the level of threat and toward understanding the actual sources of distress and the potential for government intervention to help (Purposes 3 and 4). Also during the moderate shortage stage, use of expert groups is recommended for the first time, emphasizing consultation on and evaluation of planned interventions. It is at this stage that groups with a legitimate interest, operating within either a specialized or a representative format, become highly motivated to participate. At the same time, the

TABLE 2 IMPLEMENTATION OF RESEARCH METHODS

		SHORTAGE STAGE												
		Importance	N Normal times		PE Pre-Emergency		I Perceived		II Moderate		III Severe		R Recovery	
EVOLVING SCENARIOS	High	IGM	1	HIT	4,2,1	TCT	2,4	GPP	3,4	KIN	3,5	HIT	6,3	
		HIT	1,2	TCT	2			TCT	2,4	EXG	4	IGM	6,1,3	
SHOCK SCENARIOS	High	DTA	1	IGM	1	GPP	5,3	EXG	4	TCT	2,4	TCT	2	
		ROR	1					KIN	5	SSS	4			
SHOCK SCENARIOS	Medium	same as 'evolving'		KIN	4,2	n/a		n/a		EXG	4,3	same as 'evolving'		
		same as 'evolving'		TCT	2	n/a		n/a		KIN	3,5	same as 'evolving'		
SHOCK SCENARIOS	Medium	same as 'evolving'		IGM	2,4	n/a		n/a		TCT	2,4	same as 'evolving'		
		same as 'evolving'				n/a		n/a		SSS	4	same as 'evolving'		

METHODOLOGY CODES

- DTA Demand Trend Analysis
- EXG Expert Group
- GPP General Public Panel
- HIT Home Interview Tracking
- IGM Interview-Game Method
- KIN Key Informer Intelligence Network
- ROR Review Other Research
- SSS Service Station Survey
- TCT Telephone Contingency Tracking

P* = PURPOSES FOR CONTINGENCY PLANNING RESEARCH

1. Investigate the relationship between evolving family lifestyles and ability/willingness to adapt to a shortage
2. Measure anxiety about energy supply, and sensitivity to contingency events
3. Evaluate the human impact of supply inequities and high energy costs, and the behaviours adopted to cope
4. Provide frequent feedback on public response to demand restraint and allocation programs, and on associated communications
5. Provide up-to-the-moment intelligence on what different population sectors expect of the government in the shortage
6. Synthesize what was learnt in the shortage about reducing demand and minimizing public inconvenience and distress

KIN network is invoked to measure public expectations of government action (Purpose 5), and its comprehensiveness should be evaluated.

The severe shortage stage uses a mix of hard and soft methods to pragmatically support rapid decision making that is inevitably based on incomplete information. Here, the highest priority is given to the effective flow of information in the KIN network, and its periodic revision to investigate new areas of concern. Its focus is now on the human impact of the federal and provincial restrictions and on what people expect of the government (Purposes 3 and 5). A pair of expert groups, one internal and one external to the government, concentrates their efforts on helping interpret what information is available. At the same time, to meet the most critical need for hard data on public response in a severe shortage, the service station survey can operate province-wide, or just in designated trouble spots.

Summary of Implementation Approach for Shock Shortages

The knowledge that the shortage is likely to become severe very quickly places research on a different status. At the preemergency stage, the focus is on providing the best possible information on public response to an emergency operations center that is in the process of being set up. The most useful roles for research would be to muster the KIN network and implement the off-the-shelf TCT barometer of public anxiety. Note that only in the preemergency/shock cell is it suggested that KIN should give priority to interpreting information on public fears and to estimating reaction to DR and allocation programs (Purposes 2 and 4). This is because there may not be enough time to obtain detailed hard data on which to base countermeasure implementation strategies. It should be possible to make the combined information from KIN and TCT

available in a matter of days. However, a HIT application is also shown to cover Purposes 2 and 4. This is a highly desirable addition if the pace of events allows.

In the severe shortage stage, techniques were selected to assist with a process that will inevitably resemble disaster management. Many difficult decisions may be needed at the provincial level to minimize the human and economic disruption resulting from a dramatic reduction in fuel supply. Under these circumstances, the question of monitoring and responding to the general anxiety level is secondary to acting fast on the best intelligence available. The highest priority is given to the use of expert groups in their crisis interpreter role, together with the KIN network that should now be functioning. Between them, the emphasis is on frequent update on the distribution of distress, public response to restrictions (including their evasion), and public expectations (Purposes 3–5). Being adequately informed—daily or more often if needed—is essential to public confidence in the ability of the government to take control of the situation. As with evolving/severe shortage research support, TCT is of lesser importance, but worthwhile if the pace of events permits it to be timed during a period of relative stability. In contrast to the evolving/severe shortage, the service station survey should not be given the highest priority, but it would be of great value in establishing the seriousness of trouble spots. A province-wide service station survey would also make sense if the duration of the shock shortage ran into weeks.

Summary of Implementation Approach for a Recovery Period

Regardless of the shortage scenario, it is recommended that the IGM and HIT methods be used to help synthesize what was learned about reducing demand and minimizing public inconvenience and distress (Purpose 6). In addition, the HIT survey should concentrate on the reasons for the choice of fuel-saving actions that were adopted (Purpose 3). The IGM could readily be adapted to investigate which (if any) contingency responses are being sustained in the recovery period, and why (Purposes 1 and 3). There is much important policy analysis work to be done with the HIT and IGM data as a postmortem on DR and other interventions.

Although a lower priority, the telephone tracking surveys can be continued to complete the longitudinal picture of general anxiety about energy and satisfaction with the roles of governments and industry.

CONCLUSION

In this study, the best available social research methodologies have been fit to what is known about the evolution of oil shortages and to the planning dilemmas faced by provincial governments that must respond. The advice of knowledgeable government officials was obtained through interviews with those who faced those dilemmas in previous shortages in several countries and through a critique of stereotypical research results in a simulated shortage. A research program to measure public response in support of energy contingency planning at

six stages in the life of a shortage, while respecting the different imperatives of evolving and shock shortage scenarios, has been designed. The design depends more heavily than was initially anticipated on methods less analytically rigorous than surveys. However, this is not to say that the program is any the less disciplined in its approach. Indeed, obtaining data on public attitudes and behavior under these circumstances requires careful management of the balance between structured, off-the-shelf instruments, and the more informal information sources.

Contingency planning classically turns out to be too little and too late if support is lacking to keep plans current during periods when the contingency seems remote. The research program designed here is part of an attempt to take advantage of a period of stable supply, and it proposes immediate action on a modest scale to update understanding of fuel consumption behavior. It is consistent with continuing interprovincial and federal efforts in Canada to improve energy emergency preparedness. Paradoxically, the more secure the public feels because of recent overproduction of oil, and the more consumption, conservation, and substitution patterns shift as a result, the less likely it is that the accumulated experience will be adequate to deal with increasingly problematical public response in future contingencies, and the more important it becomes to implement this type of research.

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