

# Enrollment Projections for ORCSD, 2018-2029

## Long Range Planning Committee

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# A Note of Thanks

The LRPC would like to formally thank

## Michael Goldberg



For 20+ years of service on this committee

His insightful and rigorous work continuously improving and updating the regression models used in our predictions is something that few of us fully understood but we all appreciated. Although he moved away from the district, he is a professor at UNH and has graciously made himself available to answer our questions.

# Summary of LRPC Goals

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- Provide the School Board with enrollment projections for each of the next 10 years.
- Make every effort to provide projections for the following school year in the fall when they can be used in the budgeting process.
- Continually improve and refine the model used to make enrollment projections.

# Decline in Enrollment largely offset by HS Tuition Students

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- Peak enrollment was 2,393 in 2000.
- 2018-19 enrollment is 2,162.
  - (1,975 plus 167 tuition students).
- *Decline over 18 years was 231.*
- **Projected 2028-29 with Barrington tuition students 2,056 (1,856 plus 200 tuition).**
- *The number of tuition students rises as native enrollment drops, net 10 year loss of 106.*

# Methodology

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- First Grade

Historical births and enrollment trends are used to project the number of students (using linear regression).

- Grades 2 – 12

Grade Progression Ratios (GPRs) are used to forecast the number of students.

# First Grade Methodology

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- Linear Regression Model coefficients updated annually.
- Primary independent variable is births 6 years prior.
- Some autocorrelation components.
- Looking at other independent variables:
  - Employment
  - Real Estate transactions

# Kindergarten Methodology

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- Forecasting methodology is transitional because there are not enough years of full day Kindergarten to use as basis of prediction.
- First Grade forecasts are the starting point.
- Grade Progression Ratios are used to estimate kindergarten enrollment based on forecast for the following year's first grade.

# Projections for Grades 2-12

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- Calculate GPR's for each grade and year.
- Find the 5-year average GPR by grade.
- Apply average GPRs to actual and predicted enrollments to predict enrollments into the future.
- Takes into account the net migration (in-migration and out-migration) over time and by grade.



# What is a “Grade Progression Ratio?”

Number of students in grade J and year t

+

Add students who move to ORSD in grade J+1 and year t+1

-

Subtract students who leave ORSD before grade J+1 and year t+1

=

Number of students in grade J+1 and year t+1

A numerical example:

159 students in 6<sup>th</sup> grade in October 2017

+ 6 new students join ORSD who will be in 7<sup>th</sup> grade for 2018

-4 students leave ORSD before 7<sup>th</sup> grade

Net change is +2 students

= 161 students in 7<sup>th</sup> grade in 2018

GPR (6th to 7th =  $161/159 = 1.0125$ )

# GPRs Account for Net New Students

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- More families with children moving in than moving out. (5 year average used)
- All GPRs for grades 2-12 are in the range of 1.00 – 1.05 except grade 8-9, 9-10 and 10-11, which are impacted by tuition students coming in and native students going to private schools. High School GPR very close to 1.00.

# Elementary School Split

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- Historical ratios (three year average) used to estimate First Grade split between the schools. (55.3% Mast Way, 44.7% Moharimet)
- GPR for each elementary is used to project grades 2-4 based on projections for prior year grades 1-3 at that school.
- Different GPRs used for Moharimet and Mast Way.

# Projection Range (Plus and Minus)

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- Historical LRPC Projections 1994 – 2018 (24 years of forecasts, each predicting 10 future years).
- Take the difference between Predicted and Actual Enrollment for each predicted year.
- Take the absolute value of the difference and divide by the actual enrollment figure to get a percentage.
- Find the average percentage difference for each forecast horizon (1 to 10 years out).

# The Projections



**Enrollment Projections Summary  
For Oyster River School District  
Preliminary October 1, 2018-19 Actual to 2028-29 Projected**

<u>Year</u>	<u>K</u>	<u>1-4</u>	<u>5-8</u>	<u>9-12</u>	<u>Total</u>	Average Absolute Error of Estimate		<u>HS Without Tuition</u>	<u>Total Without HS Tuition</u>
						Percent Error +/- <u>To Total</u>			
2018-19	92	589	669	812	2,162	<b>Actual Year</b>		645	1,995
2019-20	106	560	668	842	2,175	One Year Out	1.5%	661	1,996
2020-21	103	545	677	834	2,159	Two Years Out	2.6%	643	1,968
2021-22	107	521	672	852	2,153	Three Years Out	3.6%	653	1,953
2022-23	107	507	675	852	2,140	Four Years Out	5.2%	652	1,940
2023-24	109	522	642	851	2,125	Five Years Out	6.7%	651	1,924
2024-25	108	525	625	860	2,118	Six Years Out	8.1%	660	1,918
2025-26	109	533	598	855	2,094	Seven Years Out	9.2%	655	1,894
2026-27	108	534	583	857	2,083	Eight Years Out	9.7%	657	1,883
2027-28	108	536	600	824	2,068	Nine Years Out	11.0%	624	1,868
2028-29	107	535	604	808	2,054	Ten Years Out	12.5%	608	1,854

# Elementary School Projections

ACTUAL	Mast Way Projections						Moharimet Projections						Total
	K	1	2	3	4	Total	K	1	2	3	4	Total	
2017-18	70	72	76	63	71	352	49	63	64	86	81	343	695
2018-19	51	82	82	82	66	363	41	54	65	66	90	316	679
2019-20	59	64	87	85	86	381	47	46	55	68	69	285	666
2020-21	57	71	67	90	90	375	45	52	48	58	70	273	648
2021-22	60	69	75	70	95	368	47	50	53	50	60	260	629
2022-23	60	72	73	78	73	356	47	53	52	55	51	258	614
2023-24	61	72	76	75	82	366	48	52	54	54	58	265	631
2024-25	61	73	76	79	80	367	48	53	54	56	56	266	634
2025-26	61	73	77	78	83	372	48	53	55	56	58	270	642
2026-27	61	73	77	80	83	373	48	53	54	57	58	270	643
2027-28	60	73	77	80	84	374	48	53	55	57	59	271	644
2028-29	60	72	77	80	84	373	47	53	54	57	59	270	643

# Middle School Projections

Year	Fifth	Sixth	Seventh	Eighth	Total
2018	159	179	161	170	669
2019	163	165	180	160	668
2020	162	170	166	179	677
2021	167	168	170	166	672
2022	162	174	169	170	675
2023	131	168	175	169	642
2024	146	136	169	174	625
2025	141	152	136	168	598
2025	148	147	153	136	584
2027	147	154	148	152	601
2028	150	153	154	147	604



# HS Tuition Students in Projection

Year	9th	10th	11th	12th	Total Tuition
2018	50	42	38	37	167
2019	51	49	41	39	180
2020	51	50	48	42	191
2021	51	50	49	49	199
2022	51	50	49	50	200
2023	51	50	49	50	200
2024	51	50	49	50	200
2025	51	50	49	50	200
2026	51	50	49	50	200
2027	51	50	49	50	200
2028	51	50	49	50	200

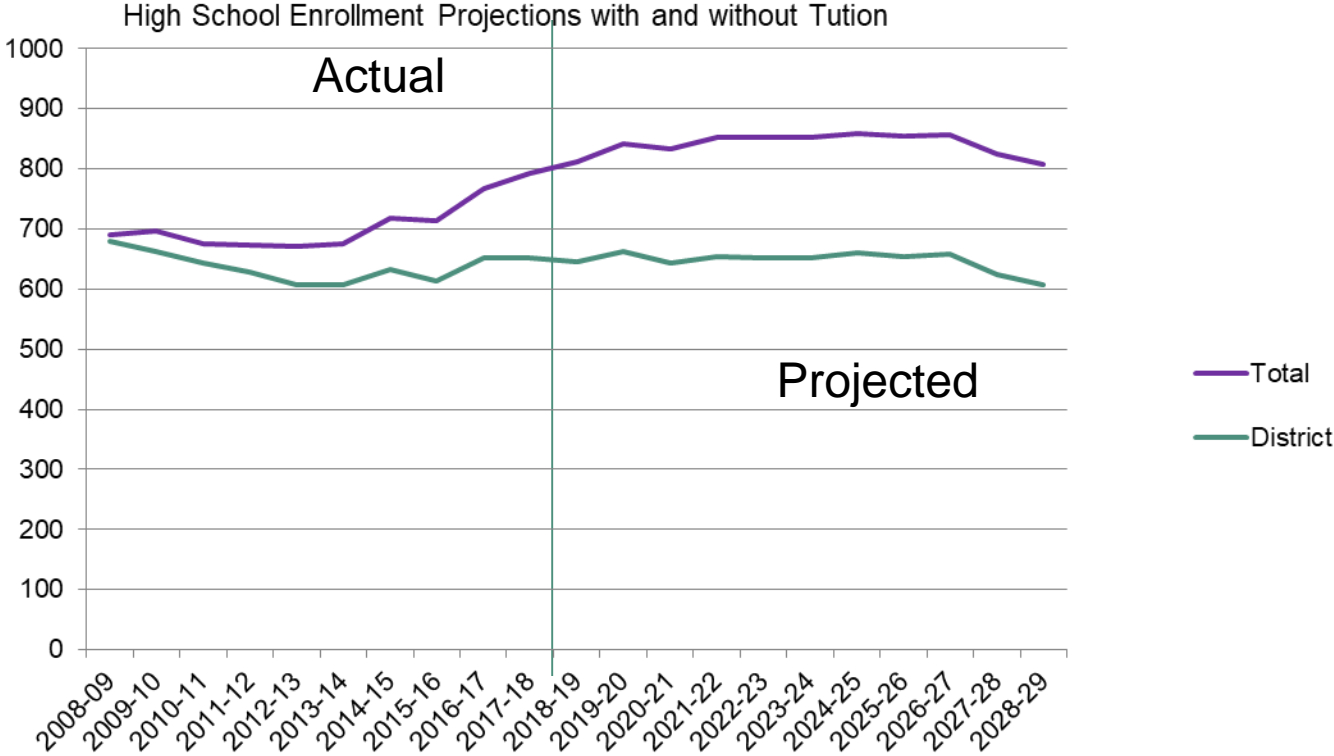
# HS Enrollment From District

Year	9th	10th	11th	12th	Total District
2018	164	164	169	148	645
2019	167	162	159	173	661
2020	158	165	157	164	643
2021	176	155	160	161	653
2022	163	174	151	164	652
2023	167	160	169	155	651
2024	166	165	156	173	660
2025	171	163	160	160	655
2026	165	169	159	164	657
2027	134	163	164	163	624
2028	150	132	159	168	608

# HS Enrollment Total by Grade

Year	9th	10th	11th	12th	Total District
2018	214	206	207	185	812
2019	218	211	200	212	842
2020	209	215	205	205	834
2021	227	206	209	210	852
2022	214	224	200	214	852
2023	218	211	218	205	851
2024	217	215	205	223	860
2025	222	214	209	210	855
2026	216	219	208	214	857
2027	185	213	213	213	824
2028	201	182	207	218	808

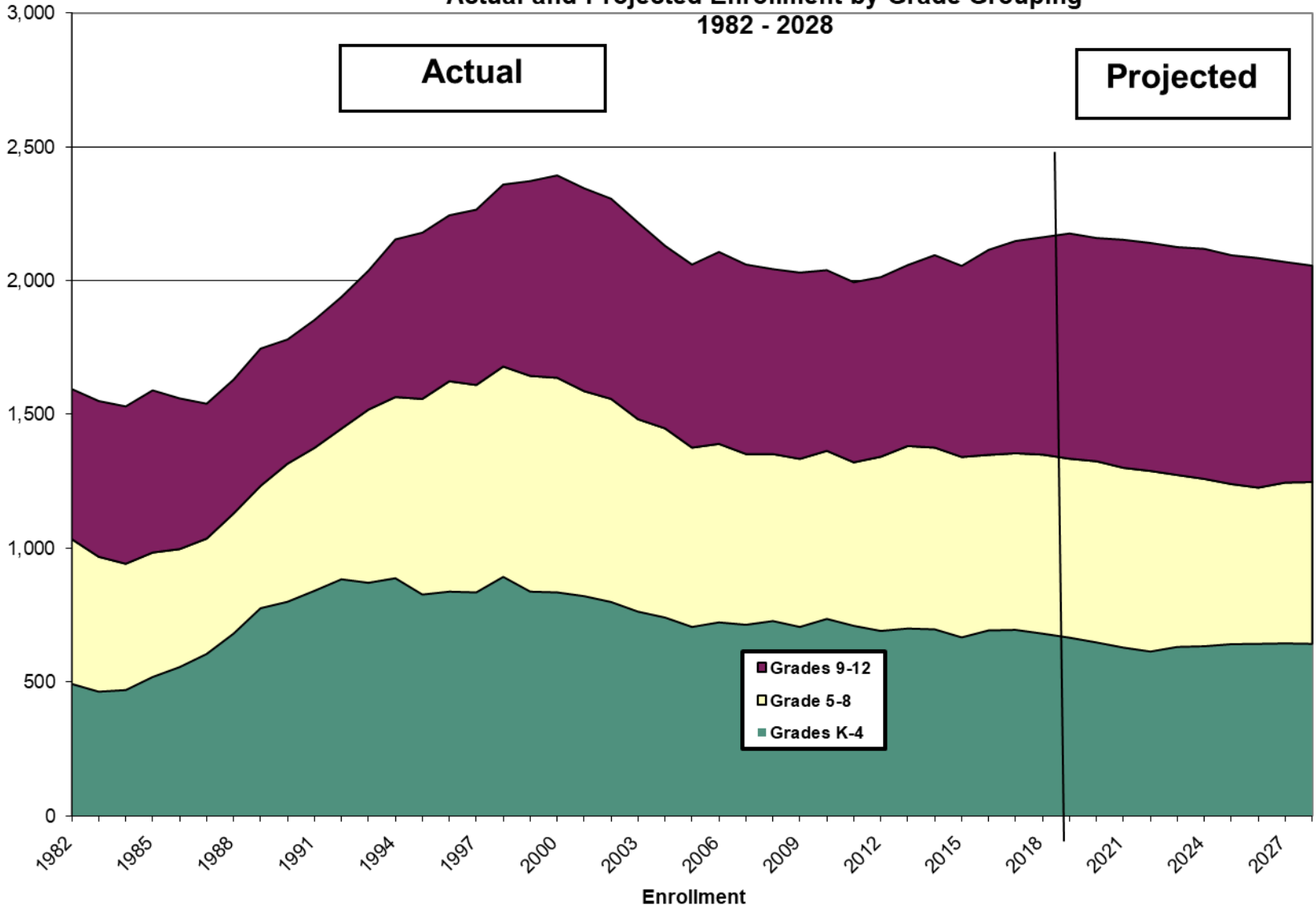
# HS Enrollment Projection with Current Barrington Tuition Arrangement



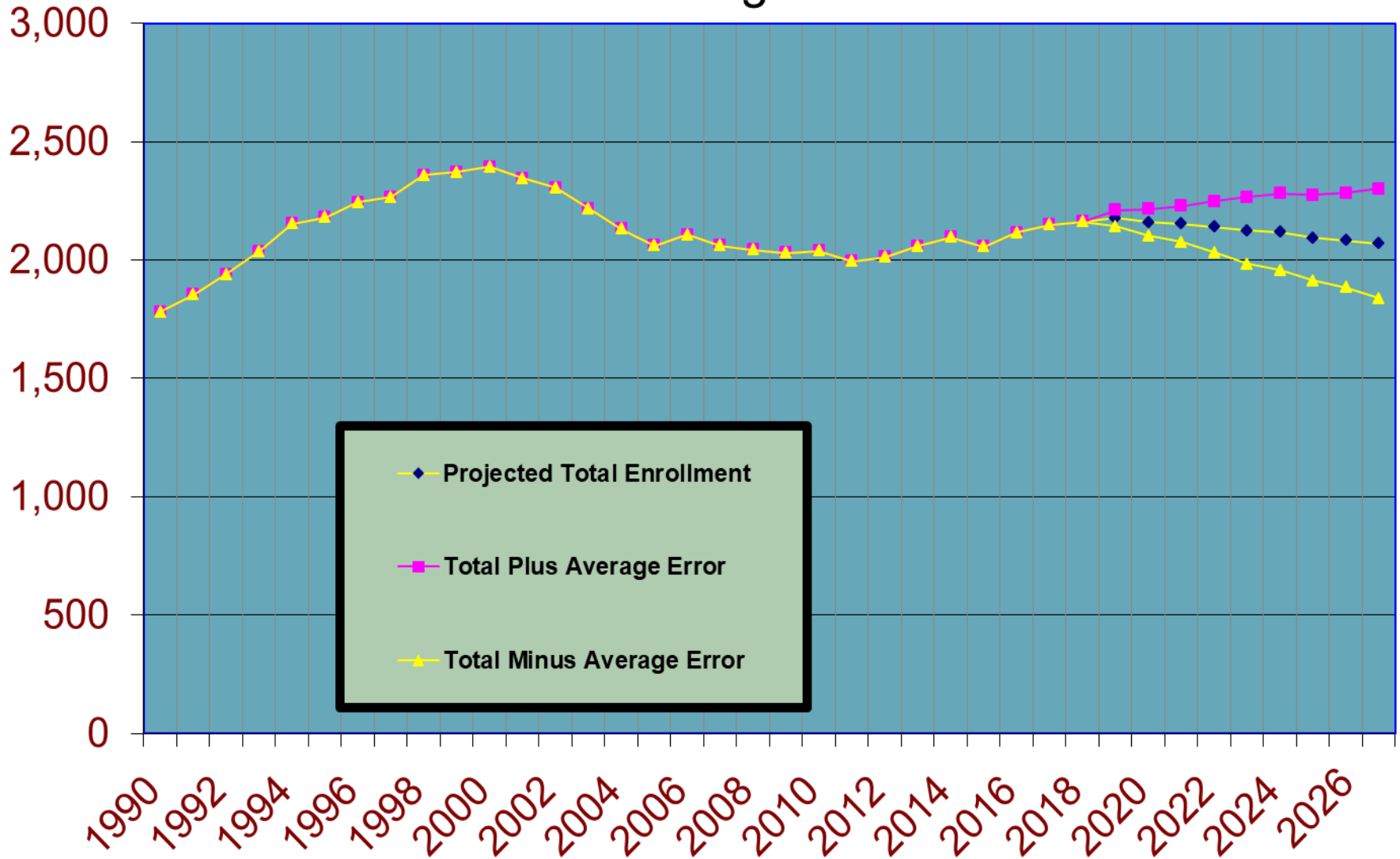
# Oyster River School District Actual and Projected Enrollment by Grade Grouping 1982 - 2028

Actual

Projected



# Actual and Projected Enrollment plus and minus Average Error of Estimate



# Summary

- **Total ORCSD enrollment is projected to remain in the 2,100 range for the entire projection. Enrollment declines by 106 students, from 2,162 this year to 2,056 projected in 2028-29.**
- **Full day kindergarten is assumed. The small size of the current kindergarten class (92 students) is considered an anomaly. After this year, kindergarten ranges from 103-109.**
- **The number of elementary school students will decrease slightly, by about 38 students, from 679 now to 643 in 2028-29. Mast Way now has 47 more students than Moharimet. This difference will grow to 103 students 2025-26 and remain at about that level to the end of the projection period. Mast Way peaks at 381 in 2019-20, then drops to the 375 or below.**
- **Middle school enrollment, now 669 grows to 677 in 2020-21, then drops to about 600 in the last 4 years of the projection.**
- **High School enrollment, now 812 (645 plus 167 tuition students) rises to 860 in 2024-25 (660 plus 200 tuition students) then drops to 808 by 2028-29 (608 plus 200 tuition students).**

# Any Questions?

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