Funding support for low-income Canadians and for Broadband Deployment

Report for CRTC TNC 2015-134: Review of Basic Telecommunications Services

prepared for the

Public Interest Advocacy Centre (PIAC)

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by

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Summary

This Report provides rationale and financial estimates for two new funding mechanisms that would help increase broadband Internet access and improve telecommunications affordability for low-income Canadians, to be financed through the National Contribution Fund ("NCF"). These would supplement the current residential local wireline subsidy regime, which would continue to operate as is.

The Report proposes creating an Affordability Funding Mechanism similar to programs in other jurisdictions (USA, France, Spain, etc.) that offer telecommunications subsidies to low-income households, and describes two possible versions of such a subsidy. The "baseline" version represents an average of subsidies offered in other jurisdictions, while the "ambitious" version would mirror the "best in class" program, as currently available to low-income households in California. The Report describes how an Affordability Funding Mechanism would operate, setting out eligibility criteria and providing estimates for number of eligible households, monthly subsidy, and total annual costs for each version. The annual cost for the "base" version of the Affordability Funding Mechanism would be capped at $70 million, while that of the "ambitious" version would be capped at $410 million.

The Report also proposes a Broadband Deployment Funding Mechanism to widen access to broadband, based on a minimum-subsidy auction approach for funding broadband deployment projects, similar to the method used in other jurisdictions and recently adopted by the FCC in the United States. The annual cost of the Broadband Deployment Funding Mechanism would be capped at $220 million per year.

These two new funding mechanisms would require an increase to NCF contributions, which is reasonable given that the current NCF is relatively small and has decreased significantly in recent years, even as telecommunications service revenues have increased. The NCF contribution regime should be expanded to include certain currently exempted services, and the percentage contribution should be increased. The total annual cost of implementing the current subsidy regime, the baseline Affordability Funding Mechanism, and the Broadband Deployment Funding Mechanism would return the NCF to the historical average for the 2001-2014 period, 0.74% of telecommunications services revenues. The total annual cost with the ambitious Affordability Funding Mechanism would increase the NCF to 1.42% of telecommunications services revenues, equal to the average size of the USA Federal Universal Service Fund over the 2001-2014 period.

Contents

1 Introduction

PIAC has commissioned me[1] to propose designs for two new funding mechanisms: (i) a funding mechanism to subsidize access to telecommunications services by low income Canadians (the "Affordability Funding Mechanism"), and (ii) a funding mechanism to support the deployment of broadband Internet access (the "Broadband Deployment Funding Mechanism").

For the purposes of these new funding mechanisms, PIAC has asked me to assume that there is a telecommunications affordability gap and a broadband Internet access services gap in Canada, neither of which will be closed or significantly reduced in the long-term by targeted Government funding, public-private partnerships, or market forces. Additionally, PIAC asked me to assume that residential local wireline service continues to be very important, and that the current residential local wireline service subsidy regime could continue. In this context, the Affordability Funding Mechanism is designed to reduce the telecommunications affordability gap and the Broadband Deployment Funding Mechanism is designed to reduce the broadband Internet access services gap. These two new funding mechanisms would be supplemental to the current residential local wireline service subsidy regime.

The rest of this Report is structured as follows:

- **Section 1.1** sets out that the current residential local wireline service subsidy regime could be continued "as is," and projects that, based on the extension of recent trends, it will continue to decline to about $80 million per year over the 2017-2020 period.

- **Chapter 2** describes the Affordability Funding Mechanism. Other jurisdictions I reviewed offer subsidies to low income households to promote telecommunications affordability. These include the USA "Lifeline" programs and similar programs in Spain and France. PIAC requested that I develop two versions of the Affordability Funding Mechanism - a "baseline" version reflecting my assessment of the comparative "average" of these other programs, and an "ambitious" version based on my "best in class" assessment. The "baseline" and "ambitious" Affordability Funding Mechanisms differ by monthly subsidy amount, number of eligible households, and annual cost, with the "baseline" Affordability Funding Mechanism having a monthly subsidy of $11 available to about 1.34 million eligible households, for an annual capped cost of $70 million, and the "ambitious" version having a $22 subsidy to 2.61 million households and an annual capped cost of $410 million.

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[1] I have more than fifteen years of experience in universal service-related issues, having advised Governments and service providers in relation to policy-setting, economic analysis, regulatory reform, establishment of universal service funds, auction design, and implementation of universal service projects in more than a dozen countries (e.g. Canada, Jamaica, St. Vincent, St. Kitts, Dominica, Cambodia, Saudi Arabia, Albania, Bahamas, India, Morocco and Thailand.

I was the principal author of the "Universal Service" chapter of the *Telecommunications Regulation Handbook* (2000) and have prepared the following: "Minimum Subsidy Auctions for Public Telecommunication Access in Rural Areas" (Chapter in ITU *Trends in Telecommunication Reform* [2003]); ITU "Report on Universal Access and Service Funds in the Sub-Saharan Africa Region" (2010); ITU "Improving the disbursement effectiveness of low disbursing Universal Service Funds in Developing Countries" (forthcoming).

Prior to forming Sepulveda Consulting Inc. and becoming an independent consultant in 2006, I was Senior Telecommunications Economist with McCarthy Tétrault LLP and Senior Economist at Bell Canada.

Household eligibility criteria and other elements of these Affordability Funding Mechanisms are developed in Chapter 2.

- **Chapter 3** describes the Broadband Deployment Funding Mechanism. Other jurisdictions have established funding mechanisms to deploy broadband based on a minimum-subsidy auction-based approach, a model that has also been recently adopted and implemented by the FCC in the USA. Under this approach, a specific contribution amount is collected or set aside for this funding mechanism. Separately, the National Regulatory Authority ("NRA") may identify, select, design, cost, and tender specific broadband deployment projects, at a speed to be determined, in communities to be determined. Having access to the collected amounts, the NRA sets aside a maximum available subsidy for each specific project. Generally all service providers are eligible to participate in these auction processes. The participating service provider bid proposing the lowest subsidy is selected for that project. That winning service provider is then required to implement the project and is compensated with the winning subsidy amount. The annual cost of the Broadband Deployment Funding Mechanism would be capped at $220 million per year. The rationale for this estimate and other elements of the Broadband Deployment Funding Mechanism are developed in Chapter 3.

- These two new funding mechanisms would be supplemental to the current residential local wireline service subsidy regime and would therefore be financed by an increase in contributions to the National Contribution Fund ("NCF"). From a historical perspective, the current NCF is relatively small and decreasing. Over the 2001-2014 period, the NCF averaged $258 million per year (equivalent to 0.74% of telecommunications service revenues), and reached a historical low of $112 million in 2014. **Chapter 4** describes how the contribution regime could be expanded to include retail Internet and paging service revenues, thereby broadening the contribution-eligible "revenue base." For the 2017-2020 period the contribution amount for the current residential local wireline service subsidy regime (capped at $80 million) and the Broadband Deployment Funding Mechanism (capped at $220 million) would reach $300 million in total. Adding to this amount the "baseline" or "ambitious" version of the Affordable Funding Mechanism ($70 million and $410 million) would result in an overall contribution amount of either $370 or $710 million per year. These amounts are equivalent to about 0.74% and 1.42% of telecommunications services revenues. The former is the same as the historical NCF average (0.74% of telecommunications services revenues over 2001-2014), while the latter is equal to the average size of USA universal service fund (1.42% of telecommunications services revenues over 2001-2014).

1.1   Current residential local wireline service subsidy regime

This Section assesses the current residential local wireline service subsidy regime.

The first question I examine is whether currently or in the long-term the current subsidy regime could be expected to close or significantly reduce either the telecommunications affordability gap or the broadband Internet access services gap. For both questions my assessment is negative because the current subsidy regime was not designed to address these gaps.

Given this assessment, the second question I address is whether the current subsidy regime could be amended or redesigned to address the telecommunications affordability gap and the broadband Internet access services gap, or whether new funding mechanisms should be introduced.

- On the <u>telecommunications affordability gap</u> question, my assessment is that a new funding mechanism could be introduced because it would not be feasible to amend the current subsidy regime without fundamentally changing it. By way of example, the current subsidy regime is geographic and cost-based, while any affordability-related funding mechanism would likely be non-geographic and income-based. Chapter 2 presents a new Affordability Funding Mechanism to reduce the telecommunications affordability gap.

- On the <u>broadband Internet access services gap</u> question, my assessment is that while it would be feasible to amend the current subsidy regime, it would not be desirable to do so, and hence a new funding mechanism should be introduced. Chapter 3 presents the new Broadband Deployment Funding Mechanism to reduce the broadband Internet access services gap and discussed the advantages relative to simply expanding the current residential local wireline service subsidy regime to include broadband.

On this second question, it is important to highlight that all of the jurisdictions I reviewed had more than one program as part of their overall universal service regimes. At the federal level in the USA, the universal service fund ("USF") traditionally had four separate programs (Lifeline, High Cost Program (now the Connect America Fund), Schools and Libraries Program, and Rural Health Program), each designed to address specific issues. As set out in the Annex, the USF in Spain has three different programs, the USF in France it has four different programs and the USF in Australia has two programs.[2] This is in contrast to Canada, where the NCF has included only one program, the residential local wireline service subsidy regime. Based on the introduction of the new Funding Mechanisms described in Chapters 2 and 3, the NCF in Canada could in the future include three funding mechanisms.

Given the discussion above, a third question of whether the current subsidy regime could be continued "as is," refined, or discontinued can be considered in the context of the introduction of the two new Funding Mechanisms outlined in Chapters 2 and 3, the absolute and relative financial cost of the current subsidy regime, and the mid-term financial projections.

From a historical perspective, the current subsidy regime in Canada is small and decreasing. Figure 1 shows the current subsidy regime in Canada from 2001 to 2014.[3] Over the 2001-2014 period it averaged $258 million per year. After the start-up year, the program cost of the current subsidy regime was relatively stable, after which it started to decline, reaching a historical low of $112 million in 2014.

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[2]   These included "standard telephone service" in high-cost areas and public telephones. See "Services provided under the USO" page from ACMA (the Australian NRA) at http://archive.acma.gov.au/WEB/STANDARD/pc=PC_2413

[3]   "Total Contribution" from "Central Funds Administration: Quarterly Report) http://www.crtc.gc.ca/eng/cfund-fondc.htm (Accessed June, 2015).

Figure 1: Current Subsidy Regime in Canada
(CAD $000,000)
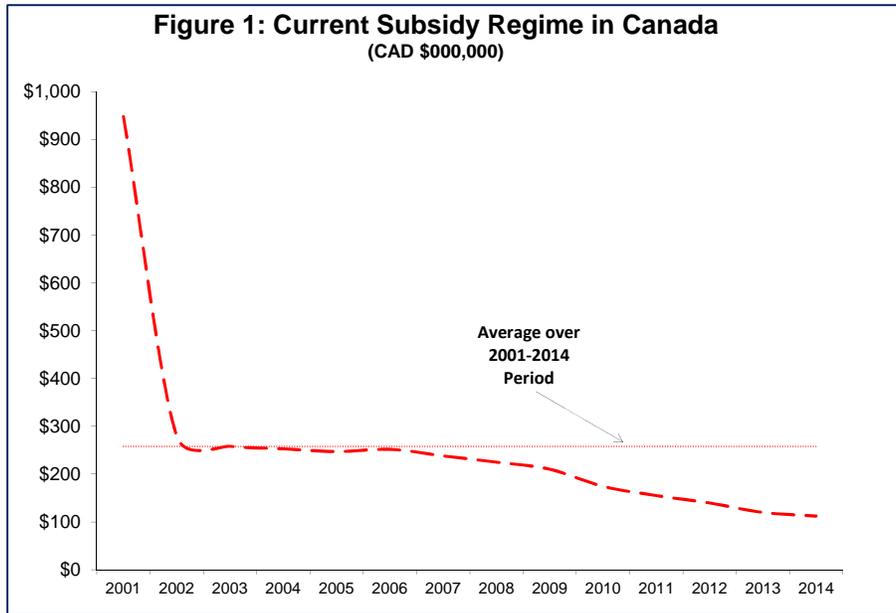
Absent any further amendments to the current subsidy regime, it is reasonable to expect that program cost will continue to decline, as presented in Figure 2, which shows that the average program cost of the current subsidy regime over the 2017-2020 period could be projected to average about $77 million per year.[4]

Figure 2: Current Subsidy Regime in Canada
(CAD $000,000; 2015 to 2020 are projections)
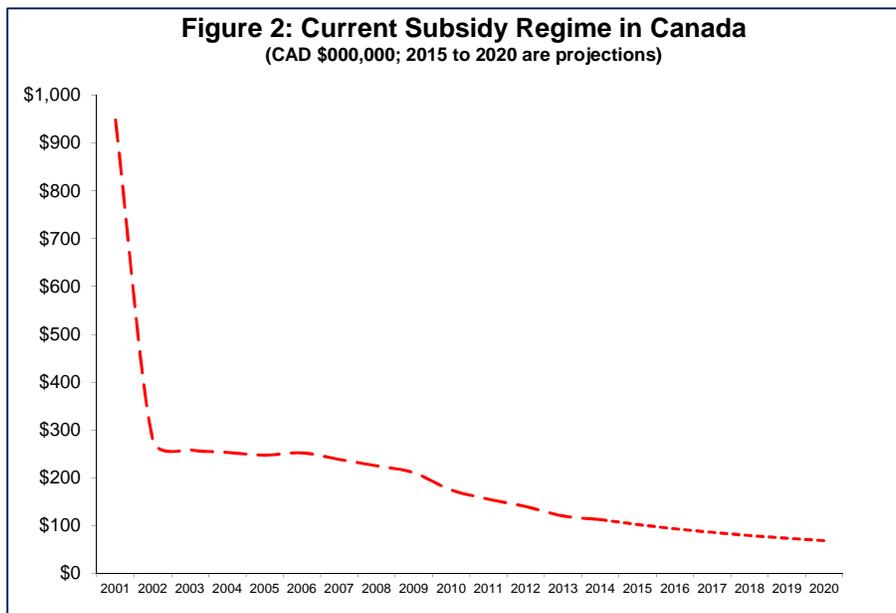
In summary, based on the projections above, over the 2017-2020 period, the program cost of the current residential local wireline service subsidy regime will continue to decline, averaging about $77 million per year. With the objective of enhancing financial certainty related to contributions,

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[4]   Projections for 2015-2020 are based on a simple statistical trendline ($Y = 4702.7X^{-1.422}$) fitted over the 2009-2014 period and extrapolated from 2014 to 2020.

the CRTC could cap the cost of the current subsidy regime at a level of $80 million starting 2017 (which is the year that the Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism could begin to be implemented) to 2020. In this overall context, my assessment is that the current subsidy regime could continue "as is," at least into the mid-term. My assessment is based on the following considerations:

- The assumption that residential local wireline service continues to be very important, and therefore the current subsidy regime could continue;

- given the new funding mechanisms discussed in Chapters 2 and 3, there is no need for the current subsidy regime to be expanded to increase the affordability of telecommunications services for low-income households or to subsidize the deployment of broadband Internet access services; and

- the expected decrease in the cost of the current subsidy regime will continue to create "budgetary slack" for the introduction of the two new funding mechanisms discussed in Chapters 2 and 3.

2 Affordability Funding Mechanism

This Chapter describes the Affordability Funding Mechanism. This funding mechanism is designed to reduce the telecommunications affordability gap and is supplemental to the current residential local wireline service subsidy regime. The Affordability Funding Mechanism could begin to be implemented in 2017.

2.1 Overview

I designed the two versions of the Affordability Funding Mechanisms based on my review and assessment of other jurisdictions that offer subsidies to low income households in order to promote the affordability of telecommunications. These include the USA (federal) program ("Federal Lifeline"), 17 State-level programs in the USA ("State Lifelines"), and programs in France and Spain. All of these programs are funded by their respective USFs.[5]

Table 1 and the Annex include a summary and a description of the above-noted programs. These programs are described based on the following elements:

- **Beneficiary Eligibility.** This refers to the criteria used to determine which households are eligible to benefit from the program. Eligibility criteria may be program based *only*, income based *only*, both income *and* program based, or income *or* program based.

- **Administration.** This refers to whether the national regulatory authority ("NRA") or a third party administrator administers the program, including verifying beneficiary eligibility and liaising with service providers.

- **Eligible Services.** This refers to the services that may be provided to the beneficiary households at a USF-funded discount.

- **Program Discount.** This refers to the monthly USF-funded discount applicable to the eligible services provided to the beneficiary households.

- **Eligible Service Providers.** This refers to the service providers that are eligible to

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[5] For reference purposes, I also took into account the recently-announced Ontario Electricity Support Program ("OESP"), which will provide subsidies to low-income households for electricity starting January 2016. The OESP is a first of its kind in Canada (there are a number of comparable Federal and State-level plans in the USA and other countries) and was designed by the Ontario Energy Board (OEB) based on direction by the Minister of Energy. Potential beneficiaries must meet income criteria (be below Statistics Canada's LIM-AT income measure). Beneficiary eligibility verification will be carried out by a Third Party Administrator. The reduction of electricity bills for residential consumers is based on a sliding scale benefit that varies between $20 and $50 per month based on income and household size, with an estimated average of $27 per month. The OEB estimates program costs are at between $175 and $225 million a year, which would be financed by an end-user a surcharge on electricity usage. See the OEB "Report of the Board - Developing an Ontario Electricity Support Program" (December 2014) at http://www.ontarioenergyboard.ca/oeb/_Documents/EB-2014-0227/Report_of_the_Board_Developing_an_OESP_20141222.pdf, the OESP Backgrounder (March 2015) at http://www.ontarioenergyboard.ca/oeb/_Documents/EB-2014-0227/OESP_Backgrounder_20150326.pdf and the OESP FAQ at http://www.ontarioenergyboard.ca/oeb/_Documents/EB-2014-0227/OESP_FAQ_20150326.pdf.

participate in the program and may receive compensation for providing discounted services.

- **Program participation and participation rate.** This refers to the overall number of households that participate in the program and the rate of program participation as a percentage of all eligible households.

- **Program Cost.** This refers to the annual costs of the program, expressed as an absolute amount, and as a percentage of telecommunications service revenues.

2.2   Financial Design of Affordability Funding Mechanisms

This Section provides the rationale for the elements of the Affordability Funding Mechanism related to overall cost (beneficiary eligibility, program discount, program participation, and participation rate).

2.2.1   Baseline Affordability Funding Mechanism

I designed the "baseline" Affordability Funding Mechanisms based on my assessment of the comparative "average" of the programs in the USA, France, and Spain.[6] I used my judgement to apply the results to the Canadian context.

My primary criteria for comparison purposes was the comparative size of the respective programs. For this I used the size of the program as a percentage of telecommunications service revenues. I consider that, for comparison purposes, telecommunications service revenues[7] is the appropriate base of comparison, rather than the respective contribution-eligible revenues. This is because the set of services that are included in contribution-eligible revenues is different for each of the jurisdictions and hence would not provide an appropriate basis for comparison.

Figure 3 shows that over the 2001-2014 period the low-income program of the USA USF averaged 0.22% of telecommunications services revenues, while those in Spain and France averaged 0.13% and 0.06%, respectively. The period average of these three countries was 0.14% of telecommunications services revenues, which is also presented in Figure 3. These averages are also included in Table 1. The 0.14% is the percentage of CTSR "target" for the baseline Affordability Funding Mechanism for Canada.

Conceptually, this percentage is the product of the monthly subsidy and the number of beneficiary households. Further, the beneficiary households are the product of the number of eligible households and the program participation rate. The average monthly USF-funded

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[6]   Please refer to the Annex for all data sources and other information related to these low-income programs.

[7]   For Canada I used "Canadian Telecommunications Service Revenues" ("CTSR") from Central Funds Administration: Quarterly Report) http://www.crtc.gc.ca/eng/cfund-fondc.htm. For other jurisdictions (USA, Spain, France and Australia (see Chapter 3) I generally used "Telecommunications Revenue" from "OECD Communications Outlook 2013," page 76 http://dx.doi.org/10.1787/888932801014. For Canada I confirmed that the OECD's revenue estimates are reasonably comparable to CTSRs, generally being on average 3% higher during the 2001-2011 period.

discount for USA, Spain and France is CAD $11.60,[8] and, as set out in Table 1, the average percentage of eligible households (of total population) is 13%.

Using a participation rate of 40% (see explanation below) and applying the average percentage of households (13%) and the average monthly discount ($11.60) applied to projected CTSRs over the 2017-2020 period[9] results in an "over-shooting" of the 0.14% CTSR target.[10] Adjusting the two multiplicands downwards to "hit the CTSR target" results in a monthly discount of $11 and a percentage of eligible households of about 10%.

Figure 3: Low-Income USF Programs
(% telecommunications service revenues)
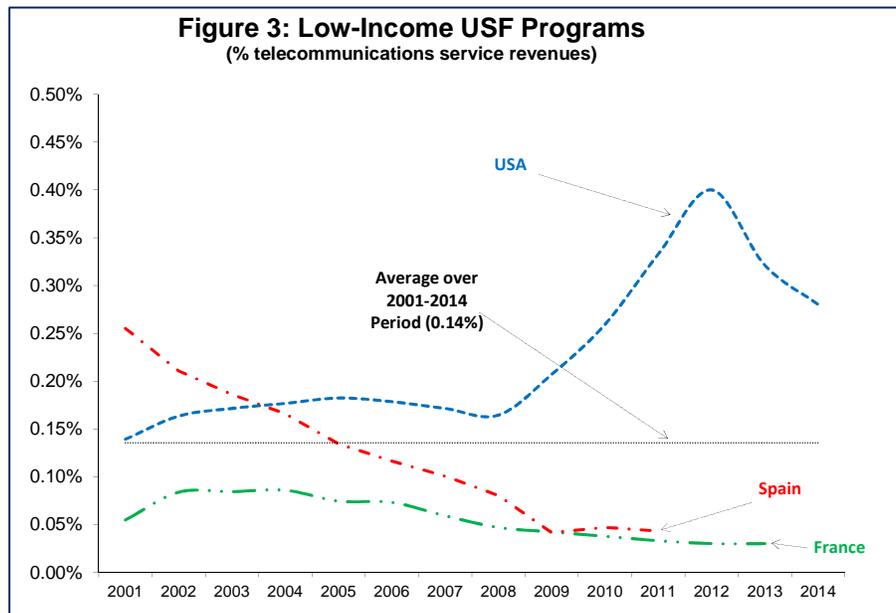
With respect to the percentage of eligible households, my review of the Canadian context indicates the following as reasonable candidate program and/or income eligibility criteria:

- provincially-administered[11] social assistance programs or federally-administered Income

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[8]   As set out in Table 1, the USA, Spain and France discounts are USD $9.25, €13.32 and €5.04. I used the average of annual exchange rates from OECD (2015) Exchange (indicator) http://dx.doi.org/10.1787/037ed317-en (Accessed July, 2015)) over the 2010-2014 period to convert these to CAD.

[9]   Estimated as follows: "Canadian Telecommunications Services Revenue" for the **2001-2014** period are from "Central Funds Administration: Quarterly Report) http://www.crtc.gc.ca/eng/cfund-fondc.htm (Accessed June, 2015). Revenues for **2015-2020** extrapolated from 2014 using cumulative average growth rate ("CAGR") of "Canadian Telecommunications Services Revenue" from above over the 2001-2014 period (calculated at 2.8%).

[10]   The over-shooting is attributable to differing participation rates across the jurisdictions.

[11]   See "Social Assistance Summaries 2014" (March, 2015) Caledon Institute of Social Policy at http://www.caledoninst.org/Publications/PDF/1062ENG.pdf (Accessed June 2015). The following are the provincially-administered social assistance programs: Newfoundland - Employment and Income Assistance (EIA); Nova Scotia - Employment and Income Assistance (ESIA): Prince Edward Island – Social Assistance (SA) and Disability Support Program (DSO); New Brunswick – Transitional Assistance (TA), Transitional Assistance-Single Employable (TA-SE) and Extended Benefits Program (EBP); Quebec - Social Assistance Program and Social Solidarity Program; Ontario – Ontario Works OW) and Ontario Disability Support Program (ODSP); Manitoba - Employment and Income Assistance (EIA); Saskatchewan - Saskatchewan Assistance Program (SAP), Transitional Employment Allowance (TEA) and Saskatchewan Assured Income for Disability (SAID); Alberta – Alberta Works (AW) and Assured Income for the Severely Handicapped

Assistance for households living on-reserve,[12] (together the social income assistance "SIA" programs), which cover 1.34 million households, or 10% of all households (13.3 million).[13] This would be a program-based eligibility criteria.

- an income-based eligibility criteria based on a number of possible low-income measures defined and measured by Statistics Canada,[14] including the after tax Low Income Cut Off ("LICO-AT"), the before tax LICO ("LICO-BT"), the after tax Low Income Measure ("LIM-AT") or the before tax LIM ("LIM-BT").

Of the candidates, the SIA program-based eligibility criteria "hits the target" of 10% of eligible households. The income-based criteria have higher percentage of eligible households (see below) and hence would "over-shoot" the CTSR target. The resulting monthly discount of $11 appears reasonable as a monthly discount. Together, these two elements result in a baseline Affordability Funding Mechanism of $70 million per year, equivalent to 0.14% of telecommunication services revenues over the 2017-2020 period.

2.2.2 Ambitious Affordability Funding Mechanism

I designed the "ambitious" Affordability Funding Mechanisms based on my assessment of the "best in class" jurisdiction amongst the programs in the USA, France, and Spain. As set out in the Annex, the combined Federal and State Lifeline programs applicable to eligible households in California is the "best in class" in terms of coverage and amount of monthly USF-funded discount. I used my judgement to apply the results to the Canadian context. As above, my primary criteria for comparison purposes was the comparative size of the respective program.

As set out in Table 1, the combined Federal and California Lifeline has a current program cost of 0.82% of telecommunications services revenues. The maximum monthly discount is USD $21.90 (or CAD $22.50)[15], and the percentage of eligible households is 24%. The 0.82% is the percentage of CTSR "target" for the ambitious Affordability Funding Mechanism.

Using a participation rate of 60% (see explanation below) and applying the percentage of eligible households (24%) and the maximum monthly discount (CAD $22.50) to projected CTSRs over the 2017-2020 period results in a slight "over-shooting" of the 0.82% CTSR target. Adjusting the two multiplicands slightly downwards to "hit the CTSR target" results in a monthly discount

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(AISH); British Columbia - Temporary Assistance (TA) and Disability Assistance (DA); Yukon – Social Assistance (SA); North-West Territories - Income Assistance Program (IAP).

[12] Aboriginal Affairs and Northern Development Canada, "Income Assistance: Key Facts" (accessed June 2015) at https://www.aadnc-aandc.gc.ca/eng/1369766807521/1369766848614.

[13] Statistics Canada, "Canadian households in 2011: Type and growth" at https://www12.statcan.gc.ca/census-recensement/2011/as-sa/98-312-x/98-312-x2011003_2-eng.cfm. (Accessed June, 2015).

[14] See Statistics Canada "Low-Income Lines, 2012-2013 at http://www5.statcan.gc.ca/access_acces/alternative_alternatif.action?l=eng&loc=/pub/75f0002m/75f0002m2014003-eng.pdf&teng=Low%20Income%20Lines,%202012-2013&tfra=Les%20lignes%20de%20faible%20revenu,%2012-2013.

[15] I used the average of annual exchange rates from OECD (2015) Exchange (indicator) http://dx.doi.org/10.1787/037ed317-en (Accessed July, 2015)) over the 2010-2014 period to convert this USD amount to CAD.

of $22 and a percentage of eligible households of about 20%.

Of the candidate eligibility criteria, the LIM-AT "hits the target" of 20% of eligible households (there are 2.61 million households below the LIM-AT).[16] The LIM-AT also has social policy support precedent in Canada, as it is the income criteria to be used in the OESP (see above). The revised monthly discount of $22 appears reasonable as a monthly discount. Together, these two elements result in an ambitious Affordability Funding Mechanism of $410 million per year, equivalent to about 0.82% of telecommunication services revenues.

Note that because the low income measures are substantially above the benefits payable under any of the SIA programs, the ambitious Affordability Funding Mechanism could use a program or income eligibility criteria (in other words, recipients would qualify for the discount if they met either the SIA program eligibility or income eligibility criteria), and the total number of eligible households would not be affected materially from using the income eligibility criteria only. The advantage of this income or program eligibility is that the application process for SIA program eligible households would be simplified (they would not have to submit documentation related to income), and the administration costs of verifying such eligibility would be reduced.

2.3   Beneficiary Eligibility

Baseline Affordability Funding Mechanism. The eligibility criteria is SIA program eligibility. For 2013-2014 the SIA programs covered 1.34 million households, or 10% of all households in Canada.

Ambitious Affordability Funding Mechanism. The eligibility criteria is either LIM-AT income or SIA program eligibility. Income eligibility is based on the LIM-AT as defined and updated by Statistics Canada. For 2012 there were a total of 2.61 million households below the LIM-AT across Canada, or 20% of all households in Canada.

2.4   Administration

Baseline or Ambitious Affordability Funding Mechanism. These types of affordability programs require an administration entity, which would verify beneficiary eligibility, monitor on-going participation, and liaise with service providers. Such administration could be carried out by the NRA or a third party administrator ("3PA"). Experience from other jurisdictions shows that a 3PA is the most common approach. The 3PA could be funded by the NCF and could be the same as the current Central Funds Administrator ("CFA").

2.5   Eligible Services

Baseline or Ambitious Affordability Funding Mechanism. In principle, any telecommunications service could be eligible to be subject to the monthly discount, including

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[16]   Statistics Canada CANSIM Table 111-0015 "Family characteristics, Low Income Measures (LIM), by family type and family type composition" at http://www5.statcan.gc.ca/cansim/a01?lang=eng. (Accessed June, 2015).

residential fixed wireline, mobile wireless, or broadband service. As per all other programs reviewed, there would only be one discounted eligible service per eligible household.

2.6   Program Discount

Baseline Affordability Funding Mechanism. The NCF-funded discount is $11 per month.

Ambitious Affordability Funding Mechanism. The NCF-funded discount is $22 per month.

2.7   Eligible Service Providers

Baseline or Ambitious Affordability Funding Mechanism. All service providers designated by the CRTC would be eligible to receive funds. The CRTC would determine the criteria that designated service providers would have to meet.

2.8   Program Participation and Participation Rate

Baseline Affordability Funding Mechanism. The estimated participation rate of 40% is based on the current USA Federal program participation rate of 38% (See Table 1), which has the highest participation rate of the USA, Spain and France. With a 40% participation rate, 0.53 million households would participate (out of 1.34 million eligible households).

Ambitious Affordability Funding Mechanism. Because of the higher benefit amount, the estimated participation rate may be expected to be higher than the baseline Affordability Funding Mechanism.[17] The estimated participation rate of 60% is based on such a comparison and consideration of the California Lifeline participation rate of (currently at 68%, with an average participation rate over the previous 12 month period of 49%). With a 60% participation rate, 1.57 million households would participate (out of 2.61 million eligible households).

2.9   Program Cost

Baseline Affordability Funding Mechanism. Based on 0.53 million participants at $11 per month per household, the annual program cost would be $70 million.

Ambitious Affordability Funding Mechanism. Based on 1.57 million participants at $22 per month per household, the annual program cost would be $410 million.

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[17]   See FCC discussion on this matter on page 18 of "REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING (January, 2012) (FCC12-11_ at https://apps.fcc.gov/edocs_public/attachmatch/FCC-12-11A1.pdf.

2.10 Summary

The baseline and ambitious Affordability Funding Mechanisms are presented in summary form in Table 1, which also includes a summary of the other programs described in the Annex.

Table 1: Summary of Baseline and Ambitious Affordability Funding Mechanisms in Canada and Low-Income Programs in Other Jurisdictions								
	USA Federal	**Spain**	**France**	**Average: USA (Fed), Spain & France**	**CANADA Baseline Affordability Funding Mechanism**	**California State**	**California Federal + State**	**CANADA Ambitious Affordability Funding Mechanism**
Households (million)	116	18	28		13.3	12.5	12.5	13.3
Beneficiary Eligibility	Program **or** Income	Program **and** Income	Program **only**		Program **only**	Program **or** Income	Program **or** Income	Income **or** Program
Eligibility Verification	Eligible Service Provider	Designated USP	Social Assistance Administrator		3rd party administrator	3rd party administrator	3rd party administrator	3rd party administrator
Eligible Services	Residential fixed or mobile telephony	Residential fixed telephony	Residential fixed telephony		Residential fixed or mobile telephony, or broadband	Residential fixed or mobile telephony	Residential fixed or mobile telephony	Residential fixed or mobile telephony, or broadband
Services per Household	1	1	1		1	1	1	1
Monthly USF-funded Discount per Service	USD $9.25	≈€13.32	€5.04	CAD $11.60	CAD $11.00	USD $12.65 wireline; $5.75/ $12.65 wireless	USD $21.90 wireline; $15.00/ $21.90 wireless	CAD $22.00
Eligible Service Providers	Multiple; determined by State PUCs	1 designated USP	1 designated USP		Multiple; determined by CRTC	Multiple; determined by CPUC	Multiple; determined by CPUC	Multiple; determined by CRTC
Eligible Households (HH) (million & % of all HH)	32.6m (28%)	≈0.8m (≈4%)	2.5m (9%)	13%	1.34m (10%)	3.0m (24%)	3.0m (24%)	2.61m (20%)
Actual HH Beneficiaries	12.4m	0.12m	0.33m			2.05m	2.05m	
Projected HH Beneficiaries					0.53m			1.57m
Participation Rate	38%	≈15%	15%		40%	68%	68%	60%
Program Cost (per year) — Average (2001-most recent)	USD $1,120m	€ 45m	€ 27m					
Program Cost (per year) — Projections (2015)						USD $337m	USD $565m	
Program Cost (per year) — Projections (avg. 2017-20)					CAD $70m			CAD $410m
Program Cost (per year) — Avg. (% revenues, 2001-most recent)	0.22%	0.13%	0.06%	0.14%				
Program Cost (per year) — Projections (% revenues, 2015)						0.49%	0.82%	
Program Cost (per year) — Projections (% revenues 2017-2020)					0.14%			0.82%

Source: See Annex for USA, Spain, France and California. See this Chapter for Affordability Funding Mechanisms.

3 Broadband Deployment Funding Mechanism

This Chapter describes the Broadband Deployment Funding Mechanism. This funding mechanism is designed to reduce the broadband Internet access services gap and is supplemental to the current residential local wireline service subsidy regime. The Broadband Deployment Funding Mechanism could begin to be implemented in 2017.

3.1 Overview

In Question 13 of Telecom Notice of Consultation ("TNC") 2015-134 the Commission asked if there is a need to establish a new funding mechanism to support the provision of modern telecommunications services and stated that any response "should address the mechanism described in Telecom Regulatory Policy 2013-711 for transport services and/or any other mechanism necessary to support modern telecommunications services across Canada."

The following sections describe the new Broadband Deployment Funding Mechanism, which constitutes a specific detailed design of a "new funding mechanism to support the provision of modern telecommunications services" formulated in Question 13 of TNC 2015-134. The sections are broadly based on the elements set out in Question 13, as follows:

- **Eligible Infrastructure/Services.** This refers to the infrastructure and services that are eligible to be funded.

- **Eligible Service Providers.** This refers to those service providers which are eligible to participate in the program and which may receive compensation.

- **Funding Amount and Distribution**. This refers to the amount of the subsidy provided and the mechanism by which the subsidy is distributed amongst eligible service providers.

- **Administration.** This discusses whether the national regulatory authority ("NRA") or a third party administrator could administer the program, including identifying the specific projects to be undertaken.

- **Regulatory and Contractual Conditions.** These would be specific regulatory or contractual conditions and obligations that would be imposed on the service providers receiving funding from the funding mechanism.

- **Program Cost.** This refers to the annual costs of the program, expressed as an absolute amount, and as a percentage of telecommunications service revenues.

3.2 Design of Broadband Deployment Funding Mechanism

I designed the Broadband Deployment Funding Mechanism based on a composite "Deployment USF Model" of minimum-subsidy auction-based universal service-related programs in other

jurisdictions,[18] including as adopted and implemented by the FCC in the USA.[19]

It is important to highlight some of the conceptual similarities and differences between the Deployment USF Model and the current residential local wireline service subsidy regime in Canada. In the Deployment USF Model, the USF contributions may be collected in advance of and not directly linked to any previously-established universal service-related compensation amount. Separately, the NRA may identify, select, design, cost, and tender specific expansion projects. The USF contributions allow the NRA to offer a subsidy for each of the specific selected projects. Generally all service providers are eligible to participate in these auction processes. The participating service provider bid proposing the lowest subsidy is selected for that project. That winning service provider is then required to implement the project and will be compensated with the winning subsidy amount. This model was designed and has generally been implemented in the context of the expansion of networks or services. Under this model, an "active" administration is required to identify, select, design, cost, tender, and monitor projects.

Taking into account the objective of reducing the broadband Internet access services gap, the Deployment USF Model has the following advantages relative to simply expanding the current residential local wireline service subsidy regime to include broadband:

- **Better suited to deployment and expansion of services and network.** The Deployment USF Model was designed and has generally been implemented in the context of the expansion of networks or services, rather than the traditional type of wireline service subsidy regime, which was designed and has generally been implemented in the context of maintenance of existing services.

- **Certainty over amount of contributions.** The amount of contributions may be established without regard to any expected future compensation of universal service-related costs. In the case at hand, this means that the contribution may be established independently of any decisions related to obligation to serve, the BSO, or the related estimated costs. This has the advantage of providing financial certainty related to the contribution amount, regardless of the other decisions. From this perspective, the contribution amount may be established with greater reference to a reasonable contribution burden, rather than established to "pay" for a specific compensation cost.

- **Greater market-orientation.** The Deployment USF Model is much more market-oriented than the traditional current subsidy regime. First, it introduces competition to the provision of universal service by allowing any interested eligible service provider to participate in the minimum subsidy auction. This could result in innovative proposals and greater competition. Second, the actual compensation amount is determined as a result of a competitive bidding

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[18] For a general overview see, for example, "Universal Access and Service; Availability, Accessibility and Affordability for Universal Service," in particular Section 4.3.2 "Competing for subsidies from Universal Access and Service Funds" and Section 4.7 "Competing for UAS Subsidies" at http://www.ictregulationtoolkit.org/4.7.

[19] For example, see FCC's "REPORT AND ORDER, DECLARATORY RULING, ORDER, MEMORANDUM OPINION AND ORDER, SEVENTH ORDER ON RECONSIDERATION, AND FURTHER NOTICE OF PROPOSED RULEMAKING" Adopted: April 23, 2014 Released: June 10, 2014 (FCC 14-54), paragraphs 235-250 for a description of Mobility Fund I and II at https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-54A1.pdf.

process, rather than the administratively-determined compensation amount. Participating eligible service providers will be incented to reveal their true cost of providing the services. This will likely result in efficiency and administrative gains.

- **Sequenced and economical deployment.** Under the Deployment USF Model, an "active" administration is required to identify, select, design, cost, tender, and monitor projects with the objective of having a sequenced and economical deployment strategy. An example of some elements of this approach was the FCC's 2012 one-time Mobility Fund process to provide mobile broadband access to certain locations.[20] This was the first universal service competitive bidding process in the USA. The FCC identified the available designated areas, and carriers were invited to bid on one or more areas. Subsidies were awarded based on the lowest subsidy amounts submitted, to at most one service provider in a given area. Subsidies were awarded based on winning bids in an ascending per road-mile basis until the USD $300 million "hard" budget for the Mobility Fund was exhausted. The remaining designated areas that did not receive bids will be the subject of subsequent processes. The result was that the auction revealed the lowest subsidy areas and the greatest number of areas was able to be served for a given fixed subsidy amount. Another standard auction approach is for the NRA to identify the specific area to be served and seek subsidy offers only on that area.

Similarly, the possible disadvantages are well known, and mitigating measures may be taken:

- **Unsuccessful Auctions.** It may be expected that at least some auction processes may be unsuccessful because no service providers participate. A common response to this occurrence is to review the terms and conditions of the auction, including the amount of the subsidy, and retender the revised project.

- **Incremental progress.** The corollary of having a sequenced deployment strategy is that by definition this Deployment USF Model achieves specified objectives incrementally over time, area by area, rather than in a single instance.

- **Risk of no disbursement.** Some developing countries that have adopted the Deployment USF Model have struggled to implemented an effective deployment strategy and have thus accumulated USF surpluses because they have not disbursed to projects. This poor performance is due to poor institutional capacity, governance problems, and other challenges that generally do not apply to Canada and other industrialized countries.

It is worth pointing out that the Deployment USF Model is similar in some respects to traditional Government funding programs, such as the Government of Canada's Connecting Canadians program (budget of $305 million).[21] Both approaches have a "hard" budget and include a methodology to distribute the funds. However, the Deployment USF Model differs from traditional Government programs in a number of ways, including that the funding in the Deployment USF Model is ongoing and predictable, and the amount and allocation of funds is

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[20]   *Ibid.*

[21]   See http://www.ic.gc.ca/eic/site/028.nsf/eng/00588.html.

based on a minimum subsidy process.

3.3   Eligible Infrastructure/Services

In principle, all types of infrastructure that facilitate the provision of the designated services should be eligible to be funded. The specific infrastructure and services to be funded could be determined by the Commission or a third party administrator appointed by the Commission.

3.4   Eligible Service Providers

In principle, all service providers would be eligible to receive funding. The service provider that actually receives funding would be the winner of a "minimum subsidy" competitive bidding process.

3.5   Funding Amount and Distribution

The amount of the funding would be determined by the subsidy requested by the winning bidder of the "minimum subsidy" competitive bidding process. The funding would be distributed to the winning bidder of a "minimum subsidy" competitive bidding process.

3.6   Administration

The administration of the Broadband Deployment Affordability Funding Mechanism could be undertaken by the Commission or a third party administrator appointed by the Commission ("3PA"). The 3PA could be the same as the current CFA or a different entity.

The administration of the Broadband Deployment Funding Mechanism would be project-oriented (a separate function from the collection and accounting function under the current CFA). The main project-oriented functions would include, but not be limited to the following:

- **Market Assessment**. The 3PA should at all times monitor sector developments and be aware of possible future developments to identify current and future gaps, based on which it would identify potential projects, thus, as noted in TNC 2015-134, ensuring that "this mechanism should complement, and not replace, other investments from the private sector and governments, including public-private partnerships."

- **Plans, Programs and Strategies**. The 3PA should be guided by a series of tools to plan, coordinate, implement, and monitor broadband deployment performance. These tools may include a multi-year strategic plan, programs, and other documents.

- **Project Identification**. The process for identifying priority projects will result in a "long list" of possible projects to be considered by the 3PA. Projects may be internally generated by the 3PA as a result of its own assessment or proposed/suggested by external parties.

- **Project Selection.** The 3PA would select projects it wants to undertake from the "long list" of projects identified. The 3PA could select this "short-list" of projects based on a set of Commission-approved criteria, including project financial sustainability (post subsidy), market orientation, and contestability.

- **Project Design.** Once a project has been selected, the 3PA would specify the project in sufficient detail that it is implementable and a project contract is enforceable.

- **Project Implementation.** This final phase involves the 3PA preparing the corresponding request for proposals or an equivalent bid document, holding the bidding process, awarding the Contract, and disbursing funds consistent with the Contractor complying with contractual milestones. Bids should be evaluated according to the procedures and indicators established in the bid document. Based on evaluation results, a Contract should be finalized with the selected Bidder. Once the Contact has been signed, the 3PA can begin to monitor the progress of the Contractor to ensure that all the corresponding obligations and milestones are met. Disbursements of the agreed-upon financing will generally be made on the completion of the contract milestones.

3.7 Regulatory and Contractual Conditions

The infrastructure and service funded under the Broadband Deployment Funding Mechanism would be subject to standard commercial provisions related to the payment of the subsidy amount, pursuant to the project contract.

In addition to these provisions, if appropriate and technically feasible, project-specific regulatory conditions may also be included. These could include, for instance, that the infrastructure to be funded should be made available on a wholesale basis, or that any telecommunications service that is subsidized be subject to a maximum retail rate. The specific regulatory conditions would be proposed by the 3PA on the particular project to be funded, subject to approval by the CTRC.

3.8 Program Cost

I designed the Broadband Deployment Funding Mechanism based on my assessment of the comparative "average" of the programs in the USA and Australia. I used my judgement to apply the results to the Canadian context.

My primary criteria for comparison purposes was the comparative size of the respective programs. I then reviewed the results of these factors and undertook an iterative process to adjust the results of this funding mechanism to take into account the overall program costs (including the Affordability Funding Mechanism). In this respect, I consider as reasonable targets 0.74% of CTSR for the overall program costs (with the baseline Affordability Funding Mechanism) and 1.42% of CTSR with the ambitious Affordability Funding Mechanism, given the differing objectives of the two versions of the Affordability Funding Mechanism (see Chapter 4 for explanation).

For purposes of this section, I consider the Broadband Deployment Funding Mechanism and the

current residential local wireline service subsidy regime to be two elements of an overall geographic-based high-cost funding mechanism. I begin by calculating the program costs of the overall area-based high-cost mechanism, from which I subtract the capped program cost of $80 million per year of the current residential local wireline service subsidy regime to calculate the program cost of the Broadband Deployment Funding Mechanism.

For comparative purposes to estimate the high-cost program costs, I reviewed the high-cost programs in the USA[22] and Australia.[23] As set out in Figure 4, over the 2001-2014 period, the High-Cost program of the Federal USF in the USA averaged 0.79% of telecommunications services revenues,[24] while that in Australia averaged 0.47%.[25] The period average of these two countries was 0.63% of telecommunications services revenues, as presented in Figure 4. The 0.63% is the percentage of CTSR "target" for the Broadband Deployment Funding Mechanism.

Applying this going-in target to projected CTSRs over the 2017-2020 period results in program costs of about $315 million per year. This figure compares to the NCF average of $258 million over the 2001-2014 period. However, taking into account that the baseline and ambitious Affordability Funding Mechanisms are at 0.14% and 0.82% of CTSR, the 0.63% results in a slight "over-shooting" of the 0.74% and 1.42% of CTSR targets for the overall program cost.
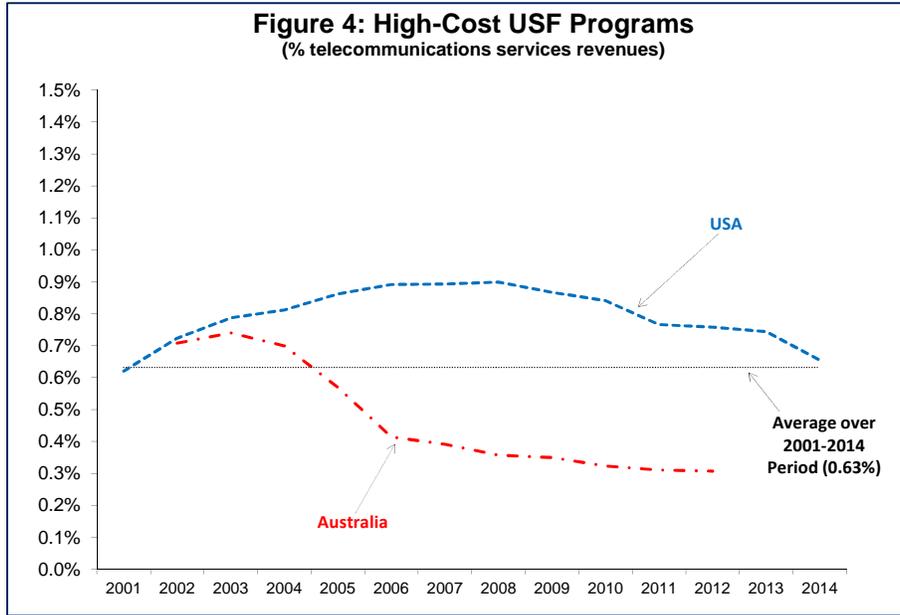
Based on the above, therefore, I adjust the program cost for the overall geographic-based high-cost funding mechanisms to 0.60% of CTSR over the 2017-2020 period, equal to $300 million per year. Subtracting the capped program cost of $80 million per year of the current subsidy regime leaves the difference of $220 million per year as the program cost for the Broadband Deployment Funding Mechanism over the 2017-2020 period.

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22   For **2001-2013,** see "High-Cost Support" in Table 1.10 "Universal Service Disbursements 2001-2013" in FCC's "Universal Service Monitoring Report" at https://apps.fcc.gov/edocs_public/attachmatch/DOC-330829A1.pdf. For **2014,** see "High-Cost" on page 45 of the Universal Service Administrative Company ("USAC") "2014 Annual Report: Moving Forward" at http://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2014.pdf.

23   For **2002-2004,** see "Universal Service Subsidies (2001-02, 2002-03, 2003-04 Default Area) Determination (No. 1) 2001" at https://www.comlaw.gov.au/Details/F2004B00472. For **2005,** see "Universal service subsidies for 2005-06 to 2007-08 - PROPOSAL PAPER" (November 2004) at http://www.acma.gov.au/webwr/telcomm/universal_service_regime/universal_service_obligation/costing_funding/subsidies_proposal_2005_2008.pdf. For **2006-2008,** see "Universal Service Subsidies (2005-06, 2006-07, 2007-08 Default Area) Determination (No. 1) 2005" at https://www.comlaw.gov.au/Details/F2005L01828. For **2009-2012,** see "Funding the USO" page from ACMA (the Australian NRA) at http://archive.acma.gov.au/WEB/STANDARD/pc=PC_2483.

24   "Telecommunications Revenue" for **2001-2011** from "OECD Communications Outlook 2013," page 76 http://dx.doi.org/10.1787/888932801014 (Accessed June, 2015). Telecommunications service revenues for **2012** extrapolated from 2011 national currency estimate using 2011 to 2012 growth rates of "Revenue from all telecommunication services" in USD from "World Telecommunication/ICT Indicators database 2014 (18th Edition, December, 2014), ITU (2014) http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (Subscription accessed June, 2015). Telecommunications service revenues for **2013-2014** extrapolated from 2012 using cumulative average growth rate ("CAGR") of "Telecommunications Revenue" from above over the 2001-2011 period (calculated at 2.3%).

25   "Telecommunications Revenue" for **2001-2011** from "OECD Communications Outlook 2013" page 76 http://dx.doi.org/10.1787/888932801014 (Accessed June, 2015), converted to national currency using exchange rates from OECD (2015) Exchange (indicator) http://dx.doi.org/10.1787/037ed317-en (Accessed July, 2015). Telecommunications service revenues for **2012-2013** extrapolated from 2011 national currency estimate, using 2011 to 2012 and 2012 to 2013 growth rates of "Revenue from all telecommunication services" in national currency from "World Telecommunication/ICT Indicators database 2014 (18th Edition, December, 2014), ITU (2014) http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (Subscription accessed June, 2015).

Figure 4: High-Cost USF Programs
(% telecommunications services revenues)

USA

Australia

Average over
2001-2014
Period (0.63%)

4 Contribution Mechanism (NCF)

The Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism are supplemental to the current residential local wireline service subsidy regime and would therefore be financed by an increase in contributions to the NCF. This Chapter also describes how the contribution regime could be expanded to include some currently-exempted services, thereby broadening the contribution-eligible "revenue base".

4.1 Cost of New Funding Mechanisms

Figures 5 and 6 show the projected cost to 2020 of adopting from 2017 the Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism.[26] Figure 5 shows the baseline version of the Affordability Funding Mechanism while Figure 6 shows the ambitious version.

Each of these figures provides a breakdown of the costs over the 2017-2020 period of the existing subsidy regime and the two new funding mechanisms: the current residential local wireline service subsidy regime (capped at $80 million), the Broadband Deployment Funding Mechanism (capped at $220 million), and the baseline or ambitious version of the Affordable Funding Mechanism (capped at $70 million or $410 million respectively), resulting in a total cost of either $370 or $710 million per year over the 2017-2020 period.

Figure 5: NCF projections - with Baseline Affordability Funding Mechanism (CAD $000,000)

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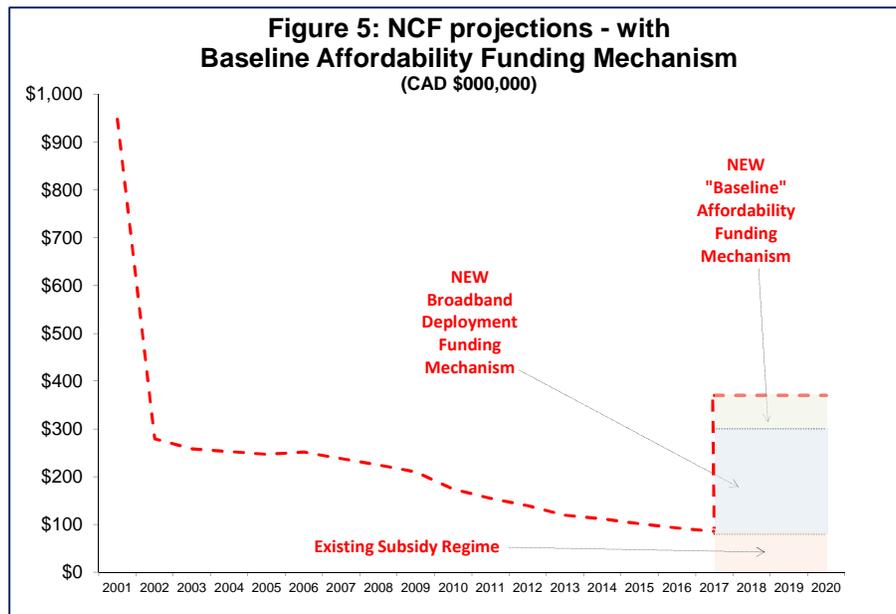
[26] For **2001-2014,** see "Total Contribution" from "Central Funds Administration: Quarterly Report) http://www.crtc.gc.ca/eng/cfund-fondc.htm (Accessed June, 2015). Projections for **2015-2016** are based on a simple statistical trendline ($Y = 4702.7X^{-1.422}$) fitted over the 2009-2014 period and extrapolated from 2014 to 2020. Projections for **2017-2020** include the existing subsidy regime and the two new funding mechanisms.

Figure 6: NCF projections - with Ambitious Affordability Funding Mechanism (CAD $000,000)
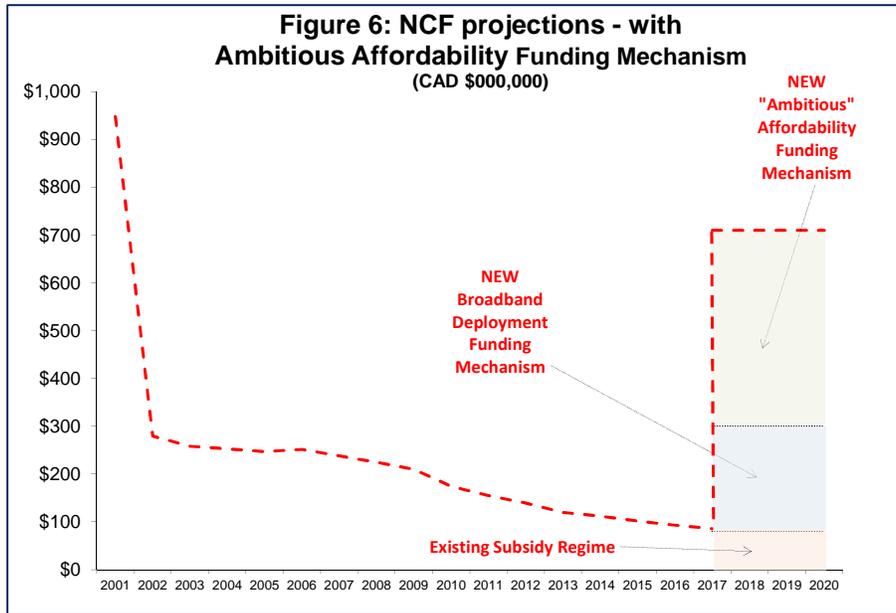
By way of comparison, Figure 7 shows the NCF and the USA USF,[27] expressed as a percentage of telecommunications service revenues over the 2001-2014 period and projections for the NCF to 2020. Figure 7 also includes the respective averages of the NCF and the USA USF over the 2001-2014 period (0.74 and 1.42%, respectively).

Figure 7: USA Federal USF and NCF - Projections (% telecommunications service revenues)

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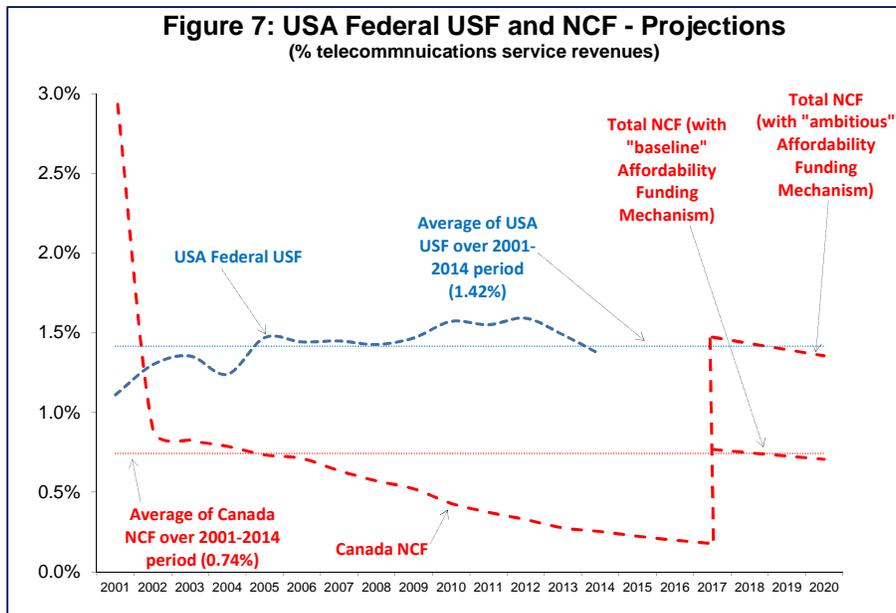
27 For **2001-2013,** see "Total" in Table 1.10 "Universal Service Disbursements 2001-2013" in FCC's "Universal Service Monitoring Report" at https://apps.fcc.gov/edocs_public/attachmatch/DOC-330829A1.pdf. For **2014,** see page 45 of the Universal Service Administrative Company ("USAC") "2014 Annual Report: Moving Forward" at http://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2014.pdf.

Figure 7 shows that overall program costs over the 2017-2020 period with the baseline Affordability Funding Mechanism average 0.74% of projected CTSRs, while the overall program costs with the ambitious Affordability Funding Mechanism average 1.42% of projected CTSRs. The former is the same as the NCF 2001-2014 average (0.74% of CTSRs), while the latter is the same as the USA USF 2001-2014 average (1.42% of telecommunications service revenues). Hence, Figure 7 confirms that the overall program costs are consistent with the percentage of telecommunications service revenues targets I consider as reasonable, given the differing objectives of the two versions of the Affordability Funding Mechanism.

4.2   Contribution Mechanism

Having determined the program cost, this section relates to reviewing the current contribution mechanism. The NCF is funded by a "contribution rate" (percent) of Contribution Eligible Revenues ("CERs"). Figure 8 shows CERs and CTSRs[28] from 2001 to 2014. Figure 9 shows that the CER/CTSR ratio averaged 62% over the entire period, but has declined to a low of 49% in 2014.

Figure 8: Telecommunications Service Revenues and Contribution-Eligible Revenues
(CAD $000,000)
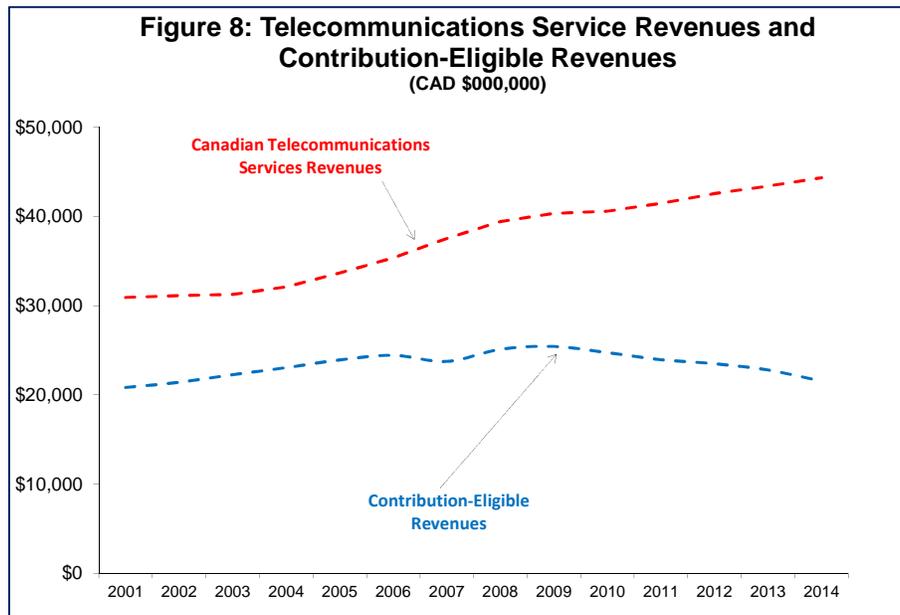
Figure 9 shows that the contribution-eligible "revenue base" will continue to decline as Internet, and, to a lesser extent, paging service revenues continue to increase.[29] With the objective of ensuring that the contribution contribution-eligible "revenue base" is "broad and sustainable," Internet and paging service revenues could be included as CERs starting 2017. This would

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28   "Canadian Telecommunications Services Revenue" and "Contribution Eligible Revenues" from "Central Funds Administration: Quarterly Report" http://www.crtc.gc.ca/eng/cfund-fondc.htm (Accessed June, 2015).

29   Internet retail service revenues increased from 22% of CTSR in 2011 to 32% in 2014, based on CRTC Letter of July 2. 2015 re "Disclosure of certain information from the Data Collection System (DCS)" CRTC reference 8663-C12-201503186 at http://www.crtc.gc.ca/eng/archive/2015/lt150702a.htm.

increase the CER/CTSR ratio to a range of about 80% in the 2017-2020 period[30], as set out in Figure 10.

Figure 9: Contribution Eligible Revenues as % of Telecommunications Service Revenues

Figure 10: Contribution Eligible Revenues as % of Canadian Telecommunications Service Revenues - Projections

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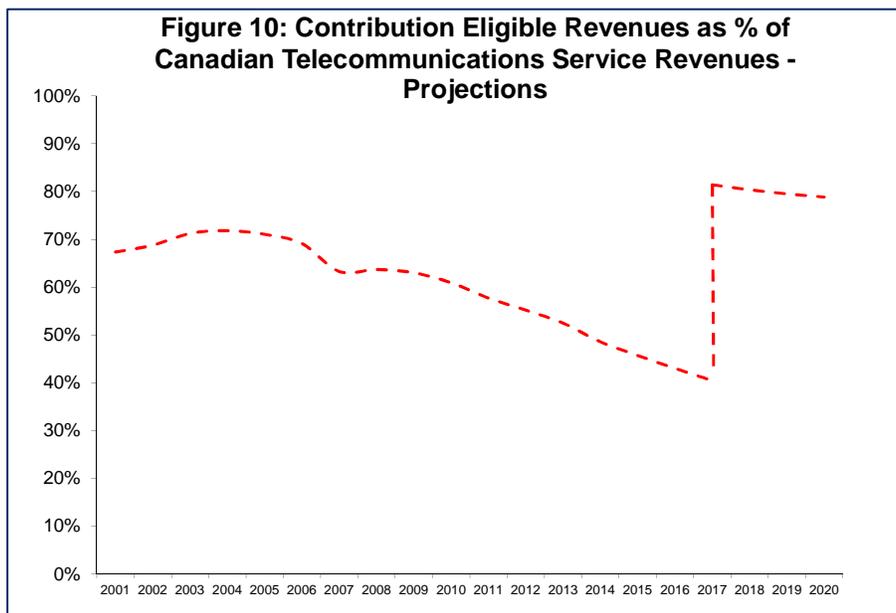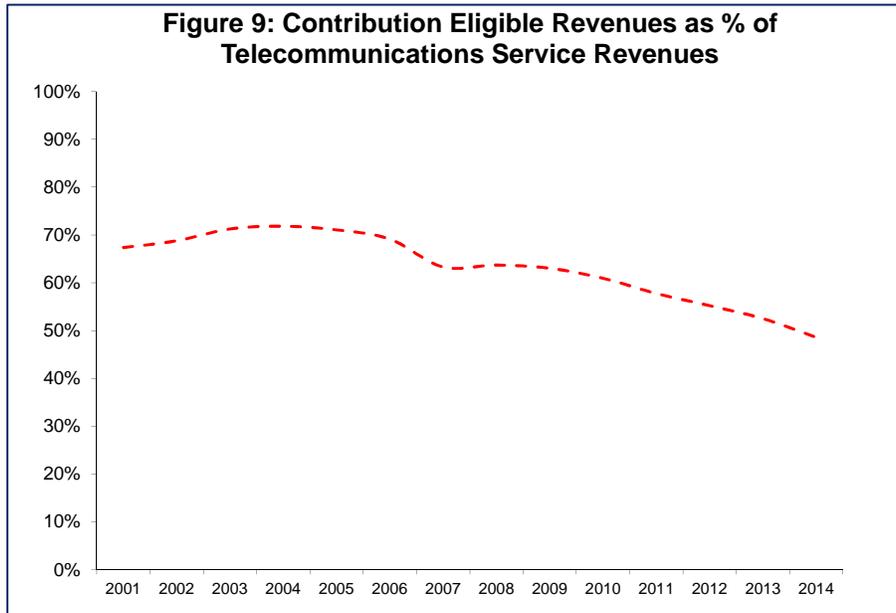
[30] "Expanded" CERs for **2015-2020** are estimated as follows: Projected "As Is" CERs extrapolated from 2014 using cumulative average growth rate ("CAGR") of CERs over the 2009-2014 period (calculated at -3.3%), to which I added projected "Retail Internet Service Revenues" and "Retail Paging Service Revenues" for 2015-2010. Retail Internet Service Revenues are extrapolated from 2014 using the average year-over-year change in the ratio of Retail Internet Service Revenues to CTSR over the 2011-2014 period and then applying the resultant ratios for 2015-2020 to projected CTSRs to calculate projected Retail Internet Service Revenues. Retail Paging Service Revenues are extrapolated from 2014 using the cumulative average growth rate ("CAGR") of "Retail Paging Service Canadian" over the 20011-2014 period (calculated at 5.0%).

Figure 11 shows the "contribution rate" (NCF as a percent of CERs) over the 2001-2014 period (average of 1.13%) and, based on the above-noted expansion of the contribution-eligible "revenue base," the contribution rate that would be required to fund total program costs over the 2017-2020 period under each of the two scenarios (averaging 0.92% and 1.77%, corresponding to the capped $370 million and $710 million per year, respectively).

Figure 11: NCF Contribution Rate - Projections
(% of "Expanded" Contribution Eligible Revenues for 2017-2020)
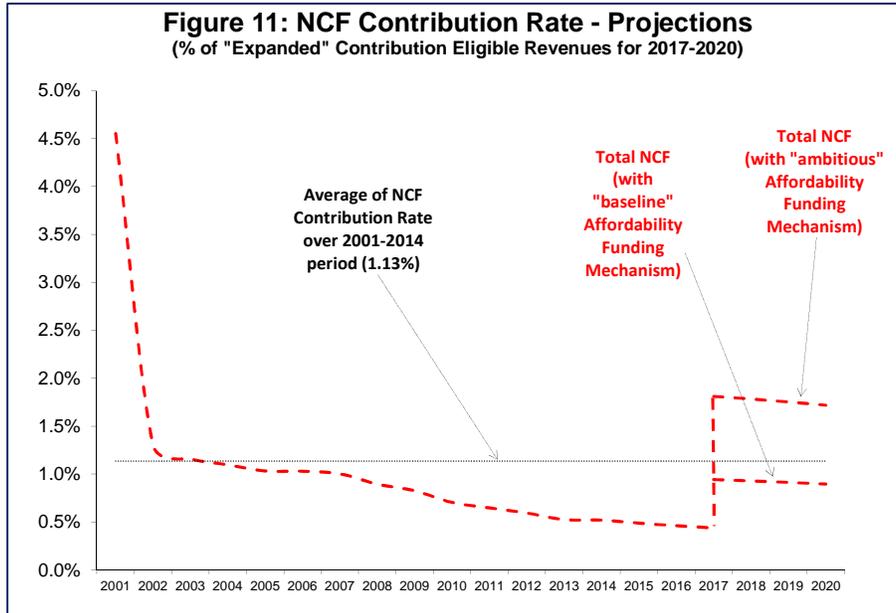
Annex: Low-Income Programs in other Jurisdictions

This Annex includes a description of programs to promote the affordability of telecommunications for low-income households in the USA (Federal program), California (combined Federal and State programs), France, and Spain. Each program is presented based on the seven elements included in Chapter 2.

USA - Federal Lifeline

The FCC's Lifeline program provides USF funding to compensate designated eligible telecommunications carriers ("ETC") for providing discounted services to eligible low-income beneficiaries. Lifeline was originally applicable only to residential fixed telephone subscriptions, until 2012, when it was expanded to include wireless telephony services. The FCC recently issued a Further Notice of Proposed Rule-Making ("FNPRM") that would, if adopted, further expand the program to include broadband access.[31] The Lifeline program is one of four major programs administered by the Federal USF, the others being the High-Cost Program (now the Connect America Fund), the Schools and Libraries Program, and the Rural Health Program.

Beneficiary Eligibility

Potential beneficiaries must meet program **OR** income criteria. In 2012, the FCC amended its rules so that all States must, at a minimum, use a uniform set of baseline eligibility criteria[32]. On top of these baseline criteria, individual States may adopt additional program or income criteria to address specific State circumstances.

Administration

Potential beneficiaries are required to submit an application form to receive the Lifeline discount. The application procedures vary by State, depending on State-specific administration arrangements. ETCs can use one of three methods to verify eligibility: a) If available, ETCs can access state or federal social services eligibility databases to determine an applicant's eligibility; b) If a state agency or administrator determines a consumer's eligibility, ETCs may rely on the determination of the agency or administrator; or c) if an ETC has no access to an eligibility database and the ETC, rather than a state agency or administrator, is responsible for establishing

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[31] See SECOND FURTHER NOTICE OF PROPOSED RULEMAKING, ORDER ON RECONSIDERATION, SECOND REPORT AND ORDER, AND MEMORANDUM OPINION AND ORDER (FCC 15-71) (June, 2015) at http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0622/FCC-15-71A1.pdf.

[32] The uniform baseline eligibility criteria are the following: a) beneficiaries must show that they are in receipt of one or more of the following federal social assistance programs: Medicaid; Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps; Supplemental Security Income (SSI); Federal Public Housing Assistance; Low-Income Home Energy Assistance Program (LIHEAP); National School Lunch Program's free lunch program; and Temporary Assistance for Needy Families (TANF). Low-income consumers living on Tribal lands may also qualify by participation in one of several additional assistance programs: Bureau of Indian Affairs general assistance; Tribally-administered TANF; or Head Start (only those meeting its income-qualifying standards), **OR** b) beneficiaries must show that they have an annual family income below 135% of federal poverty guideline. REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING (January, 2012) at https://apps.fcc.gov/edocs_public/attachmatch/FCC-12-11A1.pdf.

consumer eligibility, ETCs must review documentation to determine eligibility for new subscribers.[33]

Eligible Services

The Lifeline discount may be applied to only one telephone service from one ETC per eligible household. The telephone service maybe either a residential fixed telephone service or a mobile telephone. The recent FNPRM would, if adopted, further expand the program to include broadband access.

Program Discount

The applicable USF-funded discount per household is USD $9.25 per month.

Eligible Service Providers

Only designated eligible telecommunications carriers (ETC) are eligible to receive compensation from the federal USF Lifeline program. Generally, it is the State utility regulatory commissions that are responsible for the designation of ETCs in their respective states, and service providers must apply to be designated an ETC with them. If the State commission does not have ETC jurisdiction, then an interested service provider may petition the FCC directly.

Program Participation and Participation Rate

There were 12.4 million Lifeline subscribers at the end of 2014.[34] In 2012, the FCC estimated that there would be approximately 32.6 million eligible subscribers over the 2012-2014 period;[35] therefore the national participation rate at the end of 2014 was approximately 38%. The eligible households made up 28% of the 116 million households in the USA.[36]

Program Cost

Program costs over the 2001 to 2014 period are presented in Figure A1 and averaged USD $1,120 million over this period.[37] Figure A2 shows program costs as a percentage of telecommunications services revenues, which averaged 0.22% over the period.

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[33] See http://usac.org/li/telecom-carriers/step06/default.aspx.

[34] See page 9 of the Universal Service Administrative Company ("USAC") "2014 Annual Report: Moving Forward" at http://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2014.pdf.

[35] See page 153 of the FCC's "REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING" (FCC 12-11) (January, 2012) at https://apps.fcc.gov/edocs_public/attachmatch/FCC-12-11A1.pdf.

[36] See http://quickfacts.census.gov/qfd/states/00000.html.

[37] For **2001-2013,** see "Low-Income Cost Support" in Table 1.10 "Universal Service Disbursements 2001-2013" in FCC's "Universal Service Monitoring Report" at https://apps.fcc.gov/edocs_public/attachmatch/DOC-330829A1.pdf. For **2014,** see "Low-Income" on page 45 of the Universal Service Administrative Company ("USAC") "2014 Annual Report: Moving Forward" at http://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2014.pdf.

Figure A1: USA Federal USF Low-Income Program
(USD $000,000)

Figure A2: USA Federal USF Low-Income Program
(% telecommunications service revenues)
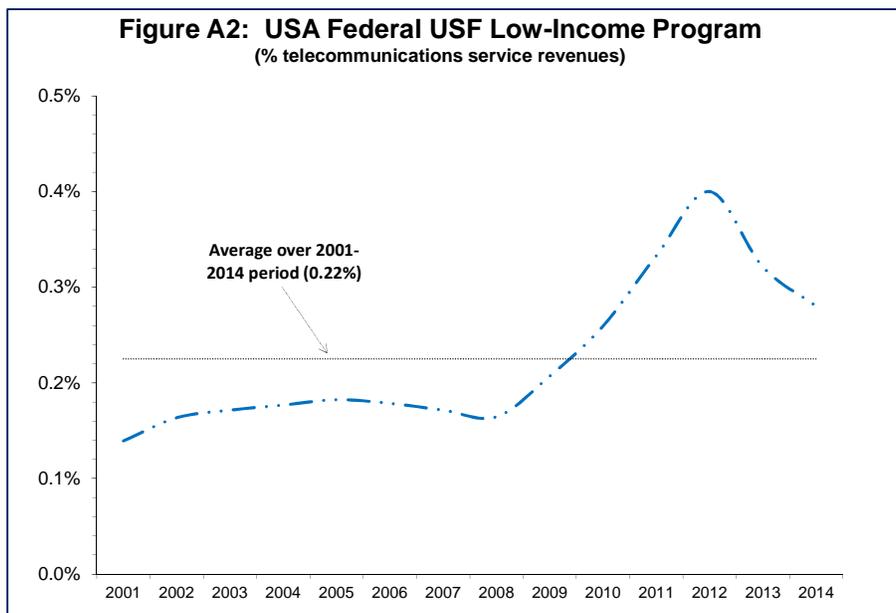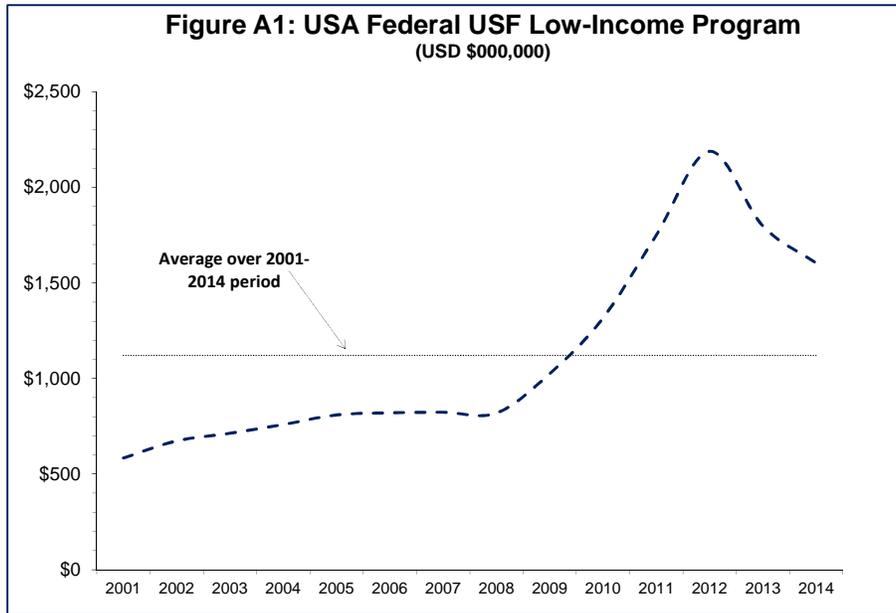
USA - California Lifeline

States in the USA may supplement the Federal Lifeline Program with their own State Lifeline Programs financed by State-level universal service funds. In 2014 a total of 17 States had State-level Lifeline programs, which totalled USD $199 million.[38]

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[38]   See "State Universal Service Funds 2014" by Sherry Lichtenberg, National Regulatory Research Institute ("NRRI") Report No. 15–05 (June 2015) at http://nrri.org/download/nrri-15-05-state-usf/ (Accessed June, 2015). This publication also highlights that most State USFs also fund other State-level programs, including High-Cost support programs, Schools and Libraries programs, etc.

California has the largest State Lifeline program. The California Lifeline Program is implemented under the California Public Utility Commission ("CPUC"), which compensates designated ETCs from funds collected via the State-administered Universal Lifeline Telephone Service ("ULTS") surcharge on end-users' intra-state telephone bills. The California Lifeline was originally applicable only to residential fixed telephone subscriptions, until March 2014, when it was expanded to include wireless telephony services.[39] To take into account the expected corresponding increase in program costs, the ULTS surcharge was increased from 1.15% to 2.40% in January 2015.[40]

Beneficiary Eligibility

California uses the uniform baseline eligibility program **OR** income criteria established by the FCC for the Federal Lifeline program, except in two respects. First, it adds California-specific programs, including "MediCal" and the "Women, Infants and Children Program (WIC)" program administered by the USDA to the list of eligible programs. Second, it raises the income cut-off to 150% of the federal poverty guideline (rather than the 135% figure used by the Federal Program).[41]

Administration

Potential beneficiaries are required to submit an application form to the "California Lifeline Third Party Administrator," which is responsible for verifying eligibility.[42]

Eligible Services

The Lifeline discount may be applied to only one telephone service from one ETC per eligible household. The telephone service may be either a residential fixed telephone service or a mobile telephone.

Program Discount[43]

All service providers that offer wireline service in California are required to offer a designated Lifeline service. The CPUC provides a maximum USD $12.65 per line subsidy payment for these wireline services. Further, the California Third Party administrator also applies the Federal Lifeline maximum discount of USD $9.25 per month to federal and State universal service surcharges (for example such as the Federal Subscriber Line Charge currently at USD $6.50), in this manner "combining" the California and Federal wireline discounts, so that eligible recipients

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[39]   See CPUC Decision 14-01-036 "DECISION ADOPTING REVISIONS TO MODERNIZE AND EXPAND THE CALIFORNIA LIFELINE PROGRAM" (January 16, 2014) at http://www.cpuc.ca.gov/NR/rdonlyres/3AF6F731-5B5A-45F8-AADD-163EAA5E1284/0/DecisionAdoptingRevisionstoModernizeandExpandtheCaliforniaLifelineProgram.pdf.

[40]   See CPUC Resolution T-17460 "Approval of the California LifeLine Program Surcharge Rate of 2.40%, Effective January 1, 2015." (December, 2014) at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M143/K313/143313864.PDF.

[41]   See CPUC "California LifeLine Program page at http://www.cpuc.ca.gov/PUC/Telco/Public+Programs/ults.htm.

[42]   See CPUC "California LifeLine (detail) page at http://www.cpuc.ca.gov/PUC/Telco/Public+Programs/lifelinedetails.htm.

[43]   See CPUC Decision 14-01-036 "DECISION ADOPTING REVISIONS TO MODERNIZE AND EXPAND THE CALIFORNIA LIFELINE PROGRAM" (January 16, 2014) at http://www.cpuc.ca.gov/NR/rdonlyres/3AF6F731-5B5A-45F8-AADD-163EAA5E1284/0/DecisionAdoptingRevisionstoModernizeandExpandtheCaliforniaLifelineProgram.pdf.

receive a total discount of USD $21.90.

Service providers that offer wireless services may offer a Lifeline-eligible wireless service. The CPUC has established a series of conditions, such as a minimum number of minutes on wireless plans which are eligible for Lifeline discounts. Plans that include 500 to 1000 minutes are eligible for a USD $5.75 Lifeline payment subsidy, while those that offer more than 1000 minutes are eligible for a USD $12.65 per line subsidy payment. These subsidy payments are generally supplemental to the Federal Lifeline (if the providers and services meet conditions for both plans). Therefore, eligible recipients may receive a total discount of USD $15.00 and USD $21.90 for wireless plans that include 500-1000 minutes and more than 1000 minutes, respectively.

Eligible Service Providers

Only designated eligible telecommunications carriers are eligible to receive compensation from the California Lifeline program. The CPUC is responsible for the designation of ETCs.

Program Participation and Participation Rate

For May 2015, the California Lifeline program supported 0.74 million wireline and 1.31 million wireless subscribers, for a total of 2.05 million.[44] In early 2015, the CPUC estimated that there were would be approximately 3.0 million eligible Lifeline subscribers;[45] therefore the May 2015 participation rate was 68%, while the average participation rate over the previous 12 month period was 49%. The eligible households made up 24% of the 12.5 million households in California.[46]

Program Cost

Based on an increase of the ULTS starting January 1, 2015 to take into account program changes adopted in 2014 (the addition of wireless telephony), program costs have increased to about USD $337 million for 2015.[47] As a percentage of projected 2015 California telecommunications services revenues,[48] program costs will be about 0.49% for 2015.

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[44] See "Third Party Administrator LifeLine Customer Counts" link in the CPUC page "LifeLine Related Forms and Notices For Carriers" http://www.cpuc.ca.gov/PUC/Templates/Default.aspx?NRMODE=Published&NRNODEGUID={794440F3-F0DC-4A29-8AB1-99ED492A14CE}&NRORIGINALURL=%2FPUC%2FTelco%2FPublic%2BPrograms%2FFormNotices_Public%2BProgram.htm&NRCACHEHINT=Guest. (Accessed June, 2015).

[45] See State of California Budget Change Proposal "Increase Appropriation to Ensure Adequate Funding for Lifeline Services in Light of Increased Wireless Subscribers" (January 2015) at http://www.cpuc.ca.gov/NR/rdonlyres/7FBA0C56-0D99-4C66-8A3E-A202D396CBA6/0/BCP_7_Lifelinefinal.pdf.

[46] See http://www.census.gov/quickfacts/table/PST045214/00,06.

[47] See CPUC Resolution T-17460 "Approval of the California LifeLine Program Surcharge Rate of 2.40%, Effective January 1, 2015" (December, 2014) at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M143/K313/143313864.PDF.

[48] To calculate Telecommunications Services Revenue for California in a comparable manner to the other jurisdictions, I applied the percentage (11.74%) of End User Telecommunications Revenue by State: 2011 table 1.8 in the FCC's "Universal Service Monitoring Report" at https://apps.fcc.gov/edocs_public/attachmatch/DOC-330829A1.pdf. In this manner, the projected Telecommunications Services Revenue for California is estimated at USD $68.8 billion.

Combined Federal and California Lifeline

Based on the subscription numbers above, the Federal Lifeline costs in California may be estimated to be $9.25 × 2.05 million × 12 months = $228 million for 2015, or equivalent to 0.33% of projected California telecommunications services revenues for 2015. When added to the California Lifeline costs of $337 million for 2015, the total combined costs of Federal and California Lifeline in California in 2015 are $565 million, or about 0.82% of projected California telecommunications services revenues.

Spain

As a Member-State of the European Union, Spain's universal service regime is subject to European Commission norms - and in particular the Universal Service Directive ("USD") of 2002.[49] The USD sets out the services that may be funded by a service provider-funded USF, the designation of universal service provider(s) ("USP"), the approach and methodology to be used for the calculation of any USF compensation, and other matters.

Approved USF data are available up to 2011. Over the 2001-2011 period the universal service regime has included three different programs: "uneconomic services" (i.e. discounts to low-income subscribers), "uneconomic areas" (i.e. service to high-cost areas), and directory services. Spain's USF-financed program that provides discounts to low income subscribers is called "Abono Social" ("Social Tariff").

Beneficiary Eligibility

Potential beneficiaries must meet program **AND** income criteria: a) beneficiaries must show that they are in receipt of any social assistance program that provides income support in the form of a "pension" (and therefore are referred to as a "*pensionista*"),[50] **and** b) beneficiaries must show that they have an annual family income below 120% of the IPREM, a Government-established income measure.[51]

Administration

Potential beneficiaries are required to submit application forms directly to Telefonica de España, the designated USP, to receive the "Abono Social." Telefonica is responsible for verifying

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[49]   Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32002L0022

[50]   See Presidential Order PRE/531/2007 "Acuerdo de la Comisión Delegada del Gobierno para Asuntos Económicos (CDGAE) por el que se aprueban las condiciones para garantizar la asequibilidad de las ofertas aplicables a los servicios incluidos en el servicio universal" http://www.boe.es/boe/dias/2007/03/10/pdfs/A10354-10356.pdf

[51]   The IPREM is a Government-established income indicator used to determine eligibility for social assistance and other matters. The threshold of 120% was set by Presidential Order PRE/1619/2010 "Acuerdo de la Comisión Delegada del Gobierno para Asuntos Económicos de 13 de mayo de 2010, por el que se modifica el umbral de renta familiar que da acceso al abono social" BOE-A-2010-9718.

eligibility.[52]

Eligible Services

The "Abono Social" is only applicable to one residential telephony service at a fixed location per household.

Program Discount

The USF compensates Telefonica approximately €13.32 per "Abono Social" per month.[53]

Eligible Service Providers

Only Telefonica de España, the designated USP, is eligible to receive compensation from the USF for providing the "Abono Social".

Program Participation and Participation Rate[54]

In 2010, the average number of telephone lines that were the subject of the "Abono Social" was 116,374.[55]

Program Cost

Program costs over the 2001 to 2011 period are presented in Figure A3 and averaged €45 million over this period.[56] Figure A4 shows the program costs as a percentage of total

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[52]   See http://www.movistar.es/particulares/atencion-cliente/telefonia-en-casa/lineas/ficha-ayuda/abono-social (Accessed June, 2015)
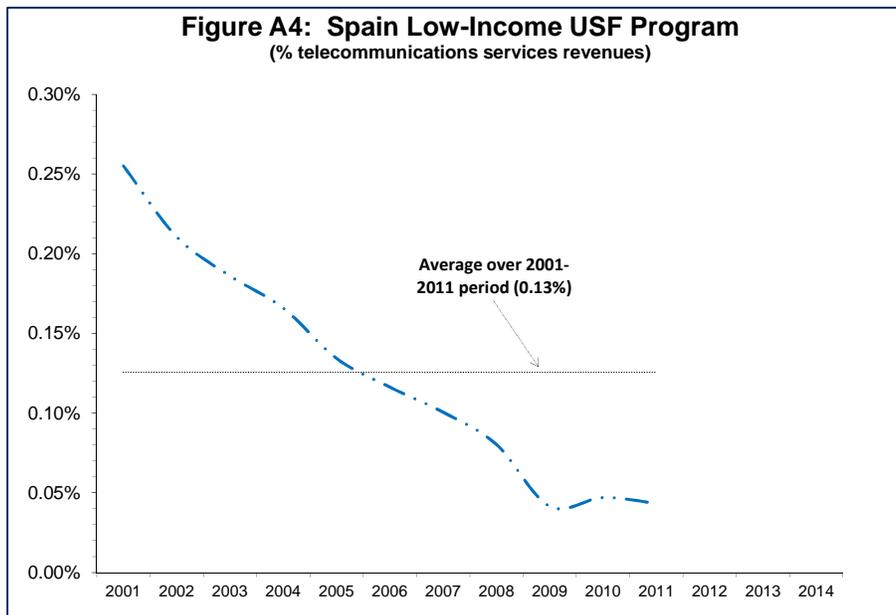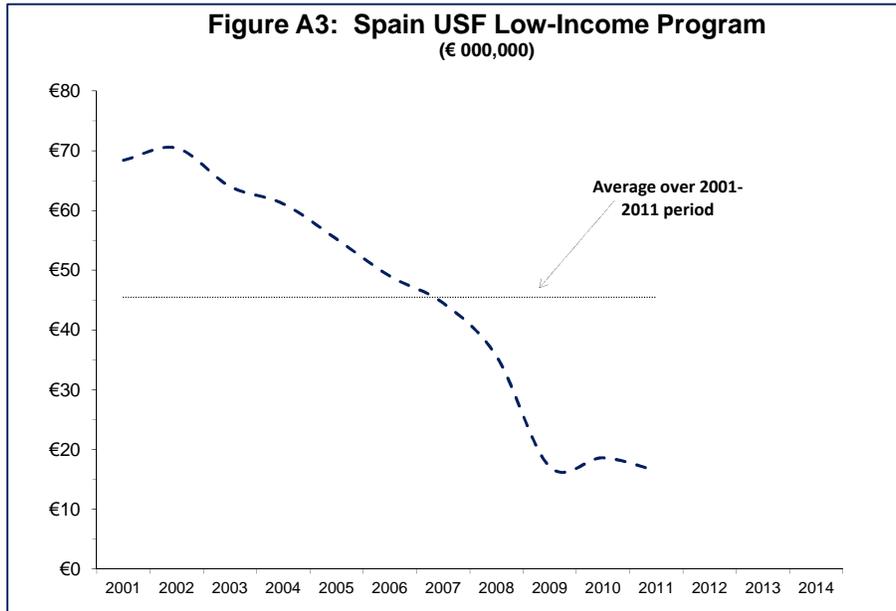
[53]   Note that the beneficiary receives a discount of €18.05 per month, based on a percentage discount of 95% (see Presidential Order PRE/531/2007 "Acuerdo de la Comisión Delegada del Gobierno para Asuntos Económicos (CDGAE) por el que se aprueban las condiciones para garantizar la asequibilidad de las ofertas aplicables a los servicios incluidos en el servicio universal" http://www.boe.es/boe/dias/2007/03/10/pdfs/A10354-10356.pdf) as applied to the lowest basic monthly subscription of €19.00 per month (see USP web-site: http://www.movistar.es/particulares/fijo/ (Accessed June 2015)). As in the case of France (see below), the USF appears to compensate Telefonica only for a portion of this beneficiary discount. I was able to calculate this amount implicitly for 2010 based on the total program costs of €18.6 million ÷ number of beneficiaries (116,374) ÷ 12 months = €13.32. In this context, Telefonica is not compensated directly for the residual of €4.73 (€18.05 - €13.32) per month.

[54]   I was unable to find any publicly-available data on the participation rate or the total number of eligible households. I therefore assumed that the participation rate was the same as that of France (15%). Based on this, I was also able to estimate the total number of participating households at 116,374 ÷ 15% = 775,826, or equivalent to 4% of all households in Spain (18 million) (see http://www.ine.es/en/prensa/np837_en.pdf).

[55]   See page 11 of CMT Resolution AEM 2012/1946 "Informe relativo a la determinación del coste neto del servicio universal presentado por Telefónica de España, S.A.U. por el ejercicio 2010" at http://www.cnmc.es/es-es/telecomunicacionesysaudiovisuales/resolucionestelecomunicacionesyaudiovisuales.aspx.

[56]   For year **2001,** see page 2 of CNMC Resolution SU/DTSA/765/13 EJECUCIÓN CNSU 2001 "RESOLUCIÓN SOBRE EL PROCEDIMIENTO EN EJECUCIÓN DE SENTENCIA SOBRE LA DETERMINACIÓN DEL COSTE NETO DE PRESTACIÓN DEL SERVICIO UNIVERSAL EN EL AÑO 2001 PROPUESTO POR TELEFÓNICA DE ESPAÑA, S.A.U. For year **2002,** see page 2 of CNMC Resolution SU/DTSA/766/13 EJECUCIÓN CNSU 2002s "RESOLUCIÓN SOBRE EL PROCEDIMIENTO EN EJECUCIÓN DE SENTENCIA SOBRE LA DETERMINACIÓN DEL COSTE NETO DE PRESTACIÓN DEL SERVICIO UNIVERSAL EN EL AÑO 2002 PROPUESTO POR TELEFÓNICA DE ESPAÑA, S.A.U." For years **2003-2011,** see page 6 of CNMC Resolution SU/DTSA/989/14/CNSU 2012 TTP "SOBRE LA VERIFICACIÓN DE LOS DATOS RELATIVOS A LA DECLARACIÓN DE COSTE NETO DEL SERVICIO UNIVERSAL REALIZADA POR TELEFÓNICA TELECOMUNICACIONES PÚBLICAS, S.A.U. PARA EL EJERCICIO 2012" at http://www.cnmc.es/es-es/telecomunicacionesysaudiovisuales/resolucionestelecomunicacionesyaudiovisuales.aspx.

telecommunications services revenues,[57] with an average 0.13% over the period.

Figure A3: Spain USF Low-Income Program
(€ 000,000)

Figure A4: Spain Low-Income USF Program
(% telecommunications services revenues)

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57   Telecommunications service revenues for 2001-2011 from "OECD Communications Outlook 2013" page 76, available at http://dx.doi.org/10.1787/888932801014 (Accessed June, 2015), converted to national currency using exchange rates from OECD (2015) Exchange (indicator) http://dx.doi.org/10.1787/037ed317-en (Accessed July, 2015).

France

As a Member-State of the European Union, France's universal service regime is subject to European Commission norms and in particular the Universal Service Directive.

Approved USF data are available up 2013. Over the 2001-2013 period, the universal service regime has included four different programs: "social tariffs" (i.e. discounts to low-income subscribers), "geographic averaging" (i.e. service to high-cost areas), public payphones, and directory services. France's USF-financed program that provides discounts to low income subscribers is called "Abonnement Social" or "Tarifs Sociaux" ("Social Tariff").

Beneficiary Eligibility

Potential beneficiaries must meet program criteria **ONLY**: beneficiaries must show that they are recipients of any one of three main social assistance programs ("le revenu de solidarité active (RSA)", "l'allocation de solidarité spécifique (ASS)," or "l'allocation aux adultes handicapés (AAH)"), or are a disabled war veteran.[58]

Administration

The social assistance Government institutions that administer the relevant eligible programs (RSA, ASS and AAH) notify all program recipients of the availability of the "Abonnement Social" and provide the corresponding application forms that must be submitted (to the same institutions) to receive the "Abonnement Social."[59]

Eligible Services

The "Abonnement Social" is only applicable to one residential telephony service at a fixed location per household.

Program Discount

The USF compensates France Telecom €5.04 per "Abonnement Social" per month.[60]

Eligible Service Providers

Only France Telecom, the designated USP, is eligible to receive compensation from the USF for providing the "Abonnement Social."

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[58]   See "les tarifs sociaux" page on ARCEP (France's NRA) web-site: http://www.arcep.fr/index.php?id=10308 (Accessed June 2015).

[59]   See USP web-site: http://boutique.orange.fr/ESHOP_mx_ft/?tp=F&ref=3610&IDCible=&donnee_appel=&id=&type=3 (Accessed June, 2015).

[60]   The "Abonnement Social" is priced at €6.49 (€10.47 below the corresponding "standard" price of €16.96). The USF compensates France Telecom for €5.04. France Telecom is not compensated directly by the USF for the residual of €5.43 (€10.47 - €5.04) per month (see page 10 of Autorité de la Concurrence « Avis n° 11-A-10 du 29 juin 2011 portant sur la mise en place d'un tarif social permettant l'accès des personnes aux revenus modestes aux services Internet haut débit » at http://www.autoritedelaconcurrence.fr/user/avisdec.php?numero=11A10.   , as updated in the «les tarifs sociaux» page on ARCEP web-site: http://www.arcep.fr/index.php?id=10308).

Program Participation and Participation Rate

At year-end 2010, the number of "Abonnement Social" telephone lines was 328,209.[61] The participation rate was 15% for 2010, from an estimated total of about 2.5 million potential beneficiaries.[62] The eligible households made up 9% of the 28 million households in France.[63]

Program Cost

Program costs over the 2001 to 2013 period are presented in Figure A5 and averaged €27 million over that period.[64] Figure A6 shows program costs as a percentage of telecommunications services revenues,[65] with an average of 0.06% over the period.

Figure A5: France Low-Income USF Program
(€ 000,000)

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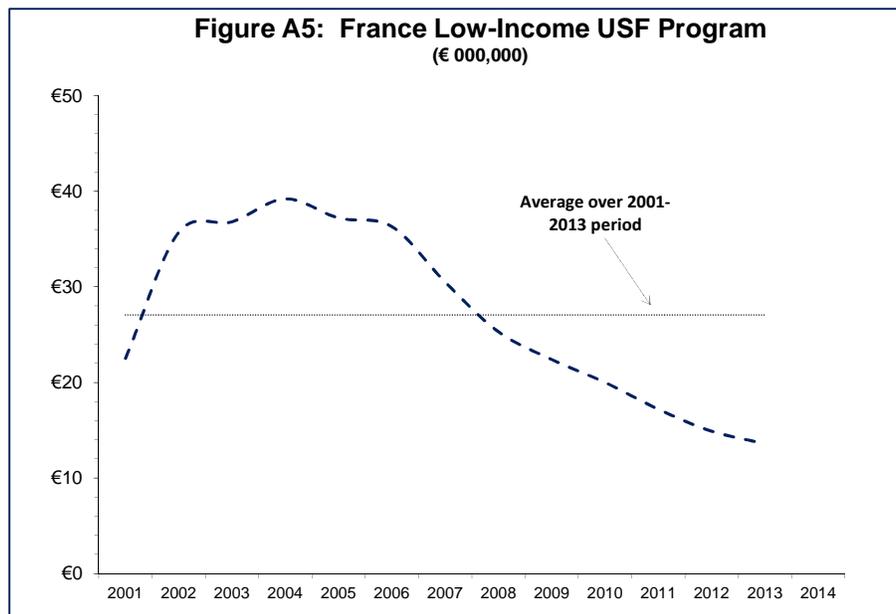
[61]   *Ibid.*

[62]   *Ibid.*

[63]   See http://www.insee.fr/fr/themes/tableau.asp?reg_id=0&ref_id=AMFd2 (Accessed June, 2015).

[64]   See "Service Universel" page on ARCEP (France's NRA) web-site: http://www.arcep.fr/index.php?id=8102&L=0 (Accessed June 2015).

[65]   "Telecommunications revenue" for **2001-2011** from "OECD Communications Outlook 2013" page 76 http://dx.doi.org/10.1787/888932801014 (accessed June, 2015), converted to national currency using exchange rates from OECD (2015) Exchange (indicator) http://dx.doi.org/10.1787/037ed317-en (accessed July, 2015). Telecommunications service revenues for **2012-2013** extrapolated from 2011 national currency estimate using 2011 to 2012 and 2012 to 2013 growth rates of "Revenue from all telecommunication services" in national currency from "World Telecommunication/ICT Indicators database 2014 (18th Edition, December, 2014), ITU (2014) http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (Subscription accessed June, 2015).

Figure A6: France Low-Income USF Program
(% telecommunnication sector revenues)