Canada Mortgage and Housing Corporation

Société canadienne d'hypothèques et de logement

CMHC On-Reserve Housing Programs

Program Evaluation Report

AUSSI DISPONIBLE EN FRANÇAIS

EVALUATION OF CMHC ON-RESERVE HOUSING PROGRAMS

Program Evaluation Division
Operations Review Directorate
Canada Mortgage and
Housing Corporation
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EXECUTIVE SUMMARY

This report presents the results of an evaluation of CMHC programs operating on reserves. The evaluation study has followed the guidelines of the Office of the Comptroller General of Canada.

The main purpose of the evaluation has been to assess the performance of CMHC programs operating on reserves in achieving their individual and collective objectives. In addition, the need for housing programs and CMHC involvement on reserves is assessed. The study also examines other impacts and effects of the programs as well as their cost-effectiveness in relation to Indian and Northern Affairs Canada (INAC) programs. Finally, alternatives to the present arrangements are assessed.

The alternatives and program modifications suggested in this report are not to be construed as recommendations for immediate action. Rather, they are intended for future consideration in an in-depth review of Indian housing policy and programs.

CMHC ON-RESERVE PROGRAMS

The present on-reserve housing policy of the government of Canada dates back to September 1977. Under this approach, CMHC was directed to support INAC by making funds and technical expertise available through various sections of the National Housing Act (NHA). The CMHC programs used to support INAC include Non-Profit Housing (Section 56.1) and the Residential Rehabilitation Assistance Program (RRAP, Section 34.1), which provide subsidy assistance for new construction and rehabilitation respectively, lending progrms which provide financing directly (direct lending, Section 59) or encourage the use of private funds through the provision of NHA insurance (loan insurance, Section 6).

Between 1979 and 1984, a total of 4 334 Section 56.1 units were built on reserves, 8 942 units were renovated using RRAP subsidies, and 323 loans to individuals were made directly or insured. All the loans made to bands under the Non-Profit Housing program were either made directly by CMHC or insured under Section 6 of the NHA.

NEED FOR THE PROGRAMS

Documentation related to the 1977 new on-reserve housing policy described the appalling condition of the on-reserve housing stock at the time. Although the situation was better in 1984, indicators still point to an urgent need for housing assistance:

- where 2.3 percent of Canadian households live in crowded dwellings, some 36 percent of on-reserve households do;

- 40 percent of on-reserve households lack either running water, indoor toilet or bathing facilities as opposed to only 1 percent across Canada;

- 43 percent of on-reserve housing units are in need of major repairs compared to 10 percent in rural Canada and 6 per cent in urban Canada.

- few affordability problems exist at the present time on reserves, mainly because housing is almost free to most households (the quality of this free housing has to be borne in mind). However, the average cost of a house built to standard is such that a yearly income of approximately $24 000 would be necessary in order to make mortgage payments within affordability criteria. According to the 1981 Census, the average income on reserves was $15 000; in 1984, 60 percent of all Indian households living on reserves earned less than $10 000.

RATIONALE FOR GOVERNMENT INTERVENTION ON RESERVES

These housing and other related conditions are far worse than that of any other group of Canadians. By themselves, they point to the need for government intervention on reserves.

Additionally, usual market conditions are not present on reserves. Because reseve land is inalienable under the Indian Act, mortgage lenders cannot foreclose in case of default and sell the property for repayment. In other words, housing finance mechanisms in place off reserves cannot be applied on reserves and call for government intervention in the area of housing financing.

Finally, as part of its responsibility for services on reserves, the federal government has committed itself to the provision of on-reserve housing, even though this does not represent a constitutional responsibility and has not been the subject of a treaty.

RATIONALE FOR CMHC INVOLVEMENT ON-RESERVES

Originally, three reasons were identified for CMHC involvement on reserves:

- the need for flexibility in approaching the on-reserve housing problem:

  In 1977, CMHC was in a position to offer new construction and renovation programs which were not solely based on the provision of front-end grants, and lending programs which could address the specific on-reserve needs as well as allow private lender participation on reserves.

- the need for technical expertise in housing construction and rehabilitation:

  INAC originally did not have this technical expertise.

- the need to direct more federal resources to assist those experiencing housing need on reserves:

Given the severity of the problem documented in 1977, more federal resources were needed in a timely fashion. CMHC participation was easily rationalized.

At present, the rationale for the provision of financial subsidies through two different agencies (CMHC and INAC) is less evident. Provision of subsidies through a single agency would reduce coordination problems which now exist between the two agencies and would simplify matters for bands. While INAC could introduce lending and on-going subsidy programs to continue to provide flexibility in on-reserve programming, CMHC is better suited to administer such programs. This is because CMHC conducts lending and on-going subsidy programs off-reserves as well, so that scale economies are achieved and well developed systems are already in place. Finally, it is clear that INAC could provide technical expertise on reserves. However, because CMHC provides these services off reserves as well, the Corporation can probably provide such expertise more efficiently.

LEVEL OF PROGRAM EFFORT

A forecasting analysis has shown that the present level of funding from both CMHC and INAC (and also the pattern of funding) will not suffice to address both the crowding and physical housing condition problems before 2010.

ALTERNATIVE ROLES FOR CMHC AND INAC

Three alternative roles were examined:

- Status Quo:

  The evaluation findings indicated that problems of funding coordination are associated with the status quo. One-half the bands interviewed indicated that funding coordination was ineffective and INAC and CMHC field staff identified coordination problems between the two agencies due in part to different planning periods (fiscal years). Consultations with Indian groups also revealed a preference for all on-reserve housing programs to be administered by INAC after an overall on-reserve housing policy review has been conducted.

- INAC only:

  Under the second alternative INAC would undertake all activities presently carried out by CMHC on reserves. INAC could acquire the technical expertise and put systems in place to conduct the lending function and administer on-going subsidy programs. This would meet the one-agency requirement but may be difficult and costly to implement. INAC would need to acquire the necessary authorities and set up systems for a low volume of activity. CMHC conducts these activities off reserves as well so that scale economies are achieved and well developed systems are in place.

- INAC with limited CMHC involvement:

  The third alternative would have INAC administering all subsidy programs with CMHC retaining the lending function and providing technical expertise as required on a fee-for-service basis. This would address some of the difficulties INAC would encounter in taking over all CMHC activities on reserves, but bands would still be required to deal with two agencies: INAC for subsidy programs and CMHC for loans and technical services. CMHC would be in the position of dealing with bands on certain aspects of program delivry without the ability to alter program policies or procedures.

The organizational alternatives considered here stem from the evaluation findings. It is evident that a much broader range of alternatives for the administration of housing assistance and services on reserves could be assessed. The limited alternatives examined in this evaluation are intended to provide input to a broad review of Indian housing policies and programs.

NON-PROFIT HOUSING OBJECTIVE ACHIEVEMENT

The main objective of the Section 56.1 Non-Profit Housing program is to provide modest, affordable housing appropriate to the needs of low and moderate income families and individuals.

Evaluation findings indicate that the Non-Profit housing program has, for the most part, achieved its objectives on reserves:

- the program has been well-targetted to low and moderate income households given the extremely low incomes on reserves in relation to other Canadian households;

- no significant affordability problem was created by the program;

- the program has provided modest housing with appropriate cost controls;

- the program has produced appropriate housing as evidenced by the presence of basic amenities, the provision of larger units relative to other recent housing built on reserves and the satisfaction of occupants with their dwelling. It is clear that Non-Profit Housing units are of better quality and condition than housing built without Section 56.1 assistance;

- one aspect that has not been achieved is the provision of uncrowded housing. However, crowding is a problem which only the provision of additional adequate units can solve;

- the rate of deterioration of on-reserve Non-Profit Housing units is far greater than that for off-reserve Non-Profit Housing. This is more likely attributable to environmental factors and construction techniques than to building design or occupant practices;

- Non-Profit Housing units have not been taken up by bands in relation to the extent of need shown. Section 56.1 favours urban bands, larger bands and bands taking more responsibility in housing matters;

- While housing quality is better under Section 56.1, INAC units are produced at a proportionately smaller subsidy cost. Consequently, Non-Profit Housing is not as cost-effective as the INAC new construction front-end grant. It is likely this is due to larger financial and sweat equity contributions from the bands and occupant households for INAC subsidized units.

The evaluation findings indicate certain program modifications that could be considered in an in-depth review of housing policies and programs on reserves.

- Increased attention to crowding indicators along with greater use of Project Development Funding and increased training in housing project management would do much to direct housing assistance to areas in proportion to the need which exists.

- Ways to reduce the subsidy costs of Section 56.1 on-reserve housing should be investigated.

- Investigation of ways to halt the rapid deterioration of Section 56.1 units is required.

RRAP OBJECTIVE ACHIEVEMENT

The performance of RRAP in achieving its four objectives on reserves is as follows:

- To provide assistance to residents of substandard housing on the basis of need:

  Household income for RRAP recipients was found to be the same as that of non-recipients. Considering the low on-reserve incomes, this means that RRAP is well targetted to low-income households.

- To improve substandard housing to an agreed level of health and safety:

  RRAP units are far from achieving the standards set for off-reserve units. However, they are in significantly better condition than houses renovated using only the INAC renovation subsidy. In particular, the incidence of substandard items, and health and safety hazards is lower. Also, RRAP units contain all basic anenities more often than INAC renovated units. On total, the average RRAP unit still needs $4 300 in renovation work to meet standards while units not renovated would need $11 000.

- To ensure that the quality of repair and improvement substantially extends the useful life of each housing unit:

  Threats to useful life exist in large majority of RRAP units, 100 percent more than off reserves.

- To promote an acceptable level of maintenance of the existing housing stock:

  No evidence exists of an effect of RRAP on household maintenance practices. This is not a surprise as no specific program mechanism exists to achieve this objective.

In parallel, RRAP was demonstrated to be slightly more cost-effective than the INAC funded renovations.

The evaluation findings indicate program modifications for future consideration a comprehensive review of on-reserve housing policies:

- Greater use of need for repair indicators should be made to promote the take up of RRAP funds on the basis of need.

- The extent of renovation need points to the necessity to stack the CMHC and INAC renovation subsidies where necessary. Also, consideration should be given to increased

forgiveness subsidies for the worst cases. Finally, the use of RRAP repayable loans in conjunction with INAC shelter allowances for welfare recipients should be promoted to avoid partial rehabilitation.

LENDING PROGRAMS OBJECTIVE ACHIEVEMENT

The lending programs have two objectives:

- To encourage private lender involvement on reserves:

  The encouragement of private lender involvement and minimization of government cash requirements have been demonstrated with respect to band non-profit housing. The INAC ministerial guarantee is a central feature in facilitating lender loans to Indians.

- To make funds available where private lenders are not active:

  The objective of providing residual loans to bands and individual members where private sources of financing have not been available has been achieved. However, use of Section 59 loans in some cases may only reflect the absence of appropriate forms and procedures to facilitate private lending.

Program modifications which could be considered in an in-depth review of Indian housing policy and programs are as follows:

- Removal of the requirement that (INAC) Ministerial Guarantees can only be issued on NHA loans should be considered. The need for Section 6 loan insurance on reserves is questionable given that the Ministerial Guarantee privides the basic security for all housing loans.

- Although the volume of loans to individuals on reserves has been very low, the potential for increased private lender financing in regions other than Quebec should be explored.

GLOBAL CMHC OBJECTIVE ACHIEVEMENT

In addition to their individual objectives, the CMHC programs are intended to support INAC initiatives on reserves. Towards this objective, CMHC has made its assistance available to all Indians bands.

Globally, CMHC has met this overall objective on reserves. However, problems do exist with respect to funding coordination and CMHC has provided little financial support through its Project Development Funding program to achieve an increased role for bands.

OTHER IMPACTS AND EFFECTS

Although data with which to provide quantitative evidence are unavailable, it is likely that the nature of CMHC programs impacts positively on band management and technical skills. Overall, the trend is towards greater band involvement in all aspects of housing delivery and management although the evidence suggests that a great deal of variability in managerial skills exists between bands.

Based on the relationship between band perceptions of economic impact and program funding levels, both CMHC and INAC housing programs have had an important effect on economic development on reserves.

Involvement in the design and construction of one's house and household responsibility for repairs were found to have a positive effect on house conditions. Initiatives to increase client involvement in design and construction, along with greater client counselling on maintenance and repairs to their units, could be considered in an overall review of housing policies and programs on reserves.

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CHAPTER I

INTRODUCTION

A) PURPOSE OF THE STUDY

The main purpose of this evaluation is to assess the performance of the Canada Mortgage and Housing Corporation (CMHC) on-reserve programs in achieving their individual objectives and in supporting the housing initiatives of Indian and Northern Affairs Canada (INAC). The rationale for the continued operation of the programs is also reviewed. In addition, the evaluation assesses the broader impacts and effects of the programs over and above the achievement of objectives. Program costs and effectiveness are examined and alternatives for CMHC's involvement on reserves are considered.

B) STUDY CONTEXT

Canada Mortgage and Housing Corporation became extensively involved in the provision of housing to Indian peoples residing on reserves following the announcement of a new comprehensive on-reserve housing program in September 1977. This announcement directed a variety of agencies, principal among which were Indian and Northern Affairs Canada and CMHC, to aggregate their resources in delivering a new housing program developed jointly by the federal government and Indian representatives. INAC was confirmed as the federal agency responsible for the development of policy and the delivery of housing for Indian people on reserves. CMHC was directed to play a supporting role by making funds and technical expertise available through various applicable sections of the National Housing Act.

In 1983, INAC management decided to undertake an evaluation of its on-reserve housing program. Representatives of CMHC and INAC convened to develop a process which would satisfy the evaluation requirements of each agency. Although INAC has overall responsibility for housing policy and programs on reserves, both CMHC and INAC continue to administer different programs with each agency assuming responsibilities for its own initiatives. As the evaluation issues and expectations of each agency do not necessarily correspond, separate reports are being issued.

Federal programs are directed to Indian people living on reserves in the areas of education, health, social assistance and economic development as well as housing and community infrastructure. Currently, Indian people and the federal government are involved in an on-going constitutional process negotiating questions of rights, aboriginal title to land and resources, and the nature of

self-government. This report has been prepared within the spirit and intent of this constitutional process. Housing policy must be developed in such a way as to reflect the changing relationship between the Indian people and the federal government. Housing program mechanisms should ensure the enhanced role of Indian leadership.

C) CMHC PROGRAMS

CMHC does not have a single umbrella program developed for on-reserve housing. Rather, the Corporation administers several housing programs on reserves. These include CMHC's programs for non-profit housing, rehabilitation and lending which are available to the general population. The on-reserve programs and the Sections of the National Housing Act which provide the authority for their operation are as follows:

- On-Reserve Non-Profit Housing (Section 56.1);
- On-Reserve Residential Rehabilitation Assistance Program (RRAP)(Section 34.1);
- Direct Lending On Reserves (Section 59);
- Insured Lending On Reserves (Section 6).

D) EVALUATION ISSUES:

This report addresses a range of evaluation issues and questions including:

1) Program Rationale: (Chapter III)

Is there a need for housing assistance on reserves? Does the initial need which prompted CMHC involvement on reserves continue to exist? Are the individual program designs logically consistent with their intended objectives?

2) Objectives Achievement: (Chapters IV and V)

To what extent have the CMHC on-reserve programs achieved their objectives? At the broader level, the objective of the group of programs operating on reserves is to support INAC housing initiatives. However, each individual program also has specific objectives to be met whether it operates on or off reserves.

a) Individual Program Objectives:

Did each of the CMHC programs operating on-reserves achieve its unique set of objectives? The Section 56.1 social housing program is intended to provide modest affordable housing appropriate to the needs of low and moderate income households. The Residential Rehabilitation Assistance Program (RRAP) (Sec. 34.1) provides assistance based on need for the improvement of substandard housing to an agreed level of health and safety. The mortgage insurance and lending programs (Sections 6 and 59) are intended to facilitate and ensure access to loan funds on reserves.

b) Support For INAC:

CMHC was directed by Cabinet to provide resources in support of INAC housing policies and programs on reserves. Did CMHC resources allocated from NHA Sections 56.1, 34.1, 59 and 6 contribute to INAC objectives?

3) Related Program Effects: (Chapter VI)

Did CMHC activities have other impacts, whether intended or unintended, over and above the program objectives? For example, have CMHC programs affected: the overall housing situation; the managerial and technical expertise of bands; and economic circumstances on reserves. This chapter also examines the influence of individual involvement in housing on house condition.

4) Cost-Effectiveness: (Chapter VII and VIII)

What are the subsidy costs associated with each agency's programs for new construction and rehabilitation? What is the cost-effectiveness of CMHC programs in relation to INAC programs? Has the design and delivery of CMHC programs limited the programs' effectiveness?

5) Alternatives: (Chapter IX)

Are there alternatives to the current CMHC arrangements for the provision of housing assistance to Indian people on reserves?

E) EVALUATION ACTIVITIES AND APPROACH:

The evaluation approach called for: detailed survey research at both the band and band member levels; a review of relevant internal, administrative and statistical reports; and a review of CMHC regional and branch office

involvement with on-reserve housing. Analysis of the data from these sources and the preparation of this report was conducted internally by the Program Evaluation Division.

Activities associated with this evaluation included the preparation of an assessment report, internal and external consultations, and survey and other research.

1) An Assessment Report on the Evaluation of CMHC On-Reserve Housing Programs:

This report was prepared by the CMHC Program Evaluation Division. It provides an initial profile of CMHC on-reserve programs; reviews previous evaluation work related to Indian housing; states potential evaluation issues and outlines options for the evaluation approach.

2) Internal and External Consultations:

a) External Consultation:

The CMHC Program Evaluation Division actively participated in the INAC Housing Program Evaluation Advisory Committee. This committee, comprised of representatives from Health and Welfare Canada, the Office of the Comptroller General, INAC Housing Directorate, and INAC Evaluation Branch monitored and reviewed significant matters related to the INAC evaluation study.

In addition, informal consultations took place between CMHC Program Evaluation Division representatives and other divisions within INAC. These discussions occurred on an ad hoc basis with INAC Housing Directorate, INAC Financial Services and INAC District and Regional Staff.

Finally, consultations were held with Indian Housing Groups across Canada to receive comments on evaluation findings and CMHC programs and to solicit recommendations for changes. These consultations were carried out by the National Indian Housing Council, Assembly of First Nations, with funding support for the project provided by CMHC.[1]

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1 The NIHC produced a report entitled Indian Participation and Consultation in the Review of the Summary Report of the CMHC On-Reserve Housing Program Evaluation (report submitted to CMHC, 1986).

b) Internal Consultation:

An advisory committee comprised of representatives from the CMHC Social Housing, Planning, Research, Rural and Native Housing and Program Evaluation Divisions was formed in 1985. This group reviewed and provided comments and direction on the analysis undertaken over the course of the study.

The five CMHC Regional Offices designated representatives to provide information and to review and comment on major evaluation output as it became available. These representatives served as a link between the Branch Offices and the Program Evaluation Division at National Office.

3) Surveys and Other Research:

CMHC and the INAC Evaluation Branch collaborated on funding the development, testing and administration of seven survey instruments on a sample of 94 reserves across Canada[1]. These instruments include the following:

- Census Inventory Survey: This entailed an individual housing unit enumeration and included data on: household composition, infrastructure, water supply and toilet facilities.

- Resident and Household Characteristics Assessment Study: This detailed occupant survey identified household types, cost data, household characteristics, physical house condition, housing demand preferences and maintenance practices, resident satisfaction and income data.

- Physical House Condition (Technical Skim): This unit inspection was carried out by trained inverviewers on the entire survey sample and addressed dwelling characteristics similar to those noted below.

- Physical House Condition (Technical): This survey included a detailed unit inspection to be carried out on a selected sub-sample by qualified inspectors. The inspection addressed basic dwelling conditions, including the structural, exterior, and interior condition and mechanical and electrical systems. This information provided the basis for an overall global rating of each unit.

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1 Details can be obtained in Technical Report of the Study of On-Reserve Housing Conditions (prepared for Indian and Northern Affairs Canada, June 1985).

- Band Level Survey Instrument: This survey of band council representatives addressed the perceived current on-reserve housing circumstances, community infrastructure, funding source utilization, band responsibilities, construction skills and community health.

- INAC District and Regional Office Surveys: These surveys provided data on INAC Offices with respect to their planning functions, planning products, office operations, implementation functions and controls. Price Waterhouse Associates took the lead role in developing and administering this survey.

- Community Nurse Survey: This survey gathered observations from a sample of local community health representatives on the reserves.

The on-reserve surveys were co-ordinated by EKOS Research Associates Inc. on behalf of INAC during the fall of 1984. CMHC contributed financial resources to the surveys in order to capture data on specific bands and housing units affected by CMHC programs.

The Program Evaluation Division prepared a survey of CMHC regional and branch offices involved in the delivery of housing programs on reserves. This survey solicited information and perspectives on program activities, program planning, resource allocation, various financial considerations, program linkages, and program effectiveness. A total of 42 different CMHC branches and regional offices received this questionnaire and 31 responses were received.

Relevant internal CMHC administrative files and statistical reports were compiled and analysed in an effort to establish national as well as regional trends. The files were furnished by Program Operations Division, Program Planning and Coordination Division, Treasurer's Directorate, Loans Administration Division, and Statistical Services Division.

4) Data Quality

Most of the analysis presented in this report is based on the survey of on-reserve households and bands carried out by Ekos Research Associates for Indian and Northern Affairs Canada and CMHC for the purposes of the evaluations carried out by each agency. The quality of this data has been assessed from various angles in a

previously mentionned report[1]. The dataset has been shown to be very reliable for most of its measurements. The only weakness of the sample is an underrepresentation of the larger bands in Ontario.

For the purposes of this evaluation, sufficient number of cases were found to observe the RRAP clients, but few cases of Non-Profit Housing residents were captured. This will have a tendency to limit the number of statistically significant differences found between Non-Profit Housing outputs and other program outputs.

F) STRUCTURE OF THE REPORT:

This report begins with a description of the programs which includes an historical context, the extent of program activity on reserves and the manner in which programs are delivered. The rationale for the continued operation of CMHC programs on reserves is addressed next. Objectives achievement for the programs is assessed and the nature of other impacts and effects is examined. The costs and effectiveness of the programs are then assessed. This is followed by the consideration of alternatives to current arrangements for the operation of CMHC programs on reserves.

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1 Technical Report..., Op Cit.

CHAPTER II

THE ON-RESERVE PROGRAMS

This chapter provides a description of both CMHC and INAC housing programs on reserves. It begins by briefly outlining the historical context and then describes the various program elements, the level of program activity and the delivery mechanisms.

A) HISTORICAL CONTEXT

The Indian Act of 1876 gave Indians special legal and constitutional status and consolidated all previous legislation concerning Indians. The Act also confirmed the special bilateral relationship between Indians and the federal government. On reserves, the federal government, through INAC, is responsible for the provision of an array of services including health, education and housing. Although it does not have a legal or treaty obligation to provide housing assistance on reserves, the federal government does have an historical commitment which it continues to honour.

INAC has provided housing assistance on reserves in some form since 1945. In order to address acute shortage problems, the construction of housing was the major thrust between 1945 and 1961 when some ten thousand units were built and "given away" to households on reserves. The focus changed in 1962 when the concept of providing front-end grants to be supplemented by individual and band contributions was introduced. In 1966, all INAC housing activity was consolidated under the Subsidy Housing Program which continued to provide front-end grants in order to subsidize both new construction and renovation activity on reserves in addition to providing Ministerial Guarantees on NHA loans[1].

CMHC can trace its involvement on reserves back to a 1962 amendment to the National Housing Act permitting direct lending to Indians, as defined in the Indian Act, for the purpose of assisting in the construction of housing projects on reserves (currently Section 59)[2]. Since reserve land, under the Indian Act, cannot be mortgaged, normal sanctions

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1 Source: Discussion Paper, Proposed Housing Policy for Indians On-Reserve, INAC, June 23, 1977.

2 Source: CMHC Statistical Services Division. It should be noted that these direct loans were not referred to under Section 59 of the NHA until it was renumbered in 1972.

against non-payment of loans were missing. In the event of default the Minister of INAC, in agreement with CMHC, assumed the borrower's obligations. In addition to direct lending, during the early 1970's a limited amount of activity under CMHC's Section 15 Limited Dividend program was undertaken on reserves.

By 1975, the inadequacies of past programs had become painfully obvious. The INAC Subsidy Housing Program had failed to reduce the backlog of housing need and subsidy levels were too low to permit the construction of adequate housing. Households on reserves were unable to supplement the INAC grant with the personal investments and loans needed to construct adequate housing. In order to be eligible for NHA (Section 59) direct loans, individuals had to be able to afford repayment of the loan and to maintain the home without further assistance from CMHC. The take-up of direct loans was very low since few could handle payment schedules at the market interest rates demanded by such loans. The lack of provision for individual or band participation in planning and administration of housing often resulted in a limited sense of obligation and ownership on the part of bands or individuals to maintain their houses.

Consequently, in December 1975, the Minister of Indian Affairs and Northern Development and the President of the National Indian Brotherhood established a joint working committee to formulate a new housing policy for status Indians. Their proposed housing policy was endorsed by Cabinet in August 1977, and was designed to be an integral part of an overall socio-economic development strategy to promote self-help and Indian participation.

The basic program rationale - serving the needs of all Indian people unable to afford adequate housing and support facilities - remained the same as previous programs. However, the new housing policy was to be distinguished from past efforts in two significant ways. First, it was hoped that suitable delivery mechanisms would be developed for Indian people to have direct input at every level of housing policy development and program management. The new system would be supportive of the concept of Indian people managing their own affairs and be flexible enough to meet a wide range of different housing needs and local conditions. Second, through interdepartmental coordination, resources could be effectively deployed to meet Indian housing needs.

Since INAC has the legal and constitutional responsibility for Indians and lands reserved for Indians, this department was to assume the lead role in coordinating and mobilizing funds and resources from CMHC, Canadian Employment and Immigration Commission (CEIC), the Department of Regional

Economic Expansion (DREE) and Health and Welfare Canada. CMHC's role was to offer bands interested in using NHA programs the necessary loan funds to augment the INAC front-end subsidy, band/individual equity contributions and job creation funds offered by DREE and CEIC. CMHC was also authorized to amend the NHA in order to make the Non-Profit Program (originally Section 15.1, subsequently Section 56.1), the Residential Rehabilitation Assistance Program (Section 34.1) and Loan Insurance (Section 6) accessible to bands and band members. Amendments to the NHA in March 1979 made the Non-Profit program available to Indian bands without the prior qualification that they incorporate as a non-profit corporation. Similarly, program resources under Section 34.1 were made available on reserves regardless of the special RRAP designation and/or provincial concurrence. With these changes NHA programs became available for use on reserves.

B) ON-RESERVE PROGRAM DESCRIPTIONS

The underlying objective of CMHC initiatives on reserves is to ensure that program activities support INAC, the lead agency in matters pertaining to policy and programs for Indians. INAC rather than CMHC establishes overall planning and priorities for Indian housing. It is the responsibility of CMHC to allocate and apply its resources according to INAC intentions and initiatives for housing on reserves.

CMHC on-reserve programming falls into three general categories:

- Non-Profit Housing - provides on-going subsidies for the development and operation of band-owned non-profit projects.

- Rehabilitation - offers assistance to Indian people on reserves for the repair and improvement of existing housing to an acceptable standard.

- Lending - provides or facilitates financing for the construction of individually-owned and band-owned houses on Indian reserves. CMHC provides mortgage insurance to facilitate private lending on reserves and also lends directly to bands and individuals where private funds are not accessible.

In addition to the provision of loans, loan insurance, subsidies and grants through these programs, CMHC is involved in the provision of technical support mechanisms such as building inspections, contractor selection and design considerations.

The INAC On-Reserve Housing Program (ORHP) consists of the following key components:

- Capital Grants - for new construction and rehabilitation.
- Support Services - including technical and financial services and advice.
- Ministerial Guarantees - for loans made to Indians on reserves for housing purposes.

This review of on-reserve housing activities includes descriptions of CMHC's On-Reserve Programs as well as the INAC On-Reserve Housing Program.

1) CMHC On-Reserve Programs

a) Non-Profit Housing

The non-profit Section 56.1 program is designed to provide federal assistance to an eligible recipient, which, in this case, is the council of a band within the meaning of the Indian Act. This assistance enables the band to meet the costs of a rental housing project and reduce the rents to a level appropriate to the needs of low income families. In addition to the objective of providing modest, affordable housing, the Section 56.1 program attempts to encourage approved lenders to provide capital to meet the housing needs of Indian bands.

The maximum amount of the assistance is the difference between the amount required to amortize the costs of construction or acquisition and rehabilitation of the housing project at prevailing market interest rates over thirty-five years and the amount required to amortize the cost of the project if the interest rate charged was 2 percent per annum. While assistance is based on the total capital cost of the project, the loans required by bands are normally less than capital costs. Usually bands use INAC housing grants and land value as equity to reduce the amount of loan necessary. The loans are secured by an INAC ministerial guarantee.

Each band enters into an operating agreement with CMHC to ensure that the intent of the program to provide affordable modest housing to low income

people is maintained[1]. The INAC capital grants for new construction, in addition to the Section 56.1 operating subsidy, ensure the viability of these projects where almost all occupants have low incomes. Any breech of the operating agreement can result in the suspension of subsidies.

To ensure that the housing produced is modest and that maximum subsidy costs are controlled, the concept of maximum unit prices (MUP) was developed. MUPs are established by CMHC branch offices for each housing form and market area in which Section 56.1 activity is anticipated. The MUP defines the acceptable total cost of a modest housing unit and determines the ceiling for Section 56.1 assistance on a project. Further, all housing built under this program must meet NHA standards, and routine inspections are carried out throughout the course of construction.

In addition to the Section 56.1 assistance, bands are eligible for loan funds to assist them in establishing the feasibility of their Section 56.1 project and in developing it to the commitment stage. Loans provided under the Proposal Development Funding (PDF) program (Section 37.1 of the NHA) are included in the capital cost of the project if the project proceeds. If the project does not receive a commitment, the Section 37.1 loan is fully forgiven.

The PDF program provides loans of up to $30 000 to prepare proposals for Section 56.1 unit allocations. These proposals or applications include evidence of the availability of a suitable site, preliminary drawings, outline specifications and preliminary cost estimates. Once a project receives conditional unit allocations, additional loan funds, up to a maximum of $75 000 are available to develop the project to the loan commitment stage. This final application for a formal commitment of Section 56.1

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1 In an off-reserve non-profit project, the target group prior to 1986 has been low and moderate income households. Moderate income tenants who are not income tested pay rents which correspond to the lower end of the range of rents for comparable housing in the private market (LEM rent). Lower income occupants who would not be able to pay a LEM rent without spending more than 25 percent of their income receive additional assistance to the maximum subsidy available. However, on reserves an income mix of occupants is not realistic and almost all the occupants pay according to income.

units must include evidence that appropriate land tenure arrangements and zoning are in place and that construction will start within six months of the issuance of the Undertaking-To-Insure. The application must also include detailed construction costs based primarily on firm fixed prices and evidence that total project capital costs are within CMHC's maximum unit price policy.

Because bands may not have the capacity to complete such project development activities, the PDF program provides a means by which outside expertise can be acquired.

b) Rehabilitation Assistance

The Section 34.1 Residential Rehabilitation Assistance Program (RRAP) is designed to provide assistance to occupants of substandard houses on the basis of need (lowest income, largest families, worst-housed first). This assistance is used to improve substandard housing to an agreed level of health and safety and to promote an acceptable level of maintenance. To be eligible for RRAP a housing unit must be substandard in one of the following categories:

i) structure
ii) electrical
iii) plumbing
iv) heating
v) fire safety
vi) accessibility for a disabled occupant.

The maximum loan available to Indians and band councils is $25 000 per unit for homeowner-occupied housing. The maximum loan for rental accommodation is $10 000 per housing unit. The RRAP loan has a forgiveable portion to accommodate low income households. The amount of forgiveness available to homeowners depends on the adjusted family income of the occupant, the rehabilitation costs and the area in which the unit is located. Households with adjusted incomes of $13 000 or less earn maximum forgiveness for their location[1]. For RRAP loans to homeowners on reserves, three zones have been designated to take account of the higher cost of construction associated with remote units (See Table II.B.1).

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1 Households with incomes greater than $13 000 earn a declining amount of assistance up to incomes of $23 000 at which no assistance is provided.

Table II.B.1
RRAP Forgiveness

Zone	Definition	Max. Loan Forgiveness	Addition For Disabled
1	South	$5 000	$1 500
2	North	$6 250	$1 500
3	Yukon, North West Territories, Labrador, far Northern Quebec	$8 250	$1 500

RRAP is normally delivered by local delivery agents, who, in the case of reserves are usually the band councils. An agency agreement between CMHC and the band council sets out the terms and conditions for such delivery arrangements and stipulates the fee-for-service to be paid.[1] If the units are band owned or if repair work is done by band members, CMHC will directly deliver RRAP or, at a minimum, will carry out all inspections. CMHC will also deliver the program if bands are unable to undertake delivery themselves.

c) Lending

The objective of the direct lending (Section 59) program is to ensure that bands as well as individuals obtain financing directly from CMHC when they do not have access to or are unable to obtain financing from the private sector. Bands may secure Section 59 loans towards the construction of band owned social housing projects. Provided they meet normal underwriting criteria, individuals may secure a Section 59 loan towards the costs of a private unit provided. The band verifies the applicant's ability to repay and accepts to repay the loan should the individual default.

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1 The fees for units located within varying distances of the delivery agent's office are as follows:

Distance to Unit	Total fee per unit
100km or less	$600
101km to 250km	$685
251km and more	$750

Section 59 loans are made by CMHC for one to five year terms with the repayment amortized over a period of 25-40 years. For this type of loan, the interest and related monthly payments will be constant for the term after which the interest rate may be adjusted. Monthly loan repayments will then be adjusted to reflect the new interest rate. Bands and individual borrowers under this program must obtain an INAC Ministerial guarantee. In the event of a default, CMHC will call the ministerial guarantee and recover outstanding amounts from INAC. INAC will subsequently recover from the band council.

The Section 6 approved lender program is also open to bands as well as individuals. Under the program, CMHC accepts the INAC Ministerial guarantee as security against the loan. CMHC issues an undertaking to insure the loan pursuant to Section 6. No mortgage insurance premiums are paid on these loans; the ministerial guarantee is called upon in default situations. Loans from approved lenders receive the CMHC undertaking since the Minister of INAC is empowered only to guarantee "NHA" loans.

d) Additional Supports

In addition to the programs described above, there are connected support activities. These activities can be grouped into three categories: program promotion, inspection services and training.

i) Program Promotion
CMHC representatives meet with bands and/or INAC staff to explain the general nature and delivery mechanisms of CMHC programs on reserves. Often INAC staff organize housing workshops for the bands and invite CMHC representatives to fulfill an information role. Once a band becomes involved with a CMHC program, staff are available in a consultive capacity to assist with unit selection, document preparation, and administrative procedures.

ii) Inspection Services
CMHC and INAC reached an agreement in 1983 concerning a variety of technical housing services CMHC would provide on reserves, on a fee-for-service basis. CMHC inspectors

undertake on-site inspections during various phases of new construction of units constructed outside NHA programs. On average, a CMHC inspector will perform two inspections to check the adequacy of construction against CMHC requirements. Monitoring inspections are carried out by CMHC on a volume related percentage of all RRAP units delivered. In addition, CMHC provides a plans examination service for bands.

iii) Training

Prior to their cancellation in June of 1985, CMHC offered training courses in rehabilitation skills at regional centres across Canada. These courses, four in total, were designed to improve the knowledge and skills of people involved in housing rehabilitation, especially those who would be acting as RRAP delivery agents. Although the focus was rehabilitation, the skills acquired such as specification writing, cost estimating and project management are skills that are easily applicable to new construction as well. Sometimes, CMHC took the lead, initiating courses in regions where audience interest had been identified. In these cases INAC and CMHC sponsored some on-reserve individuals to take the courses.

2) INAC On-Reserve Housing Program (ORHP)

A key objective of the INAC housing program is to provide housing subsidies for the purpose of improving Indian housing conditions. The ORHP is also intended to increase the role of bands in planning, management and delivery of housing, to directly deliver housing units to bands where required and to coordinate the resources of other INAC programs as well as other federal agencies, including CMHC, for the purposes of housing.

The INAC housing program includes the following initiatives:

a) Basic capital grants for new construction and renovation as well as grants to reflect transportation costs, and economic circumstances of bands.

i) The basic capital subsidy for new housing construction can range from $19 080 - $36 000 depending on the INAC geographic classification[1].

ii) The basic capital subsidy for renovation is $6 000 per unit for major repairs to existing units.

iii) The transportation subsidy is also dependent on the INAC geographic classification and is intended to offset the extraordinary costs of transporting building materials to sites far from supply centres. The subsidy is based on actual costs up to a maximum of $7 000. This subsidy is intended as a supplement to the INAC new construction grant.

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1. The INAC geographic classification for reserves is as follows:

Zone	Formerly Called	Distance From Regional Service Center*	Year Round Access by Road
1	Urban	0 - 50 km.	Yes
2	Rural	50 - 350 km.	Yes
3	Remote	350 km. and over	Yes
4	Special Access	N/A	No

* A regional service center is a community which offers provincial and federal services, banking facilities, commercial institutions, qualified and general labour.

Source: INAC, Housing and Band Support Branch

It should be noted that the INAC geographic definitions differ substantially from the standard urban-rural definitions used by Statistics Canada. Statistics Canada defines urban as an "area having a population concentration of 1 000 or more and a population density of 400 or more persons per square kilometer" (Statistics Canada, 1981 Census Dictionary, p. 106). All other territory lying outside urban areas is defined by Statistics Canada as rural. In the ensuing analyses where the 1984 INAC On-Reserve Survey is cited as the source, the INAC classifications apply.

iv) The economic subsidy is designed to offset adverse economic circumstances on reserves and is available to supplement the basic capital subsidy for new construction. The economic subsidy can range from zero to $12 000 per unit depending primarily on employment opportunities available to band members and band income. For the purpose of this subsidy, INAC has assigned every band an economic categorization based for the most part on access to centres of employment.

The INAC front-end capital grants for new construction and renovation are available for bands to use in conjunction with subsidies and loans provided under the NHA. Through coupling or stacking of CMHC and INAC assistance, the range and levels of resources available to bands can be increased.[1]

b) Support services for housing: INAC regional offices offer a variety of technical and financial services to the bands especially in the area of housing planning, design and administration. Besides advice, this support service can involve funding.

c) Ministerial guarantees for loans made to Indians on reserves where the land is inalienable and therefore cannot be mortgaged.

3) Summary

Table II.B.4 summarizes the general areas of on-reserve housing activity and the major CMHC - INAC supports available to bands.

C) CMHC PROGRAM ACTIVITY

1) Band Participation

Programs offered on reserves by CMHC are available to all bands. Table II.C.1 summarizes the distribution of bands participating in CMHC programs.[2]

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1 Examples of how CMHC and INAC subsidies can be used together for new construction and renovation are presented in Chapter VII.

2 Unless Census data is noted as the information source, any table citing geographic designations is based on the INAC geographic classification (see footnote, p. 18).

Table II.B.4
Housing Programs Areas On-Reserve
and Major CMHC-INAC Support Available*

Program Area		Supports Available													
Type	Ownership	INAC New Const. Grant	INAC Reno. Grant	INAC Minist-erial Guaran.	INAC Economic Subsidy	INAC Trans. Subsidy	INAC Training Management	NHA Sec. 59 Loan	NHA Sec. 6 Loan	NHA Sec. 34.1 Forgive-able	NHA Sec. 34.1 Repay.	NHA Sec. 56.1 Subsidy	CMHC Technical Supports	CMHC Inspection Services	Building Standards Enforced
New	Band	X	-	X	X	X	X	X	X	-	-	X	X	X	X
	Individual	X	-	X	-	X	X	X	X	-	-	-	X	X	X
Reno-vation	Band, Individual	-	X	X (if 34.1 re-pay-able	-	-	X	-	-	X	X	-	X	X	X

X = Available

- = Not Available

* The Rehabilitation Skills Training Courses were available from 1978 to 1985 when the program was cancelled.

Since 1978, 64 percent of bands have had contact with one or more of CMHC programs on reserves. While more than two-thirds of all urban and rural designated bands have participated in CMHC programs, less than one half of all remote/special access bands have used the programs. Regional differences should also be noted. In Quebec, 80 percent of the bands have participated in CMHC programs, in comparison to 53 percent of bands in Ontario.

Table II.C.1
Percent of Bands Participating in CMHC Programs, 1978-1984

Region	Geographic Designation						All Geographic Areas	N
	Urban	N	Rural	N	Remote/ Special Access	N		
Atlantic	65%	20	78%	9	-	0	68%	29
Quebec	80%	15	72%	11	85%	14	80%	40
Ontario	71%	46	55%	54	23%	26	53%	126
Prairies	70%	43	69%	95	66%	32	69%	170
B.C./Yukon	63%	78	77%	87	33%	43	63%	208
Total	69%	202	69%	256	46%	115	64%	573

N = Total bands in a given regional geographic designation.
Note: 1984 was the last year available at time of writing.
Source: INAC Housing Directorate
CMHC Administrative Files

Attention must also be paid to the actual programs utilized by bands. Five basic options with respect to CMHC programs on reserve are available to bands. These options include:

a) RRAP involvement only;
b) Direct or approved lending in conjunction with 56.1 subsidies;
c) Direct or approved lending alone;
d) Utilization of all above programs;
e) No involvement.

A summary of CMHC program utilization by band geographic designation is presented below. Direct or approved lender loan programs (Section 59 and Section 6) are almost always used by bands in conjunction with Section 56.1. For this reason, option c) is not included in the following table.

Table II.C.2 indicates that urban and rural bands involved in CMHC programs have tended to utilize either the full range of CMHC programs simultaneously, or RRAP alone. Fewer bands utilize Section 56.1, perhaps because it is somewhat more complex and involves long term commitments. RRAP is the most frequently used program probably because program requirements are less complex. As urban proximity diminishes so does the simultaneous utilization of all programs by bands. The percentage of bands using only RRAP, however, does not appear to be affected by distance from urban centres. This is also the case for bands using only Section 56.1 in conjunction with direct or approved lending.

Table II.C.2
Summary of CMHC Program Utilization by Bands, 1984
(Horizontal percentages)

Geographic Designation	Bands Utilizing All* Programs Simultaneously (%)	Bands Utilizing Only Sec. 56.1 in Conjunction with Direct or Approved Lending (%)	Bands Utilizing Only RRAP (%)	Bands Without Any Involvement (%)
Urban N=202	32	7	30	31
Rural N=256	23	8	38	31
Remote/Special Access N=115	8	8	30	54
All Geographic Designations N=573	24	7	33	36

Source: INAC Administrative Files
* See page 11 for program list

2) Unit Activity

As indicated in Table II.C.3, RRAP has been the most active CMHC program on reserves. In relation to Section 56.1, about twice as many RRAP units have been committed since 1979. British Columbia has accounted for the largest share of RRAP activity (26 per cent) followed by Ontario with 21 per cent.

TABLE II.C.3
PROGRAM ACTIVITY BY PROVINCE, 1979-1984 AND 1984 (UNITS)

	1979-1984				1984			
	Section 56.1	RRAP	Individual Lending* Insured (Private)	Individual Lending* Direct (CMHC)	Section 56.1	RRAP	Individual Lending* Insured (Private)	Individual Lending* Direct (CMHC)
Newfoundland	-	-	-	)	-	-	-	)
Prince Edward Island	-	46	-	)	-	-	-	)
Nova Scotia	46	511	-	) 10	21	88	-	) 3
New Brunswick	3	329	-	)	-	12	-	)
Quebec	961	1 231	38	8	218	298	21	-
Ontario	345	1 902	-	49	115	484	-	12
Manitoba	528	1 137	-	43	131	412	-	6
Saskatchewan	708	867	-	4	152	322	-	-
Alberta	557	542	-	38	137	191	-	1
Northwest Territories	-	-	-	-	-	-	-	-
British Columbia	1 105	2 284	-	)	339	467	-	)
Yukon	81	93	-	) 133	31	31	-	) 22
TOTAL	4 334	8 942	38	285	1 144	2 305	21	44

* Insured and direct lending are also made available to bands in conjunction with Section 56.1 assistance.

Sources: Section 56.1 - CMHC Social Housing Division (Administrative Data)
RRAP - CMHC PMS Reports
Lending - INAC Housing Directorate (Ministerial Guarantees Data)

The popularity of RRAP can be attributed in part to its use on reserves as a grant program. Table II.C.4 indicates that 90 percent of RRAP dollar commitments since 1980 are forgivable. In 1984, 98 per cent of the total RRAP commitment on reserves was forgivable compared to 84 percent off reserves.

Table II.C.4
Section 34.1 Residential Rehabilitation Assistance Program

	Approved Units No.	Commitment $000	Forgivable Commited $000	Forgiveness %
1979	520	2 238	***	***
1980	852	3 335	2 790	84
1981	1 172	4 474	3 978	89
1982	1 730	7 128	6 769	95
1983	2 362	11 130	10 989	99
1984	2 306	11 650	11 450	98
Total[1]	8 942	37 717	33 976	95

*** Data Unavailable
Note: 1984 was the last year available at time of writing.
1 Totals exclude 1979
Source: CMHC Administrative Data

Although Section 56.1 unit activity amounts to one half of RRAP activity, more than 4 300 Section 56.1 units have been committed on reserves since 1979. Again, British Columbia bands have accounted for the largest share of Section 56.1 activity (25 per cent) followed by Quebec bands (22 per cent). Very little Section 56.1 activity has occurred in the Atlantic Region (1 per cent). As indicated in the previous section, the Section 56.1 program is more complex than RRAP and involves long term commitments to repay mortgage loans.

The third component of CMHC activity on reserves is the lending programs, including direct lending by CMHC (Section 59) and private lending with loans insured by CMHC (Section 6). Direct and insured private loans are made both to individuals for private ownership and to bands for Section 56.1 non-profit housing projects. However, loans to individuals account for a very small proportion of overall CMHC unit activity on reserves (Table II.C.3). Only two percent of CMHC unit activity since 1979 was for individual loans. Further, only a small proportion of these individual loans have been made by private financial institutions with NHA

insurance (Table IV.C.4, p. 118). By 1984, however, about one-third of the 65 loans to individuals were made by private lenders. Private lender loans to individuals on reserves have occurred only since 1982 and only in the province of Quebec. In Quebec, INAC representatives have been successful in securing lender interest in the provision of individual unit construction loans. Although individual lending has increased in recent years, it remains a very small proportion of the total activity on reserves. Individual loans are utilized by only a small segment of the on reserve population.

With regard to lending activity for Section 56.1 non-profit projects undertaken by bands, the role of private lenders has increased dramatically since 1980 (see Chapter IV, Table IV.C.1). Direct lending by CMHC has declined from over 70 per cent of Section 56.1 units in 1979-1980 to only 11 per cent in fiscal year 1983-1984. By 1983-1984, private lenders accounted for 87 per cent of loan funds required for Section 56.1 on reserve projects. Increased participation by private lenders is important since it results in a corresponding reduction in federal government financial requirements.

D) PROGRAM DELIVERY

1) Budget Allocation Process

The budget allocation process can be described as one of consultation and coordination between INAC, CMHC and the Indian Bands. In consultation with the Indian Bands, INAC regional offices determine the requirements of particular bands. This is a delicate process of negotiation, and although INAC housing policies are intended to allocate units on the basis of "need", there is no rigorous definition of the term[1]. Units tend to be allocated according to indicators such as traditional funding patterns, per capita criteria, band requests and band ability to manage the programs.

The number of required units is determined by INAC regions in late August of each year; the requests are forwarded to INAC national office. Simultaneously, CMHC determines the number of units in each of its programs that will be allocated for use on reserves and these also are sent to INAC national office, where a matching is carried out. INAC national office applies its budget

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1 Price Waterhouse Associates, Management Review of the On-Reserve Housing Program, June 1985.

allocation to the CMHC allocation and matches the whole to the need requirements identified by INAC regional offices and bands. Bands are then informed early in the new year of the number of units allocated to them for the following year. The two to three month lead time is necessary to ensure that the program instruments are in place and that any necessary reallocation can occur before the beginning of the new budget year. Once a band is informed of its unit allocation, it assumes the responsibility of assigning each unit to a particular individual.

The on-reserve allocation process is thus an exercise where CMHC, bands and INAC each provide the necessary information and resources in order to facilitate actual distribution of units to regions and, ultimately, to bands. CMHC-band contact is extremely limited in this process with INAC conducting the direct government-band contact.

While CMHC operates on a calendar year, INAC operates on a fiscal year. Thus, during the allocation process there is a waiting period between notification of the 56.1 allocations to bands and formal notification of INAC allocations to band. This lag has, in some situations, led to slow take-up of 56.1 units, construction delays on reserve and construction done under bad weather conditions.

2) Housing Delivery

a) Non-Profit Housing

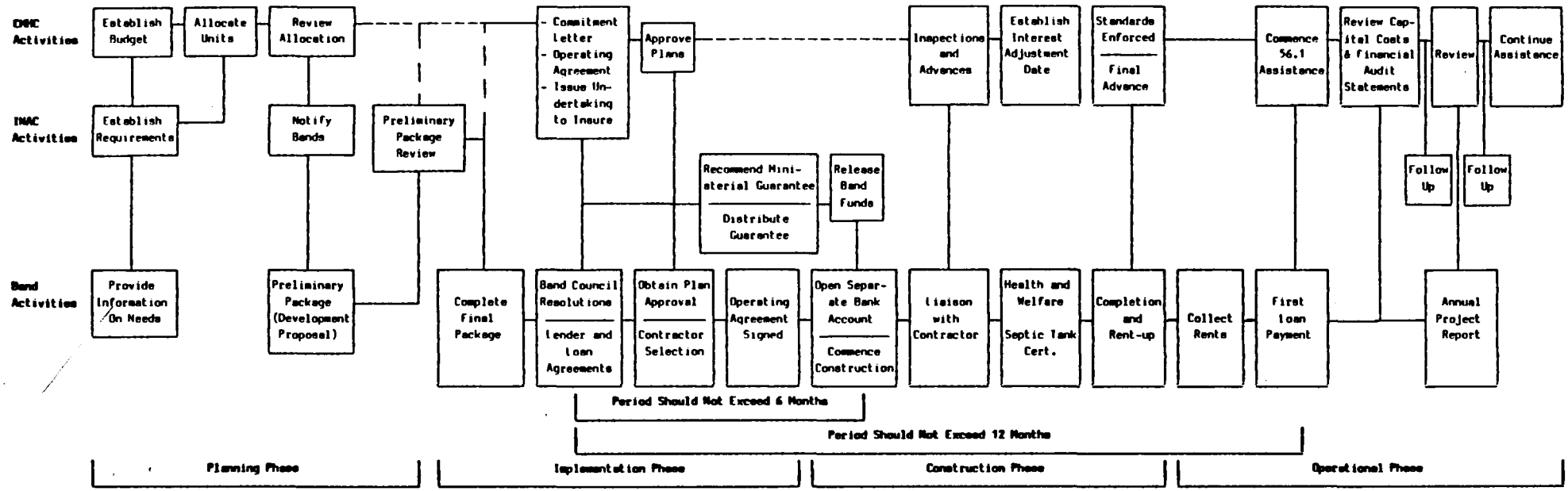
As in the initial budget allocation process, consultation and coordination between CMHC and INAC continues throughout the delivery process. The major difference is that band-level input increases substantially.

Delivery of non-profit housing on reserves occurs in four distinct phases. These phases include:

1) The Planning Phase;
2) The Implementation Phase;
3) The Construction Phase;
4) The Operational Phase.

The chart on the next page presents a summary of major activities associated with the four phases above.

SUMMARY OF ACTIVITIES AND ASSOCIATED PHASES: ON-RESERVE NON-PROFIT HOUSING DELIVERY



The planning phase includes the establishment of allocations and INAC notification to the bands. During this phase, bands receiving units begin to prepare their proposal packages which include the identified lots, adequacy of servicing, tenant profiles, and unit costs. These proposals entail the preliminary preparation of the material required for submission in the implementation phase. Bands can apply for loans under the Proposal Development Funding (PDF) program to assist them in the preparation of the proposal.

During the implementation phase, bands begin by preparing finalized plans, appraisal reviews and project tender functions. Additional PDF funding is available at this stage to assist in the preparation of the final application package. CMHC branch offices review bids, and perform a viability check on the project. CMHC then prepares a commitment letter that sets out the terms and conditions of the commitment of the units and loan. The operating agreement which follows sets out all the criteria for administration. CMHC undertakes to insure the project. Concurrently, the bands provide the necessary resolutions authorizing the disbursement of their funds plus the signed lender loan agreement. If the band utilizes a Section 59 CMHC direct loan, then a form signifying band agreement to repay the loan is submitted. The implementation phase is complete when the ministerial guarantee from INAC is received and the band funds are released.

Once the construction phase commences, bands maintain a liaison with the contractors and CMHC. CMHC carries out the required inspections and depending on the loan type (Section 59 or Section 6), either CMHC or the approved lender will forward advances to the band to cover construction costs. The construction phase concludes with a final inspection and the last advance of funds, provided that all building requirements have been met. An interest adjustment date and first payment date are established by CMHC for the band. The interest adjustment date determines the interest on the fully advanced amount for purposes of repayment. The interest rate is the prevailing market rate at the interest adjustment date.

During the operational phase, tenants move in, the band collects rent and begins its loan repayment, and Section 56.1 assistance commences. Project

management as required by the operating agreement commences concurrently. Bands must submit final certification of project capital costs and financial audit statements including verifications of tenant incomes. By March 31, each year, bands must submit a project data report in order to continue to receive assistance payments under the 56.1 program.

b) RRAP Delivery

The delivery of RRAP on-reserve, although not as complicated as the delivery of the 56.1 program, still requires a substantial degree of band participation and INAC staff support. Upon the resolution of allocations at the national and regional levels between CMHC and INAC, INAC district offices ultimately inform bands of the RRAP dollars they are to receive.

Three basic delivery arrangements or options are available for RRAP. A band council may enter into a partial agency agreement with CMHC, a tribal council may enter into a full agency agreement with CMHC or CMHC branches may deliver directly RRAP. If a band wishes to deliver RRAP to its own members, under the terms of a partial agency agreement, the band is responsible for finding applicants, assessing applicant eligibility and assisting applicants with completion of forms. As well, the band council will act as a liasion with CMHC. The Corporation retains authority for final approval of applications, the disbursement of funds and the administration of loans once under repayment. In order to avoid conflicts of intent under the partial agency agreement, CMHC also conducts the monitoring inspections to check for adherence by the band to RRAP guidelines.

A tribal council, as an arm's length entity, under the terms of a full agency agreement may work with both band councils and individual members. As a full delivery agent, a tribal council will conduct the same activities as a band would under the partial agreement, except that the tribal council if it has the capacity, may carry out unit inspections. As well, under this arrangement, CMHC provides the advances but does so on the recommendation of the tribal council. CMHC, here, retains the monitoring role.

Direct delivery by CMHC involves local offices working directly with band councils. Local CMHC offices will carry out the various RRAP delivery activities that have been described above for partial and full agency agreements. CMHC offices in delivering RRAP will not work with individual members but only with their band council.

In determining eligibility under RRAP, CMHC will ensure that bands or CMHC identify priority applicants and assess applicant eligibility for RRAP assistance. Arrangements are then made for an initial CMHC inspection to complete an eligibility assessment of the work to be done. Bands or CMHC assist applicants in obtaining estimates for the work to be done. Final estimates are reviewed by the band council who then submit to INAC regional offices a letter of recommendation, relevant applicant information, unit information and a copy of the CMHC RRAP Loan Application for consideration by the local CMHC office. If the RRAP loan is repayable, then a band council resolution requesting a ministerial guarantee must also be submitted to the INAC regional office. Once submitted to CMHC branch offices, the application package is reviewed for completeness and a decision to approve or reject the application is made.

3) Agreements Pursuant to On-Reserve Housing

A variety of agreements signed between bands and CMHC are required to deliver new construction and renovation programs on reserves. Table II.D.1 reviews briefly the major agreements associated with the RRAP, Section 56.1 and Section 59 programs.

4) Loan Portfolio Management

The CMHC on-reserve housing portfolio consists of loans made under Section 34.1 RRAP repayable and Section 59 Direct Loans.

Table II.D.2 outlines current Section 59 and Section 34.1 repayable loans outstanding on reserves. The total of the original loans is approximately $62 M, with a balance of $56 M still outstanding. INAC ministerial guarantees are in place to cover the original loan amounts. The outstanding balance to date represents 90 per cent of the original loan amount.

Table II.D.1
Agreements Pursuant to On-Reserve Housing

Section 56.1	Section 59	Section 34.1
OPERATING AGREEMENT: Agreement to maintain the low income character of the project. Also specifies project amortization schedule, payment conditions and amount of assistance. Non-compliance could result in termination of assistance.		AGENCY AGREEMENT: Agreement with a band designated as delivery agent for RRAP; arms length rule to apply; delivery fees paid by CMHC to the band.
GUARANTEE AGREEMENT: Known as ministerial guarantee. INAC guarantees, to the approved lender, the borrower's payments and assures it will assume responsibility for the loan in case of default.	GUARANTEE AGREEMENT: See left.	GUARANTEE AGREEMENT: See left. Applicable if the loan is partly repayable.
APPROVED LENDER LOAN AGREEMENT: Under Section 6, commits the band to make loan payments, specifies payment dates, interest charges, etc.	AGREEMENT TO REPAY: Specifies the band's commitment to make loan payments, loan payment interest charges and other borrower requirements.	PROMISORY NOTES: Applicant promises to pay CMHC principal and interest on RRAP loan. Formality if the loan is forgivable.

Table II.D.2
Section 59 and Section 34.1 Repayable Loans
Under Current CMHC Administration ($000)
(Up to 1984 included)

	Region	# of Loans Outstanding	Original Loan Amount	Current Balance Outstanding	Percentage Outstanding
Section 59	Atlantic	11	59.0	53.0	90
	Quebec	132	3679.0	3625.0	99
	Ontario	68	5808.0	4302.0	74
	Prairies	275	22567.0	21334.0	96
	B.C./Yukon	322	26144.0	23415.0	90
	Total	808	58257.0	53129.0	91
Section 34.1	Atlantic	-	-	-	-
	Quebec	72	364.0	267.0	73
	Ontario	61	238.0	155.0	65
	Prairies	282	1317.0	1102.0	94
	B.C./Yukon	22	2031.0	1617.0	80
	Total	437	3950.0	3141.0	80

Source: CMHC Loans Administration Division, 1985.
Note: 1984 was the last year for which data were available at time of writing.

CHAPTER III

RATIONALE

The analysis of evaluation issues begins by considering the rationale for CMHC housing programs on reserves. Two key issues are addressed: the continuing need for CMHC involvement on reserves and the extent to which program designs are consistent with program objectives.

A) NEED FOR PROGRAMS

When addressing 'need for programs', two questions arise. First, do the housing conditions which prompted the introduction of the programs continue to exist? Second, is there a continuing need for CMHC involvement on reserves in support of INAC housing initiatives?

1) Housing Problems

In order to determine whether the need which prompted the introduction of CMHC programs continues to exist, the extent to which problems of crowding, inadequacy and affordability occur on reserves has been examined. Crowding has been defined as occurring when there is more than one person per room. Inadequate housing refers to housing which is physically deficient in terms of basic components such as exterior structure, or lacking in basic services such as electricity, indoor toilet facilities and piped water. Shelter costs and the distribution of incomes on reserves have been examined in the discussion of affordability. The definitions of housing problems used in this section are generally recognized and accepted in the study of housing needs.[1]

Housing conditions over time have been examined using the 1977 INAC Housing Needs Analysis, the 1981 Census of Canada and the 1984 INAC On-Reserve Housing Survey as the primary data sources. In order to provide some context, the distribution of the Indian population on reserves will be outlined first.

a) Distribution of the On-Reserve Indian Population

According to the INAC Indian Register, as of 31 December 1984 there were 348 809 status Indians[2]. Of this group, 100 101 (29 per cent) status Indians were living off reserves while 248 708 (71 per cent) lived either on reserves or on other crown land. There are some 2 522 separate

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1 See, for example, Government of Canada, Consultation Paper on Housing, January 1985.

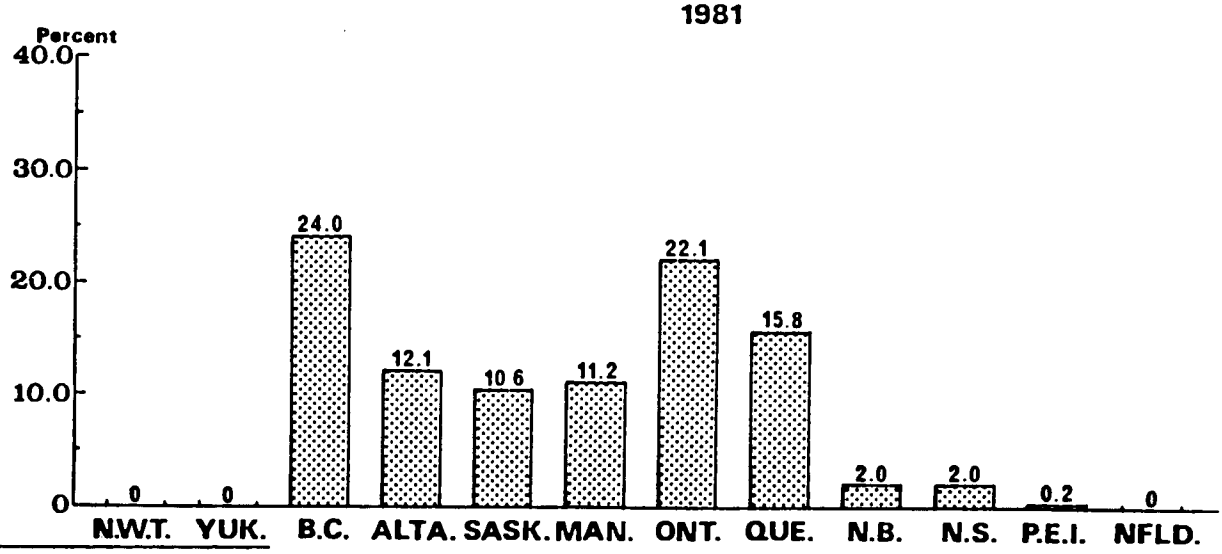
2 INAC, Registered Indian Population by Age, Sex and Place of residence, December 1984.

parcels of reserve land, set aside through treaties or other legal arrangements, on which this latter group lives. These lands cover an area of approximately 26 525 square kilometers. Almost every Indian is affiliated with one or more bands. A band is a group of Indians sharing a common interest in land and with an historical connection defined by the federal government. As of 1984, there are approximately 573 bands in Canada although, because band designations can be changed by the Minister of Indian Affairs, the number can vary from year to year.

In 1981 there were 45 420 households living on reserves or about 0.5 per cent of the 8 million households in Canada as a whole[1]. Almost half of the households living on reserves were in British Columbia and Ontario while Newfoundland, the Yukon, and the Northwest Territories did not have any reserve lands (See Table III.A.1). It should be noted, however, that in the Yukon, there are 12 communities on "land set aside" for Indian people which are treated in the same manner as reserves.

In the following sections, the extent to which households on reserves experience problems of crowding, physically inadequate housing and affordability is examined.

Table III.A.1 PROVINCIAL DISTRIBUTION OF HOUSEHOLDS/DWELLINGS ON-RESERVE, CANADA, 1981

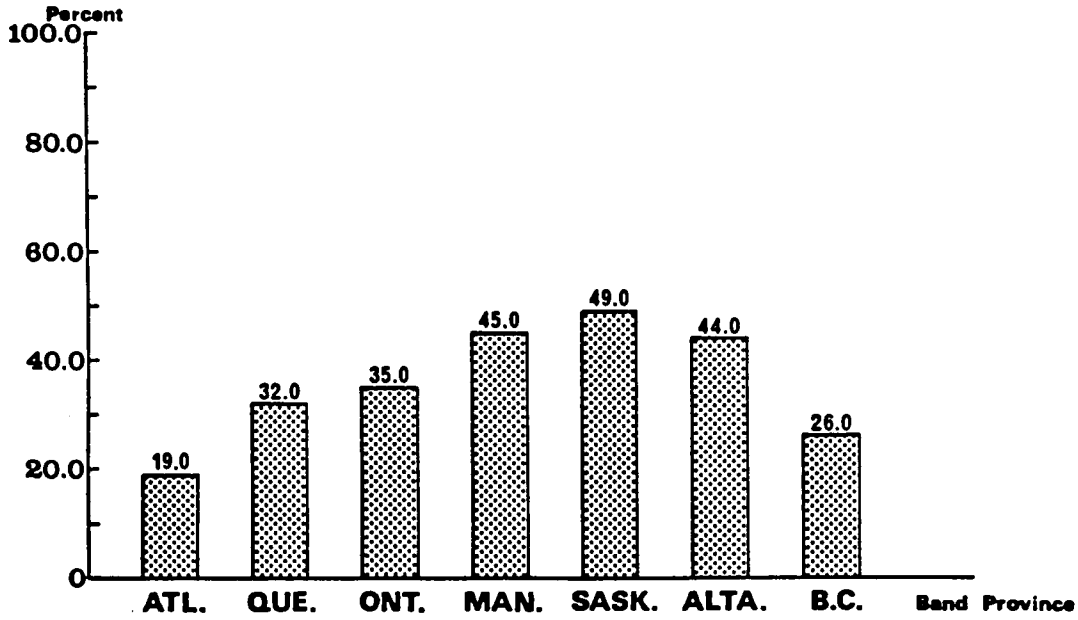


1 CMHC Research Division, Housing in Canada, A Statistical Profile, November 1984. The on reserve data in this report are from the 1981 Census.

b) Crowding

The 1984 On-Reserve Survey indicates that 36 per cent of the housing on reserves is crowded using the criterion that there should be no more than one person per room[1]. As indicated in Table III.A.2 the incidence of crowding on reserves is not uniform across the country. In Saskatchewan, Manitoba and Alberta, more than 40 per cent of households had more than one person per room. In contrast 19 per cent of on-reserve households in the Atlantic provinces experienced crowding. In comparison, 2.3 per cent of households nationwide live in crowded conditions.

Table III.A.2 PERCENT OF HOUSEHOLDS WITH MORE THAN ONE PERSON PER ROOM BY REGION



Source: 1984 INAC On-Reserve Survey

Unfortunately the 1977 INAC Housing Needs Analysis did not use this criterion which has become the most common in determining the incidence of crowding. It is consequently difficult to determine if crowding on reserves has changed since 1977, before the introduction of CMHC programs. INAC did, however, record the number of families per dwelling unit in their 1977 study. This data indicates that

1 Technical Report of the Study of On-Reserve Housing Condition, Ekos Research Associates, June 1985.

approximately 19 per cent of all dwellings on reserves housed two or more families and could therefore be considered crowded (See Table III.A.3).

Table III.A.3
Number of Families Per Dwelling

	% With One Family	% With Two Families	% With Three or more Families
On Reserves (1977)	81.2	14.8	4.0
On Reserves (1984)	81.3	14.6	3.3
Canada (1981)	98.6	1.4	N/A

Sources: 1977 INAC Housing Needs Analysis
1984 On-Reserve Survey
1981 Census

Note: Census data does not distinguish between dwellings housing two families and those housing three or more. Consequently this percent refers to dwellings housing more than one family.

Data from the 1984 survey indicate that, measured in this manner, there has been little change in the incidence of crowding over time. Approximately 18 per cent of the dwellings on reserves in 1984 housed two or more families while the average family size continued to be close to 5 members. Nationwide, the 1981 Census reports that 1.4 per cent of all dwellings are occupied by two or more families.

The incidence of crowding problems by province varies when this criterion is used as well. Alberta and Manitoba continue to experience the highest incidence of crowding on reserves and the Atlantic provinces the least (See Table III.A.4). Regardless of the criteria used, however, the need to add to the on-reserve housing stock in order to relieve the pressures of crowding continues to exist.

c) Inadequacy

The 1977 INAC housing needs analysis reported a significant number of on-reserve units in disrepair. Minimum health and safety standards were not being met. Given the nearly 31 000 on-reserve units at that time, the analysis indicated:

- 10% of units did not have electricity;
- 50% of units did not have running water;
- 55% of units did not have sewage disposal;
- 55% of units did not have indoor plumbing.

In addition, to the lack of amenities, the 1977 analysis indicated that approximately 5 000 units (or 13 per cent) needed total replacement, and 10 000 units (or nearly 28 per cent) needed major repairs. The combined effects of overcrowded and inadequate units on reserves in 1977 contributed to some of the most serious housing problems faced in Canada.

In 1984, many of the inadequacies present in 1977 continued to persist although some benefits associated with the construction of newer and somewhat larger units built to NHA standards under the on-reserve housing programs were apparent.

In 1977 approximately 13 per cent of the units were identified as beyond repair and in need of replacement. This figure had dropped to 2 per cent by 1984. Similarly, by 1984 the percentage of units without electricity had decreased from 10 per cent to 2 per cent. If it is assumed that indoor plumbing, as per the 1977 survey, is equivalent to what has been referred to as indoor toilet facilities in the 1984 survey, then the proportion of units without indoor toilet facilities decreased from more than one-half in 1977 to one-third in 1984. The percentage of households without running water, which has been assumed to exclude both units with piped water and those with a well, decreased from 50 per cent to 34 per cent (See Table III.A.5).

Although the basic services available to units on reserves have improved since 1977, and the percentage of units identified as beyond repair has decreased, adequacy problems persist. In 1977 approximately 41 percent of the units, including those identified as needing replacement, were in need of major repair. The situation had not changed significantly by 1984 as 43 percent of the units were in need of major repair. As Table III.A.6 illustrates, this level of need for major repairs on-reserve far exceeds the levels that exist elsewhere in Canada.[1]

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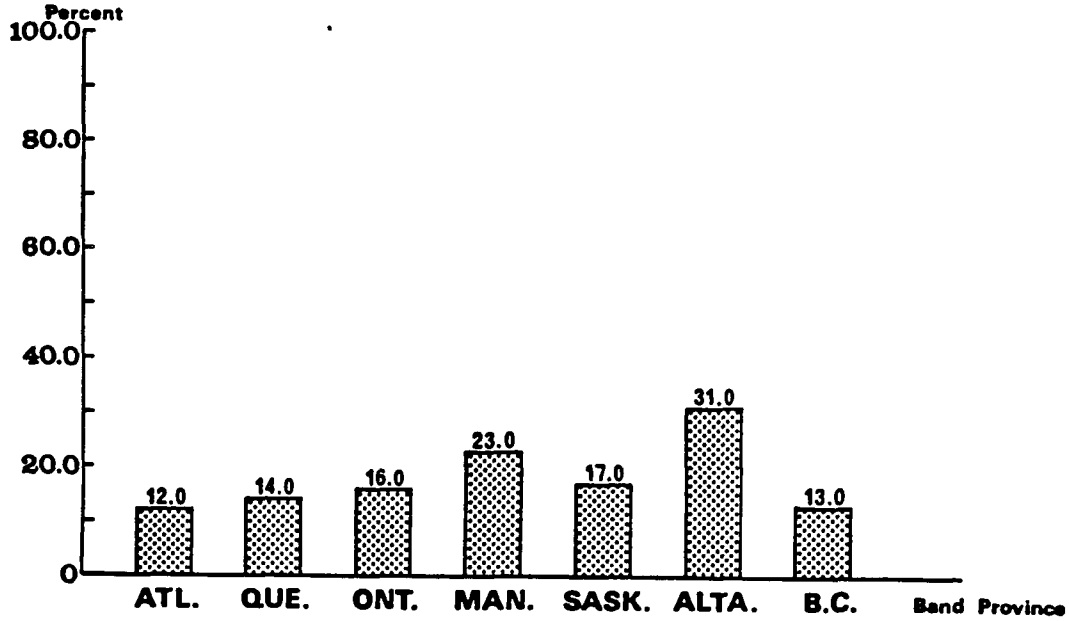
1 In order to compare the need for major repair on-reserve with that in Canada as a whole the 1981 Census and 1984 On-Reserve Survey were utilized. The Census was used instead of HIFE because the wording of the need for repair question in the on-reserve survey instrument was the same as that in the Census.

Table III.A.4 PERCENT OF HOUSEHOLDS WITH MORE THAN ONE FAMILY IN HOUSE BY REGION



Source: 1984 INAC On-Reserve Survey

Table III.A.5
Comparison of Services Available

	% of Units Without Electricity	% of Units Without Indoor Toilet Facilities	% of Units Without Piped In Water
On-Reserve 1977	10	55	50
On-Reserve 1984	2	34	34
Canada 1981	N/A	1	0.5

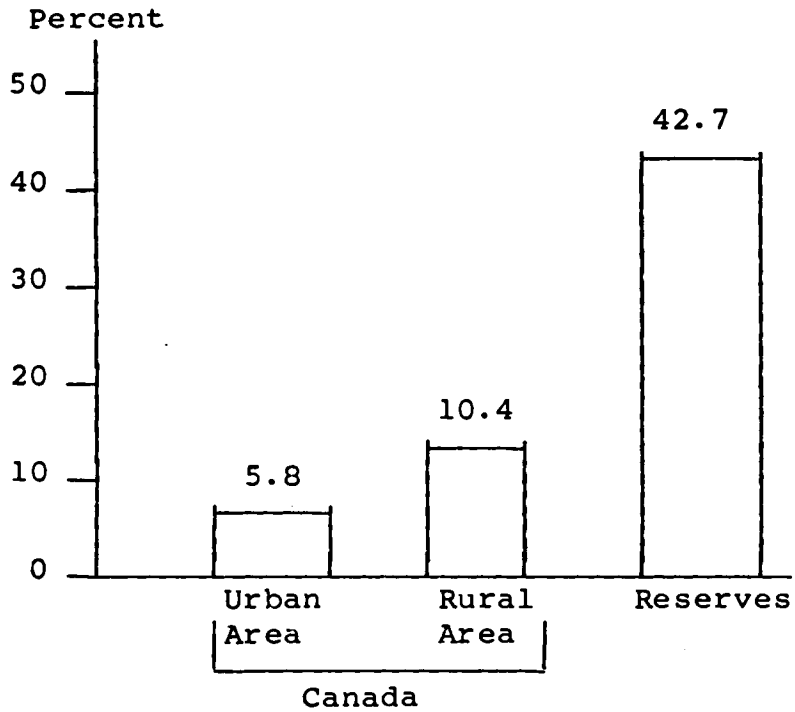
Sources: 1977 INAC Housing Needs Analysis
1984 On-Reserve Survey
Census 1981

Despite certain improvements since 1977, approximately 34 per cent of on-reserve units still do not have piped in water, and as such lag far behind standards in the rest of Canada where only 2.6 per cent of households find themselves in similar circumstances. Approximately 28 per cent of households on reserves in 1984 relied on a privy pit for sewage disposal as compared to 1.6 per cent of Canadian households off-reserve. To summarize, although there has been some improvement in the condition of housing on reserves, severe problems associated with building condition and services available persist.

Table III.A.6

Dwellings in Need of Major Repairs as a

Percentage of Total Stock, by Settlement Category



Sources: 1981 Census
On-Reserve Survey, 1984

d) Affordability

Traditionally, affordability is measured in terms of the ratio of shelter costs to income. Households spending 30 per cent or more of their income for shelter are usually defined as experiencing affordability problems. However, in the case of households on reserves, it has not been possible to examine affordability in this manner because the income data available from the On-Reserve Survey does not permit the calculation of shelter to income ratios. Instead, household shelter costs, average incomes and the overall distribution of income have been examined.

According to the 1984 On-Reserve Survey the majority of households on reserves pay very little for housing (36 per cent reported paying $0/month[1] for shelter excluding utilities while 55 percent reported paying between $1 to $50/month). However, these shelter costs must be interpreted in conjunction with data which show that, although the majority of households pay little for housing, they frequently live in substandard units.

A comparison of the cost of adequate housing and incomes on reserves indicates, in fact, that most households could not afford adequate housing. INAC administrative files indicate that in 1984 the average capital cost of constructing a new unit on reserves was $64 000. Assuming a 10 per cent downpayment, the outstanding mortgage balance on this unit would be $57 600. At an interest rate of 13 per cent and with a 25 year amortization period blended monthly payments on the outstanding amount would be $635 per month. Without paying more than 30 percent of income towards shelter, annual earnings of approximately $24 000 are necessary in order to purchase this unit. The 1981 Census showed that the average household income on reserves was approximately $15 000 per year (this was 55 per cent below the average for other Canadian households) while according to the 1984 On-Reserve Survey, 60 per cent of all Indian households earn less than $10 000.

Thus it is apparent that, while current housing payments may not create major affordability problems, if Indian residents were to be housed adequately, they would be facing serious affordability problems without government assistance for housing.

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1 One explanation for the high incidence of $0/month payments and associated poor housing conditions can be found in the guidelines for shelter allowance payments on reserves. Shelter allowances are not paid for band-owned, non-NHA units presumably because the units have already received a housing subsidy in the form of INAC capital grants. Unfortunately, this means that little, if any, maintenance can be undertaken on these units and this in turn, contributes to the high proportion of substandard units.

2) Rationale for Continuing Government Intervention

The rationale for continuing government intervention to provide housing on reserves will be examined at two levels. The reasons for federal government involvement on reserves in general will be considered first, followed by a discussion of the rationale for CMHC participation in particular.

a) Rationale for Federal Involvement

Three arguments supporting federal intervention on reserves can be made. The first of these relates to the federal government legal and constitutional commitment to status Indians. Section 91(24) of the British North America Act declared that Indians, and lands reserved for Indians, fell under the exclusive legislative authority of Parliament. All previous legislation concerning Indians was consolidated in the Indian Act of 1876, which accorded Indians special legal and constitutional status. The Indian Act confirmed the special bilateral relationship between the federal government and the status Indians.

On Indian reserves, the federal government retains full responsibility for services which are traditionally thought of as being under provincial jurisdiction. For example, the federal government is committed to the provision of health services and education on reserves. The federal government is also committed to the provision of on-reserve housing. The Aboriginal Conference held in Ottawa, April 1985, confirmed the importance of this bilateral relationship.

The second argument for continued federal involvement relates to the absence of normal housing market conditions on reserves. Under the Indian Act, reserve land is inalienable. Consequently, in the case of a loan default, mortgage lenders cannot foreclose the mortgage and sell the property for repayment. In other words, the housing finance mechanisms in place off reserves are not applicable to the reserve situation. In addition to these legal constraints, 20 per cent of the bands nationwide are located in remote or special access areas and this affects market efficiency. In such locations, building costs are high and resale market mechanisms used to value housing units do not work

well. There consequently continues to be a need for the federal government to intervene in order to address these market inefficiencies.

A third rationale for continuing federal government participation on reserves is associated with the nature of the housing conditions previously discussed. The 1984 On-Reserve Survey indicates that according to the criteria for crowding, adequacy and affordability, housing problems on reserves are of crisis proportions when compared with housing standards off reserves. There is no doubt that the housing need which originally prompted the introduction of housing programs on reserves continues to exist.

It should be recognized that government intervention to improve housing conditions on reserves not only benefits those individuals occupying the housing but also other households both on and off the reserve. This is supported by the results of a reserve-level community nurse survey conducted in 1984. For example, 74 percent of the nurses questionned were of the opinion that housing conditions contributed to on-going health problems and to the outbreak of communicable diseases on reserves. The higher incidence of infections, parasitic diseases or respiratory ailments causing infant mortality may be a reflection of housing which lacks sewage disposal and potable water systems. Similarly, the unusually high rate of fires and fire deaths on reserves may be attributable to housing quality problems such as inadequate heating systems and crowded conditions. Improved housing condition consequently could provide positive external benefits both to the Indian community on reserves specifically, and by inference, to Canadian society as a whole in the form of improved public health, lower health care costs and the creation of a better child-rearing and family management environment.

b) Rationale for CMHC Involvement

When the need for a new housing program on reserves was recognized in 1977, one of the principles on which it was to be developed was that "the housing and physical community development resources of CMHC and other federal and provincial agencies be made available to bands and individuals desiring housing assistance".[1]

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1 DIAND, Proposed Housing Policy for Indians on Reserves.

The coordinated and timely deployment of federal resources was to be a central feature of the new housing program, instituted in 1978. The new delivery system was designed to be responsive to Indian decision-making, supportive of the concept of Indian people managing their own affairs and flexible in meeting a wide range of differing housing needs and local conditions. At the time it was felt that CMHC resources and technical expertise in housing matters would support and enhance INAC initiatives, and provide the desired flexibility.

The original discussion paper proposing the new housing policy for Indians on reserves specifically identified three reasons for CMHC involvement:

1. The need for flexibility in approaching the problem;

2. The need for technical expertise in housing construction and rehabilitation on reserves;

3. The need to direct more federal resources to assisting those experiencing housing need on reserves.

In what follows, each of the three initial reasons for CMHC involvement on reserves is examined to determine whether they continue to apply.

i) Need for Flexibility

In 1977 it was argued that flexibility was required in order to meet the wide range of differing housing needs and local conditions on reserves. In order to address this diversity it was felt that a variety of program instruments was necessary.

Expansion of CMHC programs to apply on reserves introduced subsidy programs such as Section 56.1 Non-Profit Housing and RRAP as well as insured lending under Section 6. These programs were added to the existing CMHC Section 59 direct lending program and the INAC housing programs. By providing this wider range of program instruments, it was believed that differing needs could be accommodated as well as differing preferences with respect to

ownership. Some bands encourage individual ownership and consequently it was appropriate that individuals have access to a direct lending program which would not have been available through INAC. In other cases, Section 56.1 would allow bands to lever funds from private financial institutions and to meet band loan obligations associated with the provision of rental accommodation.

As noted in the discussion of housing condition, 1984 data indicate that there continues to be a great deal of variation in on-reserve housing needs across regions, within regions, and even within reserves. For example, 4 per cent of the dwellings on reserves in British Columbia lacked basic amenities in 1984 as compared to 61 per cent in Manitoba. There also continue to be differences with regards to tenure preference with some bands preferring homeownership and others rental housing. Consequently, there continues to be a need for a variety of program instruments.

Currently, the combination of programs available provides a variety of responses in terms of the type of need addressed (new construction, renovation), the type of tenure assisted (homeownership, rental) and the type of program available (grant, on-going subsidy, loan or loan insurance). Both INAC and CMHC provide assistance for the construction and renovation of rental and homeownership dwellings. In addition, CMHC provides loans under the Section 59 Direct Lending program and loan insurance under Section 6 while INAC provides Ministerial Guarantees for loans made to Indians on reserves.

The mix of program instruments accessible on reserves would diminish if CMHC programs were not available. Without CMHC involvement direct loans would no longer be available for housing purposes since INAC's lending authority is limited to the provision of loans to find potentially viable business and employment opportunities for Indians through their Indian Economic Development Account. Additionally, withdrawal of CMHC on-going subsidy assistance under Section 56.1 would

limit the type of assistance available to capital grants.

This is not to say that INAC could not operate an on-going subsidy program or acquire lending authority to make housing loans on reserves. However, to do so would result in increased administration costs overall when compared to present arrangements. This is because CMHC conducts these operations off reserves as well and therefore can achieve scale economies with well-developed administration and monitoring systems which are already in place. If INAC were to introduce on-going subsidy and lending programs, start-up costs could be significant and the scale of operation would be small.

It should be noted that, as well as providing flexibility in terms of program instruments, CMHC's participation on reserves provides flexibility with regards to delivery arrangements. This is relevant since one of the important goals of the housing policy introduced in 1977 was the involvement of the Indian people themselves in all stages of housing design and implementation. Section 56.1 requires band delivery including extensive band planning, development and management. Bands are eligible RRAP delivery agents and consequently may be responsible for planning, inspection and management.

ii) Need for Technical Expertise

Prior to CMHC involvement on reserves most housing units were built with only INAC subsidies and without direction as to construction standards. The average life expectancy of these INAC subsidy units was, at most, 15 years or less than half of the standard for off-reserve housing[1]. Consequently, the 1977 discussion paper stressed that the approach to housing on reserves should be "technically competent". Because CMHC had the technical expertise necessary to ensure compliance with National Building Code standards, the Corporation has provided inspections for both new construction and rehabilitation since 1978.

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1 DIAND, Proposed Housing Policy for Indians on Reserves.

Given the identified need on reserves for more housing units to address crowding problems, and given that one of the most efficient ways to keep pace with this demand is to build houses that last longer, there continues to be a need for the rigorous application of NHA standards. However, the continued need for technical expertise of this sort does not necessarily provide sufficient rationale for continued CMHC involvement on reserves. In fact, it could be argued that INAC could assume this responsibility thereby displacing the need for CMHC expertise. Of course, if INAC were to do so, an expansion of the Department's existing technical capability would be required. A similar argument could be made dor INAC to undertake the on-going administration of loans. That is to say, while CMHC presently performs this function, there is no reason that INAC could not acquire the necessary expertise. As with technical capability, this would require an expansion of the Department's capabilities.

In 1984 CMHC calculated that approximately 33 person years of business related time were associated with the delivery and administration of Section 56.1, direct lending and RRAP on reserves. Consequently, if INAC were to assume responsibility for inspections, program delivery and the administration of loans they would have to increase their staff sufficiently to provide the required 33 person years. It is important to note, however, that these 33 person years were contributed by between 180 and 190 people who were also responsible for the administration and delivery of CMHC programs off reserves. Since CMHC would continue to be responsible for these activities off reserves, if INAC were to conduct such activities on reserves, duplication of effort on the part of the two agencies would result. Furthermore, it must be recognized that the level of activity on reserves in some areas would not be sufficient to support INAC staff full-time. Therefore, although CMHC's continued involvement on reserves cannot be rationalized on the basis that the Corporation provides necessary technical expertise, it can be argued that CMHC may be able to provide this expertise more efficiently than INAC.

iii) Need for More Resources

It has already been noted that the coordinated and timely deployment of federal resources was to be a central feature of the new housing program instituted in 1978. It has also been noted that at that time, given the severity of the problems identified, there was an urgent need to direct more federal resources to assisting those experiencing housing problems on reserves. Consequently CMHC participation was easily rationalized.

Given the outstanding need that continues to exist for uncrowded, adequate housing on reserves, it can be argued that CMHC budgetary commitment is still important. That is, there is a continued need for the additional financial resources provided by CMHC. However, it is not necessary that these additional federal resources be provided through CMHC. In fact, a case can be made for providing all subsidy assistance through one federal agency. Such an arrangement would provide a single focus for Indian bands dealing with the federal government on housing matters and may result in improved relations between bands and government by reducing coordination problems which may arise when more than one agency is involved. The existence of problems in the coordination of funding between INAC and CMHC are identified in Chapter V.

3) Summary

In addressing the need for housing programs on reserves two issues have been considered. First, housing conditions have been examined, focussing on problems of crowding and inadequacy. Second, the continuing need for CMHC involvement on reserves is assessed.

Although there has been some improvement in housing condition on reserves since 1977, there continue to be severe problems associated with crowding, building condition and the adequacy of services available. The 1984 On-Reserve Survey indicates that approximately 36 per cent of the housing on reserves is crowded using the criterion that there should be no more than one person per room. It also indicates that 43 per cent of the units on reserve are in need of major repair while more than 40 per cent do not have access to running water, indoor toilet or bathing facilities.

Given these housing conditions, the federal government legal and constitutional responsibility to Status Indians and the absence of a functioning housing market on reserves, a sound argument for continued federal involvement can be made. Significant resources continue to be required to meet housing needs on reserves.

With regard to the rationale for CMHC involvement on reserves, however, there appears to be no justification for providing financial assistance through two different agencies (CMHC and INAC). Provision of financial assistance through a single agency may reduce coordination problems which arise when more than one agency is involved.

A case can be made for CMHC involvement on the basis that the CMHC programs (non-profit housing and direct lending) provide flexibility in terms of program instruments. INAC could, of course, introduce lending and on-going subsidy programs if CMHC were not involved on reserves. This could prove difficult, however, since INAC does not presently have lending authority except in the provision of loans for economic development. Further, because CMHC conducts lending and on-going subsidy programs off reserves as well, scale economies are achieved and well developed administration systems are already in place.

Finally, the continued involvement of CMHC on reserves cannot be rationalized on the basis that it provides necessary technical expertise (e.g., inspections) that could not be provided by another agency. However, because CMHC provides these services off reserves as well, it can be argued that the Corporation can provide such expertise more efficiently than INAC.

It should be noted that CMHC's role on reserves is considered again in Chapter VIII where alternatives to the present program arrangements are assessed. Alternatives are formulated and assessed in light of findings on the performance of CMHC programs presented in Chapters III through VIII.

B) PROGRAM DESIGN AND OBJECTIVES

The provision of new housing, renovation assistance and loans is generally consistent with the nature of on-reserve housing problems. However, in addition to the provision of housing assistance and loans, each CMHC program has specific objectives to meet. If these objectives are to be achieved on reserves, the program design and associated activities must be logically consistent with the programs's objectives. In addition, the individual CMHC programs should be complementary to each other in terms of objectives and design. In this section of the report, links between CMHC program designs/activities and program objectives are examined and inconsistencies which may affect the achievement of objectives are identified.

As described in Chapter II, CMHC Programs operate on reserves in concert with programs of Indian and Northern Affairs Canada. Given that both agencies operate housing programs, there is a possibility that the activities of one agency could affect the extent to which the other agency is able to achieve its objectives. At a more basic level, the housing program objectives of the two agencies may be inconsistent. This section examines the objectives of CMHC and INAC for potential conflicts and identifies INAC activities which could affect the achievement of CMHC program objectives.

1) Consistency Between CMHC Objectives and Activities

Table III.B.1 summarizes the stated objectives for CMHC's programs applied on reserves. The table also outlines the rationale for each objective and notes program design features or activities directed towards the achievement of the objectives.

a) Section 56.1

Logical links to the objective of providing modest and appropriate housing on reserves are evident in the application of maximum unit prices, design guidelines, NHA standards and band involvement in the delivery of units. However, the design of the Section 56.1 subsidy is inconsistent with the objective of providing affordable housing on reserves.

Because almost all occupants on reserves are likely to require assistance, the interest rate write-down is insufficient by itself to provide affordable housing for all. The CMHC non-profit housing program is dependent upon the application of INAC

TABLE III.B.1
RELATIONSHIP AND LOGICAL CONSISTENCY BETWEEN CMHC
ON-RESERVE PROGRAM OBJECTIVES AND ACTIVITIES

	SECTION 56.1				SECTION 56.1		SEC. 56.1/6	SECTION 59	SECTION 34.1			SECTION 34.1	SECTION 34.1		SECTION 34.1
	PROGRAM OBJECTIVES														
	TO PROVIDE MODEST AFFORDABLE HOUSING APPROPRIATE TO THE NEEDS OF LOW AND MODERATE INCOME FAMILIES AND INDIVIDUALS				TO PROVIDE HOUSING AT MINIMUM COST BY IMPLEMENTING APPROPRIATE COST CONTROLS		TO ENCOURAGE APPROVED LENDERS TO PROVIDE CAPITAL FOR ON-RESERVE HOUSING	TO ENSURE A RANGE OF FINANCING FOR INDIAN BORROWERS NOT ADEQUATELY SERVICED BY PRIVATE LENDERS	TO PROVIDE ASSISTANCE TO RESIDENTS LIVING IN SUBSTANDARD HOUSING ON THE BASIS OF NEED			TO IMPROVE SUBSTANDARD HOUSING TO AN AGREED LEVEL OF HEALTH AND SAFETY	TO ENSURE THE QUALITY OF REPAIR AND IMPROVEMENTS SUBSTANTIALLY EXTENDS USEFUL LIFE OF DWELLING		TO PROMOTE AN ACCEPTABLE LEVEL OF MAINTENANCE OF THE EXISTING HOUSING STOCK
	MODEST HOUSING	AFFORDABLE HOUSING	APPROPRIATE HOUSING	NEEDS OF LOW AND MODERATE INCOME HOUSEHOLDS	MINIMUM COST	APPROPRIATE CONTROLS	PRIVATE SOURCE OF FINANCING	RANGE OF FINANCING	ASSISTANCE	SUBSTANDARD HOUSING	NEED	HEALTH AND SAFETY	QUALITY OF REPAIR AND IMPROVEMENT	USEFUL LIFE OF DWELLING	MAINTENANCE
RATIONALE	- Equity considerations - Actual needs on-reserve ie. crowding, inadequacy	- Equity considerations - Actual needs on reserve	- Equity considerations - Actual needs on reserve	- Equity considerations - Reserve incomes lower than incomes of general population	- Reduced government cash requirements - Equity considerations - Effectiveness of government expenditure	- Effectiveness of government expenditures - Equity considerations	- Reduction of overall government cash requirements - Reduction of Indian reliance upon government resources	- Equity considerations	- Equity considerations - Housing needs on-reserve	- Housing needs on-reserve - Equity considerations	- Variance of need by household and community	- Absence of private sector or other external mechanisms	- Effectiveness of government expenditures	- Effectiveness of government expenditures	- Effectiveness of government expenditures
PROGRAM DESIGN FEATURE / ACTIVITY	- Maximum unit prices - Design guidelines	- Interest rate reduction to 2%	- NHA Standards - Other design guidelines - Occupant/band involvement - On-going housing Management	- Recommend income testing, wait listing. Bands also not required to formally incorporate to receive assistance	- Predetermined assistance - Branch Office review of operating budgets and other financial arrangements	- Maximum unit prices - Annual audits	- Provision of NHA Sec. 6 facilitating private lenders involvement - lender loan agreements	- Direct CMHC loans to individuals and bands for construction purposes	- Forgivable /repayable loans - Technical assistance	- Qualifying RRAP criteria	- Varying forgiveness levels tied to geographic	- RRAP Standards	- Enforcement of RRAP standards - Inspection and monitoring process	- Inspection and monitoring process - Completion of all RRAP items	- Encouragement of maintenance and occupancy by-laws

front-end grants and other financing if it is to achieve this objective. Affordable housing does not follow from current Section 56.1 subsidy levels but may follow when the interest rate reduction offered by the program is combined with other grants. In effect, a deeper CMHC subsidy is required if the Section 56.1 program is to be capable of providing affordable housing independent of other subsidy programs.

b) Section 34.1

Perhaps the most serious inconsistency between RRAP objectives and activities on reserves is the absence of a mechanism to effectively deal with cases of partial RRAP. Partial RRAP occurs where the maximum forgiveness does not cover total rehabilitation costs and the applicant is unwilling to take on a repayable loan. In these cases, the full rehabilitation work required to bring the unit up to RRAP standards is not done.

To avoid partial RRAP, the stacking of INAC renovation grants on RRAP assistance may be essential if the required capital is to be applied to a unit in need of repairs[1]. A deeper CMHC renovation subsidy could address this problem and eliminate the need for INAC stacking. It should also be noted that, while stacking of the INAC grant on RRAP assistance often occurs, there is no program requirement to do so in order to avoid cases of partial RRAP.

It is also evident that the program design feature of encouraging maintenance and occupancy (M&O) by-laws is not sufficient to achieve the objective of promoting maintenance of the existing stock. The development and enforcement of M&O by-laws are band council matters well beyond the control of CMHC program staff. While CMHC may encourage band adoption of such standards, band initiative as well as tenant ability to pay will ultimately determine their utilization. As such, the consistency of the

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1 Even with stacking, there may be insufficient funds available depending on rehabilitation costs (see Chapter IV).

program design feature with the objective is affected by the lack of control CMHC staff have in this regard[1].

c) Lending

On reserves, the Section 6 insured lending program is insufficient by itself to achieve the objective of encouraging private lender involvement. Because of legal restrictions regarding reserve bands, it is the INAC Ministerial Guarantee, and not Section 6 mortgage insurance, which is the central feature enabling private lender involvement.

Legally, reserve lands are inalienable. Thus, the basic form of security for NHA loans, which is a mortgage cannot be provided. Where a loan cannot be secured by a property, CMHC is normally unable to insure the loan. On reserves, however, CMHC accepts an agreement to repay executed by the borrower plus the INAC ministerial guarantee as alternatives to a mortgage. This process involves INAC issuing a guarantee which takes force upon CMHC agreement to underwrite the loan. Concurrently, CMHC will issue the undertaking to insure conditional upon the INAC provision of the above agreements. No mortgage insurance premium is chargeable on government guaranteed loans.

INAC requires the CMHC undertaking to insure to indicate that the loan has been made pursuant to the NHA. INAC requires that undertaking because current INAC ministerial authority to provide the guarantee only applies to NHA loans. In effect, private lenders are afforded double protection with the INAC guarantee and Section 6 mortgage insurance. It is possible that lenders would participate in the absence of one or the other forms of protection. However, the Section 6 borrower agreement specifies that in default situations the lender must automatically claim remedies arising out of the INAC guarantee and not the mortgage insurance fund. To the extent that current arrangements do not allow for the mortgage insurance fund to be exposed when defaults occur, it is mainly the INAC ministerial guarantee and not Section 6 alone which facilitates the objective of private lender involvement.

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1 Lack of enforcement of M&O by-laws in urban areas off reserves is also a problem in achieving this objective under the urban RRAP program. See Residential Rehabilitation Assistance Program Evaluation, CMHC Program Evaluation Division, May 1986, p. 118.

Finally, it is evident that the individual CMHC programs are complementary. Direct lending is available where private lenders are unwilling to participate and both lending sources provide financing for Section 56.1 band rental projects. The RRAP program is self-contained in terms of subsidy assistance and financing but complements the new construction orientation of the lending and Section 56.1 programs by addressing rehabilitation need on reserves.

2) Consistency Between INAC and CMHC Objectives/Activities

This section provides a review of the nature and scope of CMHC and INAC housing objectives on reserves. It also indicates certain activities undertaken in connection with INAC programs which affect the achievement of CMHC program objectives.

Table III.B.2 provides an outline of INAC Housing objectives and INAC and CMHC program design features which lend support. In addition, the table indicates the rationale or perceived benefits of the CMHC/INAC initiatives. As well, potential constraints to the attainment of INAC objectives are presented.

a) Nature and Scope of INAC-CMHC Objectives

Comparison of the stated INAC objectives shown in Table III.B.2 to the CMHC objectives identified in Table III.B.1, indicates that, while different, the housing objectives of the two agencies do not conflict. There are, however, clear differences in the nature and scope of the two agencies' objectives.

INAC stated objectives appear as statements of actions to be undertaken by the department in the provision of housing to Indian bands. The INAC objectives, unlike those of CMHC' contain no specific references to substantive or tangible aspects of housing itself. Under Section 56.1, for example, the intended objectives include the provision of modest, affordable housing appropriate to the needs of those with low and moderate incomes. For RRAP (Section 34.1), the intended objectives include the provision of assistance to those in substandard housing on the basis of need, the improvement of housing to an agreed level of health and safety and the extension of the dwelling's useful life. In contrast, the closest corresponding INAC objective is the provision of

financial subsidies to improve Indian housing conditions. Other INAC objectives are concerned with the means or process of improving housing rather than the ends to be achieved. Leaving actual housing attributes and even specific need groups within band populations unmentioned, INAC's objectives are quite dissimilar to the objectives of CMHC.

That these differences exist in the nature and scope of the respective CMHC-INAC objectives is likely a reflection of each agency's unique mission. INAC is a department charged with responsibility towards Canada's Indians, while CMHC is the federal agency responsible for housing matters.

b) Consistency Between CMHC Objectives and INAC Activities

While INAC housing program objectives are not in conflict with those of CMHC, certain INAC program design features and procedures affect the extent to which CMHC objectives can be achieved. These features/procedures are identified in the following discussion which examines areas of concern with respect to new construction, renovation and lending activity.

i) New Construction

The allocation of units by bands to members is a program design feature derived from the INAC objective of increasing band roles and autonomy in housing matters. Councils are clearly the most familiar with the collective and individual needs of their reserve. However, the ability to direct assistance in a way such that the low and moderate income objective for Section 56.1 can be met, may be limited. The limiting factor may be the use by INAC of provincial public housing rental scales as applied off reserves for its reserve welfare shelter payment schedule. If these scales are set too low, project rental revenues (i.e., the amount of rent tenants are able to pay based on these scales) could be insufficient when added to the Section 56.1 operating subsidy to fully meet project operating costs[1].

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1 The Program Operations Division has noted this problem particularly in Saskatchewan and to some extent in Quebec.

Table III.B.2
Relationship Between CMHC Program Activity and INAC On-Reserve Housing Objectives
INAC ON-RESERVE HOUSING PROGRAM OBJECTIVES

INAC Objective	The Provision of Financial Housing Subsidies to Bands in Improving Indian Housing Conditions	Increasing the Band Role in Planning, Management and Delivery of Housing According to Construction Standards	Provision of Financial and Technical Advice to Bands	Direct Delivery of Housing Units to Bands That Lack the Delivery Capacity Themselves (Residual Housing Delivery)	Co-ordination of Funding From Other INAC Programs and Extra-Departmental Programs Including CMHC and Indian Contributions
CMHC Program Design Feature	- NHA Section 34.1 and 56.1 Subsidies	- Band directly involved with lenders - Bands as RRAP Delivery Agents - Bands as Non-Profit Group - RRAP Standards; Building Standards - Band as builder/contractor - Band as project managers	- Explanation of CMHC program procedures - Review of Plans and Technical Unit Inspections - Funds under PDF	- Explanation of CMHC Program Procedures - Direct delivery of RRAP to individually owned units	- Construction Schedule - timetable requirement - Liaising with INAC National, District and Region Representatives - Consultation during allocations - INAC control over CMHC budget lines
INAC Program Design Feature	- Capital Grants - New Construction - Capital Grants - Renovation - Transporation and Economic Subsidies	- Band participation in needs assessment - Band level Unit Allocation; Proposal Development - Sweat Equity Provisions	- INAC Engineering and Architecture Services - Technical and Training Assistance Grants - CEIC involvement on-reserve	- INAC Project Officers - Financial and Technical advice	- Ministerial Guarantees - Program Procedures & Guidelines, J-Circulars - CEIC, Health and Welfare - Band Financial Contributions - INAC responsibility for infrastructure program
Rationale or Perceived Benefit	- Indian Housing Conditions - Combined Subsidy (assistance) strength - Insufficient INAC resources - Job creation	- Band Autonomy - Reduced Band Reliance on Government Resources - Job creation	- Variable Band Capacities in this regard necessitates these services - Quality Assurance	- Limited Band Capacity in this regard - Effectiveness of Government Expenditures	- Effectiveness of Government Expenditures - Elimination of Overlap/Duplication
Constraints at Government Level Affecting Achievement	- INAC lack of accountability for decisions related to co-ordination and management of resources made within other departments. INAC must accept new program directions e.g. reductions in RRAP or NEED programs.	- Item does not correspond to any explicit CMHC program objective. Ability to plan, deliver and manage housing is assumed and built into CMHC program features. Process is important to CMHC but quality comes first.	- Agreement between CMHC and INAC as to specific agency responsibilities in this area is unclear. Yet INAC has always been identified as lead in this regard.	- CMHC programs assume more than minimal skills when utilizing programs. Insufficient INAC or CMHC resources.	- Definition of a forum for inter-departmental resolution of issues. - INAC Fiscal Planning vs. CMHC Calendar Planning
Constraint at Band Level Affecting Achievement	- Success linked government co-ordination - Success linked to skills developed within bands - Housing Assistance may be viewed as an end and not necessarily linked to overall economic development strategy or development plan	- Band capacity to absorb and utilize skills learned varies - Frustration of efforts towards autonomy as INAC and CMHC compromise in this area may not be evident. Bottom line rests with functional capacities of bands.	- Bands with capacity to absorb and utilize programs more likely to succeed	- Given limited capacity or resources within government bands requiring direct assistance are less likely to succeed - Extensive direct delivery contributes to cycles of dependance - Potential band conflicts of interest	- Resolution of issues and timely co-ordination within government is a pre-requisite for band success - Policy or program changes in CMHC, CEIC or other participating departments are beyond control of INAC and hence, the bands

Project viability is not a concern for public housing projects off reserves which use the same rental scales. This is because federal-provincial agreements are in place to share in operating shortfalls for public housing. However, Section 56.1 rental projects on reserves must generate sufficient additional revenues through tenant rental payments to remain viable. Lower income individuals confined to the public housing rent scales may not be able to afford the rent required to ensure project viability. This could create a bias against the inclusion of such tenants for Section 56.1 projects or, if included, could jeopardize the viability of the project. Thus, the application by INAC of provincial public housing rent scales to housing on reserves could hinder the achievement of the low and moderate income objective under Section 56.1.

ii) Renovation

The achievement of RRAP objectives related to health and safety, extension of dwelling life and encouragement of maintenance of units can be limited by the ability of an occupant to afford the associated costs. This is often the case for on-reserve households in receipt of welfare. The INAC welfare system does not provide a shelter allowance to occupants who have received an INAC capital grant since no rent is paid on their units. These units are a primary target for RRAP assistance and can be in the worst of condition and house those in the lowest of income groups on reserves.

Achievement of the RRAP objective of encouraging on-going maintenance is acutely affected by the absence of a shelter allowance payment for occupants of INAC subsidy units. Welfare occupants receiving only living allowances are unlikely to be able to afford the periodically necessary expenditures to adequately maintain their units once RRAP work is completed. The preservation of benefits derived from RRAP is difficult as occupants are unable to cover expenses for the upkeep of their units.

In effect, the INAC welfare system probably increases the need for RRAP on reserves and adversely affects the encouragement of on-going maintenance once RRAP funds have been applied. However, it should be noted that the welfare system does not limit the extent to which RRAP funds can be utilized. That is, if a RRAP repayable loan is needed to ensure that all required renovation work is done, a shelter allowance can be made available in the amount of the loan repayment, regardless whether the unit has received an INAC capital grant in the past.

iii) Lending

A variety of INAC departmental activities and administrative practices could have potential adverse effects on the attainment of both Sections 6 and 59 lending objectives. The legal pre-requisites in place for the issuance of the INAC loan guarantees include ministerial legislative authority through Privy Council and, second, sufficient ministerial contingent liabilities. The legislative authority gives legal force to the guarantee; contingent liability represents the total amount or value of loans which the minister is empowered to guarantee. However, the manner in which INAC translates these pre-requisites into program procedures or administrative practices can affect the extent to which private lender involvement on reserves is achieved.

The INAC ministerial guarantee plus the borrower executed agreement to repay are accepted by CMHC as appropriate mortgage alternatives. However, except in the province of Quebec[1], such agreements are available only for social housing loans made to band

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1 In Quebec, regional staff plus justice department officials recently developed these agreements with terms satisfactory to lenders for the provision of loans to individuals. This activity was regionally motivated, indicating that it could occur elsewhere given the initiative.

councils. While the ministerial authority is in place for the guarantee of Section 6 loans to individuals, most INAC regions have yet to develop the administrative means to actually bring this situation about. Consequently, individual borrowers, outside Quebec, must utilize Section 59 CMHC direct loans for construction. As these borrowers might be able to secure private loans, if the agreements were available, the Section 59 objective of providing only residual loans may be impinged upon. Furthermore, given the absence of such agreements in most regions, private lenders are unable to provide loans to individuals and the Section 6 objectives for encouraging lender involvement is compromised.

Other INAC administrative practices could have negative consequences on the extent to which lenders are willing to get involved on reserves. Should the processing of guarantee applications as well as claims be inefficient and result in higher lender administrative costs, the liklihood of lender participation could be diminished. Should lenders choose not to participate, thereby forcing bands or individuals to seek a direct government loan, this INAC activity could be said to present a potential threat to the attainment of the Section 6 objective of encouraging private lending on reserves.

Thus, depending on both the approach taken by INAC staff to facilitate lender participation and the manner in which INAC administrative practice such as that related to the processing of loan guarantees is perceived by lenders, the level of objectives achievement with respect to CMHC lending programs for bands and individuals can be affected.

3) Summary

The preceeding discussion has indicated certain inconsistencies between on-reserve program objectives and CMHC program design features or activities.

- Subsidies under Section 56.1 alone are unable to provide affordable housing given the very low household incomes on reserves;

- Section 6 alone cannot facilitate private lender activity on reserves: the INAC Ministerial Guarantee is the central feature enabling private lender involvement;

- RRAP forgiveness levels are lower than average on-reserve repair costs: as a result, partial RRAP is likely to occur since occupants are unwilling to take on a repayable loan; and

- Maintenance and occupancy by-laws cannot be guaranteed under RRAP: these are band council matters beyond the control of CMHC staff.

In these cases, specific INAC program features are necessary to facilitate CMHC objectives. In the absence of certain INAC program features, CMHC objectives might be unattainable. With respect to inconsistencies noted under Section 56.1 and RRAP, deeper CMHC subsidies could solve these problems and eliminate the stacking requirements.

CMHC objectives have also been shown to be quite different in their nature and scope from the INAC objectives. While CMHC objectives refer to specific housing attributes and target groups, INAC objectives focus on the means or process of improving housing conditions rather than the ends to be achieved.

The manner in which INAC program design features or activities can affect the achievement or advancement of CMHC program objectives has also been demonstrated:

- The application of provincial public housing rent scales by INAC to social housing on reserve could hinder the achievement of the Section 56.1 low and moderate income objective. Rents which individuals confined to these scales can afford to pay may be too low to ensure project viability.

- INAC does not provide shelter payments to welfare recipients who do not pay rent. This feature of their welfare program could lessen the extent to which RRAP objectives, including the on-going maintenance of units, are achieved. Individuals may be unable to afford on-going unit maintenance.

- The activity of INAC in facilitating lender involvement as well as administrative practices such as those related to the processing of ministerial guarantees can adversely affect the extent to which CMHC lending objectives are achieved.

C) PROGRAM EFFORT

A final aspect of program rationale is the level of effort or resources devoted to it. A program may have every reason to exist but be allotted too few resources to have any impact on the problem it is supposed to address.

For purposes of this study, the issue of the global impact of present programs on the on-reserve housing conditions was addressed through the creation of a model of housing dynamics. The model can be used to forecast future housing conditions assuming the continuation of present policies and financial input.

A detailed model[1] of the structure and behavior of the on-reserve housing stock has been developed which takes into consideration the condition of the stock as of 1980 (the first year of simulation), the private and public renovation and new construction activity observed between 1980 and 1984, the observed rates of obsolescence, destruction and renovation, and the actual and forecasted population growth on reserves. Close to all of the model parameters were derived from hard evidence, the few other ones being established from informed judgment. Resources from both CMHC and INAC were considered in the model.

The first five years of simulation overlap with a period where administrative and survey data exist and can corroborate the quality of the model's replication of reality. After correction for data imperfections, the model was shown to provide an accurate account of the first five years of the system's behavior. It can thus be useful as a projection tool and a public policy forecasting instrument.

A series of simulations was carried out on this model to assess the impact of programs on:

- the crowding problem: the stated objective of the model is to reduce the number of persons per house to the 1983 rural Canada average for households living in single-detached units;

- the physical condition problem: the objective that the policy simulations are targetting at is to increase the proportion of good housing to the 1982 Canadian level;

- total government expenditures over the 25 years of simulation.

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1 Documented in On-Reserve Housing Stock: Quality, Quantity and Crowding between 1980 and 2010, A System Dynamics Approach (Program Evaluation Division, CMHC, May 1986).

It is estimated that the actual programs would cost $4.2 billion to the government over the next 30 years. They would increase the stock of on-reserve housing from 21,000 in 1980, to 63,000 in 2010. Correspondingly, the on-reserve population would increase from 230,000 to 285,000 in the same period including the effect of Bill C-31. The crowding objective would be achieved in 2004 in this scenario.

Housing quality would increase by 34 percent over the 30 year period, from 50 percent good housing in 1980 to 67 percent in 2010. This, however, does not reach the Canadian standard for 1982. In addition, rapid obsolescence of a large part of the stock led to a decrease in quality, starting in 1996 where the proportion of good housing peaked at 71 percent.

Thus, the current programs and the resources currently allocated to them would relieve the crowding problem by 2004. The quality of housing problem, however, is still present in year 2010 of this simulation. It could be addressed more efficiently through shifting resources from new construction to renovation, and more rapidly through an overall increase in government funding.

CHAPTER IV

OBJECTIVES ACHIEVEMENT

The mandate for the operation of CMHC housing programs on reserves suggests that the overall objective of the programs is to support INAC housing initiatives. As described earlier, in order to achieve this objective, CMHC programs have been adapted for use on reserves.

However, in addition to supporting INAC initiatives, each CMHC program also has specific objectives whether it operates on or off reserves. The Section 56.1 non-profit housing program, for example, is intended to provide modest, affordable housing appropriate to the needs of low and moderate income families and individuals. The Residential Rehabilitation Assistance Program (Section 34.1) provides assistance based on need in order to bring substandard housing to an agreed level of health and safety. The lending programs, Section 6 and 59, are intended to facilitate and ensure access to loan funds on reserves.

The purpose of this chapter is to assess the extent to which the objectives of each individual program have been achieved. The next chapter determines the extent to which the programs as a group have supported INAC initiatives.

A) NON-PROFIT HOUSING

The multiple objectives for the Section 56.1 non-profit housing program can be stated as follows:

- to provide modest, affordable housing appropriate to the needs of low and moderate income families and individuals;

- to produce modest housing by implementing appropriate cost controls;

- to encourage approved lenders to provide capital.

The approach taken in this section is to first identify key aspects of the stated objectives. Each aspect or component is then defined and indicators and criteria are established to assess the performance of the program in achieving its objectives.

The stated objectives indicate that the Section 56.1 program on reserves should be assessed with respect to several aspects:

- the extent to which appropriate housing has been provided;

- the extent to which the housing provided is modest and has been provided under appropriate cost controls;
- the extent to which low and moderate income households are served;
- the extent to which the housing provided is affordable;
- the extent to which approved lenders have provided capital.

Because the encouragement of approved lenders is closely associated with the insured lending program (Section 6), this final objective is examined in section (C) of this Chapter dealing with lending on reserves.

In addition to assessing the extent to which the Section 56.1 program has achieved its objectives, this section also examines the question of unit commitments. Specifically, the extent to which Section 56.1 units are taken up and used by bands on the basis of need is addressed. While take up on the basis of need is not a stated objective of the program, it is a general principle underlying the operation of all CMHC social housing activities.

1) Appropriate Housing

Appropriate housing is here considered to be housing which is:

- uncrowded
- physically adequate
- suited to the needs of the occupants.

a) Crowding

Two measures are used to assess the extent to which Section 56.1 units on reserves are free of crowding. The first is an objective measure in the sense that quantitative information is used to provide an indicator of crowding. If the number of persons occupying the unit is greater than the number of rooms, the housing unit is considered to be crowded. No CMHC guidelines specify however what level of crowding is to be considered acceptable. Thus, three hypotheses are analyzed:

Section 56.1 units show no incidence of crowding

Section 56.1 units on reserves do not present more instances of crowding than Section 56.1 units off reserves.

> Section 56.1 units are not as crowded as other on-reserve housing units.

The second measure is subjective in the sense that it is based on the perceptions of occupants regarding the amount of space available to them. Occupants were asked, during a face-to-face interview, if they had too much, too little or about the right amount of room available to them. The hypothesis tested is that:

> Occupants of Section 56.1 units are likely to feel that their housing space is adequate

Two indicators of crowding are used to test the above hypotheses:

> The per cent of units with more than one person per room;
>
> the per cent of units where occupants feel that the space available to them is inadequate.

Table IV.A.1 provides data on both indicators of the availability of space in the relevant units. It identifies Section 56.1 units on reserves and compares them to recent housing which did not use Section 56.1 assistance and older housing not renovated; the off-reserve Section 56.1 stock and the overall Canadian housing stock are also used for comparison.

On reserves, three Section 56.1 units out of ten are considered crowded using the number of persons per room indicator. This compares to 3 per cent in off-reserve Section 56.1 units and 2 per cent in the overall Canadian housing stock. Other on-reserve units are crowded to a statistically similar extent. Given the poor condition of the housing on reserves previously noted, this is not necessarily surprising. If there is a shortage of adequate dwellings, it may be argued that an incentive is created to over-occupy those dwellings which are adequate, thereby resulting in crowding. Moreover, there is no a posteriori provision in the delivery of Section 56.1 housing to monitor the number of persons inhabiting a 56.1 unit.

Examination of occupants' perceptions regarding the amount of room available also suggests that crowding occurs with considerable frequency in Section 56.1

Table IV.A.1

Crowding - Objective and Subjective Measures

Indicator	On-Reserve 56.1 %	Recent INAC Front-End Grant (1) %	Old Housing w/o Assistance (2) %	Off-Reserve 56.1 %	All Canadian Housing %
Crowding(3)	29	37ns	41ns	3**	2**
Inadequate Space(4)	18	41**	48**	N/A	N/A
N	37	488	822	3 049	9 143

Sources: On-Reserve Evaluation Surveys, Household File
Section 56.1 Evaluation Client Survey
HIFE 80

1 New Construction six years or less
2 Housing more than 6 years old which has not received rehabilitation assistance
3 More than one person per room
4 Five and more on a 7-point scale (1 is "far too much") in response to: "Do you think you have too much, too little or about the right amount of room at present?"
** Chi-square significant at the 0.01 level between this group and On-Reserve 56.1 units.
ns Non-significant difference.
N/A Not available

units on reserves. About 20 percent of Section 56.1 occupants on reserves felt that they had less than the right amount of space in their dwelling. However, even though objective indicators do not show statistically significant differences, it is evident that occupants of Section 56.1 housing are more satisfied than occupants of other on-reserve housing with regard to the amount of space available to them.

b) Adequacy

The extent to which Section 56.1 provides adequate housing is assessed by examining data on basic amenities and the need for repair. Housing is considered inadequate if basic amenities (running water, indoor toilet and bathing facilities) are unavailable or if the housing unit is in need of major or minor repair. Table IV.A.2 incorporates survey data related to these criteria. It outlines both the incidence of lack of basic amenities and the incidence of the state of (dis)repair of various segments of the housing stock.

The first hypothesis to be tested is that:

> Section 56.1 units provide all the basic amenities

Table IV.A.2, shows that significantly fewer Section 56.1 units are inadequate than either of the two other groups of houses examined. Only twelve per cent of Section 56.1 units lack running water compared to 38 per cent of recent houses funded with the INAC front-end grant; none of the 56.1 units were found without a bath or shower or without toilet facilities where more than a third of the other recent houses on reserves were. Overall, a house is four times as likely to lack one basic facility if it is recent (6 years old or less) and not funded under Section 56.1 than if it is a Section 56.1 unit.

It should be noted that the lack of basic amenities for Section 56.1 units (which is entirely due to the absence of running water) is probably overstated since no consideration was given to the fact that certain reserves cannot provide running water to inhabitants because there is no water available. In these cases, water has to be trucked in.

The second aspect of housing adequacy examined relates to the physical condition of the housing unit. The hypothesis is that:

> Section 56.1 units are in better state of repair than other housing units on reserves of similar age.

Table IV.A.2 provides the distribution of the need for repair for both on and off-reserve Section 56.1 units. The off-reserve distribution is not formally

Table IV.A.2

Housing Adequacy

Indicator	On-Reserve 56.1 %	Recent INAC Front-End Housing %	Old Housing w/o Assistance % (2)	Off-Reserve 56.1 %	All Canadian Housing %
No running water	12	38**	35**		1
No bath or shower	0	33**	42**		2
No toilet facilities	0	37**	45**		1
Lacks at least one amenity	12	45**	49**		1
Need repair		**	**	**	
Maintenance	69	36	15	68	76.3
Minor rep.	11	34	34	24	17.0
Major rep.	20	30	51	8	6.7
N	32	488	825	2 843	8 281 530

Sources: On-Reserve Evaluation Surveys, Household File
Section 56.1 Evaluation Client Survey
HIFE 80
Census 81

** Chi-square significant at the 0.01 level with On-reserve 56.1 units.

comparable to the other three distributions because the data was gathered using self-completed survey questionnaires (occupant filled) while the on-reserve data was part of a technical observation of the dwelling unit carried out by trained interviewer. Nonetheless, it seems apparent that the state of disrepair of on-reserve Section 56.1 units is much higher than that found off reserves; one fifth of Section 56.1 units (which are less than seven years old) were in need of major repair in 1984. This proportion is only 8 percent off reserves.

Compared to units not funded by Section 56.1, the condition of CMHC units is better. Recent housing funded through the INAC grant presents an incidence of need for major repair that is fifty per cent greater than that of Section 56.1 units. Its incidence of minor repair is also three times as high (34 per cent compared to 11 per cent) as that for Section 56.1 units. The older stock of housing on reserves is in worse condition but may reflect regular obsolescence rather than differences in standards at the time of construction.

In brief, Section 56.1 seems to adequately provide the basic amenities to the units built under its auspices. However, within six years of their construction, one fifth of the units are in need of major repair. Table IV.A.3 examines the condition of specific elements in order to find an explanation for this rapid rate of obsolescence. It is thought that if structural elements are defaulting it might indicate that the problem relates to the construction of the units; otherwise, maintenance practices can be put into question. Thus, maintenance practices may account for the need for major repair in the Section 56.1 on-reserve stock if the following hypothesis holds:

> The incidence of structural defects is not higher among units needing major repair than among units in better condition.

Table IV.A.3 compares the condition of, on the one hand, the Section 56.1 units in need of minor repairs or regular maintenance and, on the other hand, 56.1 units in need of major repair. The items are sorted in decreasing order of difference between the two incidences.

In order to interpret these results, one must have some conception of the factors that can impact on the condition of a dwelling. Three factors are generally recognized:

- The environment; this includes such aspects as poor soil condition, high water tables, etc. This is an important determinant of the obsolescence rate of the structural elements of a dwelling.

TABLE IV.A.3
Substandard Elements for Section 56.1 Units

	ITEM CONDITIONS				FACTORS CONTRIBUTING TO DETERIORATION			
	Major Repair Units (% bad)	Non-major Repair Units (% bad)	Difference	Prob. of a Larger Chi Square	Environment (1)	Design (2)	Construction (3)	Occupant (4)
Doors and Windows	61	24	37	.00	(m)	(m)	(m)	-M-
Soundness of joists	52	16	36	.00	(m)	(m)	(m)	(m)
Soffits and fascia	46	18	28	.00	(m)	.o.	(m)	(m)
Structure of ext. foundation	41	15	26	.01	-M-	(m)	-M-	.o.
Structure of floors ab. grade	43	18	25	.01	(m)	.o.	(m)	.o.
Basement floor	36	11	25	.01	-M-	.o.	(m)	.o.
Overall exterior	36	11	25	.00				
Overall interior	45	21	24	.02				
Surface of ext. walls	36	14	22	.02	(m)	.o.	(m)	(m)
Surface of floors ab. grade	38	21	17	.07	.o.	(m)	.o.	-M-
Structure of chimney	27	11	16	.08	(m)	(m)	(m)	(m)
Interior surfaces	37	22	15	.12	.o.	-M-	.o.	-M-
Water damage	38	24	14	.16	(m)	(m)	(m)	(m)
Soundness of support posts	22	10	12	.13	(m)	(m)	(m)	(m)
Structure of ext. walls	20	8	12	.08	(m)	.o.	(m)	.o.
Waterproofness of basement	21	11	10	.24	(m)	(m)	-M-	.o.
Surface drainage	21	13	8	.32	-M-	.o.	-M-	.o.
Surface of roof	15	7	8	.23	-M-	.o.	(m)	.o.
Attached structures	32	27	5	.59	-M-	(m)	(m)	(m)
Structure of basement walls	10	7	3	.65	-M-	(m)	-M-	.o.
Structure of stairs	8	11	-3	.78	.o.	.o.	(m)	(m)
Condition of wiring	4	9	-5	.39	.o.	.o.	(m)	(m)
Flashing	9	15	-6	.57	.o.	.o.	-M-	.o.
Lot upkeep	9	16	-7	.36	(m)	.o.	.o.	-M-
Structure of roof	0	10	-10	.07	(m)	(m)	(m)	(m)
N of cases	30	63						

Sources: On-Reserve Evaluation Surveys, Technical Skim
CMHC Project Implementation Division

Legend: -M- Major Influence
(m) Moderate Influence
.o. Little or no influence

NOTES TO TABLE

1. Poor soil conditions, high groundwater levels, racking and heaving, climatic extremes, high winds, long winters, short drying season, driving rain and snow.

2. Inappropriate choice of materials (low durability), inadequate detailing for weather resistance, "southern" designs for northern environments. It is assumed that designs conform to minimum Building Code standards.

3. Poor workmanship, substitution of inferior materials, lack of attention to proper detailing, failure to follow good building practice. It is assumed that construction passed required inspections and that all deficiencies were corrected.

4. Rugged lifestyle, lack of maintenance or inability to afford maintenance, contribution to high humidity levels, overcrowding. It is assumed that occupant is not expected to perform maintenance functions beyond what would be expected of a typical Canadian.

- The construction itself; two dimensions are of interest: first, the design of the dwelling both in terms of suitability and in terms of the choice of materials; and also, the construction techniques and the workmanship quality.

- The occupant lifestyle; this aspect covers a wide range of possible causes: maintenance practices, crowding, kettle boiling, ventilation, etc. These can impact on the surface condition (e.g. paint) but also on the structural aspects through, for example, excess moisture.

Although it is very difficult to pinpoint a single influence that would account for the present condition of the Section 56.1 units, the first six lines of Table IV.A.3 -- which show the elements presenting the most difference in condition between the major repair units and the other ones -- suggest that the environment (first) and the construction techniques (second) impact on the condition of the units.

Indeed, all six elements are potentially influenced in a moderate or major fashion by both the environment and construction techniques. The house design and occupant practices have potentially little or no influence on three out of six elements; design could have a moderate influence on the three others while occupant practices could have a moderate influence on one but only little impact on the two left.

Hence, what is probably the main reason for the rapid obsolescence of Section 56.1 units -- the environment -- is controllable only to a limited degree. The second most probable reason -- construction techniques -- is to a certain degree controllable; if construction techniques are questionnable, a better inspection system might prevent some of the early obsolescence syndrome cases found in Section 56.1 units on reserves. Occupant practices do not seem to be a major contributing factor although some impact can potentially be perceived; on the other hand, the negative impact of bad occupant practices may show up only in a number of years. Finally, the design of the Section 56.1 units does not seem to be an important factor in explaining the need for major repair of Non-Profit units on reserves.

c) Other Aspects of Appropriate Housing

The provision of housing which is appropriate can involve considerations other than crowding and physical adequacy. Some additional aspects of housing appropriateness will be examined here, namely: suitability of the design to the occupant, constraints of the design on the occupant's activities, occupant satisfaction with the dwelling unit and the occupant's intention to move in the next year.

The first hypothesis analysed is that:

> Section 56.1 units are suitable to their occupants.

Table IV.A.4 reports on these indicators of housing appropriateness. Suitability of the house design was rated by the household member interviewed for this evaluation. Three quarters of the Section 56.1 units occupants feel the design of their dwelling is suitable to their household.

Conversely, one fourth do not. This level of satisfaction is not different from that found among occupants of houses built recently and which have not used Section 56.1 assistance. Residents of older houses are less likely to see the design of their home as suitable (44 per cent).

Another indicator of the quality of the Section 56.1 unit design would be documented if:

> The design of Section 56.1 units does not prevent the occupants from carrying out activities they would like to carry out.

Table IV.A.4 also indicates that one quarter of the occupants of Section 56.1 units express the view that some activity is prevented by the house design. Privacy is cited as the most frequent problem. Occupants of recent non-CMHC houses hold views similar to those of CMHC units except that they are more likely to feel that they lack storage and that they cannot work at home. Residents of older houses are more inclined to feel that the design of their unit prevents a range of activities.

Satisfaction is another broad indication of the appropriateness of the dwelling units. The following hypothesis can be tested:

Occupants of Section 56.1 units are more satisfied with their dwelling unit than other on-reserve residents.

Table IV.A.4
Other Indicators of Appropriate Housing

Indicator	On-Reserve 56.1 (%)	Recent INAC Front-End Grant (%)	Old Housing w/o Assistance (%)
House design suitable to occupant	76	68ns	44*
Design prevents activities	24	29ns	41*
Prevents storage	10	47*	48*
Prevents working at home	0	34*	36*
Prevents privacy	33	32ns	49ns
Prevents other activites	57	53ns	45ns
Occupant satisfied with dwelling	65	65ns	51*
Intend to move in the next year	7	8ns	17ns
N	33	429	759

Source: On-Reserve Evaluation Surveys, Household File

* Chi-square significant at the 0.05 level.
ns Non-significant difference.

In Table IV.A.4, it appears that two thirds of Section 56.1 occupants are satisfied with their unit. This incidence is similar to that found among the residents of recent non-CMHC on-reserve housing and 14 points higher than the satisfaction level of occupants of older housing.

Lastly, the intent to move can be seen as a proxy for the occupant's perception of the appropriateness of his unit. While one's intent to move is also influenced by the possibility of finding another more appropriate dwelling unit, the following hypothesis can be examined:

Section 56.1 units occupants are less inclined to move out of their dwelling than occupants of other dwelling units.

Only seven percent of the residents of Section 56.1 units intend to move within twelve months. This is not significantly different from the eight percent found for residents of recent non-CMHC on-reservehousing. Residents of older homes are more inclined to move out of their unit, perhaps because of a longer residence period.

2) Modest Housing and Cost Controls

Maximum Unit Prices (MUP's) are the cost control mechanism used to ensure that housing provided under Section 56.1 is modest.

Maximum Unit Prices are used both to encourage the production of modest housing and to control subsidy costs. The maximum federal subsidy for a project is based on the lesser of the lending value or the sum of MUP's. While Section 56.1 project costs on reserves may exceed MUP's, there is an incentive not to do so. If project costs exceed MUP's the sponsoring band must provide equity to reduce the cost to MUP's plus an equivalent amount to reduce the loan below the Maximum Unit Prices. This in turn reduces the federal subsidy to the project.

The concept of modest housing is reflected in the establishment of MUP's in two basic ways:

i) Modest housing may be defined purely in structural terms on the basis of house size, type, design and construction criteria, or

ii) Modest housing may be defined as "moderately priced housing in relation to the local housing market".

Most CMHC branch offices rely on the physical definition of modest housing, although some use the market price approach while others use a combination of the physical and market approaches.

Maximum Unit Prices are established by CMHC branch offices for each housing form and market area in which Section 56.1 activity is anticipated. Formal review of MUP's occur twice yearly with interim adjustments if market indicators change.

Separate land and building components are included in each MUP. Building construction costs are estimated through different appraisal techniques, including the use of basic rates and a schedule of adjustments, costing manuals, and analyses of previous experiences

and cost trends. Land costs are approximated using the value of surrounding off-reserve land. Land is considered part of the band equity.

It is evident that modest housing is fundamental to the establishment of MUP's. However, once established, it is the Maximum Unit Prices that are used to encourage modest housing under Section 56.1, rather than size, structural or physical design criteria. For example, maximum size guidelines are used to establish MUP's, but actual project unit sizes are not controlled provided the cost criteria are met. In effect, modest housing is defined in terms of cost (i.e. MUP's) rather than physical attributes of dwellings.

Given the manner in which MUP's are established and used, one indication of the extent to which modest housing has been provided on reserves is the number of projects approved within MUP's. As shown in Table IV.A.5, between 1978 and 1984, eight percent of Section 56.1 projects were committed at costs exceeding MUP's, while five percent of projects were committed at costs equal to MUP's. In contrast, 15 percent of all Section 56.1 units committed off reserves were approved at costs in excess of MUP's and 11 per cent at costs equal to MUP's.

Table IV.A.5
Project Costs Versus MUP's, 1987-1984

Category	On-Reserve Projects	Off-Reserve Projects
Costs exceed MUP's	7.5%	14.6%
Costs equal to MUP's	4.5	10.9
Costs less than MUP's	88.0	74.5
N	134	798

Source: CMHC Administrative Files

This would tend to support the view that on-reserve Section 56.1 units are more modest than off-reserve Section 56.1 dwellings. This conclusion can be supplemented by the fact that bands rate the adequacy of MUP's rather low as can be seen in Table IV.A.6. More than half the bands think that the MUP levels are less than adequate; another quarter hold the view that they are just enough.

Table IV.A.6
Bands' Views on the Adequacy of MUP's

Adequacy of MUP's	Scale	Incidence
Much more than adequate:	1	0%
	2	0
	3	18
Just enough:	4	24
	5	15
	6	24
Completely inadequate:	7	18
N		33

Source: On-Reserve Evaluation Survey, Band File

Although program guidelines do not specify modest housing in terms of physical characteristics, an indication of the extent to which Section 56.1 has provided modest housing on reserves can be obtained by comparing some features with other housing on and off reserves.

The size of the units for example can be considered an indication of the modest character of a dwelling unit. The hypothesis tested is:

> The average size of Section 56.1 units is not different from the average size of non-CMHC on-reserve units.

Table IV.A.7 contains average unit sizes for various groups of houses. The average size of Section 56.1 units on reserves is slightly larger than it is for the on-reserve non-CMHC stock. It is however very comparable to what is found for Section 56.1 units off reserves. It is also significantly smaller than the average size of Homeowner RRAP units in 1981[1].

Modest housing in relation to size can also be assessed by examining the number of rooms per person in a housing unit. If single person households are not considered, the arbitrary criterion that two or more rooms per person represents excess space can be used. This leads to the following hypothesis:

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1 A Canadian average for the total housing stock would provide a better comparison but is not available.

Section 56.1 units present a relatively small incidence of non-modest use of space.

Table IV.A.8 contains the incidence of "excess space" for a variety of housing stocks. Section 56.1 units on reserves appear to be used in quite the same way as the other two groups of on-reserve housing presented in this analysis. However, Section 56.1 on-reserve units display significantly less "excess space" than Section 56.1 units off reserves.

Table IV.A.7

Size of Dwelling Units

Types	Average Size		Number of Cases	Probability of a greater t
	Square Meters	Square Feet		
On-Reserve Sec. 56.1 Housing	98	1 055	30	
Recent INAC Front-End Grant	84	904	538	0.04
Old Housing w/o Assistance	83	893	803	0.00
Off-Reserve Sec. 56.1 Housing	91	980	545	N/A
1981 RRAP Homeowners	111	1 195	1 022	0.00

Sources: On-Reserve Evaluation Surveys, Technical Skim
CMHC Administrative Files
RRAP Evaluation Surveys, 1983.

Table IV.A.8

Incidence of Excess Space

Types	Incidence of Excess Space	Number of Cases	Probability of a greater chi-square
On-Reserve Sec. 56.1 Housing	17	36	
Recent INAC Front-End Grant	12	468	0.41
Old Housing w/o Assistance	14	1 141	0.23
Off-Reserve Sec. 56.1 Housing	37		

Sources: On-Reserve Evaluation Surveys, Household File
CMHC Administrative Files

3) Low and Moderate Income

Available data on the income of Section 56.1 households on reserves does not permit a detailed assessment of the extent to which low and moderate income households have been served. However, the survey of household characteristics does provide crude data on the income distribution of on-reserve households[1].

The use of income as an eligibility criterion for Section 56.1 has to be put in perspective when used in the on-reserve context. Indeed, in 1981, the average on-reserve household income amounted to $14 968, or 55 percent of the average for other Canadian households (Census 1981). Moreover, the proportion of households with incomes less than $10 000 is much higher on reserves than in other areas of Canada (See Table IV.A.9). Because incomes are so low on reserves, the concept of income might be inappropriate for purposes of examining the targetting of a program.

Keeping this in mind, the hypothesis tested hereafter is:

> The incidence of low income households is larger in Section 56.1 units than in other types of units on reserves.

Table IV.A.9 demonstrates that more than half of the Section 56.1 occupants earn less than $10 000 a year. This proportion is similar to the incidence of low income households in recent and old non-CMHC on-reserve housing units. Thus while not directed to households with incomes are lower than other on-reserve residents, Section 56.1 units are nevertheless targetted to low-income households.

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1 Although a multi-stage tree-type question was used to measure household income in the household survey, it is felt that only the first dichotomy (plus or minus $10 000) is reliable.

Table IV.A.9
Incidence of Household with Incomes Lower than $10 000

Types	Year	Incidence Low Income Households	Number of Cases	Probability of a greater chi-square
On-Reserve Sec. 56.1 Housing	1984	49	29	
Recent INAC Front-End Grant	1984	59	403	0.29
Old Housing w/o Assistance	1984	58	692	0.37
Off-Reserve Sec. 56.1 Housing	1981	30		
Canada	1981	16		
Rural Canada	1981	18		
Urban Canada	1981	16		

Sources: On-Reserve Evaluation Surveys, Household File
CMHC Administrative Files
Census 1981

4) Affordable Housing

The income data available for occupants of Section 56.1 housing on reserves does not permit the calculation of shelter to income ratios commonly used to objectively assess the extent to which affordable housing is being provided under the program.

However, a perceptual indicator of the affordability of Section 56.1 housing is available from the survey of household characteristics. On-reserve households were asked to indicate how affordable their shelter costs are. The following hypothesis is tested:

> Relatively few Section 56.1 occupants consider their shelter costs to be unaffordable.

As found in Table V.A.10, one quarter of Section 56.1 occupants rate their shelter costs as unaffordable (to various degrees). This proportion is not significantly different for the other three comparison groups[1].

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1 Of the 26 percent of off-reserve Section 56.1 occupants who said their rent was somewhat high to much too high, 59 percent were found to have a rent-to-income (R/I) ratio of 25 percent or more. Thirty-two percent of the 74 percent who did not mention affordability problems had R/I ratios of 25 percent or more.

As seen in Table IV.A.10, one third of the Section 56.1 units residents have no shelter cost and another one third pay up to $50 per month, for a total of 68 per cent paying $50 or less. In recent INAC front-end grant units, 86 per cent pay that amount and in older not assisted housing some 83 per cent pay $50 or less per month for shelter and utilities.

Table IV.A.10
Affordability Aspects of Housing

	On-Reserve Sec. 56.1 Housing	Recent INAC Front-End Grant	Old Housing without Assistance	Off-Reserve Sec. 56.1 Housing
Unaffordable Shelter Costs (%)	25	30ns	33ns	26ns
Month Rent and Utilities:		*	*	
Nil	34%	23%	20%	
$1 to $50	34	63	63	
$51 to $100	22	10	13	
$101 and more	11	3	4	
Average Rent and Utilities	$37	$21*	$23*	
N of Cases	20	215	464	

Sources: On-Reserve Evaluation Surveys, Household File
CMHC Administrative Files
* Significant at the 0.05 level

5) Assistance on the Basis of Need

The extent to which Section 56.1 units have been utilized on the basis of need is considered first at the level of regions/provinces and second at the individual band level.

To provide an indication of the regional distribution of need for new housing construction on reserves, the incidence of crowding from the survey of on-reserve households is examined[1]. The distribution of

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1 It is felt that crowding rather need for repair provides a preferred indication of the need for new housing units as provided under Section 56.1.

Table IV.A.11
Section 56.1 Units in Relation to Need

Region/ Province	On-Reserve Households	Crowded Households	56.1 Unit Commitments	Difference
Atlantic	4.2%	2.3%	1.3%	-1.0
Quebec	15.8	14.5	20.4	5.9
Ontario	22.1	22.2	9.6	-12.4
Manitoba	11.2	14.4	13.3	-1.1
Saskatchewan	10.6	14.9	17.2	2.3
Alberta	12.1	15.3	10.6	-4.7
B.C.	24.0	16.5	27.6	11.1
Total	100.0	100.0	100.0	
N	45 420		2 939	

Sources: Census 81
On-Reserve Evaluation Surveys, Household File
CMHC Administrative Data

need is then compared to the provincial distribution of the Section 56.1 units since 1981. Results of these calculations, found in Table IV.A.11, indicate major discrepancies between Section 56.1 take up and crowding problems in Ontario and British Columbia. Ontario received a much smaller proportion of Section 56.1 units than the proportion of need it accounts for, while British Columbia has received a much larger proportion.

It is also evident that Section 56.1 commitments are not distributed solely on the basis of on-reserve population. Ontario has received less than one-half the units which would be committed based on the number of households it accounts for, while Quebec and Saskatchewan receive a larger share.

An important factor affecting Section 56.1 take up is bands' willingness to participate in a program offered by an agency other than INAC. The political reality is that some bands may have insisted on dealing only with INAC regarding housing matters. Further, bands may refuse to participate in a loan program, regardless of the level of subsidy involved, as a matter of principle. Also, certain bands may not be included in the list of potential recipients of Section 56.1 units because of past problems with the program.

Given these various considerations, a more meaningful indication of the extent to which Section 56.1 units have been allocated on the basis of need would be to examine commitments only in relation to crowding problems of bands willing to participate in the program. Unfortunately, such information is not available. Finally, it should be noted that is was only in 1985 that the full yearly allocation of Section 56.1 on-reserve units was completely taken up by bands.

It appears, then, that Section 56.1 units are taken up on the basis of factors other than need or population alone. Other factors such as historical allocation patterns or the administrative ability of bands may come into play, with allocations to bands being made on the basis of a combination of factors.

In an attempt to identify the relevant factors associated with the band participation in the Section 56.1 Program, a variety of band characteristics were analysed for bands participating or not in Non-Profit Housing. Table IV.A.12 contains the relevant observations. Urban bands participate more readily than rural, remote or special access bands. Although not significant, a difference in the level of band management of housing seems to exist: the more the band is responsible for management, the more likely it is to take part in Section 56.1 activity.[1] The small number of cases prevents conclusions on the level of take-up by province. Section 56.1 bands are also larger than other bands but had no more need related to major repair (1977 or 1984) or crowding than other bands. Section 56.1 Non-Profit Housing thus seems to be used most by urban bands, bigger bands and bands taking more responsibility for housing matters.

6) <u>Incremental Effect of Non-Profit Housing Program on House Conditions</u>

Because Section 56.1 is never used alone on reserves - it is almost always combined with the INAC front-end grant - it is very difficult to assess what portion of the quality of housing produced is attributable to the additional assistance provided by the Section 56.1 program. Moreover, systematic biases may exist in that bands using Section 56.1 are somewhat more likely to be involved in housing matters than other bands. This

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1 It can be argued that Section 56.1 bands become more involved in housing because of their participation in the program rather than less involved bands being discriminated against by program design and delivery.

might mean that these bands would have produced better housing even without CMHC assistance. However, the extent of the differences are such, and comments by informed observers converge so much in the same direction, that it is difficult to refute that Section 56.1 housing is by and large of better quality and condition than housing built without Section 56.1 assistance:

- Section 56.1 units are one third less likely to be need of major repair;
- their available space is considered more appropriate by occupants;
- they are four times less likely to lack one basic amenity;
- they are fourteen per cent larger;
- they are twice as likely to provide a sink;
- the heating and plumbing systems are more appropriate.

Thus, the additional assistance provided through Section 56.1 is reflected in differences in the dwellings. The cost-effectiveness of this difference will be analysed in Chapter 7.

Table IV.A.12
Differences Between Bands Participating or Not in Non-Profit Housing

	Percentage Participating in Sec. 56.1	N	Probability of a Larger Chi-Square
Location:			
Urban	52	21	
Rural	28	29	0.14
Remote and Special Areas	25	12	
Level of Band Management:			
Below Average	26	19	0.32
Equal or Above Average	40	43	
Region:			
Atlantic	0	3	
Quebec	56	9	
Ontario	25	8	
Manitoba	25	4	0.61
Saskatchewan	31	16	
Alberta	50	6	
British Columbia	38	16	

	Participating in Sec. 56.1 (average)	Not Participating in Sec. 56.1 (average)	Probability of a larger t
Band Population	1 071	586	0.08
Major repair in 1977	38%	36%	0.81
Major repair in 1984	39%	36%	0.61
Quality increase 1977-1984	-2.6	-0.2	0.72
Units crowded in 1984	36%	36%	0.96

Source: On-Reserve Evaluation Surveys, Band File

7) Summary

Section 56.1 funds are to be used to provide "appropriate housing". This has been defined as meaning housing which is uncrowded, physically adequate and suited to the occupants' needs.

This section has shown that Section 56.1 units are as crowded as other recent houses built without Section 56.1 assistance and older on-reserve housing units not rehabilitated: thirty percent of the units shelter more than one person per room. Occupants of Section 56.1 units tend, however, to have more positive feelings about the adequacy of their living space: only one-fifth think it is inadequate compared to four and five in ten respectively for occupants of other recent and old housing on reserves.

Only twelve percent of the Section 56.1 units lack at least one basic amenity. This compares to forty-five percent for other recently built houses on reserves. However, one-fifth of the Section 56.1 units are considered in need of major repair, a proportion one-third less than that for recent non-CMHC units. Older housing is in even worse condition.

Three-quarters of Section 56.1 occupants are satisfied with the design of their dwelling unit; two-thirds are satisfied with their dwelling overall. One-quarter of Section 56.1 residents feel some activities are prevented by the design of their dwelling. Only seven per cent of occupants intend to move within a year. These last four indicators are not different from those for comparable non-Section 56.1 houses.

Overall, Section 56.1 housing is as crowded, not as much in need of major repair and as satisfying as recent non-CMHC housing. It also provides full basic amenities which is far from being the case for non-CMHC houses.

Section 56.1 units on reserves are rarely committed over the Maximum Unit Prices; moreover, their prime users, the bands, consider that the MUP's are barely sufficient or that they are inadequate. The Section 56.1 units on reserves are slightly larger than other on-reserve houses but similar to the off-reserve Section 56.1 units and smaller than the average off-reserve housing funded with RRAP in 1981. Finally, the incidence of "excess space" is the same for all housing on reserves; it is half the incidence found in off-reserve Section 56.1 units.

Section 56.1 is serving low income groups on reserves in the same proportion as they are found in the general population on reserves. On-reserve incomes are so low relative to the incomes of all other Canadians that the program is well targetted to low and moderate income households in the Canadian context.

One quarter of Section 56.1 households indicated that their shelter costs were unaffordable to some extent. This proportion is the same for other on-reserve households and for off-reserve Section 56.1 occupants. Section 56.1 households pay 50 per cent more than recent non-CMHC unit occupants for shelter and utilities ($37 versus $21 per month).

Finally, it is apparent that Section 56.1 program units are not taken up by regions or bands on the basis of need although the effect of band willingness to participate on the pattern of take up cannot be determined. Section 56.1 Non-Profit Housing seems to be used more by urban bands, bigger bands and bands taking more responsibility in housing matters.

In conclusion, it can be said that the Section 56.1 program is for the most part achieving its objectives on reserves:

- the program is well-targeted to low and moderate income households given the extremely low incomes on reserves in relation to other Canadian households.

- the program provides modest housing with appropriate cost controls.

- the program produces appropriate housing as evidenced by the presence of basic amenities, the provision of larger units relative to other recent housing built on reserves and the satisfaction of occupants with their dwellings. It is clear that Section 56.1 housing is of better quality and condition than housing built without Section 56.1 assistance.

One aspect of the objective of providing appropriate housing that is not being achieved is the provision of uncrowded housing. One-quarter of Section 56.1 units are crowded, a proportion not statistically different from that of other on reserve housing. However, crowding is a problem which only the provision of additional adequate units can solve. Yet, it is also apparent that Section 56.1 units are not being allocated across Canada on the basis of need for new construction as indicated by the extent of crowding.

Another problem related to appropriate housing is the physical condition of Section 56.1 units. Although Section 56.1 units are in better physical condition than other on-reserve dwellings, one-fifth are in need of major repair. The evidence suggests that the rapid deterioration of Section 56.1 units is more likely attributable to environmental factors and construction techniques than to building design or occupant practices.

B) RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM

This section assesses the performance of the Residential Rehabilitation Assistance Program (RRAP) in terms of the achievement of its objectives which are:

1) To provide assistance to residents of substandard housing on the basis of need;

2) To improve substandard housing to an agreed level of health and safety;

3) To ensure that the quality of repair and improvement substantially extends the useful life of each housing unit;

4) To promote an acceptable level of maintenance of the existing housing stock.

While each objective generally deals with a different aspect or element of the program, there are areas of overlap between these objectives. To simplify the presentation of findings, the analysis will slightly restructure the construct of the objectives in the following way:

- analysis of the first objective will deal with the RRAP recipient and will include concepts of assistance, need, and dwelling eligibility;

- analysis of the second objective will concentrate on the dwelling unit and specifically its improvement in the areas of compliance with standards as well as health and safety-related conditions;

- analysis of the third objective will focus on the RRAP work itself and will consider the quality of the work and the extension of useful life of the dwelling;

- analysis of the fourth objective will examine the maintenance practices of the residents.

Wherever possible, the evaluation concepts will be operationalized using quantifiable measures and evaluation criteria. A large set of such measures and criteria were derived in the overall evaluation of RRAP conducted recently by CMHC.[1] Where possible, similar indicators and measures will be used.

In general performance of the program is assessed in a comparative fashion using appropriate statistical techniques. In some cases, simple descriptive statistics suffice since the objective is phrased in terms of aims and targets.

1) Assistance to Residents

The first objective of RRAP is to provide assistance to residents in substandard housing on the basis of need. Two concepts can be extracted from this objective statement: targetting to bands and targetting to individuals.

a) Targetting to Bands

The concept of assistance used here refers to the band allocation of RRAP assistance. It does not include the relationship with dwelling condition and the impact of RRAP assistance on it. The logic is that if RRAP is targetting assistance to households most in need, it must first make funds available to the bands exhibiting the largest need. A subsequent necessity, assistance to the most needy households within bands, will be addressed in the next section. Thus, the following hypothesis:

> Bands using RRAP funds have a higher proportion of dwellings in need of major repair than bands not using RRAP funds.

A major constraint to the fulfillment of this condition is that a number of bands do not participate in CMHC programs by choice. Thus, the targetting to need by band is difficult to achieve at the outset.

Table IV.B.1 presents the proportion of dwellings classified in need of major repair by an objective observer for those bands receiving RRAP funding and those that do not.

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1 See CMHC, Residential Rehabilitation Assistance Program Evaluation, 1986 and particularly the Technical Appendix.

TABLE IV.B.1
NEED FOR REPAIR(1) BY RRAP FUNDING

Groups	RRAP Funded Bands		Not Funded Bands		Difference	Probability of a greater chi-square
	%	N	%	N		
GLOBAL	42	867	38	552	4	0.13
Urban	43	335	26	177	17	0.00
Rural	39	443	45	216	-6	0.13
Remote and Special Access	57	75	42	159	15	0.03
Atlantic	64	96	-	-	-	-
Québec	53	100	43	100	10	0.16
Ontario	54	196	54	60	0	0.97
Manitoba	17	60	55	20	-38	0.00
Saskatchewan	25	140	34	174	-9	0.08
Alberta	41	120	24	19	17	0.14
B.C.	32	155	33	179	-1	0.78
Band Size						
500 and less	37	376	34	313	3	0.42
501 to 1000	39	253	38	79	1	0.90
More than 1000	53	238	40	120	13	0.02
Infrastructure						
below average	44	180	45	175	-1	0.83
above average	40	273	33	159	7	0.14
Level of Band Management						
below average	36	198	43	199	-7	0.21
above average	44	669	35	353	9	0.01

Source: On-Reserve Evaluation Surveys, Household and Band Files

NOTE: 1) Entries are the proportions of houses classified in need of major repair by the interviewer in each of the two groups: the group of bands receiving RRAP funds and the group of bands not receiving RRAP funds.

Overall, 42 percent of the dwellings in the RRAP funded bands are classified in need of major repair compared to 38 percent in the non funded bands, a statistically insignificant difference. This suggests that need for repair (or housing conditions) is unrelated to the use of RRAP funds by bands and would represent poor targetting of the program.

Targetting to need is better in urban and remote settings, for large bands and more sophisticated groups. It appears however to be very poor in Manitoba and Saskatchewan where the need for repair is significantly larger in non-funded than in funded bands.

Table IV.B.2 reports the results of an analysis that isolates the potential difference in need between funded and non-funded bands from the influence of some other factors that might impact on the band need for repair. It can be concluded from this table that, everything else being kept constant, no difference in need exists between funded and non-funded bands. The only groups which show significant differences in need are Atlantic Canada and Ontario with need significantly greater than in British Columbia.

Another aspect of the targetting dimension is expressed by the following hypothesis:

> Among the bands which participate in RRAP, the per capita amount of funding by RRAP is related to the extent of need for renovation.

Table IV.B.3 uses only the data from the bands actually funded by RRAP and correlates the level of per capita funding with the percentage of houses in need of major repair or replacement in 1977 and 1984 as well as with the difference between the 1977 and the 1984 need. The two levels of need do not significantly relate to the RRAP funding. The increase in quality seems somewhat related to the amount of RRAP funds committed on reserves.

TABLE IV.B.2
COVARIANCE ANALYSIS ON NEED FOR MAJOR REPAIR

Variable	Estimate	Probability
Intercept	0.39	0.01
RRAP Funding (dummy variable)	-0.02	0.69
Urban	-0.07	0.41
Rural	0.02	0.78
Remote and Special Access	Reference Cat.	Reference Cat.
Atlantic	0.39	0.00
Quebec	0.18	0.09
Ontario	0.23	0.01
Manitoba	-0.07	0.50
Saskatchewan	-0.02	0.83
Alberta	0.07	0.52
British Columbia	Reference Cat.	Reference Cat.
Size: 500 and less	-0.10	0.17
501 to 1000	-0.07	0.42
More Than 1000	Reference Cat.	Reference Cat.
Infrastructure Index	0.00	0.97
Sophistication Index	0.01	0.67

Source: On-Reserve Evaluation Surveys, Household and Band Files

NOTES:
- the dependent variable is the percentage of dwellings rated in need of major repair by the interviewer, by band.
- the results are the coefficients estimates of an analysis of covariance.
- if the amount spent by RRAP on each reserve is used instead of the simple binary indication of its presence, a significant but minuscule coefficient is found to exist (a coefficient of 1 corresponds to $1 000 000 of RRAP funds).
- Model parameters: F = 2.09
  df = 13
  pr = 0.03
  r^2 = 0.35

Table IV.B.3
RRAP Allocations and Need for Repair

Dependent Variable	Independent Variable	Pearson Correlation	Signi-ficance
RRAP allocations 81-84	Repair need in 1977	0.17	0.38
RRAP allocations 81-84	Repair need in 1984	0.26	0.16
RRAP allocations 81-84	Quality increase 77-84	0.33	0.08

Source: On-Reserve Evaluation Surveys, Band File
1977 INAC Need Assessment

Overall, these results suggest that the take up of funds by bands is only marginally, if at all, related to the actual need for repair existing on reserves.

b) Targetting to Individuals

Whatever the quality of the allocation of RRAP funds to bands, if the funds are not targetted within the band to the households most in need, the program will not be capable of achieving its first objective.

The need for assistance in renovation is generally defined in terms of financial capacity. The RRAP Evaluation was able to capture this concept by measuring available income, capacity to take on debt, poverty, available equity and capacity to pay for the renovation work. Unfortunately, the limited income and financial data available from the On-Reserve Survey restricts the scope of analysis for On-Reserve RRAP. The following hypothesis can, however, be tested:

> RRAP clients on-reserve have a lower income than other on-reserve inhabitants living in dwellings in need of major repair[1].

In addition, other reference groups are compared to the RRAP clients on reserves to put this need analysis in a national perspective.

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1 Tests isolating the non-recipients from the funded bands were carried out and lead to similar results. Small sample sizes made the tables less useful than those presented here however.

Table IV.B.4 provides the various income distributions for on-reserve RRAP recipients and non-recipients. Globally, there is no difference in income between the recipients of either RRAP or INAC assistance and the non-recipients. All groups have approximately two thirds of their constituents below the $10 000 line. Only three groups show substantially more low income households in the RRAP client group. Although not shown in Table IV.B.4, they are: the remote and special access bands (24 points difference); British Columbia (25 points); and middle size bands (32 points). Two groups, Atlantic Canada and Saskatchewan show negative differences (RRAP recipients are not as poor as non-recipients); however these differences do not quite reach the levels of statistical significance which would indicate that they are real differences.

TABLE IV.B.4
INCOME DISTRIBUTION OF VARIOUS GROUPS

	Proportion earning less than $10 000 (%)	N	Probability of a larger chi-square
RRAP Clients on-reserve (no INAC grant)	62	79	
INAC grant recipients (no RRAP loan)	71	40	0.29
Recipients of INAC and RRAP assistance	73	137	0.10
Households living in old housing not renovated	58	692	0.51
1981 RRAP clients off-reserve(1)	29	1 032	0.01
1982 Canadian population (1)(2)	17	3 903	0.01

Sources: On-Reserve Evaluation Surveys, Household File
RRAP Evaluation Surveys
HIFE 1982.

1) Incomes adjusted to 1984 dollars.
2) Households living in dwellings in need of major repair.

Overall, one could conclude that these data identify poor targetting of RRAP assistance on reserves since the recipients are not poorer than the non-recipients. However, this has to be put in national perspective. On-reserve RRAP recipients are 2.1 times more likely to earn less than $10 000 than the off-reserve RRAP clients and 3.6 times more likely than Canadian homeowners living in dwellings in need of major repair. Two-thirds of all on-reserve Indians do not reach the $10 000 threshold. This makes the income criterion much less relevant on-reserve than for the general population.

2) Improvement of Substandard Housing

The second objective of RRAP is to improve substandard housing to an acceptable level of health and safety. The analysis of this objective will consider the concepts of housing quality, compliance with RRAP standards and health and safety.

a) Housing Quality

If the objective of RRAP is to improve substandard housing, the general housing condition should be better overall for RRAPd dwellings than for other units. The hypothesis tested here is[1]:

> RRAPed units are in better condition than non-RRAPed units.

Table IV.B.5 contains the results of a series of tests of this hypothesis. It shows vividly that, for units which used either RRAP alone, the INAC grant alone or both in combination, the physical condition of the dwellings is the same: this includes the need for repair and the incidence of interior, exterior and overall housing problems. However, occupants of units rehabilitated using INAC funds only are significantly more dissatisfied with their dwelling than residents of units renovated under RRAP (either stacked or not with the INAC front-end grant). Additionally, residents of units rehabilitated using both sources of funding are more likely to mention an increase in house quality over the last three years than residents of units renovated using only one of the funding sources;

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1 This does not relate specifically to the RRAP housing standards which are analysed in the following section; it is seen as a front end test of general housing quality.

residents of units not renovated recently are more likely to state that their housing quality has decreased over the previous three years.

This could show that, although RRAP fails to improve many dwellings above their substandard condition, it does have some positive effect on housing quality. This could be interpreted as a symptom that RRAP is being applied to houses in very poor condition but that available resources are insufficient to bring them to standards.

b) Compliance with Standards

The program guidelines specify that all mandatory elements in the dwelling must be brought up to an acceptable quality level. However, on reserves, RRAP has been used to finish incomplete houses aged five years or more since the incidence of such houses (particularly houses without basic amenities) was alarmingly high. Consequently this section tests for compliance with standards but in addition, examines the state of basic amenities in RRAPd units.

The minimum level of quality of housing to be achieved under RRAP is defined in the RRAP Standards. The extent to which compliance with standards is achieved can be determined by testing the following hypothesis:

> After the RRAP work, all elements of the dwelling unit defined as mandatory in the RRAP Standards present a standard condition, i.e. no substandard mandatory elements exist.

The RRAP evaluation provided an opportunity to operationalize the program guidelines through the available inspection instrument[1]. Table IV.B.6 tries to provide parallel if not exactly similar measures of compliance to standards. It is found here that each RRAPd unit presents on average seven elements which do not meet the standards. This does not constitute an average which is significantly different from that observed in other groups of on-reserve housing. As a basis for comparison, the RRAP units inspected for the off-reserve RRAP evaluation showed an average of 1.2 items below standards.

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1 See RRAP Evaluation Technical Appendix.

TABLE IV.B.5
HOUSE CONDITION BY RRAP FUNDING

GROUPS	RRAP ONLY	INAC ONLY	RRAP and INAC	Old Housing w/o assistance
Need for repair:		ns	ns	ns
maintenance only	20%	18%	19%	15%
minor repair	37	36	42	34
major repair	43	46	38	51
Major exterior problem	43%	39%ns	46%ns	54%*
Major interior problem	47%	45%ns	41%ns	52%ns
Major housing problem	46%	51%ns	52%ns	58%*
Dissatisfied with house	38%	58%*	40%ns	51%*
Over the last three years, the house quality has:		ns	*	*
increased	34%	21%	49%	23%
stayed the same	30	32	27	28
decreased	37	48	24	49
Number of Cases	97	44	166	816

Source: On-Reserve Evaluation Surveys, Household file
NOTE: - The first four judgements were made by a trained interviewer
- The last two are occupant responses
* Difference with RRAP only significant at the 0.05 level.

TABLE IV.B.6 - INCIDENCE OF SUBSTANDARD RATING

	RRAP ONLY	INAC ONLY	RRAP AND INAC	OLD HOUSING w/o ASSIST.	OFF-RESERVE RRAP CLIENTS
Mean number of subst. items	7.2	8.6ns	6.8ns	8.8**	1.2
Proportion not to standard	94	96ns	95ns	96ns	51
Surface drainage	21	31ns	23ns	31*	2
Basement waterproofness	32	26ns	33ns	33ns	5
Water entry	34	38ns	32ns	42ns	14
Attached structures	45	64*	49ns	58**	12
Exterior walls	39	39ns	32ns	42ns	4
Basement walls	33	31ns	26ns	27ns	2
Support posts and beams	32	30ns	29ns	28ns	2
Soundness of exterior walls	18	30ns	17ns	28*	0
Soundness of chimney	29	29ns	22ns	31ns	4
Roof structure	31	33ns	31ns	31ns	0
Ground floors (1)	35	56*	27ns	46*	1
All floors above ground (2)	31	27ns	24ns	36ns	1
Basement insulation	(3)	(3)	(3)	(3)	2
Attic ventilation	(3)	(3)	(3)	(3)	8
Basement ventilation	19	23ns	10ns	23ns	7
Doors and windows	55	48ns	44ns	63ns	6
Doors weatherstripping	52	62ns	45ns	58ns	13
Windows weather-stripping	51	59ns	43ns	62*	10
Surface of exterior walls	40	48ns	48ns	51*	6
Roof surface	40	45ns	30ns	39ns	2
Flashing	21	41*	33ns	37**	3
Furnace	17	37*	24ns	28*	1
Heat dist. system	17	37*	24ns	28*	2
Pipes (4)	10	21ns	16ns	35**	2
Plumbing (4)	12	31**	17ns	23*	4
Number of bathrooms (4)	14	38**	27**	48**	0
Bathroom Equipment (4)	7	7ns	11ns	13ns	2
Visible wiring	31	26ns	25ns	31ns	1
Electrical system (4)	30	19ns	26ns	26ns	1

Source: On-Reserve Evaluation Surveys, House Technical Skim

Notes:

1) "Ground floor" in the RRAP evaluation but "Surface of floors" in this case
2) "All floors above ground" in the RRAP evaluation but "Structure of floors" in this case
3) No correspondent item exist in the Technical Skim and no item can be derived from the household interview
4) Item derived from the household interview

Overall, 95 per cent of RRAP or non-RRAP units on reserves contain at least one housing element which does not meet the standards, compared to one half of all RRAP units across Canada. Units renovated using RRAP only or RRAP plus the INAC renovation grant do not differ in terms of their compliance with standards. Units rehabilitated using only the INAC grant however do not do as well as RRAP only units: the attached structures, the surface of the floors, the flashing, the furnace, the heat distribution system, the plumbing and the number of bathrooms are all in worse condition.

Compared to off-reserve RRAP, these statistics show poor objective achievement. Additionally, where the mean cost to upgrade to standards was $630 for the deficient off-reserve RRAP units, it is from $4 110 to $4 260 on reserves depending on the exclusion or inclusion of the provision of basic amenities (Table IV.B.7). These costs do not include transportation costs which can be very significant in the on-reserve context.

TABLE IV.B.7
COSTS TO STANDARDIZE

	Without Consideration for Amenities (N)	With Consideration for Amenities (N)
RRAP Units without INAC assistance	$4 112(29)	$ 4 260(28)
INAC units without RRAP assistance	$8 677(4)ns	$11 677(4)ns
INAC and RRAP assistance	$4 828(36)ns	$ 5 752(32)ns
Units without assistance	$8 116(157)**	$10 910(114)**

Source: On-Reserve Evaluation Surveys, Technical Inspections.

On the other hand, comparing RRAP units to units not having received assistance, it is found that the average costs to upgrade and provide basic amenities are $4 260 and $10 910 respectively, a difference larger than the full available forgiveness under RRAP. Moreover, as Table IV.B.8 shows, the presence of basic amenities on reserve is significantly different for RRAP and non-RRAP cases.

TABLE IV.B.8
ACCESS TO AMENITIES

CRITERION	RRAP ONLY	INAC ONLY	RRAP AND INAC	OLD HOUSING w/o ASSIST.
Have running water	90%	79%ns	81%ns	65%**
Have bath or shower	90%	68%**	83%ns	58%**
Have a toilet	90%	62%**	76%**	55%**
Number of basic amenities lacking:		**	ns	**
0	84%	64%	74%	51%
1	8	2	11	8
2	2	17	4	12
3	7	16	12	30
N	97	46	162	715

Source: On-Reserve Evaluation Surveys, Household File

Thus, even though RRAP houses on reserves are far from achieving the standards set for the off-reserve context, RRAP is shown to have positive effects on the amount of outstanding renovations and on access to amenities.

c) Health and Safety

The second objective of RRAP is to ensure that an "agreed level of health and safety" is attained. This concept can be operationalized in two ways. First, the RRAP Standards, as a whole, can be taken as the criterion of acceptable health and safety. Thus, one measure of health and safety would be equivalent to the measure of dwelling condition used in section (b). Using this approach, if all the standards are met, then the dwelling does not present health and safety hazards.

The analysis of this measure revealed that 95 per cent of the RRAPd dwellings still presented at least one substandard mandatory item after RRAP. If the direct relationship between the RRAP Standards and health and safety is assumed, then all of the RRAPd dwellings present health and safety hazards.

A second approach is to concentrate on the specific elements of the dwelling which are related more closely to health and safety. The RRAP Evaluation

has devised two sets of indicators of health and safety respectively[1]. Table IV.B.9 lists these items and mentions any discrepancy in measurement between the RRAP evaluation and the present analysis.

TABLE IV.B.9
HEALTH AND SAFETY MEASURES

Item Descriptions	Health Measure	Safety Measure
Condition of exterior porches		*
Doors - weatherstripping	*	
Windows - weatherstripping	*	
Waterproofness of basement	*	
Basement ventilation	*	
Fire hazards (1)		*
Condition of furnace (2)		*
Heat distribution system (2)	*	
Condition of electrical system (3)		*
Water supply piping (4)	*	
One complete bathroom (5)	*	
Bathroom equipment	*	
Bathroom ventilation (6)	*	
Presence of a smoke detector		*
Location of the smoke detector (7)		*
Condition of interior stairs		*

Source: RRAP Evaluation
NOTES: 1) Has there been a serious fire in this house?
2) How well does your heating system work?
3) Condition of visible wiring
4) Broken down more than once in the last year
5) Water heater and bath or shower
6) Unavailable.
7) Smoke detector in working condition

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1 RRAP Evaluation, Technical Appendix.

To measure the effectiveness of RRAP in eliminating health and safety hazards the following hypothesis can be tested:

> No health and safety hazards exist in dwelling units which have received RRAP.

Table IV.B.10 contains the statistical test of this hypothesis. The health aspect is treated first. It is shown that on average two health hazards still exist after the RRAP work, compared to 2.5 hazards on average in houses renovated using the INAC grant only and 2.7 in houses not renovated. As many as 82 per cent of the RRAP dwellings present at least one health hazard. These incidences compare poorly to the overall off-reserve RRAP stock figures of 0.5 hazard per house and 34 percent of the houses presenting some health problem.

The main sources of health hazard are the weatherstripping around doors and windows. RRAP houses have somewhat fewer problems with heating, pipes and bathrooms than non-RRAP dwellings. It is interesting to note that these problems (highest and lowest incidences) follow a trend similar to that found for off-reserve RRAP dwellings: problems with weatherproofness, good performance with piping and bathrooms. This might very well signal the impact of the RRAP standards.

Safety hazards are also present to a high degree in the on-reserve stock. Three quarters of the dwellings present some sign of unsafe condition, compared to 58 per cent for off-reserve RRAP dwellings. Rehabilitation done without RRAP leaves more safety hazards than work done under RRAP. The main sources of safety hazard are the exterior structures and the absence of a smoke detector. High incidences of other hazard sources are also noticeable particularly in comparison with the off-reserve RRAP clients. Non-RRAP units suffer from more safety hazards related to exterior structures, furnace, and presence and location of smoke detector.

Overall, it is obvious that RRAP is not eliminating health and safety hazards from the subsidized dwellings. A difference in favour of RRAP units exists on the health side, but the sheer incidence of hazards demonstrates that severe problems remain. Similarly, the safety hazards are still numerous after on-reserve RRAP and are considerably

TABLE IV.B.10
INCIDENCE OF SUBSTANDARD ITEMS - HEALTH AND SAFETY

ITEMS	RRAP ONLY	INAC ONLY	RRAP AND INAC	NO ASSIS-TANCE	OFF-RESERVE RRAP CLIENTS
HEALTH ITEMS					
Mean number of subst. items	1.9	2.5*	1.9ns	2.7**	.5
Proportion of dwellings not to standard	82	90ns	82ns	88ns	34
Doors - weatherstripping	52	62ns	45ns	58ns	16
Windows - weatherstripping	51	59ns	43ns	62*	11
Waterproofness of basement	32	26ns	33ns	33ns	6
Basement ventilation	19	23ns	10ns	23ns	7
Heat distribution system	17	37**	24ns	28*	2
Water supply piping	21	41**	30ns	50**	2
One complete bathroom	12	33**	19ns	42**	0
Bathroom equipment	7	7ns	11ns	13ns	3
Bathroom ventilation (1)					5
SAFETY ITEMS					
Mean number of subst. items	1.7	2.0ns	1.7ns	2.1**	1.1
Proportion of dwellings not to standard	74	90*	83ns	90**	58
Condition of exterior porches	45	64*	49ns	58**	14
Fire hazards(2)	9	4ns	7ns	9ns	5
Condition of furnace	17	37**	24ns	28*	1
Cond. of electrical system	31	26ns	25ns	31ns	1
Presence of smoke detector	49	53ns	48ns	61*	44
Location of smoke detector	25	52*	33ns	43**	33
Condition of interior stairs	33	18ns	23ns	30ns	7
Number of cases	98	46	173	825	1 747

Source: On-Reserve Evaluation Surveys, Household File
NOTES: See Table IV.B.7 for the detailed differences between the items used here and in the RRAP evaluation.

1) Unavailable
2) A technical assessment of fire hazards was made by a trained inspector on a subset of dwellings. It demonstrates an incidence of 50 percent of serious fire hazards due to the building structures and of 45 percent due to resident practices. No statistically significant difference exist between RRAP and non-RRAP units. The relatively small number of cases inspected in this way prevents the use of that measure in the context of this analysis.

more dispersed across the types of hazards than they were for off-reserve RRAP units where the absence of a smoke detector was the main problem. However, on reserves, the dwellings renovated using RRAP present less health and safety hazards than other dwellings.

The absence of differences between units renovated using RRAP alone or stacked with the INAC grant might be attributable to the worse condition of the latter at the outset. Many bands try to spread the renovation money over as many dwellings as possible and will avoid stacking the assistance, except in extremely bad cases, in order to get work done on more units.

3) Quality and Useful Life

The third objective of RRAP is to ensure that the quality of repair and improvement substantially extends the useful life of each housing unit. The RRAP evaluation used three criteria to assess this effect: the quality of the RRAP work, the satisfaction of the recipient and the extension of useful life. This evaluation has no objective data available on the quality of the RRAP work on reserves[1]; thus, this aspect cannot be analysed. Additionally, further analysis of the satisfaction measures in the context of the RRAP evaluation and in general suggests that usage of these measurements may have questionnable utility.

The third approach, examining the extension of useful life attributable to RRAP, can be used for purposes of this evaluation. However, because it is not possible to directly measure the extended useful life an indirect method is used. The RRAP evaluation provided a list of house condition elements which can be related to the useful life of a housing unit. Using this information, the impact of the program on the useful life of the dwellings can be inferred by isolating key components of the dwelling structure which could cause a threat to a fifteen year useful life if they were substandard. Using this approach, the following hypothesis can be tested:

> RRAP units do not contain substandard elements related to useful life.

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1 The new RRAP monitoring inspection system will probably provide useful on-going data in that regard.

Table IV.B.11 provides empirical evidence to reject this hypothesis. RRAP units on reserves present an average of 4.4 threats to useful life when used alone and 4.1 when stacked, a number similar to that of the non-RRAP dwellings and five times larger than that found for off-reserve RRAP houses. More than eight RRAP houses in ten were found to have some useful life related item substandard.

Attached structures, surface of exterior walls and roof surface are the three most frequent threats to useful life with fourty percent of RRAP units showing problems in these respects. Other aspects cover a third of the RRAP sample: exterior foundation walls, roof structure, basement walls, support posts and beams, basement waterproofness, electrical system, floor surface and structure and water entry. Areas where RRAP units are in better shape than units renovated using INAC funds alone are: attached structures, flashing, furnace, electrical system and pipes.

Once again, this evidence points to the non-achievement of the third RRAP objective in absolute terms but to a positive effect when compared to units renovated without its assistance or not renovated at all.

4) Maintenance Practices

The final objective of RRAP is to promote an acceptable level of maintenance of the existing housing stock. Contrary to the overall RRAP evaluation, the analysis cannot rely on an objective rating of maintenance practices made by an external inspector. The present analysis will attempt to infer an impact of RRAP on maintenance practices using indirect indicators[1]. The first hypothesis is that

> RRAP clients assume more responsibility in maintenance and repairs than other on reserve households.

Since there is no reason to believe that RRAP clients would assume more responsibility for repairs and maintenance than non clients, everything else being equal, a difference could indicate that RRAP has induced some sense of responsibility for their house to the recipients.

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1 The problem with this approach is the difficulty of demonstrating a causal ordering of events, from a participation in RRAP to differences in maintenance practices.

TABLE IV.B.11
INCIDENCE OF SUBSTANDARD ITEMS - USEFUL LIFE

Items	RRAP ONLY	INAC ONLY	RRAP AND INAC	NO ASSIS-TANCE	OFF-RESERVE RRAP CLIENTS
Mean number of subst. items	4.4	5.2ns	4.1ns	5.1ns	.8
Proportion of dwellings not to standard	84	92ns	88ns	89ns	42
Attached structures	45	64*	49ns	58**	14
Exterior foundation walls	39	39ns	32ns	42ns	4
Surface of exterior walls	40	48ns	48ns	51*	7
Soundness of exterior walls	18	30ns	17ns	28*	1
Roof surface	40	45ns	30ns	39ns	2
Roof structure	31	33ns	27ns	31ns	0
Flashing	21	41*	33ns	37**	3
Attic ventilation (1)					9
Basement walls	33	31ns	26ns	27ns	3
Support posts and beams (2)	32	30ns	29ns	28ns	2
Basement waterproofness	32	26ns	33ns	33ns	6
Basement ventilation	19	23ns	10ns	23ns	7
Furnace (3)	17	37**	24ns	28*	1
Electrical system (4)	31	26ns	25ns	31ns	1
Pipes (5)	12	31**	17ns	23*	2
Surface of all floors (6)	35	56*	28ns	46*	1
Structure of all floors (7)	31	27ns	24ns	36ns	1
Water entry	34	38ns	32ns	42ns	15
Number of cases	98	45	172	825	1 747

Source: On-Reserve Evaluation Surveys, Household File
NOTES: 1) Not Available
2) Worst of two judgements
3) Quality of the heat distribution system
4) Visible wiring only
5) More than 1 water system failure in the last year
6) Ground floor in the RRAP evaluation
7) Floors above ground in the RRAP evaluation

As Table IV.B.12 shows, very little evidence exists in favour of the hypothesis. On most indicators of household responsibility and involvement, no significant difference exists between RRAP and other renovated dwelling households. RRAP clients are slightly more involved in housing matters than households living in dwellings renovated using INAC funds only. The data indicates that where both sources of funding are used, the household is less likely to be responsible for maintenance and less willing to do repair work than when only RRAP was used.

The second hypothesis states that RRAP has had an effect on the recipients as far as maintenance practices are concerned if:

> The relationship between responsibility for maintenance and repair, and housing quality is stronger for RRAP clients than for other households.

This would stem from better maintenance by RRAP clients, when they are responsible for it[1]. Table IV.B.13 can be subdivided into four groups of variables mentioned as "responsibility elements".

i) Responsibility for maintenance (factual questions):
There is no statistical relationship between responsibility for maintenance and house condition for the non-RRAP household. For RRAP units, however, it seems that those with some responsibility for maintenance show worse house conditions than those who have none.

ii) Responsibility for repairs (factual questions):
The non-renovated dwellings are in better condition when the household has responsibility for repairs. This relationship is weaker for all renovated units.

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1 Sixty-three per cent of residents are responsible for maintenance. Bands are considered by the occupant to be responsible for maintenance 35 percent of the time. The methodological problem here is that RRAPd houses have been shown to be in similar if not worse shape than other dwellings, overall. This should be somewhat compensated by the analysis of the relationship between maintenance and condition rather than by describing the simple house condition.

TABLE IV.B.12
MAINTENANCE RESPONSIBILITY BY RRAP STATUS

RESPONSIBILITY ELEMENTS	RRAP ONLY	INAC ONLY	RRAP AND INAC	NO ASSISTANCE
Responsible for maintenance	75	63ns	61*	64*
Pays for maintenance	70	58ns	56*	59*
Responsible for repairs	30	34ns	37ns	34ns
Pays for repairs	35	28ns	41ns	33ns
Occ. should pay for repairs	13	13ns	18ns	18ns
Willing to pay for repairs	57	56ns	59ns	62ns
Willing to do repair work	80	68ns	68*	74ns
Responsibility Indicator:		ns	ns	**
None	22	35	33	38
Some	45	34	34	31
A lot	33	31	33	31
Involvement Indicator:		*	ns	ns
None	37	61	41	45
Some	48	33	45	43
A lot	16	6	15	12
Minimum N	97	46	163	744

Source: On-Reserve Evaluation Surveys, Household File

TABLE IV.B.13
RELATIONSHIP BETWEEN RESPONSIBILITY AND HOUSE CONDITION BY RRAP STATUS

RESPONSIBILITY ELEMENTS		% IN GOOD CONDITION FOR										
		RRAP ONLY		INAC			RRAP AND INAC			NO ASSISTANCE		
		%	X^2 gamma	%	X^2 gamma	Three-way	%	X^2 gamma	Three-way	%	X^2 gamma	Three-way
Responsibility for maintenance:	Yes	46	0.00	45	0.49	0.16	44	0.16	0.06	43	0.69	0.00
	No	81	0.67	56	0.21		55	0.22		42	-0.03	
Pays for maintenance:	Yes	47	0.02	48	0.87	0.18	44	0.15	0.22	45	0.16	0.01
	No	74	0.52	51	0.05		55	0.22		40	-0.11	
Resp. for repairs:	Yes	49	0.38	49	0.90	0.69	56	0.11	0.10	59	0.00	0.00
	No	59	0.20	51	0.04		43	-0.25		35	-0.44	
Pays for repairs:	Yes	56	0.97	45	0.50	0.56	53	0.32	0.58	56	0.00	0.10
	No	55	-0.01	56	0.23		45	-0.16		36	-0.38	
Should pay repairs:	Yes	63	0.58	66	0.51	0.82	57	0.33	0.95	63	0.00	0.39
	No	54	-0.18	51	-0.30		47	-0.20		39	-0.45	
Willing to pay repairs:	Yes	59	0.52	55	0.43	0.76	46	0.41	0.31	50	0.00	0.19
	No	52	-0.13	43	-0.25		52	0.13		30	-0.40	
Willing to do repairs:	Yes	55	0.75	53	0.51	0.47	49	0.62	0.59	46	0.01	0.24
	No	60	0.09	42	-0.22		45	-0.08		34	-0.23	
Responsibility Indicator:												
None		78	0.05	54	0.74	0.43	60	0.00	0.08	40	0.00	0.01
Some		47	0.30	41	0.02		28	0.00		32	-0.20	
A Lot		49		53			58			56		
Involvement Indicator:												
None		59	0.24	40	0.34	0.24	50	0.44	0.14	39	0.00	0.44
Some		46	-0.01	60	-0.41		50	0.11		41	-0.18	
A Lot		69		71			36			61		

Source: On-Reserve Evaluation Surveys, Household File
(1) Average between 1 and 7 where 1 is best.

iii) Willingness to assume responsibility for repairs (opinion questions):
The households living in non-renovated dwellings who favour household implication in repairs live in significantly better house conditions. The relationship does not exist for renovated cases.

iv) Responsibility and involvement indicators:
A small positive relationship exists between responsibility and house conditions for households living in non-renovated dwellings. No such relationship really exists for renovated units.

Overall, the relationship between responsibility for maintenance and repairs and house condition is the same among the three groups of renovated units. The positive relationship between responsibility and condition exists only for non-renovated dwellings.

All of these comments obviously point to the rejection of the second hypothesis.

5) Incremental Effect of RRAP on House Condition

It is clear that RRAP has not achieved its objectives on reserves to the extent that it has off reserves. This has been mentioned several times in the previous pages. Another interesting question, however, concerns the performance of RRAP as an instrument to increase housing quality on reserves over and above what is already achieved by the INAC front end grant. The following comparisons are enlightening.

For RRAP compared to the use of the INAC grant only:

- the physical condition of the dwellings is similar;
- the occupant is more satisfied with his house;
- although not statistically significant, the difference in the number of substandard ratings favours RRAP units;

- the outstanding repairs are somewhat smaller (not statistically significant);
- basic amenities are more likely to be present;
- the average number of health hazards is smaller;
- the involvement of occupants in housing matters is more frequent.

For the use of RRAP and INAC grants compared to RRAP only:

- the physical condition of the units is similar;

- the occupant is twice as likely to report an increase in housing quality;
- there are less substandard items (not statistically significant);
- outstanding repair costs are the same;
- same incidence of basic amenities;
- same incidence of health and safety hazards and of threats to useful life;
- same involvement and responsibility of the occupant.

These data tend to confirm that RRAP has been playing a key role in ameliorating the house condition on reserves. The comparison of stacked cases to those which have used RRAP only would confirm that resources were stacked in the cases needing the most rehabilitation work. In both cases, the resources are insufficient to solve the problem but the fact that they are spread according to the condition of the unit mirrors the condition under which the programs evolved.

6) Summary and Conclusions

The analysis presented in this section indicates that RRAP has been less than successful in achieving its objectives on reserves. This is particularly evident for the objectives concerning improved housing, health and safety, extension of the useful life of dwellings and promotion of maintenance practices. Some key findings with regard to these housing quality objectives are as follows:

. Improvement of Substandard Housing:
RRAP units are far from achieving the standards set for the off-reserve context. On average, each RRAP unit on reserves has seven items which do not meet standards as opposed to only 1.2 items below standard in off-reserve RRAP units.

. Health and Safety:
Health hazards persist in 82 per cent of RRAP units and safety hazards exist in three-quarters. These figures compare poorly to off-reserve RRAP units where 34 per cent presented some health hazard and 58 per cent had safety hazards.

. Extension of Useful Life:
Threats to useful life of dwellings exist in 85 per cent of RRAP units on reserves. In comparison only 42 per cent of off-reserve RRAP units were found to have some items which were substandard and would threaten the extension of the useful life of the dwelling to 15 years.

- Promote Maintenance:
  No evidence of an effect of RRAP on household maintenance practices was formed.

While it is clear that RRAP has not achieved these objectives on reserves to the extent that it has off reserves, the evidence also indicates that RRAP has played a key role in ameliorating on-reserve house conditions. It must be recognized that on reserves, RRAP is applied to housing which is generally in much worse condition than off-reserve housing. For example, on-reserve RRAP has been used to finish incomplete houses which were often without basic amenities. Thus while RRAP has not improved on-reserve units up to standards, it has had positive effects on:

- the amount of outstanding renovations required;
- the provision of basic amenities.

In addition, the use of RRAP by bands is associated with improved housing conditions relative to bands not using RRAP.

The evidence also indicates that units renovated using RRAP funds (alone or in combination with INAC grants) performed better than units receiving only the INAC grant or units not receiving any assistance. For example:

- The incidence of substandard items was somewhat higher for units receiving only INAC grants than for RRAP units.

- Basic amenities are more likely to be present in RRAP units.

- RRAP units had fewer health and safety hazards than did units receiving only INAC grants.

- Occupants of RRAP units are more involved in housing matters.

- Occupants of RRAP units are more satisfied with their dwelling.

Moreover, where RRAP and INAC grants are used in combination, (i.e., stacking), the resulting larger grants have been utilized for the most needy houses.

A key finding of this assessment of RRAP objectives achievement is that, after RRAP, houses still need some $4 300 in renovation work to achieve RRAP standards. However, units which have not received RRAP assistance were found to require $10 900 in renovation work. This has important implications for program design and is dealt with in Chapter VIII.

While RRAP has not fully achieved its housing quality objectives on reserves, the program has performed well with respect to the objective of providing assistance on the basis of need. There is no doubt that those who have received RRAP on reserves are in need. Two-thirds of all on-reserve households have incomes of $10 000 or less and RRAP recipients on reserves are two times more likely to earn less than this amount than off-reserve RRAP clients. Thus, from a national perspective the program is well targetted. In the more narrow context of the on-reserve population, however, it is apparent that RRAP assistance is not taken up by bands on the basis of need. Also, while the incomes of RRAP recipients are very low, they are not lower than the incomes of other on-reserve residents living in dwellings in need of major repair.

C) LENDING PROGRAMS

Bands and their individual members may obtain financing under Section 6 and 59 of the NHA for the capital costs of construction. The objectives of these two programs as presented in the NHA Loan Insurance Handbook and as they relate to Indian Reserves are understood as follows:

a) Section 6 (Mortgage Insurance)

- To encourage greater levels of private lender activity on reserves;

- To minimize government cash requirements.

b) Section 59 (Direct Lending)

- To provide loan funds on reserve to those not adequately served by private lenders.

This section assesses the extent to which these objectives have been achieved with respect to both band and individual lending on reserves.

1) Section 6

As a mechanism to facilitate the infusion of private lender capital into the construction of housing on reserves, this program enables lenders to accept INAC ministerial guarantees rather than a property as security against loans made on reserve lands. To this extent, it is not so much the Section 6 program but rather the INAC ministerial guarantee which induces lender participation (see Chapter III). Under this program borrowers are to approach private lenders for housing capital whenever possible.

The measures or indicators of private lender activity on reserves are:

1) The proportion of units financed with private capital relative to all lending activity.

2) The proportion of total capital costs for on-reserve housing now furnished through private sources.

3) The number of private lenders active on reserves.

The second measure above also provides an indication of the extent to which government cash requirements are reduced under the program.

a) Band Housing

Examination of Table IV.C.1 reveals that the proportion of band units financed with private capital has increased dramatically over time[1]. In the early years of the non-profit program only 30 per cent of the units received financing from private sources. At present 90 per cent of social housing units receive private loan funds with the remainder receiving Section 59 direct financing.

The extent to which private lender involvement has been cultivated may also be determined by examining the proportion of total capital costs for on-reserve housing furnished by private lenders relative to all other lending activity.

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1 INAC administrative data on loan guarantees issued for band construction were used to determine the distribution of band social housing units according to their source of financing.

INAC administrative data indicates approximately $180.7 million in total new construction costs for band projects between the fiscal years 1979-1980 and 1983-1984. Of this amount, INAC ministerial guarantees for construction loans by approved lenders and CMHC represent approximately $134.1 million or 74 per cent of total construction capital costs. The remaining 26 per cent capital cost is provided from other sources such as personal contributions, band contributions or INAC capital grants. Table IV.C.2 presents the distribution of capital costs over time between approved lenders, CMHC and other sources.

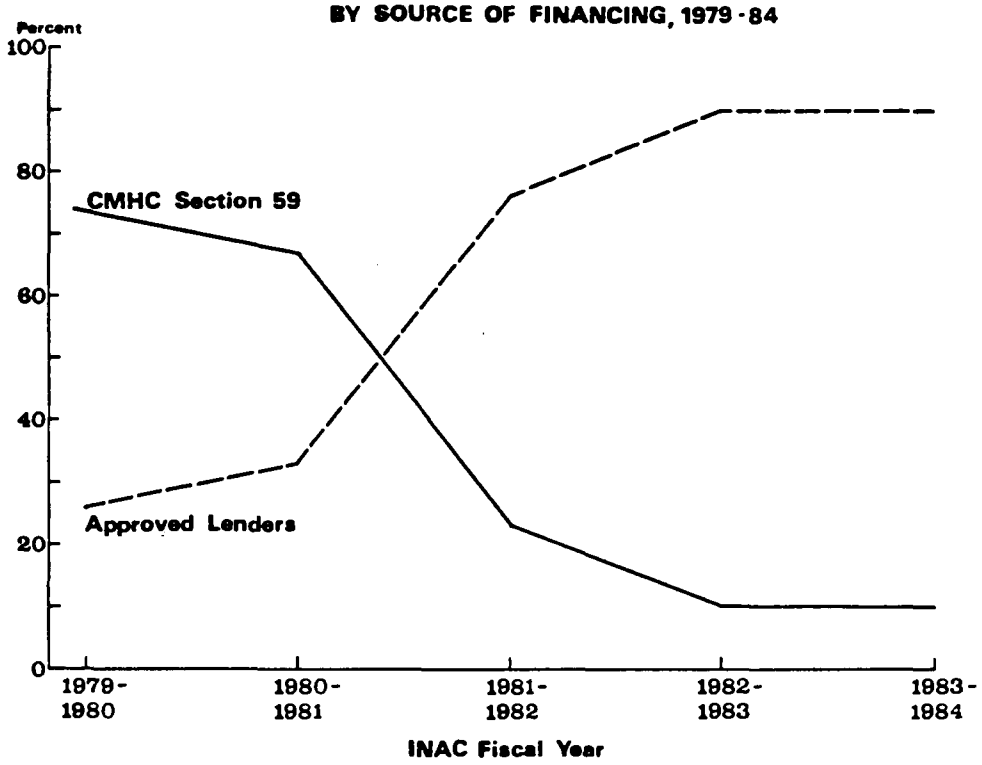
Since 1979, approved lender loans have come to account for an increased proportion of capital costs for band construction projects. By the 1983-84 approved lender loans account for 63 per cent of total capital costs for new construction.

In all, it may be stated that the objective of encouraging private lender involvement has been achieved. At present, 90 per cent of all band units are financed, in part, through approved loans and these loans now account for nearly two-thirds of the capital construction costs of band non-profit projects. However, private lender participation is more likely due to the INAC ministerial guarantee than to the Section 6 program.

In dollar terms, the capital infused by private lenders represents approximately $84.6 million or 47 per cent of total capital costs between 1979 and 1984. In the absence of private lending activity on reserves, this amount would represent funds that government would have had to provide towards capital costs to maintain current construction levels. In this sense, government cash requirements may be said to have been reduced by this amount given private lender participation.

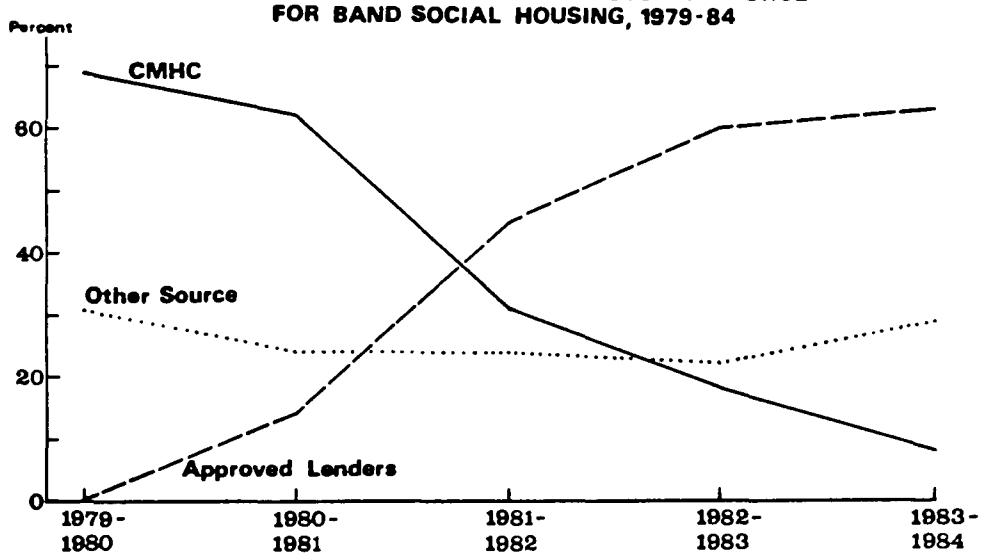
One final measure indicating the extent of private lender involvement in providing capital towards new construction costs for band projects, is the actual number of lenders involved with bands. While precise annual figures dating back to the first years of private lender involvement are not available, the situation at the end of 1984 is known (Table IV.C.3).

Table IV.C.1 DISTRIBUTION OF BAND SOCIAL HOUSING UNITS BY SOURCE OF FINANCING, 1979-84



Source: INAC Administrative Data

Table IV.C.2 DISTRIBUTION OF CAPITAL COSTS BY SOURCE FOR BAND SOCIAL HOUSING, 1979-84



Source: INAC Administrative Data

Table IV.C.3
Approved Lenders by Region
Participating On-Reserve
1984

REGION	NUMBER OF LENDERS
Atlantic	2
Quebec	14
Ontario	6
Prairies	9
B.C./Yukon	9
Total Canada	40

Source: INAC Administration Data

To the extent that no lender participation, whatsoever, occured up to 1980 and where, at present there is an average of one lender servicing every 14 bands nationwide or an average of one lender for every 9 bands participating in CMHC programs, there is further evidence that the objective of encouraging private lender involvement has been met.

b) Individual Housing

Indicators similar to those used in the preceeding discussion may be employed to assess the level of objectives achievement for Section 6 insured lending on reserves with respect to individual construction.

The indicators used include:

1) The proportion of individual units financed with private loans relative to all lending activity.

2) The proportion of capital costs for individual housing attributable to private lenders.

3) Number of approved lenders participating in individual lending.

It should be noted at the outset that in relative terms very little individual lending occurs on reserves. Administrative data from INAC indicates a total of 323 individual construction loans guaranteed between 1979 and 1984. These loan

guarantees represent less than 3 per cent of the total number of units constructed during this period. Of the 323 loan guarantees, only 38 or approximately 12 per cent were issued to approved lenders with the remainder issued to CMHC for direct loans under Section 59.

Table IV.C.4 indicates a comparatively modest increase in the proportion of individual units financed by private lenders. In fiscal year 1983-84, approved lender financing for individual construction accounted for one-third of all individual loans. This proportion does not compare favourably to band construction activities where it has already been noted that 90 per cent of units received private or approved loans. For individual loans the proportion of units financed under Section 6 has remained significantly lower relative to CMHC direct lending.

Examination of the proportion of capital costs attributable to private lenders serves to support further the notion that the achievement of Section 6 objectives with respect to individual construction has been less than successful (Table IV.C.5).

Only a small increase in the proportion of capital costs attributable to private lenders for this type of construction has occured since 1981[1]. In 1981-82 approximately 5 per cent of capital costs for individual construction came from approved lenders. By 1983-84 this had increased to 15 per cent. Over this same period, approved lender capital for band non-profit projects increased from 15 per cent to 63 per cent.

The low level of private lending for individual loans suggests that there has been little impact on government cash requirements. If it is assumed that CMHC direct lending would have been required in the absence of private lending, then cash requirements may be said to have been reduced by only $0.6 million since 1980-1981.

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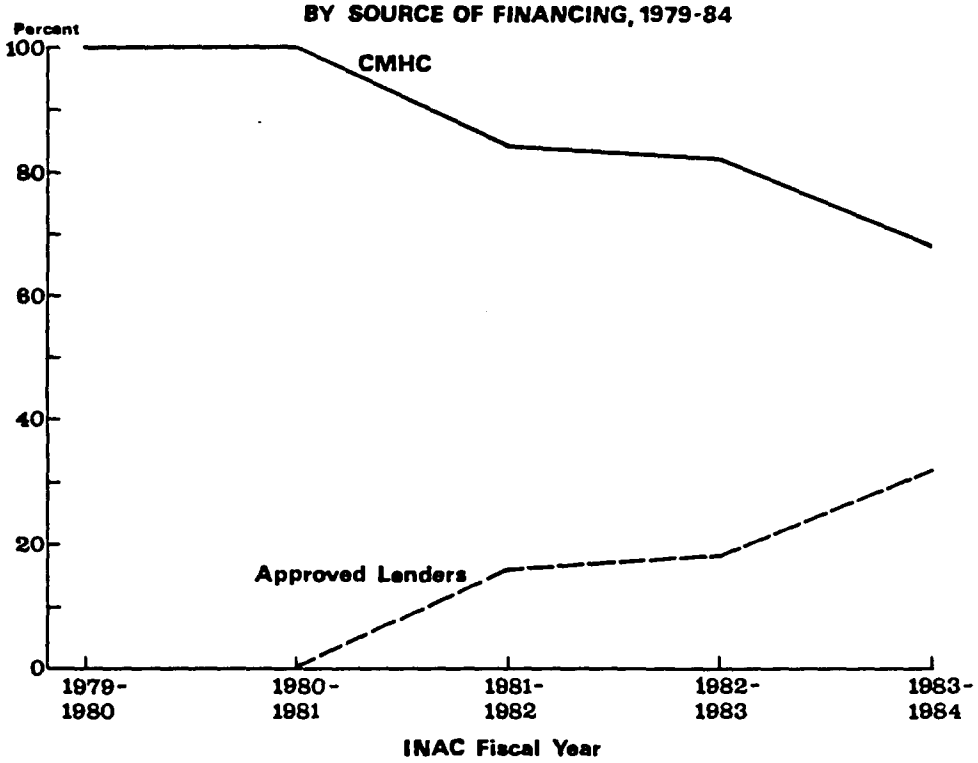
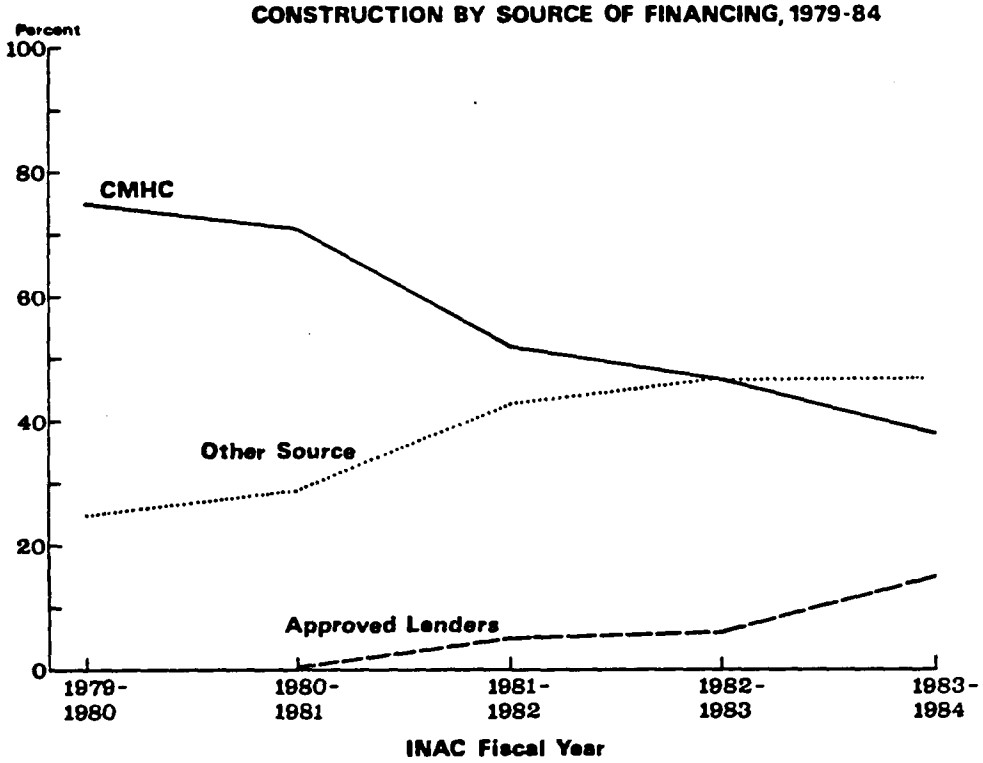
1 It is interesting to note that the decline in the proportion of capital cost provided through CMHC direct lending is mostly due to increased contributions from other sources (INAC grants, personal contributions and band contributions) than to increased loans by private lenders.

Table IV.C.4 DISTRIBUTION OF INDIVIDUAL CONSTRUCTION LOANS BY SOURCE OF FINANCING, 1979-84



Source: INAC Administrative Data

Table IV.C.5 DISTRIBUTION OF CAPITAL COSTS FOR INDIVIDUAL CONSTRUCTION BY SOURCE OF FINANCING, 1979-84



Source: INAC Administrative Data

It should be noted as well, that the annual dollar value of direct lending by CMHC has declined very little since 1979-1980. In dollar terms the 75 per cent of capital costs for individual construction attributable to CMHC in 1979-1980 represents approximately $1.2 million for 46 units. In the fiscal year 1983-1984, the 38 per cent of capital costs attributable to CMHC represents approximately $1 million for 44 units. Despite the drop in percentage terms of capital costs attributable to CMHC, CMHC actual cash requirements have not declined significantly over this period.

Data are not available on the number of approved lenders participating in individual lending on reserves. However, it should be noted that all private lending to individuals has occured in the province of Quebec. INAC staff there have worked with banks, caisse populaires, and other institutions in nurturing their participation. In working with these lenders, procedures, documentation and terms have been developed to the satisfaction of both parties. Nevertheless, because private approved lending to individuals occurs in Quebec and in no other region, it is clear that the objective of encouraging private lender involvement with individuals has been met in only a marginal sense.

2) Section 59

As a residual lending program, Section 59 is intended to assist those seeking financing for housing but not adequately served by private lending institutions. Direct data on the extent to which funds are provided to bands and individuals not adequately serviced by private lenders are not available[1]. However, data on the incidence of default on private lender loans as opposed to CMHC direct loans can be used to provide an indication of whether the objective is being achieved. A higher default rate on Section 59 loans would suggest that CMHC serves a higher risk group which private lenders may be reluctant to serve.

A second, related but less reliable indicator in this context is the proportion of units financed with direct loans relative to all other lending activity. Private

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1 There is no requirement at present for potential borrowers under Section 59 to submit lender refusal letters which would indicate the extent of unserviced borrowers.

lenders may or may not perceive higher risk with loans to Indians despite the protection of the ministerial guarantees offered to lenders. However, they incur high administrative costs in issuing the loan and calling and collecting on the guarantee if default occurs. A consistently higher proportion of units financed through Section 59 relative to private lending could reflect this possible lender predilection and would suggest that Section 59 is indeed serving those not adequately served by the private sector.

a) Band Housing

Table IV.C.1 indicates that between 1980 and 1984 the proportion of band non-profit housing units funded residually under Section 59 fell from 76 per cent to 10 per cent. Similarly, Table IV.C.2 indicates that the proportion of capital costs attributable to CMHC fell from 69 per cent to 8 per cent during the same period. As approved lender activity has been shown to account for this diminished reliance upon CMHC loans for band housing, it may be inferred that band loans for social housing to not represent a serious default risk situation.

Data on the actual number of calls made on ministerial guarantees for social housing loans confirms that the overall incidence of band defaults has been low. In this regard, INAC issued 376 band loan guarantees between 1978 and 1984 and only 17 pay-outs or calls have been registered.

As suggested, a higher default rate on Section 59 loans may be an indication of a higher risk group which lenders may be unwilling to serve. Of the 376 loan guarantees issued, 184 were to private lenders and 192 to CMHC. The default rates for Section 59 band loans and Section 6 band loans are 7 per cent (13 defaults) and 2 per cent (6 defaults) respectively. Given the higher rate of defaults associated with Section 59, it appears that CMHC is serving a higher risk clientele which private lenders may be reluctant to serve.

b) Individual Construction

Tables IV.C.4 and IV.C.5 indicate that CMHC lending has remained the main vehicle for financing the construction of individual units. At present, Section 59 financing is associated with more than two-thirds of all individual unit construction where mortgage financing is used. It now accounts for nearly 40 per cent of the total capital costs for the construction of these units. The high level of CMHC involvement with individual construction activity would suggest higher risks associated with these loans.

Data on loans and defaults from the inception of the individual lending programs provide the basis for determining default rates on loans to individuals. Loan guarantee information on individual construction indicated 977 loans issued between 1966 (when the first loans were recorded) and the end of the 1983 fiscal year. During this same period, 133 defaults were registered. Of the 977 guarantees, 38 or only 4 per cent were to private lenders. No calls on individual loans from private lenders have been registered[1].

Dividing the total number of defaults by the total number of Section 59 loans to individuals (939), yields a default rate of 14 per cent. Similar to Section 59 band loans, the higher rate of default on individual loans indicates a higher risk clientele which lenders may be reluctant to serve.

Despite the notion that Section 59 is providing loans to individuals who might otherwise be unserviced by private lenders, the 14 per cent default rate for these loans compares most unfavourably to the 7 per cent default rate on band Section 59 loans and to the overall low rate for all Section 6 lending. In this comparative context, the dilemma faced in meeting social objectives on the one hand and following sound lending and underwriting procedures on the other hand becomes most evident.

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1 The zero default rate for private loans to individuals on reserves must be interpreted with caution. Private lending activity on reserves is low, has only been in place since 1982 and occurs only in Quebec.

3) Summary

While the level of achievement of Section 6 lending objectives with respect to band housing has been high, the achievements have been much more modest with respect to individual construction. At present, approved lender financing is used for 90 per cent of band non-profit housing units and this financing has accounted for two-thirds of the capital costs for this housing. However, it is not so much the insured lending program as the INAC ministerial guarantee which encourages lender participation. Under individual construction, there has generally been very little program activity, only 38 loans. Less than one-third of these units now receive private financing and the proportion of total capital costs attributable to private sources for individual construction is only 15 per cent. The number of approved lenders involved with bands nationwide has now reached 40 in total. Since private lending to individuals occurs only in Quebec, the number of approved lenders serving individuals is limited.

Section 59 lending appears to be successful to the extent that a high risk clientele, which private lenders may be unwilling to serve, are using the program. Defaults on individual loans under the program have posed a much greater problem than defaults on Section 59 band loans. A difficult problem in this regard is in the determination of an acceptable level of default-related problems under a residual lending program where higher risk clients participate.

CHAPTER V

CMHC SUPPORT FOR INAC

While each CMHC program has its own specific objectives, the overall objective of CMHC activity on reserves is to support INAC housing initiatives. This is evident from the 1977 Cabinet papers outlining the present on-reserve housing policy. INAC was identified as the lead agency with responsibility for implementing policy and coordinating the utilization of programs and resources of other federal departments. CMHC was directed to make available the necessary loan funds to augment the INAC front-end subsidy and to amend the National Housing Act so that the Corporation's non-profit housing and rehabilitation programs could be used extensively on reserves. In the delivery of band programs, CMHC was also expected to offer its experience and expertise in housing to INAC and Indian bands.

The purpose of this chapter is to assess the extent to which CMHC has provided support for INAC in its efforts to improve housing for Indian people on reserves. The approach taken is to examine the extent of CMHC support for each of the objectives identified for the INAC On-Reserve Housing Program[1]. The objectives provide specific statements of the intended role of INAC against which CMHC support can be assessed. Where possible, quantitative indicators of CMHC support for each INAC objective are presented.

A) PROVISION OF SUBSIDIES

The INAC objective concerning housing subsidies is as follows:

> "Provision of financial housing subsidies to assist bands in improving Indian housing conditions".

CMHC supports this objective by providing operating subsidies for new construction (Section 56.1 Non-Profit) and forgivable loans for rehabilitation work (Section 34.1 RRAP). Unit and subsidy commitments under these programs are indicative of the extent of CMHC support.

As shown in Table V.A.1, CMHC subsidy commitments have escalated rapidly since 1980. Forgivable loans for rehabilitation have more than quadrupled while maximum annual subsidy commitments for new construction have

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1 Objectives of the INAC On-Reserve Housing Program are identified in: Evaluation Assessment of the On-Reserve Housing Program, INAC Evaluation Branch, Corporate Policy, February, 1982.

increased almost five times. In contrast, INAC capital expenditures both for new construction and rehabilitation have doubled since 1980 (Table V.A.2) suggesting that the extent of CMHC support has increased over the five year period.

While the data in Tables V.A.1 and V.A.2 are not directly comparable[1], they provide a reasonable basis for estimating the extent of CMHC support for the INAC objective of providing housing subsidies. The indicator of CMHC support is the proportion of CMHC subsidies to INAC subsidies.

Over the five year period, total CMHC forgivable loans for rehabilitation amounted to 50 per cent of total INAC expenditures for rehabilitation. However, considering only the latest year (i.e., 1984 for CMHC versus fiscal year 1983-1984 for INAC), CMHC rehabilitation subsidies amounted to 63 per cent of INAC support as opposed to only 28 per cent in the first year.

With regard to new construction, CMHC support for INAC's objective of providing subsidies reveals a similar pattern: the amount of CMHC subsidies relative to that provided by INAC has increased over the five year period. It should be noted that CMHC's Section 56.1 program provides on-going subsidy assistance for up to 35 years while the INAC capital subsidy is an up-front grant which involves no future subsidy commitments. For this reason, the appropriate value for comparison with the INAC subsidy is the present value of all future subsidy commitments undertaken by CMHC in each year. In the first year of the five year period, the present value of CMHC subsidy commitments amounted to only one-quarter of INAC capital expenditures. In the fifth year, however, the CMHC subsidy commitment stood at 65 per cent of the INAC subsidy for new construction. Over the five year period CMHC's commitments in present value terms have amounted to 63 per cent of INAC capital subsidies.

Additionally, it should be noted that the provision of subsidy assistance by CMHC requires considerable human resources. Table V.A.3 presents data on staff time devoted to on-reserve programs by both CMHC and INAC.

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1 The data in Table V.A.2 represent actual capital expenditures incurred by INAC for each fiscal year. The data for CMHC programs in Table V.A.1 represent commitments for subsidies in each of the calendar years indicated rather than actual expenditures.

TABLE V.A.1

CMHC Unit and Subsidy Commitments for New Construction and Rehabilitation

	New Construction (Section 56.1)			Rehabilitation (Section 34.1)	
	Units	Maximum Annual Subsidy	Present Value of Annual Subsidy*	Units	Forgivable Loan
	(No.)	($000)	($000)	(No.)	($000)
1980	366	1 577	10 749	852	2 790
1981	577	4 427	23 807	1 172	3 978
1982	866	6 230	38 732	1 730	6 769
1983	985	6 018	43 508	2 362	11 000
1984	1 144	7 493	54 172	2 306	11 450
	3 938		170 988	8 422	35 987

* Present value of each year's maximum annual subsidy commitment is calculated using the average mortgage interest rate as the discount rate and the average amortization period for Section 56.1 projects on reserves as the time period over which annual subsidy payments will be paid. See Appendix 2 for detailed calculations.

TABLE V.A.2
INAC On-Reserve Housing
Capital Expenditures for New Construction and Rehabilitation

Year	New Construction		Rehabilitation		
	No. of Units Completed	Cost to Appropriation ($000)	No. of Units	Cost to Appropriation ($000)	Total Costs ($000)
1979-80	2 056	43 460	3 013	9 845	53 305
1980-81	2 327	48 996	3 619	14 830	63 826
1981-82	2 453	48 724	3 181	13 078	61 802
1982-83	2 413	45 846	4 184	15 887	61 733
1983-84	2 803	83 445	4 380	18 198	101 643
Total	12 052	270 472	18 377	71 837	342 309

Source: INAC Housing Branch

TABLE V.A.3

Staff Time Associated with CMHC and
INAC On-Reserve Housing Programs, 1984

	CMHC Programs*	INAC ORHP
	(Person Years)	
Atlantic	0.9	9.0
Quebec	2.2	9.5
Ontario	4.1	13.1
Prairie	8.5	33.3
British Columbia	7.1	22.5
Technical Services	9.4	-
Sub-Total Field	32.2	87.4
National Office	0.9	6.0
Total	33.1	93.4

* Includes Section 56.1, Section 34.1 and Section 59.

Source: CMHC Treasurer's Directorate
Price Waterhouse Management Review

In 1984, CMHC devoted 33 person years to the operation of its programs on reserves, about 35 per cent of the person years associated with the INAC On-Reserve Housing Program. As indicated in Chapter III.B, these CMHC person year equivalents were provided by between 180 and 190 people who were also responsible for the administration and delivery of CMHC programs off reserves.

It is evident that CMHC has provided substantial support to INAC in the provision of housing subsidies. The extent to which the coordination of funding from the two sources proceeds smoothly is examined next.

B) FUNDING COORDINATION

As regards funding, another objective of the INAC On-Reserve Housing Program is:

> "Funding coordination, with other DIAND programs and extra-departmental programs including (CMHC) approved loans, other governmental funding and native contributions (i.e. labour, capital, sweat equity)."

The substantial financial subsidies provided by CMHC in support of INAC suggest that funding coordination between the two agencies is being achieved. However, it is also evident from surveys of bands, INAC district and CMHC branch offices that the coordination of funding from the two sources is not without some problems.

About one-half the bands interviewed identified funding coordination as ineffective. However, when asked to identify funding coordination problems, only 16 per cent of these bands identified CMHC or possible lack of interaction between CMHC and INAC as the problem. Thus, some problems are present in the coordination of CMHC housing funds with those of INAC, but they are not widespread.

The surveys of INAC and CMHC field offices provide an indication of the types of funding coordination problems encountered:

- In the survey of CMHC Branch offices, 35 per cent of respondents felt that the process of obtaining a Ministerial Guarantee was very slow and that bands had difficulty satisfying all the requirements for proceeding with a Ministerial Guarantee.

- In the coordination of funds for new construction, the problem mentioned most frequently by CMHC branch offices was that the budget planning process was difficult because the INAC fiscal year and CMHC calendar year do not coincide. With regard to the timing of allocations, CMHC favours the beginning of the calendar year because this provides bands or other off-reserve groups with the time needed for planning before the construction season begins.

- INAC field offices also identified the timing of funds as a problem. Social housing funds are allocated in December and this does not coincide with funds from other sources[1].

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1 Price Waterhouse Associates, Management Review of the On-Reserve Housing Program, Final Report: July, 1985, p.47.

It was also reported that INAC field offices indicated the funding process for RRAP was complex and requires too many documents to be completed. Another problem cited is that paperwork for Section 56.1 projects is heavy and is duplicated by INAC and CMHC. Such problems are not considered to be matters of funding coordination. Rather, they probably reflect the different types of programs and associated paperwork which personnel in the two agencies are

Problems of funding coordination are important not only because of the difficulties they pose for bands managing projects and the delays in completing much needed housing and renovation projects. Scheduling delays also invariably result in increased costs and increased subsidies.

C) INCREASING THE ROLE OF BANDS

The objective of INAC in relation to the role of bands in on-reserve housing is stated as follows:

> "Increasing the bands' role in the planning, management and delivery of housing according to construction standards, through financing and technical advice".

This objective can be considered in terms of two components:

i) Increasing the bands' role in housing, including the provision of training;

ii) Providing financing and technical advice to achieve an increased role for bands.

With regard to the first component, quantitative indicators with which to measure the extent of the CMHC contribution to increased involvement by bands are not available. However, it can be said that the nature of CMHC programs encourages an increased role for bands. In the case of new construction under Section 56.1, only the bands can undertake projects. Hence, bands have an extensive role to play in all aspects of the housing projects, including planning, pre-development and management activities.

To establish project feasibility, for example, the band must investigate mortgage financing options and prepare the preliminary specifications and drawings. At the project development stage, the band would be involved in project design and finalizing contractual agreements. Bands are also responsible for allocating units to band members by establishing a band member priority list. During the operation of the project, bands enter into an operating agreement that details the project's amortization schedule, payment conditions and the terms and amount of CMHC annual assistance.

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accustomed to dealing with. The amount of paperwork involved in the administration of an on-going subsidy program under the terms of an operating agreement (Section 56.1) is naturally greater than that associated with a one-time capital grant (INAC's ORHP).

Under RRAP, bands may act as delivery agents, carrying out planning and management functions. In 1985 it is estimated that for three-quarters of the on-reserve RRAP units, some aspect of delivery will be conducted by bands.

Increasing the bands' role in housing can be accomplished by providing training in managerial and technical skills. INAC does have a training program[1] that covers technical as well as managerial skills, but CMHC only participates on an ad hoc basis when specifically requested by INAC staff. CMHC participation often takes the form of providing information concerning CMHC programs. In the CMHC branch survey, only 27 per cent of respondents said that their participation involved any training aspects. In effect, CMHC support for training on reserves is limited but this is not surprising since INAC has the lead role responsibility for training on reserves.

CMHC has, however, contributed to the training of band members by developing courses in rehabilitation skills. These courses include skills such as specification writing and project management. While the number of on-reserve residents who have taken the courses is not available, it is known that some 360 native people (living both on and off reserves) have attended since 1981[2]. The courses continue to be available through community colleges.

With regard to the second component of this INAC objective (i.e., providing financing and technical advice to increase the bands role in housing), CMHC support is available but has seen limited use. In relation to the delivery of housing programs on reserves, CMHC has attempted to provide financing and technical advice to bands. One example of this is Project Development Funding (PDF) offered in conjunction with the Section 56.1 non-profit program. Under

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1 Bands or band councils in each region may submit proposals for training projects up to an amount of $40 000. A total of $350 000 was expended on this program in fiscal year 1983/84. See Price Waterhouse Associates, pp. 14, 15. It should be noted, however, that 67 per cent of bands surveyed were dissatisfied with the availability of training courses.

2 The importance of the courses to natives is underscored when it is considered that their enrolment in the courses far outstrips their proportion in Canadian society. According to the 1981 census native citizens represent 2 per cent of the Canadian population, but the 361 native students enrolled in the courses accounted for 12 per cent of total enrolment (2 964 students).

this program, project groups are required to carry out a wide range of pre-development activities in order to establish the feasibility of the project and develop it to the loan commitment stage (see Chapter II). The PDF program provides funding to Bands requiring assistance in developing projects to the loan commitment stage.

The take-up of the PDF program on reserves has been very modest since 1980. As Table V.A.4 indicates, Ontario and B.C. account for the majority of uptake.

TABLE V.A.4
Program Development Funding On Reserves, 1980-83

Region	PDF Expenditures
Atlantic	0
Quebec	21 871
Ontario	129 244
Prairies (Sask.)	500
B.C./Yukon	90 940
Total	$242 555

Source: Social Housing Division, PMS

Between 1980 and 1983, there were only 19 cases of applications for PDF funds at an average funding amount of $12 766 per project. It is evident that the contribution of the PDF program has been modest in support of the INAC objective to provide financing so that the role of bands in housing can be increased.

Although the reasons for the poor take-up of PDF funds on reserves are not clear, it should be noted that INAC has traditionally fulfilled the role of advisor to the bands. INAC also has provided up-front funding through its housing services programs[1] to cover the costs of external

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1 INAC provides Management Support funds in support of activities contributing to band level management and administration of housing. About $400 per housing unit allocation is provided. For fiscal year 1985/86 about $1 million is budgetted for this purpose. In addition, funds are available on a one-time basis for Technical Assistance ($10 000 maximum per band) and Planning ($3 000 per band for the preparation of a multi year housing capital plan).

consultants hired by bands to provide financial and technical assistance. In Manitoba, PDF funds are not allocated by CMHC for on-reserve projects because of the availability of INAC funding. However, Manitoba bands have indicated that INAC funds are insufficient and wish to have PDF made available to them. One potential difficulty with INAC funding for project development is that funds are lost to bands if projects do not proceed. Under the PDF program, the loans are fully forgiven if the project does not receive a commitment.

As regards the provision of technical advice, CMHC has played an important role through its inspection services by advising that units meet building code standards. In addition, CMHC offices may provide advice to bands to ensure compliance with Operating Agreements. However, such advice is usually provided through ad hoc consultations which occur when problems with Operating Agreements arise or when inspections reveal technical deficiencies. While CMHC advice is important, it appears that the Corporation has not played the major role in providing technical advice on reserves. When CMHC Branch Offices were asked where bands go for this type of advice, 67 per cent of the CMHC staff replied that the bands turned to INAC or external consultants when they need technical or financial advice.

D) DIRECT DELIVERY

The final INAC objective is stated as follows:

> "Direct delivery to bands that lack the delivery capacity themselves (residual housing delivery)".

CMHC support for this objective occurs under RRAP. In 1985 it is estimated that about one-quarter of the on-reserve RRAP allocation will be delivered entirely by CMHC. In addition, CMHC also undertakes partial direct delivery to bands if the units are band owned or if the repair work is to be done by band members. That is, bands may identify applicants and fill out applications but CMHC at a minimum will carry out all inspections. In such cases, the band may have the capacity to do all aspects of delivery including inspections but units would be inspected by CMHC to avoid a conflict of interest situation.

Because Section 56.1 requires projects to be conducted by bands, no direct delivery of units can occur. CMHC delivers the program to bands but bands must undertake project development and management. This has led to the contention that the Section 56.1 program is biased against bands lacking a delivery capacity. As indicated in Chapter IV (Table IV.A.12), there is some evidence to suggest that this

may occur. Although not statistically significant, a difference in the level of band management seems to exist between bands which participate in Section 56.1 and those which do not. The more a band is responsible for housing management, the more it is likely to take part in Section 56.1 activity.

While Section 56.1 units cannot be delivered directly by CMHC, the availability of Project Development Funding in connection with Section 56.1 activity provides a means by which bands lacking a delivery capacity can participate in the program.

E) SUMMARY

While each CMHC program has its own specific objectives, the overall objective of CMHC activity on reserves is to support INAC housing initiatives. This chapter has examined the extent of CMHC support for each of the objectives identified for the INAC On-Reserve Housing Program.

While CMHC has contributed substantial support to the INAC objective of providing housing subsidies, there are problems in the coordination of funding from the two agencies. CMHC support for the INAC objective of funding coordination seems to be affected by the slowness of the ministerial guarantee process and different planning periods (fiscal years) for INAC and CMHC.

With regard to the objective of increasing the bands' role in housing, it can be said that the nature of CMHC programs encourages an increased role for bands. Under RRAP, bands may act as delivery agents and under Section 56.1 only bands can undertake projects. It can also be said that CMHC supports INAC efforts to provide training in managerial and technical skills as a means of increasing the bands' role in housing. The amount of support provided by CMHC is not extensive but this is consistent with the 1978 on-reserve program directive identifying INAC as the agency responsible for training on reserves. CMHC only participates in INAC training activities on an ad hoc basis and this usually involves the provision of program information rather than training. CMHC has also contributed to an increased role for bands by developing courses in rehabilitation skills.

Financial assistance to support an increased role for bands is provided through CMHC,s Project Development Funding (PDF) program. Take-up of PDF has been limited partly because INAC provides similar funding program to cover band costs for financial and technical assistance although such funding may be lost to bands if projects do not proceed. Limited take-up of PDF can also be attributed to lack of promotion

of the program by CMHC. While CMHC plays an important role in providing technical advice in connection with its inspection services, bands most often turn to INAC or external consultants when they need technical or financial advice.

Finally, CMHC support for the INAC objective of direct delivery to bands lacking a delivery capacity can occur under RRAP but cannot be undertaken under Section 56.1 since these projects must be developed and managed by bands. However, the availability of PDF Funds in connection with Section 56.1 means that bands lacking a delivery capacity can participate in the program.

In conclusion, it can be said that CMHC has supported INAC with regard to all objectives for the On-Reserve Housing Program. For each objective, however, it is clear that INAC remains the major actor on reserves.

CHAPTER VI

IMPACTS AND EFFECTS

Chapters IV and V have assessed the extent to which the various CMHC programs active on reserves have achieved their stated objectives. Achievement of official objectives constitutes a set of expected effects. Beyond these, there exists a number of other impacts and effects associated with the operation of CMHC programs. This chapter documents the existence or non-existence of the following impacts and effects:

- the impact of CMHC's activity on the housing situation on reserves;
- the effects of CMHC programs on the managerial expertise of the bands as well as on the construction and rehabilitation skills of their members; and
- the effect of CMHC programs on the economic circumstances of bands.

In addition to the analysis of impacts and effects of CMHC programs, this chapter also examines a key relationship which has implications for on-reserve housing policy. It has been suggested that increased individual involvement in housing leads to improved housing conditions. Thus, the relationship between house condition and individual involvement and responsibility in matters related to their housing is examined.

A) HOUSING SITUATION ON RESERVES

CMHC programs, by their type of delivery, are intended to supplement INAC assistance on reserves. Thus, although the achievement of individual program objectives is important, it is also essential to look at CMHC activity from a broader standpoint. Consequently, this section assesses the additional impact of CMHC programs on the overall housing situation on reserves. The approach taken is to identify the change in housing conditions at the band level between 1977 and 1984 and determine the key funding sources associated with improved housing conditions.

In 1977, a study of band housing needs was conducted which led to a count of the number of units in need of major repair or in need of replacement. A percentage of houses in need of major repair or replacement in each band in 1977 can thus be calculated and compared to the proportion of houses in need of major repair (census question) in 1984[1]. The

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1 This percentage is based on the 1984 On-Reserve Survey rather than a complete count as in 1977.

difference in need between 1984 and 1977 is then quantified on a scale from -100 to +100 where a positive figure means an increase in the quality of housing on a reserve in 1984 compared to 1977[1].

The data on change in housing conditions at the band level provides the information required to test the following hypothesis:

> CMHC funding has a positive incremental effect on house condition on reserves, over and above the effect of INAC and CEIC funding.

A regression model using the change measure as dependent variable was set up; the explanatory variables are:

- the need in 1977; and
- the INAC, CMHC, CEIC and private lenders input of funding on reserves in the last three years, per capita.

Initial estimates of the model revealed strong collinearities between RRAP, Section 56.1 and ORHP (On-Reserve Housing Program, INAC) funding levels per capita. Consequently, two regression models were set up, each excluding one of the two CMHC programs, to resolve the

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1 Considering the different types of data collection used, the differences in the indicators employed and the probable increase in rigor in 1984 balanced with a reduced sample size, the measure of change in house condition is likely not to be purely valid (i.e., it will not measure with exact accuracy the concept under study). However, it is likely that the measure is reliable (i.e., that variations in the measure represent variations in the concept observed) since most measurement error should cancel out.

When the change in need for each band is weighted by the band population, the average change is not significantly different from zero which implies no amelioration in on-reserve housing conditions between 1977 and 1984. However, since the two measures are perhaps not exactly measuring the same condition (as explained in the previous paragraph), this conclusion can be questioned. It is possible to eliminate this validity assumption. The following, more important, analysis does not assume the validity of the housing condition change measure. It is only based on its reliability.

collinearity. This approach reduced, but did not completely eliminate the problem[1].

Table VI.A.1 provides the results of these two regression models. This table reports the results of multiple regressions where the housing quality increase between 1977 and 1984 is explained by the level of funding received from each INAC and CMHC housing program as well as private lenders and band contributions. The parameter estimate measures the dimension and importance of the relationship between each source of funding and the quality increase. The significance represents the probability that the estimate is not different from zero. The beta weight is a measure of the relationship (similar to the parameter estimate) which is not influenced by the unit of measurement of the independent variables and is thus a more reliable estimate of the true influence of funding sources. In both regressions, the need in 1977 is one of the strongest predictors of the change between 1977 and 1984: both coefficients are positive, meaning that the greater the need was in 1977, the larger the increase in quality of housing between this time and 1984. This suggests that the gap between the best and worst bands has probably decreased since 1977.

In the first model, the level of Section 56.1 funding per capita is the strongest predictor of change. The coefficient is positive, demonstrating a positive impact of Section 56.1 funding on house conditions.

The negative coefficient associated with ORHP funding possibly points to a threshold effect: new construction requires Section 56.1 funding to achieve appropriate standards; the INAC grant alone is not sufficient. The band contribution is also positively associated with an increased quality of housing in this model as well as in the second model which tests the effect of RRAP funding.

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1 The variance inflation factors calculated for each dependant variable indicate that the collinearity problem has not disappeared but it is considerably reduced. Other problems were found with these models. Essentially, they are somewhat sensitive to certain outlier values to the extent that some coefficients' signs and significance levels can change with the exclusion of these outliers. However, there is no empirical reason to think that the revised data set is any more valid than the non-corrected one so the results including all the data are presented. Moreover, pairwise deletion of missing data was used to avoid losing too many cases. Overall, the results should be recognized as being rather fragile.

TABLE VI.A.1
EXPLAINING HOUSING QUALITY INCREASE[1]: MULTIPLE REGRESSIONS

Independent Variables[2]	Parameter Estimate	Significance	Beta Weight
Funding Sources (56.1)	R^2 = 0.64**	R^2_a = 0.59**	
Section 56.1	8.7	0.00	0.77
On-Reserve Housing Program	-11.8	0.00	-0.73
Major Repair Need in 1977[3]	0.6	0.00	0.42
Training Prog. - Del. Agents	401.2	0.00	0.31
Band	8.3	0.00	0.26
Section 59	-11.0	0.06	-0.17
NEED	16.3	0.15	0.12
Social Assistance Program	2.1	0.25	0.10
Community Infrastructure and Services	-3.5	0.39	-0.09
Private Lenders (Section 6)	-9.0	0.42	-0.08
Intercept	-22.5	0.00	-
Funding Sources (RRAP)	R^2 = 0.64**	R^2_a = 0.59**	
Major Repair Need in 1977[3]	0.8	0.00	0.49
RRAP	-4.6	0.00	-0.33
Social Assistance Program	4.4	0.03	0.21
Band	6.6	0.01	0.21
Training Prog. - Del. Agents	239.1	0.06	0.18
Community Infrastructure and Services	5.8	0.12	0.15
NEED	-16.0	0.13	-0.12
Private Lenders (Section 6)	7.1	0.45	0.07
On-Reserve Housing Program	0.8	0.58	0.05
Section 59	-2.6	0.63	-0.04
Intercept	-38.1	0.00	-

Source: On-Reserve Evaluation Surveys, band file

1 Need in 1977 minus need in 1984, range from -100 to +100
2 All the funding amounts are in thousand dollars per capita
3 Need for major repair and replacement in 1977

In the second regression model, RRAP funding levels show less influence and a negative coefficient: the more money RRAP has put on a reserve, the more likely this reserve is to have experienced a reduction in housing quality. This is not to say that RRAP has a negative effect on band housing conditions; it probably means that more RRAP funds are directed to the bands showing obsolescence problems (i.e. higher rates of deterioration of the housing stock), a sign of relevant targetting.

Overall, it seems that Section 56.1 funds have a positive impact on house quality at the band level and succeed in crossing over the funding threshold which permits the construction of good quality housing. RRAP does not show such a positive effect on house condition. The structure of the multiple regression results suggest that this may be a problem of threshold effect, i.e. RRAP funding, even over and above INAC funding, is not sufficient to reverse the obsolescence trend. Other CMHC programs (e.g. Section 6 and Section 59) do not present important or significant effects on house condition on reserves, all things considered.

To summarize, at the band level, more Section 56.1 funding is associated with a larger housing quality increase between 1977 and 1984, notwithstanding the level of INAC funding. One can have less confidence in the regression results for RRAP. RRAP funding is associated with a decrease in quality which may be attributed to either an insufficiency of funds (per house) or to targetting to bands experiencing rapid obsolescence.

B) MANAGERIAL EXPERTISE AND TECHNICAL SKILLS OF BANDS

In addition to their impacts on housing condition, CMHC programs may also influence the managerial and technical expertise of bands to administer and implement housing plans and programs. If bands are to become more and more autonomous with regard to housing responsibilities, every attempt should be made to increase their level of managerial expertise as well as the construction and rehabilitation skill levels of band members.

Logically, CMHC programs could have a positive impact on managerial expertise of bands and technical skills of their members. The Section 56.1 program implies extensive band planning and management and makes funds available for project development. RRAP is most often delivered by bands which means enhanced renovation and inspection skills as well as budget management capacity. Section 59 direct loans and Section 6 insured loans come into play when a loan is taken by a band or an individual, thus forcing financial planning and management.

Since 1974, INAC funds for program management have been gradually transferred (as a matter of policy) to the bands for administration. A grant for the basic administrative costs of the chief council members and managers was formally introduced in 1974, and band training and support services, intended to assist in the development of managers at the band level, was started in 1970. Because housing needs analysis and housing delivery will ultimately depend on the managerial expertise of the bands, some assessment of those abilities today is useful.

Also useful, in this same regard, is some description of the technical skills of band members. When the new housing policy was announced in 1978, emphasis was placed on the concept of "the Indian people helping themselves". It was hoped that the housing initiative would generate employment for Indians on reserves. No measure of the construction or rehabilitation skills of the bands was taken in the 1977 housing needs analysis, so rigorous data to measure change over time does not exist. However, there is enough evidence from the various surveys taken in connection with the present evaluation to describe this expertise today.

This section describes the present levels of skills and expertise found on reserves and attempts to link CMHC activity with increased levels of capabilities.

1) Managerial Expertise

During the 1984 On-Reserve survey, bands were asked a variety of questions concerning their involvement in housing delivery and their own management skills. Responses to the questions on housing involvement are summarized in Table VI.B.1.

The two lower sections of Table VI.B.1 indicate a high level of involvement on the part of bands in terms of responsibilities for and participation in housing activities. With regard to housing policy matters, 55 per cent of the bands do have a written housing policy in place, which in the majority of cases, according to the survey, they established themselves without INAC or CMHC advice. There was also evidence that these housing policies in most cases included bylaws regulating construction, maintenance, housing standards and building code enforcement. Eighty-three percent of the bands have hired a housing coordinator and 53 percent of the bands mentioned that they had control over their own housing delivery.

The bands were also asked to what extent their level of involvement had changed over the last three years. The

TABLE VI.B.1
BAND INVOLVEMENT IN HOUSING

CHARACTERISTICS	INCIDENCE %
Have a written housing policy	55
Policy established with INAC or CMHC	32
Policy deals with:	
Construction regulation	54
Maintenance regulation	51
Location regulation	67
Housing standards	87
Code enforcement	84
Policy administered by:	
Band Council	96
Band Housing Committee or Authority	70
Band Housing Coordinator	84

	Solely	Partially	Increased Over 3 Yrs.
Responsible For:			
Developing subdivisions	65	19	56
New construction	82	16	51
Selecting materials and designs	71	19	55
Tendering supplies	61	34	54
Renovation	84	13	46
Material transportation	67	18	46
Housing maintenance	66	18	47
Community services	79	19	53
Infrastructure	73	23	61

	INCIDENCE %
Carry out:	
Pre-construction tendering	79
Determining housing allocations	95
Supervising construction	87
Rent collection	56
Maintenance operations	79
Enforcing bylaws	79

Source: On-Reserve Evaluation Surveys, Band File.

kinds of involvement specified were activities such as selecting materials and designs for housing, tendering for housing, tendering supplies and material transportation, developing new subdivisions, and delivering new housing through construction or renovating existing housing. The overwhelming response was that the level of involvement had stayed the same or improved. The direction of the responses certainly indicates a modestly increasing involvement.

When the question of housing management skills was addressed during the band interview, the bands had a very positive perception of their own skills. When asked to what extent the band feels it possesses the appropriate management skills to manage its housing, the following responses were given:

Extent of Skills		Incidence
Complete:	1	26%
	2	27
	3	15
	4	14
	5	10
	6	7
No Skills:	7	3
N		74

More than fifty per cent of bands indicate that they have hardly any need for improvement as far as housing management is concerned. Another thirty percent rate their skills as fairly good. At least 20 percent of bands feel their skills are insufficient to manage their own housing stock.

The above perceptions of band skills in the delivery and management of housing should be tempered by the results of the CMHC branch survey. The majority of staff (55 percent) indicated that housing delivery and management skills varied widely between bands. A further 33 percent rated band skills in these areas as poor. Any conclusions concerning band involvement in housing delivery or management should weigh these opinions.

Results concerning band construction management were encouraging. Thirty-five percent of the branch staff indicated that they had had successful experiences with band construction management, and on the other hand, only 6 percent indicated that they had had problems with the construction techniques.

Although an assessment of band management skills was not elicited in the review of INAC district and regional staff done by Price-Waterhouse Associates, the INAC staff were asked to rate the effectiveness of their training programs. From their responses, a general impression of their opinion of band skills can be obtained. Although the INAC staff rated technical assistance and training provided as modestly effective, they were of the opinion that the amount of assistance available was not adequate enough to meet the needs of the bands. Insufficient funding and lack of available staff for technical assistance and training programs were most often cited as the reasons for the low effectiveness rating.

The most important conclusion concerning band management skills is that they vary widely from band to band. Moreover, a certain number of bands clearly indicate their incapacity to manage their housing stock.

Because CMHC programs require the bands to be involved in many housing activities, it can be said that by their design and nature CMHC programs are supportive of band involvement in housing delivery and management. In the case of the Section 56.1 program, there is a great deal of pre-development work that has to be done. To establish project feasibility, for example, the band must investigate mortgage financing options and prepare the preliminary specifications and drawings. At the project development stage the band would be involved in project design and finalizing contractual agreements. During the operation of the Section 56.1 project, the bands enter into an operating agreement that details the project amortization schedule, payment conditions, and the terms and amount of CMHC annual assistance. The involvement of the band councils and designated band workers is just as extensive under RRAP. The band council assesses an applicant's eligibility, assigns priority to the applications received, and assists the individual applicants in obtaining contractor's estimates. In effect, it appears that CMHC programs by their nature and design have provided a positive impact on band involvement in housing delivery and on band management skills.

2) <u>Construction and Rehabilitation Skills</u>

As with the case of housing delivery and management skills, no data exists that can rigorously measure construction skills against an agreed upon standard or the change in these skills over time. However, based on the 1984 on-reserve survey, and the CMHC branch survey,

a general description of these skills as they exist today is possible.

Results of the 1984 On-Reserve Survey indicate that a majority (68 percent) of the bands had a positive feeling that their construction skills have been increasing over the last three years.[1] The bands were asked to provide numbers of members who have various construction skills, and the results clearly indicate that the majority of members fall into low skill categories. The largest group were general labourers, with painters, carpenters and roofers the next most populous categories. High skill tradesmen such as electricians and plumbers were very few in number. A majority of bands (67 per cent) also indicated they were dissatisfied with the availability of INAC and/or CMHC construction training courses.

The only construction/rehabilitation training undertaken by CMHC was the Rehabilitation Skills Training Center courses. As was indicated earlier, these courses were popular with native students and the native take-up was high[2]. The courses were popularly used to train RRAP delivery agents. Although no data is available to rigorously evaluate the effects of the course, it appears that the impact on band construction and rehabilitation skills was positive.

It is also likely that the existence of federal housing programs, including CMHC programs, has provided opportunities for band members to acquire construction and rehabilitation skills. A majority of bands (58 per cent) indicated that more than 80 per cent of the labour used on federally funded projects was provided by their own band members[3]. Further, the enforcement of National Building Code standards on all Section 56.1 units built on reserves may have contributed to improved construction skills[4]. Evidence from the survey of CMHC Branch Offices indicated that bands had responded very positively to building code standards.

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1 See Section VI.C.3 for a more detailed presentation of this data.

2 This could be partly due to the obligation for RRAP delivery agents to take the RSTC courses.

3 See Section VI.C.1 for more details on this distribution.

4 The fact that the presence of CMHC standards has had a positive impact on housing conditions is demonstrated in Chapter IV.A.

3) Summary

It is very difficult to arrive at any substantive conclusions concerning the managerial expertise of the bands to deliver or manage housing because rigorous measures are not available. However, it is clear that the trend is to greater band involvement in all aspects of housing delivery and management. The nature of CMHC programs impacts positively on this involvement, and bands have an enthusiastic perception of their abilities to carry out these tasks. However, INAC and CMHC field staff are much more cautious. The evidence seems to indicate a great deal of variability in managerial skills exists between bands.

Although the bands feel that their construction skills have been increasing, there exists evidence that the level of skills remains low. The evidence also indicates a real desire on the part of the bands to have more construction training courses made available. The bands' interest in these courses, and their positive response to building code standards serve as good evidence that CMHC activity and CMHC standards can have a positive impact on the construction and renovation skills of their members.

C) ECONOMIC DEVELOPMENT IMPACTS OF HOUSING PROGRAMS

Housing conditions constitute a huge problem on reserves. It is not the only one, however. Some argue that the housing problem is only a by-product of a larger issue: the chronic economic under-development of Indian reserves. The argument is that housing would be less of a problem if bands could count on a firmer economic base and if band members were able to financially contribute more to meeting their housing needs.

Neither the INAC nor CMHC housing programs on reserves have economic development as a primary objective. Only the NEED program from CEIC is aimed at that end. However, the INAC On-Reserve Housing Program, even though it is not designed as an employment generation program or as an economic activity generator, has economic development as a side objective:

> A fifth, though derivative and secondary objective, is to encourage the acquisition of skills and the creation

> of jobs through the construction, rehabilitation and management of housing[1].

None of the CMHC on-reserve housing programs has economic development as a stated objective.

Even though they are not primarily intended to generate economic development, housing programs do promote economic activity and therefore, contribute to economic development. Thus, this section of the evaluation report briefly analyses the existence or non-existence of on-reserve economic impacts attributable to housing programs.

The data collection instruments used for this evaluation did not contain specific and objective measures of the economic development impacts of housing programs. However, a set of band-perceived indicators was captured in the band-level interviews and can be used here. These indicators are:

- the percentage of labour associated with federally-funded housing projects provided by band members;
- the band feeling that the work generated through the housing programs is making a significant contribution to the band's economy;
- the band-rated increase or decrease in the number of skilled labourers over the past three years;
- the band-estimated number of job-weeks created on reserves in the last twelve months as a result of INAC housing programs and of CMHC housing programs.

Each of these indirect indicators of economic development impacts will be analysed in relation to the amount of financial assistance provided by both CMHC and INAC. The general hypothesis is that:

> The more funding has been provided by CMHC or INAC, the larger the quantified economic development impact.

1) <u>Percentage of band labour in federal housing projects</u>

The first indicator of economic development impact is the proportion of labour in federally sponsored housing projects that is provided by band members. Bands participating in this study have been asked to provide an estimate of this percentage based on the projects

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1 Ekos Research Associates, <u>Final Report of the Study of On-Reserve Housing Conditions</u>, Ottawa, 1985

carried out in the past twelve months. Overall, the distribution is as follows:

Percentage of Band Labour	Incidence
0 to 20%	12%
20 to 40%	12
40 to 60%	7
60 to 80%	12
80 to 100%	57
N = 74	100%

Since more than half the bands responding to this question mention that their members provided 80 per cent or more of the labour on federal housing projects, one can conclude that the housing programs have an effect on employment generation.

However, the question asked of the bands did not allow a differentiation between the proportion of band labour on CMHC versus INAC projects. This difference can only be analysed incidentally by using multivariate analysis techniques to try to separate out the unique effects of each funding source in producing this economic effect. The specific hypothesis tested here is that:

> The proportion of labour related to housing projects that is carried out by band members augments with the amount of funding received.

To test this hypothesis, regression models were estimated using the proportion of band labour on federal housing projects as the dependent variable. The explanatory variables are the levels of funding received by bands in the last three years under each program. As explained in Section VI.A, problems of multicollinearity would occur if the funding levels from all sources are included in a single equation. To circumvent this problem, two sets of regression equations were estimated, one excluding RRAP funds and one including RRAP funds but excluding Section 56.1 funds. These equations are reported in the top sections[1] of Tables VI.C.1 and VI.C.2, respectively.

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1 The middle and bottom sections of Tables VI.C.1 and VI.C.2 report results of regressions carried out on other indicators of economic development. These are described subsequently in this section.

Table VI.C.1 presents (in the top section) the results of two multiple regressions using the funding levels (total and per capita) as independent - explanatory - variables and excluding RRAP funds. Table VI.C.2 contains the same information but excludes Section 56.1 funds and includes RRAP funds. These tables are to be read in a fashion similar to that in Section VI.A.1

Before examining the results of the regression equations, the appropriate form of the independent variables should be discussed. That is, should the funding amounts be expressed in terms of totals or on a per capita basis? Normally, since the effect analyzed is measured at the band level and since a prime determinant of total government assistance on a reserve is the reserve population, one would be tempted to use the per capita spendings as independent variables in the regressions explaining economic development on reserves. However, it will be seen that the regressions using the total funding levels rather than the per capita figures lead to better beta weights and more statistically significant coefficients. This is probably because the dependent variables analyzed are perceptual rather than objective and because the band council perceptions are dictated more by the total or raw government spending than by the per capita counterparts. Thus, driven by the explanatory power of the regressions, the analysis focusses on total funding and simply reports the results of the per capita regressions in the tables.

From Tables VI.C.1 and VI.C.2, it can be concluded that the level of funding is unrelated to the proportion of band labour found in federal housing projects, i.e. neither more CMHC funding nor more INAC funding (and for that matter more CEIC funding) generate a greater proportion of labour done by band members. Thus, the variations in the proportion of band labour are likely due to other factors such as the skills found among band members, the type of projects undertaken, and so on.

2) Band rated contribution of housing programs to band economy

Participating bands were also asked to rate (on a 1 to 5 scale where 5 means no effect at all) the contribution of housing programs to the band's economy. This is admittedly a weak measure because: 1) it is the band

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1 See the explanation of Table VI.A.1.

TABLE VI.C.1
ECONOMIC EFFECT OF HOUSING RELATED FUNDS
(RRAP EXCLUDED)

Funding Source	Funding in 000$			Funding in 000$/Capita		
	Estimate	Proba-bility	Beta Weight	Estimate	Proba-bility	Beta Weight
Dependent: Percent of Band Labour in Federal Housing Projects(1)						
NEED	-.0017	.30	-.18	-1.67	.07	-.26
Private Lenders	.0028	.30	.18	1.16	.18	.22
Comm. Impr. & Services	.0004	.42	.16	.50	.13	.26
Training for Del. Agents	-.0187	.36	-.13	-16.02	.09	-.25
On-Reserve Housing Pr.	.0003	.50	.12	.33	.16	.42
Section 56.1	-.0003	.60	-.09	-.25	.18	-.46
Band	.0001	.67	.06	.19	.30	.13
Social Assistance Prog.	.0000	.77	.05	.09	.53	.09
Section 59	-.0002	.85	-.03	.21	.64	.22
Intercept	3.6965	.00	-	3.46	.00	-
Dependent: Band Rated Contribution of Housing to Band Economy(2)						
Comm. Impr. & Services	.0013	.00	.67	.70	.00	.47
NEED	-.0033	.00	-.45	-.72	.28	-.14
On-Reserve Housing Pr.	-.0008	.01	-.41	-.01	.95	-.02
Band	-.0006	.01	-.33	-.28	.04	-.23
Section 56.1	.0007	.07	.29	-.02	.90	-.04
Private Lenders	-.0031	.10	-.24	-.01	.98	.00
Social Assistance Prog.	.0001	.30	.16	-.03	.79	-.04
Training for Del. Agents	-.0164	.24	-.14	-10.28	.13	-.20
Section 59	-.0001	.88	-.02	.48	.14	.19
Intercept	3.3592	.00	-	2.84	.00	-
Dependent: Band Rated Change in Number of Skilled Labourers(3)						
Private Lenders	-.0050	.01	-.46	-1.66	.00	-.46
Social Assistance Prog.	.0003	.04	.36	.21	.03	.29
NEED	-.0015	.17	-.22	-.54	.37	-.12
On-Reserve Housing Pr.	-.0004	.22	-.21	-.05	.74	-.09
Section 59	-.0003	.58	-.09	-.15	.62	-.07
Comm. Impr. & Services	.0001	.69	.07	-.15	.47	-.12
Band	-.0001	.67	-.06	-.29	.02	-.28
Training for Del. Agents	.0038	.78	.04	4.64	.45	.11
Section 56.1	.0001	.80	.04	.05	.69	.12
Intercept	3.3185	.00	-	3.20	.00	-

Source: On-Reserve Evaluation Surveys, Band File

1 Varies from 1 to 5 where 1 is the "less than 20%" category.
2 Varies from 1 to 5 where 1 means "very large contribution".
3 Varies from 1 to 7 where 1 means "increased a great deal".

TABLE VI.C.2
ECONOMIC EFFECT OF HOUSING RELATED FUNDS
(SECTION 56.1 EXCLUDED)

Funding Source	Funding in 000$			Funding in 000$/Capita		
	Estimate	Proba-bility	Beta Weight	Estimate	Proba-bility	Beta Weight
Dependent: Percent of Band Labour in Federal Housing Projects(1)						
Comm. Impr. & Services	.0004	.39	.17	.27	.37	.14
NEED	-.0016	.33	-.17	-.92	.28	-.14
Training for Del. Agents	-.0201	.32	-.14	-12.86	.17	-.20
Private Lenders	.0020	.36	.12	.61	.43	.12
RRAP	.0003	.47	.09	.05	.65	.07
Social Assistance Prog.	.0001	.63	.08	.07	.66	.07
Section 59	-.0004	.57	-.07	-.01	.97	.00
On-Reserve Housing Pr.	.0002	.67	.07	.02	.90	.02
Band	.0001	.72	.05	.21	.28	.14
Intercept	3.6916	.00	-	3.76	.00	-
Dependent: Band Rated Contribution of Housing to Band Economy(2)						
Comm. Impr. & Services	.0013	.00	.65	.68	.00	.45
NEED	-.0033	.00	-.45	-.66	.27	-.13
On-Reserve Housing Pr.	-.0006	.05	-.30	-.03	.72	-.05
Band	-.0005	.04	-.27	-.28	.04	-.23
Training for Del. Agents	-.0207	.15	-.18	-10.07	.13	-.20
Section 59	.0006	.23	.14	.46	.13	.18
RRAP	.0003	.36	.10	.01	.94	.01
Social Assistance Prog.	.0001	.54	.10	-.03	.78	-.04
Private Lenders	-.0010	.48	-.09	-.05	.93	-.01
Intercept	3.2671	.00	-	2.86	.00	-
Dependent: Band Rated Change in Number of Skilled Labourers(3)						
Private Lenders	-.0048	.00	-.43	-1.50	.00	-.42
Social Assistance Prog.	.0003	.03	.36	.19	.07	.27
On-Reserve Housing Pr.	-.0004	.17	-.22	-.01	.88	-.02
NEED	-.0014	.18	-.21	-.59	.28	-.13
RRAP	.0004	.19	.15	.03	.68	.06
Comm. Impr. & Services	.0001	.69	.07	-.13	.51	-.10
Section 59	-.0002	.67	-.05	-.10	.71	-.05
Band	-.0001	.76	-.04	-.29	.02	-.27
Training for Del. Agents	.0007	.96	.01	4.10	.49	.09
Intercept	3.2741	.00	-	3.16	.00	-

Source: On-Reserve Evaluation Surveys, Band File

1 Varies from 1 to 5 where 1 is the "less than 20%" category.
2 Varies from 1 to 5 where 1 means "very large contribution".
3 Varies from 1 to 7 where 1 means "increased a great deal".

feeling about this contribution that is measured rather than the objective contribution itself; and 2) it does not separate the contribution originating from the various programs active on reserves. The distribution of the responses given is as follows:

Contribution	Incidence
Very large	12%
Large	24
Some	28
Small	26
None at all	10
N	68

Ninety percent of the bands responding to this question mentioned at least a small impact of housing programs on the band's economy. Two thirds of the bands claim that the housing programs have more than a small economic effect.

As in previous sections, the analytical issue here is to try to separate the contribution stemming from each housing program. The specific hypothesis that is to be analysed is that:

> The band-rated level of contribution of housing programs to the band's economy increases as the level of funding from these programs increases.

The middle sections of Tables VI.C.1 and VI.C.2 contain the results of the multiple regressions carried out between the measure of contribution of housing programs to the band's economy and the levels of funding. They are structured in a way similar to the analysis described in Section VI.C.1.

Four funding sources exert an effect on the band rating of the contribution of housing funds to the band's economy:

- the Community Improvement and Services program funds (INAC) tend to reduce the band's feeling of contribution of federal housing funds to the band's economy, i.e. the more CISP funds one band received, the smaller its rating of the contribution of housing funds.

- the NEED program funds (CEIC) is associated with a perception of a larger contribution of federal housing programs to the band's economy.

- the INAC On-Reserve Housing Program funds correlate positively with the rating of the contribution to the economy.

- the band's own investment in its housing stock is also positively linked with an assessment of a greater impact of federal funds on the band's economy.

None of the CMHC funds are statistically related to the bands' perception of an impact on the band economy. This may be due to the "best housing for the money" approach used by CMHC programs but it can also be a reflection of the problem encountered in Section VI.A: since CMHC projects are almost always stacked with INAC funds, it is difficult to statistically differentiate the unique effect of CMHC.

3) Band-rated change in the number of skilled labourers

A third indicator of economic development impact is the number of labourers having acquired skills in housing related activities. To the extent that increased skill levels reflect past levels of economic activity generated by housing funds, on-reserve programs can be said to have provided an economic development impact. Increased skill levels among band members also provide a basis for future economic activity.

The bands, during their interview, were asked to provide an estimate of the number of band members possessing skills in:

- carpentry
- electricity
- plumbing
- bricklaying
- drywalling
- painting
- roofing
- carpet/tile layers/installers
- general labouring

They were then asked if these figures had increased or decreased over the past three years. A scale of 1 to 5 was used for responses, where 1 meant "increased a great deal". The distribution of responses is as follows:

Skill Change	Distribution
Very large	11%
Large	15
Little	29
Stayed same	30
Decreased a little	4
N	71

Almost no bands declared that the number of skilled labourers had diminished over the previous three years. One third mention no change while two thirds note some change and one tenth indicate a very large increase in the number of band members having construction skills.

The hypothesis that has to be confirmed for the housing program funds to be said to have an impact on this aspect of the band's economic development reads:

> The increase in the number of band members presenting construction skills is statistically related to the level of funding from housing programs.

The bottom sections of Tables VI.C.1 and VI.C.2 contain the regression coefficients for each funding source when the change in housing construction skills is made the dependent variable.

Only two funding sources are related to the change in skills:

- the most closely related source of funding is the amount of money received from private lenders: it is positively related to an increase in the number of skilled band members, i.e. the more money a band has received from private lenders, the more positive its estimate of the change in the number of band members having construction skills; it is documented elsewhere in this report that private lending is done through the use of Section 6 of the National Housing Act and that only an insignificant portion of the Section 6 lending is done directly with individuals; almost all that kind of lending is done through Section 56.1 projects, so that a clear positive impact of Section 56.1 on the economic development of bands can be documented;

- the second statistically significant source of funding is the amount of assistance received from the Social Assistance Program (SOCA); it is negatively related to the increase in construction skills, i.e. the more money SOCA has provided a band, the less likely this band is to rate the change in the number of skilled labourers as positive and large.

  Neither other INAC programs nor other CMHC programs are related to this indicator of economic impact.

4) Job-weeks created

Finally, another indicator of the economic development effect of housing programs is the number of job-weeks created as a result of either INAC or CMHC programs. The hypotheses are:

> The level of INAC funding is in direct relationship with the number of job-weeks created by INAC funds;
>
> The level of CMHC funding is in direct relationship with the number of job-weeks created by CMHC funds; and
>
> Since economic development is a peripheral objective of the INAC On-Reserve Housing Program, ORHP creates more job-weeks for a given amount of housing assistance than CMHC programs.

As part of their interview, the participating bands were asked to estimate the number of full-time jobs created on reserves in the previous year as a result of INAC and CMHC housing programs, independently. This estimate constitutes the dependent variable measure for the test of the three above hypotheses.

Table VI.C.3 provides the zero-order correlation coefficients between each funding source level and the number of job-weeks created by each department according to the band's perception. Also provided are the values of the slopes of the regression lines and the probability levels associated with the two measures.

From this table, it can be seen that the perception of the number of job-weeks created by INAC's programs is positively related to the spending from four programs:

- first, the On-Reserve Housing Program, which was expected;

- second, Section 59 funding, which was not expected. It is also somewhat surprising that the correlation between Section 59 funding and job-weeks created by INAC is as strong as that between ORHP and job-weeks created by INAC. In addition, the regression slope (i.e. the number of job-weeks created by $1 000 of Section 59 funding if only that source had been taken into consideration by the band when making their estimate of the number of job-weeks created by federal programs) is twice as large for Section 59 as it is for ORHP;

- third, the Community Improvement and Services Program, which has coefficients close to those for ORHP;

- finally, Section 56.1, which was not expected to present this behavior but which is also close to a statistically non-significant level; the relationship might be due to the covariation between ORHP and Section 56.1 funds.

The number of job-weeks created by the CMHC programs in the year previous to the interview, as reported by the band, is statistically related to spending on only two programs:

- first, Section 59 again; its regression slope is similar to the one it exhibited in relation to INAC generated job-weeks but the correlation coefficient is quite large at 0.62;

- second, Section 56.1 is positively related to the creation of more job-weeks.

No other CMHC program (i.e. Section 6, or RRAP) is statistically related to the job creation associated with CMHC activities.

The last hypothesis is that INAC should create more job-weeks for money expended than CMHC since it is peripherally directed to achieve this aim. Using the spending from ORHP only on the INAC side and from Section 56.1 and RRAP on the CMHC side, it is found that INAC creates 1.62 full-time job-weeks per thousand dollars on average while CMHC has a record of 1.44; the difference is not statistically significant.

5) <u>Summary</u>

The argument developed in this section was that although the housing programs are not set out to exert

TABLE VI.C.3
HOUSING FUNDS AND JOB CREATION

Funding Source	Funding in 000$			Funding in 000$/Capita		
	Estimate (2)	Proba-bility	Pearson Corr.	Estimate (2)	Proba-bility	Pearson Corr.
Dependent: Number of Job Weeks Created by INAC Funds(1)						
On-Reserve Housing Pr.	.30	.00	.43	6.29	.81	.03
Section 59	.64	.00	.42	322.73	.00	.38
Comm. Impr. & Services	.27	.00	.40	102.51	.11	.20
Section 56.1	.20	.05	.24	8.62	.64	.06
Training for Del. Agents	-4.26	.39	-.11	-1789.75	.41	-.10
NEED	.23	.47	.09	-68.53	.75	-.04
Social Assistance Program	.03	.48	.09	11.30	.74	.04
Private Lenders	.15	.78	.04	13.21	.94	.01
RRAP	-.03	.80	-.03	-10.55	.64	-.06
Band	.02	.84	.03	-27.30	.60	-.07
Dependent: Number of Job Weeks Created by CMHC Funds(1)						
Section 59	.64	.00	.62	338.12	.00	.57
Section 56.1	.22	.00	.39	14.88	.25	.15
NEED	-.38	.08	-.22	-3.50	.98	.00
Comm. Impr. & Services	.10	.08	.22	51.03	.26	.14
Private Lenders	.03	.53	.19	199.73	.10	.21
Social Assistance Program	-.03	.25	-.14	-42.26	.08	-.22
Training for Del. Agents	-3.64	.29	-.13	-1533.28	.31	-.13
Band	.02	.84	.08	-15.50	.67	-.05
On-Reserve Housing Pr.	-.03	.60	-.07	.59	.97	.00
RRAP	-.03	.69	-.05	-2.74	.86	-.02

Source: On-Reserve Evaluation Surveys, Band File

1 As estimated by the band in the Band Interview

2 The entries are the slope associated with the funding figures in a series of bivariate regression analyses. The zero-order correlation coefficients are also provided.

NOTE: One of the values of the number of job-weeks created by INAC and by CMHC has been deleted from the dataset since it was definitely outside the distribution (outlier) and because it caused serious disturbances in the results of the regressions.

significant impacts on the economic development of bands, it would be conceivable that they have some economic development spinoffs. This section has provided some evidence to document the economic development effects on reserves attributable to INAC or CMHC housing programs.

It was found that neither INAC nor CMHC funding has an influence on the proportion of labour related to housing that is carried out by band members.

The band-rated contribution of federal housing assistance to the development of the band economy is somewhat positively related to the level of On-Reserve Housing Program funding (INAC) but negatively related to the level of funding from the Community Improvement and Services Program (INAC). CMHC funding is unrelated to this band perception.

The band-perceived change in the number of construction skilled band members is related to the amount of money received from private lenders which all goes through Section 6 - almost all the Section 6 funds are related to Section 56.1 projects. In contrast, the funds from the Social Assistance Program are negatively related to this increase in the number of skilled labourers.

Finally, the main determinant of the number of job-weeks created by INAC funds (as quantified by bands) is the level of funding from ORHP but Section 59 funds are also closely related to the same measure. On the CMHC side, Section 59 and Section 56.1 funding levels are the main explanatory variables of the number of job-weeks created by CMHC programs. Compared in terms of efficiency, CMHC and INAC funds create similar (and statistically not significantly different) numbers of job-weeks per $1 000.

Overall, it can be concluded that the federal housing programs have had a significant economic development impact on reserves. Based on the relationships examined between indicators of economic impact as perceived by bands and program funding levels, the INAC On-Reserve Housing Programs may have a marginally stronger effect than CMHC programs. ORHP funding was found to have a significant positive influence on three of the four indicators while CMHC programs, especially Section 56.1, were positively related to only two. However, in terms of the number of job-weeks created per $1 000 of funding, CMHC and INAC programs are similar.

D) INDIVIDUAL AND BAND INVOLVEMENT IN HOUSING

Discussion, exploratory data analysis and expert opinion suggest that the involvement of resident households in their houses and the level of responsibility given to households in the upkeep of their houses tend to be associated with generally better house conditions. This section will scrutinize the following related hypothesis:

> The more involved and responsible a household is in house related matters, the more likely the house is to be in good condition[1].

The household level survey of on-reserve housing carried out in 1984 provides a large number of indicators of involvement and responsibility in housing matters. They can be grouped along two dimensions:

i) either the household or the band can be involved or responsible. (Note, however that this is not exhaustive: INAC or other parties can also play a role in a number of dimensions of housing matters).

ii) the indicator of responsibility or involvement can relate to actual conditions or to conditions that respondents think should or would occur if they had their way.

Accordingly, Table VI.D.1 is separated into:

- household level actual practices
- band level actual practices
- household level desired practices, and
- band level desired practices

The dependent variable analysed in this section is house condition. It is represented by the judgement made by the interviewer of the general condition of the house on a seven point scale; this scale is dichotomized in a way that will permit the establishment of the proportion of standard and below standard houses in a group.

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1 It is unclear if band direct involvement (as opposed to the individual's) or government built housing would have a negative (comparative) impact on house condition, as a corollary to this hypothesis. These statements do not follow from the acceptance of the hypothesis. Unfortunately, limited data availability prevents in-depth analysis of these possibilities.

Table VI.D.1 provides a preliminary idea of the relationship between involvement/responsibility, and house condition. Using the first line of the table to explain how it is built, the figures should be read as follows:

- 51 percent of those who do not have a right to sell their house live in a home of standard condition;

- 54 percent of those who do have a right to sell their house live in a standard house;

- there is a three point difference between those who do and those who don't have a right to sell their house, favouring the former, in terms of the condition of their house;

- this difference does not reach the required statistical significance (0.05) necessary to accept it as different from zero.

- the values in this row are based on 1,528 responses.

The results presented in Table VI.D.1, lead to the following observations:

i) individual ownership and responsibility for maintenance are not related to house condition;

ii) investment (cash or labour) in a new house, involvement in its design, investment (cash or labour) in renovations and responsibility for repair work and costs are related to better house conditions; all of these relationships, without being marginal, are moderate to weak;

iii) band responsibility for maintenance is positively related to house condition;

iv) on the contrary, band labour investment in new construction and band responsibility for repair work and costs are somewhat related to poorer housing; these are weak relationships;

v) occupants who think they should pay for repairs and those who are willing to pay for or do repair work tend to live in better housing; these are moderate to strong relationships;

vi) those who think the band should pay for home repairs tend to live in poorer housing than those who do not.

TABLE VI.D.1
HOUSE CONDITION BY RESPONSIBILITY LEVEL

Indicators	Category No (1)	Category Yes (1)	Difference	Probability (2)	N
Household Level: actual practices					
Right to sell the house	51	54	3	.34	1 528
Certificate of ownership	53	57	4	.34	814
Invested in the purchase	53	64	11	.00	1 414
Involved in the design	50	62	12	.00	1 518
Helped build the house	50	58	8	.01	1 586
Got paid to help build	55	64	9	.10	436
Helped renovate the house	44	54	10	.02	615
Paid part of the renovations	46	56	10	.02	586
Responsible for maintenance	56	50	-6	.03	1 561
Pays for maintenance	54	52	-2	.49	1 544
Responsible for repairs	48	62	14	.00	1 550
Pays for repairs	48	61	13	.00	1 545
Band Level: actual practices					
Contributed to house purchase	52	56	4	.10	1 414
Provided labour for constr.	59	52	-7	.02	1 560
Funded renovations	50	49	-1	.73	586
Responsible for maintenance	50	57	7	.01	1 561
Pays for maintenance	52	53	1	.55	1 544
Responsible for repairs	58	50	-8	.00	1 550
Pays for repairs	57	50	-7	.01	1 544
Household Level: desired practices					
Occupant should pay repairs	49	69	20	.00	1 515
Willing to pay repairs	45	58	13	.00	1 662
Willing to do repair work	49	54	5	.05	1 667
Would down pay on new home	50	53	3	.37	1 382
Would give labour on new home	51	52	1	.74	1 366
Band Level: desired practices					
Should pay for repairs	60	49	-11	.00	1 515

Source: On-Reserve Evaluation Surveys, Household File

1 Categories of the indicator variable; entries are the proportion of the houses in that group that are in standard condition.

2 Chi-square significance

Thus, generally speaking, involvement in the construction of a new house or the renovation of an existing one is related to better housing. So is responsibility for repairs, actual or desired. What is not related to better housing is ownership of the house, individual responsibility for maintenance, willingness to invest in a new home and band involvement in construction and repairs, actual or desired.

These relationships, however, are likely to fluctuate according to a number of circumstances among which households income, size, experience in housing, head age, crowding, etc. The next two tables analyse these fluctuations for respondent's income and unit age respectively. They are to be read in a manner similar to Table VI.D.1 except that they are divided into subgroups of income or dwelling age. Both also display an extra column at the extreme right. It contains the probability that no difference exists in the relationship between the responsibility indicator and housing quality, from category to category of the third variable - either income or dwelling age depending on the table[1]. The usual 0.05 probability level is used here. The analysis of the intervening effect of income shall thus proceed with the statistically significant lines of Table VI.D.2:

i) the right to sell a house is related to better housing among the richer (income above $10 000) group of residents; no statistically significant relationship exists among the poorer group;

ii) similarly, the effect of having contributed financially to the renovations (on the house condition) is apparent only for the more wealthy group;

iii) the impact of the occupant's willingness to pay for repairs exists only for the poorer group;

iv) only among the richer group does a feeling that the band should pay for repairs have a negative relationship with house condition.

If a trend is to be found in these data, it is probably that the relationship between responsibility for housing matters and house quality is stronger among richer occupants; it still exists for poorer households - a number of

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1 This probability level is the one associated with the chi-square value calculated for the highest level interaction term of a saturated model in a log-linear analysis. See David Knoke and Peter Burke, Log-Linear Models, Beverly Hills, Sage Publ., 1980.

TABLE VI.D.2
HOUSE CONDITION BY RESPONSIBILITY LEVEL BY INCOME LEVEL

Indicators	Income Above $10 000				N	Income Equal or Below $10 000				N	Probability of the Three-Way Non-Effect (3)
	No (1)	Yes (1)	Difference	Probability (2)		No (1)	Yes (1)	Difference	Probability (2)		
Household Level: actual practices											
Right to sell the house	62	72	10	.02	506	58	44	-6	.11	783	.01
Certificate of ownership	67	72	5	.41	263	48	47	-1	.89	422	.45
Invested in the purchase	65	74	9	.09	490	49	58	9	.17	723	.84
Involved in the design	63	72	9	.05	505	47	55	8	.10	777	.71
Helped build the house	64	68	4	.28	528	47	53	6	.17	813	.94
Got paid to help build	65	76	11	.18	173	49	62	13	.13	189	.99
Helped renovate the house	63	68	5	.47	217	40	43	3	.62	288	.81
Paid part of the renovations	60	72	12	.06	209	44	38	-6	.39	275	.05
Responsible for maintenance	73	62	-11	.02	520	53	45	-8	.03	802	.49
Pays for maintenance	71	63	-8	.09	518	51	46	-5	.12	792	.62
Responsible for repairs	60	72	12	.01	522	45	58	13	.00	792	.95
Pays for repairs	62	69	7	.08	521	45	57	12	.00	786	.53
Band Level: actual practices											
Contributed to house purchase	64	68	4	.34	490	48	51	3	.46	723	.77
Provided labour for constr.	72	64	-8	.08	531	50	50	0	.98	772	.18
Funded renovations	67	61	-6	.37	209	41	44	3	.57	275	.29
Responsible for maintenance	63	73	10	.02	520	44	54	10	.01	802	.78
Pays for maintenance	63	70	7	.13	518	46	51	5	.21	792	.61
Responsible for repairs	69	63	-6	.15	522	53	47	-6	.14	792	.86
Pays for repairs	67	63	-4	.40	521	51	47	-4	.35	785	.97
Household Level: desired practices											
Occupant should pay repairs	61	79	18	.00	511	47	61	14	.01	776	.35
Willing to pay repairs	65	66	1	.85	562	42	55	13	.00	828	.05
Willing to do repair work	65	65	0	.98	570	47	49	2	.44	823	.69
Would down pay on new home	62	65	3	.54	457	47	47	0	.98	700	.60
Would give labour on new home	64	65	1	.84	448	49	46	-3	.40	694	.52
Band Level: desired practices											
Should pay for repairs	74	59	-15	.00	511	52	47	-5	.19	776	.05

Source: On-Reserve Evaluation Surveys, Household File

1 Categories of the indicator variable; entries are the proportion of the houses in that group that are standard

2 Chi-square significance

3 Probability that the income level exerts no statistically significant effect on the relationship between responsibility level and housing quality

responsibility indicators are positively related to house quality in this group too, particularly the actual and desired responsibility for repairs - but the relationship seems weaker.

Table VI.D.3 presents similar tabular analyses concerning the intervening effect of the age of the dwelling unit. Interesting, and different, three-way effects are uncovered here:

i) the effect of occupant labour involvement in renovations varies considerably from one age category to the other: although marginally insignificant, the effect is negative for the most recent houses meaning that the occupant involvement is related to worse house conditions[1]; no effect exists for the middle category while a positive relationship with house condition is found for older houses;

ii) the occupant's responsibility for repairs is more strongly related to house condition among occupants of middle age houses (six to 10 years);

iii) the band's contribution to the purchase of the house has no effect on the condition of houses more than five years old but has a positive impact on recent houses;

iv) All the household level desired practices are affected by the age of the house:

- the effect of the occupant perception that he should pay for repairs is somewhat stronger for the middle category of building age;

- the other desired practices (to pay repairs, to do repair work, to make a downpayment or give labour to a new home) are either not related or negatively related to house quality for recent houses, are not related or somewhat positively related to quality of housing for old houses and are strongly positively related to a better house condition for the middle category of unit age;

v) the other band level indicators of responsibility and involvement do not vary significantly in their relation to house quality by unit age.

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1 Only effectively renovated houses are included in this table so that the worse quality is not explained by the fact that renovation work had to be done.

TABLE VI.D.3
HOUSE CONDITION BY RESPONSIBILITY LEVEL BY UNIT AGE

Indicators	Unit Between 0 & 5 years old					Unit Between 6 & 10 years old					Unit More Than 10 years old					Probability of the three-way Non Effect (3)
	No (1)	Yes (1)	Diffe-rence	Proba-bility (2)	N	No (1)	Yes (1)	Diffe-rence	Proba-bility (2)	N	No (1)	Yes (1)	Diffe-rence	Proba-bility (2)	N	
Household Level: actual practices																
Right to sell the house	71	78	7	.09	423	49	57	8	.14	298	39	43	4	.23	731	.69
Certificate of ownership	77	85	8	.19	211	49	55	6	.47	151	40	50	10	.05	428	.86
Invested in the purchase	75	81	6	.31	398	52	72	20	.05	281	40	56	16	.00	674	.73
Involved in the design	69	82	13	.01	432	50	60	10	.14	301	39	49	10	.03	711	.57
Helped build the house	71	77	6	.23	443	49	61	12	.06	312	39	46	7	.06	754	.79
Got paid to help build	77	76	-1	.85	130	58	63	5	.68	76	43	54	11	.23	223	.66
Helped renovate the house	85	64	-21	.09	53	51	54	3	.73	116	40	53	13	.01	424	.04
Paid part of the renovations	76	69	-7	.56	50	54	56	2	.90	107	42	54	12	.02	413	.33
Responsible for maintenance	78	70	-8	.09	436	51	54	3	.61	308	43	40	-3	.41	738	.32
Pays for maintenance	76	71	-5	.24	427	49	55	6	.27	308	39	43	4	.27	735	.19
Responsible for repairs	71	78	7	.14	432	43	73	30	.00	302	36	51	15	.00	739	.03
Pays for repairs	71	78	7	.10	429	45	69	24	.00	304	36	50	14	.00	737	.23
Band Level: actual practices																
Contributed to house purchase	69	80	11	.01	398	53	55	2	.75	281	44	42	-2	.53	674	.06
Provided labour for constr.	83	70	-13	.01	465	55	51	-4	.56	316	49	40	-9	.02	707	.41
Funded renovations	78	59	-19	.19	50	56	52	-4	.67	107	46	47	1	.86	413	.42
Responsible for maintenance	70	77	7	.11	436	53	52	-1	.91	308	40	44	4	.32	738	.51
Pays for maintenance	72	76	4	.40	427	56	48	-8	.15	308	42	40	-2	.59	735	.26
Responsible for repairs	78	71	-7	.13	432	66	45	-21	.00	302	45	39	-6	.08	739	.10
Pays for repairs	77	71	-6	.19	428	62	48	-14	.01	304	46	38	-8	.03	737	.61
Household Level: desired practices																
Occupant should pay repairs	69	89	20	.00	424	48	76	28	.00	300	40	53	13	.00	725	.08
Willing to pay repairs	73	75	2	.53	476	37	61	24	.00	324	33	46	13	.00	774	.03
Willing to do repair work	77	73	-4	.35	475	38	56	18	.01	331	37	43	6	.16	771	.04
Would down pay on new home	76	71	-5	.32	361	43	58	15	.02	277	39	41	2	.61	670	.05
Would give labour on new home	79	68	-11	.03	361	41	61	20	.00	271	39	41	2	.51	663	.00
BAND LEVEL: desired practices																
Should pay for repairs	83	68	-15	.00	424	66	47	-19	.00	300	49	38	-11	.00	725	.40

Source: On-Reserve Evaluation Surveys, Household File

1 Categories of the indicator variable; entries are the proportion of the houses in that group that are standard
2 Chi-square significance
3 Probability that the income level exerts *no* statistically significant effect on the relationship betweenresponsibility level and housing quality

It seems that actual responsibility for housing matters (particularly for repairs) and willingness to take on more has more resonance for those who live in units aged between 6 and 10 years. Each of the other two groups show a weaker link between responsibility/involvement, and better house condition.

A final, more stringent, test of the hypothesis has been conducted; its results are provided in Table VI.D.4. The relationship between each responsibility and involvement indicator and the quality of the house was tested net of the effect of household income and dwelling unit age[1]. The sign and significance of the coefficients under column "INDICATOR" are of interest here. A positive coefficient indicates that more responsibility or involvement is related to a better house condition notwithstanding the household income or the unit age; a negative coefficient represents the opposite relationship; a zero coefficient means that responsibility or involvement is unrelated to house quality. The probability level is the risk that the coefficient is not different from zero. Comparing to the "uncontrolled" results of Table V.D.1, it is found that:

i) the financial investment in the purchase of a house keeps its positive effect on house condition but the labour investment loses its significance;

ii) similarly, the labour and financial investment in renovations loses its positive relationship with house condition;

iii) involvement in the design of a new house maintains its positive influence;

iv) responsibility for maintenance is still negatively related to house quality as in Table V.D.1;

v) responsibility for repairs remains strongly related to better house conditions;

vi) the patterns of effect of band responsibility are left unchanged.

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1 One logistic regression was carried out for each indicator. The dependent variable was the dummy variable of house condition. Since the logit coefficients behave the same way that regression coefficients do, their value is considered to be controlled for the other variables in the equation, i.e. the relationship uncovered cannot be spuriously due to any other term of the equation.

Summary

To summarize, this section has documented a number of ways in which individual responsibility and involvement in housing matters as well as band responsibility and involvement has an impact on house quality.

It seems clear that individual involvement in the design and construction of one's house is related to better housing. The same cannot be said about renovation. Similarly, household responsibility for repairs has a positive impact on house condition but occupant responsibility for maintenance presents a negative relationship. Willingness to take more responsibility for repairs is related to better housing but not willingness to contribute financially or through labour to a new house.

At the band level, when a relationship exists between occupant-perceived band responsibility and house condition, it is generally not positive: more band implication is not related to better house conditions. There is one important exception to this generalization: band responsibility for maintenance is positively related to better house condition.

The positive effect of individual involvement and responsibility in housing matters seems somewhat stronger among richer household than among poorer household and is definitely stronger for households living in dwellings aged 6 to 10 years compared to more recent or older dwelling units.

In conclusion, the results suggest that increased involvement/ responsibility by individuals in certain aspects of housing, particularly involvement in the design and construction of the house and responsibility for repairs, may lead to improved house conditions.

TABLE VI.D.4
HOUSE CONDITION BY RESPONSIBILITY LEVEL
CONTROLLING FOR INCOME AND UNIT AGE[1]

Indicators	Inter-cept		Indi-cator		Income (3)		Unit Age (Decade)	
	Coef	P	Coef	P	Coef	P	Coef	P.
Household Level: actual practices								
Right to sell the house	.66	.00	.03	.64	-.34	.00	.40	.00
Certificate of ownership	.86	.00	.06	.52	-.46	.00	.46	.00
Invested in the purchase	.95	.00	.25	.01	-.31	.00	.47	.00
Involved in the design	.75	.00	.15	.05	-.31	.00	.39	.00
Helped build the house	.72	.00	.10	.14	-.32	.00	.41	.00
Got paid to help build	.77	.00	.19	.16	-.31	.01	.29	.01
Helped renovate the house	.35	.00	.07	.42	-.47	.00	.15	.10
Paid part of the renovations	.41	.00	.08	.45	-.42	.00	.18	.06
Responsible for maintenance	.75	.00	-.18	.00	-.36	.00	.42	.00
Pays for maintenance	.73	.00	-.11	.06	-.35	.00	.42	.00
Responsible for repairs	.79	.00	.25	.00	-.29	.00	.43	.00
Pays for repairs	.76	.00	.23	.00	-.28	.00	.42	.00
Band Level: actual practices								
Contributed to house purchase	.75	.00	.04	.48	-.33	.00	.45	.00
Provided labour for constr.	.77	.00	-.16	.03	-.33	.00	.40	.00
Funded renovations	.34	.04	-.02	.86	-.45	.00	.15	.12
Responsible for maintenance	.76	.00	.20	.00	-.36	.00	.42	.00
Pays for maintenance	.72	.00	.09	.12	-.35	.00	.42	.00
Responsible for repairs	.74	.00	-.12	.04	-.31	.00	.43	.00
Pays for repairs	.71	.00	-.10	.11	-.30	.00	.41	.00
Household Level: desired practices								
Occupant should pay repairs	.89	.00	.31	.00	-.29	.00	.43	.00
Willing to pay repairs	.65	.00	.18	.00	-.30	.00	.41	.00
Willing to do repair work	.67	.00	.02	.76	-.32	.00	.41	.00
Would down pay on new home	.66	.00	.02	.74	-.34	.00	.42	.00
Would give labour on new home	.67	.00	-.03	.61	-.35	.00	.41	.00
BAND LEVEL: desired practices								
Should pay for repairs	.78	.00	-.22	.00	-.30	.00	.46	.00

Source: On-Reserve Evaluation Surveys, Household File

1 Results of a set of logistic regressions; the coefficients are logit coefficients; only their sign and significance levels are of interest here

2 The independent variable tested is named in the left column; the dependent is always the house condition

3 Binary variable where 1 is for income equal or less than $10 000

CHAPTER VII

PROGRAM COST-EFFECTIVENESS

The purpose of this chapter is to compare the subsidy cost to government of providing assistance under the various on-reserve housing programs. The technique used to compare programs with respect to cost is cost-effectiveness analysis. As used here, the cost-effectiveness approach provides a relative measure of the cost of providing a common unit of housing output under each program. The approach compares the CMHC new construction program (Section 56.1) with the INAC capital grant for new construction, on the one hand, and the CMHC renovation program (RRAP) with the INAC renovation grant on the other hand.

To carry out the cost-effectiveness analysis, measures of subsidy cost and effectiveness are required for each program. With the exception of Section 56.1, the measures of cost are relatively straightforward. The first section of this chapter attempts to clarify the nature of Section 56.1 and RRAP subsidies by providing examples of the calculation of subsidy costs under each program and indicating how the subsidies are used by bands in conjunction with INAC capital grants. The second section then generates subsidy cost per unit assisted under each program, based on historical cost data. This section also illustrates the growth in federal housing subsidy expenditures on reserves since 1979.

In contrast to the measure of subsidy cost, the measure of effectiveness is much more difficult. This is because assistance under the various programs provides a different quality of housing output. For example, previous chapters of this report have identified differences between Section 56.1 units and units receiving only the INAC capital grant. The third section of this chapter addresses this problem by developing comparative indices of the performance of programs in terms of housing quality. These comparative indices or coefficients are based on indicators of the useful (unit) life provided under each program, the presence of amenities, occupant satisfaction and occupant assessment of housing quality improvement. The final section combines the measure of cost and effectiveness to provide comparative coefficients of the cost-effectiveness of each program relative to each of the other programs.

A) SUBSIDY COST CALCULATIONS

The subsidy mechanisms and the application of subsidies on reserves are complicated by the use of Section 56.1 and RRAP subsidies in combination with INAC capital grants. To provide an understanding of the nature of these subsidies,

this section illustrates subsidy cost calculations under Section 56.1 and RRAP.

1) Section 56.1 Subsidy Costs:

Subsidy cost calculations for a Section 56.1 on-reserve project are illustrated for a hypothetical 10 unit project. The example project, developed in consultation with Rural and Native Housing Division, uses figures which approximate 1984 per unit capital costs for Section 56.1 on-reserve projects. Capital costs for the hypothetical project are as follows:

Project Costs

- Land Value (servicing included)		$100 000
- Fees and Charges:		
. interest (during construction)	$13 000	
. insurance (by contractor)	-	
. architect fees	10 000	
. organization expense	5 000	
. CMHC application fee	1 000	
. contingency (i.e., project cost audit)	10 000	
		$ 39 000
- Structures:		
. building costs at $45 000/ unit	$450 000	
. stoves and refrigerators	15 000	
. laundry equipment	10 000	
. landscaping	5 000	
		$480 000
TOTAL CAPITAL COSTS		$619 000

The cost of structures is the largest component of project capital costs (accounting for 78 per cent of the total capital costs), followed by the cost of serviced land (16 per cent) and various fees and charges (6 per cent).

Given total capital costs, the maximum annual subsidy payable under Section 56.1 is the difference between annual payments required to amortize the total capital costs over a 35 year period at the mortgage rate of interest and annual payments required at a 2 per cent

rate of interest. Assuming the mortgage interest rate is 12 per cent the subsidy calculation is as follows:

Annual Principal and Interest Payments:

$619 000 at 12% over 35 years	$73 760
Less $619 000 at 2% over 35 years	24 575
Maximum Annual Subsidy	$49 185

The maximum subsidy represents one source of revenue available to the project to offset operating costs. The other revenue source is the rents to be collected from occupant households. For non-welfare assisted households, rents are normally set at 25 per cent of adjusted household income or low end of market rent, whichever is lower. For welfare recipients, rents are set at the welfare shelter allowance, in line with provincial guidelines. By interviewing future occupants, bands can estimate expected rental revenues for the project. For the example project, it is assumed that occupant incomes are such that $26 000 in rent revenue would be generated so that total annual revenue amounts to $75 185 ($49 185 + $26 000).

With regard to project operating costs, the two major components are principal and interest payments on the required loan amount and other operating costs such as utilities, maintenance, etc. For the example project, it is assumed that other operating costs are as follows:

Other Operating Costs:

. Utilities and Maintenance	$20 800
. Administration (including annual audit)	3 000
. Insurance	2 000
. Replacement Reserve	1 000
. Contingency (i.e. bad debt)	1 000
Total	$27 800

The principal and interest payments component of operating costs depends on the size of the loan required, the interest rate and the amortization period. On reserves, the loan required is much less than the total capital cost or value of the project because of land equity in the project. For the example project, band equity consists of the value of serviced land and the INAC capital grant[1]. The loan required is calculated as follows:

1 Band equity may also include contributions under the CEIC NEED program which can be applied to the cost of band labour used to construct the units.

Total Capital Costs		$619 000
Less Band Equity:		
. Land	$100 000	
. INAC Grant[1]	150 000	250 000
	Loan Required	$369 000

Once the required loan amount is determined, principal and interest payments depend on the mortgage interest rate (assumed to be 12 percent) and the amortization period chosen for the loan. Bands can choose alternative amortization periods which determine the period of future subsidy flows to the project and the length of time for the band to acquire full title to the project. If it is assumed that the amortization chosen is 35 years (the maximum allowed under Section 56.1), annual revenues and costs for the project would be as follows:

Annual Revenue:	
. Rent Revenue	$26 000
. Section 56.1 Subsidy	49 185
Total Revenue	$75 185
Annual Operating Costs:	
. Principal and Interest	$43 970
. Other Operating Costs	27 800
Total Operating Costs	$71 770

The choice of a 35 year amortization period leaves the band with project revenues greater than costs by $3 415. The excess of revenue over cost in this example could be put into a subsidy surplus account of up to $500 per unit which bands can accumulate and use in subsequent years when rent revenues fall short of expectations due to changes in occupants' incomes or vacancies. However, once the subsidy surplus account reaches the limit of $500 per unit (in the second year of operation in this example) all excess revenues must be turned over to CMHC.

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1 The INAC grant per unit ($15 000) is assumed to be about half the average INAC capital grant per unit. This is because bands often spread part of the available INAC subsidy over a larger number of Section 56.1 units. In this example, it is assumed that the band has an allocation of 10 units at $30 000 per unit for a total of $300 000. The band has chosen to apply half the total INAC subsidy ($150 000) to 10 Section 56.1 units at $15 000 per unit and use the remaining $150 000 for five INAC-only subsidized units at $30 000 per unit.

Alternatively, the band can choose the amortization period such that project operating costs just equal, or are slightly less than project revenues, i.e.:

Annual Revenue:

. Rent Revenue	$26 000
. Section 56.1 Subsidy	49 185
Total Revenue	$75 185

Annual Operating Costs:

. Other Operating Costs	$27 800
. Principal and Interest ($369 000 at 12% over 21 years)	47 335
Total Operating Costs	$75 135

In this case, the band is able to achieve full title to the project over a period of 21 years as opposed to the maximum period of 35 years, while operating the project on a viable basis (i.e. revenues are sufficient to cover all operating costs). The attraction of a shorter amortization period may be very strong for bands. The burden of payments on the loan is lifted and title is acquired sooner. Further, bands are removed from obligations entered into in connection with the Ministerial Guarantee required on the loan. For bands with a policy of rent-to-ownership for band members under the non-profit program, Section 56.1 units can be turned over to occupants on an ownership basis within a more realistic time frame.

The amortization period for the example project could be further reduced if the band applied the full INAC capital grant to each unit. Assuming that the full INAC capital grant per unit is $30 000, the loan required on the project would be reduced from $369 000 to $219 000 and the amortization period from 21 years (in the previous example) to 7 years, i.e.:

Total Capital Costs		$619 000
Less Band Equity:		
. Land	$100 000	
. INAC Grant	300 000	400 000
Loan Required		$219 000
Annual Revenue		
. Rent Revenue		$ 26 000
. Section 56.1 Subsidy		49 185
Total Revenue		$ 75 185
Annual Operating Costs:		
. Other Operating Costs		$ 27 800
. Principal and Interest ($219 000 at 12% over 7 years)		45 990
		$ 73 790

By applying the full INAC capital grant as equity in the project, the band is able to dramatically reduce the amortization period. However, this reduction in the amortization period must be weighed against the smaller number of units which can be built. In the previous example, a total of 15 units could be constructed with the total INAC capital grant of $300 000: 10 Section 56.1 units at $15 000 per unit and five other units receiving the full INAC capital grant of $30 000 per unit. In this example, only 10 Section 56.1 units are built with each receiving the full INAC capital grant. It should also be noted that while a short amortization period is often considered desirable, there is a disadvantage. Once the loan is paid off and full title is obtained, the flow of subsidy dollars under Section 56.1 also terminates. In effect, bands must make a trade-off between faster access to full title on the project and a reduced flow of future subsidy dollars.

Bands may also apply the full INAC capital grant to Section 56.1 units so that very low income occupants can be accommodated. This is illustrated in the following example which assumes occupant incomes of $7 000 per year:

Annual Revenue:

. Rent Revenue	$17 500
. Section 56.1 Subsidy	49 185
Total Revenue	$66 685

Annual Operating Costs:

. Other Operating Costs	$27 800
. Principal and Interest ($219 000 at 12% over 10 years)	37 291
Total Operating Costs	$65 091

Application of the full INAC capital grant would permit the band to serve very low-income occupants and still acquire title within 10 years if desired. Alternatively, the band could serve low-income households by extending the amortization period to the maximum 35 years and using less than the full INAC subsidy. For example:

Annual Revenue:

. Rent Revenue	$17 500
. Section 56.1 Subsidy	49 185
Total Revenue	$66 685

Annual Operating Costs:

. Other Operating Costs	$27 800
. Principal and Interest ($326 000 at 12% over 35 years)	38 846
	$66 646

In this case, an INAC capital grant of $193 000 ($19 300 per unit) would be necessary to establish the required loan at $326 000, i.e.:

Total Capital Costs		$619 000
Less Band Equity:		
. Land	$100 000	
. INAC Grant	193 000	293 000
Loan Required		$326 000

The examples presented to this point indicate how bands can utilize various combinations of Section 56.1 subsidy and INAC capital grants to achieve short amortization

periods or to serve very low-income households. However, it can also be shown that the Section 56.1 on-going subsidy is unlikely to be large enough by itself to serve the on-reserve population. If it is assumed that no INAC capital grant is available for the example project, the required loan would be calculated as follows:

Total Capital Cost		$619 000
Less Band Equity:		
. Land	$100 000	100 000
Loan Required		$519 000

On the assumption that the average income on reserves is $10 000 per household per year, and that occupants of the Section 56.1 units pay no more than 25 per cent of household income for rent, the annual revenue-cost picture would be as follows:

Annual Revenue:

. Rent Revenue	$25 000
. Section 56.1 subsidy	49 185
Total Revenue	$74 185

Annual Operating Costs

. Other Operating Costs	$27 800
. Principal and Interest ($519 000 at 12% over 35 years)	61 844
Total Operating Costs	$89 644

Comparison of the Total Operating Cost and Total Revenue figures indicates that the project would not be viable using only the Section 56.1 subsidy.

Finally, it should be noted that administration costs are not included in the above examples as they cannot be reliably assessed. However, it is expected that the per unit delivery costs related to Non-Profit Housing are far greater than those of INAC's front end grants for new construction because monitoring continues over the terms of the loan under Section 56.1. RRAP is also likely to be more expensive to deliver than the INAC renovation grants because of the inspections carried out.

This will trend to overstate CMHC programs' cost-effectiveness by reducing the cost side.

2) RRAP Subsidy Costs:

The use of RRAP subsidies on reserves is much more straight-forward than Section 56.1 subsidy arrangements. As described in Chapter II, RRAP provides loans (up to $25 000 for homeowner units and $10 000 for rental units) to improve substandard housing with a portion of the loan being forgivable. On reserves, over 90 per cent of RRAP loans are made only for the forgivable amount. In effect, the RRAP subsidy on reserves is a capital grant like the INAC renovation capital grant and the two subsidies can be easily combined.

In Zone 1 (see Chapter II, p.13) the RRAP forgivable loan amounts to $5 000 for households with incomes of $15 000 or less, with forgiveness earned over a five year period. Thus, when used alone, the RRAP forgivable loan could cover renovation costs up to $5 000. However, as indicated in Chapter IV, p.93, the estimated average cost to bring older on-reserve housing units up to standard is $11 000. For higher cost rehabilitation work, RRAP can be combined with the INAC renovation grant of up to $6 000 per unit[1].

In effect, by combining available subsidies, rehabilitation costs of up to $11 000 per unit can be covered. However, if the subsidies are combined, fewer units can be assisted.

3) Summary

The various examples presented in this section serve to illustrate the flexibility available to bands in their use of the Section 56.1 on-going subsidy in combination with the INAC capital grant. Bands can increase the INAC per unit grant in order to shorten the amortization period on their loan, thereby acquiring full title to the project much sooner than the 35 year period normally associated with Section 56.1 projects. Increased use of the available INAC grant for Section 56.1 units, however, restricts the number of other non-Section 56.1 units which can be constructed. Use of the INAC grant

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1 An additional grant may also be available from CEIC in the form of a contribution toward band labour used for the renovation work. The CEIC grant would normally amount to a fraction of the RRAP and INAC subsidies, about $1 000 per unit.

also permits the Section 56.1 non-profit program to serve very low income households on reserves. Without the additional assistance provided by the INAC grant, the Section 56.1 subsidy by itself would not be able to sustain viable social housing projects given the low incomes on reserves.

The examples also indicate that bands do not necessarily use the full INAC capital grant per unit in combination with the Section 56.1 subsidy and that the period of future payout of Section 56.1 subsidies on reserves is likely to be less, on average, than the maximum 35 year amortization period. These are key considerations in the next section of this chapter which identifies actual subsidy costs associated with Section 56.1 on-reserve units.

RRAP subsidies on reserves can be used alone or in combination with INAC renovation grants. For the most part, RRAP loans are made only for the forgivable portion so that RRAP assistance is in effect a capital grant and is easily combined with the INAC renovation grant. On reserves, about 60 per cent of RRAP units also receive the INAC renovation grant.

B) PROGRAM SUBSIDY COSTS

The purpose of this section is to provide the subsidy cost information required to assess the cost-effectiveness of CMHC and INAC housing programs. Historical expenditure and commitments data are used to provide estimates of the average subsidy costs per unit associated with new construction and renovation programs on reserves.

1) New Construction

New housing units on reserves may receive only an INAC capital grant or may receive subsidies under the Section 56.1 non-profit program in addition to an INAC capital grant. However, the amount of the INAC capital grant associated with a Section 56.1 unit is likely to differ from the INAC grant associated with a non-Section 56.1 or INAC-only unit. As illustrated in the previous section, bands may spread their INAC capital grant allocation over a large number of Section 56.1 units. Also, if the INAC capital grant is the only source of subsidy it is expected that the per unit grant would be greater than for units which are also receiving the Section 56.1 on-going subsidy. This expectation is confirmed by the data presented in Table VII.B.1. The per unit INAC grants to non-Section 56.1 units exceed the per unit grants to Section 56.1 housing units.

The INAC capital grant per unit represents the total per unit subsidy associated with non-Section 56.1 (i.e., INAC-only) units. It is a one-time expenditure made at the beginning of the housing project. However, for Section 56.1 projects, it is necessary to add the on-going Section 56.1 subsidy to the per unit INAC grant on Section 56.1 units to get the total per unit subsidy. Because the Section 56.1 subsidy is paid out over an extended period of time (up to 35 years, depending on the amortization period), it is necessary to calculate the present value of the flow of future subsidy payments[1]. The per unit present value of the Section 56.1 on-going subsidy is added to the INAC capital grant per unit on Section 56.1 units to yield the total per unit subsidy cost associated with Section 56.1 units. Results of the present value calculations and the total per unit subsidy costs are shown in Table VII.B.2.

While Section 56.1 units receive lower capital grants than other new construction units on reserves, the total subsidy on each Section 56.1 unit is much higher. This is due to the high present value of the on-going Section 56.1 subsidy. In 1984, the total subsidy costs per unit on Section 56.1 units exceeded per unit subsidies on non-Section 56.1 units by $30,000.

It has been shown in section IV.A that units built using only the INAC grant were not in as good a condition as Section 56.1 units, even just after they were completed. It has been argued that this worse condition would imply more rapid need for renovations and additional costs in renovation funds. In effect, this would imply that subsidy costs for INAC only new units have been underestimated. This does not have to be taken into consideration here since the useful life estimates for each type of new housing derived in a further section use only observations on houses which has never been renovated.

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1 The detailed calculations are outlined in Appendix 2.

TABLE VII.B.1
INAC CAPITAL GRANTS PER UNIT: NEW CONSTRUCTION

	Average INAC Capital Grant[1]	
	Section 56.1 Units	Non-Section 56.1 (INAC-only) Units
	($ per unit)	
1979	11 071	22 071
1980	9 774	22 592
1981	11 262	22 804
1982	13 634	21 135
1983	19 139	35 369
1984	18 536	38 054

Source: INAC Administrative Data
Note: 1984 was the last year there data was available at time of writing.

TABLE VII.B.2
PER UNIT SUBSIDY COSTS: SECTION 56.1 AND NON-SECTION 56.1 UNITS

	Present Value of Section 56.1 Subsidy per unit	Total Per Unit Subsidy Cost	
		Section 56.1	Non-Section 56.1
	($ per unit)		
1979	24 477	35 548	22 071
1980	29 368	39 142	22 592
1981	41 260	52 522	22 804
1982	44 725	58 359	21 135
1983	44 170	63 309	35 369
1984	47 353	65 889	38 054

Note: 1984 was the last year there data was available at time of writing.

1 The average INAC grant per Section 56.1 unit is based on INAC Administrative data. To determine the average INAC grant on non-Section 56.1 units, the total amount of the INAC grants on Section 56.1 units (based on ministerial guarantee data) in each year is subtracted from the total INAC appropriation for new construction to yield the remaining subsidy amount for non-Section 56.1 units. The average per unit capital subsidy on an INAC-only unit is the remaining subsidy amount divided by the number of INAC-only units.

2) Renovation

Subsidies to conduct renovation or rehabilitation work on existing units are available in the form of capital grants from INAC and forgivable loans from CMHC under RRAP. While forgiveness on CMHC loans is earned over a five year period, the funds are provided up-front and, hence, are directly comparable to the INAC capital grant for renovation work. Average per unit subsidies made by CMHC and INAC since 1979 are presented in Table VII.B.3.

TABLE VII.B.3
CMHC AND INAC PER UNIT
RENOVATION SUBSIDIES

	Average RRAP Forgiveness[1]	Average INAC Renovation Grant[2]
	($ per unit)	
1979	4 304	3 268
1980	3 275	4 097
1981	3 394	4 110
1982	3 913	3 797
1983	4 651	4 154
1984	4 965	4 345

Source: CMHC and INAC Administrative Data, 1984
Note: 1984 was the last year where data was available at time of writing.

1 CMHC renovation subsidies per unit are estimated by dividing total annual RRAP foregiveness by the number of units receiving RRAP.

2 INAC renovation subsidies per unit are determined by dividing total annual INAC renovation appropriations by the total number of INAC reported renovations.

In the early years of the program, INAC renovation subsidies on a per unit basis exceeded RRAP forgiveness per unit.[1] Recently, however, RRAP per unit forgiveness has been greater than the INAC capital grant. In 1984, the CMHC subsidy per unit exceeded the INAC per unit subsidy by $620[2].

As indicated in the previous section, the CMHC and INAC renovation grants can be combined to provide greater subsidies in cases where renovation costs exceed the subsidies available under either program individually. Unfortunately, data on the per unit subsidy costs when the two subsidy sources are combined are not available. In the absence of such data it is assumed that the combined per unit subsidy is equal to the sum of the per unit subsidy cost when each program is used individually.

3) Summary

This section estimates subsidy costs on a per unit basis for each of the new construction and renovation programs operating on reserves. Units constructed under Section 56.1 receive a much deeper subsidy per unit than non-Section 56.1 or INAC-only units. In addition to the INAC capital grant, Section 56.1 units receive an on-going operating subsidy which extends over the amortization period of the loan. When the future flow of annual subsidy payments is capitalized in present value terms and added to the INAC capital grant the total subsidy exceeds that received by INAC-only units in 1984 by more than $10 000 per unit.

With regard to renovation subsidies, the CMHC RRAP program has provided somewhat higher per unit subsidies than the INAC renovation grant in recent years. In 1984, RRAP forgiveness amounted to $4 965 per unit, about 12 per cent higher than the average INAC renovation grant per unit. In cases where RRAP forgiveness and the INAC renovation grant are combined, it is assumed that the per unit subsidy equals

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1 The exception is 1979. However, only 520 RRAP units were approved in 1979 as opposed to more than 3000 INAC renovation units. See Appendix 2 for detailed data.

2 Note that the 1984 INAC subsidy of $4 345 per unit is considerably less than the $6 000 per unit which INAC allocated to bands for renovation purposes in 1984. This is because bands may spread the total renovation allocation over a larger number of units thereby experiencing lower per unit renovation subsidies.

the sum of the per unit subsidies when each program is applied individually.

C) PROGRAM EFFECTIVENESS

This chapter has so far documented the subsidy costs associated with each of the five government programs or set of programs active on reserves, namely:

- new construction using the INAC capital grant
- new construction using the INAC grant and Section 56.1 subsidies
- renovation carried out using the INAC renovation grant
- renovation carried out under RRAP
- renovation carried out using both RRAP and the INAC grant.

This section turns to the effectiveness side of the cost-effectiveness equation. The purpose is to quantify the relative quality of housing provided by each of these programs. The intent of the exercise is to derive a set of comparative quality measures which would permit the evaluation of the cost-effectiveness of each program: i.e., how much does it cost to get so much quality of housing under this program compared to this other program. Indicators of housing quality which ought to be used in this effectiveness measure are presented first. Next the question of deriving a unique measure of housing quality from these diverse aspects is addressed. It will be found that no unique comparison is possible between two programs but rather that a range of probable comparisons exists and has to be used in order to assess the relative effectiveness of housing programs.

The following section in this chapter will put together the cost and effectiveness sides of the analysis to conclude on the relative economic merit of the housing programs on reserves.

1) Relevant Aspects of Housing Quality

The problem addressed here is to identify the relevant dimensions to take into consideration when measuring housing services or quality. The condition of the housing delivered by these programs is difficult to measure because of the multidimensional nature of the concept of house condition. It has been said many times that house condition is not a straightforward concept. It has to be considered from a number of perspectives.

It is proposed here that four aspects of house quality have to be taken into consideration to assess housing quality on reserves:

- the number of useful life years a building is likely to give;
- the presence of basic facilities (running water, indoor toilet and bath or shower);
- the occupant's satisfaction with his home; and
- the level of improvement observed in housing in recent years.

a) Useful Life

The only way to substantiate precisely the extent of useful life of a dwelling unit is to observe it until it is not providing adequate housing services anymore. This is obviously not a practical research approach. Instead, the visible house condition will be used to approximate the useful life remaining to a group of dwelling units. Physical house condition can be measured in a variety of ways:

- the occupant can be asked to assess the condition of his home as was the case in the 1982 and 1985 versions of Statistics Canada Household Income, Facilities and Equipment Survey;

- a professional inspector can visit a dwelling unit and assess the condition of diverse particular elements of construction which can be aggregated into a single measure of global condition either by the inspector himself (asked to rate the overall dwelling condition) or through statistical computations using the various item ratings;

- a professional inspector or trained observer can assess the overall dwelling quality within the three categories of "need for repair" used in the 1981 Census (need for major repair, minor repair or only regular maintenance); these need for repair judgments can be converted into the likely useful life for a group of dwellings (and probabilistically attributed to individual units within these homogeneous groups of dwellings).

This last approach was chosen for this analysis for a number of reasons. First, the occupant rating of the condition of this dwelling still poses problems in terms of validity and reliability even though Indian people on reserves were proven to be

significantly better (than the general population) at rating their house condition.[1] Second, the use of a composite index of house condition is not easily convertable into a meaningful number (what does a score of 57 on a scale of 0 to 100 mean?) and is too complex for the simple analyses intended here. And third, the use of a straight distribution of the need for major repair by housing groups is functional but not as easy to grasp as the estimate of the likely useful life which is a common concept (but rarely measured).

This incidence of major repair need for each group of housing defined by the participation in the various housing programs on reserves is presented in Table VII.C.1.

TABLE VII.C.1
INCIDENCE OF NEED FOR MAJOR REPAIR
(SUBSIDY GIVEN WITHIN THE LAST FIVE YEARS)

PROGRAMS	MAJOR REPAIR	MINOR REPAIR	MAINTENANCE ONLY	N
Section 56.1	20%	11	69	37
INAC new cons.	30%	34	36	482
RRAP	43%	37	20	96
RRAP & INAC	38%	42	19	167
INAC renov.	46%	36	18	44

Source: On-Reserve Evaluation Surveys, Technical Skim

To translate the major repair need into useful life years, certain assumptions have to be made:

- the incidence of major repair need characterizes the obsolescence rate of a group of houses;

- the groups analysed (defined by their program participation) are homogeneous enough to make inferences on their dynamics;

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1 See analysis in the Technical report by Ekos Research Associates done for Indian and Northern Affairs Canada concerning INAC's evaluation of its on-reserve housing programs (1985).

- houses in all groups are all in good condition at the start of the first calculation period. Although this is unlikely, the data available to this analysis does not allow lifting up this assumption. It could be shown, however, that according to known on-reserve conditions this assumption is favouring CMHC funded unit useful life estimates;

- only the major repair need is important in assessing the useful life remaining to a dwelling unit; the need for minor repair does not impact on the obsolescence rate;

- the obsolescence rate observed during the first five years of the dwelling group existence will persist over an arbitrary threshold of 75 years; this assumption of stable obsolescence rate is conservative in the sense that any other common form of growth relationship (such as geometric or exponential) would amplify the differences which are found here: the stable obsolescence rate assumption decreases the differences between the programs.

If these assumptions are accepted, then the extent of remaining useful life can be calculated by applying the rate of obsolescence (the rate of falling into the major repair category) in each program usage group. Table VII.C.2 provides the results of this calculation for each program. The following explanation uses the example of the Section 56.1 units group. After five years, the obsolescence rate is 20 per cent (the proportion in need of major repair) and 80 per cent of the Section 56.1 units are still in habitable condition. After 10 years, an additional 20 per cent of the remaining 80 per cent (or 16 per cent) has fallen into disrepair, leaving 64 per cent of the original Section 56.1 stock still in good condition. After 15 years, 20 per cent of the remaining 64 per cent (or 13 per cent) become in need of major repair, leaving 51 per cent of the stock untouched. And this rule is applied until the arbitrary threshold of 75 years is reached.

The estimate of useful life is obtained by multiplying the maximum number of years that each dwelling in a group has shown before falling into disrepair by the proportion of the group of housing that has fallen into major repair need during that period and totalling up these products for each

TABLE VII.C.2
USEFUL LIFE ESTIMATION

YEAR	SECTION 56.1 Lost	SECTION 56.1 Still Good	INAC NEW Lost	INAC NEW Still Good	RRAP Lost	RRAP Still Good	RRAP & INAC Lost	RRAP & INAC Still Good	INAC RENOV. Lost	INAC RENOV. Still Good
					(% of units)					
0	0	100	0	100	0	100	0	100	0	100
5	20	80	30	70	43	57	38	62	46	54
10	16	64	21	49	25	32	24	38	25	29
15	13	51	15	34	14	19	15	24	13	16
20	10	41	10	24	8	11	9	15	7	9
25	8	33	7	17	5	6	6	9	4	5
30	7	26	5	12	3	3	3	6	2	2
35	5	21	4	8	1	2	2	4	1	1
40	4	17	2	6	1	1	1	2	1	1
45	3	13	2	4	0	1	1	1	0	0
50	3	11	1	3	0	0	1	1	0	0
55	2	9	1	2	0	0	0	1	0	0
60	2	7	1	1	0	0	0	0	0	0
65	1	5	0	1	0	0	0	0	0	0
70	1	4	0	1	0	0	0	0	0	0
75	1	3	0	0	0	0	0	0	0	0
Useful Life		21.5		16.2		11.6		13.1		10.9

group of housing: e.g. for Section 56.1, the calculations are as follows: 0x0% + 5x20% + 10x16% + ... = 21.5. The last line of table VII.C.2 provides the useful life estimates for each of the five program groups analysed in this chapter.

The estimate of useful life of the Section 56.1 units does not take into consideration the existence of the maintenance fund. Each Section 56.1 project carries a fund that is aimed at addressing the maintenance and renovation expenditures in later years of the project. This money does not exist for INAC new construction units. Because of this, the useful life of Section 56.1 units, in comparison to INAC new units, may be underestimated. Section VII.D.4 will address this measurement problem by simulating a 50 percent increase in useful life of Section 56.1 units; if prior conclusions still hold under this scenario, the validity of the method will have been demonstrated.

b) Basic Amenities

The second aspect relevant to the measurement of housing quality on reserves is the provision of basic amenities. The basic services taken into consideration here are:

- running water
- indoor toilet
- bath or shower

Off reserves, the criterion of provision of basic amenities is largely irrelevant to the discrimination between good and poor housing because of the very low incidence of that problem. On reserves, however, it has been shown earlier in this report that the lack of basic amenities is a major problem and does provide a useful indication of the quality of Indian housing.

The provision of basic amenities is measured using the survey of On-Reserve Housing Condition carried out for the purposes of this evaluation. Table VII.C.3 contains the incidence of provision of basic amenities for each program. Section 56.1 Non-Profit Housing is said to provide all three basic amenities in 88 per cent of the houses built under its auspices; houses built in the last five years using

the INAC capital subsidy without Section 56.1 assistance provide all basic amenities in 54 per cent of the cases; dwellings renovated using RRAP only provide amenities 84 per cent of the time; this incidence compares to 74 per cent and 64 per cent respectively for renovations undertaken using both RRAP and the INAC grant and for work done with the INAC grant only.

TABLE VII.C.3
DISTRIBUTION OF THE FOUR CRITERIA

PROGRAM	USEFUL LIFE	ALL BASIC AMENITIES PROVIDED	OCCUPANT SATISFAC-TION	HOUSING IMPROVE-MENT
Section 56.1	21.5	88%	4.3	4.1
INAC new cons.	16.2	54%	4.1	4.2
RRAP	11.6	84%	3.8	4.0
RRAP and INAC	13.1	74%	3.7	4.5
INAC renovation	10.9	64%	3.5	3.7

Source: On-Reserve Evaluation Surveys, Technical Skim and Household File

c) Occupant Satisfaction

The first two dimensions analysed so far consider the factual condition of the buildings. An attitudinal dimension is proposed for inclusion in this assessment of house quality. It seems appropriate to add the judgment of the occupant on his own house; is he satisfied with his living conditions or does he think that they are unsatisfactory? This third component will complement the previous two which are related to the overall structural aspect of the dwelling unit (the useful life estimate) and to the services provided by the unit (the access to all basic amenities).

The households surveyed were asked to rate their satisfaction with their dwelling unit on a scale of 1 to 7:

Overall, how satisfied are you with your house?

1 2 3 4 5 6 7

Completely Satisfied — Totally Dissatisfied

This scale was reversed for the purposes of this analysis so that all three indicators of housing condition would follow the same logic of measurement, i.e., an increased quality of housing would be represented by a larger value of the indicator. Table VII.C.3 contains the average satisfaction level for each program. The satisfaction level of the occupant decreases in the following sequence: Section 56.1, INAC new construction, RRAP, RRAP and INAC, INAC renovation.

The satisfaction measure, as well as the housing improvement measure which follows, is a subjective measure in that it calls upon the respondent's jugdment. This kind of measurement in not reliable in the sense that a 50 percent change in satisfaction is not likely to translate into an equivalent change on the measurement scale. For that reason, these two indicators are "softer" than the first pair. The sensitivity test carried out later in this section will allow an assessment of the effect of these two indicators on the global effectiveness scores.

d) Housing Improvement Over Three Years

The last dimension takes into account the previous condition of the housing units. It is based on the assumption that, notwithstanding the condition of the unit after the programs, the program which improved housing quality the most will be considered more effective. This should countervail at least partially the fact that no measure of dwelling value prior to program activity is available to this analysis.

Also, in the case of renovated houses particularly, it is known that programs - and especially stacking of assistance - are used differently according to the PREVIOUS condition of the dwelling units. In particular, it is common knowledge that RRAP and the INAC renovation subsidy - which can be stacked onto one another - are used in conjunction when the dwellings are in very bad condition at the outset.

Even though no precise indicator of the condition of the dwellings prior to the renovation work is available, a proxy can be used. During the interview carried out with some 2 000 households in preparation to this evaluation, occupants were asked to rate the improvement that occured in their housing condition over the three previous years:

Do you feel that your housing has improved or decreased in quality over the last 3 years?

1	2	3	4	5	6	7
Improved a great deal						Decreased a great deal

As with occupant satisfaction, this scale has been reversed to ensure consistency with the logic of the other measures. This aspect of housing quality will capture at least part of the difference in original house condition between groups of renovated houses.

The distribution of means of this variable is presented in Table VII.C.3. It should be noted that this last dimension is largely irrelevant to the new construction comparisons and, as expected, the two new construction programs do not differ in any great extent on this measure. Consequently, the inclusion of the quality improvement aspect in the comparisons on the new construction side will not affect the results and will standardize the calculations for all pairs of programs compared. Renovation programs do differ on this measure, however, with the combination of RRAP and INAC renovation grant providing the best improvement, RRAP the second and INAC renovation grant alone the third.

2) Combining the Aspects of Housing Quality

Four aspects of housing quality have been retained for the measurement of on-reserve housing program effectiveness. In order to compare the effectiveness of the programs, it is necessary to amalgamate these four measures into a single indicator of house quality for each program. Since the intent of this analysis is to compare the various programs, it is not necessary to derive an indicator that would mean something in and by itself; it is sufficient that the indicator be comparable to that of the other programs.

Using this logic, instead of considering the actual number of years left in terms of useful life for each group of housing, one could treat the ratio (or comparison) of useful life for two programs. For example, instead of using the fact that Section 56.1 is estimated to provide 21.5 years of useful life on average, one can say that it offers 1.33 times more useful life than INAC-only new construction. This would avoid addressing the problem of different units of measurement for the four aspects of housing quality and provide a sound comparative basis for the analysis.

Table VII.C.4 contains the matrix of comparative coefficients. Each program is compared to other relevant programs and discriminates between the four aspects of quality retained for analysis. In this table, a coefficient of 1 (one) signals that the estimate for the base program is the same as the estimate for the compared program; a coefficient larger than 1 means that the compared program performs better than the base program; and a coefficient smaller than 1 signals that the compared program did not do as well as the base program. For example, the coefficient of 0.75 assigned to INAC new construction when compared to Section 56.1 for the useful life aspect means that INAC new construction is 0.75 as good as Section 56.1 on that dimension of house quality.

The easiest way to amalgamate the four quality dimensions is to total up the values of the four comparisons relevant to each pair of programs. For example, the comparison between Section 56.1 Non Profit Housing and INAC new construction would be represented by the following coefficient:

Section 56.1 Base				INAC Base
0.75	---	Useful life	---	1.33
0.61	---	Amenities	---	1.63
0.95	---	Satisfaction	---	1.05
1.02	---	Improvement	---	0.98
3.35	---	TOTAL	---	4.98

TABLE VII.C.4

COMPARED PERFORMANCE OF PROGRAMS ON HOUSING QUALITY

BASE PROGRAM	COMPARED PROGRAM Sec. 56.1	INAC NEW	RRAP	RRAP & INAC	INAC RENOV.
			USEFUL LIFE		
Sec. 56.1	1	0.75			
INAC new	1.33	1			
RRAP			1	1.13	0.94
RRAP & INAC			0.89	1	0.83
INAC renov.			1.06	1.20	1
			AMENITIES		
Sec. 56.1	1	0.61			
INAC new	1.63	1			
RRAP			1	0.88	0.76
RRAP & INAC			1.14	1	0.86
INAC renov.			1.31	1.16	1
			OCCUPANT SATISFACTION		
Sec. 56.1	1	0.95			
INAC new	1.05	1			
RRAP			1	0.97	0.92
RRAP & INAC			1.03	1	0.95
INAC renov.			1.09	1.06	1
			QUALITY IMPROVEMENT		
Sec. 56.1	1	1.02			
INAC new	0.98	1			
RRAP			1	1.13	0.92
RRAP & INAC			0.89	1	0.82
INAC renov.			1.08	1.22	1

TABLE VII.C.5

AGGREGATED COMPARED PERFORMANCE OF HOUSING PROGRAMS

BASE PROGRAM	COMPARED PROGRAM Sec. 56.1	INAC NEW	RRAP	RRAP & INAC	INAC RENOV.
Sec. 56.1	4	3.35			
INAC new	4.98	4			
RRAP			4	4.11	3.55
RRAP & INAC			3.94	4	3.47
INAC renov.			4.54	4.63	4

Table VII.C.5 provides these additive coefficients (some of which don't total up due to rounding error -- the calculations were performed with 16 decimal digits for each pair of programs under examination). A coefficient of 4 here means the same thing as a coefficient of 1 in Table VII.C.4, i.e., the quality of housing provided by each program is similar. A coefficient larger than 4 means that the compared program provides better housing than the base program and a coefficient smaller than 4 indicates that the compared program does not perform as well as the base program.

3) Varying Weights

Although this method makes sense, this addition of single aspect coefficients is, however, based on an assumption which would be better relaxed. Indeed, the addition shown above as an example between Section 56.1 Non Profit Housing and INAC new construction assumes equal weight of all four aspects and consequently equal importance of useful life, access to amenities, occupant satisfaction and quality improvement in the measurement of housing quality. No theory is available to guide the attribution of unequal weights to the various dimensions, so pure empiricism will guide the rest of this analysis.

Tests of the sensitivity of this assumption were carried out to ensure that the equal-weight hypothesis does not hide unintended consequences. The detail of these tests can be found in Appendix III. The conclusion is that, under very severe variations of the relative weight of each dimension of effectiveness, none of the major program comparisons are affected by the assumption of equal contribution of the four dimensions of effectiveness.

4) Summary

This section has created a set of coefficients which enables the comparison of the effectiveness of each program active on reserves. These effectiveness coefficients are derived using four aspects of house quality relevant in the context of this evaluation but not generalizable to other contexts:

- the number of useful life years a building is likely to provide;

- the presence of basic facilities (running water, indoor toilet, and bath or shower);
- the occupant's satisfaction with his home; and
- the occupant assessed level of improvement observed in housing in recent years.

Ratios of these measurements taken on houses which had used one or more of the on-reserve housing programs constitute the basis for a set of additive coefficients of comparative effectiveness.

The sensitivity of these additive coefficients to the relative importance given to each of the four dimensions used was analysed. Some variations in the results of the comparisons were highlighted; they point to the necessity of using a similar sensitivity analysis in the cost-effectiveness analysis carried out in the next section but their small range also demonstrates the rigourous character of the effectiveness measurement and its insensitivity to varying assumptions.

D) COST-EFFECTIVENESS

Section A of this chapter has described the mechanics of calculating subsidies under RRAP and Section 56.1 Non-Profit Housing. Section B documented the observed levels of subsidy paid out by CMHC and by INAC between 1978 and 1984. Section C described the creation of a program effectiveness measure which allows the comparison of the effectiveness of each program with each other. The present section will put together the information from Sections B and C using a model of cost-effectiveness whereby the level of housing quality output of the programs is related to the financial resources require to realize them. Comparisons are drawn between programs.

1) Revisions to the Cost Estimates

It is important to document some revisions to be made to the cost estimates for the purposes of the cost-effectiveness analysis and also to mention some caveats found in the cost side of the cost-effectiveness model.

a) Revisions

The average subsidy amounts reported in Section B on an annual basis are useful descriptive tools but are too detailed for the purposes of the cost-effectiveness analysis. Indeed, their use would require equally precise data on the effectiveness side, which is not available because of limited per annum data. The present analysis thus requires data

covering the period 1978-1984. Table VII.D.1 presents the detailed subsidy data along with the weighted averages used in the cost-effectiveness model. These averages, weighted according to each year's activity, are used on the whole period for comparison with the effectiveness figures.

b) Caveats

Three caveats are worth noting in the costs estimates. First, the new construction estimates consider only the subsidy costs associated with each case. By default, this assumes that the band and occupant financial and sweat equity are equivalent under Section 56.1 Non-Profit Housing and under the INAC capital grant constructions. However, it is a generally shared feeling that more equity (particularly sweat equity) is put into construction carried out using only the INAC capital grant than into Section 56.1 construction. This is easily explained by the level of funding of each program, i.e., the construction of a standard house under the INAC capital grant requires the band and the household to add either money or time to the construction since the grant does not suffice.

TABLE VII.D.1
SUMMARY OF THE AVERAGE COST ESTIMATES
(1981 Dollars)

	1979	1980	1981	1982	1983	1984	WEIGHTED AVERAGE
Sec. 56.1*	45 331	44 035	52 523	52 698	54 039	53 897	52 180
INAC New	27 655	25 417	22 804	19 805	30 170	31 128	26 230
RRAP	5 392	3 684	3 394	3 533	3 972	4 061	3 890
INAC renov	4 095	4 609	4 160	3 429	3 543	3 554	3 840

Source: Section B, Chapter VII
Note: 1984 was the last year where data was available at time of writing.
The estimate related to renovations done using both RRAP and the INAC renovation grant is simply the sum of the average RRAP forgivable loan and the average INAC renovation grant.

* The Section 56.1 average includes both the Section 56.1 present value subsidy and the INAC average capital grant for Section 56.1 Non-Profit Housing.

Secondly, the cost estimates for renovation programs do not take into account the original value of the building. This is a problem because house values (and consequently condition) prior to program activity may vary with participation in one program rather than another: i.e. unfinished houses might use RRAP rather than INAC's renovation funds and the worst houses may combine both sources of funding. Comparing the outputs of the renovation programs implies that one accepts that the original condition of the dwelling units is comparable from program to program. Even though some provision for a differing original condition was built into the effectiveness measure through the quality increase indicator, there are reasons to believe that the totality of the differing original states has not been captured.

To countervail this, the cost estimates would have to contain the original value of the dwellings which would have represented a better operationalization of the differences observed between the houses renovated under the various programs.

Finally, the comparison of the renovation programs to the new construction programs will not be possible because the cost estimates do not take into consideration the basic differences in program designs. This is to say that new construction subsidy estimates cover the whole construction of a new dwelling while the renovation programs can count on an existing structure the value of which is not accounted for in the subsidy estimates.

Once again, to counter this problem, the original value of the units would have to have been built into the cost estimates which is not possible with the existing database.

All of these caveats will be taken into consideration in analysing the results of the cost-effectiveness comparisons.

2) Cost-Effectiveness Calculations

The objective of the cost-effectiveness calculations is to derive a single coefficient which will represent the fact that one program is performing better (i.e., providing better quality housing per dollar of subsidy expenditure) than another program. This is done by comparing the ratios of effectiveness to cost.

If two programs are performing in a similar manner, one would expect the cost-effectiveness coefficient to be 1 (one). It would be derived in the following manner:

$$\frac{\text{Base program effect.}}{\text{Base program cost}} * \text{Coefficient} = \frac{\text{Compared program effect.}}{\text{Compared program cost}}$$

Examples of equal performance could be:

$$\frac{4}{100} * 1 = \frac{5}{125}$$

$$\frac{4}{100} * 1 = \frac{3}{75}$$

Solving the above mentioned equation for the coefficient, one can see the cost-effectiveness coefficient as being:

$$\text{Coefficient} = \frac{\text{Base program cost}}{\text{Base program effect.}} * \frac{\text{Compared program effect.}}{\text{Compared program cost}}$$

By definition found in Section C, the base program aggregated effectiveness always has a value of 4 (four). The compared program effectiveness coefficients (not accounting for varying factors weights) are to be found in Table VII.C.5. The base program and compared program costs are given by the weighted averages found in Table VII.D.1. Thus, an example of the calculations performed for the cost-effectiveness analysis could be:

Base program: Section 56.1 Non-Profit Housing
Compared program: INAC new construction

$$\text{Coefficient} = \frac{59810}{4} * \frac{3.35}{26560} = 1.88$$

A cost-effectiveness coefficient of 1 means that the programs are performing equally well in terms of the quality produced for the subsidy cost. A coefficient larger than 1 means that the compared program is performing better than the base program. A coefficient smaller than 1 can be interpreted as meaning that the compared program is not performing as well as the base program or that the base program is more cost-efficient than the compared program.

3) Results

Table VII.D.2 presents the cost-effectiveness coefficients for the basic comparisons made here. These calculations do not take into consideration the varying weights yet. They are carried out on the basis of equal contribution of each of the four indicators of effectiveness discussed in Section C. (See Table VII.C.5).

TABLE VII.D.2
BASIC COST-EFFECTIVENESS COEFFICIENTS

BASE PROGRAM	COMPARED PROGRAM				
	SEC. 56.1	INAC NEW	RRAP	RRAP&INAC	INAC RENOV
Sec. 56.1	1	1.66			
INAC new	0.63	1			
RRAP			1	0.52	0.90
RRAP & INAC			1.96	1	1.74
INAC renov.			1.12	0.58	1

The sensitivity tests carried out on the cost-effectiveness ratios demonstrate their rigidity under varied assumptions concerning the relative weight of each effectiveness dimension. The detailed results are outlined in Appendix III.B.

Four comparisons are central to this analysis:

- Section 56.1 Non-Profit Housing vs. INAC new construction: a coefficient of 1.66 favours INAC new construction over Section 56.1 housing. This means that INAC new construction is 1.66 times more cost-effective than Section 56.1 which does not imply that the housing produced is better but that what is produced is built at a proportionately smaller subsidy cost. This could mean that:

  - Section 56.1 builds non modest housing which costs significantly more than the modest (to say the least) INAC-only capital grant new construction units; this conclusion would diverge from the analysis carried out in Chapter IV, Section A where MUPs and other indicators tended to show that Section 56.1 is producing modest housing;

- there is a threshold effect in that to produce standard Section 56.1 housing, a large incremental investment is necessary; this would happen if the relationship between cost and quality of housing was non-linear, geometric or exponential;

- very significant differences in financial and sweat equity may exist between the two groups of housing; INAC new construction units involve more occupant equity or work (this could be over a long period of time) than do Section 56.1 units.

o <u>RRAP vs. INAC renovations</u>: the cost-effectiveness coefficient between these two programs is 0.90, slightly favoring RRAP over INAC renovations. This "small difference" conclusion implies that the programs are producing similar outputs with only marginally different amounts of money. One possible explanation is that all of the RRAP constraints (inspections, standards, etc.) are less relevant on reserves where there is no question as to where the renovation money should be used. There are too many basic systems and structural elements to fix in an on-reserve house to be tempted to use the renovation funds for cosmetic use.

  Table VII.D.4 shows that the range of this coefficient is 0.88-0.99; this means that the error possibly due to the assumption of equal weights is small but that changing the assumption would likely favour RRAP. The major difference between the two groups of housing is the presence of basic amenities. This may be of major concern on reserves.

  In sum, RRAP can be said to be slightly more cost-effective than INAC-only renovations.

o <u>RRAP vs. the concurrent usage of RRAP and INAC renovation grant</u>: the cost-effectiveness coefficient is 0.52, favouring RRAP. This stems from the fact that the condition of the two groups of housing (after renovation) is essentially the same and that it cost twice as much to renovate using the two programs in a stacking arrangement. This could either mean:

  - that the renovation funds are badly used when they are stacked; for example, the INAC renovation funds could either be used on a different house or for more important renovation work; or

- more likely, that the two groups of houses are in very different condition at the outset and that the extent of that difference has not been fully captured by the quality increase indicator in the previous section.

o INAC renovations vs. renovations done using both RRAP and INAC funds: it is not surprising to find a cost-effectiveness coefficient of 0.56 favouring INAC renovations. Indeed, the comparison of INAC renovations to RRAP has demonstrated little cost-effectiveness difference, so the comparison between RRAP and stacking should be duplicated in the comparison of INAC renovations to stacking. The previous conclusions apply here as well.

4) Extension to Section 56.1 Useful Life

As mentionned earlier in Section VII.C.1.a, the estimate of useful life for Section 56.1 units may be pessimistic in comparison to that of INAC new units, because of the existence of the Section 56.1 maintenance fund.

To address this issue, a separate set of cost-effectiveness calculations was carried out with Section 56.1 useful life increased by 50 percent to 32.25 years. All the calculations of sections C and D were reproduced using this new assumption. Detailed results of the cost-effectiveness ratios and their sensitivity tests are to be found in Appendix III.C.

This scenario does not change the results of previous analyses. The cost-effectiveness ratio of Section 56.1 and INAC new construction is 1.54, favouring the latter. In the combination of weights most favourable to Section 56.1, the ratio is still 1.12, favouring INAC new construction by 12 percent.

5) Summary

This section has joined the cost data of Section b) with the effectiveness data from Section c) to produce a cost-effectiveness comparison analysis. Average costs over the 1979-1984 period are used. Three caveats were outlined: i) occupant equity is not considered in the new construction programs; this is equivalent to assuming that it is similar between programs; ii) equivalent pre-renovation condition of housing is assumed in comparing renovation programs (to the extent that the quality increase indicator does not cover it); iii) renovation programs are not formally comparable to new construction programs because the cost figures do not include the value of the house before renovation.

Comparing the costs and effectiveness measures between programs, it was found that:

- Section 56.1 Non-Profit Housing is not as cost-effective as INAC new construction; this does not imply that the housing produced by INAC is better, but rather that what is produced is built at a proportionately smaller subsidy cost. This is most likely due to a threshold effect, in that a large incremental investment is necessary to produce units up to standards, or to very significant differences in sweat equity between the two types of housing.

- RRAP is slightly more cost-effective than INAC renovations. The two programs are producing comparable outputs with only marginally different amounts of money.

- the concommittent use of RRAP and INAC renovation grants does not seem as cost-effective as their separate use. For twice the cost, the combination of both sources of renovation funds produces the same housing output. This is most likely due to differences in the original condition of the houses before renovation (not fully captured by the effectiveness component of the analysis).

CHAPTER VIII

PROGRAM DESIGN AND DELIVERY

The purpose of this chapter is to relate the performance of CMHC programs in achieving their objectives on reserves to each program design and delivery feature. Chapter III of this report examined the linkages between program design features and objectives while Chapters IV and V assessed the extent to which objectives have been achieved. The approach taken here is to attempt to explain the findings on objectives achievement in terms of program design and delivery features. Each program's performance in achieving its objectives is related to program design and delivery features.

A) SECTION 56.1

1) Appropriate Housing

Appropriate housing is defined as uncrowded, physically adequate, and suited to occupant needs. On reserves, Section 56.1 housing, in contrast to INAC-only funded units, better provides for basic amenities and results in higher levels of occupant satisfaction. The size of CMHC units, measured by both actual living area as well occupant perception of available space, represents a positive improvement over INAC-only funded units. In stated social housing program guidelines there are standards for architecture and planning, inspections, mortgage and property administration, social development and space. These standards represent factors distinguishing CMHC from INAC-only funded units. In 1983, the federal cabinet insisted that all new housing, including INAC subsidy units, built on reserves meet minimum standards of the national building code. The enforcement of these standards should contribute to or enhance the actual structure of INAC subsidy units. However, Section 56.1 housing, from its inception on reserves, has had to meet these codes as well as the standards outlined in the program guidelines.

Section 56.1 units are as crowded as other recently built housing units on reserves. While thirty per cent of the units shelter more than one person per room, their occupants tend to have more positive feelings about their living space than occupants of other non-social housing units found on reserves.

The problem of crowding was identified long before the availability of CMHC programs on reserves. In fact, the problem was an important factor leading to use of CMHC

programs. At the unit level, CMHC will address crowding by matching the unit offered to the size of the household intended to occupy the unit. Depending on the stated family size at the time of aplication, CMHC can make available units ranging in size from one to five bedrooms. As well, basements of units are finished in a way such that additional occupants could be accommodated. However, despite the policy to build units to family sizes, a number of external factors may give rise to crowding. These factors include the often difficult identification of the number of intended occupants. Family sizes and structures change constantly, for example, through natural increases or family members moving back and forth between urban and reserve areas. Seasonal employment or subsistence patterns also occur. In view of these possibilities, while a new unit may be matched to the family at the time of application, future and often unpredictable variations occur.

Despite construction initiatives, crowding persists on reserves. Those without units or those with units deteriorated beyond the point of habitation have few options available. They are forced to move in with friends or relatives residing in larger and newer units such as those built by CMHC. While this arrangement may only be temporary until such time that additional units are available, in some cases on reserves, extended family arrangements continue as a matter of choice.

2) Modest Housing

The objective of modest housing is defined through project costs which, as guidelines state, must be within prescribed Maximum Unit Prices (MUP's). Modest housing, through the application of MUP's, can be reflected either through unit design attributes or secondly, moderate relative house prices. The achievement of the modest housing objective has been indicated inasmuch as only eight per cent of section 56.1 units on reserves were found to exceed MUP's. The incidence of excessive use of space was also found to be extremely low. As noted above, CMHC policy is to link units with family sizes. MUP's have been established for a variety of unit sizes. Provided information on family size is accurate at the time of application and the subsequent size does not radically increase, a unit of an appropriate size as prescribed by the MUP will be provided. The application of MUP's, as a program design feature has been effective in achieving modest housing on reserves.

3) Low and Moderate Incomes

Low and moderate income families and individuals represent the groups which the Section 56.1 program is intended to serve. Section 56.1 units shelter no more low-income households than other types of housing found on reserves. However, as incomes on reserves are so low compared to the incomes of all other Canadians the objective has been achieved. The selection of tenants is a band council responsibility. Bands are encouraged to use a variety of tenant selection criteria and techniques such as needs analysis, wait lists and crowding. However, neither CMHC nor INAC is able to direct bands in their ultimate selections. Provided the band establishes tenant income levels consistent with program guidelines, CMHC must accept band council tenant selections.

4) Affordable Housing

One quarter of Section 56.1 occupants indicate their shelter cost is unaffordable. This proportion was found not to be significantly different for the occupants of units in the comparison groups. Section 56.1 households pay fifty per cent more per month than recent non-CMHC unit occupants for shelter and utilities ($37 versus $21). Overall, it can be said that Section 56.1 has been providing affordable housing. Program features such as minimum monthly rents of $28 up to a maximum pre-determined low end of market rent contribute to the affordability of the units. However, it is not the Section 56.1 interest subsidies alone which achieve this objective. The Section 56.1 subsidy must be used in conjunction with the INAC front-end grant. The design of the Section 56.1 program is such that the available subsidy is insufficient by itself to ensure affordable housing given the low incomes on reserves. An augmentation of CMHC subsidy levels would be required if Section 56.1 alone is to provide affordable housing independent of other sources.

5) Take up Based on Need

Provincial allocations and allocations to bands are INAC responsibilities. The principle of need is noted as a central feature in the determination of these allocations. However, bands in need may be unable or unwilling to take up Section 56.1 units which are allocated to them. Crowding on reserves across Canada has been used in this report as an indicator of need. Three Section 56.1 units in ten are considered crowded using a persons per room indicator. Other housing units

on reserves are crowded to a statistically similar extent. Evidence indicates that Section 56.1 units have not been utilized on the basis of need. Bands involved with the Section 56.1 program have tended to be urban, larger and assume greater levels of responsibility for housing matters.

Difficulties associated with allocation procedures have been documented in a 1981 INAC Housing Activity Audit Report. The report notes:

> "The allocation and prioritization of capital funds is not made by Headquarters and Regions according to needs. The principle of helping to rectify the worst problems first is recognized as a desirable objective but has not been codified as a policy. The criteria used for allocation of housing funds vary from Region to Region".

The findings of the 1984 INAC On-Reserve survey indicate that matters of allocation and take up on the basis of need remain a concern.

B) RRAP

1) Improvement of Substandard Housing

This objective has been considered in view of housing quality concepts, compliance with RRAP standards and hazards to health and safety. RRAP units on reserves have been shown to have on average seven items below standard. This situation compares rather unfavourably to RRAP units off reserves where an average of 1.2 items below standard were found.

On reserves, RRAP is associated with improved housing conditions relative to bands not using RRAP. Units receiving only INAC assistance have been shown to have an even higher incidence of substandard items. These units are deficient in basic amenities in comparison to those which have received RRAP. Units renovated using RRAP funds, whether alone or in conjunction with an INAC grant, performed consistently better than units receiving only an INAC grant or no assistance at all. The presence of RRAP renovation standards and inspections contribute to the improvements associated with RRAP on reserves. Historically, the INAC renovation subsidy program has provided funds but no

rigid standards for renovation work. When only INAC funds have been used, bands identify renovation needs and carry out the work. However, they have done so without the benefits of standards and qualified inspections as found under RRAP.

The importance of stacking INAC and CMHC renovation assistance is evident. Units which have received neither source of assistance have been shown on average to require approximately $11 000 in repairs to become standardized. Units which have received RRAP have been shown on average to require approximately $4 300 in repairs to become standardized. Here, an INAC grant could be applied to cover the post-RRAP shortfall to ensure a sufficiency of renovation dollars. However, there is no requirement for bands to stack. Bands are able to either concentrate renovation dollars and adequately repair fewer units or dilute funds towards the inadequate repair of many. The high incidence of substandardness would indicate that bands have opted for the latter approach.

The often similar condition of RRAP only units to units which have combined CMHC and INAC assistance is an indication that stacking as a practice occurs when only the worst of units are encountered. Unfortunately, given the severe nature of the problems bands face, even when stacking is used, insufficient funds may be applied. The $11 000 average cost to standardize a unit never in receipt of assistance is equal to the combined maximum RRAP forgiveness and available INAC renovation grant. For units which exceed the average, however, the combined assistance is inadequate. Moreover, the average outstanding cost to standardize a unit which has received stacked assistance is $5 800. Thus, even when stacking, bands are faced with pressures to spread their renovation dollars.

2) Health and Safety

The effectiveness of RRAP was analyzed in view of health and safety hazards as they exist in units which have received RRAP. On average, after RRAP, two health hazards exist compared to 2.5 hazards in houses using the INAC grant only and 2.7 hazards in unrenovated houses. Approximately seventy-five per cent of RRAP dwellings present some unsafe condition as opposed to ninety per cent of units renovated using INAC assistance.

Units renovated using RRAP, in contrast to INAC funded units, present fewer health and safety threats. However, the scarcity of renovation funds and severe condition of many dwellings is reflected by the absence of differences between RRAP-only units and units renovated with combined CMHC and INAC funds. Bands have limited funds to tackle blighted units. If bands allocate funds to units according to the severity of the problem, then units which receive the largest amounts or combined CMHC and INAC grants are likely those in the worst condition. This combined amount, when applied to units in the worst condition, may improve the units only to the level of improvement experienced by less deteriorated units funded solely under RRAP.

The sufficiency of funds applied to a renovation will affect the attainment of these RRAP objectives. The fact that many of these units, prior to RRAP, are in the worst condition implies that a significant amount of renovation dollars will be required to adequately repair the unit. In the absence of measures which ensure that sufficient funds are applied to repair a unit, compromised program objectives will occur. The current program fails in the provision of a mechanism which can respond appropriately to such compromises.

3) Quality and Useful Life

The intent of this objective is to ensure that the quality of repair and improvement substantially extends the useful life of a unit. This objective was analyzed in view of isolated components of dwelling structures which, if substandard, could cause a threat to a fifteen year useful life. While RRAP units presented a mean of 4.4 threatening items, units using INAC assistance only and units combining INAC and CMHC assistance presented 5.2 and 4.1 threatening items respectively. Units receiving no assistance presented a mean of 5.1 threatening items. RRAP only funded units have performed better than INAC only funded units.

Renovation standards plus a somewhat richer level of assistance associated with RRAP may account for these differences.

4) Promotion of Maintenance

An additional RRAP objective includes on-going unit maintenance once renovation work is complete. The analysis of this objective was unable to indicate that RRAP clients assume more responsibility in maintenance and repairs than other reserve households. No significant differences in assumed levels of responsibility or in levels of involvement were demonstrated between RRAP and other renovated units. Furthermore, between CMHC-only, INAC-only and CMHC-INAC funded renovations, the relationship between occupant responsibility for maintenance and repairs and house condition is the same.

On-going maintenance as a post repair activity requires occupants to have sufficient incomes to afford associated costs. In addition, band adoption and enforcement of by-laws or regulation may contribute to the levels of objectives achievement. However, where bands do establish by-laws, if occupants are unable to afford maintenance costs, such by-laws exert little influence.

The band adoption of codes is something which CMHC can only encourage. The legal adoption of these codes is done strictly through a vote of a band council. At present approximately 50 per cent of written band housing policies contain by-laws regulating maintenance. This partial acceptance of codes by bands may reflect the low income levels of households on reserves. The enforcement of the by-laws is difficult in situations where the occupants are unable to afford the necessary on-going expenditures. Welfare recipients occupying units which have received only the INAC capital grant for new construction are not entitled to shelter allowance benefits since they do not pay rent. This feature of the INAC welfare system limits the ability of occupants to pay for on-going maintenance after RRAP work has been done.

5) Assistance Based on Need

This objective has been analyzed from two perspectives. With respect to individuals, those on reserve in receipt of RRAP demonstrate no greater need than those who have not received assistance. However, in a national context, recipients of RRAP demonstrate a high degree of need. In contrast, take up of funds by bands has not occurred on the basis of need. The proportion of dwellings in need of major repairs in RRAP funded and non-RRAP funded bands is not significantly different.

While allocations under RRAP are the responsibility of INAC, it must be recognized that some bands may be unwilling to participate in CMHC programs so that allocations are not taken up.

At the individual level, allocations are a band council responsibility. While a variety of arrangements are in place to deliver units to individuals, it is the band council which must approve an individual's application. Given increased band involvement in housing matters, neither CMHC or INAC can direct bands in their allocations. With band support and RRAP assistance available, unless the applicant fails to meet program income requirements, the application will be approved. As incomes are so low, most applicants will be eligible for full RRAP forgiveness.

C) LENDING PROGRAMS

1) Encouragement of Private Lenders

The encouragement of private lender involvement and the minimization of government cash requirements have been demonstrated with respect to Section 56.1 band housing. However, significant failings with respect to the participation of lenders in the individual construction program are documented. While the legal requirements to faciltate lender involvement in both activities have been met, the program procedures and forms for private loans to individuals are absent in all provinces except Quebec. Their development in Quebec is a result of the initiative taken by local INAC program staff. The INAC ministerial guarantee is a central feature in facilitating lender loans to Indians. However, the development of lender and guarantee forms to meet the requirements for individual lending, for the most part, has not taken place. The role of INAC is critical in this regard.

2) Residual Loans

The objective of providing residual loans to bands and individual members where private sources of financing have not been available has been achieved in view of the indicators analyzed. These indicators include the number of units financed with direct loans relative to other lending activity as well as default rates on residual loans. However, use of section 59 loans in

some cases may only reflect the absence of appropriate forms and procedures to facilitate private lending. Lender willingness to provide loans to individuals has been demonstrated in Quebec. This activity indicates that lenders do not necessarily perceive risk in lending to individuals on reserves. The absence of INAC forms may and procedures rather than lender perception of risk may prevent full private lender involvement in individual lending.

D) SUPPORT FOR INAC

INAC is the lead agency responsible for the implementation of housing programs on reserves. CMHC, in this regard, is to provide support in the attainment of INAC objectives. These INAC objectives include:

- provision of financial housing subsidies to assist bands in improving Indian housing conditions

- funding co-ordination with other INAC programs and extra-departmental programs

- increasing the bands' role in the planning, management and delivery of housing according to construction standards through financial and technical advice

- direct delivery of housing units to bands lacking delivery capacities.

1) Provision of Financial Housing Subsidies

In support of this INAC objective, CMHC makes its assistance available to all bands. Between 1980 and 1984, the present value of CMHC commitments for new construction subsidy assistance under Section 56.1 amounted to 65 per cent of INAC capital expenditures for new construction. Over the same period, CMHC rehabilitation subsidies (RRAP forgivable loans) amounted to one-half the total INAC expenditures for rehabilitation. Since 1978, nearly two-thirds of all bands nation-wide have had contact with one or more CMHC programs. While CMHC has provided assistance to more than two-thirds of urban or rural designated bands, only one-half the remote or special access bands have used the programs.

The current program design provides INAC with full responsibility for allocations. Not in receipt of an allocation, a band is unable to participate in the program. Less remote or special access band involvement likely follows from present allocation procedures. For example, analysis of the social housing program has indicated that allocations have tended to favour larger bands and those having urban proximities. It must also be recognized that some bands are unwilling to participate in CMHC programs.

2) Funding Co-ordination

Co-ordination, such as in processes and procedures leading to payments to bands, appears to have presented certain problems. Bands, INAC offices and CMHC offices have all reported certain difficulties with aspects of co-ordination. Fifty-six per cent of bands rated overall co-ordination as ineffective and thirty-five per cent of CMHC branch offices indicated the processing of INAC ministerial guarantees is very slow. Program aspects which may explain these difficulties are the different INAC-CMHC fiscal years and a centralized INAC process for the issuance of ministerial guarantees.

INAC prepares its budget on fiscal cycles commencing April 1. The CMHC budget is finalized for the calendar year commencing January 1. This process creates a three month gap between the beginnings of new CMHC and INAC budgetary cycles. While bands might be made aware of their social housing allocation as early as January of a given year, they must await its finalization through the INAC allocation which occurs three months later. Only when INAC allocation are finalized can bands embark, with certainty, on their housing program which will include physical planning, paperwork, plus contractor and lender negotiations. Actual construction or rehabilitation cannot commence until this groundwork is complete. This may occur a few months subsequent to the finalization of the INAC budget. A shorter construction season plus pressure to work through winter months is the usual result of this process.

INAC approves and issues all ministerial guarantees through INAC headquarters in Ottawa. Delays can result when processing occurs away from the office where the initial application is made. In situations where insufficient or incorrect information has been provided to INAC headquarters and where mail service is relied upon, the entire process may be slowed.

Although not a coordination problem, it should be noted that INAC staff perceive the paperwork associated with CMHC programs to be somewhat overbearing. This concern likely arises out of the contrast between the INAC grant program and the CMHC long term subsidy approach. While the INAC contribution agreement signed between bands and INAC may be sufficient to enable the provision of INAC front-end grants, the processes of the Section 56.1 program are somewhat more complex. The intricacies of social housing which result in INAC staff notifying bands of allocations, reviewing band proposals, recommending and distributing ministerial guarantees, releasing funds, following-up project capital cost and financial audit statements plus annual reports are much more intensive than the signing of a contribution agreement. In absolute terms CMHC programs do have greater demands in delivery procedures. Perhaps unaccustomed to or unfamiliar with the complexities of the long term CMHC approach, INAC staff perceive the demands as cumbersome.

3) Increasing the Bands' Role in Housing Matters

There is no explicit CMHC program objective to augment the bands' roles in housing matters. However, the nature of CMHC programs is such that band involvement in the planning, development and management of housing matters is essential. This involvement, under section 56.1, ranges from project pre-development work, the collection of rents, the submission of annual project audit statements and on-going maintenance once a project is complete. Under RRAP, bands may act as delivery agents fulfiling a variety of planning, inspection and management responsibilities.

While CMHC programs make these demands upon bands, responsibility for the provision of financial and technical training which may be needed in meeting these demands rests with INAC. Nearly seventy per cent of bands indicate dissatisfaction with the availability of training. CMHC does provide information on the utilization of its programs. It makes available funding to pay for consultants used in project pre-development. Certain of its rehabilitation courses remain available through community colleges. As well, CMHC inspection services will provide technical advice. Unfortunately, in certain instances, where band skills are weak or non-existent these CMHC activities may be insufficient. However, with neither the mandate nor the resources to impart the necessary skills to bands, there is little more CMHC can do.

4) Direct Delivery of Housing

CMHC has no specific program objective concerning direct delivery of housing to bands without the ability to do so themselves. However, under RRAP in 1985 approximately twenty-five per cent of units were delivered directly by CMHC. Direct RRAP delivery may occur when bands are new to or unfamiliar with the program. The nature of the Section 56.1 program precludes the direct delivery of housing units. Under Section 56.1 bands must undertake project development and management activities themselves.

E) SUMMARY

Required Section 56.1 program standards for architecture and planning, inspections, mortgage and property administration, space and social development represent factors distinguishing CMHC from INAC-only funded units. Further contributing to appropriate housing is the fact that CMHC units on reserves have always had to meet the minimum standards of the national building code. Higher levels of occupant satisfaction have been found in Section 56.1 housing in comparison to other housing on reserves.

Crowding has been identified as a problem in Section 56.1 housing. Often difficult to predict factors such as future fluctuations in family size and structure plus urban-reserve migration patterns contribute to crowding. Newer and larger Section 56.1 units also become the best available temporary residences. Those without units or those awaiting new units may join friends and relatives in existing units. However, should information on family size be accurate, the MUP program feature allows for the provision of modest, uncrowded units to accommodate the family.

Given the income levels on reserves in comparison to the rest of Canada, the low and moderate income objective of the Section 56.1 program has been achieved. The selection of tenants and, hence, the income character of projects is determined by the band council but governed by program guidelines. With regard to regional and band allocations, units have not been allocated in accordance with the principle of need. Bands which have received units tend to be urban, larger and assume greater levels of responsibility for housing matters.

Affordable housing is generally associated with Section 56.1 housing on reserves. Program features such as minimum and maximum monthly rents contribute to affordability. However,

the depth of the current Section 56.1 subsidy does not allow for the attainment of this objective independent of assistance from other programs. Affordable housing on reserves is achieved when the Section 56.1 subsidy is used in conjunction with the front-end grants from INAC.

On reserves, RRAP is associated with improved housing conditions relative to bands not using RRAP. Units receiving only INAC assistance have a higher incidence of substandard items. RRAP renovation standards plus a RRAP forgiveness level which exceeds the average INAC grant by about $1 000, contribute to these differences. Stacking of CMHC and INAC assistance in many cases could provide the funds to effect all necessary repairs. The outstanding repair costs, amenities included, of approximately $4 300 for units which received RRAP, is an amount well within the $6 000 available INAC renovation grant. However, there is no requirement for bands to stack assistance. Bands tend to spread thin their renovation dollars to as many units as possible. Stacking occurs when only the worst units are encountered. However, the average cost to standardize a unit having received neither CMHC nor INAC assistance is $11 000. This amount equals the combined maximum assistance levels available from CMHC and INAC. However, the combined amount would be insufficient to standardize units with above average costs. Even when stacking is used, insufficient renovation dollars are applied to a unit.

Achievement of the RRAP objective to encourage on-going maintenance is impeded by the INAC shelter allowance program. Since occupants of INAC-only new construction, subsidy units are not entitled to a shelter allowance under the welfare system, their ability to undertake on-going post-RRAP maintenance is restricted.

Health and safety threats are found in RRAP units. Units combining CMHC and INAC assistance showed no significant difference from RRAP-only units. Units in receipt of combined funds are likely those experiencing the most severe problems. In this context, stacking improves units to the level of improvement experienced by less deteriorated units funded solely under RRAP. The sufficiency of renovation assistance applied to these units plus the ability to secure a sufficiency of funds for these units affect the attainment of these objectives. Bands must strike a balance between available funds and the often severe conditions faced.

Finally, while individuals in receipt of RRAP demonstrate need, they demonstrate no greater need than those who have not received RRAP. Allocations to band members is a band

council responsibility. Provided the applicants meet program requirements, CMHC must accept band council selections. As INAC has responsibility for provincial allocations, inaccuracies in their needs analysis affect the extent to which RRAP units are allocated on the basis of need.

The participation of private lenders in the individual construction program has not occurred outside of Quebec. Section 59 CMHC residual loans are the primary source of funds used in individual construction. This use of Section 59 loans could be unwarranted. Lenders outside Quebec are unable to make loans to individuals as INAC regions have not yet developed the loan and ministerial agreement forms to meet lender requirements. It appears that the absence of forms and procedures rather than lender perception of risk with individual lending on reserves prevents full lender participation in this program activity.

Towards support of INAC housing objectives, CMHC makes its assistance available to all bands. However, the allocation procedures of INAC exert influence over which bands receive CMHC subsidy assistance. Problems in funding co-ordination have been noted and explained in view of differing INAC-CMHC fiscal years and centralized INAC processing of ministerial guarantees. The nature of CMHC programs encourages band involvement in delivery and management, yet, the responsibility for training rests with INAC. While dissatisfaction exists with the amount of training now available, CMHC has neither the mandate nor the resources to provide it. Direct delivery may occur under RRAP but is precluded by the design of Section 56.1.

CHAPTER IX

ALTERNATIVES

The evaluation findings presented in Chapters III to VIII indicate that alternative organizational arrangements as well as program modifications may improve the effectiveness and efficiency of on-reserve housing initiatives. The purpose of this chapter is twofold. First, alternative roles for INAC and CMHC in the delivery of on-reserve housing programs are proposed and assessed. Second, based on evaluation findings, certain program modifications are identified. It should be emphasized that the alternatives put forth here are intended to guide future efforts to review and develop Indian housing policy and programs and should not be considered as recommendations for immediate action.

A) ROLE OF INAC AND CMHC

This section considers alternative roles for INAC and CMHC in the delivery and administration of on-reserve housing programs. These alternatives are considered in the context of current initiatives to achieve Indian self-government through constitutional amendment or through other procedures such as amendments for the Indian Act which provide Bands with increased responsibilities for the administration of social services, thereby decreasing the involvement of Federal departments in program administration. However, the process of achieving constitutional amendment may be lengthy and not all bands may be capable or desirous of acquiring increased administrative responsibilities through other measures. In the meantime, alternative organizational arrangements to facilitate the delivery of housing programs should be considered. The alternatives identified here are to be viewed as interim arrangements with the eventual administration of housing funds and programs on-reserves to be conducted by the bands themselves.

1) Alternatives

Three alternative roles for INAC and CMHC in the administration and delivery of on-reserve housing programs are considered:

- Status Quo: INAC and CMHC continue to administer/deliver each department's programs with INAC having the lead role.

- INAC Only: INAC administers all housing programs with no CMHC participation either in delivery or in the provision of technical services.

- INAC with limited CMHC involvement: INAC administers/delivers all subsidy funds/programs with CMHC continuing to provide direct loans, loan insurance and technical services on a fee-for-service basis.

a) Status-Quo

The findings of this evaluation indicate the following problems with the current organizational arrangements[1]:

- Difficulties in planning and coordinating delivery activities between the two agencies since INAC and CMHC operate on different fiscal years.

- The perception by bands that funding co-ordination is ineffective.

The consultations with Indian groups also indicated that bands find it difficult to deal with two different organizations on housing matters. Bands have expressed a preference to have all federal housing programs administered by INAC.

Thus, while the present arrangements are working, there are coordination problems between the two agencies. Perhaps more important, however, there is a desire on the part of bands to see all responsibility for housing funds rest with one agency (INAC)[2].

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1 These problems are outlined in detail in Chapter V.

2 National Indian Housing Council, Indian Participation and Consultation in the Review of the Summary Report of the CMHC On-Reserve Housing Program Evaluation, Report submitted to CMHC, May, 1986.

National Indian Housing Council, Indian Consultation and Participation Summary Report: Evaluation of the On-Reserve Housing Program, Report submitted to the Honourable David Crombie, January, 1986.

b) INAC Only

Chapter III of this report indicated it would be possible for INAC to undertake all the activities presently carried out by CMHC on-reserves. That is, INAC could acquire the technical expertise and put in place administrative systems to conduct a lending function and to administer an on-going subsidy program such as Section 56.1. However, this could not be done without substantial and possibly costly changes.

The following problems were identified:

- INAC does not presently have lending authority for housing purposes. This would have to be acquired. It may also be necessary for INAC to acquire authority to provide on-going subsidies to rental projects.

- While INAC could acquire staff with the skills and expertise to conduct lending operations and on-going subsidy programs, administration costs may be higher than under present arrangements where CMHC carries out these functions. This is because CMHC conducts lending and on-going subsidy programs off reserves as well so that scale economies are achieved and well developed administrative systems are already in place.

The INAC Only alternative would address the problem of bands dealing with two different organizations but may be difficult and costly to achieve.

c) INAC with CMHC Lending and Technical Services Assistance

This alternative would partly address some of the difficulties INAC would encounter in taking over all CMHC activities on-reserves, by retaining the lending function at CMHC. The Corporation would also provide technical services on a fee-for-service basis to assist INAC in this area, as required. Unfortunately, this approach does not address the main concern of Indian bands: i.e., the problem of dealing with two different agencies on housing matters. While INAC would administer renovation and new construction subsidy programs, bands would still be required to deal with CMHC for loans, loan insurance and associated inspections and advances. Further, this

alternative would put CMHC in the position of delivering certain aspects of on-reserve housing programs (e.g., loans, inspections, advances) without the ability to adjust program policies or procedures in response to problems which may arise.

2) Assessment

It is evident that each of the three alternatives presents problems for the bands or the administering agencies or both. The evaluation findings indicate that problems of funding coordination are associated with the status quo. The second alternative (INAC only) would both reduce coordination problems between CMHC and INAC and respond to the bands' wishes to simplify on-reserve programming by dealing with only one agency. Under this alternative, however, there may be difficulties and high administration costs in setting up a lending function at INAC to deal with a small volume of loans.

The third alternative would remove the need for INAC to become involved in lending, but would continue CMHC involvement in program delivery. Bands would continue to have to deal with two agencies and CMHC would be in the difficult position of having to deal with bands on program delivery matters without the capacity to alter program policies or procedures in response to program problems.

Further investigation of the third alternative could identify ways of reducing or eliminating CMHC involvement in program delivery aspects while permitting the Corporation to continue to conduct the lending function. For example, consideration could be given to removing the requirement for Section 6 loan insurance given that the INAC Ministerial Guarantee provides the basic security for approved lender loans (see next section of this Chapter). With regard to direct CMHC loans, an approach whereby bands would deal directly with INAC for loan applications, inspections, advances and repayments, and INAC would then deal with CMHC might be feasible. In effect, INAC would be operating as an agent for CMHC in lending matters on-reserves. Such an approach would permit bands to deal only with INAC on housing program delivery matters and INAC would not need to set up a lending function for housing on reserves. The provision of technical services by CMHC might also be arranged so that CMHC deals only with INAC. INAC, in

turn, would deal with the bands regarding the results of inspections, plan reviews, etc.

Based on the evaluation findings, this section has assessed a small number of alternative roles for INAC and CMHC which stem from the evaluation findings. A much broader range of roles for INAC, the Bands and CMHC could be considered in a comprehensive review of housing policies and programs. The alternatives assessed here are intended to provide input to such a review.

B) PROGRAM MODIFICATIONS

As indicated above, there is a need for a comprehensive review of Indian housing policy/programs apart from this evaluation of CMHC's on-reserve housing programs. The purpose of this section is to identify certain aspects of the on-reserve housing programs which would be considered for in-depth examination in a comprehensive policy review. Evaluation findings for each program are considered and their implications for program modifications identified.

1) Section 56.1 Non-Profit Housing

While the Section 56.1 program is for the most part achieving its objectives on reserves, the evaluation findings suggest areas where changes could improve program effectiveness.

a) Assistance on Basis of Need

Commitments of Section 56.1 units across regions do not reflect the need for new housing based on indicators of crowding. Ontario accounted for 22 per cent of all crowded households on reserves but has received less than 10 per cent of Section 56.1 units since 1981. In contrast, British Columbia has received 28 per cent of Section 56.1 units since 1981 but accounts for only 17 per cent of crowded households.

Crowding is a major problem on reserves: thirty-six per cent of households have more than one person per room as opposed to 2.3 per cent off reserves. Increased attention to crowding indicators as a basis for new unit commitments would do much to direct housing assistance to areas in proportion to

the need which exists. With regard to past commitments, it should be noted that full take up of all Section 56.1 units made available for reserves is only expectd to occur in 1986. In effect the supply of units has exceeded the ability of bands to utilize them. With full take up expected in future years, the matching of units to need will become increasingly relevant.

It must be recognized, however, that commitments of Section 56.1 units based on crowding may not be feasible if those bands with severe crowding problems do not have the expertise to initiate and operate Section 56.1 projects. Thus, while units may be made available or allocated to bands on the basis of need they are often not taken up by bands in need. The Evaluation findings indicate that Section 56.1 is used more by urban bands, larger bands and bands which take more responsibility in housing matters. At the same time, very little use has been made of the Project Development Funding program by bands. Indian housing groups have also expressed the need for increased training in housing development and management[1].

These findings suggest that improved take up on the basis of need could be realized if greater use of PDF is encouraged for bands lacking housing expertise to assist them in the development of Section 56.1 projects. Increased training in housing project management would assist such bands to successfully operate Section 56.1 projects.

Despite efforts to improve take up on the basis of need, it is unlikely that an exact matching of units with need can be achieved. This is because some bands may be unwilling to participate in the Section 56.1 program for reasons unrelated to housing expertise. For example, some bands wish to deal only with INAC on housing matters while others are opposed to loan programs on principle.

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1 National Indian Housing Council, Indian Participation and Consultation in the Review of the Summary Report of the CMHC On-Reserve Housing Program Evaluation, Report submitted to CMHC, May, 1986.

b) Improved Cost-Effectiveness

The analysis presented in Chapter VII revealed that Section 56.1 units are less cost-effective than housing built with only the INAC capital grant. This conclusion was reached taking into account the better physical condition and longer life expectancy of the units and the higher satisfaction of Section 56.1 occupants with their housing. Although INAC-only new construction units are of lesser quality, they have lower costs per year of useful life provided than Section 56.1 units. The total subsidy (cost) on a Section 56.1 unit, when discounted to present value terms, is much higher than that for an INAC-only unit. However, the much larger Section 56.1 subsidy provides an estimated average useful-life of only 21.5 years[1] while the lower-cost INAC-only unit provides an average useful life of 16.2 years.

One possible explanation for the higher-cost effectiveness of INAC-only subsidized units is that band members are contributing greater amounts of equity, in the form of capital and/or labour, to improve the quality of their housing over and above what could be achieved with the INAC capital grant. In contrast, the much deeper Section 56.1 subsidy and the availability of loan funds to cover construction costs may act as a disincentive to greater equity contribution. While evidence to support this explanation is not available, the cost-effectiveness analysis suggests that ways to reduce the subsidy costs of Section 56.1 on-reserve housing should be investigated.

c) Deterioration of Section 56.1 Units

In the assessment of objectives achievement (Chapter IV), a problem with the physical condition of Section 56.1 units was noted. Although Section 56.1 units are in better condition than other on-reserve dwellings, one-fifth are in need of major

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1 The cost-effectiveness analysis was also conducted on the assumption that the useful life of Section 56.1 units was 50 per cent longer (i.e., 32.25 years). However, this did not alter the substance of the results reported here.

repair. This represents a high incidence of major repair need, given that these units are six years old or less. In contrast, only eight per cent of Section 56.1 units off reserves were found to be in need of major repair.

This evidence suggests that investigation of ways to halt the deterioration of Section 56.1 units is required. Analysis of the condition of housing components indicates that the rapid deterioration of Section 56.1 units is more likely attributable to environmental factors and construction techniques than to building design or occupant practices. If more in-depth analysis confirms these findings, emphasis on investigation of technology to overcome adverse environmental factors and the encouragement of improved construction techniques would be appropriate.

2) RRAP

While RRAP has been successful in ameliorating on-reserve housing conditions, the program has had less success in achieving its objectives on reserves. This suggests that ways to improve the performance of the program should be considered.

a) Assistance on Basis of Need

From a national perspective, RRAP was found to be well-targeted to individuals on the basis of need. The evaluation findings indicate, however, that RRAP is not taken up by bands on the basis of need. In particular, allocation to bands on the basis of need is very poor in Manitoba and Saskatchewan where the need for repair is significantly larger for bands not receiving RRAP than for bands which did receive RRAP funding.

Greater use of need for repair indicators as a basis for committing RRAP forgiveness would assist in directing renovation assistance to bands on the basis of need.

b) Increased Forgiveness Levels

The analysis presented in Chapter IV indicated that RRAP did not achieve objectives concerning improved housing, health and safety, extension of useful life of dwellings and promotion of maintenance. A key

finding is that, even after RRAP, houses still require an average of $4 300 in renovation work if RRAP standards are to be achieved. In contrast, the average cost to upgrade deficient RRAP units off reserves was $630. For on-reserve units which have not previously received renovation assistance an average of $11 000 would be required to achieve RRAP standards. It is clear that RRAP forgiveness levels alone, which now vary from $5 000 to $8 250 depending on location, are insufficient to meet average renovation needs on reserves.

On reserves, RRAP forgiveness is often combined with the INAC renovation grant. In combination, these two sources would provide sufficient assistance to meet the average cost of reaching RRAP standards. However, there is no requirement to combine the funding sources to ensure that all the work needed to meet RRAP standards is carried out. In practice, the two funding sources are only combined in the worst cases of rehabilitation need. In such cases, even the combined assistance is usually insufficient to bring the units to RRAP standards.

One approach to the problem of partial rehabilitation on reserves would be to require the use of both funding sources where necessary to ensure that units will comply with standards. This would result in the achievement of standards for a large proportion of all on-reserve units in need of major repair. To meet the worst cases of rehabilitation need, however, larger maximum subsidies would have to be made available from one or both agencies. The difficulty with providing larger per unit subsidies from a given subsidy pool is that fewer households can benefit from the receipt of renovation assistance.

Another approach to address the problem of partial rehabilitation on reserves would be to encourage the use of RRAP repayable loans in cases where the RRAP forgiveness level alone or combined with the INAC renovation grant are insufficient. The high incidence of welfare recipients on reserves should not restrict the use of RRAP repayable loans since INAC shelter allowances can be provided for loan repayment. For low income wage earners not on welfare, however, the ability to repay a rehabilitation loan is limited. RRAP repayable loans amounted to only 2 per cent of RRAP commitment funds in 1984. This may be because RRAP is seen by bands and DIAND primarily as a grant program. The use of RRAP

as a loan program with shelter allowances to meet payments for welfare recipients has received little promotion in the field. Greater efforts to promote this aspect of RRAP could do much to prevent partial rehabilitation on reserves.

c) Extend RRAP Standards

The evaluation findings indicate that units which received RRAP funds for renovation work were generally in better physical condition upon completion of the work than units which received only the INAC renovation grant. RRAP units had fewer substandard items, were more likely to have basic amenities, had fewer health and safety hazards and had occupants who were more involved in housing matters and were more satisfied with their dwelling (see Chapter IV). Moreover, the superior performance of RRAP cannot be explained by the amount of subsidy provided. On a weighted average basis, RRAP forgiveness over the period 1979 to 1984 exceeded the average INAC renovation grant by only $60 per unit.

These findings suggest that the use of RRAP standards for on-reserve renovation projects has resulted in superior performance. Extension of these standards to all subsidized renovation work should be considered.

3) Lending

While the insured and direct lending programs have been successful in achieving their objectives on reserves, there are two areas where changes could be considered.

a) The Need for Section 6 Loan Insurance

Chapter III of this study considered the requirement for Section 6 loan insurance on reserves given that the INAC Ministerial Guarantee provides the basic security for the loan. In effect, current arrangements do not allow the mortgage insurance fund to be exposed once construction is completed. The requirement for Section 6 insurance on reserves is based more on administrative requirements than the need to provide an underwriting function to lenders.

Removal of the requirement that Ministerial Guarantees can only be issued on NHA loans should be considered in a review of Indian housing policy and programs. This would reduce one source of coordination problems between INAC and CMHC in the delivery of on-reserve housing programs. Also, it would simplify matters for clients, since only one agency would be involved in the lending process. However, without Section 6 insurance and the associated CMHC inspections, an increased burden would be placed on INAC inspection services. Further, it would be necessary to guage the reaction of private lenders to this proposal. A key reason for private lender involvement in the early years of the Section 56.1 program was the availability of Section 6 insurance in addition to the Ministerial Guarantee. This "double protection" and the involvement of CMHC may have been a key factor in the increased participation of private lenders in Section 56.1 rental housing projects. Although lenders have now had considerable experience with on reserve loans, and may be more confident about participating in the absence of CMHC involvement through Section 6, their reaction to the proposal should be sought.

b) Increased Private Lending to Individuals

The evaluation findings indicated that there is a potential to increase the participation of private lenders in the provision of capital financing to individuals. The volume of loans to individuals has been very low on reserves and most have been made by CMHC under Section 59[1]. However, private sector lending has occurred in recent years in Québec. Between 1982 and 1984, 38 approved lender loans were made in Québec. Twenty-one of these loans were made in 1984 and accounted for one-third of all loans made to individuals on reserves.

It appears that private sector lending has been encouraged in Québec by INAC staff who have worked with lending institutions to develop procedures, documentation and terms acceptable to both lender and borrower. To the extent that the experience in Québec could be extended to other regions, private

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1 Between 1979 and 1984, 285 loans were made to individuals for housing construction on reserves. CMHC direct loans accounted for 87 per cent of this total.

lender financing could further contribute to reduced government financial requirements for on-reserve housing.

Participation of the private sector in financing band non-profit projects reached 90 per cent of all units committed in 1984. Individual construction loans, like band loans, are backed by a Ministerial Guarantee and Section 6 insurance. To the extent that the same security is available to private lenders for loans to both band and individuals, it would appear that greater participation could be encouraged for individual lending and the successful experience in Québec could serve as a model for other regions.

4) Encourage Individual Involvement

Analysis of indicators of individual responsibility for, and involvement in, their housing indicates that increased involvement/responsibility may lead to better housing. Improved house conditions were found to be associated with individual involvement in the design and construction of one's house and responsibility for repairs.

Since improved house condition extends the useful life of dwellings, thereby reducing the need for future government expenditures, a high priority should be placed on seeking ways to encourage individual involvement and responsibility. More emphasis on client involvement in the design stage and in the provision of sweat equity during construction could be considered along with greater client counselling on maintenance and repairs to their units.

C) SUMMARY

This chapter examines interim roles for INAC and CMHC in the delivery of on-reserve housing programs and, based on evaluation findings, provides suggestions for program changes to be considered in subsequent studies of Indian housing policy and programs.

Alternative Roles for INAC and CMHC:

Three alternatives are considered:

- Status-Quo
- INAC Only
- INAC with limited CMHC involvement

Under the Status-Quo alternative, bands find it difficult to deal with two different agencies on housing matters and coordination problems between the agencies arise. Consultations with Indian groups also revealed a preference for all on-reserve housing programs to be administered by INAC in the short term. The second alternative (INAC Only) would meet the requirement that bands deal with only one agency but may be difficult and costly to achieve. This is because INAC would need to acquire authorities and set up systems to conduct lending operations and on-going subsidy operations for a low volume of activity. CMHC conducts these activities off reserves as well so that scale economies are achieved and well developed administration systems are already in place.

The third alternative would have INAC administering all subsidy programs with CMHC retaining the lending function and providing technical services as required on a fee-for-service basis. This would address some of the difficulties INAC would encounter in taking over all CMHC activities on reserves but bands would still be required to deal with two agencies: INAC for subsidy programs and CMHC for loans and technical services. Further, CMHC would be in the position of dealing with bands on certain aspects of program delivery (e.g., loans, inspections, approval of advances, plans review, etc.) without the ability to alter program policies or procedures in response to program problems.

Further investigation of the third alternative could identify ways to reduce or eliminate CMHC involvement in program delivery while permitting the Corporation to continue to conduct the lending function and to provide technical services as required. For example, consideration could be given to: removing the requirement for Section 6 loan insurance on loans secured by a Ministerial Guarantee; having INAC act as an agent for CMHC in direct lending on reserves; and dealing directly with INAC in the provision of technical services with INAC dealing directly with bands.

While a broad range of alternative roles for INAC, the Bands and CMHC could be assessed, this review has focussed on a limited number of alternatives arising from the evaluation findings. The assessments provided here are intended as input to a broader review of on-reserve housing policy and programs.

Program Modifications:

Based on evaluation findings, several suggestions for program changes are put forth for future consideration in an in-depth review of Indian housing policy and programs:

Section 56.1:

- Need Based Assistance

  Commitments of Section 56.1 units across regions does not reflect the need for new housing based on indicators of crowding. Increased attention to crowding indicators along with greater use of Project Development Funding and increased training in housing project management would do much to to direct housing assistance to areas in proportion to the need which exists.

- Improved Cost-Effectiveness

  While Section 56.1 units are of higher quality and have a longer useful life than housing built with only the INAC capital grant, the subsidy cost is proportionately higher. Ways to reduce the subsidy costs of Section 56.1 on-reserve housing, thereby improving cost-effectiveness, should be investigated.

- Extend Useful Life

  While Section 56.1 units are in better condition than other on-reserve dwellings, one-fifth are in need of major repair. Investigation of ways to halt the deterioration of Section 56.1 units is required.

RRAP:

- Need Based Assistance

  Although RRAP was found to be well targeted to individuals, program funds are not taken up by bands in proportion to the need they experience. Greater use of need for repair indicators as a basis for commitments should be considered.

- Increased Foregiveness Levels

  While average unit renovation costs can be met when the INAC renovation grant and RRAP forgiveness are combined, a larger subsidy is required to meet the worst cases of rehabilitation need. Further, the use of both funding sources should be required in order to avoid partial rehabilitation and ensure that units receiving assistance will comply with standards.

- Encourage RRAP Repayable Loans

  RRAP repayable loans amounted to only 2 per cent of total RRAP commitments in 1984. Greater efforts to promote this aspect of RRAP in conjunction with INAC shelter allowances for loan repayment could do much to address the problem of partial rehabilitation on reserves.

- Extend RRAP Standards

  Units which received RRAP funds for renovation work were generally in better empical condition than units which received only the INAC renovation grant. Extension of these standards to all subsidized renovation work should be considered.

Lending:

- Review the need for Section 6 Insurance

  Removal of the requirement that Ministerial Guarantees can only be issued on NHA loans should be considered. The need for Section 6 loan insurance on reserves is questionable given that the Ministerial Guarantee provides the basic security for all housing loans.

- Increased Private Lending to Individuals

  Although the volume of loans to individuals on reserves has been low and most have been CMHC direct loans, private sector lending has occurred in recent years in Quebec. Based on the experience in Québec, the potential for increased private lender financing in other regions should be explored.

Encourage Individual Involvement:

Improved house conditions were found to be associated with individual involvement in the design and construction of one's house and responsibility for repairs. Initiatives to increase client involvement in design and construction should be considered along with greater client counselling on maintenance and repairs to their units.

CHAPTER X

CONCLUSIONS

The present on-reserve housing policy of the federal government was announced in September 1977. Under this approach, CMHC was directed to support Indian and Northern Affairs Canada by making funds and technical expertise available through various sections of the National Housing Act. The main CMHC programs used to support INAC include non-profit housing (Section 56.1) and RRAP (Section 34.1), which provide subsidy assistance for new construction and rehabilitation, and lending programs which provide financing directly (Section 59) or encourage the use of private funds through the provision of NHA insurance (Section 6).

The main purpose of this evaluation has been to assess the performance of CMHC programs operating on reserves in achieving their individual objectives and in providing overall support to INAC. In addition, the need for housing programs on reserves and the rationale for continued CMHC involvement in the provision of housing assistance and expertise has been assessed. The evaluation has also examined other impacts and effects of the programs as well as their cost-effectiveness in relation to INAC programs. Conclusions on each aspect of the evaluation are presented below.

<u>There is a continuing need for housing assistance on reserves</u>.

While there has been some improvement in housing conditions on reserves since 1977, there continue to be severe problems of crowding, poor physical house conditions and lack of basic amenities:

- 36 per cent of on-reserve units are crowded as opposed to 2.3 per cent in Canada as a whole,
- 43 per cent of housing units are in need of major repair as opposed to 10 per cent throughout rural Canada,
- 40 per cent do not have access to running water, indoor toilet or bathing facilities as opposed to only 1 per cent across Canada.

Given the extent of housing problems, the low incomes of on-reserve households and the absence of a functioning housing market on reserves, it is clear that continued federal assistance is required.

The rationale for CMHC involvement in on-reserve subsidy programs is less clear

The provision of financial assistance through two different agencies can create problems of coordination or inefficiency. Provision of subsidies through a single agency would reduce coordination problems which arise when more than one agency is involved and would simplify matters for bands. Further, consultations with Indian housing groups indicated support for the consolidation of all housing programs at INAC.

Continued CMHC involvement in lending and the provision of technical services may be justified on efficiency grounds.

Because CMHC conducts lending operations and provides technical services off reserves as well, scale economies are achieved and well developed administration systems and authorities are already in place.

Further investigation of organizational arrangements could be carried out.

The evaluation findings indicate that problems of funding coordination are associated with the present role of INAC and CMHC in administering housing programs on reserves. Examination of an alternative whereby INAC alone would administer all housing programs and services on reserves and one with INAC operating subsidy programs and CMHC providing loans and technical services also indicate potential problems. The examination of this limited range of alternatives is intended to provide input to an overall review of housing policy on reserves which would consider a broader range of alternatives.

The Section 56.1 Non-Profit Program is providing modest, affordable accommodation for low and moderate income households.

The Section 56.1 program is well targeted to low and moderate income households given the extremely low incomes on reserves in relation to the rest of Canada. Also, the housing provided is modest: Section 56.1 units on reserves are rarely committed over the Maximum Unit Prices.

The Section 56.1 program provides better quality housing than units built without CMHC assistance.

In relation to units built with only the INAC capital grant, Section 56.1 units are in better physical condition, are more likely to have basic amenities and are slightly larger.

Section 56.1 units are experiencing rapid deterioration.

Although Section 56.1 units are in better physical condition than other recent on-reserve housing, they are nevertheless experiencing rapid deterioration relative to off-reserve units. One-fifth of Section 56.1 units on reserves were found to be in need of major repair. This represents a high incidence of major repairs need given that these units are 6 or less years old. In contrast, only 8 per cent of Section 56.1 units off reserves were found to be in need of major repair.

A relatively large proportion of Section 56.1 units are crowded.

Another aspect of the objective of providing appropriate housing that is not being achieved is the provision of uncrowded housing. Thirty per cent of Section 56.1 units are crowded, about the same proportion as that for other on-reserve housing. However, crowding is a problem which only the provision of additional adequate units can solve.

Section 56.1 units have not been committed on the basis of need.

Commitments of Section 56.1 units across regions or bands does not reflect the need for new housing based on indicators of crowding. Increased attention to crowding indicators as a basis for new unit commitments would do much to direct housing assistance to areas in proportion to the need which exists. An exact matching of need with unit allocations is unlikely, however, since some bands do not have the necessary expertise while others are unwilling to participate in the Section 56.1 program. Since full take up of Section 56.1 units is expected to occur in 1986, the matching of take up to need will become increasingly important for future commitments.

RRAP has performed well in providing assistance to households on the basis of need.

There is little doubt that those who have received RRAP on reserves are in need. Two-thirds of all on-reserve households have incomes of $10,000 or less and RRAP recipients on reserves are two times more likely to earn $10,000 or less than off-reserve RRAP clients.

RRAP is not taken up by bands on the basis of need.

Overall, there is no difference in need for repair between bands which have used RRAP and those which have not. However, targeting to need is very poor in Manitoba and Saskatchewan where the need for repair is much higher for bands not using RRAP than for bands which received RRAP funds.

RRAP has not been successful in achieving its housing quality objective on reserves.

Objectives concerning improved housing, health and safety, extension of the useful life of buildings and promotion of maintenance practices have not been met:

- On average, each RRAP unit on reserves has 7 items which do not meet standards of housing quality.
- Health hazards persist in 82 per cent and safety hazards in three-quarters of RRAP units.
- Threats to useful life of the dwellings exist in 85 per cent of RRAP units.
- No evidence of an effect of RRAP on household maintenance practices was found.

RRAP forgiveness alone is not sufficient to meet average rehabilitation costs required to bring units to standards on reserves.

A key finding of this evaluation is that after RRAP, houses still require some $4,300 in renovation work to achieve RRAP standards. For units which have not previously received renovation assistance, an average of $11,000 would be required to achieve RRAP standards.

Partial rehabilitation could be reduced by combining CMHC and INAC subsidies.

The incidence of partial rehabilitation work could be significantly reduced by combining RRAP forgiveness with the INAC renovation grant where required to meet the cost of achieving RRAP standards. However, the difficulty with providing larger per unit subsidies from a given annual subsidy pool is that fewer households can benefit from the receipt of renovation assistance.

Even when RRAP forgiveness is combined with the INAC renovation grant, the total subsidy may not be sufficient to achieve RRAP standards.

In combination, the two sources of assistance would provide sufficient subsidy to meet the average cost of achieving RRAP standards. To address the worst cases of cost-effective rehabilitation (as opposed to new construction) however, larger maximum subsidies would be required.

Greater use of RRAP repayable loans could help reduce partial rehabilitation

In cases where the RRAP forgiveness level alone or in combination with the INAC capital grant are insufficient, greater use of RRAP repayable loans should be encouraged. The high incidence of welfare recipients on reserves should not restrict the use of repayable loans since INAC shelter allowances can be provided for loan repayment. In 1984, however, only 2 per cent of total RRAP funds committed were repayable.

RRAP has been successful in ameliorating on-reserve housing conditions.

While RRAP has not achieved its housing quality objectives on reserves, it has had positive effects on the amount of outstanding renovation required and the provision of basic amenities. In comparison to units which received only the INAC renovation grant, RRAP units:

- had fewer substandard items
- were more likely to have basic amenities
- had fewer health and safety hazards
- had occupants which where more involved in housing matters and were more satisfied with their dwelling.

The superior performance of RRAP on reserves suggests that the extension of RRAP standards to all renovation work should be considered.

A greatly increased role for private lenders in financing Section 56.1 units has been achieved.

Between 1979 and 1984 the percentage of Section 56.1 units financed with private capital increased from 30 per cent to 90 per cent. Thus, the Section 6 objective of encouraging private lending activity on reserves, thereby reducing government capital requirements, has been achieved although this is primarily due to the INAC Ministerial Guarantee which provides the basic security for the loans. At the same time, the role of direct lending (Section 59) has been reduced to a residual component for on-reserve Section 56.1 units.

The continued need for Section 6 insurance on reserves should be re-assessed.

Chapter III of this study considered the requirement for Section 6 loan insurance on reserves given that the INAC Ministerial Guarantee provides the basic security for the loan. In effect, current arrangements do not allow the mortgage insurance fund to be exposed once construction is completed. The requirement for Section 6 insurance for on-reserve loans appears to be based on administrative requirements rather than the need to provide an underwriting function to lenders. Removal of the requirement that Ministerial Guarantees can only be issued on NHA loans should be considered in a review of Indian housing policy and programs. Consultations with lenders should be held to seek their views on the matter.

Very few loans are made to individuals on reserves but there may be a potential to increase private lending activity.

The volume of loans to individuals has been very low (only 285 loans between 1979 and 1984) and most have been made by CMHC under Section 59. To a large extent, this reflects household incomes on reserves. Nevertheless, some private lending has occurred in recent years in Quebec. Based on the experience in Quebec, there may be a potential to increase private lender financing for individuals in other regions.

CMHC has provided considerable support for INAC housing initiatives on reserves.

Since 1979, when the Corporation became extensively involved in on-reserve housing, CMHC has supported INAC in achieving the objectives of its On-Reserve Housing Program by:

- Providing financial subsidies under Section 56.1 and RRAP,

- Increasing the role of bands,
- Undertaking direct delivery of RRAP where necessary.

Some problems exist with regard to funding coordination.

Achievement of the INAC objective of funding coordination has been affected by the different planning periods (fiscal years) used by the two agencies and by slowness of the Ministerial guarantee process.

Take-up of CMHC's Project Development Funding (PDF) program has been limited.

Limited take-up of PDF funds has occurred partly because INAC provides similar funding to cover band costs for financial and technical assistance, and partly due to lack of promotion of the program by CMHC. However, bands have indicated a desire for increased funding of this type.

Section 56.1 assistance has had a positive effect on housing quality at the band level.

Although the independent effects of CMHC programs on housing quality are difficult to measure, the evidence suggests that bands which received more Section 56.1 funding per capita have experienced larger increases in housing quality between 1977 and 1984. It appears that Section 56.1 assistance, in addition to the INAC new construction capital grant, is required to reach the funding threshold which permits the construction of good quality housing.

CMHC programs have probably had a positive effect on the managerial expertise of bands and the technical skills of their members.

Although data with which to provide quantitative evidence are unavailable, it is likely that the nature of CMHC programs impacts positively on band management and technical skills. The Section 56.1 program requires extensive band planning and management and makes funds available for project development (PDF). Also, RRAP is often delivered by bands. Both programs have provided opportunities for band members to work on housing projects and thereby acquire technical skills.

Overall, the trend is toward greater band involvement in all aspects of housing delivery and management although the evidence suggests that a great deal of variability in managerial skills exists between bands.

CMHC programs have had a significant economic development impact on reserves.

Based on the relationship between band perceptions of economic impact and program funding levels, both CMHC and INAC housing programs have had an important effect on economic development on reserves. Although the effect of INAC programs may be marginally stronger than that of CMHC, there is no statistically significant difference between the number of job-weeks of employment created per $1,000 of funding from the two agencies.

Individual involvement in housing matters is closely associated with better housing.

Involvement in the design and construction of one's house and household responsibility for repairs were found to have a positive effect on house conditions. This suggests that encouraging involvement/responsibility by individuals in certain aspects of housing may lead to improved house conditions.

It is likely that more financial and sweat equity is provided for units which are built with only the INAC capital grant.

The cost-effectiveness analysis carried out in chapter VII found that Section 56.1 housing was less cost-effective in terms of subsidy cost per unit of housing quality provided than INAC-only units. While INAC-only units are of lesser quality than Section 56.1 units, they are produced at a proportionately lower subsidy cost. This is probably because more equity is contributed by individuals. Unfortunately, data is not available to provide direct evidence on this matter. These results suggest that ways should be sought to improve the cost-effectiveness of Section 56.1 units, perhaps by encouraging more equity contributions.

RRAP is more cost-effective than renovations done with the INAC renovations grant.

While RRAP was found to be slightly more cost-effective than the INAC renovation grant, the nature of the cost-effectiveness analysis has probably under-estimated the difference. The better performance of RRAP is likely due to the use of RRAP standards.

GENERAL CONCLUSIONS:

The findings of this study indicate that CMHC has provided substantial support to INAC in its efforts to improve Indian housing conditions. For the most part, the Section 56.1 Non-Profit program and the lending programs have successfully achieved their objectives on reserves. While RRAP has been less than successful in achieving its objectives, there is no doubt that the program has played an important role in ameliorating Indian housing conditions.

Although CMHC programs have generally performed well on reserves, the evaluation suggests areas where improvements could be effected. With regard to organizational arrangements, the need for continued CMHC involvement has been assessed and alternative roles for CMHC and INAC reviewed. The evaluation findings indicate that problems of funding coordination are associated with the status quo. The limited assessment of alternative roles is intended to provide input to a comprehensive policy and program review which would consider a broad range of alternatives.

The evaluation findings also suggest potential modifications to existing programs which could result in improved efficiency and effectiveness. For example, commitments of units and funds on the basis of appropriate need indicators and changes to renovation subsidy arrangements to avoid cases of partial rehabilitation should be considered. A re-examination of the need for Section 6 insurance on reserves and further study of ways to encourage individual involvement in housing should also be conducted. These and other potential options should be considered in an in-depth review of Indian housing policy and programs.

APPENDIX I - MEASURES

A) THE INFRASTRUCTURE CONCEPT

One possible determinant both of housing quality and of the effectiveness of government programs on reserve is the extent of the existing physical infrastructure. It is conceivable that a better infrastructure will induce motivation to upkeep, provide a better context for renovation, help reduce the obsolescence rate, etc. It is thus important to devise a workable measure of the concept.

The census of the sampled bands that was carried out in 1984 contains indications concerning the electrical services, the road access, the water services and the toilet services for each dwelling. The quality of the physical infrastructure of each reserve can be observed through the proportions of each reserve housing stock receiving full service for each of the four types of characteristics mentionned earlier. These were calculated for each of the 62 bands which sent the census forms back.

This matrix of 62 rows by four columns was then submitted to a principal component factor analysis to examine the extent to which more than one dimension can be detected in the four variables. Table I.A.1 provides the results of that factor analysis. It is obvious that only one dimension exists in this data set. Thus, it is concluded that a simple "physical infrastructure dimension" can be derived from the weighted sum of the four characteristics of the household servicing.

Table I.A.2 provides basic descriptive statistics for each base variable used to construct this scale and for the scale itself. For ease of use in the analysis, the cumulative scale has been dichotomized using the mean as a cutpoint so that from now on the physical infrastructure indicator will be referred to as being below or above average.

TABLE I.A.1

FACTOR ANALYSIS RESULTS

	FACTOR 1	FACTOR 2
Eigenvalue	2.31	0.79
Proportion of households with full service:		
Electricity	0.75	
Road (all year)	0.58	
Water	0.79	
Toilet	0.88	

Source: On-Reserve Evaluation Surveys, census file

Note: This factor analysis used a principal component technique without rotation since a single factor was extracted.

TABLE I.A.2

UNIVARIATE STATISTICS

VARIABLE	N	MEAN	STANDARD DEVIATION
Proportion with full electricity services	62	0.75	0.32
Proportion with all year road services	62	0.87	0.20
Proportion with full water services	62	0.66	0.36
Proportion with full toilet services	62	0.67	0.34
Physical infrastructure scale	62	2.18	0.74

Source: On-Reserve Evaluation Surveys, census file

B) THE RESPONSIBILITY AND INVOLVEMENT CONCEPTS

Qualitative assessments of the issues relevant to the analysis of the impacts of the programs analysed here pointed to the importance of the relationship existing between the occupant and his/her dwelling. Broadly stated, it was felt that the degree of responsibility and involvement that one assumed in the dwelling could have a significant impact both on the actual condition of the dwelling but also on the effectiveness of the various programs used.

This level of involvement and responsibility can be seen from two points of view:

- how involved and responsible does the resident think he/she actually is?
- how involved and responsible does the resident think he/she should be?

As a starting point in the analysis of the issue, the former dimension has been preferred to the latter since it is more likely to have a direct impact on observable behavior.[1]

Table I.B.1 lists the ten indicators selected to measure some parts of the responsibility/involvement concept. All the variables relevant to the concept were used for this scale analysis.

TABLE I.B.1
LIST OF INDICATORS USED

INDICATOR	ACRONYM
Ownership of the house	OWN
Investment in the purchase of the house	INVPURCH
Involvement in the design of the house	DESGCONS
Helped build the house	DIDBUILD
Helped renovate the house	DIDRENOV
Invested in renovations to the house	PAYRENO
Responsible for maintenance	RESPMAIN
Pays for house maintenance	PAYMAIN
Responsible for repairs to the house	RESPREP
Pays for repairs to the house	PAYREP

This set of binary variables was submitted to a factor analysis to extract only the non redundant dimensions out of the data.[1] Table I.B.2 presents the correlation matrix (Pearson product moment coefficients) used here. Table I.B.3 summarizes the results of the factor analysis.

It seems clear from the eigenvalues vector that only two dimensions really exist in this set of data. The rotated factor pattern matrix demonstrates that the first factor is constituted of the four items related to the responsibility aspect while the second factor shows high loadings for the first four involvement items. This empirical evidence supports the construct of two scales: one involvement scale and one responsibility scale.

This idea was further tested using Guttman scaling analyses on each of the two sets of four binary variables. As Table I.B.4 demonstrates, there is no doubt that these two additive scales are undimensional and highly reliable. The Proctor scale reliability coefficients are 0.82 and 0.95 respectively for the involvement and the responsability scales while the scalability coefficients stand at 0.52 and 0.88.

The correlation between the two scales is significant and amounts to 0.44. For the sake of simplicity, each of the two five-point scale has been recoded to three point variables in the following fashion:

ORIGINAL VALUE	RECODED VALUE
0	0 NONE
1, 2	1 SOME
3, 4	2 A LOT

---

1 Perceptions of situations are generally recognized to have a closer effect on behavior than perceptions of desires.

2 This analysis used principal component factor analysis with varimax rotation. Because of the binary nature of the variables, the results of the factor analysis using a Pearson correlation matrix were retested with a Tau c correlation matrix and a tetrachoric coefficient matrix. All techniques lead to similar results.

TABLE I.B.2

CORRELATION MATRIX OF THE ITEMS

	OWN	INVPURCH	DESGCONS	DIDBUILD	DIDRENOV	PAYRENO	RESPMAIN	PAYMAIN	RESPREP	PAYREP
OWN	1.00	0.32	0.30	0.31	0.17	0.23	0.29	0.31	0.32	0.32
INVPURCH		1.00	0.30	0.31	0.16	0.23	0.21	0.23	0.29	0.30
DESGCONS			1.00	0.46	0.17	0.17	0.23	0.23	0.25	0.26
DIDBUILD				1.00	0.29	0.21	0.30	0.31	0.33	0.30
DIDRENOV					1.00	0.57	0.29	0.28	0.29	0.29
PAYRENO						1.00	0.21	0.24	0.24	0.28
RESPMAIN							1.00	0.81	0.52	0.49
PAYMAIN								1.00	0.53	0.56
RESPREP									1.00	0.81
PAYREP										1.00

Source: On-reserve Evaluation Surveys, household file

Note: Entries are Pearson correlation coefficients; they are all significant at the 0.0001 level

TABLE I.B.3
FACTOR ANALYSIS RESULTS

	FACTOR 1	FACTOR 2	FACTOR 3
Eigenvalue	4.00	1.29	1.18
Rotated factor pattern matrix			
OWN	0.27	0.58	0.07
INVPURCH	0.14	0.65	0.10
DESGCONS	0.08	0.77	0.04
DIDBUILD	0.19	0.70	0.17
DIDRENOV	0.20	0.12	0.86
PAYRENO	0.12	0.16	0.87
RESPMAIN	0.83	0.13	0.11
PAYMAIN	0.85	0.15	0.12
RESPREP	0.78	0.26	0.13
PAYREP	0.78	0.25	0.15

Source: On-reserve Evaluation Surveys, household file

Note: This factor analysis used a principal component technique and a varimax rotation.

TABLE I.B.4
GUTTMAN SCALING RESULTS

	INVOLVEMENT ITEMS	RESPONSABILITY ITEMS
Coefficient of reproductibility	0.89	0.95
Coefficient of scalability	0.52	0.88
Probability of misclassification (1)	0.09	0.04
Scale reliability	0.82	0.95

Source: On-Reserve Evaluation Surveys, household file

(1) Probability that a case will be classified differently using the sum or the Proctor criteria (of True Type)

Note: See John P. McIver and Edward G. Carmines, Unidimensional Scaling, Beverly Hills, Sage Publications, 1981, Chapter 4 for a clear presentation of these coefficients.

C) THE BAND SOPHISTICATION CONCEPT

Bands vary in their level of sophistication in the handling of housing related responsibilities. Since this level of sophistication might have an impact on other band level characteristics and since some concerns have been expressed about the possibility of that some independent variables can covariate with sophistication, it is important to devise a reliable measure of the band level of sophistication.

Table I.C.1 lists the variables retained to participate in the constitution of a measure of sophistication. Four aspects of sophistication are used here:

- The fact of having a housing policy
- The responsabilities devoted solely to the band
- The management activities carried out by the band
- The existence of housing allocation procedures.

Factor analyses were carried out on this set of data. Tables I.C.2, I.C.3 and I.C.4 report on the results of three factor analyses. The main problem encountered is related to the number of relevant factors to extract. Table I.C.2 uses the very common criterion of the eigenvalue greater than unity. The eigenvalues show an obvious drop in magnitude immediately after the first factor. Additionally, the four factors as described by the rotated factor pattern matrix do not seem to produce interpretable results.

Table I.C.3 tries to alleviate the problem by using Armor's criterion of falling eigenvalue which retains only the first two factors. Once again, the factor loadings do not draw a clear set of measures. In addition, one can argue that the enormous difference in eigenvalue between the first and second factor demonstrates the overall power of this first extraction and the meaningless incremental importance of the second factor. Table I.C.4 draws on this argument and derives a set of factor loadings and an eigenvector which seems the best compromise.

The sophistication scale is derived directly as a factor score which has a mean of zero and a standard deviation of 2.9. For ease of analysis, the scale was dichotonized into an indicator using the mean as the cutpoint. Fourty per cent of the bands stand below the mean and sixty per cent above. This will become the band sophistication indicator.

D) THE RELATIONSHIPS BETWEEN INDEPENDENT VARIABLES

A final concern with the set of independent variables used in this report is related to the possible interrelationships that might exist between these variables. Slight covariation is expected since eight variables related to socio-demographic characteristics cannot be perfectly orthogonal; however, the concern here is with extreme covariation which could reduce the usefulness of certain variables and impair the results of regression based techniques.

Each table of crossclassification of the independent variables will not be presented here (1) because of space requirements. Instead, Table I.D.1 provides a matrix of association coefficients which helps pinpoint the interesting relationships. The lower part of the matrix (below the diagonal) contains nominal or ordinal association coefficients and uses the categorised variables; the upper part shows Pearson correlation coefficients and uses only the interval-type variables. Both sets of coefficients lead to similar conclusions.

The following comments summarize the important observations made on these tables:

- a slight relationship exist between band type and settlement size which is primarily due to the absence of "INAC DOUBLE" bands in remote and special access locations;

- no "CMHC ONLY" bands exist in Atlantic Canada and Alberta and Ontario presents a large number of "INAC DOUBLE" bands which explain the coefficient linking band type and province;

- a strong co-variation exists between band type and band size since all "INAC DOUBLE" bands have population greater than 500 and all "CMHC ONLY" bands are smaller than 1 000;

- the infrastructure of the "INAC ONLY SIMPLE" bands is significantly less developped than that of the other types of bands; this leads to some co-variation between band type and quality of infrastructure;

- the level of band sophistication and of individual responsability and involvement does not vary by band type;

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(1) There are 56 combinations of which 28 are unique tables.

TABLE I.C.1

INDICATORS USED

INDICATOR	ACRONYM	MEAN	STANDARD DEVIATION
Have a housing policy	HOUSPLCY	0.46	0.50
Sole responsability for:			
Subdivisions	SUBDVRES	0.52	0.50
New Construction	NEWHSRES	0.69	0.47
Renovation	RENOVRES	0.71	0.46
Design and Materials	MTRLRES	0.51	0.50
Tendering Supplies	SUPLYRES	0.59	0.49
Tendering Transportation	TRANSRES	0.54	0.50
Maintenance	MNTCERES	0.56	0.50
Community Services	COMTYRES	0.67	0.47
Infrastructure	INFRARES	0.60	0.49
Management done by band:			
Preconstruction Tendering	PRECONST	0.62	0.49
Housing allocations	DETHSALL	0.79	0.41
Construction supervising	SPRVCONS	0.72	0.45
Inspection of personnel	INSPPERS	0.57	0.50
Rent collection	COLLRENT	0.36	0.48
Maintenance	MNTNCE	0.60	0.49
Enforcing bylaws	BYLAW	0.53	0.50
Allocation procedures exist	HSALPROC	0.69	0.47

Source: On-Reserve Evaluation Data, Band Interview file.

TABLE I.C.2

FOUR FACTORS FACTOR ANALYSIS RESULTS

	FACTORS 1	2	3	4	5
Eigenvalues	8.24	1.93	1.38	1.10	0.84
Rotated factor pattern matrix					
HOUSPLCY	-0.01	0.11	0.14	0.86	
SUBDVRES	-0.09	0.47	0.34	0.47	
NEWHSRES	0.20	0.73	0.11	0.28	
RENOVRES	0.32	0.75	0.16	0.18	
MTRLRES	0.53	0.58	-0.19	0.12	
SUPLYRES	0.86	0.25	0.10	-0.10	
TRANSRES	0.83	0.21	0.06	-0.10	
MNTCERES	0.23	0.72	0.43	-0.15	
COMTYRES	0.33	0.72	0.06	0.20	
INFRARES	0.32	0.67	0.18	0.10	
PRECONST	0.60	0.29	0.38	0.18	
DETHSALL	0.60	0.36	0.26	0.34	
SPRVCONS	0.79	0.25	0.22	0.22	
INSPPERS	0.66	0.33	-0.05	0.24	
COLLRENT	0.03	0.13	0.87	0.16	
MNTNCE	0.32	0.65	0.51	-0.09	
BYLAW	0.25	0.21	0.66	0.36	
HSALPROC	0.47	0.11	0.16	0.68	

Source: On-Reserve Evaluation Data, Band Interview file

Note: Uses a principal component factor analysis with a varimax rotation.

Four factors retained using the eigenvalue threshold criterion.

TABLE I.C.3

TWO FACTORS FACTOR ANALYSIS RESULTS

	FACTORS 1	2	3
Eigenvalues	8.24	1.93	1.38
Rotated factor pattern matrix			
HOUSPLCY	-0.01	0.67	
SUBDVRES	0.11	0.72	
NEWHSRES	0.52	0.52	
RENOVRES	0.64	0.48	
MTRLRES	0.74	0.10	
SUPLYRES	0.87	-0.04	
TRANSRES	0.83	-0.08	
MNTCERES	0.56	0.44	
COMTYRES	0.62	0.41	
INFRARES	0.60	0.40	
PRECONST	0.64	0.37	
DETHSALL	0.67	0.43	
SPRVCONS	0.79	0.24	
INSPPERS	0.72	0.14	
COLLRENT	0.06	0.71	
MNTNCE	0.59	0.49	
BYLAW	0.28	0.69	
HSALPROC	0.42	0.49	

Source: On-Reserve Evaluation Data, Band Interview file

Note: Uses a principal component factor analysis with a varimax rotation.

Two factors retained using Armor's criterion of falling eigenvalue. See David Armor, "Theta Reliability and Factor Scaling" in Sociological Methodology, 1974.

TABLE I.C.4

ONE FACTORS FACTOR ANALYSIS RESULTS

	FACTORS 1	FACTORS 2	EIGENVECTOR
Eigenvalues	8.24	1.93	
Rotated factor pattern matrix			
HOUSPLCY	0.36		0.12
SUBDVRES	0.49		0.17
NEWHSRES	0.72		0.25
RENOVRES	0.79		0.28
MTRLRES	0.68		0.24
SUPLYRES	0.70		0.24
TRANSRES	0.64		0.22
MNTCERES	0.70		0.25
COMTYRES	0.74		0.26
INFRARES	0.72		0.25
PRECONST	0.74		0.26
DETHSALL	0.79		0.28
SPRVCONS	0.79		0.28
INSPPERS	0.68		0.24
COLLRENT	0.44		0.15
MNTNCE	0.77		0.27
BYLAW	0.61		0.21
HSALPROC	0.62		0.21

Source: On-Reserve Evaluation Data, Band Interview file

Note: Uses a principal component factor analysis without rotation because only one factor is retained.

One factor retained on the basis of the large drop in eigenvalue.

- some covariation exist between province and settlement size because of the inexistence of remote and special access bands in Atlantic Canada and Alberta and because of a particular concentration of urban bands in Quebec and Alberta;

- bigger bands tend to be located closer to urban areas;

- the closer a band is from cities the more complete its infrastructure tends to be;

- band infrastructure is more developped in Atlantic Canada, Quebec, Manitoba and British Columbia than elsewhere;

- band sophistication levels are higher in Atlantic Canada, Saskatchewan and Alberta and somewhat in British Columbia than elsewhere;

- individual responsability is somewhat larger in Quebec, Ontario and British Columbia than elsewhere; in the same provinces and in Atlantic Canada, individual involvement in housing is somewhat larger than in other provinces;

- band size is only marginally related to anything else than band type (which is an artifact of the definition of the latter);

- bands with a better infrastructure tend to allow somewhat more personal involvement and responsibility at the household level; band sophistication is unrelated to the latter to variables;

- there is a close (but not perfect) relationship between involvement and responsibility at the household level; this might cause some problems if both variables are used in the same multiple regression.

E) MULTIPLE REGRESSIONS OF HOUSE CONDITION BY FUNDING SOURCES

The effect of INAC funding and of the concomitant use of INAC and CMHC funds on housing conditions is analysed here through a multivariate approach. Each of ten dependent variables capturing some aspect of housing quality is submitted to a multiple regression analysis where the independent variable set comprises:

- funding sources: INAC only versus both versus none in the last five years;
- income of the occupant;
- responsibility for maintenance and repairs (binary);
- ownership of the house;
- employment status;

TABLE I.D.1
ASSOCIATION COEFFICIENTS MATRIX

	BANDTYPE	LOCATION	PROVINCE	SIZEGRP	INFRAIND	SOPHIIND	RESPIND	INVOLIND
BANDTYPE -Band Type	1.00							
LOCATION - Settlement size	0.21	1.00		-0.15	-0.34	-0.10	-0.07	-0.05
PROVINCE - Geographic location	0.29	0.29	1.00					
SIZEGRP - Band size	0.41	-0.21	0.28	1.00	-0.01ns	0.03ns	0.13	0.10
INFRAIND - Infrastructure	0.37	-0.43	0.39	*0.04	1.00	0.02ns	0.14	0.20
SOPHIIND - Sophistication	0.09	-0.19	0.41	0.17	-0.06ns	1.00	0.05*	-0.01ns
RESPIND - Responsability	0.11	-0.11	0.25	0.17	0.26	-0.11	1.00	0.44
INVOLIND - Involvement	0.16	-0.06*	0.23	0.14	0.28	-0.05	0.55	1.00

Source: On-Reserve Evaluation Data, Household file

Note: Entries for the lower portion of the table are:

- Cramer's V when band type or province is implied
- Gamma otherwise

For the upper portion, Pearson correlation coefficients are reported and the continuous scales are used instead of the dichotomized items. All coefficients are significant at the 0.01 level unless otherwise stated.

Note: ns means non significant
* means significant at the 0.05 level

- dwelling unit age;
- helped to the design;
- helped to the renovation.

One set of ten multiple regressions was run for the following groups of units:

- all houses;
- the houses renovated in the last five years;
- the houses built in the last five years.

Table I.E.1 to I.E.3 contains the regression coefficients and their associated probability level for each term of these thirty equations. All the intercept terms are significant at least at the 0.01 level.

Table I.E.1 reports on the inclusion of all available units. The absence of funding in the last five years is the reference category against which the funding sources are compared. It is found that, overall:

i) The INAC only funded houses are similar to those that have not been funded in the last five years;

ii) When both funding sources are used, significantly better housing conditions are found and the satisfaction is meaningfully increased;

iii) The increased number of toilet breakdowns in the case of funding from both sources is probably due simply to the fact that more toilets exist in these units;

iv) The responsibility for repairs (not maintenance) seems to be associated with a better objective house condition (interviewer measured) and a greater recent increase in quality;

v) Ownership of the house affects the subjective measures of house quality (occupant rated) but not the objective ones.

Table I.E.2 provides similar data using only the new construction cases. The reference category for funding is the INAC only funded units. The following is found in this table:

i) The use of both sources increases the indication of subjective quality but leaves intact the objective quality;

ii) Income, employment, ownership and responsibility for maintenance have very little impact on housing quality;

iii) Responsibility for repairs increases slightly the subjective assessment of the quality of the dwellings;

iv) The units where the occupant assisted in the house design are rated in better condition both by the occupant and by the inspector.

Table I.E.3 deals with the renovation cases; only the last five years are used here again. As in Table 12b, the INAC only group constitutes the reference category of the funding sources. The following can be said on this table:

i) No real difference exists between the CMHC only and the INAC only funded renovations;

ii) When both sources are stacked, large increases in quality are observed both from a subjective and an objective point of view;

iii) Income, employment and responsibility for repairs have no effect on housing quality in this context;

iv) Responsibility for maintenance might be slightly negative while ownership and help in the renovation seem marginally positive on house condition.

Table I.E.1
Regressions Between House Condition and Funding Sources
(All Houses In)

Dependent	Intercept	Both Sources	INAC Only	Income 10k	Resp. for Maint.	Resp. for Repairs	Own House	Employed	Unit Age Decades
Suitability (1-7)	4.53	0.07	0.05	-0.31	-0.17	-0.04	-0.57**	0.06	0.15**
Satisfaction (1-7)	4.49	-0.65*	-0.05	-0.50*	0.16	-0.35	-0.70**	-0.09	0.17**
Quality Increase (1-7)	4.69	-1.00**	-0.34	-0.36	0.12	-0.76**	-0.08	-0.25	0.15**
Toilet Breakdowns	0.94	0.65**	0.01	-0.25	-0.20	-0.06	-0.36	-0.03	0.06
Water Breakdowns	0.35	0.24	0.29	0.09	0.39*	0.01	-0.24	-0.12	0.05
Heating System (1-7)	3.94	-0.65**	0.06	0.23	0.05	-0.68**	-1.01**	-0.22	0.01
Electricity Failures	0.98	-0.05	-0.21	0.54*	0.10	-0.32	-0.08	-0.35	0.20**
Condition of Interior (1-7)	3.82	-0.42	0.04	-0.25	0.21	-0.50*	-0.16	-0.11	0.20**
Condition of Exterior (1-7)	3.88	-0.64**	-0.31	-0.23	0.29	-0.34	-0.15	-0.03	0.24**
House Condition (1-7)	4.11	-0.53*	-0.25	-0.27	0.19	-0.40	-0.22	-0.14	0.21**

Source: On-Reserve Evaluation Surveys, Household File

* Significant at the 0.05 level
** Significant at the 0.01 level

Table I.E.2
Regressions Between House Condition and Funding Sources
(New Houses In)

Dependent	Intercept	Both Sources	Income 10k	Resp. for Maint.	Resp. for Repairs	Own House	Employed	Helped Design
Suitability (1-7)	4.55	0.04	-0.27	-0.15	0.15	-0.28	0.07	-0.82**
Satisfaction (1-7)	4.47	-0.72**	-0.46	0.15	-0.34	-0.43	-0.10	-0.67*
Quality Increase (1-7)	4.54	-0.56*	-0.28	0.17	-0.75**	0.17	-0.25	-0.59*
Toilet Breakdowns	0.99	0.58*	-0.21	-0.20	0.03	-0.38	-0.09	0.11
Water Breakdowns	0.41	0.13	0.09	0.38	0.12	-0.17	-0.11	-0.25
Heating System (1-7)	4.01	-0.69**	0.21	0.05	-0.72**	-0.87**	-0.16	-0.44
Electricity Failures	1.24	-0.22	0.63*	0.06	-0.40	-0.05	-0.50	-0.16
Condition of Interior (1-7)	4.10	-0.26	-0.17	0.22	-0.41	0.06	-0.14	-0.51*
Condition of Exterior (1-7)	3.72	0.05	-0.10	0.38	-0.15	0.19	-0.03	-0.81**
House Condition (1-7)	4.01	0.13	-0.15	0.28	-0.19	0.11	-0.13	-0.82**

Source: On-Reserve Evaluation Surveys, Household File

* Significant at the 0.05 level
** Significant at the 0.01 level

Table I.E.3
Regressions Between House Condition and Funding Sources
(Renovated Houses In)

Dependent	Intercept	CMHC Only	Both Sources	Income 10k	Resp. for Maint.	Resp. for Repairs	Own House	Employed	Unit Age Decades	Helped Renovate
Suitability (1-7)	4.54	-0.40	0.11	-0.19	0.26	-0.28	-0.33	0.08	0.05	-0.39
Satisfaction (1-7)	4.46	-0.54	-0.52	-0.36	0.57	-0.30	-0.57	-0.20	0.07	-0.50
Quality Increase (1-7)	4.61	-0.57	-1.10**	-0.37	0.39	-0.63	-0.09	-0.32	0.14	-0.43
Toilet Breakdowns	0.92	0.40	0.49	-0.13	-0.37	-0.12	-0.38	-0.25	0.03	0.17
Water Breakdowns	0.74	-1.17**	-0.26	0.14	0.57*	-0.07	0.11	-0.13	0.01	-0.19
Heating System (1-7)	4.05	-0.16	-0.82**	0.37	0.11	-0.46	-0.95**	-0.42	-0.05	-0.22
Electricity Failures	0.66	0.09	0.44	0.66	0.31	-0.64	0.19	-0.50	0.14	0.10
Condition of Interior (1-7)	4.06	0.01	-0.92**	-0.28	0.26	-0.24	-0.24	-0.31	0.20**	-0.19
Condition of Exterior (1-7)	3.96	-0.31	-1.07**	-0.24	0.55*	-0.11	-0.14	-0.14	0.24**	-0.55*
House Condition (1-7)	4.27	0.12	-1.12**	-0.29	0.30	-0.11	-0.39	-0.25	0.23**	-0.35

Source: On-Reserve Evaluation Surveys, Household File

* Significant at the 0.05 level
** Significant at the 0.01 level

APPENDIX II

SUBSIDY CALCULATIONS

This appendix contains detailed information on INAC and CMHC subsidy payments for new construction and renovation. The material is intended to provide an indication of annual total subsidies paid by INAC and CMHC as well as average per unit subsidy costs.

The material is divided into two sections:

A) New Construction Subsidies - INAC and CMHC
B) Renovation Subsidies - INAC and CMHC

Final yearly totals are used except for the INAC 1984-85 fiscal year. In the case of 1984-85, as these figures were not available at the time of writing, estimates are used. These estimates are based in part on preliminary indications from INAC as to expected activity/expenditure levels for 1984-85 as well as on previous years construction and renovation performance.

CMHC and INAC operate under calendar and fiscal years respectively. However, for example, under the current program the 1984-1985 INAC fiscal allocation is intended to be matched with the CMHC 1984 calendar allocation. This process has been used in the preparation of the ensuing program subsidy costs. INAC fiscal figures for 1979-1980 period are matched to the CMHC 1980 figures, the 1980-1981 INAC figures are matched to CMHC 1980 figures and so on. Overlap of the cycles occurs in winter months where there is little housing activity. While the two cycles do not precisely correspond, in the analysis the matching approach has been employed as it most closely resembles the allocation patterns under the current program.

A) New Construction Subsidies

1) INAC Capital Grants

The following table outlines average INAC subsidy payments for:

a) INAC subsidy units (non-social housing)
b) CMHC social housing units (Section 56.1)

INAC administrative data allows for the determination of total units and annual INAC subsidy funds applied to newly constructed units with and without INAC ministerial guarantees. Non-social housing units do not require INAC ministerial guarantees. The difference between total annual INAC new construction appropriations and the subsidy funds applied to units

with guarantees represents the total subsidy pool available or applied to non-social housing. The subsidy pool for non-social housing divided by the number of non-social housing units constructed provides the average grant provided to non-social housing units. The difference between total INAC reported newly constructed units and the number of units for which ministerial guarantees have been issued provides the number of non-social housing units constructed.

Average INAC grant contributions for social housing are available from two sources. Figures may be obtained through either INAC administrative files or through CMHC social housing files. INAC administrative files as noted above include the number of units and INAC grant contributions associated with ministerial guarantees. As band owned units (social housing) require gurantees, the contributions to these units divided by the corresponding number of units yields an average per unit grant amount. Second, CMHC section 56.1 administrative files record project capital costs as outlined on commitment forms (2252). Grant contributions and the number of units per project are entered on these forms as part of project cost data. Annual average per unit grant contributions may be obtained with this data.

Two tables are presented below. The first table includes INAC subsidy contributions to non-social housing units on reserves and average per unit subsidies to social housing as indicated through both INAC and CMHC data. Table II.A.1 presents figures in current dollars. Constant 1981 dollars are employed for comparative purposes in Table II.A.2. The second table also contains a weighted average subsidy for all years presented.
Except for the years 1978 and 1979, CMHC and INAC data on subsidy contributions to social housing units are comparable. Differences in the early years could be attributable to CMHC program staff unfamiliarity with procedures for entering band equity data on program forms, the few number of cases, or keypunching errors. Analysis in Chapter Seven employing the above data focussed on the contribution data from INAC files. INAC data on contributions to non-social housing is the most reliable. In order to remain consistent, as similar biases are likely throughout the INAC data, contribution data on social housing was also taken from INAC files.

TABLE II.A.1
INAC AVERAGE SUBSIDY CONTRIBUTIONS TO
SOCIAL AND NON-SOCIAL HOUSING UNITS
CURRENT DOLLARS

YEAR	AVERAGE INAC CAPITAL GRANT NON-SOCIAL HOUSING	AVERAGE INAC CAPITAL GRANT PER SECTION 56.1 UNIT	
		CMHC DATA	INAC DATA
1979	$22 071 n=1871	$16 049 n=100	$11 701 n= 185
1980	$22 592 n=2048	$16 203 n= 92	$ 9 774 n= 279
1981	$22 804 n=1828	$10 439 n=347	$11 262 n= 625
1982	$21 135 n=1726	$14 814 n=445	$13 634 n- 687
1983	$35 369 n=1836	$21 229 n=666	$19 139 n= 967
1984	$38 054 n=1863	$18 072 n=555	$18 536 n=1144

Source: CMHC Section 56.1 Administrative Files
INAC Housing Directorate
Note: 1984 was the last year where data was available at time of writing.

TABLE II.A.2
INAC AVERAGE SUBSIDY CONTRIBUTIONS TO
SOCIAL AND NON-SOCIAL HOUSING UNITS
CONSTANT 1981 DOLLARS

YEAR	AVERAGE INAC PER UNIT CAPITAL GRANT NON-56.1	AVERAGE INAC PER UNIT CAPITAL GRANT SEC. 56.1	
		CMHC DATA	INAC DATA
1979	$27 655	$20 109	$14 661
1980	$25 417	$18 228	$10 996
1981	$22 804	$10 439	$11 262
1982	$19 805	$13 377	$12 311
1983	$30 170	$18 108	$16 362
1984	$31 128	$14 783	$15 162
Weighted Average	$26 231	$15 205	$14 007

Source: CMHC Section 56.1 Administrative Files
INAC Housing Directorate
Note: 1984 was the last year where data was available at time of writing.

2) CMHC Social Housing

Subsidy payments under this program have been calculated using present value factors as they flow over an extended time period. The subsidy is assumed to flow over the amortization period of the loan and

the discount rate used is equal to the mortgage interest rate. Section 56.1 administrative data has been used in determining both average interest rates and amortization periods for the years presented below. However, in the year 1984, the mean mortgage lending rate as quoted by insitituional lenders is used in conjunction with the amortization period applied for the year 1983. While the subsidy calculations are based on the assumption of a constant interest rate over the life of the subsidy payments, in fact fluctuations can occur at renewal periods. Given uncertainty with respect to accurate future interest rate predictions, the constant rate is employed. Final average per unit subsidies are presented in both current and constant 1981 dollars. A weighted average per unit subsidy is also calculated.

B) Renovation Subsidies

Renovation subsidies on reserves have been calculated using, a) INAC administrative data reporting annual renovation appropriations and units completed and, b) CMHC RRAP administrative reports outlining annual RRAP forgiveness levels and total units approved. Total units renovated as reported by INAC will include units which have received RRAP. Current reporting methods of both CMHC and RRAP do not facilitate the distinction of units which receive only one or both sources of assistance. In determining average subsidy amounts each source of data has been kept separate and averages are calculated accordingly. Final average per unit subsidies are presented in both current and constant 1981 dollars.

TABLE II.B.1
SECTION 56.1 PRESENT VALUE OF SUBSIDIES ON RESERVES

YEAR	COMMITTED UNITS	MAXIMUM ANNUAL ASSISTANCE	i RATE	AMORTI-ZATION (years)	PRESENT VALUE FACTOR	P.V. ANNUAL ASSISTANCE	P.V. PER UNIT ASSISTANCE	PER UNIT ASSISTANCE 1981 DOLLARS
1979	305	$1 023 531	13.5%	33	7.293958	$7 465 592	$24 477	$30 670
1980	366	$1 576 636	14.4%	33	6.817475	$10 748 677	$29 368	$33 039
1981	577	$4 427 307	18.5%	31	5.377380	$23 807 312	$41 261	$41 261
1982	866	$6 230 008	15.6%	23	6.217 037	$38 372 1290	$44 725	$40 387
1983	985	$6 017 976	12.9%	23	7.229658	$43 507 908	$44 170	$37 677
1984	1 144	$7 493 000	13.2%	23	7.229658	$54 171 827	$47 353	$38 735
Weighted average:								$38 171

Source: CMHC Section 56.1 Administrative Files
Note: 1984 was the last year where data was available at time of writing.

1) INAC Capital Grants

TABLE II.B.2
INAC AVERAGE RENTOVATION SUBSIDY
PER UNIT

YEAR	UNITS REHABILITATED	COST TO APPROPRIATION	AVERAGE PER UNIT SUBSIDY	UNIT SUBSIDY 1981 DOLLARS
1979	3 013	$ 9 845 200	$3 268	$4 095
1980	3 619	$14 829 633	$4 097	$4 609
1981	3 181	$13 077 700	$4 110	$4 160
1982	4 184	$15 886 648	$3 797	$3 429
1983	4 380	$18 197 597	$4 154	$3 543
1984	4 581	$19 904 829	$4 345	$3 554
Weighted Average:				$3 844

Source: INAC Housing Directorate
Note: 1984 was the last year where data was available at time of writing.

2) CMHC Section 34.1

TABLE II.B.3
CMHC AVERAGE RRAP FORGIVENESS
PER UNIT

YEAR	UNITS APPROVED	TOTAL FORGIVENESS	AVERAGE PER UNIT SUBSIDY	UNIT SUBSIDY 1981 DOLLARS
1979	520	$2 238 000	$4 303	$5 392
1980	852	$2 790 000	$3 275	$3 684
1981	1 172	$3 978 000	$3 394	$3 394
1982	1 730	$6 769 000	$3 913	$3 533
1983	2 362	$11 000 000	$4 657	$3 972
1984	2 306	$11 450 000	$4 965	$4 061
Weighted Average:				$3 890

Source: CMHC PMS Reports
Note: 1984 was the last year where data was available at time of writing.

APPENDIX III
COST-EFFECTIVENESS ANALYSIS:
SENSITIVITY TESTS

A) SENSITIVITY OF THE EFFECTIVENESS COEFFICIENTS

The calculations performed in the preparation of Table VII.C.5 (the additions of the four comparative coefficients for each pair of programs) were replicated with varying weights associated with each housing quality aspect. Each weight was allowed to vary between a value of 0.2 and a maximum of 3.0, by steps of 0.2. For example, using the case of the Section 56.1 versus INAC new construction comparison outlined above, the following calculations would have been made to apply a weight of 0.5 to the useful life aspect:

Coeff	Weight	New coef			Coef	Weight	New coef
0.75 *	0.5	= 0.38	---	Useful life	--- 1.33 *	0.5	= 0.67
0.61 *	1.0	= 0.61	---	Amenities	--- 1.63	1.0	= 1.63
0.95 *	1.0	= 0.95	---	Satisfaction	--- 1.05	1.0	= 1.05
1.02 *	1.0	= 1.02	---	Improvement	--- 0.98	1.0	= 0.98
	3.5	2.96	---	TOTAL	---	3.5	4.33
2.96 /	3.5 * 4	= 3.38			4.33 /	3.5 * 4	= 4.95

The last line of calculations simply normalises the maximum of each coefficient to the maximum that the equal weight assumption was providing, i.e., 4. This convention is essential to permit the comparisons of coefficients across weight patterns.

Tables III.A.1a to III.A.1d present the impact of varying weights:

- Table (a) keeps the basic amenities, the satisfaction and the improvement weights constant, leaving the useful life weight to vary;

- Table (b) does the same with the useful life, satisfaction and quality improvement weights; the basic amenities weight varies;

- Table (c) repeats the exercise with the useful life, basic amenities and quality improvement constant; the satisfaction weight is varying;

- Table (d) finally keeps the useful life, the basic amenities and the occupant satisfaction weights constant, leaving the quality improvement weight free.

Each line of these tables summarizes fifteen different coefficients derived using the following weights:

- for the varying weight: 0.2, 0.4, 0.6 ... 2.8, 3.0
- for the constant weights: 1.

Only a limited number of comparisons are affected by the varying weights to the point of proposing to different conclusions. Table III.A.2 indicates which comparisons are influenced by each weight.

Finally, Table III.A.3 presents similar statistics for the case where all four weights are allowed to vary. In this case, the four weights consecutively take each of their values (between 0.2 and 3.0) and all combinations of the four weights are analysed.

TABLE III.A.1a
SENSITIVITY ANALYSIS:
ADDITIVE COEFFICIENT VARIABILITY IF
ONLY THE USEFUL LIFE WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO		MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new		3.31	0.06	3.23	3.43
Sec. 56.1	RRAP		3.24	0.22	2.95	3.65
Sec. 56.1	RRAP & INAC		3.31	0.18	3.08	3.65
Sec. 56.1	INAC renov.		2.86	0.17	2.64	3.18
INAC new	Sec. 56.1		5.01	0.06	4.90	5.09
INAC new	RRAP	*	4.03	0.24	3.72	4.47
INAC new	RRAP & INAC	*	4.06	0.17	3.85	4.38
INAC new	INAC renov.		3.50	0.17	3.29	3.82
RRAP	Sec. 56.1		5.29	0.43	4.47	5.84
RRAP	INAC new	*	4.31	0.26	3.81	4.64
RRAP	RRAP & INAC		4.15	0.07	4.01	4.25
RRAP	INAC renov.		3.57	0.04	3.49	3.62
RRAP & INAC	Sec. 56.1		5.07	0.30	4.49	5.46
RRAP & INAC	INAC new	*	4.10	0.17	3.77	4.32
RRAP & INAC	RRAP	*	3.90	0.07	3.81	4.04
RRAP & INAC	INAC renov.		3.45	0.03	3.42	3.50
INAC renov.	Sec. 56.1		5.90	0.40	5.13	6.42
INAC renov.	INAC new		4.76	0.24	4.31	5.07
INAC renov.	RRAP		4.52	0.05	4.45	4.62
INAC renov.	RRAP & INAC		4.65	0.03	4.59	4.69

Source: Simulation based on Table VII.C.4; the useful life weight varies between 0.2 and 3.0.

* This comparison is affected to the extent that the minimum and maximum values reached by the comparative coefficient lead to opposite conclusions on which program is performing better, i.e., the minimum is below 4 and the maximum is above 4.

TABLE III.A.1b
SENSITIVITY ANALYSIS:
ADDITIVE COEFFICIENT VARIABILITY IF
ONLY THE BASIC AMENITIES WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	3.26	0.16	3.05	3.57
Sec. 56.1	RRAP	3.40	0.09	3.24	3.51
Sec. 56.1	RRAP & INAC	3.40	0.01	3.39	3.42
Sec. 56.1	INAC renov.	2.95	0.01	2.94	2.96
INAC new	Sec. 56.1	5.13	0.28	4.60	5.49
INAC new	RRAP	* 4.35	0.38	3.63	4.84
INAC new	RRAP & INAC	* 4.28	0.24	3.82	4.60
INAC new	INAC renov.	3.70	0.21	3.31	3.98
RRAP	Sec. 56.1	4.97	0.16	4.47	5.27
RRAP	INAC new	* 4.01	0.29	3.64	4.57
RRAP	RRAP & INAC	* 4.05	0.11	3.91	4.26
RRAP	INAC renov.	3.50	0.09	3.38	3.67
RRAP & INAC	Sec. 56.1	4.89	0.03	4.85	4.94
RRAP & INAC	INAC new	* 3.90	0.20	3.64	4.28
RRAP & INAC	RRAP	* 4.00	0.11	3.79	4.14
RRAP & INAC	INAC renov.	3.46	0.00	3.46	3.47
INAC renov.	Sec. 56.1	5.67	0.03	5.62	5.73
INAC renov.	INAC new	4.51	0.23	4.22	4.95
INAC renov.	RRAP	4.61	0.03	4.37	4.78
INAC renov.	RRAP & INAC	4.63	0.00	4.63	4.63

Source: Simulation based on Table VII.C.4; the basic amenities weight varies between 0.2 and 3.0.

* This comparison is affected to the extent that the minimum and maximum values reached by the comparative coefficient lead to opposite conclusions on which program is performing better, i.e., the minimum is below 4 and the maximum is above 4.

TABLE III.A.1c
SENSITIVITY ANALYSIS:
ADDITIVE COEFFICIENT VARIABILITY IF
ONLY THE OCCUPANT SATISFACTION WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	3.39	0.09	3.23	3.50
Sec. 56.1	RRAP	3.37	0.03	3.31	3.41
Sec. 56.1	RRAP & INAC	3.41	0.01	3.40	3.42
Sec. 56.1	INAC renov.	2.98	0.06	2.87	3.05
INAC new	Sec. 56.1	4.90	0.14	4.72	5.18
INAC new	RRAP	4.11	0.08	4.00	4.26
INAC new	RRAP & INAC	* 3.97	0.10	3.97	4.29
INAC new	INAC renov.	3.58	0.03	3.53	3.64
RRAP	Sec. 56.1	5.01	0.10	4.88	5.19
RRAP	INAC new	4.18	0.03	4.13	4.22
RRAP	RRAP & INAC	4.09	0.04	4.04	4.16
RRAP	INAC renov.	3.56	0.03	3.51	3.59
RRAP & INAC	Sec. 56.1	4.88	0.05	4.82	4.97
RRAP & INAC	INAC new	* 4.05	0.08	3.90	4.15
RRAP & INAC	RRAP	3.95	0.03	3.89	3.99
RRAP & INAC	INAC renov.	3.50	0.06	3.39	3.57
INAC renov.	Sec. 56.1	5.61	0.14	5.43	5.88
INAC renov.	INAC new	4.64	0.01	4.62	4.65
INAC renov.	RRAP	4.52	0.04	4.48	4.59
INAC renov.	RRAP & INAC	4.59	0.07	4.50	4.73

Source: Simulation based on Table VII.C.4; the occupant satisfaction weight varies between 0.2 and 3.0.

* This comparison is affected to the extent that the minimum and maximum values reached by the comparative coefficient lead to opposite conclusions on which program is performing better, i.e., the minimum is below 4 and the maximum is above 4.

TABLE III.A.1d
SENSITIVITY ANALYSIS:
ADDITIVE COEFFICIENT VARIABILITY IF
ONLY THE QUALITY IMPROVEMENT WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	3.42	0.14	3.16	3.60
Sec. 56.1	RRAP	3.41	0.10	3.22	3.54
Sec. 56.1	RRAP & INAC	3.50	0.18	3.16	3.74
Sec. 56.1	INAC renov.	3.02	0.12	2.79	3.17
INAC new	Sec. 56.1	4.88	0.20	4.62	5.25
INAC new	RRAP	4.12	0.06	4.04	4.24
INAC new	RRAP & INAC	4.17	0.02	4.12	4.20
INAC new	INAC renov.	3.59	0.01	3.57	3.61
RRAP	Sec. 56.1	4.96	0.18	4.74	5.30
RRAP	INAC new	4.17	0.01	4.16	4.18
RRAP	RRAP & INAC	4.15	0.07	4.01	4.24
RRAP	INAC renov.	3.56	0.03	3.51	3.60
RRAP & INAC	Sec. 56.1	4.78	0.23	4.48	5.22
RRAP & INAC	INAC new	* 3.98	0.05	3.92	4.08
RRAP & INAC	RRAP	* 3.90	0.07	3.81	4.03
RRAP & INAC	INAC renov.	3.45	0.03	3.41	3.51
INAC renov.	Sec. 56.1	5.56	0.23	5.27	6.00
INAC renov.	INAC new	4.63	0.02	4.60	4.66
INAC renov.	RRAP	4.52	0.04	4.47	4.60
INAC renov.	RRAP & INAC	4.65	0.04	4.57	4.71

Source: Simulation based on Table VII.C.4; the occupant satisfaction weight varies between 0.2 and 3.0.

* This comparison is affected to the extent that the minimum and maximum values reached by the comparative coefficient lead to opposite conclusions on which program is performing better, i.e., the minimum is below 4 and the maximum is above 4.

TABLE III.A.2
COMPARISONS AFFECTED BY THE WEIGHTS
VARYING INDEPENDENTLY

	SEC. 56.1	INAC NEW	RRAP	RRAP & INAC	INAC RENOV
Sec. 56.1					
INAC new			1-2	1-2-3	
RRAP		1-2		2	
RRAP & INAC		1-2-3-4	1-2-4		
INAC renov.					

1. Varying useful life weight
2. Varying basic amenities weight
3. Varying occupant satisfaction weight
4. Varying quality improvement weight

Source: Table III.A.1

Each line of Table III.A.3 summarizes 50 625 coefficients calculated with patterns of weights varying as illustrated below:

	Useful Life Weight	Basic Amen. Weight	Occupant Satisf. Weight	Quality Improv. Weight
Case 1:	0.2	0.2	0.2	0.2
Case 2:	0.4	0.2	0.2	0.2
Case 15:	3.0	0.2	0.2	0.2
Case 16:	0.2	0.4	0.2	0.2
Case 225:	0.2	3.0	0.2	0.2
Case 226:	0.2	0.2	0.4	0.2
Case 3375:	0.2	0.2	3.0	0.2
Case 3376:	0.2	0.2	0.2	0.4
Case 50 625:	3.0	3.0	3.0	3.0

In Table III.A.3, the means replicate the coefficients of Table VII.C.5. More important data are to be extracted from both the minimum and maximum values taken by each coefficient under the fluctuations induced by the varying weights. These minima and maxima tell which comparisons are affected by the assumptions underlying the different combinations of weights.

Table III.A.4 presents the five relationships particularly affected by the fluctuations of all weights concommitantly. These five comparisons are the ones most likely to be affected by the weights when the costs are entered into the cost-effectiveness model. They will have to be considered special cases. Only the comparison of RRAP and RRAP & INAC is really crucial since this is the only comparison affected by concurrent changes in the weights which involves two programs of the same type (i.e. renovation).

The demonstration of the small impact of large variations of the weights associated with each aspect of effectiveness used here is also important in another respect. It is acknowledged that two of the indicators of effectiveness are "harder" than the other two, namely the calculation of useful life and the presence of basic amenities versus client satisfaction and client rated quality increase of their housing conditions. Also, the latter dimension is more relevant to renovation than to new construction. These weaknesses of the measure of effectiveness have to be played down however since the attribution of weights varying from 0.2 (close to wiping out the dimension altogether) to 3 (where a dimension takes an overwhelming weight compared to others) does not significantly affect the outcome of the effectiveness comparisons. In particular, one of the scenarios taken into consideration attributes a weight of 0.2 to both "soft" dimensions and a weight of 3 to both "hard" dimensions and this still does not affect the effectiveness ratios in an important way. The effectiveness measurement can thus be said to be very resistant to conflicting views on the operationalization of the concept.

Comparative coefficients in Table III.A.3 are the basis of the effectiveness side of the cost-effectiveness equation analysed in the following section since they include all of the available information in a compact way.

TABLE III.A.3
SENSITIVITY ANALYSIS:
ADDITIVE COEFFICIENT VARIABILITY IF
ALL FOUR WEIGHTS ARE ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	3.35	0.19	2.65	3.93
Sec. 56.1	RRAP	3.35	0.21	2.42	3.80
Sec. 56.1	RRAP & INAC	3.41	0.20	2.65	4.17
Sec. 56.1	INAC renov.	2.95	0.17	2.23	3.46
INAC new	Sec. 56.1	4.98	0.31	4.14	6.18
INAC new	RRAP	4.15	0.37	3.15	5.76
INAC new	RRAP & INAC	4.15	0.25	3.44	5.19
INAC new	INAC renov.	3.59	0.22	2.89	4.49
RRAP	Sec. 56.1	5.06	0.41	4.26	6.89
RRAP	INAC new	4.17	0.32	2.93	5.27
RRAP	RRAP & INAC	4.11	0.12	3.65	4.46
RRAP	INAC renov.	3.55	0.09	3.16	3.71
RRAP & INAC	Sec. 56.1	4.90	0.31	3.92	6.20
RRAP & INAC	INAC new	4.01	0.23	3.16	4.74
RRAP & INAC	RRAP	3.94	0.12	3.60	4.41
RRAP & INAC	INAC renov.	3.47	0.06	3.33	3.71
INAC renov.	Sec. 56.1	5.68	0.39	4.71	7.40
INAC renov.	INAC new	4.64	0.27	3.66	5.65
INAC renov.	RRAP	4.54	0.12	4.32	5.09
INAC renov.	RRAP & INAC	4.63	0.07	4.32	4.81

Source: Simulation based on Table VII.C.4; all weights vary weight varies between 0.2 and 3.0.

* This comparison is affected to the extent that the minimum and maximum values reached by the comparative coefficient lead to opposite conclusions on which program is performing better, i.e., the minimum is below 4 and the maximum is above 4.

TABLE III.A.4
COMPARISONS AFFECTED BY THE WEIGHTS VARYING TOGETHER

	Sec. 56.1	INAC New	RRAP	RRAP & INAC	INAC RENOV
Sec. 56.1				*	
INAC new			*	*	*
RRAP		*		*	
RRAP & INAC	*	*	*		
INAC renov.		*			

B) SENSITIVITY OF THE COST-EFFECTIVENESS RATIOS

Since the weights associated with each indicator might have very significant impacts on the conclusions drawn from the cost-effectiveness coefficients (they might in fact reverse or seriously attenuate their content), it is worth looking at the results of a series of sensitivity analyses carried out on the cost-effectiveness coefficients with varying weights. The analytical technique used here is very similar to the one used in the sensitivity analysis reported in Section C. Tables III.B.1 and III.B.2 are to be read as Tables III.A.1 and III.A.3 were.

As shown by Table III.B.1 and confirmed in Table III.B.2, no variation of the weights, independently or jointly, affect substantively the conclusions to be drawn from Table VII.D.2. All the cost-effectiveness comparisons stay within limited ranges when the weights vary between 0.2 and 3.0. Some cost-effectiveness coefficients do occupy a range which could be considered large such as the INAC new versus RRAP coefficient in Table VII.D.4 which varies between 5.31 and 9.71), but none present large variations while being border line comparisons (close to a coefficient of 1). Hence, the sensitivity analysis demonstrates that the weights attached to the four dimensions of housing quality do not impact on the results of the cost-effectiveness analysis.

TABLE III.B.1a
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE USEFUL LIFE WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.65	0.03	1.61	1.70
Sec. 56.1	RRAP	10.85	0.73	9.91	12.25
Sec. 56.1	RRAP & INAC	5.59	0.30	5.21	6.16
Sec. 56.1	INAC renov.	9.72	0.57	8.98	10.81
INAC new	Sec. 56.1	0.63	0.01	0.62	0.64
INAC new	RRAP	6.79	0.40	6.27	7.54
INAC new	RRAP & INAC	3.45	0.14	3.26	3.72
INAC new	INAC renov.	5.98	0.28	5.62	6.52
RRAP	Sec. 56.1	0.10	0.01	0.08	0.11
RRAP	INAC new	0.16	0.01	0.14	0.17
RRAP	RRAP & INAC	0.52	0.01	0.50	0.53
RRAP	INAC renov.	0.90	0.01	0.89	0.92
RRAP & INAC	Sec. 56.1	0.19	0.01	0.17	0.20
RRAP & INAC	INAC new	0.30	0.01	0.28	0.32
RRAP & INAC	RRAP	1.94	0.04	1.89	2.00
RRAP & INAC	INAC renov.	1.74	0.01	1.72	1.76
INAC renov.	Sec. 56.1	0.11	0.01	0.09	0.12
INAC renov.	INAC new	0.17	0.01	0.16	0.19
INAC renov.	RRAP	1.11	0.01	1.10	1.14
INAC renov.	RRAP & INAC	0.58	0.00	0.57	0.58

Source: Simulation based on Table VII.D.2; the useful life weight varies between 0.2 and 3.0.

TABLE III.B.1b
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE BASIC AMENITIES WEIGHT IS ALLOWD TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.62	0.08	1.52	1.77
Sec. 56.1	RRAP	11.40	0.29	10.86	11.77
Sec. 56.1	RRAP & INAC	5.74	0.01	5.73	5.77
Sec. 56.1	INAC renov.	10.01	0.03	9.98	10.06
INAC new	Sec. 56.1	0.64	0.04	0.58	0.69
INAC new	RRAP	7.34	0.64	6.12	8.16
INAC new	RRAP & INAC	3.63	0.21	3.24	3.90
INAC new	INAC renov.	6.33	0.36	5.64	6.79
RRAP	Sec. 56.1	0.09	0.00	0.09	0.10
RRAP	INAC new	0.15	0.01	0.13	0.17
RRAP	RRAP & INAC	0.51	0.01	0.49	0.54
RRAP	INAC renov.	0.89	0.02	0.86	0.93
RRAP & INAC	Sec. 56.1	0.18	0.00	0.18	0.18
RRAP & INAC	INAC new	0.29	0.01	0.27	0.32
RRAP & INAC	RRAP	1.98	0.06	1.88	2.06
RRAP & INAC	INAC renov.	1.74	0.00	1.74	1.74
INAC renov.	Sec. 56.1	0.10	0.00	0.10	0.11
INAC renov.	INAC new	0.17	0.01	0.15	0.18
INAC renov.	RRAP	1.14	0.03	1.08	1.18
INAC renov.	RRAP & INAC	0.58	0.00	0.57	0.58

Source: Simulation based on Table VII.D.2; the basic amenities weight varies between 0.2 and 3.0.

TABLE III.B.1c
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE OCCUPANT SATISFACTION WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.69	0.04	1.61	1.74
Sec. 56.1	RRAP	11.30	0.11	11.09	11.45
Sec. 56.1	RRAP & INAC	5.76	0.01	5.74	5.77
Sec. 56.1	INAC renov.	10.12	0.19	9.76	10.37
INAC new	Sec. 56.1	0.62	0.02	0.59	0.65
INAC new	RRAP	6.92	0.14	6.75	7.18
INAC new	RRAP & INAC	3.48	0.08	3.37	3.64
INAC new	INAC renov.	6.11	0.06	6.03	6.21
RRAP	Sec. 56.1	0.09	0.00	0.09	0.10
RRAP	INAC new	0.16	0.00	0.15	0.16
RRAP	RRAP & INAC	0.51	0.00	0.51	0.52
RRAP	INAC renov.	0.90	0.01	0.89	0.90
RRAP & INAC	Sec. 56.1	0.18	0.00	0.18	0.18
RRAP & INAC	INAC new	0.30	0.01	0.29	0.31
RRAP & INAC	RRAP	1.96	0.02	1.93	1.98
RRAP & INAC	INAC renov.	1.76	0.03	1.70	1.80
INAC renov.	Sec. 56.1	0.10	0.00	0.10	0.11
INAC renov.	INAC new	0.17	0.00	0.17	0.17
INAC renov.	RRAP	1.12	0.01	0.10	1.13
INAC renov.	RRAP & INAC	0.57	0.01	0.56	0.59

Source: Simulation based on Table VII.D.2; the occupant satisfaction weight varies between 0.2 and 3.0.

TABLE III.B.1d
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE QUALITY IMPROVEMENT WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.70	0.07	1.57	1.79
Sec. 56.1	RRAP	11.43	0.34	10.79	11.86
Sec. 56.1	RRAP & INAC	5.91	0.30	5.34	6.30
Sec. 56.1	INAC renov.	10.24	0.41	9.46	10.77
INAC new	Sec. 56.1	0.61	0.02	0.58	0.66
INAC new	RRAP	6.94	0.11	6.81	7.14
INAC new	RRAP & INAC	3.53	0.02	3.49	3.56
INAC new	INAC renov.	6.12	0.02	6.10	6.16
RRAP	Sec. 56.1	0.09	0.00	0.09	0.10
RRAP	INAC new	0.15	0.00	0.15	0.15
RRAP	RRAP & INAC	0.52	0.01	0.50	0.53
RRAP	INAC renov.	0.90	0.01	0.89	0.91
RRAP & INAC	Sec. 56.1	0.18	0.01	0.17	0.19
RRAP & INAC	INAC new	0.29	0.00	0.29	0.30
RRAP & INAC	RRAP	1.94	0.03	1.89	2.00
RRAP & INAC	INAC renov.	1.74	0.02	1.71	1.77
INAC renov.	Sec. 56.1	0.10	0.00	0.10	0.11
INAC renov.	INAC new	0.17	0.00	0.17	0.17
INAC renov.	RRAP	1.12	0.01	1.10	1.13
INAC renov.	RRAP & INAC	0.58	0.01	0.57	0.58

Source: Simulation based on Table VII.D.2; the occupant satisfaction weight varies between 0.2 and 3.0.

TABLE III.B.2
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ALL FOUR WEIGHTS ARE ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.66	0.10	1.32	1.95
Sec. 56.1	RRAP	11.25	0.70	8.13	12.73
Sec. 56.1	RRAP & INAC	5.75	0.35	4.48	7.04
Sec. 56.1	INAC renov.	10.02	0.59	7.59	11.77
INAC new	Sec. 56.1	0.63	0.04	0.52	0.78
INAC new	RRAP	7.00	0.62	5.31	9.71
INAC new	RRAP & INAC	3.52	0.21	2.92	4.40
INAC new	INAC renov.	6.14	0.37	4.94	7.66
RRAP	Sec. 56.1	0.09	0.01	0.08	0.13
RRAP	INAC new	0.15	0.01	0.11	0.20
RRAP	RRAP & INAC	0.52	0.02	0.46	0.56
RRAP	INAC renov.	0.90	0.02	0.80	0.94
RRAP & INAC	Sec. 56.1	0.18	0.01	0.15	0.23
RRAP & INAC	INAC new	0.30	0.02	0.23	0.35
RRAP & INAC	RRAP	1.96	0.06	1.79	2.19
RRAP & INAC	INAC renov.	1.74	0.03	1.67	1.87
INAC renov.	Sec. 56.1	0.10	0.01	0.09	0.14
INAC renov.	INAC new	0.17	0.01	0.13	0.21
INAC renov.	RRAP	1.12	0.03	1.07	1.26
INAC renov.	RRAP & INAC	0.58	0.01	0.54	0.60

Source: Simulation based on Table VII.D.2; all weights vary between 0.2 and 3.0.

C) SENSITIVITY UNDER EXTENDED SECTION 56.1 USEFUL LIFE

To address the Section 56.1 useful life measurement problem mentioned in section VII.C.1.a, a separate set of simulations was carried out increasing the Section 56.1 useful life estimate by 50 percent to 32.25. Tables III.C.1 and III.C.2 provide the revised cost-effectiveness ratio sensitivity tests. As can be seen, although the exact cost-effectiveness ratio of Section 56.1 housing to INAC new construction gets closer to equality under this scenario, it is still above 1, favouring INAC front-end grant units: the mean is 1.54 and the lowest estimate is 1.12.

TABLE III.C.1a
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE USEFUL LIFE WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.49	0.10	1.36	1.67
Sec. 56.1	RRAP	10.07	1.07	8.70	12.10
Sec. 56.1	RRAP & INAC	5.15	0.49	4.52	6.08
Sec. 56.1	INAC renov.	8.98	0.89	7.83	10.66
INAC new	Sec. 56.1	0.74	0.05	0.64	0.81
INAC new	RRAP	6.79	0.40	6.27	7.54
INAC new	RRAP & INAC	3.45	0.14	3.26	3.72
INAC new	INAC renov.	5.98	0.28	5.62	6.52
RRAP	Sec. 56.1	0.12	0.02	0.09	0.14
RRAP	INAC new	0.16	0.01	0.14	0.17
RRAP	RRAP & INAC	0.52	0.01	0.50	0.53
RRAP	INAC renov.	0.90	0.01	0.89	0.92
RRAP & INAC	Sec. 56.1	0.23	0.03	0.17	0.26
RRAP & INAC	INAC new	0.30	0.01	0.28	0.32
RRAP & INAC	RRAP	1.94	0.04	1.89	2.00
RRAP & INAC	INAC renov.	1.74	0.01	1.72	1.76
INAC renov.	Sec. 56.1	0.13	0.02	0.10	0.15
INAC renov.	INAC new	0.17	0.01	0.16	0.19
INAC renov.	RRAP	1.11	0.01	1.10	1.14
INAC renov.	RRAP & INAC	0.58	0.00	0.57	0.58

TABLE III.C.1b
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE BASIC AMENITIES WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.51	0.06	1.43	1.62
Sec. 56.1	RRAP	10.85	0.40	10.10	11.36
Sec. 56.1	RRAP & INAC	5.44	0.05	5.34	5.50
Sec. 56.1	INAC renov.	9.49	0.08	9.34	9.59
INAC new	Sec. 56.1	0.72	0.02	0.68	0.75
INAC new	RRAP	7.34	0.64	6.12	8.16
INAC new	RRAP & INAC	3.63	0.21	3.24	3.90
INAC new	INAC renov.	6.33	0.36	5.64	6.79
RRAP	Sec. 56.1	0.11	0.01	0.10	0.12
RRAP	INAC new	0.15	0.01	0.13	0.17
RRAP	RRAP & INAC	0.51	0.01	0.49	0.54
RRAP	INAC renov.	0.89	0.02	0.86	0.93
RRAP & INAC	Sec. 56.1	0.21	0.01	0.20	0.22
RRAP & INAC	INAC new	0.29	0.01	0.27	0.32
RRAP & INAC	RRAP	1.98	0.06	1.88	2.06
RRAP & INAC	INAC renov.	1.74	0.00	1.74	1.74
INAC renov.	Sec. 56.1	0.12	0.00	0.12	0.13
INAC renov.	INAC new	0.17	0.01	0.15	0.18
INAC renov.	RRAP	1.14	0.03	1.08	1.18
INAC renov.	RRAP & INAC	0.58	0.00	0.57	0.58

TABLE III.C.1c
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE OCCUPANT SATISFACTION WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.57	0.07	1.45	1.66
Sec. 56.1	RRAP	10.76	0.22	10.34	11.05
Sec. 56.1	RRAP & INAC	5.45	0.07	5.31	5.54
Sec. 56.1	INAC renov.	9.61	0.30	9.05	9.99
INAC new	Sec. 56.1	0.69	0.03	0.65	0.76
INAC new	RRAP	6.92	0.14	6.75	7.18
INAC new	RRAP & INAC	3.48	0.08	3.37	3.64
INAC new	INAC renov.	6.11	0.06	6.03	6.21
RRAP	Sec. 56.1	0.11	0.00	0.10	0.12
RRAP	INAC new	0.16	0.00	0.15	0.16
RRAP	RRAP & INAC	0.51	0.00	0.51	0.52
RRAP	INAC renov.	0.90	0.01	0.89	0.91
RRAP & INAC	Sec. 56.1	0.21	0.01	0.20	0.22
RRAP & INAC	INAC new	0.30	0.01	0.29	0.31
RRAP & INAC	RRAP	1.96	0.02	1.93	1.98
RRAP & INAC	INAC renov.	1.76	0.03	1.70	1.80
INAC renov.	Sec. 56.1	0.12	0.01	0.11	0.13
INAC renov.	INAC new	0.17	0.00	0.17	0.17
INAC renov.	RRAP	1.12	0.01	1.10	1.13
INAC renov.	RRAP & INAC	0.57	0.01	0.56	0.59

TABLE III.C.1d
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ONLY THE QUALITY IMPROVEMENT WEIGHT IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.59	0.09	1.41	1.71
Sec. 56.1	RRAP	10.88	0.45	10.03	11.46
Sec. 56.1	RRAP & INAC	5.60	0.37	4.91	6.08
Sec. 56.1	INAC renov.	9.72	0.52	8.75	10.39
INAC new	Sec. 56.1	0.69	0.04	0.64	0.76
INAC new	RRAP	6.94	0.11	6.81	7.14
INAC new	RRAP & INAC	3.53	0.02	3.49	3.56
INAC new	INAC renov.	6.12	0.02	6.10	6.16
RRAP	Sec. 56.1	0.11	0.01	0.10	0.12
RRAP	INAC new	0.15	0.00	0.15	0.15
RRAP	RRAP & INAC	0.52	0.01	0.50	0.53
RRAP	INAC renov.	0.90	0.01	0.89	0.91
RRAP & INAC	Sec. 56.1	0.20	0.01	0.19	0.23
RRAP & INAC	INAC new	0.29	0.00	0.29	0.30
RRAP & INAC	RRAP	1.94	0.03	1.89	2.00
RRAP & INAC	INAC renov.	1.74	0.02	1.71	1.77
INAC renov.	Sec. 56.1	0.12	0.01	0.11	0.13
INAC renov.	INAC new	0.17	0.00	0.17	0.17
INAC renov.	RRAP	1.12	0.01	1.10	1.13
INAC renov.	RRAP & INAC	0.58	0.01	0.57	0.58

TABLE III.C.2
SENSITIVITY ANALYSIS:
COST-EFFECTIVENESS COEFFICIENT VARIABILITY IF
ALL FOUR WEIGHTS IS ALLOWED TO VARY

BASE PROGRAM	COMPARED TO	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Sec. 56.1	INAC new	1.54	0.13	1.12	1.93
Sec. 56.1	RRAP	10.64	1.00	6.12	12.66
Sec. 56.1	RRAP & INAC	5.41	0.50	3.33	6.96
Sec. 56.1	INAC renov.	9.45	0.87	5.67	11.64
INAC new	Sec. 56.1	0.71	0.06	0.53	0.94
INAC new	RRAP	7.00	0.62	5.31	9.71
INAC new	RRAP & INAC	3.52	0.21	2.92	4.40
INAC new	INAC renov.	6.14	0.37	4.94	7.66
RRAP	Sec. 56.1	0.11	0.02	0.08	0.19
RRAP	INAC new	0.15	0.01	0.11	0.20
RRAP	RRAP & INAC	0.52	0.02	0.46	0.56
RRAP	INAC renov.	0.90	0.02	0.80	0.94
RRAP & INAC	Sec. 56.1	0.21	0.03	0.15	0.33
RRAP & INAC	INAC new	0.30	0.02	0.23	0.35
RRAP & INAC	RRAP	1.96	0.06	1.79	2.19
RRAP & INAC	INAC renov.	1.74	0.03	1.67	1.87
INAC renov.	Sec. 56.1	0.12	0.02	0.09	0.20
INAC renov.	INAC new	0.17	0.01	0.13	0.21
INAC renov.	RRAP	1.12	0.03	1.07	1.26
INAC renov.	RRAP & INAC	0.58	0.01	0.54	0.60

Canada