

**Report for January 2021 G- & R-NRUF – Canadian NPAs
to the
Canadian Steering Committee on Numbering (CSCN)**

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1. Purpose of G- & R-NRUF

The purpose of the General Numbering Resource Utilization Forecast (G-NRUF) is to provide an annual forecast to aid in projecting Numbering Plan Area (NPA) and North American Numbering Plan (NANP) exhaust. The G-NRUF process requires current and prospective Central Office (CO) Code Holders to submit actual and forecast annual data regarding their current and future use of CO Codes to the Canadian Numbering Administrator (CNA) on an annual basis.

In accordance with the *Canadian Numbering Resource Utilization Forecast (C-NRUF) Guideline* (the Guideline), approved by the Canadian Radio-television and Telecommunications Commission (CRTC) in Telecom Decision CRTC 2015-166 dated 29 April 2015:

When an NPA is entering the timeframe for NPA Relief Planning (e.g., within or about 72 months before the Projected Exhaust Date), an initial R-NRUF is conducted to obtain actual and forecast annual data at the Exchange Area level of detail. The purpose of the initial R-NRUF is to validate the Projected Exhaust Date for an exhausting NPA, and to provide the CNA with detailed information to be used to identify a potential Relief Date and to prepare the Initial Planning Document as outlined in the Canadian NPA Relief Planning Guideline. Typically, the initial R-NRUF will utilize Format 2 in Appendix A. In general, the CNA will conduct the initial R-NRUF when needed; however, the CNA should attempt to choose dates for the initial and subsequent R-NRUFs that will coincide with the annual G-NRUF and mid-year R/S-NRUF dates (e.g., as of January 1 and July 1 each year).

Subsequent R-NRUFs will be conducted semi-annually to monitor CO Code forecast changes prior to implementing relief. These R-NRUFs shall be conducted until three months of when relief is implemented, or until they are replaced by S-NRUFs or J-NRUFs.

Based on the January 2021 G-NRUF results, the CNA determined that, in addition to NPA 204/431, 226/519/584, NPA 236/250/604/672/778, NPA 289/365/905, NPA 403/587/780/825, NPA 416/437/647, NPA 438/514, NPA 450/579, NPA 506, and NPA 819/873, NPA 709 had also reentered the 6-year relief planning window and the CNA declared that NPA 249/705 and NPA 343/613 are in a Jeopardy Condition.

During the Joint CSCN and NPA 306/639 Relief Planning Committee (RPC) conference call held on 5 August 2020, an agreement was reached that the January 2021 R-NRUFs would be conducted at the NPA-level of detail instead of at the Exchange Area-level and that the data would be entered on a single Geographic G-NRUF worksheet.

During the joint CSCN and RPC conference call held on 2 March 2021, the participants agreed that the January 2021 G-NRUF and the R-NRUF reports should be combined in a single report as the R-NRUF was also conducted at the NPA-level of detail.

The CNA has prepared this report in accordance with the Guideline.

Included as attachments to this report are:

- 2021 G- & R-NRUF Aggregate Results and the Quantity of CNA CO Codes as of 1 January 2021;
- Historical January NRUF Graphs for Canadian NPAs; and,

- CSCN Letter dated 14 October 2020 providing direction to the CNA re: the 2021 Numbering Resource Utilization Forecast (2021 NRUF) Methodology and Assumptions.

2. High Level Summary

The results from the January 2021 G- & R-NRUF show significant changes in several NPAs compared to the January 2020 NRUF. The following are some of the factors that are driving these changes:

- 1) Several Telecommunications Service Providers (TSPs) have submitted forecasts that indicate an expansion of their footprint into new areas over the next few years.
- 2) Some established TSPs have adjusted their forecast to meet the demand created by new technologies and new services whereas some TSPs have decreased their forecast as their business plans have changed.
- 3) The introduction of a new numbering resource under the *Canadian Non-Geographic Code Assignment Guideline* is expected to alleviate some of the issues associated with Machine-to-Machine demand but this is difficult for both the TSPs and the CNA to quantify at this time.

The impact of each of the above factors varies from NPA to NPA. See the following table for a list of NPAs that are currently undergoing or entering NPA Relief Planning:

	Most Recent 2020 NRUF	January 2021 NRUF	
NPA	PED	PED	Remarks
204/431	Jun-2024	Apr-2024	In relief planning
226/519/548	Oct-2026	Jul-2024	Entered relief planning window
236/250/604/672/778	Oct-2026	Feb-2027	Entered relief planning window
249/705	Dec-2024	Apr-2023	In relief planning. Entered into a Jeopardy Condition.
289/365/905	Mar-2023	Sep-2022	In relief planning
306/639	May-2022	May-2022	Relief Date 2 October 2021 iaw Telecom Decision CRTC 2019-129. No longer in a Jeopardy Condition.
343/613	Feb-2024	Oct-2022	In relief planning. Entered into a Jeopardy Condition.
403/587/780/825	Nov-2023	Jan-2023	Relief Date 23 April 2022 iaw Telecom Decision CRTC 2021-101.
416/437/647	Nov-2025	Jul-2026	In relief planning
438/514	Dec-2024	Jul-2024	In relief planning
450/579	Jul-2024	Sep-2023	In relief planning
506	Mar-2024	Jan-2024	Relief Date 29 April 2023 iaw Telecom Decision CRTC 2020-363.
709	Jun-2028	Sep-2026	Re-entered relief planning window.
819/873	Dec-2023	Jul-2023	In relief planning

3. Current and Past G-NRUF Projected Exhaust Dates

NPA	Location	2017	2018	2019	2020	2021
204/431	Manitoba	Aug-2023	Mar-2026	Jul-2026	Jan-2025	Apr-2024
					Mar-2038	Feb-2035
226/519/548	S. Ontario	Oct-2026	Jan-2029	Nov-2026	Jan-2028	Jul-2024
						Sep-2034
236/250/604/672/ 778	BC	May-2020	Jul-2020	Nov-2026	Oct-2026	Feb-2027
		Jun-2029	Dec-2028	Sep-2026	Mar-2034	Oct-2033
		May-2038	Aug-2037	Feb-2034	Aug-2041	Jun-2040
				Jul-2041		
249/705	N. E. Ontario	Jul-2024	Jun-2026	Jul-2025	Apr-2026	Apr-2023
						Apr-2031
						Jul-2042
289/365/905	Toronto Fringe	Sep-2023	Nov-2022	Jun-2022	Mar-2023	Sep-2022
		Sep-2033	Sep-2032	Oct-2031	Jul-2033	Mar-2030
						Jul-2039
306/639	Saskatchewan	Oct-2034	Jun-2022	May-2022	Jan-2022	May-2022
		Apr-2025	Feb-2024		Sep-2037	Jul-2035
343/613	Ottawa area	Mar-2022	Sep-2022	Dec-2023	Jun-2025	Oct-2022
		Jul-2029	Nov-2030	Dec-2036	Oct-2038	May-2032
367/418/581	N. E. Quebec	Oct-2020	Oct-2019	Nov-2029	Feb-2033	Mar-2028
		Nov-2031	Aug-2038			Aug-2037
403/587/780/825	Alberta	Oct-2020	Oct-2019	Jun-2022	Dec-2022	Jan-2023
		Nov-2031	Aug-2038	Jul-2029	Mar-2030	Feb-2030
		Sep-2028	Jan-2026	Feb-2037	Sep-2037	Mar-2041
416/437/647	Toronto	Jun-2022	Jun-2021	Jan-2024	Jan-2025	Jul-2026
		Oct-2036	Jan-2036	Jan-2033	Jul-2035	Mar-2038
438/514	Montreal	Dec-2021	Dec-2021	Oct-2023	Mar-2026	Jul-2024
		Aug-2019	Apr-2023	Aug-2037	Beyond 2042	Dec-2036
450/579	Montreal Fringe	Nov-2029	Mar-2033	Jun-2024	Oct-2024	Sep-2023
		Beyond 2039	Beyond 2040	Jul-2038	Oct-2037	Apr-2046
506	New Brunswick	Aug-2023	Oct-2026	Aug-2022	Mar-2024	Jan-2024
709	Nfld & Labrador	Aug-2019	Apr-2023	Aug-2023	Mar-2024	Sep-2026
782/902	Nova Scotia & PEI	Nov-2029	Mar-2033	Apr-2034	Nov-2033	Nov-2029
807	N.W. Ontario	Beyond 2039	Beyond 2040	Beyond 2041	Beyond 2042	Beyond 2043
819/873	N. W. Quebec	Aug-2023	Oct-2026	Oct-2025	Jul-2025	Jul-2023
		Mar-2037				Jul-2034

867	Yukon, NWT, Nunavut	Jul-2036	Jun-2039	Beyond 2041	Beyond 2042	Beyond 2043
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4. R-NRUF – High Level Summary

The results from the January 2021 R-NRUF are quite different from the July 2020 R-NRUF results due to some TSPs submitting updated data. The CNA has verified the input from TSPs and the variance from previous inputs can be rationalized.

The NRUF results were reviewed by the CSCN and RPCs during a joint conference call held on 2 March 2021.

NPA 204/431

NRUF data, including the most recent results, is summarized in the following chart.

NPA 204/431 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
204/431	January 2019 G-NRUF	26 March 2019	July 2026
204/431	January 2020 G-NRUF	24 March 2020	January 2025
204/431	July 2020 R-NRUF	18 August 2020	June 2024
204/431	January 2021 R-NRUF	23 February 2021	April 2024

NPA 226/519/548

NRUF data, including the most recent results, is summarized in the following chart.

NPA 226/519/548 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
226/519/548	January 2021 G-NRUF	23 February 2021	July 2024

NPA 236/250/604/672/778

NRUF data, including the most recent results, is summarized in the following chart.

NPA 236/250/604/672/778 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
236/250/604/ 672/778	January 2021 G-NRUF	23 February 2021	February 2027

NPA 249/705

NRUF data, including the most recent results, is summarized in the following chart.

NPA 249/705 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
249/705	January 2019 G-NRUF	26 March 2019	July 2025
249/705	July 2019 R-NRUF	20 September 2019	March 2026
249/705	January 2020 G-NRUF	24 March 2020	April 2026
249/705	July 2020 R-NRUF	18 August 2020	December 2024
249/705	January 2021 R-NRUF	23 February 2021	April 2023

NPA 289/365/905

NRUF data, including the most recent results, is summarized in the following chart.

NPA 289/365/905 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
289/365/905	January 2017 G-NRUF	29 March 2017	September 2023
289/365/905	July 2017 R-NRUF	25 September 2017	May 2023
289/365/905	January 2018 R-NRUF	20 March 2018	November 2022
289/365/905	July 2018 R-NRUF	5 September 2018	November 2021
289/365/905	January 2019 R-NRUF	26 March 2019	June 2022
289/365/905	July 2019 R-NRUF	20 September 2019	December 2022
289/365/905	January 2020 G-NRUF	24 March 2020	March 2023
289/365/905	July 2020 R-NRUF	18 August 2020	March 2023
289/365/905	January 2021 R-NRUF	23 February 2021	September 2022

NPA 343/613

NRUF data, including the most recent results, is summarized in the following chart.

NPA 343/613 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
343/613	January 2017 G-NRUF	29 March 2017	April 2025
343/613	January 2018 R-NRUF	20 March 2018	February 2024
343/613	July 2018 R-NRUF	5 September 2018	August 2022
343/613	January 2019 R-NRUF	26 March 2019	December 2023
343/613	July 2019 R-NRUF	20 September 2019	September 2025
343/613	January 2020 G-NRUF	24 March 2020	June 2025
343/613	July 2020 R-NRUF	18 August 2020	February 2024
343/613	January 2021 R-NRUF	23 February 2021	October 2022

NPA 403/587/780/825

NRUF data, including the most recent results, is summarized in the following chart.

NPA 403/587/780/825 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
403/587/780/825	January 2017 G-NRUF	29 March 2017	March 2022
403/587/780/825	July 2017 R-NRUF	25 September 2017	January 2023
403/587/780/825	January 2018 R-NRUF	20 March 2018	September 2022
403/587/780/825	July 2018 R-NRUF	5 September 2018	March 2022
403/587/780/825	January 2019 R-NRUF	26 March 2019	June 2022
403/587/780/825	July 2019 R-NRUF	20 September 2019	February 2022
403/587/780/825	January 2020 G-NRUF	24 March 2020	December 2022
403/587/780/825	July 2020 R-NRUF	18 August 2020	November 2023
403/587/780/825	January 2021 R-NRUF	23 February 2021	January 2023

NPA 416/437/647

NRUF data, including the most recent results, is summarized in the following chart.

NPA 416/437/647 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
416/437/647	January 2019 G-NRUF	26 March 2019	January 2024
416/437/647	July 2019 R-NRUF	20 September 2019	June 2025
416/437/647	January 2020 G-NRUF	24 March 2020	January 2025
416/437/647	July 2020 R-NRUF	18 August 2020	November 2025
416/437/647	January 2021 R-NRUF	23 February 2021	July 2026

NPA 438/514

NRUF data, including the most recent results, is summarized in the following chart.

NPA 438/514 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
438/514	January 2019 G-NRUF	26 March 2019	October 2023
438/514	July 2019 R-NRUF	20 September 2019	June 2024
438/514	January 2020 G-NRUF	24 March 2020	March 2026
438/514	July 2020 R-NRUF	18 August 2020	December 2024
438/514	January 2021 R-NRUF	23 February 2021	July 2024

NPA 450/579

NRUF data, including the most recent results, is summarized in the following chart.

NPA 450/579 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
450/579	January 2017 G-NRUF	29 March 2017	June 2022
450/579	July 2017 R-NRUF	25 September 2017	August 2023
450/579	January 2018 R-NRUF	20 March 2018	June 2021
450/579	July 2018 R-NRUF	5 September 2018	March 2021
450/579	January 2019 R-NRUF	26 March 2019	June 2024
450/579	July 2019 R-NRUF	20 September 2019	June 2024
450/579	January 2020 G-NRUF	24 March 2020	October 2024
450/579	July 2020 R-NRUF	18 August 2020	July 2024
450/579	January 2021 R-NRUF	23 February 2021	September 2023

NPA 506

NRUF data, including the most recent results, is summarized in the following chart.

NPA 506 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
506	January 2015 G-NRUF	27 March 2015	April 2025
506	January 2016 G-NRUF	21 March 2016	February 2021
506	July 2016 R-NRUF	12 October 2016	May 2020
506	January 2017 R-NRUF	29 March 2017	December 2021
506	July 2017 R-NRUF	8 September 2017	November 2024
506	January 2018 R-NRUF	20 March 2018	December 2021
506	July 2018 R-NRUF	5 September 2018	January 2022
506	January 2019 R-NRUF	26 March 2019	August 2022
506	July 2019 R-NRUF	20 September 2019	April 2023
506	January 2020 G-NRUF	24 March 2020	March 2024
506	July 2020 R-NRUF	18 August 2020	March 2024
506	January 2021 R-NRUF	23 February 2021	January 2024

NPA 709

NRUF data, including the most recent results, is summarized in the following chart.

NPA 709 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
709	January 2015 G-NRUF	27 March 2015	August 2024
709	January 2016 G-NRUF	21 March 2016	May 2019
709	April 2016 J-NRUF	15 May 2016	March 2019
709	July 2016 J-NRUF	2 September 2016	March 2019
709	October 2016 J-NRUF	5 December 2016	March 2019
709	January 2017 J-NRUF	29 March 2017	August 2019

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709	April 2017 J-NRUF	2 June 2017	August 2019
709	July 2017 J-NRUF	5 September 2017	May 2023
709	January 2018 R-NRUF	20 March 2018	April 2023
709	July 2018 R-NRUF	5 September 2018	March 2023
709	January 2019 R-NRUF	26 March 2019	August 2023
709	July 2019 R-NRUF	20 September 2019	October 2023
709	January 2020 G-NRUF	24 March 2020	March 2023
709	July 2020 R-NRUF	18 August 2020	June 2028
709	January 2021 R-NRUF	23 February 2021	September 2026

NPA 819/873

NRUF data, including the most recent results, is summarized in the following chart.

NPA 819/873 Summary of Projected Exhaust Dates			
NPA	Type of C-NRUF	Date of Publication	Projected Exhaust Date
819/873	January 2019 G-NRUF	26 March 2019	October 2025
819/873	July 2019 R-NRUF	20 September 2019	March 2025
819/873	January 2020 G-NRUF	24 March 2020	July 2025
819/873	July 2020 R-NRUF	18 August 2020	December 2023
819/873	January 2021 R-NRUF	23 February 2021	July 2023

5. Schedule of Future NRUF Activities in the Current Year

Due Date	NRUF Type	NRUF Format	NPA(s)
15 July	S-NRUF	NPA level	306/639
15 July	J-NRUF	NPA level	343/613
30 July	R-NRUF	NPA level	204/431
30 July	R-NRUF	NPA level	226/519/548
30 July	R-NRUF	NPA level	236/250/604/672/778
30 July	R-NRUF	NPA level	249/705
30 July	R-NRUF	NPA level	289/365/905
30 July	R-NRUF	NPA level	403/587/780/825
30 July	R-NRUF	NPA level	416/437/647
30 July	R-NRUF	NPA level	438/514
30 July	R-NRUF	NPA level	450/579
30 July	R-NRUF	NPA level	506
30 July	R-NRUF	NPA level	709
30 July	R-NRUF	NPA level	819/873
15 October	S-NRUF	NPA level	306/639
15 October	J-NRUF	NPA level	343/613

6. Summary of Challenges Encountered during the G- & R-NRUF Process

- a) Most problems with NRUF submissions are created by companies not knowing how many CO Codes they held on 1 January 2021.

- b) Some TSPs submitted their NRUF after the requested date, even after a reminder email was sent, but all TSPs submitted within 7 days after the due date.
- c) The CNA continues to monitor and track the accuracy of the NRUF submissions between the forecast and actual assignment rates and continues to report this data to the CSCN. The way the current process works, there are potential consequences for under-forecasting (e.g., constant resubmissions, limited to a previous forecast in the situation of a Jeopardy Condition) and there are no perceived negative consequences for over-forecasting.

7. Potential Solutions Identified by the CNA to Address G-NRUF Process Issues

- a) The CNA strives to instill the importance of an accurate forecast to TSPs, highlighting the consequences of inaccurate forecasting to both the industry and the public. Until the industry makes accurate forecasting a priority in the allocation of appropriate resources the CNA believes that the forecasts will remain unpredictable.
- b) The CSCN should strive to increase the participation of TSPs in its activities, such that they are more conversant with the significance of various numbering requirements (e.g., the G-NRUF process, relief planning).
- c) Given the volatility of the forecast and the extra work required by the RPCs to constantly adjust Relief Implementation Schedules, the CNA suggests that the RPCs consider recommending in their Planning Documents and Relief Implementation Plans that once the initial Relief Implementation Date is established, this date would not be advanced, however could be delayed in extenuating circumstances. This would allow for better forecasting, budgeting plans and allocation of resources within a given time frame as well as providing a consistent message to the public.

8. G-NRUF Assumptions

The assumptions used for the January 2021 G-NRUF are the assumptions that were provided on 14 October 2020 to the CNA by the Canadian Steering Committee on Numbering (CSCN) for conducting the January 2021 NRUF.

Item 4 of the 14 October 2020 letter states, in part:

Where the CNA believes, based on its analysis of past growth and NRUF forecast data for an NPA, that the six-year forecast average annual growth may not be the best methodology for that NPA for projecting growth beyond the six-year forecast period, the CNA shall seek guidance from CRTC staff and will advise the CSCN of the alternative method used.

In this instance, the CNA compared the average forecast growth for the next five years, the median forecast growth for the next five years and the median and average historical growth for the past five years. The lowest number resulting from these calculations was the one used to identify the PED for each NPA.

9. Conclusion

In accordance with Section 4, Item 6 h) of the *Canadian Numbering Resource Utilization Forecast (C-NRUF) Guideline*, the CNA has conducted assessments, sought clarification and/or explanation from various TSPs to reconcile 2021 growth with current and historical forecasts to determine whether the 2020 NRUF results are reasonable and the Projected Exhaust Dates for all NPAs are realistic.

The CNA believes that emerging technology growth has been responsible for a good part of the recent demand. It is assumed that the introduction of the *Canadian Non-Geographic Code Assignment Guideline*, will alleviate some of the issues associated with Machine-to-Machine demand but it is difficult to quantify. Some TSPs are applying for non-geographic codes.

Based on the data and explanations provided by TSPs in response to the CNA's questions, the NRUF results appear reasonable and the Projected Exhaust Dates for Canadian NPAs are generally realistic.

January 2021 G- & R-NRUF Aggregate Results

Attachment 1

Geographic NPAs																							
As of January 1																							
NPA / Years	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
204/431	1259	1388	1456	1579	1663	1738	1809	1882	1955	2028	2101	2174	2247	2320	2393	2486	2559	2632	2705	2778	2851	2924	2997
226/519/548	1744	2066	2224	2340	2461	2557	2644	2716	2788	2860	2932	3004	3076	3148	3241	3313	3385	3457	3529	3601	3673	3745	3817
236/250/604/672/778	3092	3241	3395	3546	3698	3848	3982	4126	4242	4358	4474	4590	4706	4851	4967	5083	5199	5315	5431	5547	5693	5809	5925
	1220	1400	1550	1773	1876	2030	2112	2180	2248	2316	2382	2483	2551	2619	2687	2755	2823	2891	2959	3027	3095	3163	3264
289/365/905	2063	2310	2459	2631	2738	2841	2940	3022	3104	3186	3300	3382	3464	3546	3628	3710	3792	3874	3956	4072	4154	4236	4318
306/639	1469	1566	1692	1747	1808	1862	1906	1964	2022	2080	2138	2196	2254	2312	2370	2452	2510	2568	2626	2684	2742	2800	2858
343/613	1294	1485	1655	1773	1898	1992	2061	2124	2187	2250	2313	2376	2469	2532	2595	2658	2721	2784	2847	2910	2973	3036	3099
367/418/581	1590	1771	1914	2013	2129	2212	2301	2383	2490	2572	2654	2736	2818	2900	2982	3064	3146	3244	3326	3408	3490	3572	3654
403/587/780/825	2904	3083	3196	3400	3535	3663	3781	3851	3921	3991	4088	4158	4228	4298	4368	4438	4508	4578	4648	4718	4788	4887	4957
416/437/647	1902	1985	2074	2158	2248	2345	2469	2534	2599	2664	2729	2794	2859	2924	2989	3054	3119	3184	3271	3336	3401	3466	3531
438/514	1301	1401	1483	1557	1662	1736	1804	1864	1924	1984	2044	2104	2164	2224	2284	2344	2429	2489	2549	2609	2669	2729	2789
450/579	1281	1409	1524	1657	1753	1856	1938	1962	1986	2010	2034	2058	2082	2106	2130	2154	2178	2202	2226	2250	2274	2298	2322
506	619	692	742	797	863	899	945	978	1011	1044	1077	1110	1143	1176	1209	1242	1275	1308	1341	1374	1407	1440	1473
709	589	634	678	714	746	779	834	841	848	856	863	870	877	884	891	898	905	912	919	926	933	940	947
782/902	1069	1181	1245	1300	1363	1421	1482	1523	1564	1626	1667	1708	1749	1790	1831	1872	1913	1954	1995	2036	2077	2118	2159
807	268	316	341	362	377	391	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490
819/873	1295	1450	1541	1683	1784	1856	1942	2003	2064	2125	2186	2247	2308	2369	2462	2523	2584	2645	2706	2767	2828	2889	2950
867	281	317	334	357	394	420	443	459	475	491	507	523	539	555	571	587	603	619	635	651	667	683	699
Total Codes*	25240	27695	29503	31387	32996	34446	35803	36827	37848	38866	39919	40948	41974	42999	44048	45088	46109	47121	48139	49169	50195	51220	52249
2021 Forecast	2455																						
NPA / Years	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
* Includes Admin. Codes																							
Non-Geographic NPAs																							
As of January 1																							
NPA / Years	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
5YY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
600	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
6YY	241	392	593	852	1212	1653	2134	2448	2753	3058	3372	3677	3982	4296	4601	4915	5220	5525	5839	6144	6458	6763	7068
9YY	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
NPA / Years	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043

January 2021 G- & R-NRUF Aggregate Results

Attachment 1

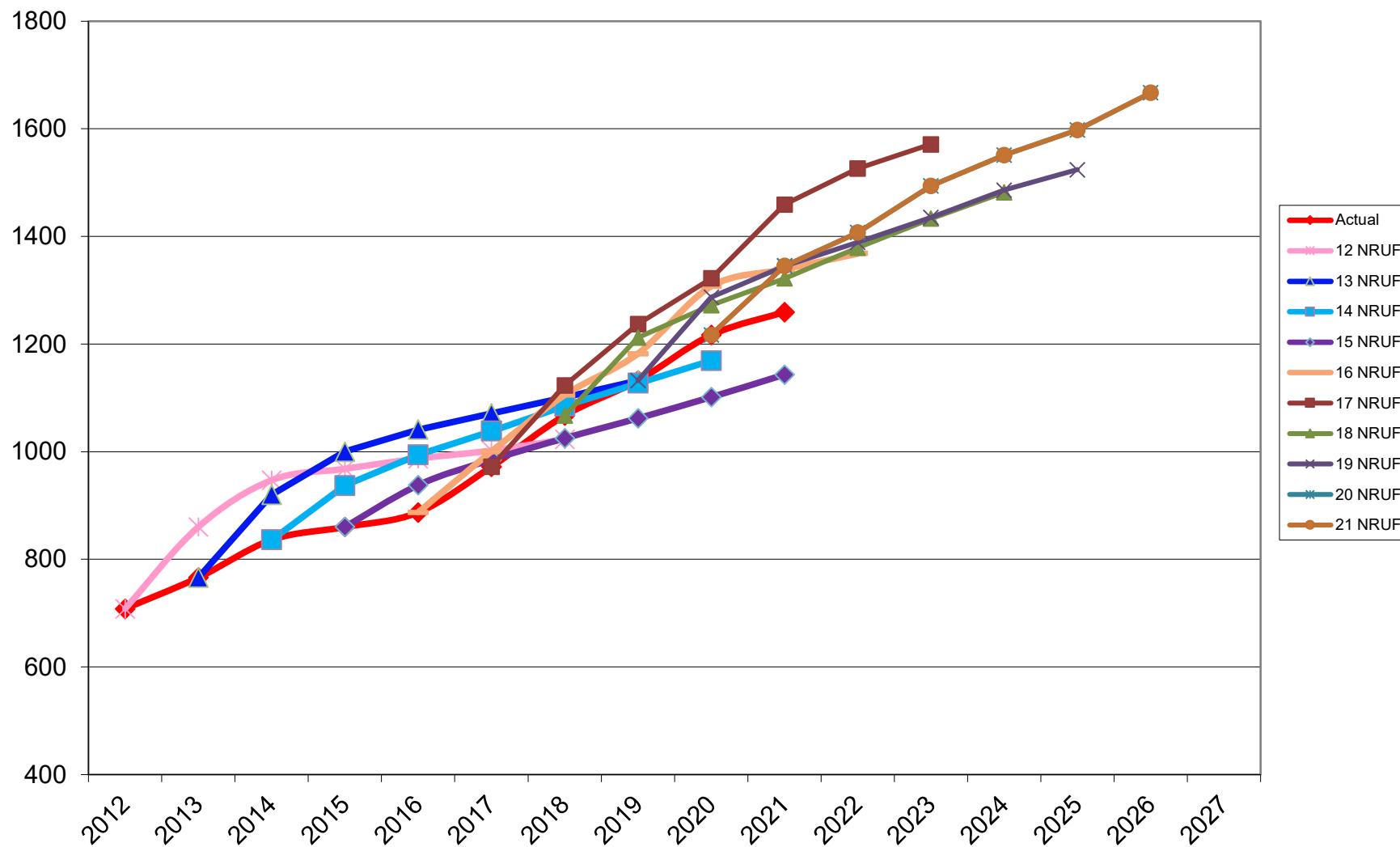
NPA / Years	2016			2017			2018			2019			2020			5 Year
	Actual	Forecast	Delta	Actual	Forecast	Delta	Actual	Forecast	Delta	Actual	Forecast	Delta	Actual	Forecast	Delta	Average
204-431	87	83	104.8%	100	113	88.5%	64	151	42.4%	80	145	55.2%	50	128	32.3%	63.8%
226-519-548	72	181	39.8%	69	216	31.9%	113	177	63.8%	59	224	26.3%	88	176	51.8%	48.9%
236-250-604-778	332	228	145.6%	104	476	21.8%	122	238	51.3%	65	219	29.7%	116	214	52.7%	59.9%
249-705	47	96	49.0%	106	94	112.8%	71	84	84.5%	44	126	34.9%	71	66	102.9%	80.0%
289-365-905	82	182	45.1%	98	195	50.3%	62	183	33.9%	75	112	67.0%	111	210	76.0%	58.3%
306-639	206	83	248.2%	158	181	87.3%	136	127	107.1%	33	219	15.1%	37	75	48.7%	96.0%
343-613	56	79	70.9%	85	107	79.4%	126	74	170.3%	20	201	10.0%	63	103	67.0%	77.7%
403-587-780-825	261	185	141.1%	82	362	22.7%	240	158	151.9%	50	304	16.4%	37	74	26.8%	69.9%
416-437-647	66	76	86.8%	70	104	67.3%	95	95	100.0%	70	106	66.0%	64	126	48.1%	68.5%
418-581	36	77	46.8%	57	139	41.0%	166	141	117.7%	115	240	47.9%	65	101	52.8%	60.5%
438-514	38	70	54.3%	33	68	48.5%	56	86	65.1%	30	81	37.0%	13	109	13.7%	42.5%
450-579	65	81	80.2%	60	106	56.6%	72	88	81.8%	56	162	34.6%	56	53	71.8%	56.9%
506	25	41	61.0%	11	81	13.6%	12	54	22.2%	33	119	27.7%	37	79	33.3%	36.1%
709	14	50	28.0%	3	51	5.9%	2	57	3.5%	9	101	8.9%	7	62	9.2%	16.5%
782-902	87	95	91.6%	16	133	12.0%	90	84	107.1%	41	150	27.3%	34	61	45.9%	58.7%
807	9	14	64.3%	4	21	19.0%	5	14	35.7%	14	19	73.7%	5	23	29.4%	43.4%
819-873	56	75	74.7%	70	129	54.3%	96	82	117.1%	35	163	21.5%	61	91	73.5%	68.2%
867	33	58	56.9%	23	54	42.6%	5	24	20.8%	8	23	34.8%	16	51	37.2%	38.5%
			82.7%			47.5%			76.5%			35.2%			48.5%	
Notes:	Actual is based on Part 3 assignment date.															
	Forecast is from G-NRUF submissions, ignoring CNA codes.															
	Delta is Actual/Forecast.															

January 2021 G- & R-NRUF Aggregate Results

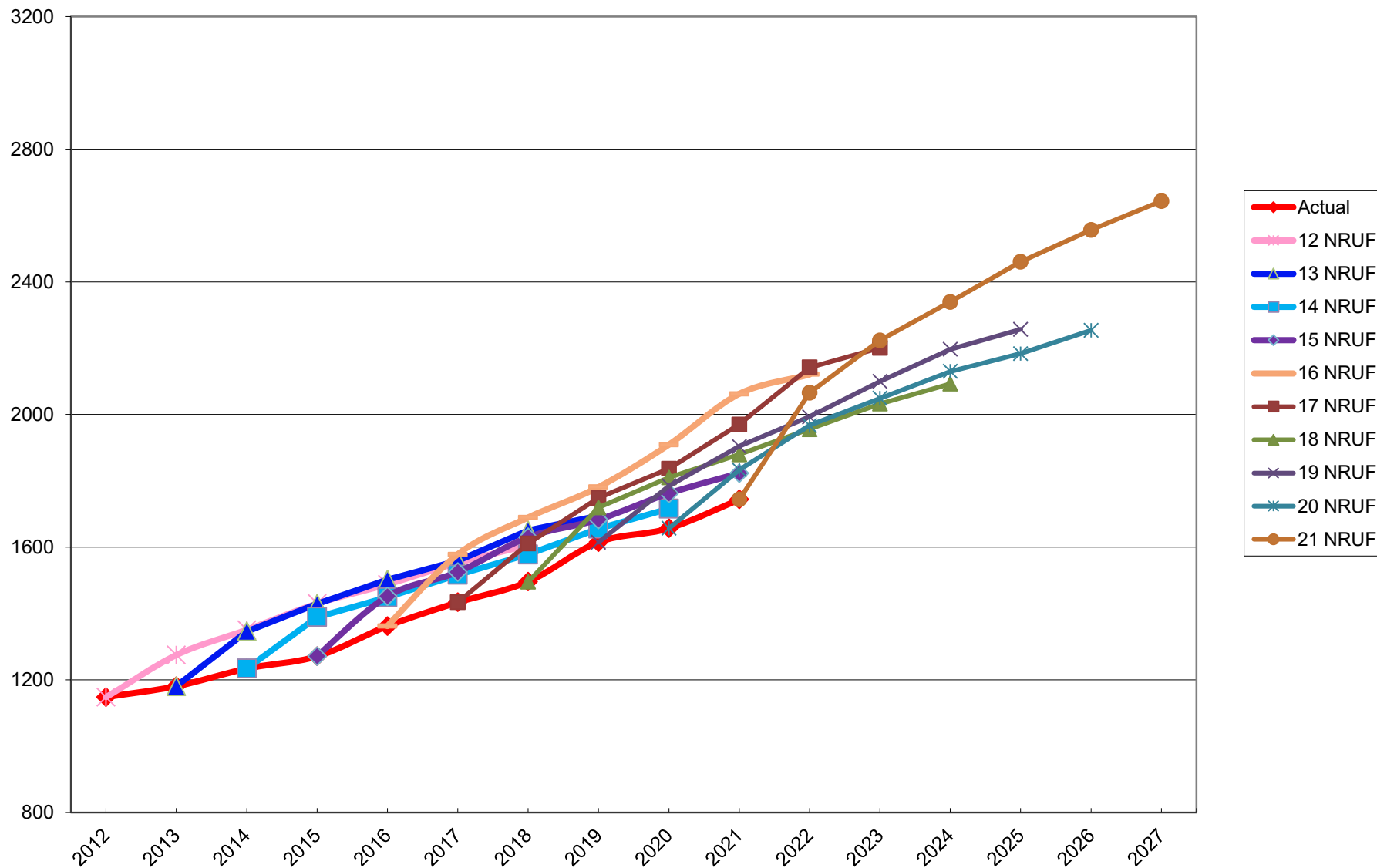
Attachment 1

January 1, 2021																		
NPAs	204/431	226/519/548	236/250/604/ 672/778	249/705	289/365/742 /905	306/474/ 639	343/613	354/450 /579	367/418/581	368/403/587/ 780/825	416/437/647	428/506	438/514	709/879	782/902	807	819/873	867
	(MB)	(ON)	(BC)	(ON)	(ON) *	(SK) *	(ON)	(QC) *	(QC)	(AB) *	(ON)	(NB) *	(QC)	(NL) *	(NS)	(ON)	(QC)	(NT)
New Entrants iaw PNs/NOCs/ Decisions	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0
Initial Code iaw PNs/NOCs/ Decisions	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Protected	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
N11 Service Codes	16	24	40	16	24	16	16	16	24	32	24	8	16	8	16	8	16	8
Special Use Codes (555, 950 & 976)	6	8	15	5	9	6	5	6	8	12	8	3	5	3	6	2	5	3
Industry Plant Test Codes	3	6	10	4	6	4	4	4	6	8	6	2	4	2	4	2	4	2
Home NPAs NXX Codes	4	9	23	4	12	6	4	6	9	16	9	2	4	2	4	1	4	1
Neighbour NPAs NXX Codes	0	0	0	16	21	4	14	4	0	1	0	2	4	3	0	4	12	8
Future NPAs NXX Codes	4	6	0	12	3	8	10	16	18	0	9	7	10	6	6	11	14	14
Relief NPA	2	3	0	2	0	0	2	0	0	0	6	0	2	0	0	0	2	0
Limited Availability (USA 7D Problem)	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3
911 Misdialed Codes (912, 914 & 915)	5	8	13	5	8	5	5	5	8	10	8	2	5	2	5	2	5	3
Special 7 Digit Dialing Codes (310, 610 & 810)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4	0
Total	40	64	101	64	83	49	60	57	73	79	70	38	50	31	41	34	66	42
Unforecasted Demand	3	5	7	5	7	3	7	5	0	7	6	0	6	0	3	2	2	2

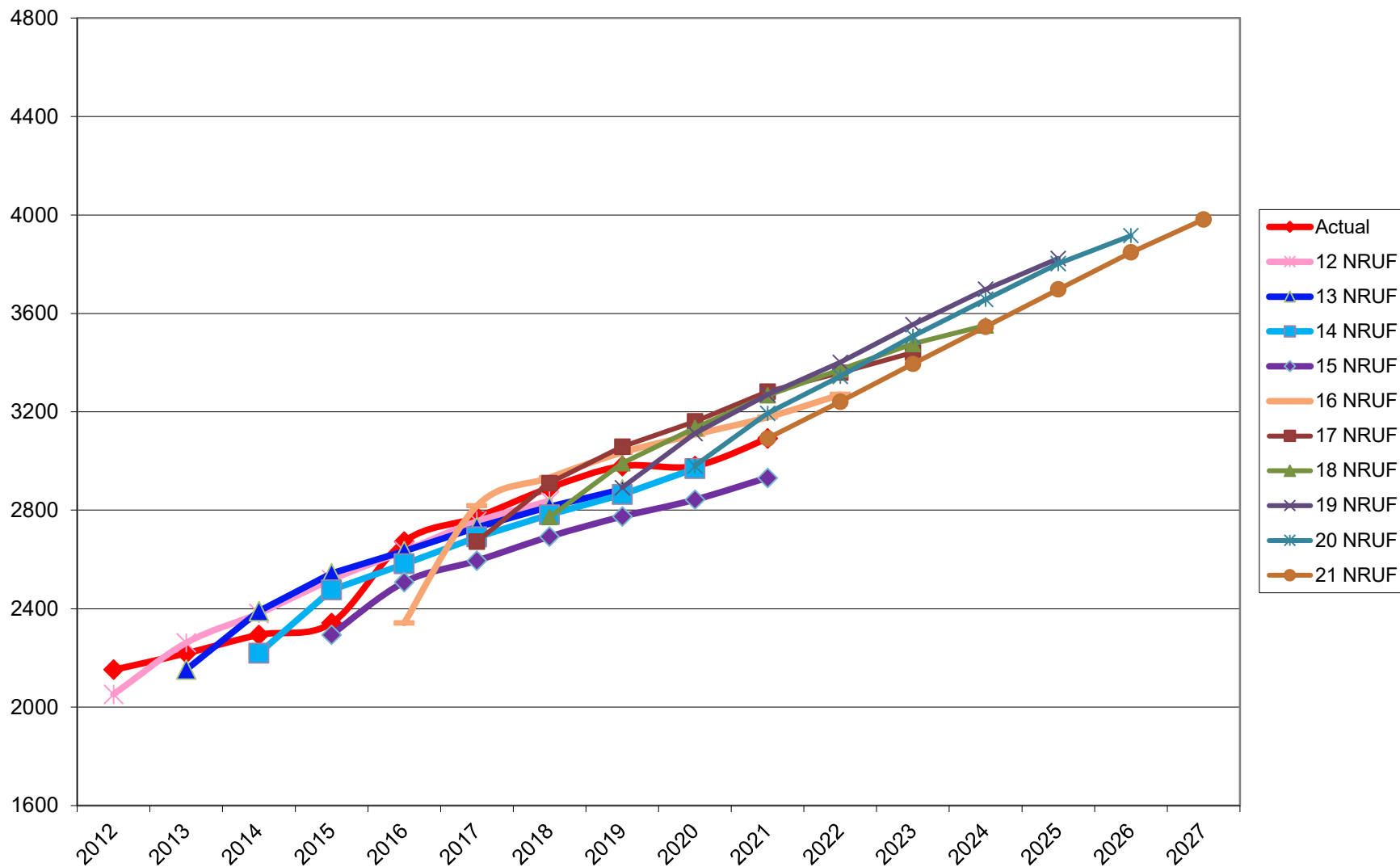
NPA 204/431 Manitoba



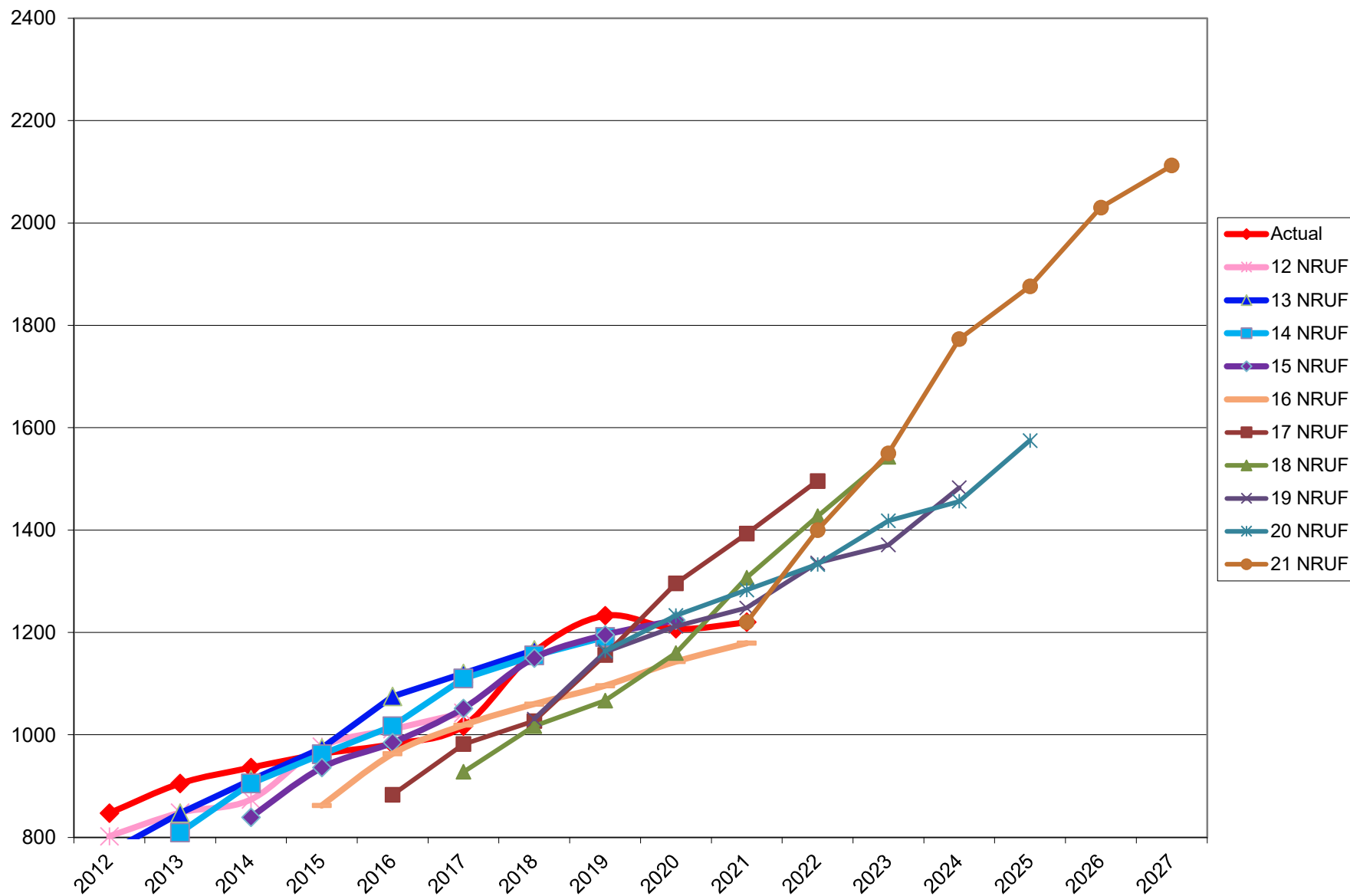
NPA 226/519/548 Ontario



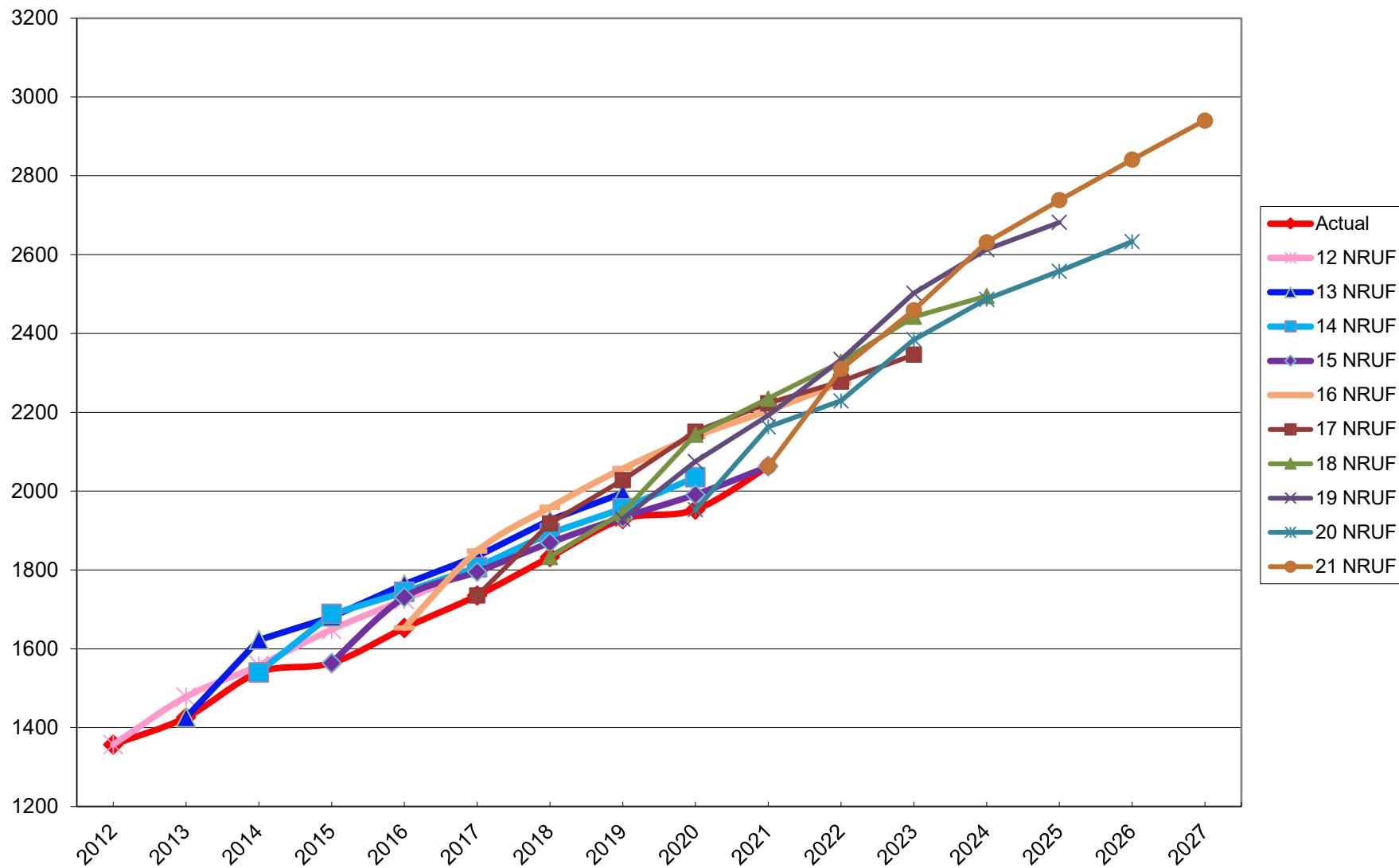
NPA 236/250/604/672/778 British Columbia



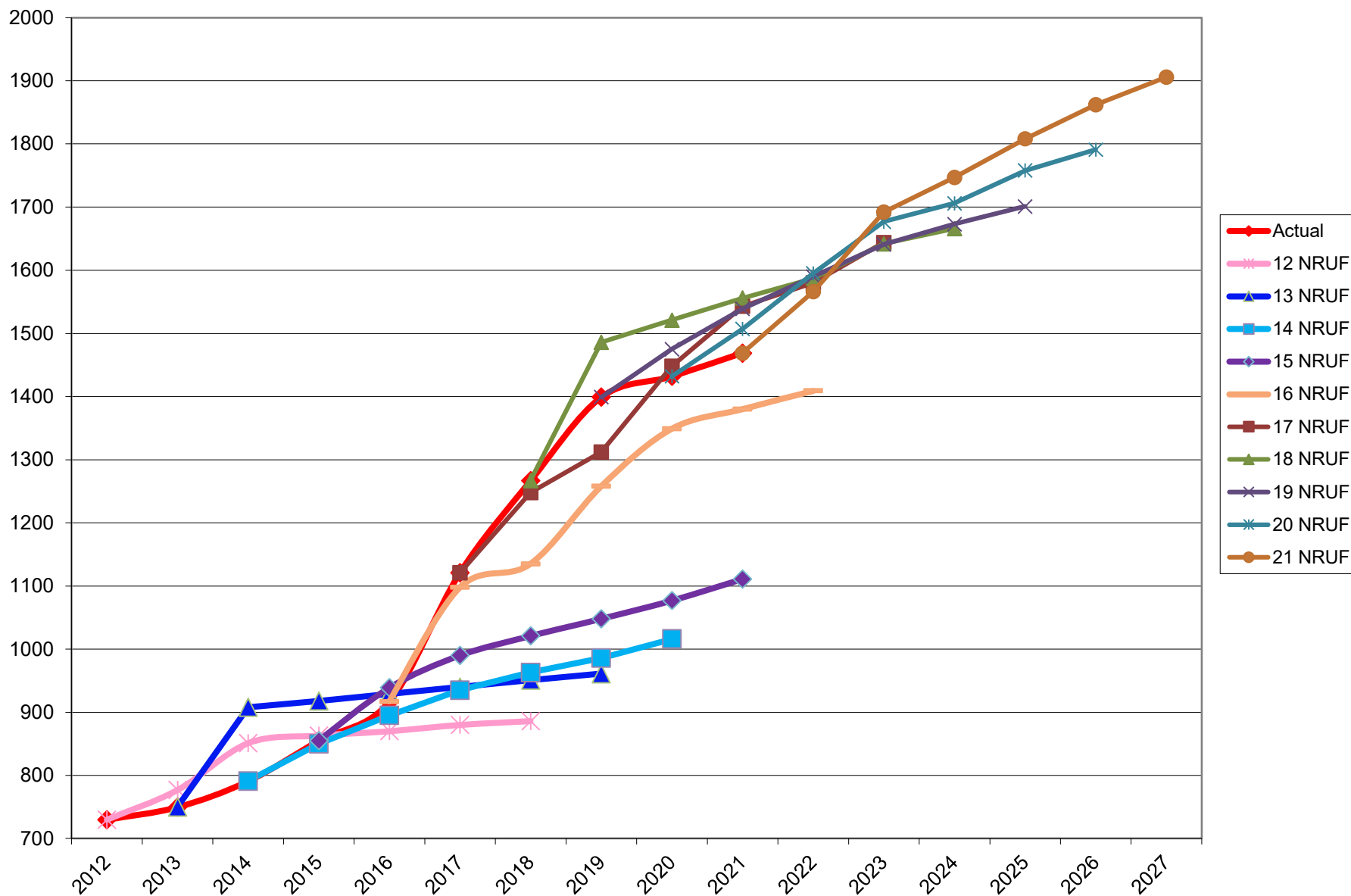
NPA 249/705 Ontario



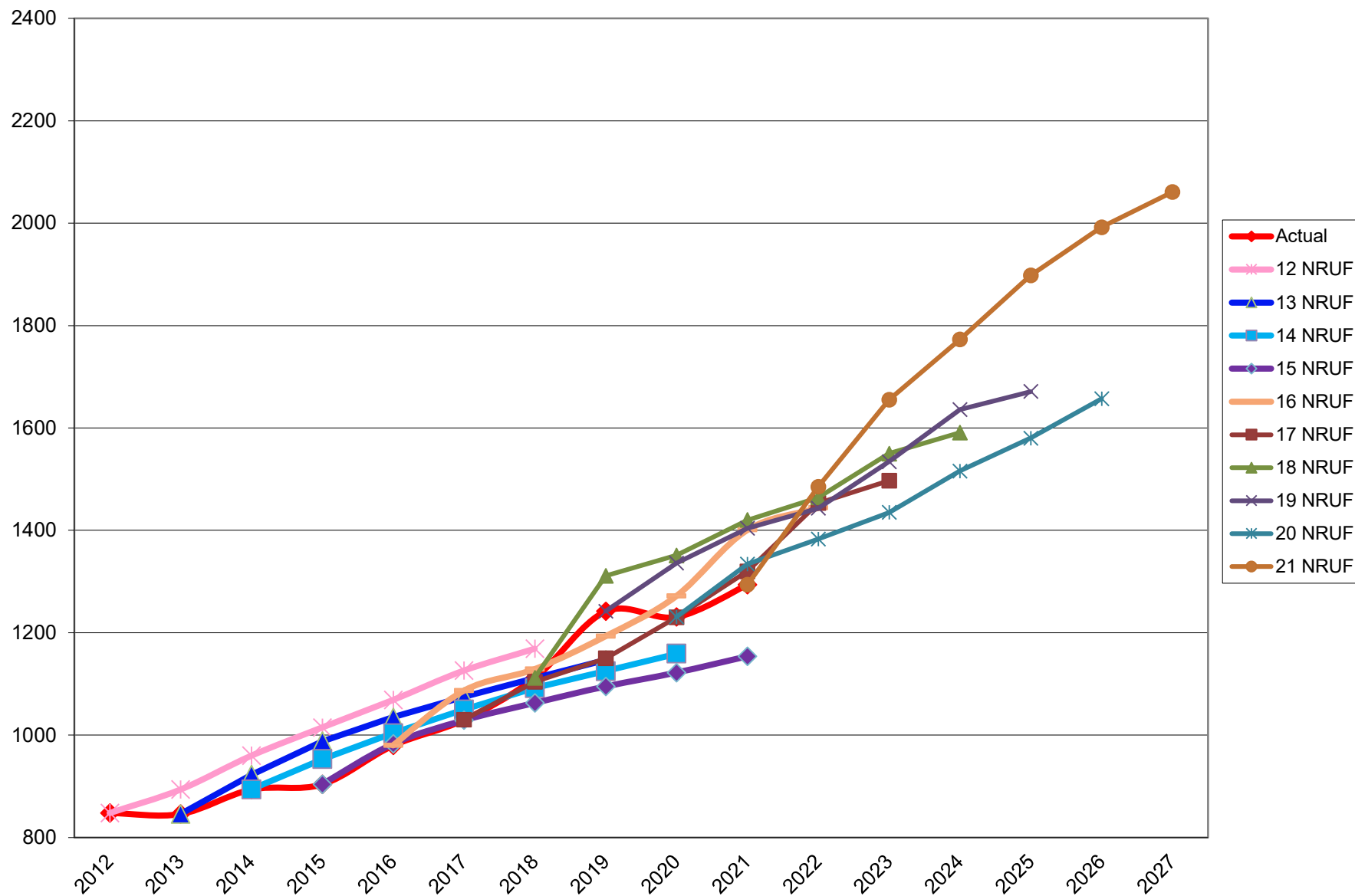
NPA 289/365/905 Ontario



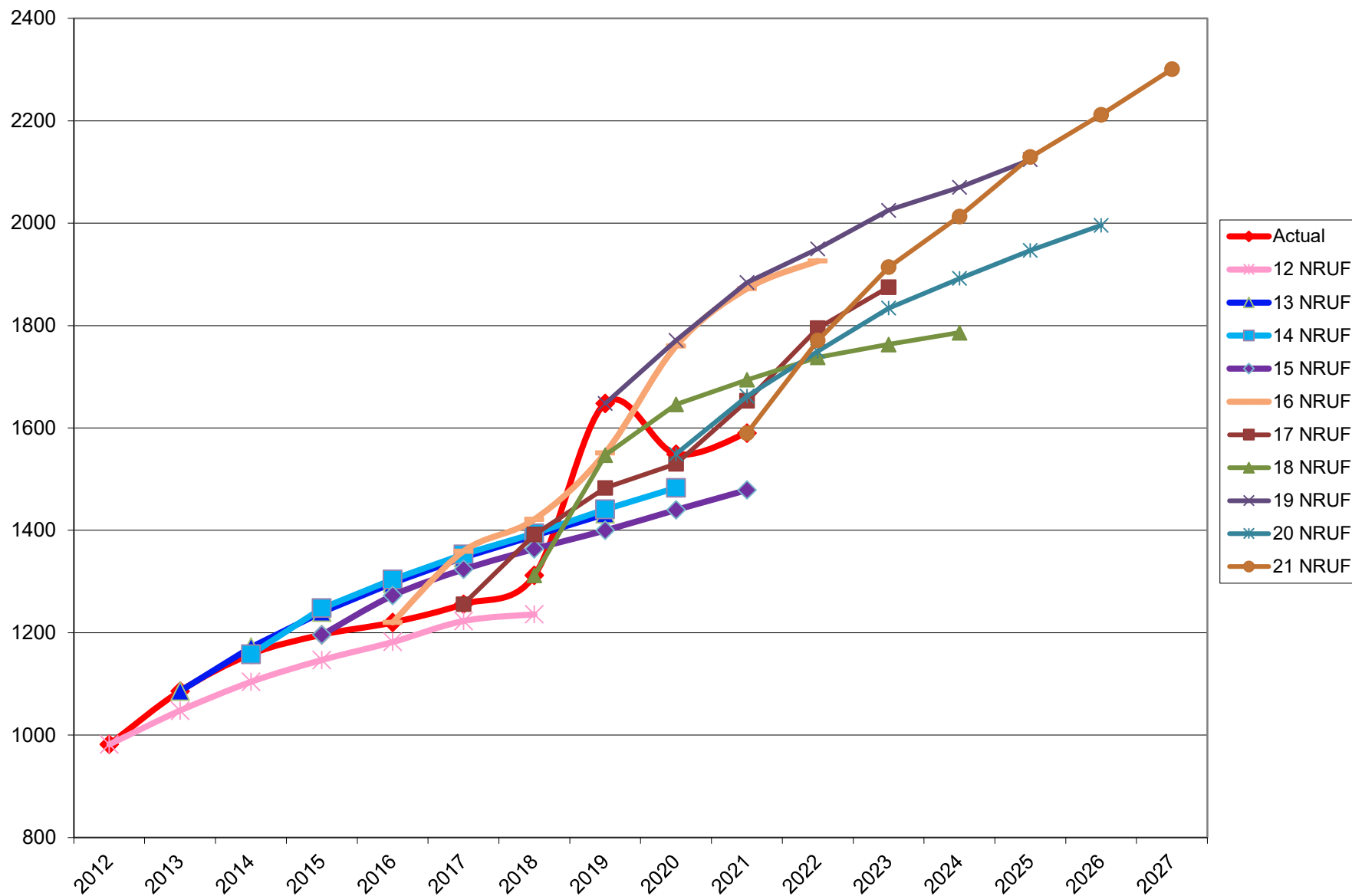
NPA 306/639 Saskatchewan



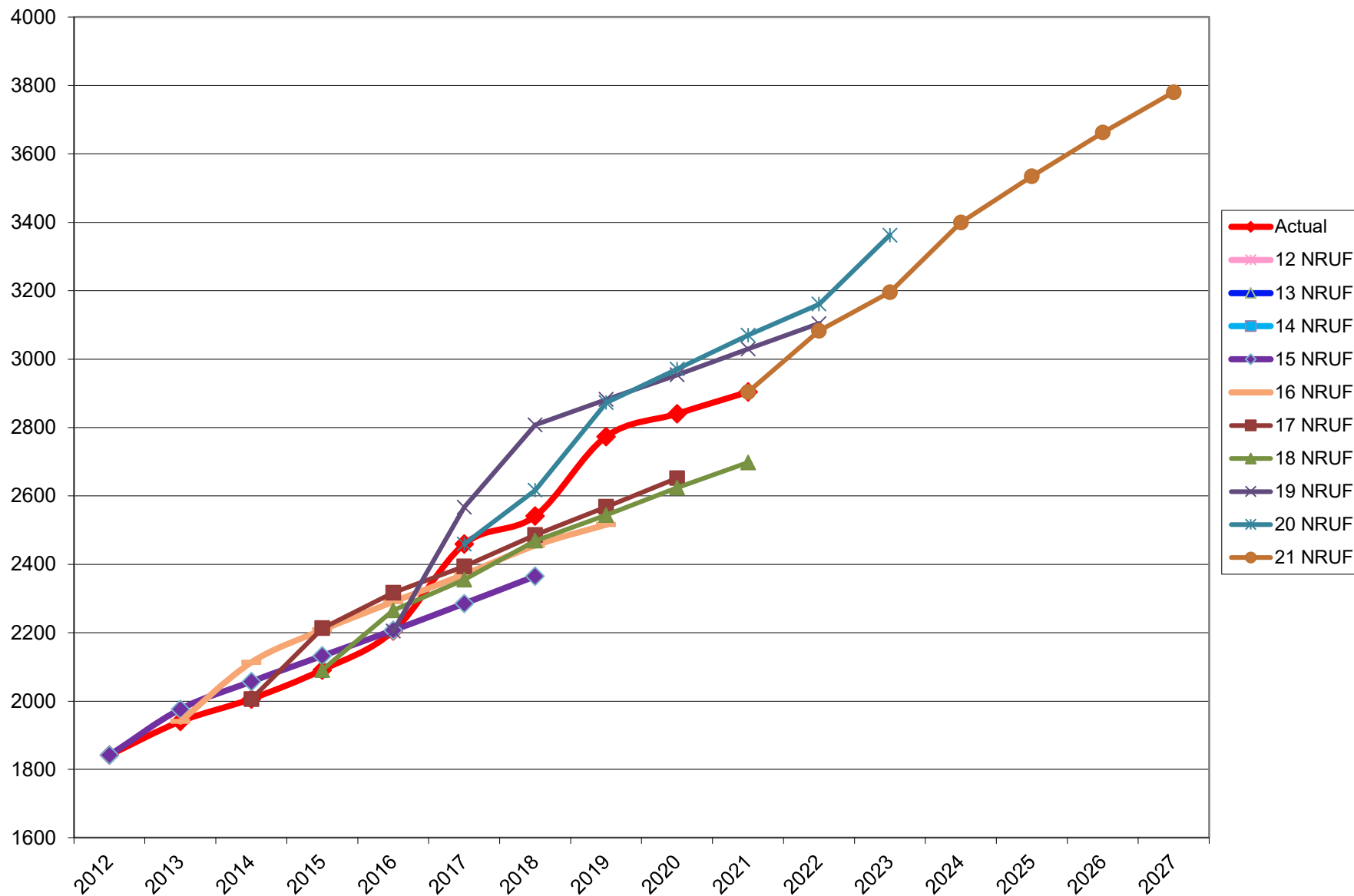
NPA 343/613 Ontario



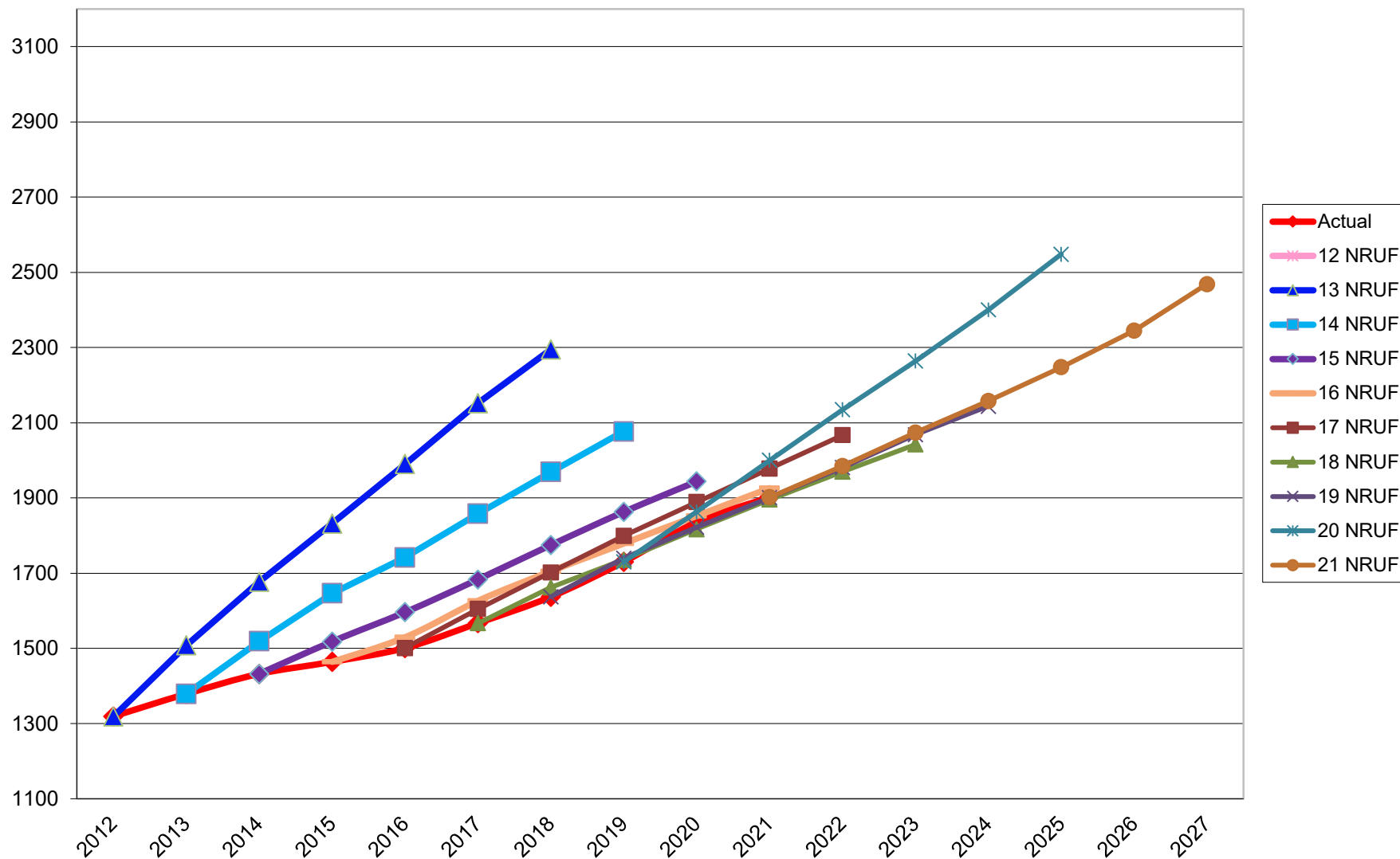
NPA 367/418/581 Quebec



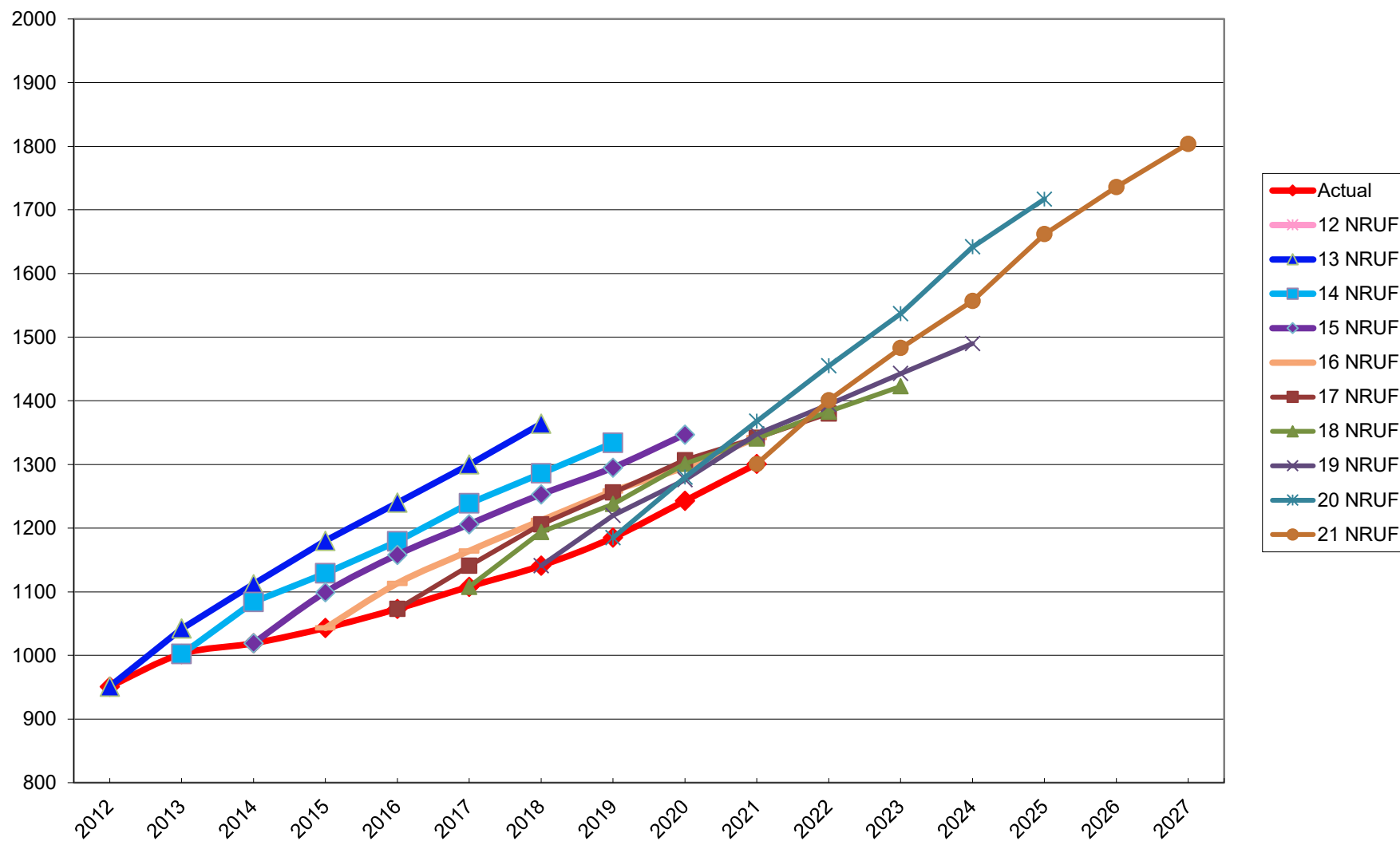
NPA 403/587/780/825 Alberta



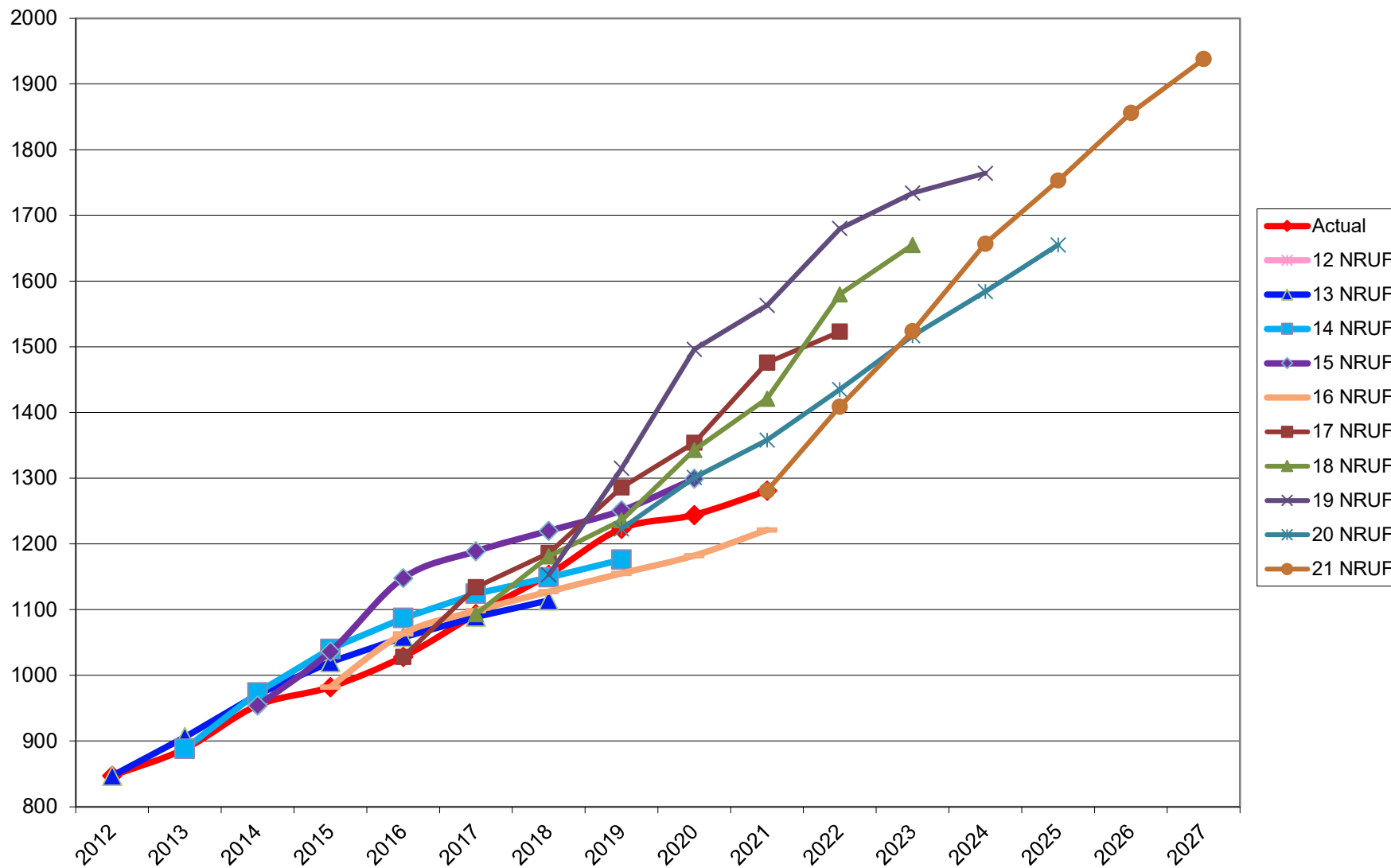
NPA 416/437/647 Ontario



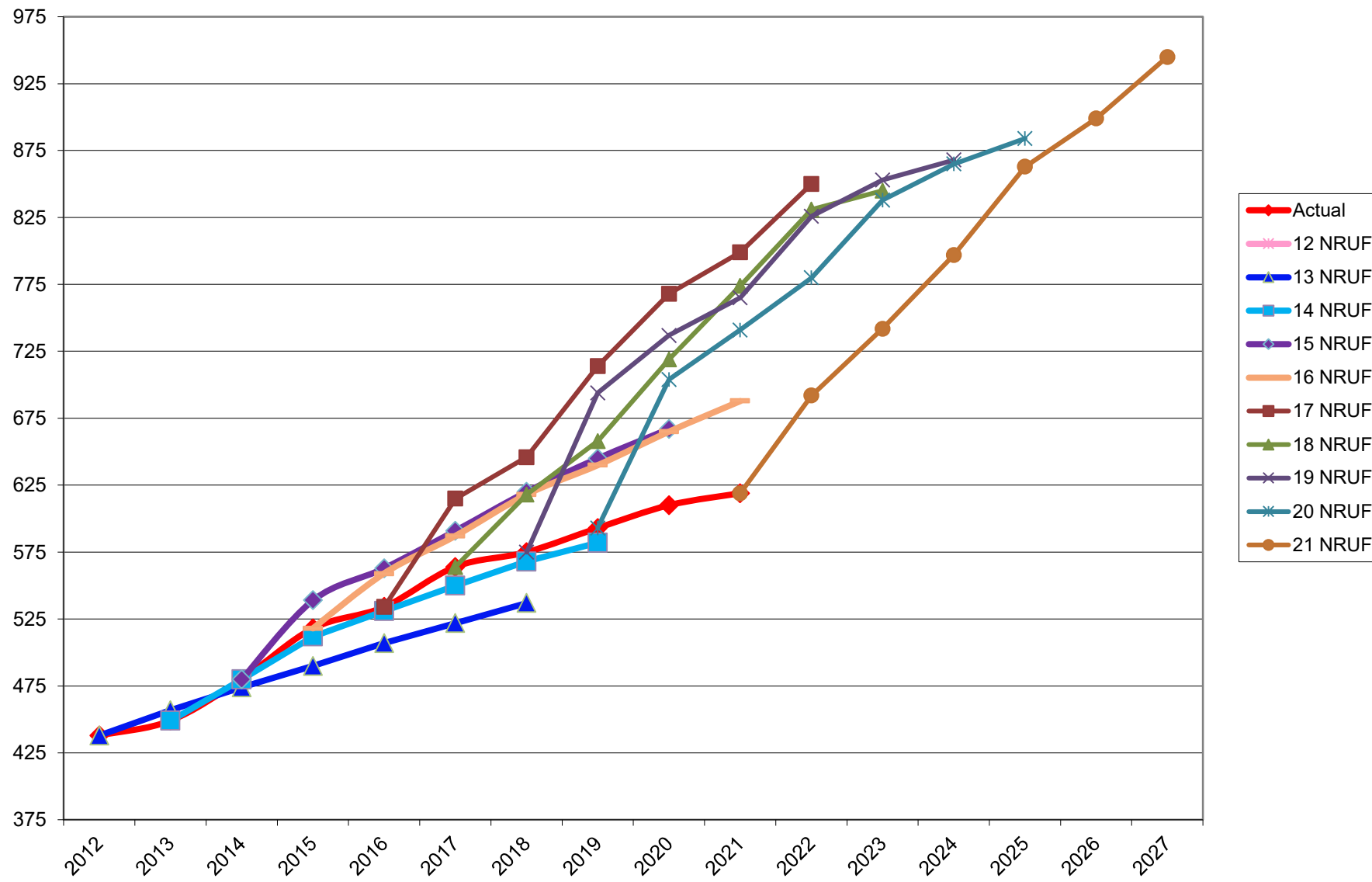
NPA 438/514 Quebec



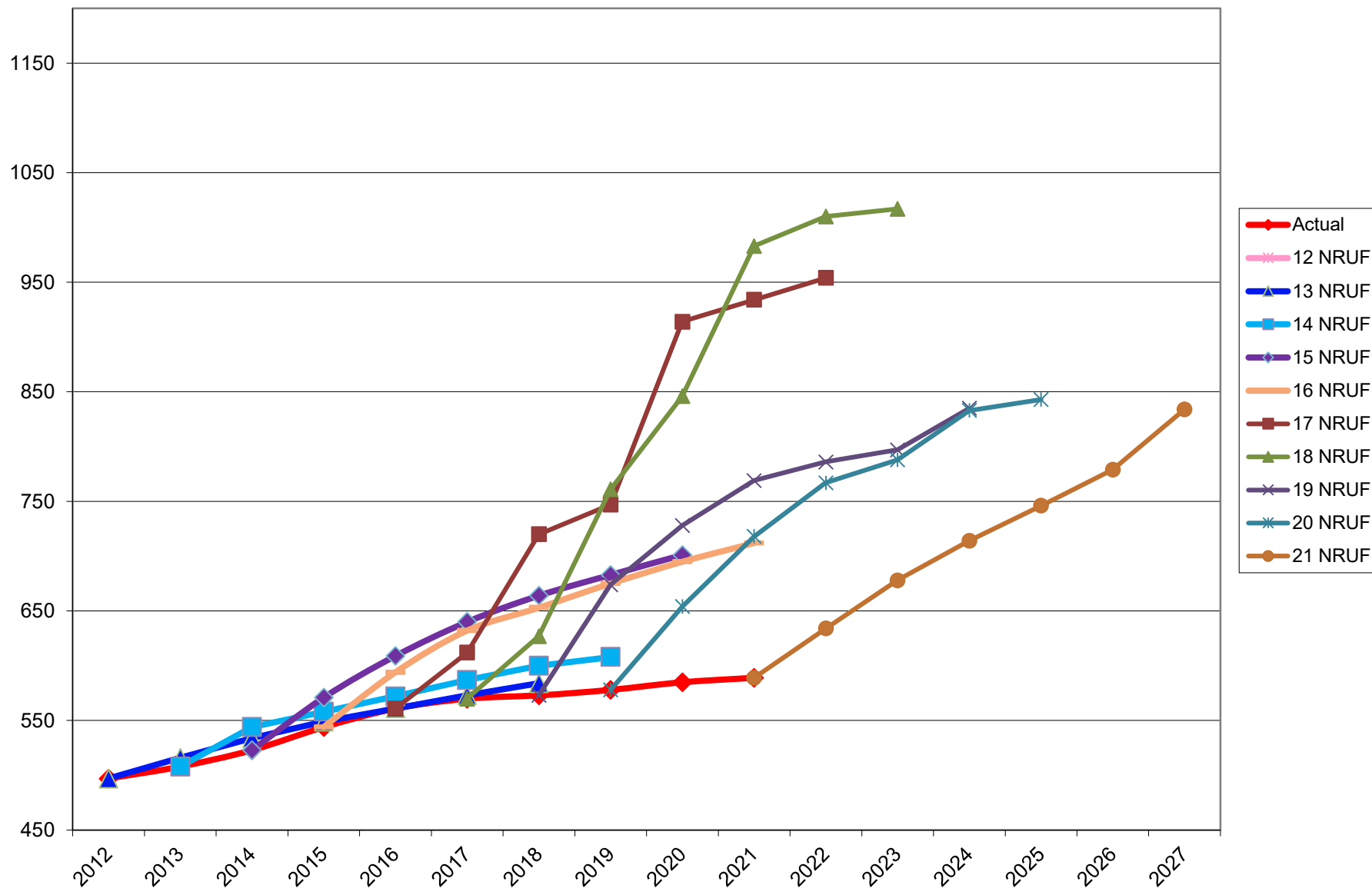
NPA 450/579 Quebec



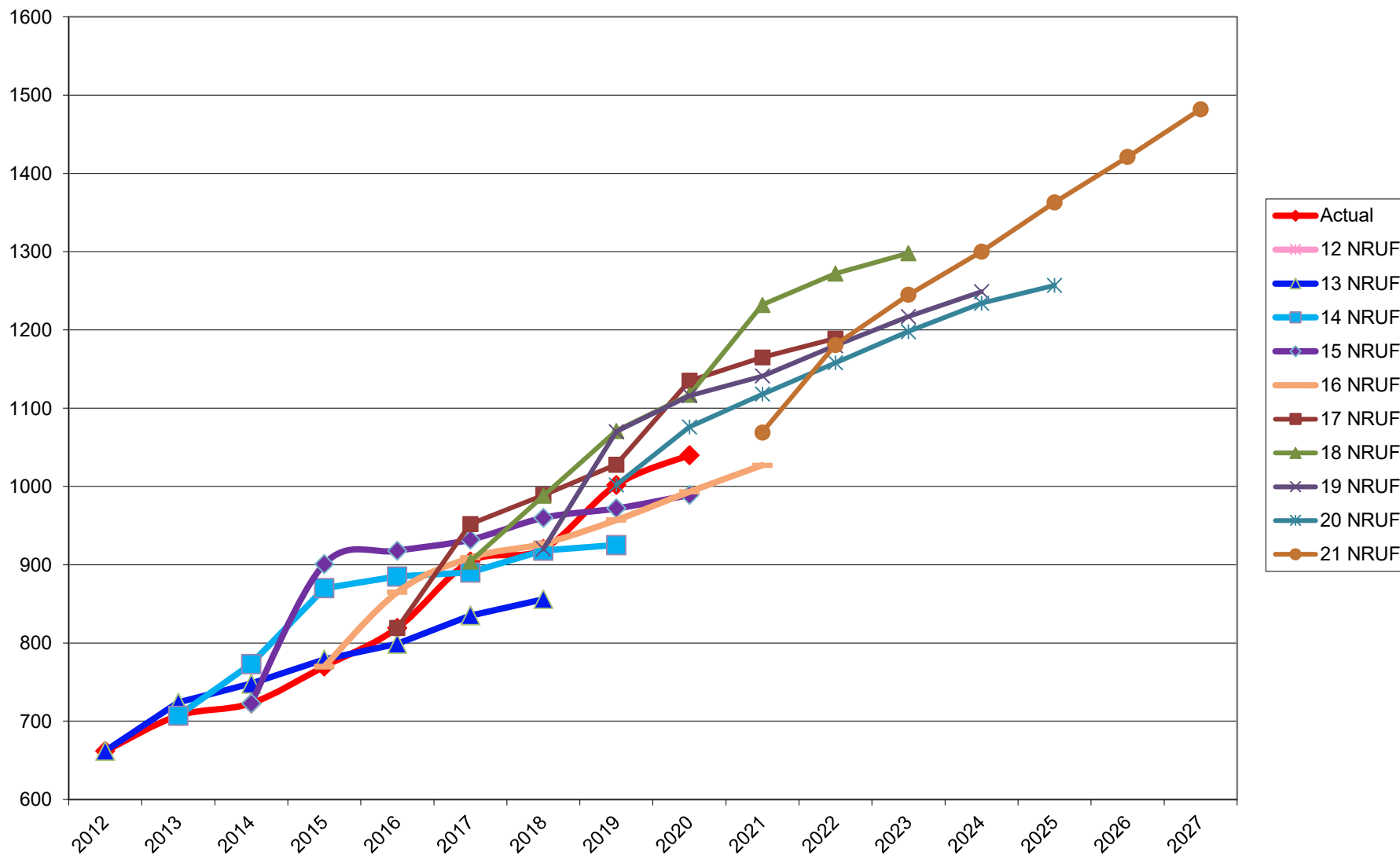
NPA 506 New Brunswick



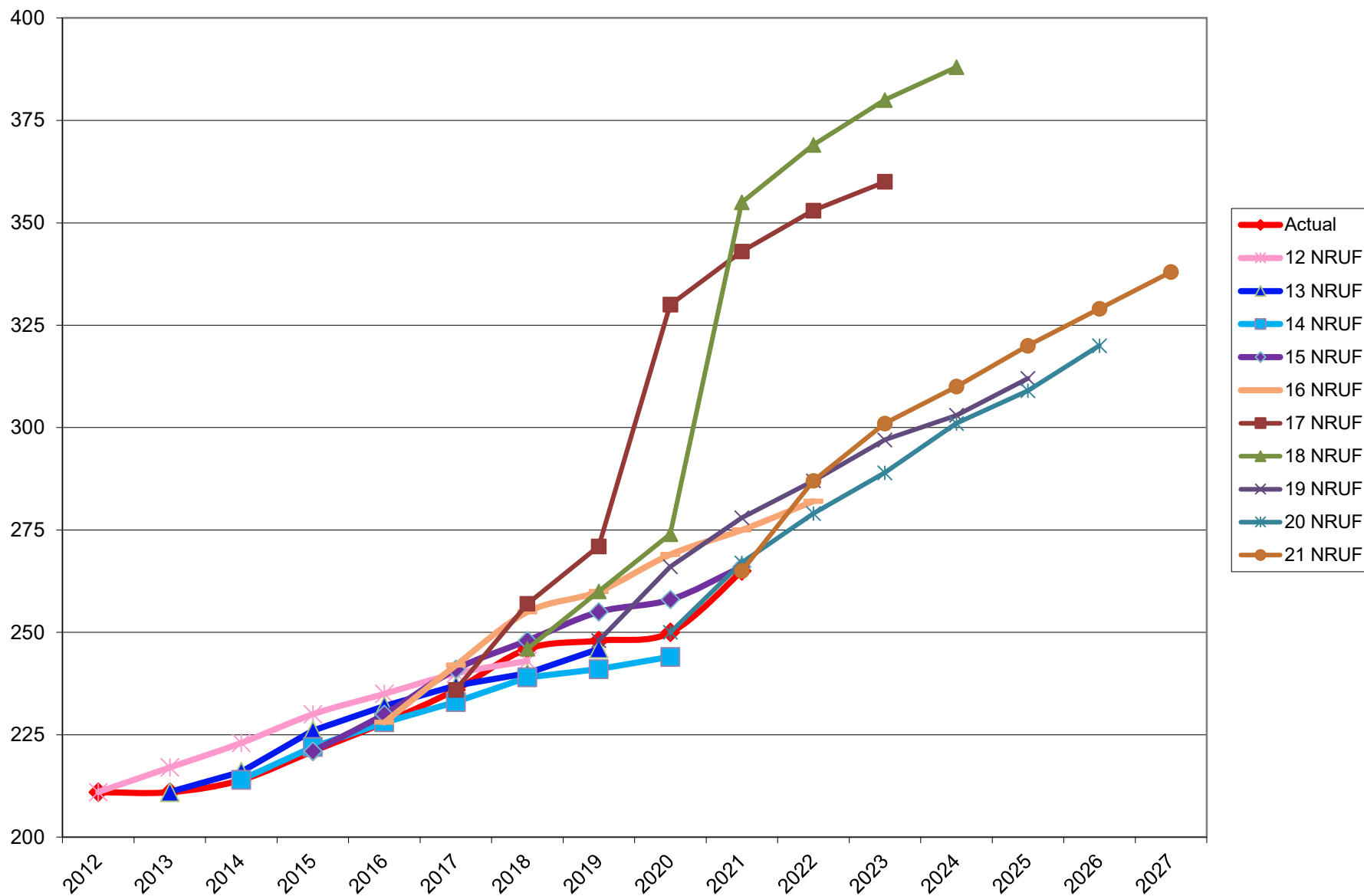
NPA 709 Newfoundland and Labrador



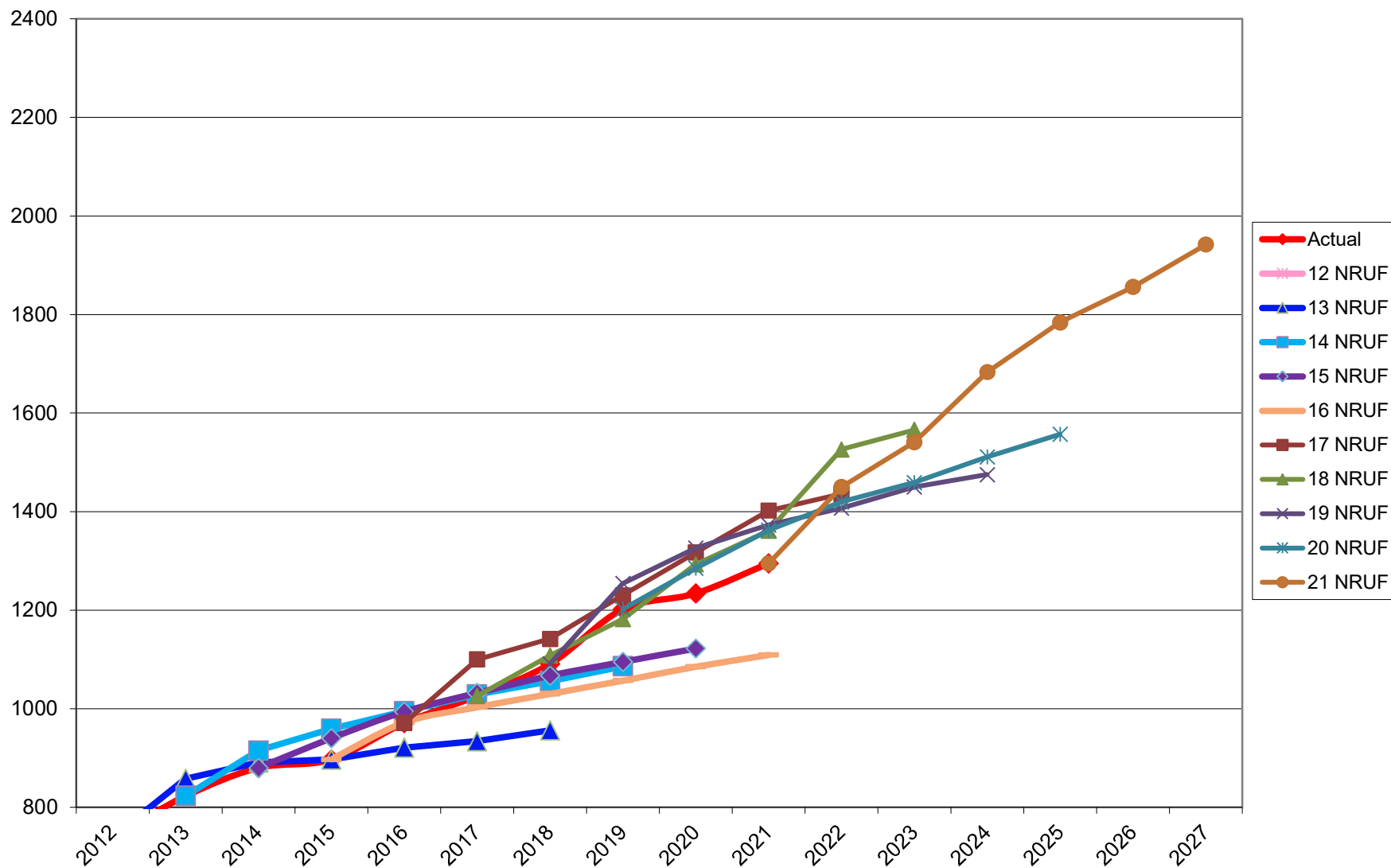
NPA 782/902 Nova Scotia-Prince Edward Island



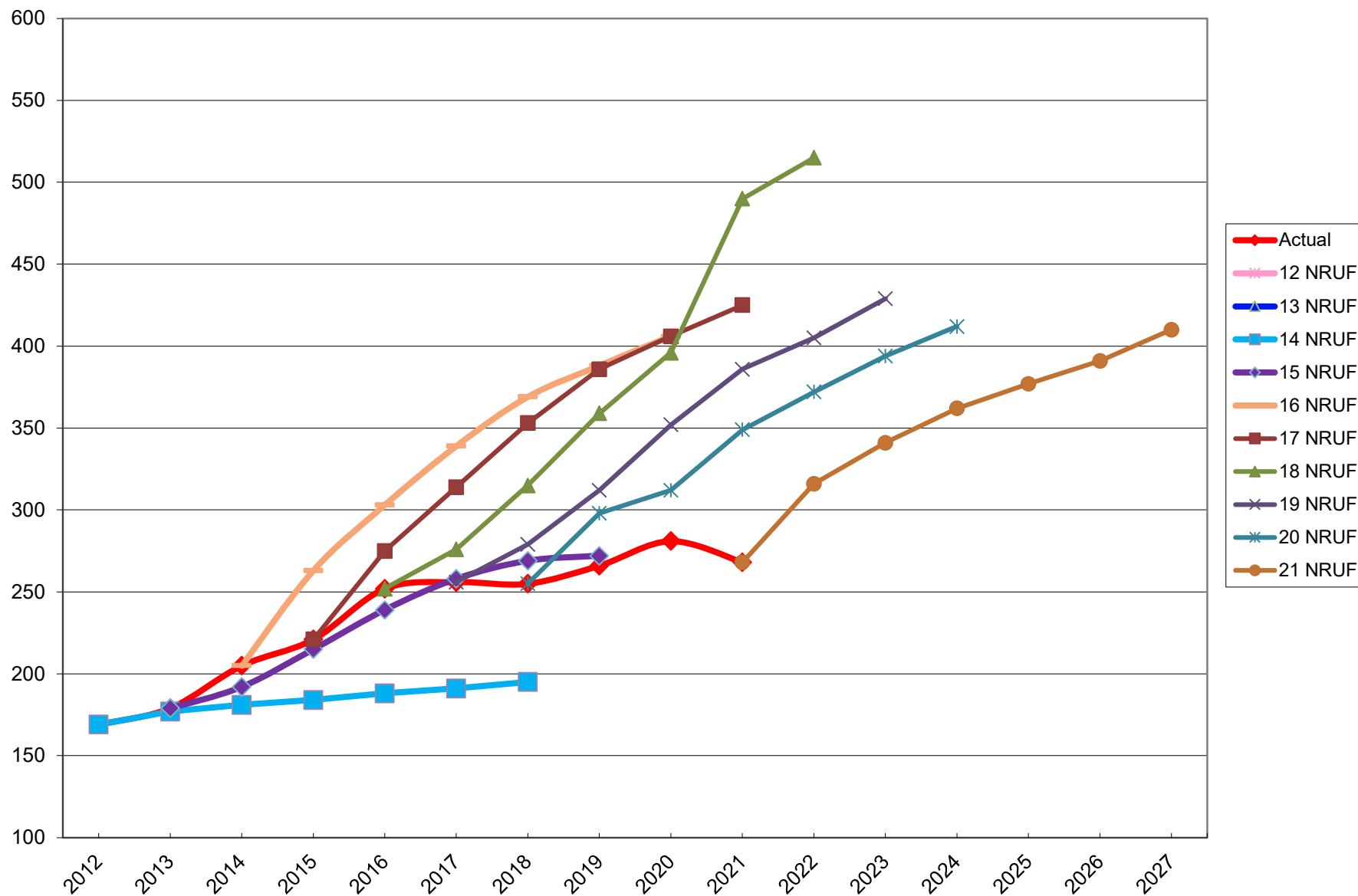
NPA 807 Ontario



NPA 819/873 Quebec



NPA 867 Northwest Territories-Nunavut-Yukon





Attachment 3

Kelly T. Walsh
Chair - CSCN
c/o COMsolve Inc.
150 Isabella St, Suite 605
Ottawa, Ontario, Canada K1S
1V7

Canadian Steering Committee on Numbering

14 October 2020

TRANSMITTED ELECTRONICALLY

Kelly T. Walsh
CNA Program Manager
Canadian Numbering Administrator (CNA)
COMsolve Inc.
150 Isabella St., Suite 605
Ottawa, Ontario K1S 1V7

**Subject: CSCN Direction to Canadian Numbering Administrator (CNA) re: the 2021
Numbering Resource Utilization Forecast (2021 NRUF) Methodology and
Assumptions**

On 14 October 2020, the Canadian Steering Committee on Numbering (CSCN) discussed and agreed to the direction for the CNA with respect to the 2021 NRUF Methodology and Assumptions.

The attached document contains the direction titled "CSCN Direction to CNA re: the 2021 NRUF Methodology and Assumptions, 14 October 2020".

Sincerely,

Original signed by

Kelly T. Walsh
CSCN Chair

c.c.: Bill Mason – CRTC staff
Michel Murray – CRTC staff

Attachment

**CSCN Direction to CNA re: the 2021 NRUF Methodology and Assumptions
14 October 2020**

**The CSCN submits the following methodology and assumptions to the CNA for
the 2021 Numbering Resource Utilization Forecast (NRUF).**

1. If there is a discrepancy between the CNA records and those submitted by the CO Code Holder with respect to the quantities of actual CO Codes assigned and reserved as of 1 January 2021, the CNA will attempt to rectify the discrepancy. However, if the discrepancy cannot be resolved, the quantity of CO Codes appearing in the CNA's records will be used. The CO Code Holder and the CNA should attempt to resolve the discrepancy before the next NRUF is conducted.

This problem has generally occurred when a CO Code:

- is still "being recovered" (i.e., a Part 3 Form has not been issued but the CO Code Holder believes the CNA has recovered the CO Code);
 - is a test code (i.e., legacy, NPA Relief, industry plant test codes and Appendix D temporary plant test codes); or
 - has been assigned and a Part 4 Form has not been received. In the past some CO Code Holders have not counted assigned codes.
2. CRTC staff instructed the CNA to reserve a number of CO Codes to be used for new unknown entrants, new technologies and other unforecast demand. The CSCN recommends that the quantities identified by CRTC staff should be carried forward to the 2021 NRUF, except in NPAs where pools of CO Codes have been established for initial CO Code assignments, in which case the allowance for unforecast demand should only be included for forecast years following the dissolution of the pool for initial CO Code assignments as noted in the table below.

CRTC Staff Allowance for Unforecast Demand based on CRTC staff letter, dated 16 Oct 2007 (http://cnac.ca/NRUF/NRUF.htm)	
NPA	Quantity of CO Codes
204/431	3
226/519/548	5
236/250/604/672/778	7
249/705	5
289/365/905	7
306/639	3
343/613	7
367/418/581	3
403/587/780/825	7
416/437/647	6
438/514	6
450/579	5
506	3
709	2
782/902	3
807	2
819/873	2
867	2

Where a Notice of Consultation (NoC) is currently in effect in an NPA complex, the number of CO Codes listed under “Quantity of CO Codes” in the table above is superceded by any quantities specified in the related NoC. That number may be further impacted by recent CO Code assignments from the new entrant pools.

CRTC Staff Allowance for Unforecast Demand based on NoC				
NPA	Quantity of CO Codes	Relief year (est. = estimated)	Allowance to be excluded from forecast total quantities prior to the year below (= year after the dissolution of the pool, which is 2 years after relief)	CRTC Telecom Decision or Notice establishing pool of CO Codes for initial CO Code assignments
506	7	est. 2022	est. 2025	Notice 2016-206
709	2	est. 2022	est. 2025	Notice 2016-205

The quantities of CO Codes in the above tables should be carried forward for the 20-year study period with no growth.

3. Where the CRTC has ordered or an RPC has recommended that quantities of CO Codes be set aside for a specified period of time for assignment to initial CO Code Applicants for a 2-year period after implementation of an Overlay, the CNA shall add such quantities to the actual quantity of CO Codes for 1 January of the current year and carry them forward in the forecasts until the Relief Date, since these set-aside CO Codes are unassignable from the date of the Decision until immediately prior to the Relief Date, after which they become assignable (with limitations). The CNA should exclude such set-aside CO Codes from the calculation of annual growth rates.
4. Future projections beyond the six year forecast period will be calculated using linear extrapolation and the average annual growth in quantity of CO Codes for the six year forecast period, excluding any extraordinary factors such as returns or reclamations of large quantities of CO Codes and Codes identified in item 3 above that would create an unreasonable projected future growth rate. Where the CNA believes, based on its analysis of past growth and NRUF forecast data for an NPA, that the six-year forecast average annual growth may not be the best methodology for that NPA for projecting growth beyond the six-year forecast period, the CNA shall seek guidance from CRTC staff and will advise the CSCN of the alternative method used. The six-year average growth of CO Codes per year shall be calculated as follows and rounded to one decimal point at a maximum (e.g., 5.14 rounds down to 5.1; 5.15 rounds up to 5.2):

$$\text{6 Year Average Growth of CO Codes per Year} = \frac{[(\text{Forecast Quantity of CO Codes in year six}) - (\text{Actual Quantity in 1 January of Current Year})]}{6}$$

When extending the forecast from 7 to 20 years, the CNA should use the six year forecast average annual growth, calculated to one decimal point, to develop the 1 January quantity of CO Codes for each year (e.g., in year seven $100 + 5.4 = 105.4$ rounds up to 106; in year eight $105.4 + 5.4 = 110.8$ rounds up to 111).

5. The CNA shall provide for each NPA the total quantity of actual and forecast CO Codes and a breakdown of the quantity of “Unassignable CO Codes” as per section 3.7 of the CRTC-approved Canadian Central Office Code (NXX) Assignment Guideline, or as otherwise directed in writing by CRTC staff when the draft aggregate results are released, and in the subsequent 2021 NRUF Report to the CSCN after the aggregate results are finalized.
6. The “Administrative Codes” and “Stranded CO Codes” shall not be used in the calculation of the average annual future growth used for the 7 to 20 year projection. At this time, there are no Stranded CO Codes.
7. The CNA shall not add or include any demand for CO Codes for proposed CLECs that did not submit NRUF forecasts, other than the demand that is already allowed for in the quantity of CO Codes for unforecast demand specified by CRTC staff.
8. For the purpose of the NRUF the CNA should assume that the Overlay Method will be used for future NPA Reliefs unless CRTC staff advises otherwise.
9. With respect to NPAs that are due to exhaust approximately in the 2040 timeframe, the CNA should exercise its best judgment in finalizing the forecast for those NPAs.