Report for January 2022 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 2022 NRUF results, the CNA determined that the following NPAs continue to be in the relief planning window:

- 204/431;
- 226/519/584;
- 236/250/604/672/778;
- 249/705;
- 343/613;
- 403/587/780/825;
- 416/437/647;
- 438/514;
- 450/579;
- 506; and,
- 819/873.

NPA 709 is no longer in the 6-year relief planning window and the CNA declared that NPA 403/587/780/825 is no longer in a Jeopardy Condition.

On 11 June 2021, CRTC staff agreed that future R-NRUFs should be performed at the area code level of detail where multiple area codes serve the same geographic area.

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

Included as attachments to this report are:

- 2022 G- & R-NRUF Aggregate Results and the Quantity of CNA CO Codes as of 1 January 2022;
- Historical January NRUF Graphs for Canadian NPAs; and,
- CSCN Letter dated 14 December 2021 providing direction to the CNA re: the 2022 Numbering Resource Utilization Forecast (2022 NRUF) Methodology and Assumptions.

2. High Level Summary

The results from the January 2022 G- & R-NRUF show significant changes in several NPAs compared to the January 2021 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.

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 2021 NRUF	**January 2022 NRUF**	
NPA	**PED**	**PED**	**Remarks**
204/431	Dec-2023	Nov-2023	Relief Date 29 October 2022 iaw Telecom Decision CRTC 2022-51
226/519/548	Aug-2024	Mar-2025	Relief Date 17 June 2023 iaw Telecom Decision CRTC 2022-50
236/250/604/672/778	Apr-2027	Mar-2027	In relief planning
249/705	May-2023	Oct-2023	Relief Date 18 June 2022 iaw Telecom Decision CRTC 2021-371.
343/613	Nov-2022	Jun-2023	Relief Date 26 March 2022 iaw Telecom Decision CRTC 2021-372
403/587/780/825	Jul-2022	Aug-2022	Relief Date 23 April 2022 iaw Telecom Decision CRTC 2021-101.
416/437/647	Sep-2025	Mar-2026	In relief planning
438/514	Nov-2023	Mar-2024	Relief Date 22 October 2022 iaw Telecom Decision CRTC 2021-364.
450/579	Jun-2023	Aug-2024	Relief Date 22 October 2022 iaw Telecom Decision CRTC 2021-373.
506	Dec-2023	Oct-2024	Relief Date 29 April 2023 iaw Telecom Decision CRTC 2020-363.
709	Apr-2026	Nov-2028	Out of relief planning window.
819/873	May-2023	Aug-2023	Relief Date 22 October 2022 iaw Telecom Decision CRTC 2021-393.

3. Current and Past G-NRUF Projected Exhaust Dates

NPA	Location	2018	2019	2020	2021	2022
204/431	Manitoba	Mar-2026	Jul-2026	Jan-2025	Apr-2024	Nov-2023
				Mar-2038	Feb-2035	Aug-2034
226/519/548	S. Ontario	Jan-2029	Nov-2026	Jan-2028	Jul-2024	Mar-2025
					Sep-2034	Feb-2033
						Dec-2040
236/250/604/672/778	BC	Jul-2020	Nov-2026	Oct-2026	Feb-2027	Mar-2027
		Dec-2028	Sep-2026	Mar-2034	Oct-2033	Nov-2034
		Aug-2037	Feb-2034	Aug-2041	Jun-2040	
			Jul-2041			
249/705	N. E. Ontario	Jun-2026	Jul-2025	Apr-2026	Apr-2023	Oct-2023
					Apr-2031	May-2032
					Jul-2042	
289/365/742/905	Toronto Fringe	Nov-2022	Jun-2022	Mar-2023	Sep-2022	
		Sep-2032	Oct-2031	Jul-2033	Mar-2030	May-2029
					Jul-2039	Jan-2038
306/474/639	Saskatchewan	Jun-2022	May-2022	Jan-2022	May-2022	
		Feb-2024		Sep-2037	Jul-2035	Jan-2038
343/613	Ottawa area	Sep-2022	Dec-2023	Jun-2025	Oct-2022	Jun-2023
		Nov-2030	Dec-2036	Oct-2038	May-2032	Oct-2033
367/418/581	N. E. Quebec	Oct-2019	Nov-2029	Feb-2033	Mar-2028	Jul-2033
		Aug-2038			Aug-2037	
403/587/780/825	Alberta	Oct-2019	Jun-2022	Dec-2022	Jan-2023	Aug-2022
		Aug-2038	Jul-2029	Mar-2030	Feb-2030	Feb-2028
		Jan-2026	Feb-2037	Sep-2037	Mar-2041	Jun-2038
416/437/647	Toronto	Jun-2021	Jan-2024	Jan-2025	Jul-2026	Mar-2026
		Jan-2036	Jan-2033	Jul-2035	Mar-2038	Jul-2035
438/514	Montreal	Dec-2021	Oct-2023	Mar-2026	Jul-2024	Mar-2024
		Apr-2023	Aug-2037	Beyond 2042	Dec-2036	Jun-2035
450/579	Montreal Fringe	Mar-2033	Jun-2024	Oct-2024	Sep-2023	Aug-2024
		Beyond 2040	Jul-2038	Oct-2037	Apr-2046	
506	New Brunswick	Oct-2026	Aug-2022	Mar-2024	Jan-2024	Oct-2024
709	Nfld & Labrador	Apr-2023	Aug-2023	Mar-2024	Sep-2026	Nov-2028
782/902	Nova Scotia & PEI	Mar-2033	Apr-2034	Nov-2033	Nov-2029	Apr-2029
807	N.W. Ontario	Beyond 2040	Beyond 2041	Beyond 2042	Beyond 2043	Beyond 2044
819/873	N. W. Quebec	Oct-2026	Oct-2025	Jul-2025	Jul-2023	Aug-2023
					Jul-2034	Sep-2034
867	Yukon, NWT, Nunavut	Jun-2039	Beyond 2041	Beyond 2042	Beyond 2043	Beyond 2044

4. R-NRUF – High Level Summary

The results from the January 2022 R-NRUF are quite different from the July 2021 R-NRUF and October 2021 J-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 21 March 2022.

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
204/431	R-NRUF July 2021	19 August 2021	October 2023
204/431	J-NRUF October 2021	17 November 2021	December 2023
204/431	S-NRUF January 2022	1 March 2022	November 2023

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
226/519/548	July 2021 R-NRUF	19 August 2021	July 2024
226/519/548	January 2022 R-NRUF	1 March 2022	March 2025

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
236/250/604/ 672/778	July 2021 R-NRUF	19 August 2021	April 2027
236/250/604/ 672/778	January 2022 R-NRUF	1 March 2022	March 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
249/705	July 2021 R-NRUF	19 August 2021	April 2023
249/705	October 2021 J-NRUF	17 October 2021	May 2023
249/705	January 2022 R-NRUF	1 March 2022	October 2023

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
343/613	July 2021 R-NRUF	19 August 2021	November 2022
343/613	October 2021 J-NRUF	17 October 2021	December 2022
343/613	January 2022 S-NRUF	1 March 2022	June 2023

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	February2022
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
403/587/780/825	July 2021 R-NRUF	19 August 2021	July 2022
403/587/780/825	October 2021 J-NRUF	17 October 2021	December 2023
403/587/780/825	January 2022 J-NRUF	1 March 2022	August 2022

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
416/437/647	July 2021 R-NRUF	19 August 2021	November 2025
416/437/647	January 2022 R-NRUF	1 March 2022	March 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
438/514	July 2021 R-NRUF	19 August 2021	December 2024
438/514	January 2022 R-NRUF	1 March 2022	March 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
450/579	July 2021 R-NRUF	19 August 2021	June 2023
450/579	January 2022 R-NRUF	1 March 2022	August 2024

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 March2016	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
506	July 2021 R-NRUF	19 August 2021	November 2023
506	January 2022 R-NRUF	1 March 2022	October 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

NPA 709 Summary of Projected Exhaust Dates			
NPA	**Type of C-NRUF**	**Date of Publication**	**Projected Exhaust Date**
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
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
709	July 2021 R-NRUF	19 August 2021	December 2026
709	January 2022 R-NRUF	1 March 2022	November 2028*

* Out of Relief Planning window

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
819/873	July 2021 R-NRUF	19 August 2021	May 2023
819/873	October 2021 J-NRUF	17 October 2021	September 2023
819/873	January 2022 J-NRUF	1 March 2022	August 2023

5. Schedule of Future NRUF Activities in the Current Year

Due Date	NRUF Type	NRUF Format	NPA(s)
15 April	S–NRUF	NPA level	204/431
15 April	S–NRUF	NPA level	819/873
15 July	S–NRUF	NPA level	204/431
15 July	S–NRUF	NPA level	819/873
30 July	R–NRUF	NPA level	236/250/604/672/778
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

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 2022.

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 2022 G-NRUF are the assumptions that were provided on 14 December 2021 to the CNA by the CSCN for conducting the January 2022 NRUF.

Item 4 of the 14 December 2021 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 average growth for the next six years 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 2022 growth with current and historical forecasts to determine whether the January 2022 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.

Geographic NPAs																							
As of January 1																							
NPA Complex / Years	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
204/431	1300	1527	1634	1706	1811	1893	1954	2021	2088	2155	2222	2289	2356	2437	2504	2571	2638	2705	2772	2839	2906	2973	3040
226/519/548	1914	2104	2247	2377	2500	2592	2686	2786	2886	2986	3086	3186	3303	3403	3503	3603	3703	3803	3903	4025	4125	4225	4325
236/250/604/672/778	3163	3383	3556	3707	3834	3981	4140	4236	4332	4428	4524	4620	4716	4835	4931	5027	5123	5219	5315	5411	5507	5628	5724
249/705	1258	1467	1668	1769	1888	2017	2111	2177	2243	2309	2373	2455	2521	2587	2653	2719	2785	2851	2917	2983	3049	3115	3181
289/365/742/905	2269	2465	2651	2756	2846	2928	2966	3066	3166	3298	3398	3498	3598	3698	3798	3898	3998	4127	4222	4322	4422	4522	4622
306/474/639	1532	1641	1730	1788	1832	1868	1900	1952	2004	2056	2108	2160	2212	2264	2316	2368	2442	2494	2546	2598	2650	2702	2754
343/613	1380	1547	1660	1799	1898	1972	2009	2077	2145	2213	2281	2349	2444	2512	2580	2648	2716	2784	2852	2920	2988	3056	3124
367/418/581	1678	1773	1853	1929	1997	2058	2080	2120	2182	2244	2306	2368	2450	2512	2574	2636	2698	2760	2822	2884	2946	3008	3070
403/587/780/825	2976	3319	3514	3675	3782	3896	3991	4088	4163	4238	4313	4388	4463	4538	4613	4688	4763	4861	4936	5011	5086	5161	5236
416/437/647	1999	2094	2185	2285	2380	2498	2544	2631	2718	2805	2892	2979	3066	3153	3255	3342	3429	3516	3603	3690	3777	3864	3951
438/514	1394	1493	1586	1679	1749	1845	1887	1956	2025	2094	2163	2232	2301	2370	2461	2530	2599	2668	2737	2806	2875	2944	3013
450/579	1402	1471	1547	1650	1742	1823	1846	1867	1888	1909	1930	1951	1972	1993	2014	2035	2056	2077	2098	2119	2140	2161	2182
506	628	718	766	821	858	898	929	957	992	1027	1062	1097	1132	1167	1202	1237	1272	1307	1342	1377	1412	1447	1482
709	593	645	684	714	737	772	795	807	815	826	834	842	850	858	866	874	882	890	898	906	914	922	930
782/902	1171	1270	1320	1370	1432	1487	1532	1585	1653	1706	1759	1812	1865	1918	1971	2024	2077	2130	2183	2236	2289	2342	2395
807	267	352	379	405	427	450	477	485	493	501	509	517	525	533	541	549	557	565	573	581	589	597	605
819/873	1382	1528	1663	1736	1832	1884	1926	1997	2068	2139	2210	2281	2352	2451	2522	2593	2664	2735	2806	2877	2948	3019	3090
867	270	296	319	328	345	359	372	383	394	405	416	427	438	449	460	471	482	493	504	515	526	537	548
Total Codes*	26576	28970	30827	32360	33741	35061	36050	37074	38160	39244	40291	41356	42469	43583	44669	45718	46789	47867	48934	50005	51054	52128	53177
NPA Complex / Years	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**

* Includes Admin. Codes

NPA / Years	2017			2018			2019			2020			2021			Rel Delta
	Actual	Forecast	Rel Delta	Actual	Forecast	Rel Delta	Actual	Forecast	Rel Delta	Actual	Forecast	Rel Delta	Actual	Forecast	Rel Delta	5Y Average
204-431	100	113	88.5%	64	151	42.4%	80	145	55.2%	50	128	39.1%	41	129	31.8%	51.4%
226-519-548	69	216	31.9%	113	177	63.8%	59	224	26.3%	88	176	50.0%	170	322	52.8%	45.0%
236-250-604-778	104	476	21.8%	122	238	51.3%	65	219	29.7%	116	214	54.2%	70	149	47.0%	40.8%
249-705	106	94	112.8%	71	84	84.5%	44	126	34.9%	71	66	107.6%	37	180	20.6%	72.1%
289-365-905	98	195	50.3%	62	183	33.9%	75	112	67.0%	111	210	52.9%	150	247	60.7%	52.9%
306-639	158	181	87.3%	136	127	107.1%	33	219	15.1%	37	75	49.3%	48	97	49.5%	61.7%
343-613	85	107	79.4%	126	74	170.3%	20	201	10.0%	63	103	61.2%	44	191	23.0%	68.8%
403-587-780-825	82	362	22.7%	240	158	151.9%	50	304	16.4%	37	74	50.0%	63	130	48.5%	57.9%
416-437-647	70	104	67.3%	95	95	100.0%	70	106	66.0%	64	126	50.8%	72	194	37.1%	64.3%
418-581	57	139	41.0%	166	141	117.7%	115	240	47.9%	65	101	64.4%	55	179	30.7%	60.3%
438-514	33	68	48.5%	56	86	65.1%	30	81	37.0%	13	109	11.9%	41	83	49.4%	42.4%
450-579	60	106	56.6%	72	88	81.8%	56	162	34.6%	56	53	105.7%	101	73	138.4%	83.4%
506	11	81	13.6%	12	54	22.2%	33	119	27.7%	37	79	46.8%	10	102	9.8%	24.0%
709	3	51	5.9%	2	57	3.5%	9	101	8.9%	7	62	11.3%	5	46	10.9%	8.1%
782-902	16	133	12.0%	90	84	107.1%	41	150	27.3%	34	61	55.7%	103	112	92.0%	58.8%
807	4	21	19.0%	5	14	35.7%	14	19	73.7%	5	23	21.7%	10	48	20.8%	34.2%
819-873	70	129	54.3%	96	82	117.1%	35	163	21.5%	61	91	67.0%	89	155	57.4%	63.5%
867	23	54	42.6%	5	24	20.8%	8	23	34.8%	16	51	31.4%	3	36	8.3%	27.6%
			47.5%			76.5%			35.2%			51.7%			43.8%	

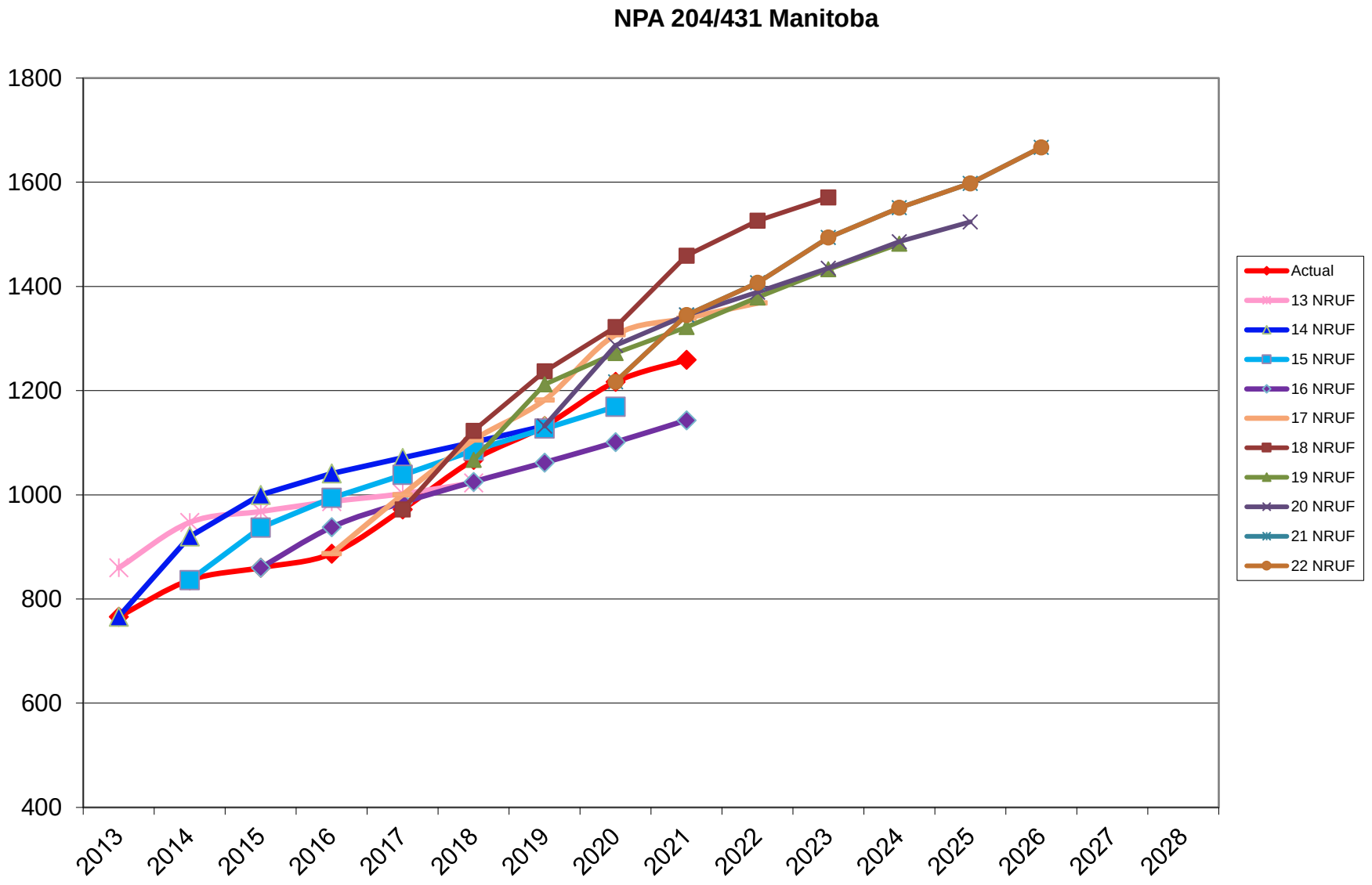
Notes:

Actual is based on Part 3 assignment date.

Forecast is from G-NRUF submissions, ignoring CNA codes.

Relative Delta is Actual/Forecast.

CNAStatus	204/431	226/519/548	236/250/604/672/778	249/683/705	289/365/742/905	306/474/639	343/613/753	354/450/579	367/418/581	368/403/587/780/825	416/437/647	428/506	263/438/514	709/879	782/902	807	468/819/873	867
	(MB)	(ON)	(BC)	(ON) *	(ON)	(SK)	(ON) *	(QC) *	(QC)	(AB) *	(ON)	(NB) *	(QC) *	(NL) *	(NS)	(ON)	(QC) *	(NT)
New Entrants Reserved	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0
Available as Initial Code only	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 Codes	16	24	40	16	32	24	16	16	24	32	24	8	16	8	16	8	16	8
555; 950; 976	6	8	15	5	12	9	5	6	8	12	8	3	5	3	6	2	5	3
Plant Test	3	6	10	4	8	6	4	4	6	8	6	2	4	2	4	2	4	2
Home NPA	4	9	23	6	16	9	6	6	9	16	9	2	6	2	4	1	6	1
Neighbouring NPA	0	0	0	16	28	6	14	4	0	1	0	2	4	3	0	4	12	8
Future NPAs	4	6	0	12	4	12	10	16	18	0	9	7	10	6	6	11	14	14
Relief NPAs	2	3	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0
911 Mis-dial (i.e 912; 914; 915)	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3
310; 610; 810	5	8	13	5	10	6	5	5	8	10	8	2	5	2	5	2	5	3
USA Dialing Problems	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4	0
	40	**64**	**101**	**64**	**110**	**72**	**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**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2022
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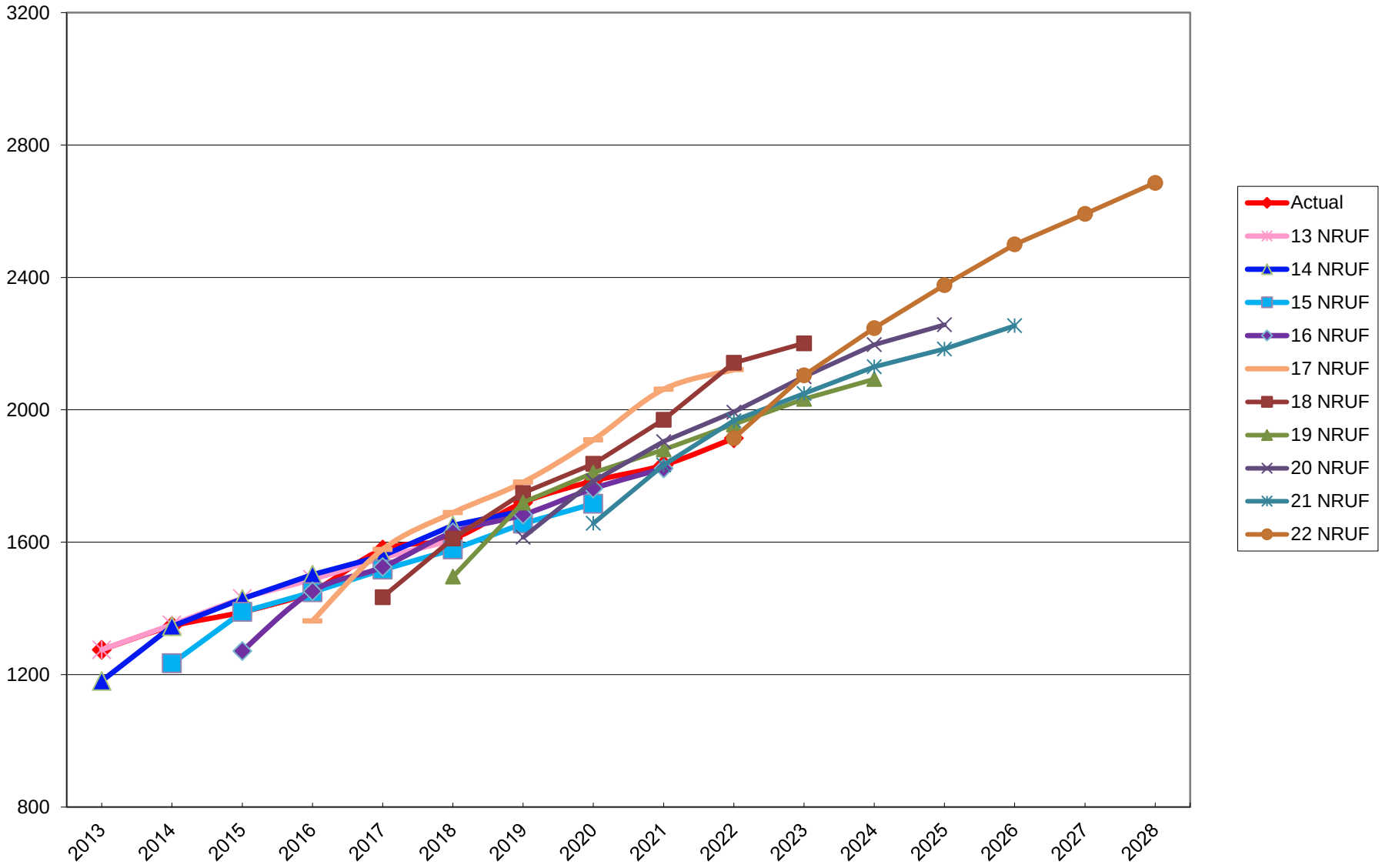
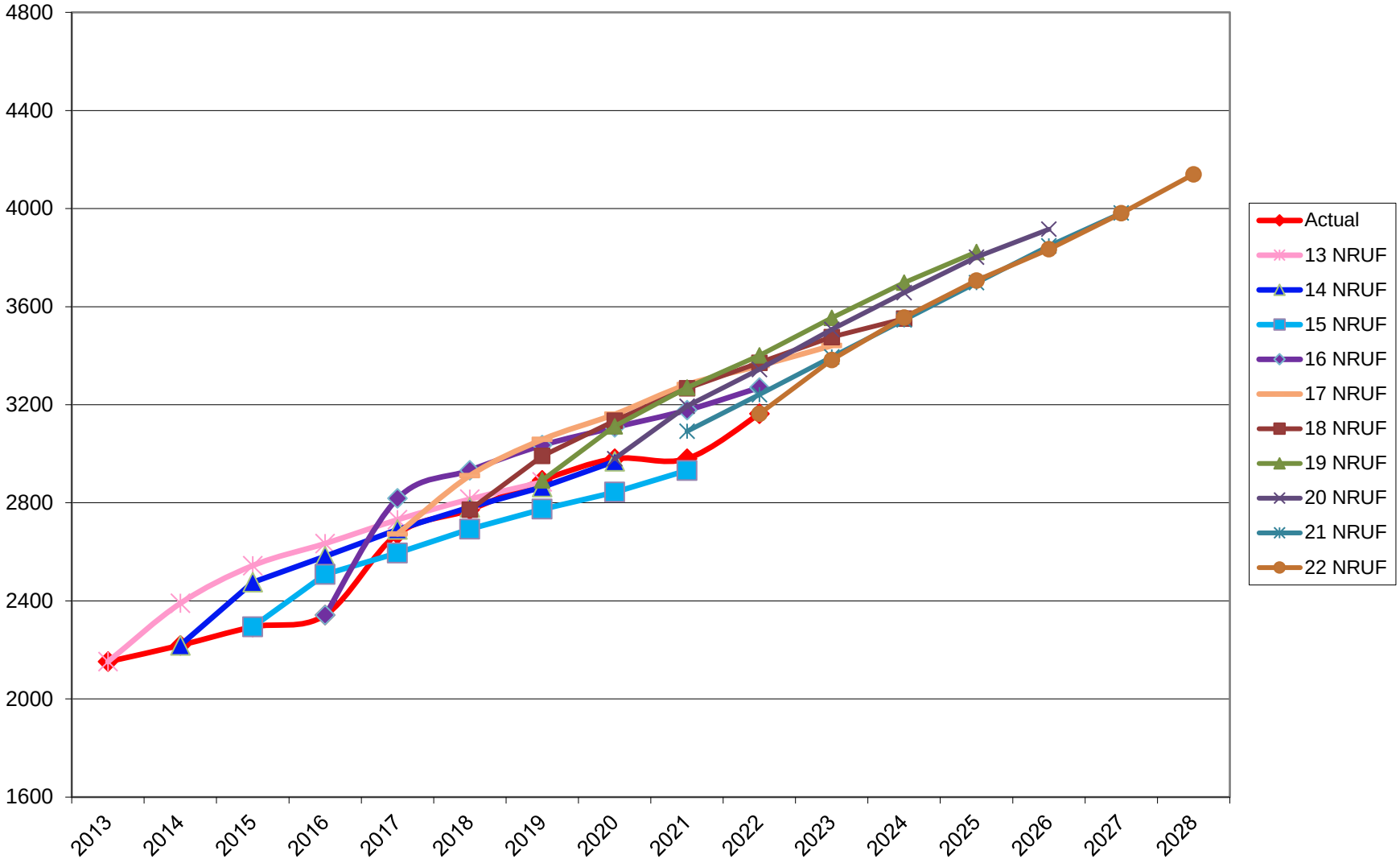
2024
2025
2026
2027
2028
Actual
13 NRUF
14 NRUF
15 NRUF
16 NRUF
17 NRUF
18 NRUF
19 NRUF
20 NRUF
21 NRUF
22 NRUF

NPA 226/519/548 Ontario



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



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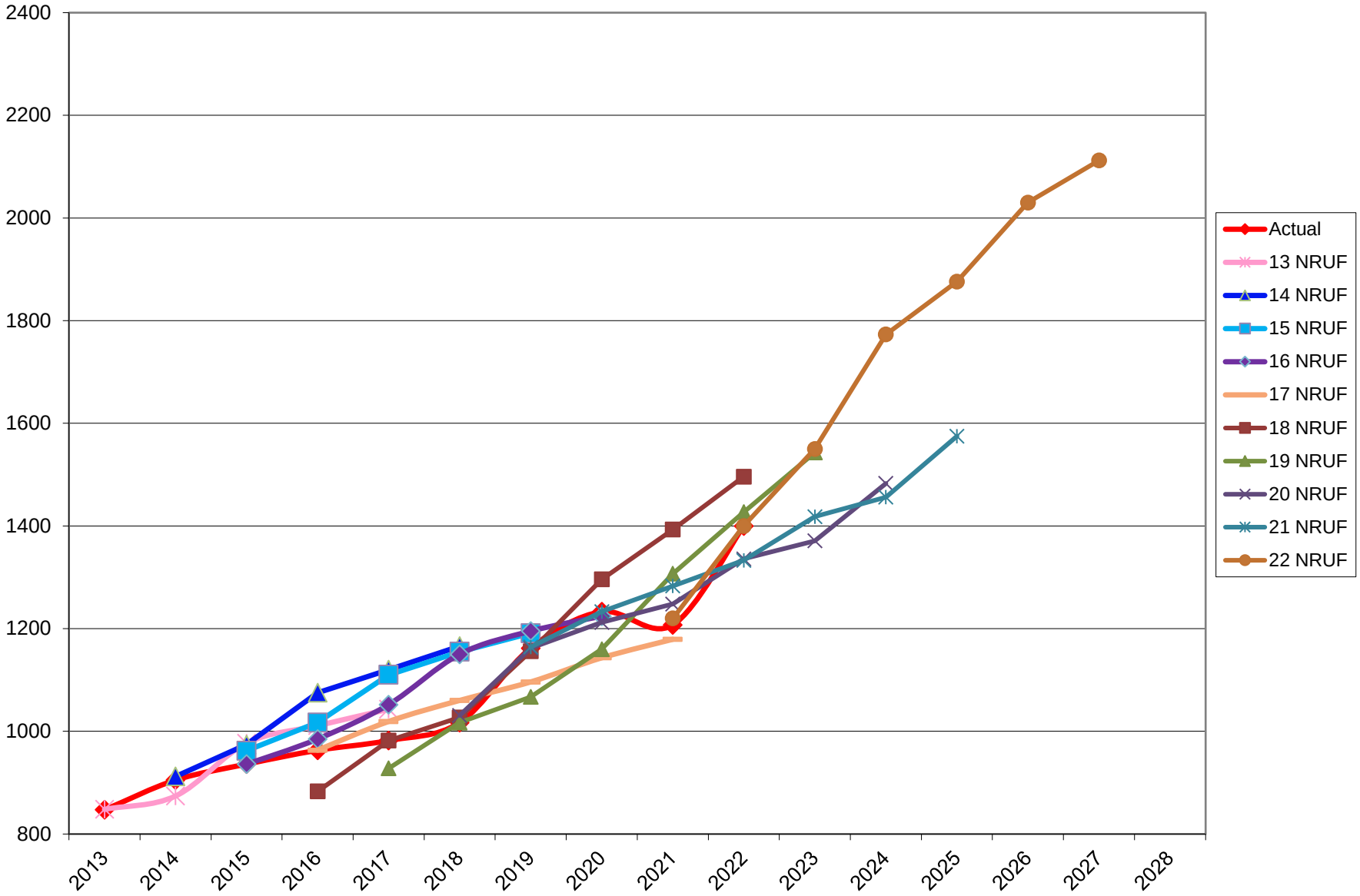

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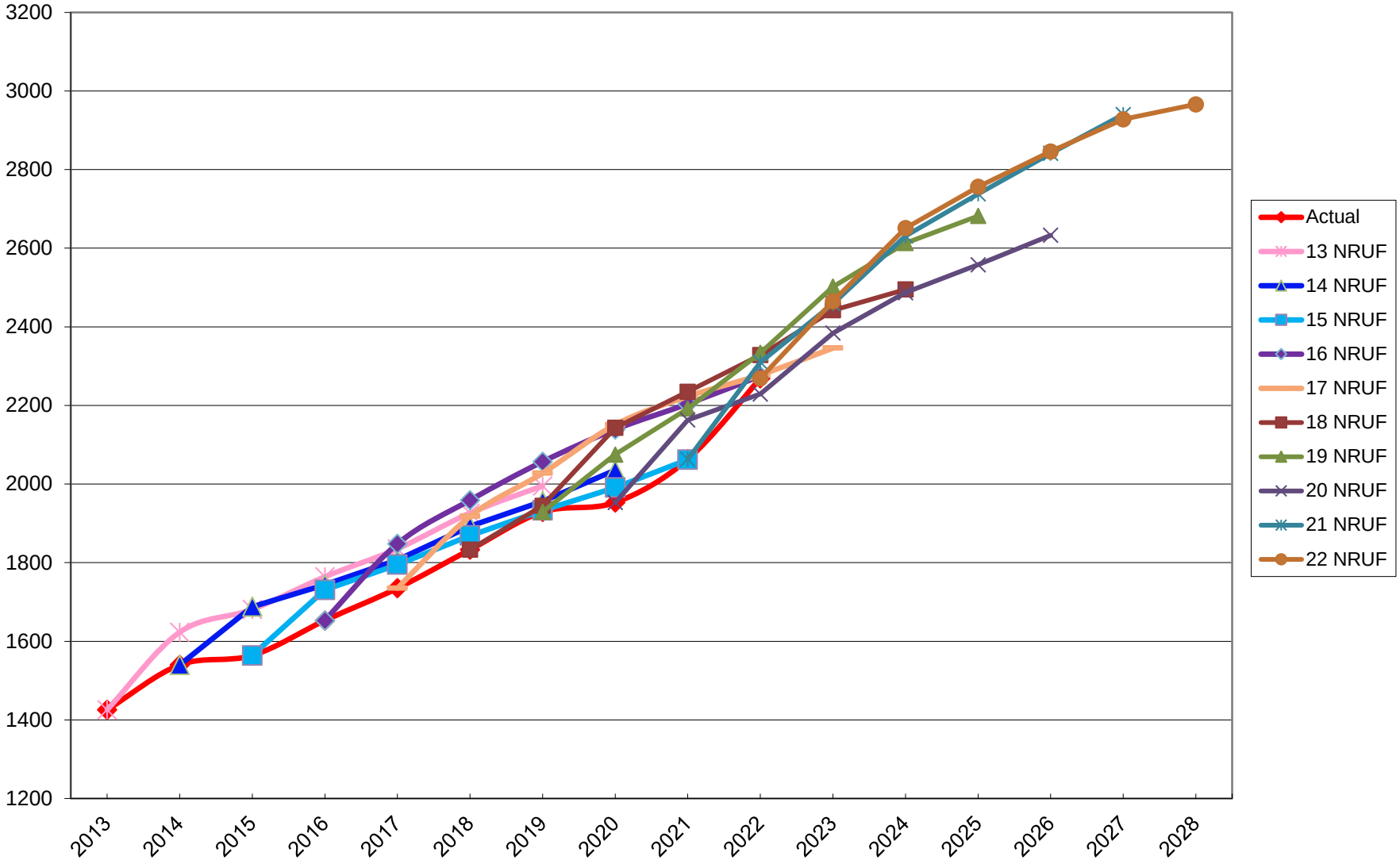
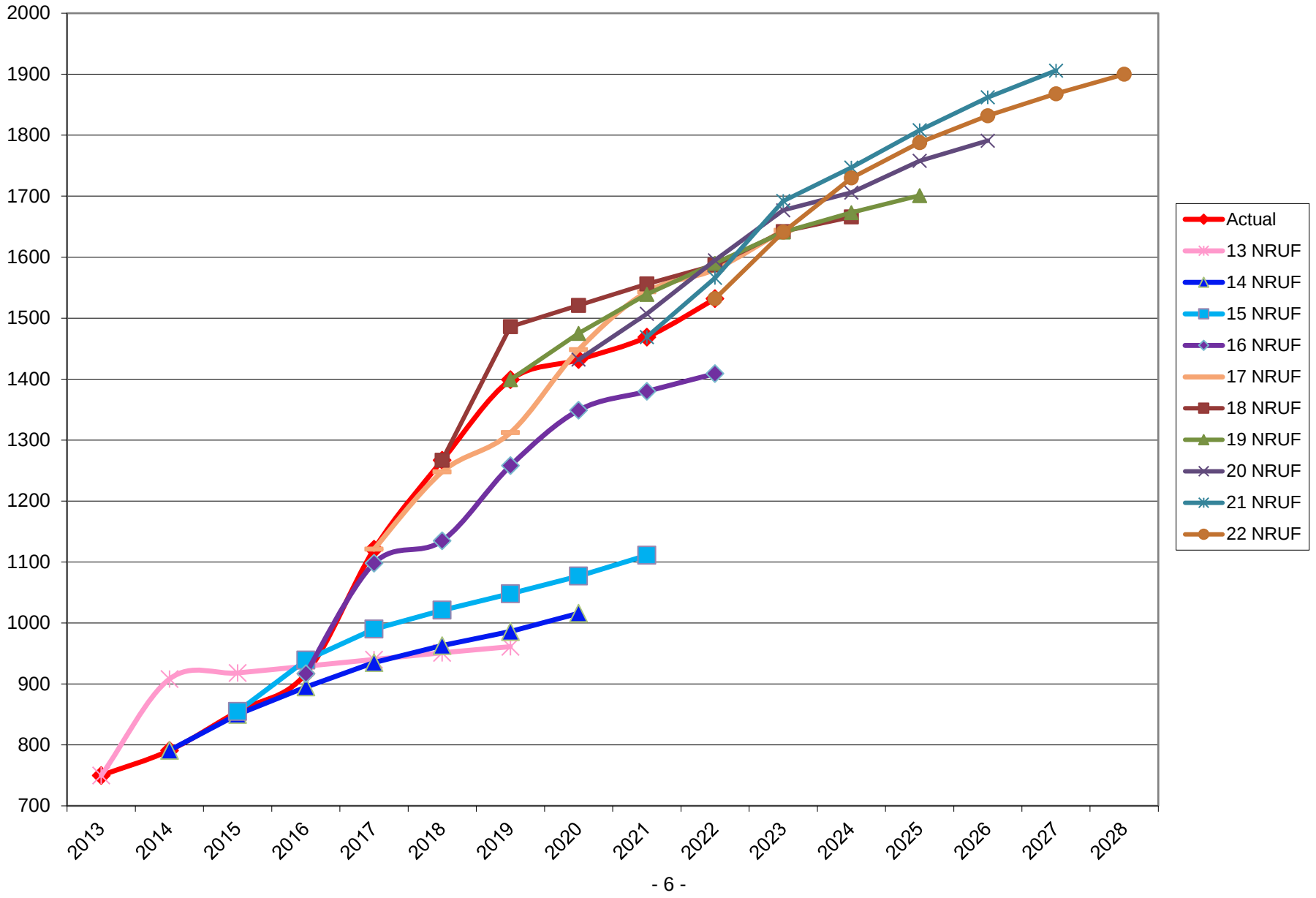
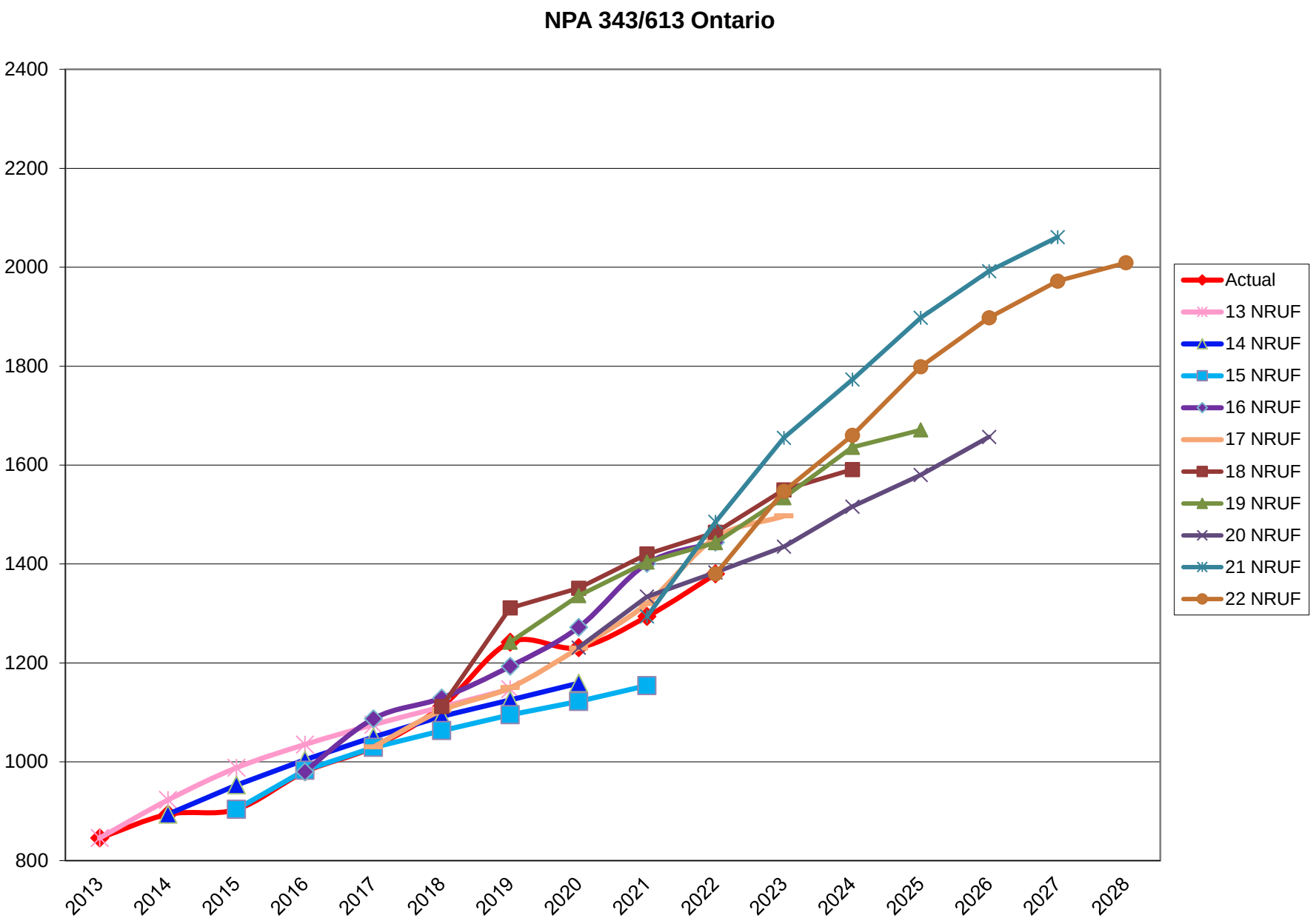


NPA 306/474/639 Saskatchewan

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2400
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2028
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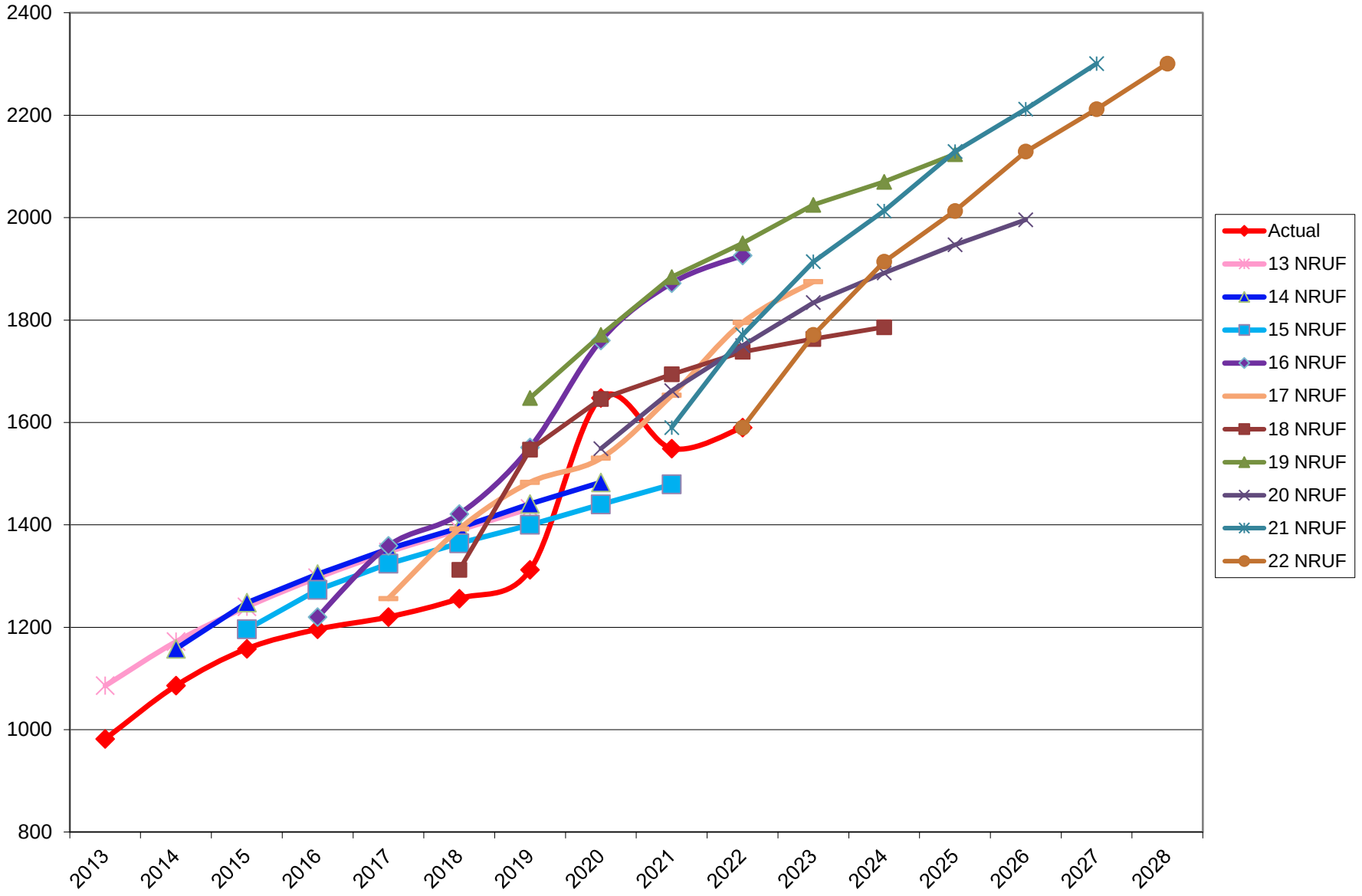
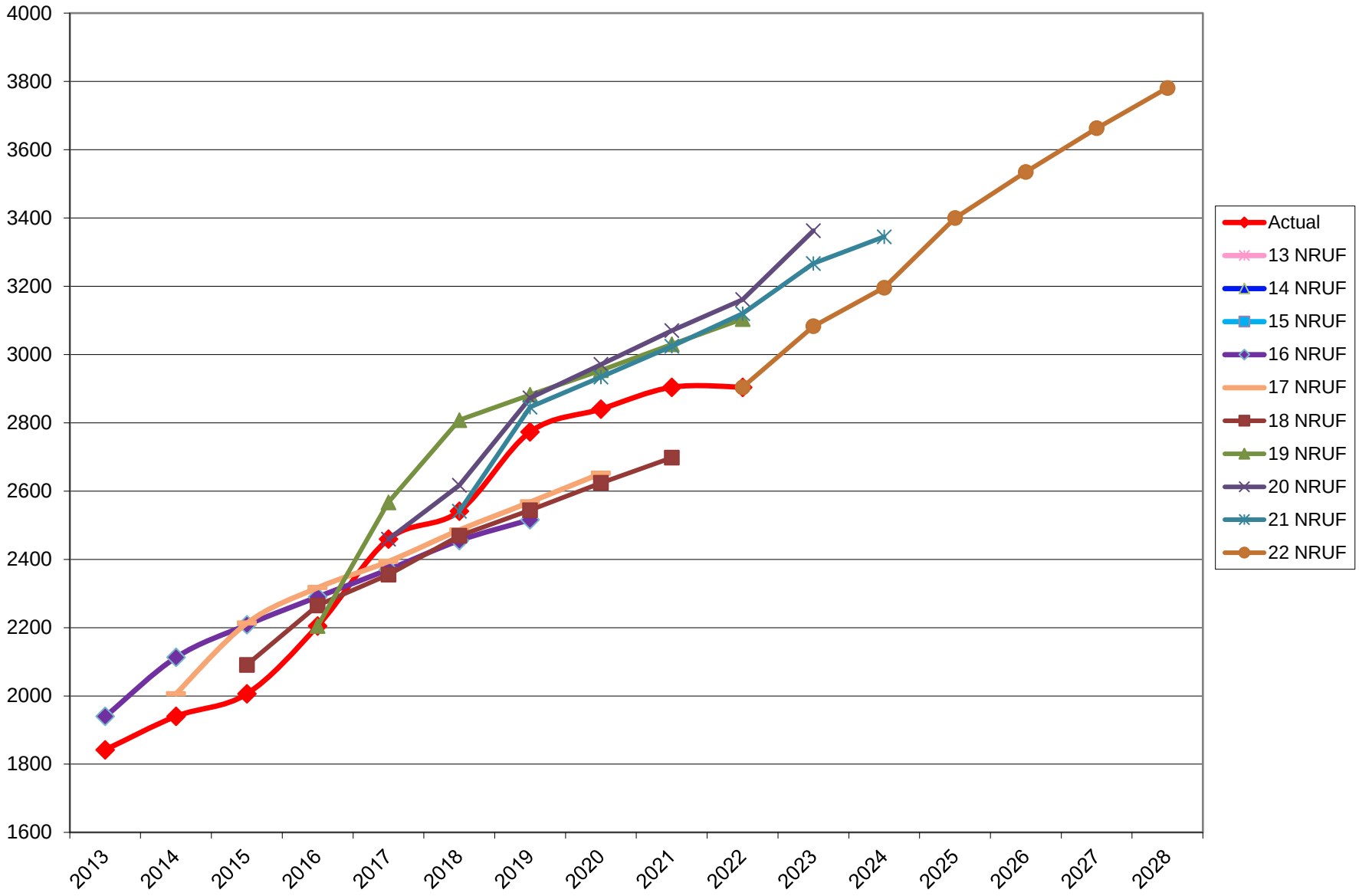
14 NRUF
15 NRUF
16 NRUF
17 NRUF
18 NRUF
19 NRUF
20 NRUF
21 NRUF
22 NRUF

NPA 367/418/581 Quebec



NPA 403/587/780/825 Alberta



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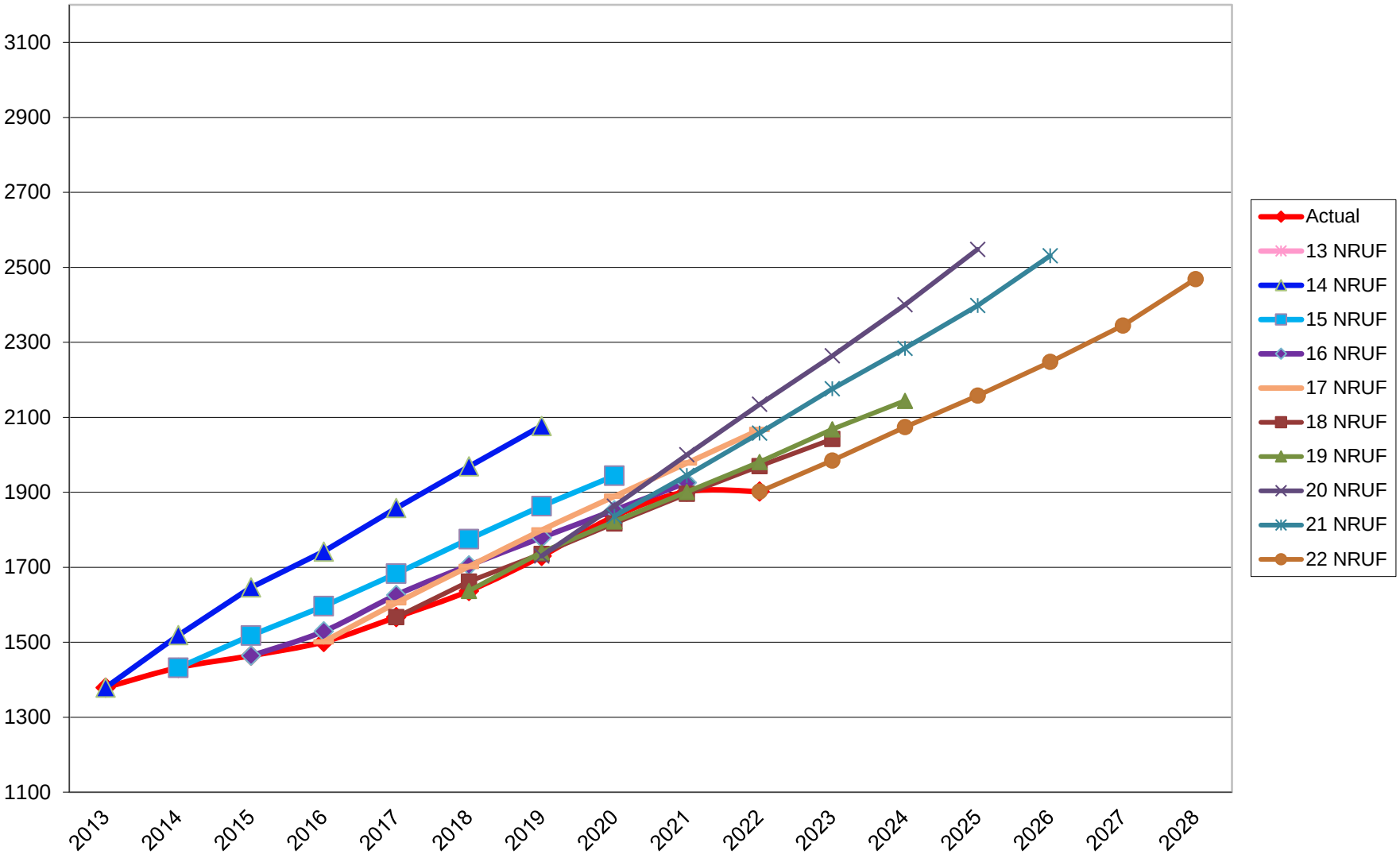
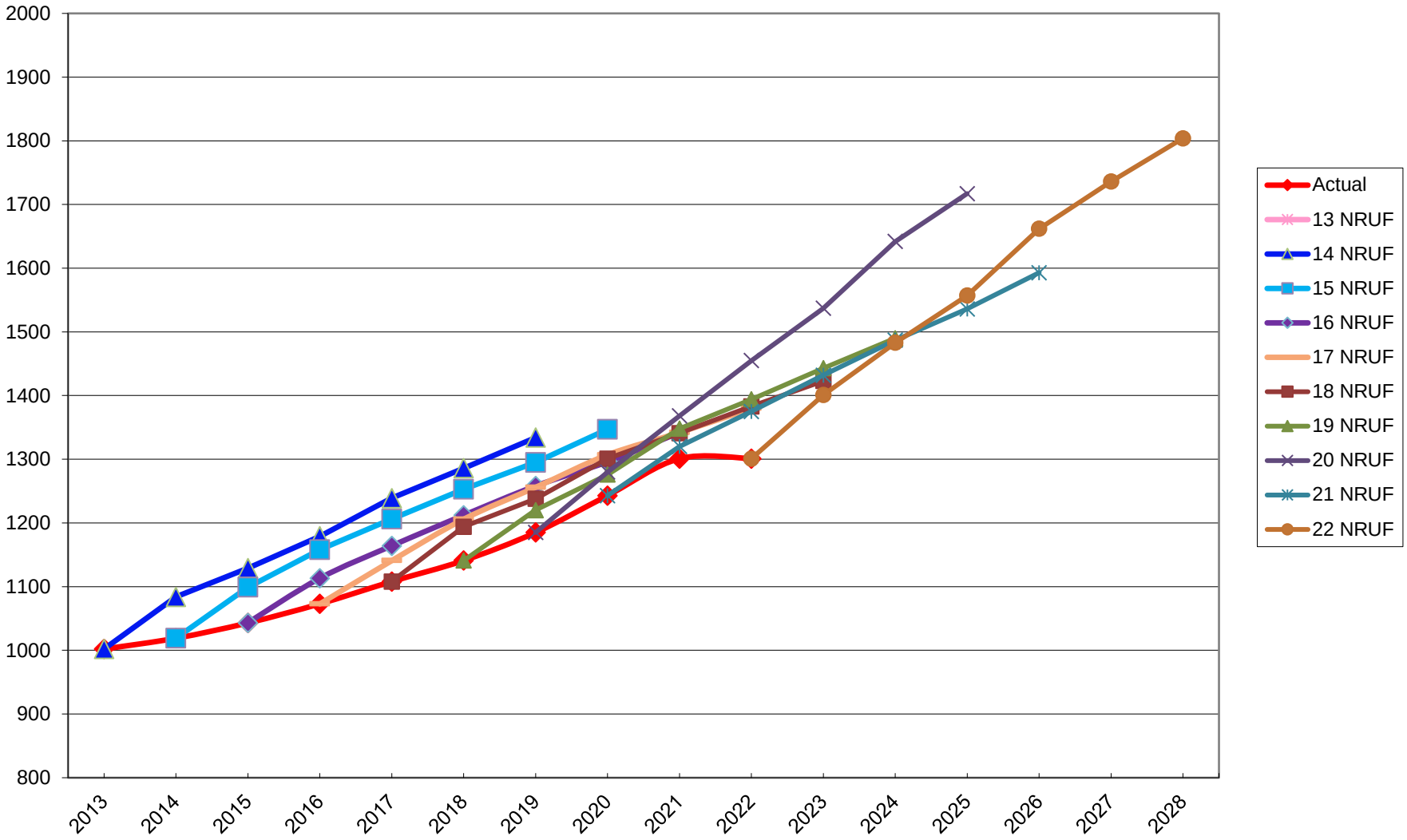
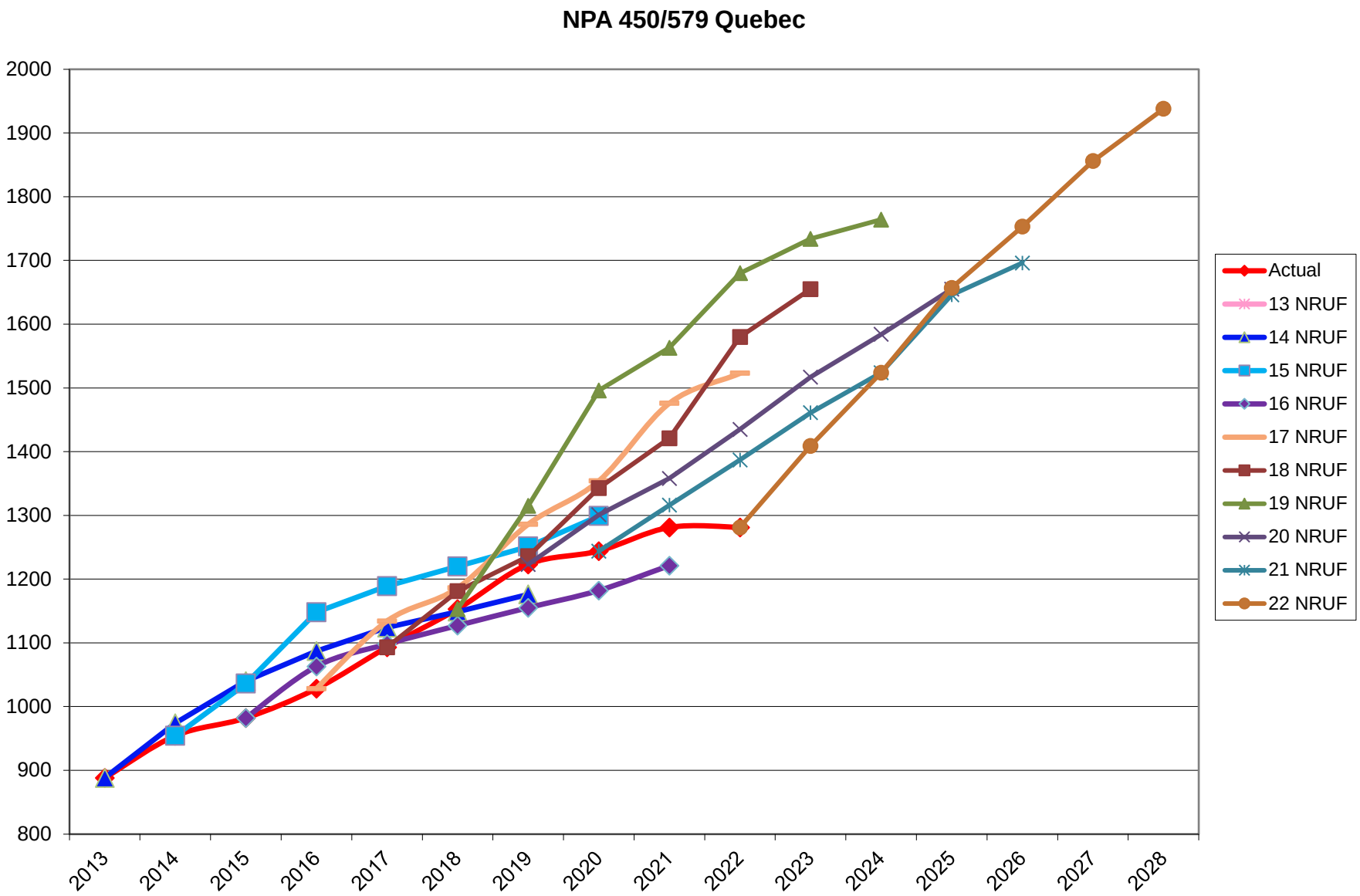


NPA 438/514 Quebec

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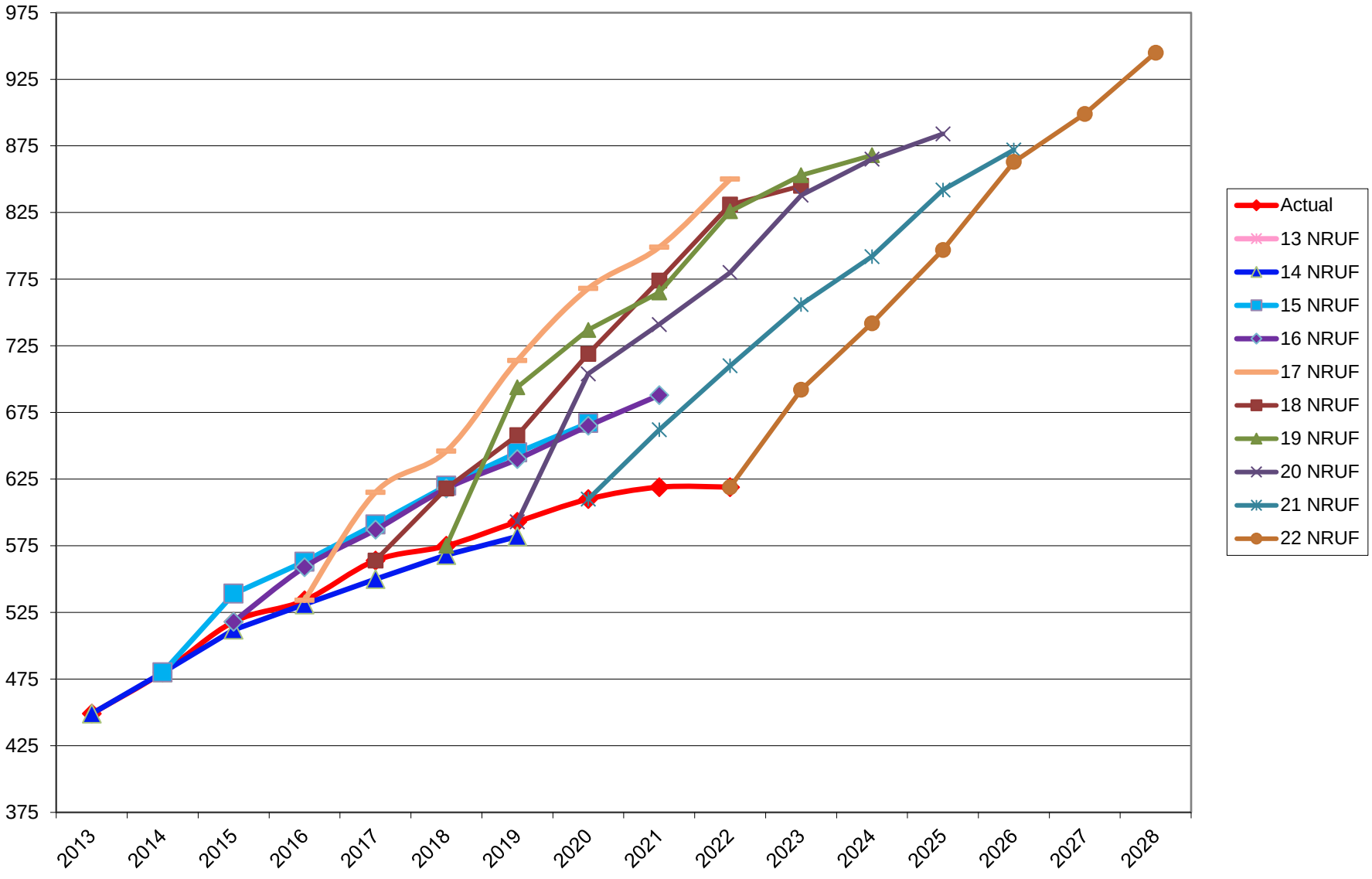
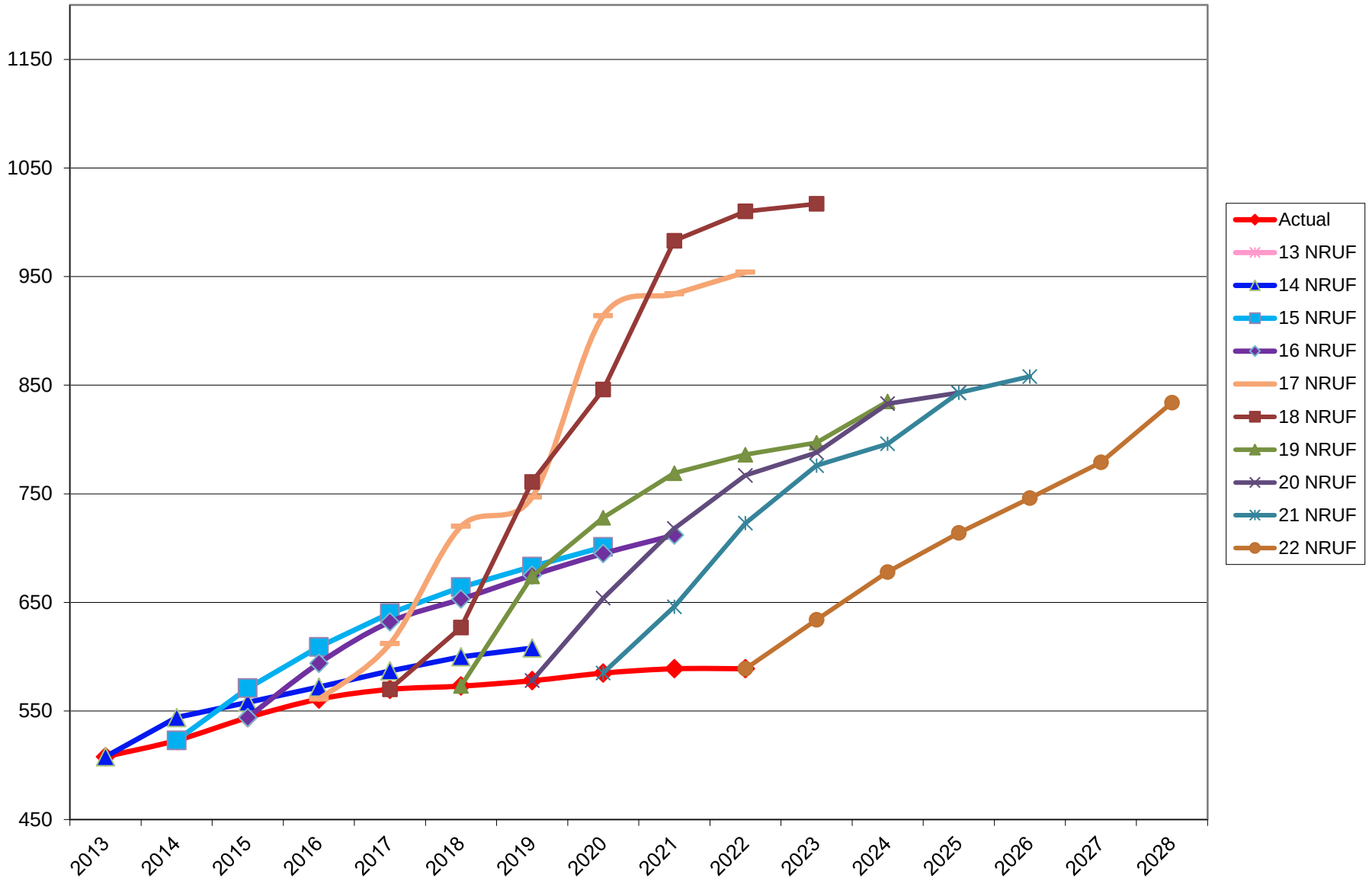
19 NRUF
20 NRUF
21 NRUF
22 NRUF

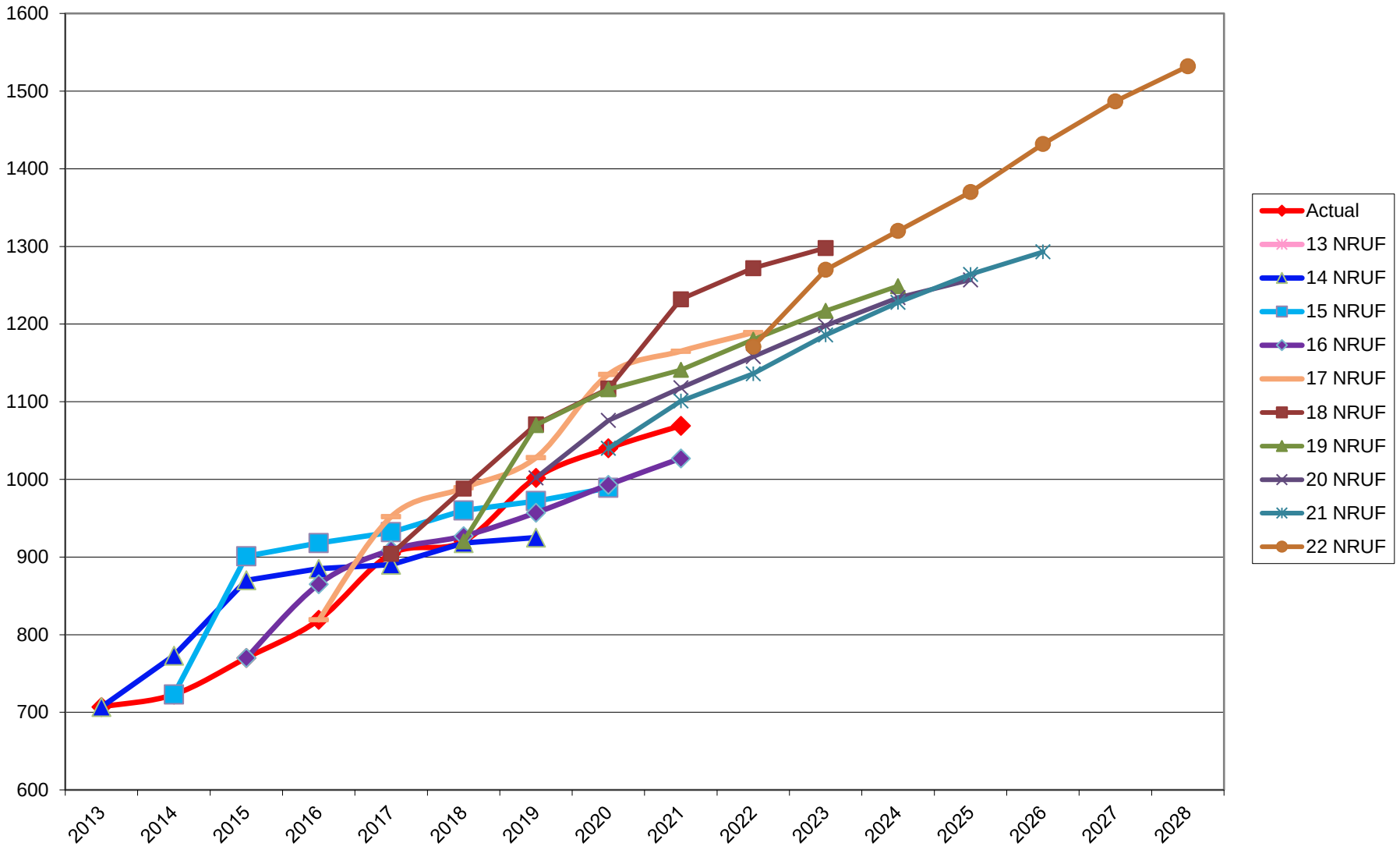
NPA 506 New Brunswick



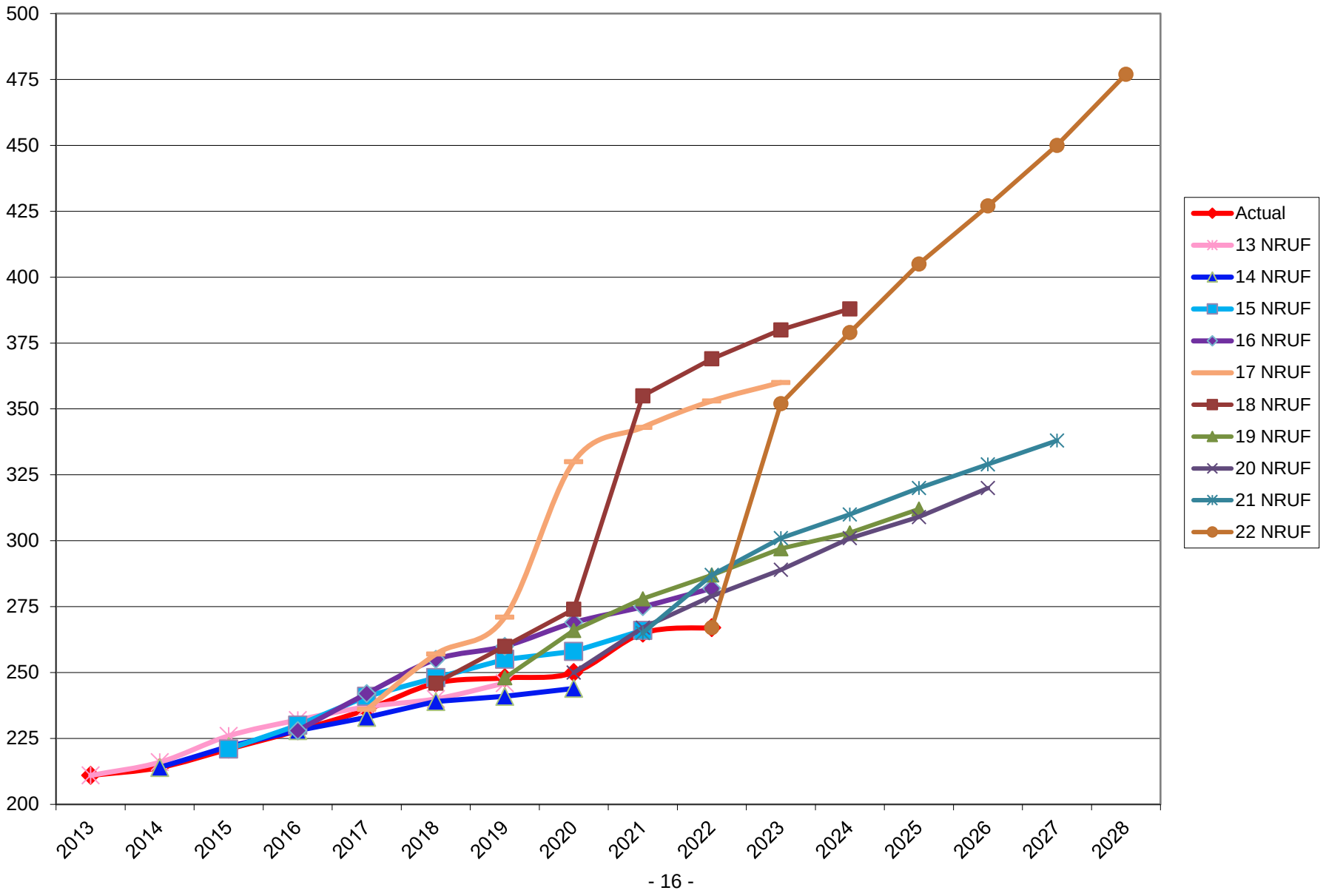
NPA 709 Newfoundland and Labrador

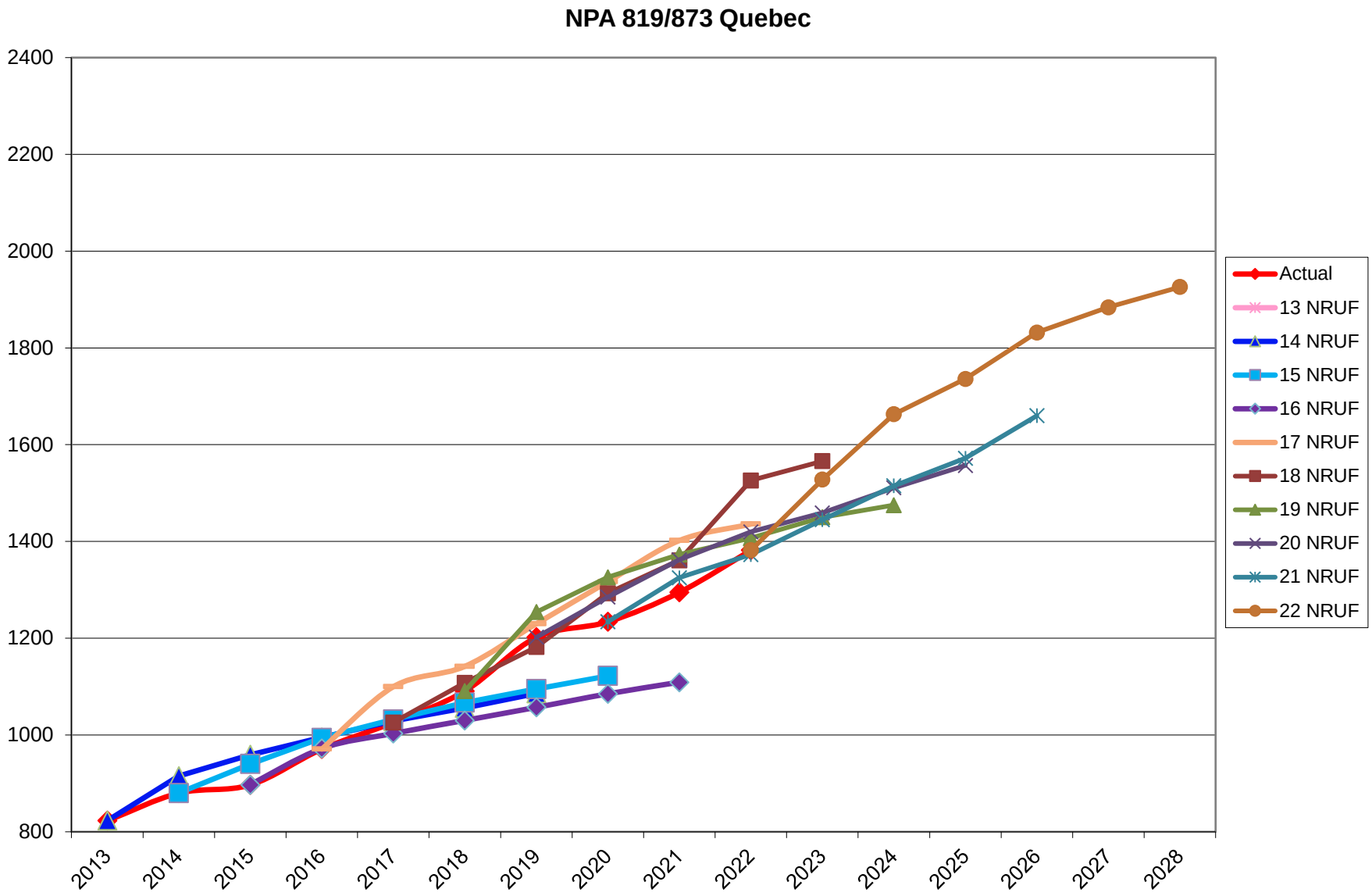


NPA 782/902 Nova Scotia-Prince Edward Island



NPA 807 Ontario

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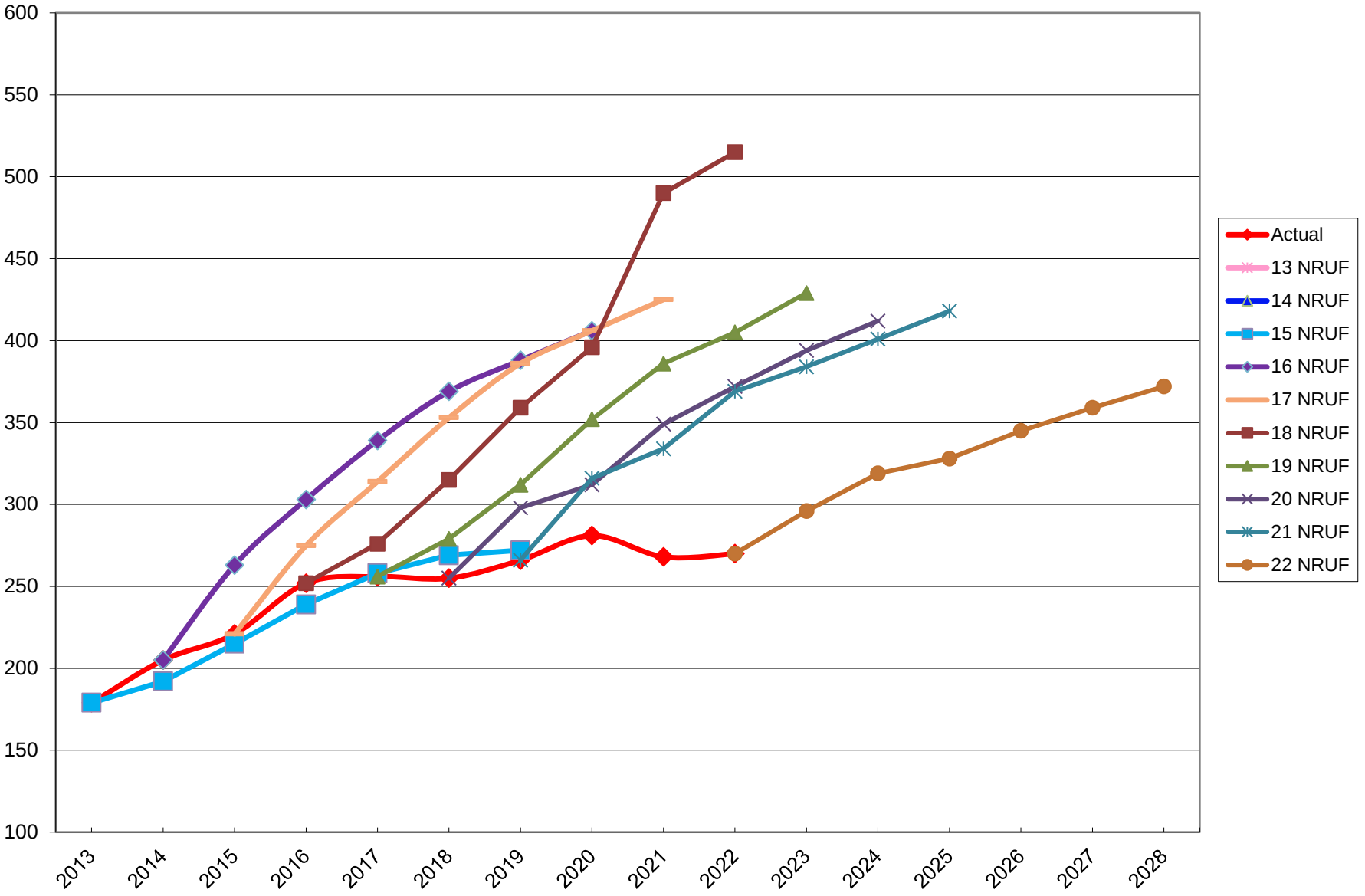
22 NRUF

NPA 867 Northwest Territories-Nunavut-Yukon



CSCN

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Fax: 613-702-0017

Canadian Steering Committee on Numbering

14 December 2021

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 2022 Numbering Resource Utilization Forecast (2022 NRUF) Methodology and Assumptions

On 26 October 2021, the Canadian Steering Committee on Numbering (CSCN) discussed and agreed to the direction for the CNA with respect to the 2022 NRUF Methodology and Assumptions.

The attached document contains the direction titled "CSCN Direction to CNA re: the 2022 NRUF Methodology and Assumptions, 26 October 2021".

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 2022 NRUF Methodology and Assumptions
26 October 2021

The CSCN submits the following methodology and assumptions to the CNA for the 2022 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 2022, 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 2022 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. 2023	est. 2026	Notice 2016-206
709	2	TBD (see Telecom Decision CRTC 2021-13)	2 years after Relief Date	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):

   6 Year Average Growth of CO Codes per Year =
   [(Forecast Quantity of CO Codes in year six) – (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 2022 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 2 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 2042 timeframe, the CNA should exercise its best judgment in finalizing the forecast for those NPAs.