

CONSIDERATIONS RELATED TO USAGE
CHARGING FOR LOCAL TELEPHONE**
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PREFACE

This report is intended as a supplement to an earlier report entitled "Engineering Cost Study of Usage Charging for Local Telephone Service", dated July 31, 1975.

During the course of this earlier study, it developed that there were possibly more far-reaching considerations than simply cost involved in any decision to be made on the implementation of usage charging for local telephone service.

This report attempts to identify and discuss briefly some of those other considerations.

Particular thanks for outlining their views relating to these further considerations of usage charging are due to GTE Automatic Electric (Canada) Ltd., Northern Electric Company, Limited, Bell Canada, British Columbia Telephone Company, Limited, New York Telephone, Mountain Bell, and the U.S. Department of Commerce, Office of Telecommunications.



CONSIDERATIONS RELATED TO
USAGE CHARGING FOR LOCAL TELEPHONE SERVICE

I. INTRODUCTION

Local telephone service in Canada is presently provided on a predominantly flat-rate basis, at a monthly charge which does not consider the actual amount of use made of the service. There is no record kept of local calls generated and no real information available about the amount of use made of a particular service or telephone line.

This situation is in contrast to the charges made for non-local (long distance) telephone calling, where the charges for each call depend, in part, on the distance covered by the call, the time duration of the call, and the time of day or day of week of the call. A detailed record is kept of each call and an itemized subscriber bill is produced.

Canadian local telephone service also contrasts with the situation in many other countries, and in parts of the USA, where a charge is levied for each local call. Such local call charges sometimes also depend on the distance and/or duration of each call. In these situations, the subscriber bill usually does not provide any detail of the calls billed, but simply requests payment for total local usage. Substantiating detail of past usage may or may not be available on request, and a means of verification of future bills may or may not be offered.

Both the flat-rate and the usage charging basis of local telephone service have their respective advantages and disadvantages.

Each system has its own social, economic and technical implications, and it is not readily apparent which of the two systems offers the greatest long-term benefits.

Our report, Engineering Cost Study of Usage Charging for Local Telephone Service, concluded that the cost of providing usage charging in terms of investment and operating costs, is not prohibitive. There is even a possibility that introduction of usage charging could in fact result in an overall cost reduction in the Canadian telephone network. On this basis, it is apparent that considerations other than engineering economics will determine the desirability of converting to usage charging for local telephone service in Canada.

It is the purpose of this report to identify and discuss briefly some of those other considerations, and to identify some of the areas where present information is insufficient to allow full appraisal of the factors involved.

II. ALTERNATIVE CHARGING SYSTEMS

Full usage charging would probably imply a system that measured every call on every line, and generated a corresponding charge to the subscriber. Within such a "full" system, there are still many options related to basic monthly allowances, and to charging for basic time and for overtime, charging for distance, discounts for time of day or day of week, and charging for originating and/or for terminating calls. Such options are discussed in our Engineering Cost Study report.

There are a number of alternatives to a full usage charging system. Among the more significant are the following possibilities:

- A) Apply full usage charging only to some classes of service, such as only business lines. Leave other lines on flat-rate.
- B) Permit options between usage charging and flat-rate, for some or for all types of subscribers.
- C) Create many levels of flat-rates, all with the same calling areas, and classify subscribers according to their actual or anticipated average usage. Classification could be determined by sampling or by characteristics of the subscriber.
- D) Create many levels of flat-rates, each with a different calling area. Each subscriber would pay a flat-rate for the class of service (calling area) best suited to his needs, and would pay long distance rates for each call outside the chosen area. This arrangement is especially interesting for areas where flat-rates are presently high due to large EAS (Extended Area Service free calling) arrangements.

Each of the above alternatives, and others, have different technical requirements and would create different operating costs. Each alternative also has different social consequences.

In the event that the terminal area market is significantly altered by interconnection, the composition of the revenue requirements of the carriers may alter. The relationship to usage charging is somewhat indirect, but the introduction of a suitable usage charging tariff may be a convenient way to re-structure the tariff to accommodate any alteration in the composition of revenue requirement.

III. IMPLEMENTATION OF USAGE CHARGING

The present configuration of the telephone network, and the technical limitations of the available usage charging equipment, place constraints on the universal and simultaneous implementation of usage charging. Small switching offices and multi-party lines would be very expensive and difficult to equip, while electronic common control offices with single-party lines would be the least expensive to equip and operate. Thus, for economic reasons, usage charging might be introduced gradually on an office-by-office basis and certain classes of service might remain on flat-rate for some time.

There are potential problems if usage charging is introduced on a basis that results in some flat-rate customers being in the same calling areas as some usage-rate customers. One observed phenomena is that the usage-rate customers who have flat-rate associates will learn to notify their associates to call them (free) (sometimes by a pre-arranged unanswered ringing code) rather than simply call their associates at a usage rate. The resulting distortions in the calling traffic patterns can have serious consequences for the network and can certainly suppress the revenue received by the carrier.

There are also social problems resulting from a gradual introduction of usage charging. The subscribers may see during the interim period, a form of discrimination by which other subscribers receive either better or worse service than they do, at higher or lower rates. Some such discrimination may apply to small exchanges or to multi-party lines for many years, but it may be found acceptable and in fact may not be much different than some of the forms of discrimination now found in the telephone market (e.g. multi-party service is offered only outside the base rate area).

For social reasons, it might be found desirable to delay implementation of usage charging until the majority of the network is suitably adapted. Economically, this might mean delaying implementation until electronic common control is prevalent. During the intervening years, considerable planning would need to be done to ensure that implementation was achieved at the lowest overall cost. For economic reasons, some usage charging equipment should be installed well ahead of time to take advantage of co-ordination with other installation activity, while some equipment should not be installed until the moment it is needed. All switching equipment installed during the preparatory period should certainly be designed and arranged in such a way as to make the most economical ultimate provision for usage charging.

Overall, the matter of timing would need to be explored with the carriers and with the manufacturers. Existing or future plans for routine equipment installations will determine to a large extent the earliest economical implementation date for widespread usage charging. Conversely, the establishment of a target date for usage charging would influence the planning of the carriers and of the manufacturers. It would be well to give the carriers as much as several years notice if usage charging is established as an objective. This objective would of course embody the desired alternative charging system to be planned for.

IV. PUBLIC REACTION

A number of public surveys, notably those referred to by AT&T and by Mountain Bell, showed a distinct negative public reaction to the future implementation of usage charging. The reaction seems more positive among those already exposed to usage charging, and the problem may be largely a matter of resistance to change. There will need to be some extensive work done to determine the best way to promote usage charging, and to predict the ultimate acceptability of usage charging in Canadian society.

The reaction of the subscribers will also depend to a great extent upon the objectives being served by the implementation of usage charging.

If the objective is to continue to raise the same total revenue from local service as with flat-rate charging, the reaction will be quite different than if the objective is to simultaneously relate the total revenue from local service to the cost of local service. The latter objective would apparently result in a large increase in the revenue from local service, presumably offset by a decrease in revenues from other services.

It must also be recognized that usage charging is expected to suppress the amount of local calling. This fact calls for a conscious decision about the social value of unlimited flat-rate local calling, and the overall public desirability of any alternative system.

Public reaction to usage charging will also depend on the format and detail of call recording and billing. On the one hand, detailed recording may be seen as an invasion of privacy, while

on the other hand, bulk billing without supporting detail may not be accepted. Timing of calls may be more socially objectionable than the simple counting of calls, but the revenue effects and the traffic suppression effects of timing are considered essential to a successful usage charging plan.

The introduction of discounts for time of day or day of week should be found attractive to the public, and should have a noticable positive effect on the objective of leveling the traffic peaks and so optimizing the use of investment.

Public reaction to the apparent justice of the arrangement will determine whether incoming (terminating) calls should be measured and charged in some or in all instances. There is an objection to paying for calls the subscriber did not want to receive, but other subscribers such as certain merchants, taxi companies etc. may want to assume the full charge for calls to their numbers. Such a mixed arrangement could be technically difficult, and the traditional solution has been for each subscriber to pay only for originating calls which are completed.

V. CARRIER REACTION

The telecommunications common carriers are not unanimous in their reaction to the concept of usage charging for local telephone service. Much of their reaction stems from intuitive feelings about subscriber preferences and about possible difficulties in administering a usage charging system. The flat-rate system has achieved a certain sanctity by its apparent success over past decades, as it is hard to prove or disprove any causal relationship between flat-rate charging and the evolution of the North American network.

There is also a genuine carrier concern that revenues from local service may be less stable with usage charging, and an economic downturn could decrease revenues without any short-term decrease in costs. This may be an area for some investigation before usage charging is adopted as a desirable system.

The carriers might predict lower local revenues due to the suppressed calling effects of usage charging. However it could be countered that a usage charging rate structure could be developed to produce precisely the same revenue as any flat-rate structure. The local revenue growth trends however, could vary with such a change in rate structure.

VI. INFORMATION MERCHANDISING

The implementation of usage charging provides a mechanism by which a subscriber can pay for access by telephone to certain information services such as time of day, weather forecasts, news briefs, recipes, jobs, etc. Such services are generally regarded as profitable to the carrier, as the unit charge for a call is usually in excess of the incremental cost of handling a call. In addition, an advertising message can often be sold for inclusion with the information. The magnitude of the potential revenue would need to be investigated, along with the associated costs. Both the revenue and the costs would depend on any possible agreements between the carriers and other parties to share the responsibilities of providing the service and the information, and selling the advertising.

VII. SHORT-HAUL TOLL APPLICATIONS

Usage charging for local telephone service, including a factor for the distance covered by each call, offers an alternative to high flat-rates for large free (EAS) calling areas. When time and/or distance are measured on "local" calls, every such call becomes in effect a short-haul toll call. Those calls which are presently long distance calls would presumably continue to be measured and billed in the present manner, although some administrations (notably Britain) use bulk multi-unit billing for all calls.

With the resulting lesser distinction between "local" calls and "long distance" calls, it becomes attractive to re-consider the boundary between the two. The key point is that the cost of recording and billing a call under usage charging can be much less than the cost of handling the same call as a long distance call, primarily due to the higher volume with fewer details produced. Extended Area Service plans were introduced and expanded as a means of eliminating short-haul toll calls where the necessary minimum charge was excessive due to (mainly manual originated) billing costs. Usage charging might make it practical to reverse that trend, to the benefit of those who do not require frequent access to a large calling area and without inflicting excess costs on those who do call the large area.

In any assessment of usage charging for local telephone service there will need to be extensive consideration of the possible impact on EAS offerings. Although EAS offerings are usually introduced only after a favourable subscriber survey, large EAS plans are probably unsuited to the needs of many subscribers. The replacement of flat-rate EAS plans is one of the most attractive potential applications of usage charging for local telephone service.

VIII. SUBSCRIBER USAGE INFORMATION

The entire concept of usage charging is based on the premise that different subscribers have different patterns of local calling, to such an extent that a uniform flat rate charge is not appropriate. In order to fully assess the relative virtues of various charging alternatives, it will be necessary to acquire much more information about subscriber usage of the network than is now available. The effect of any given plan on any segment of the public will depend on the usage by that segment, and the effect of any given plan on the revenues of the carrier will similarly depend on the usage of each section of the charging plan.

The social effects, the revenue effects, and the investment effects of any given plan will also depend on the elasticity of demand for local calls under a given pricing arrangement.

A number of studies are presently under way, as detailed in our Cost Study report, to determine in detail who is using the network, in what manner, and at what times. There are also some experiments that should show some changes in subscriber behavior when usage charging is introduced. All of these studies and experiments should be watched, analysed, and possibly supplemented in order to acquire an adequate fund of information on which to base decisions about usage charging.

IX. CONCLUSION

There are many factors which require consideration in determining the desirability of implementing any plan to charge for the usage of local telephone service. The technical problems are apparently capable of solution, at a reasonable cost. The social and economic ramifications of usage charging will thus be the dominant considerations, and extensive research and analysis will be required in these fields in order to determine the best course of action.

This report has attempted to identify some of the more prominent areas of concern.

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