

NOT TO BE TAKEN FROM THIS ROOM

A regionalization study

An in-depth study of fire protection in six communities in New Jersey shows how regionalization could provide fire protection at less cost and more efficiently. The study also provides a basic plan for merging the fire department functions on a step-by-step basis.

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Hudson County, New Jersey is located on the western shore of the Hudson River opposite mid-town Manhattan. This is one of the most densely populated areas in the United States. The communities comprising Hudson County are faced with the problems indigenous to urban areas. Each must supply essential services to its residents under the constraints of a fixed tax base and rising costs. Home rule being strong in New Jersey, these problems, historically, have been attacked by individual communities, with varying success.

In recent years, the regionalization of many areas of local government has become increasingly attractive to the towns comprising North Hudson County. To this end, the towns of Guttenberg, Hoboken, North Bergen, Union City, Weehawken, and West New York have established a North Hudson Regional Council of Mayors, with director, staff, and budget, to discuss problems common to all. In 1973, the council contacted Stevens Institute of Technology in Hoboken in an effort to bring the Institute's knowledge to bear on municipal problems. One of the first projects which came to fruition was a study concerning fire department regionalization.

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The advantages of regionalization seemed almost apparent at first glance. The communities of North Hudson County have a population ranging from 5,000 to 50,000 within a compact region 6 miles long and 2 miles wide. The boundaries that divide them lie along streets and through houses in such a way that, in the absence of signs, a traveler would be hard put to know when one town is being left for another.

Currently, each town has its own fire department, separate and autonomous. These departments do a creditable job, especially the larger ones. However, they are faced with requirements for equipment and manpower which, considering their small population and fixed tax base, they cannot meet completely. This situation is made more disturbing for each town since, just a few blocks away, there is another town with the same problem. There are fire stations almost across the street from each other which support each other only through mutual aid agreements. Improved efficiency seemed attainable through regionalization of firefighting operations. But to determine the benefits of regionalization, certain questions had to be answered. What sort of standards are there for fire protection? How does the current arrangement compare to these standards? Finally, how can the current departments be reorganized to improve efficiency? This study set out to answer these questions with an eye towards improved efficiency at reduced costs.

Fire protection standards are rather loosely defined. A community's primary interest may be to reduce its ISO rating, but does this goal produce optimal fire protection? The authors of this study felt the ISO put too much emphasis on property value and not enough on the ability of a fire department to protect lives. Admittedly, property value is easier to quantify but life should be the primary concern. In any case, the ISO guidelines did not provide the breadth of information needed to do a detailed

study of all aspects of fire protection. Information had to be gleaned from other sources, but a few basic observations could be made at the start.

The first is that inevitably, fires occur where there are people living close together. Specifically, from 10 to 20 fires per 1,000 population occur in cities whose density is at least 7,000 people per square mile. This means that urban municipalities of as few as 10,000 people can expect at least 100 fires each year. The study communities average 500 fires a year (ranging from 35 to about 900). Of these, some significant proportion will be serious enough to warrant multiple alarms.

The second fact is that, although most fires can be controlled by the first due complement of equipment (2 pumpers and 1 ladder truck), the serious fires require at least twice that much. This means that each fire district, be it as little as 5,000 population, should have at least six pieces of equipment immediately available to it at all times.

These facts imply a certain minimum size to fire departments. Smaller communities find it difficult to meet even these equipment requirements while somewhat larger communities, who can afford equipment, often cannot carry the manpower to adequately use it.

This conclusion, although not formulated this clearly at the beginning of the study, was expressed in various ways by the fire chiefs and other fire related organizations. It was strongly apparent when statistics from fire departments of various cities, not the direct subjects of this study, were examined.

The initial impetus to study other cities grew out of the following considerations: Protection from fire, as an essential community service, competes for taxpayer support with the other essential community services of police protection, sanitation, public works, parks and recreation, and welfare. The natural "market" forces of supply and demand, ex-

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pressed through taxpayers' votes in support or against politicians who make the decisions, result in fire departments, police departments, and other city departments of certain sizes. These departments are at least as big as they are or else their lack of performance would be intolerable to the taxpayer/politician and more money would be allocated. They are no bigger than they are because the taxpayer/politician is sufficiently satisfied with their performance so that no compelling reason to spend more exists.

This means the observed size and composition of existing fire departments, if averaged over the region or nation, can provide a basis to which a local fire department can be planned or compared. In conjunction with the firefighting requirements observed above, a scale to fire departments and districts can be determined.

The study collected statistics from 21 New Jersey cities and towns ranging from 10,000 to 500,000 population. Three eastern cities, New York, Philadelphia and Boston, were also included to provide further range in the data. The projected North Hudson fire district had a population of 211,000 in 1970 which falls well within the range of the data.

The results and conclusions of this statistical exercise are summarized here.

► Alarms per year per 1,000 popu-

lation range from 30 to 60; runs per company from 500 to 2,500. Both rise with population.

► Companies per 10,000 population and companies per square mile are both between 1 and 2. For population densities above 10,000 per square mile, companies per square mile tend to rise with population and density while companies per capita tends to fall.

► Total fire department personnel is between 15 to 30 per 10,000 population while firefighters per company is from 15 to 30. Fire personnel per capita tends to fall as city size increases while firefighters per company tends to rise. Firefighters per company do not reach the recommended minimum of 20 until city size approaches 100,000 population.

► Fire department salary costs per capita of population range from \$15 to \$30; total department cost runs 35% higher. Salary costs tend to rise as the city size increases, except for very large cities.

These observed averages represent considerable actual experience. They may therefore be used as standards of comparison. They are referred to as "Regional Guidelines." Originally, the intent was to develop true National Guidelines, but the limited time and effort available precluded that goal.

From these results, and other considerations, the following guidelines apply to the applicability and

goals of a regionalization study:

1. The methods of this study are applicable to urban areas, e.g., those exhibiting densities of at least 4,000 people per square mile. Their applicability to other areas needs to be examined.

2. Sufficient urban area needs to be included so that the resultant regional fire district contains at least 100,000 population. No obvious maximum became apparent from the study.

3. The greatest benefit of regionalization will accrue to districts which are contiguous, i.e., have common boundaries. If current district boundaries are also natural boundaries, the benefits of regionalization may be reduced to streamlining upper management.

The proposed North Hudson County fire district fits these generalizations but specifics must be compared to determine the effectiveness of the current fire departments. The authors of this study benefited from the excellent communication and cooperation with the fire departments and local governments. The resultant data (See Table) shows wide discrepancies with the Regional Guidelines. It is apparent that as an aggregate of separate districts, the departments have a low work load, a large amount of equipment, and too few firefighters to man it adequately.

The areas targeted for improvement were the high number of com-

panies and the low manning per company. It was recognized that if the number of companies could be reduced, at no significant loss in coverage, then the manpower could be redistributed to achieve fully manned companies.

Intuitively obvious at the beginning of the study, and reinforced by the above analysis, was the idea that companies could be eliminated under the regionalization of the North Hudson fire districts. The proposed locations of the engines and trucks to be kept under the regional department were determined by a mathematical computer model similar to those developed by Rand Institute of New York and PTL.

This one, however, was less sophisticated and much simpler to use. The computer model not only considered the fire hazard of each structure in the towns but also located the nearest, second nearest, and third nearest engine (and truck) company, disregarding community boundaries.

A Hazard Response Index was given each location. The computer model went through the procedure of eliminating the engine (and truck) location which contributed least to the coverage of the region. This was done until the resultant coverage was the same as the current town-by-town coverage. This occurred with 15 engine and 8 truck locations providing the same coverage as the current 26 engine and 8 truck locations. However, this is not necessarily the best allocation of the 23 pieces, just the best using existing fire house locations.

The resultant number of companies and the current alarm rate imply efficiency ratios well within guidelines (See Table) except for the number of companies per square mile. These are still high, but is probably justified by the high population density of the region.

Manpower is calculated on the basis of 20 firefighters for each engine and 24 for each truck. This provides 4 firefighters on each engine each shift and 5 firefighters on each truck with one firefighter per shift on leave at all times. This is considered full manning. If an allowance for staff of 10% of firefighters is made, the regional guide-

lines on total personnel per 10,000 population can be met and enough staff provided.

As far as costs are concerned, the regional district would have a total budget about 5% less than the total of the current districts. Of course, there will be expenses associated with setting up a central alarm room and headquarters. These can be kept to a minimum since a headquarters can be located in an existing fire house.

In summary, the six communities will be broken into three regions with 7 to 8 companies per region. The advantages will be that 23 pieces of equipment will provide coverage presently provided by 34 pieces, each piece will be fully manned, and total annual costs will be less under regionalization.

The implementation of regionalization will consolidate dispatching, general staff functions, and equipment. Central dispatching is essential to regionalization since all facets of firefighting can be coordinated; back-up equipment located and dispatched, the best equipment and personnel can be made available to each community, and an overall central information center can be established.

Centralization of staff functions will coordinate and benefit training programs, community fire prevention programs, equipment maintenance, and allow proper planning which couldn't have been done on a small scale basis.

Also, specialized equipment has always been hard to justify and next to impossible to finance by the requirements of any one community. For instance, five of the six municipalities share the waterfront; no one of them can justify the purchase of a fire boat. The combined fire district cannot only justify it, but also afford it.

The regional department will be better able to assess the need for specialized equipment, better able to plan its allocation and use, and be better able to finance it.

Regionalization will occur in a sequence of steps: from central alarm room, to company reduction and interchange, to central staff functions, and, finally, to a fully unified department. As we see it, the directing of the regionalization effort is primarily in the hands of

the chiefs, provided they have the support of the mayors. The chiefs are the ones who together must develop the initiatives which will make regionalization work. They must take such actions as they can on their own responsibility. Where ordinances are required, they must collectively press for the support of their governing bodies.

Regionalization will not come about unless it is pushed. This has become obvious since the Stevens Tech study was presented to the Council of Mayors in early 1975.

The report was well received by the press and they continue to support regionalization. However, the mayors, firemen, and fire department management have remained publicly silent on the study. The extent to which behind-the-scenes activity in support of the effort exists is not known. Apparently, the mayors were looking for more cost cutting than the proposed 5%. Since the bulk of the costs result from manpower and equipment requirements, any further cost cutting would be at the expense of efficiency and coverage. In the absence of greater savings, no great impetus seems to exist for the mayors to act on the study's recommendations. Some firemen indicate they are not happy with the idea of splitting up companies and having men sent to different companies or even different towns. After relocation, though, their complaints may subside. Finally, the chiefs have been rather quiet on the subject. The two chiefs who worked along with the authors have backed the recommendations of the study, the others have not volunteered any comment at all.

The fire department and government officials apparently do not feel there is any incentive to implement regionalization. But what sort of incentive do they need? It has become apparent to the authors of this study that costs are their main concern and 5% savings is not enough. Over time, an increase of 40% in efficiency will result in a savings of taxes, lives and property, but it is difficult to attach a sound figure to this savings. In the end, the people of North Hudson County will have to decide, through the voting process, whether efficiency is an incentive for change. ■