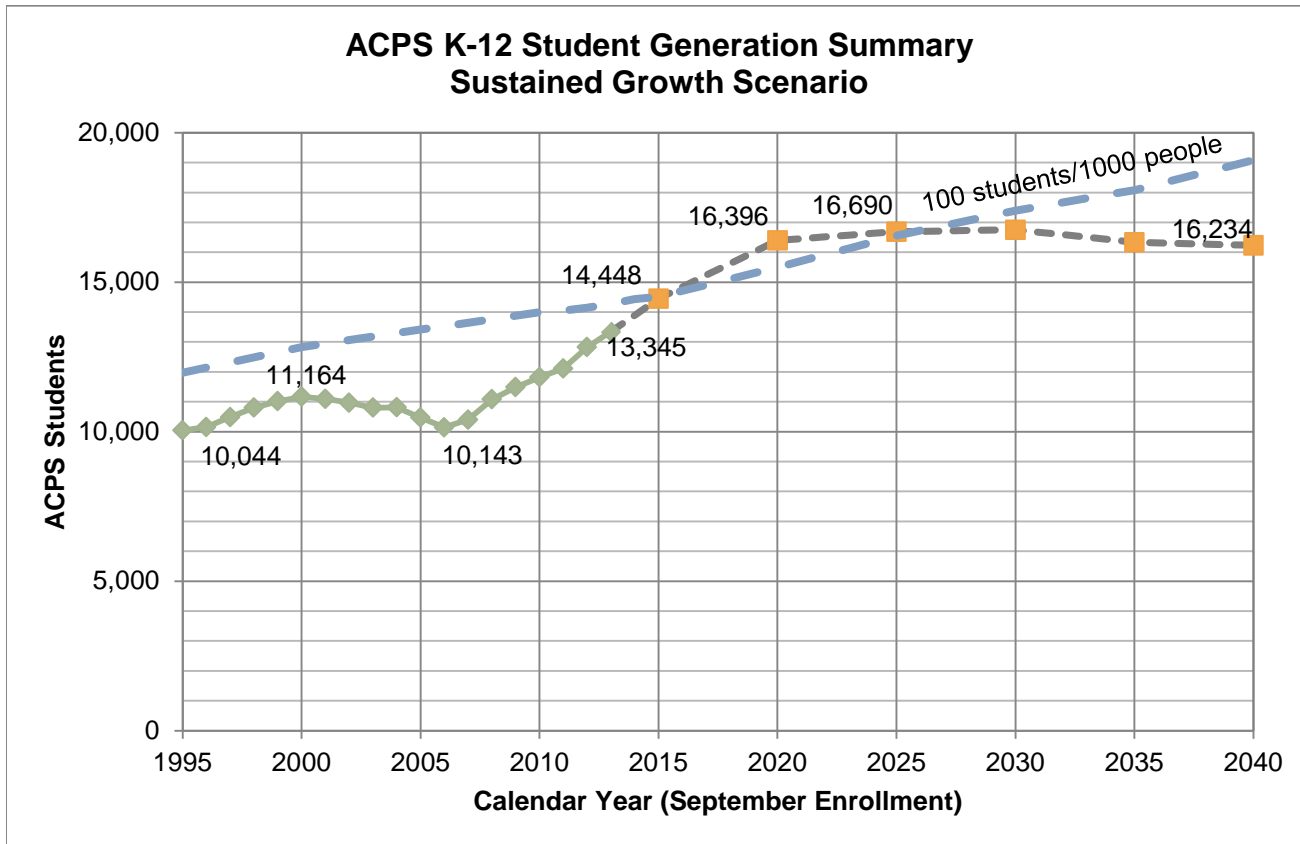


DISCUSSION DRAFT

Concept Forecast Only, Forecast Model Not Fully Developed
Development and Student Generation Scenarios

10/25/2013



Sustained Growth Scenario

Assumptions

1. Sustained new development and population growth in Alexandria
2. Sustained employment growth
3. Incomes and home prices remain high, fewer affordable units, less economic diversity
4. Regional mobility returns to high levels as suburban development continues
5. Perception of school quality remains the same or improves, increasing student generation from all households
6. Single-family detached student generation increases to current Arlington County rate of 0.43 per unit
7. Senior share of Alexandria population grows a bit less than proportionally with its share of the U.S. population
8. Additional low and moderate-income family housing developed based on 5% of new midrise apartment construction.

Measures

1. Population up 35% from 2010 to 2040, 189,000 by 2040
2. Residential units up 35% to 97,000
3. Employment up 40% from 2010 to 2040
4. Demolition of 2,967 garden apartments by 2040, with demolitions peaking in 2026-2030
5. 19,450 new midrise and 5,800 new high rise units by 2040
6. Seniors rise to 15% of Alexandria population by 2040; a smaller share of housing is available for families with children.

Enrollment Forecast Outcomes

1. Kindergarten capture falls to historic averages of 55% to 60% within five to seven years, falls in very long term
2. Cohort survival remains stable at about 97% for all classes except for H.S. recovery
3. Student generation rises for all unit types through 2025 as the current high K capture passes through the system.
4. Student generation continues to rise for single-family detached units after 2025.
5. After reaching a peak, student generation falls for all units with further demographic and housing changes.
6. Enrollment rises to approximately 16,700 in 2025 and then remains roughly constant or declines.

Note: Model does not yet incorporate aging of existing units to increased affordability over time.

Incorporating this change would somewhat increase the enrollment forecast.

Sustained Growth Scenario - COG Round 8.2 Development Forecast

Residential Category	2010 Baseline	Demolitions						2011- 2040
		2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	
Detached Residential	9,021	0	-15	0	0	0	0	-15
Semi-detached Residential	1,500	0	0	0	0	0	0	0
Row House Residential	9,956	0	0	0	0	0	0	0
Garden Condo Residential	7,141	0	0	0	0	0	0	0
Mid-rise Condo Residential	5,813	0	0	0	0	0	0	0
High-rise Condo Residential	6,711	0	0	0	0	0	0	0
Cooperative Residential	335	0	0	0	0	0	0	0
Townhouse Condo Residential	1,536	0	0	0	0	0	0	0
Garden Apt (1-3 Story)	9,000	-263	-200	-878	-999	-406	-221	-2,967
Public Housing Garden Apartment	974	0	-157	0	-90	-66	-127	-440
Other Low/Moderate Income Family Housing	1,500	0	0	0	0	0	0	0
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	8,115	0	0	0	0	0	0	0
High-rise Apt (7+ Story)	10,100	-100	-187	-100	-100	-100	0	-587
Assisted Living Facility	0	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	725	0	0	0	0	0	0	0
Sheltered Residences	0	0	0	0	0	0	0	0
Total All Residential Types	72,427	-363	-559	-978	-1,189	-572	-348	-4,009

Residential Category	2010 Baseline	Remaining Existing 2010 Units						2011- 2040
		2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	
Detached Residential	9,021	9,021	9,006	9,006	9,006	9,006	9,006	9,006
Semi-detached Residential	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Row House Residential	9,956	9,956	9,956	9,956	9,956	9,956	9,956	9,956
Garden Condo Residential	7,141	7,141	7,141	7,141	7,141	7,141	7,141	7,141
Mid-rise Condo Residential	5,813	5,813	5,813	5,813	5,813	5,813	5,813	5,813
High-rise Condo Residential	6,711	6,711	6,711	6,711	6,711	6,711	6,711	6,711
Cooperative Residential	335	335	335	335	335	335	335	335
Townhouse Condo Residential	1,536	1,536	1,536	1,536	1,536	1,536	1,536	1,536
Garden Apt (1-3 Story)	9,000	8,737	8,537	7,659	6,660	6,254	6,033	6,033
Public Housing Garden Apartment	974	974	817	817	727	661	534	534
Other Low/Moderate Income Family Units	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	8,115	8,115	8,115	8,115	8,115	8,115	8,115	8,115
High-rise Apt (7+ Story)	10,100	10,000	9,813	9,713	9,613	9,513	9,513	9,513
Assisted Living Facility	0	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	725	725	725	725	725	725	725	725
Sheltered Residences	0	0	0	0	0	0	0	0
All Residential Types	72,427	72,064	71,505	70,527	69,338	68,766	68,418	68,418

Sustained Growth Scenario - COG Round 8.2 Development Forecast

Residential Category	2010 Baseline	New Construction						2011- 2040
		2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	
Detached Residential	9,021	0	13	0	0	0	0	13
Semi-detached Residential	1,500	0	0	0	0	0	0	0
Row House Residential	9,956	209	548	249	389	426	659	2,480
Garden Condo Residential	7,141	0	4	28	64	125	0	221
Mid-rise Condo Residential	5,813	0	0	0	0	0	0	0
High-rise Condo Residential	6,711	0	0	0	110	224	436	770
Cooperative Residential	335	0	0	0	0	0	0	0
Townhouse Condo Residential	1,536	0	260	0	0	0	0	260
Garden Apt (1-3 Story)	9,000	73	2	73	32	0	0	180
Public Housing Garden Apartment	974	0	60	0	100	80	66	306
Other Low/Moderate Income Family Housing	1,500	88	175	168	186	161	194	972
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	8,115	1,679	3,325	3,189	3,538	3,065	3,680	18,476
High-rise Apt (7+ Story)	10,100	994	841	2,368	1,133	0	490	5,826
Assisted Living Facility	0	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	725	0	0	0	0	0	0	0
Sheltered Residences	0	0	0	0	0	0	0	0
Total All Residential Types	72,427	3,043	5,228	6,075	5,552	4,081	5,525	29,504

Residential Category	2010 Baseline	Cumulative Units with New Construction						2011- 2040
		2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	
Detached Residential	9,021	9,021	9,019	9,019	9,019	9,019	9,019	9,019
Semi-detached Residential	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Row House Residential	9,956	10,165	10,713	10,962	11,351	11,777	12,436	12,436
Garden Condo Residential	7,141	7,141	7,145	7,173	7,237	7,362	7,362	7,362
Mid-rise Condo Residential	5,813	5,813	5,813	5,813	5,813	5,813	5,813	5,813
High-rise Condo Residential	6,711	6,711	6,711	6,711	6,821	7,045	7,481	7,481
Cooperative Residential	335	335	335	335	335	335	335	335
Townhouse Condo Residential	1,536	1,536	1,796	1,796	1,796	1,796	1,796	1,796
Garden Apt (1-3 Story)	9,000	8,810	8,612	7,807	6,840	6,434	6,213	6,213
Public Housing Garden Apartment	974	974	877	877	887	901	840	840
Income-limited Family Units	1,500	1,588	1,763	1,931	2,117	2,279	2,472	2,472
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	8,115	9,794	13,119	16,308	19,846	22,910	26,591	26,591
High-rise Apt (7+ Story)	10,100	10,994	11,648	13,916	14,949	14,849	15,339	15,339
Assisted Living Facility	0	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	725	725	725	725	725	725	725	725
Sheltered Residences	0	0	0	0	0	0	0	0
All Residential Types	72,427	75,107	79,776	84,873	89,236	92,745	97,922	97,922

Generation Factors by Age of Structure (Now used only for new development after 2010)

Residential Category	Prev 3-yr	Base	Percent of Base by Age of Unit					
			10	20	30	40	50	60
Detached Residential	0.275	0.280	1	1	1	1	1	1
Semi-detached Residential	0.156	0.200	0.75	0.75	0.75	0.75	1	1.25
Row House Residential	0.156	0.126	0.9	0.9	0.9	1.1	1.25	1.4
Garden Condo Residential	0.069	0.100	0.5	0.6	0.75	1	2.5	1.5
Mid-rise Condo Residential	0.091	0.080	0.75	0.75	1	1.25	1.5	2
High-rise Condo Residential	0.074	0.075	0.75	0.75	1	1.1	1.25	1.5
Cooperative Residential	0.616	0.600	0.3	0.3	0.5	1.1	1.1	1.1
Townhouse Condo Residential	0.082	0.150	0.9	0.9	0.9	1.1	1.2	1.2
Garden Apt (1-3 Story)	0.300	0.350	0.3	0.3	0.5	1	1.25	1.25
Public Housing Garden Apartment	0.978	1.000	1	1	1	1	1	1
Income-Limited Family Units		0.650	1	1	1	1	1	1
Townhouse Apartment (1-4 Story)		0.350	0.3	0.3	0.5	1	2	2
Mid-rise Apt (4-6 Story)	0.138	0.100	0.6	0.6	0.75	1	1.25	2.5
High-rise Apt (7+ Story)	0.084	0.080	0.7	0.7	0.8	1	1.25	1.5
Assisted Living Facility		0.000	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo		0.000	0	0	0	0	0	0
Sheltered Residences		0.000	0	0	0	0	0	0

Residential Category	Prev 3-yr	Base	Generation Factor by Age of Unit					
			10	20	30	40	50	60
Detached Residential	0.275	0.280	0.28	0.28	0.28	0.28	0.28	0.28
Semi-detached Residential	0.156	0.200	0.15	0.15	0.15	0.15	0.2	0.25
Row House Residential	0.156	0.126	0.113	0.113	0.113	0.139	0.158	0.176
Garden Condo Residential	0.069	0.100	0.05	0.06	0.075	0.1	0.25	0.15
Mid-rise Condo Residential	0.091	0.050	0.06	0.06	0.08	0.1	0.12	0.16
High-rise Condo Residential	0.074	0.080	0.056	0.056	0.075	0.083	0.094	0.113
Cooperative Residential	0.616	0.350	0.18	0.18	0.3	0.66	0.66	0.66
Townhouse Condo Residential	0.082	0.150	0.135	0.135	0.135	0.165	0.18	0.18
Garden Apt (1-3 Story)	0.300	0.350	0.105	0.105	0.175	0.35	0.438	0.438
Public Housing Garden Apartment	0.978	1.000	1	1	1	1	1	1
Income-limited Family Units		0.650	0.65	0.65	0.65	0.65	0.65	0.65
Townhouse Apartment (1-4 Story)		0.350	0.105	0.105	0.175	0.35	0.7	0.7
Mid-rise Apt (4-6 Story)	0.138	0.100	0.06	0.06	0.075	0.1	0.125	0.25
High-rise Apt (7+ Story)	0.084	0.080	0.056	0.056	0.064	0.08	0.1	0.12
Assisted Living Facility		0.000	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo		0.000	0	0	0	0	0	0
Sheltered Residences		0.000	0	0	0	0	0	0

Base = assumed 2012 generation for all existing units in residential category, after separation of public housing, senior units and subsidized or income-limited housing from other categories.
Previous 3-year average prior to removal of some of above and reclassification of some units.

Sustained Growth Scenario

Residential Category	Generation Factor Multiplier by Calendar Year						
	2012	2015	2020	2025	2030	2035	2040
Detached Residential	1	1.12	1.25	1.35	1.45	1.4	1.4
Semi-detached Residential	1	1.075	1.225	1.275	1.225	1.2	1.15
Row House Residential	1	1.075	1.225	1.275	1.225	1.15	1.125
Garden Condo Residential	1	1.075	1.225	1.2	1.175	1.125	1.075
Mid-rise Condo Residential	1	1.075	1.225	1.2	1.175	1.125	1.075
High-rise Condo Residential	1	1.075	1.225	1.2	1.175	1.125	1.075
Cooperative Residential	1	1.075	1.225	1.2	1.175	1.125	1.075
Townhouse Condo Residential	1	1.075	1.225	1.2	1.175	1.125	1.075
Garden Apt (1-3 Story)	1	1.075	1.225	1.2	1.175	1.125	1.075
Public Housing Garden Apartment	1	1.075	1.225	1.2	1.175	1.125	1.075
Income-Limited Family Units	1	1.075	1.225	1.2	1.175	1.125	1.075
Townhouse Apartment (1-4 Story)	1	1.075	1.225	1.2	1.175	1.125	1.075
Mid-rise Apt (4-6 Story)	1	1.075	1.225	1.2	1.175	1.125	1.075
High-rise Apt (7+ Story)	1	1.075	1.225	1.2	1.175	1.125	1.075
Assisted Living Facility	1	1	1	1	1	1	1
Age-Restricted Senior Apartment or Condo	1	1	1	1	1	1	1
Sheltered Residences	1	1	1	1	1	1	1

Generation factor adjustments by year are intended to account for the following factors that are not currently explicitly modeled:

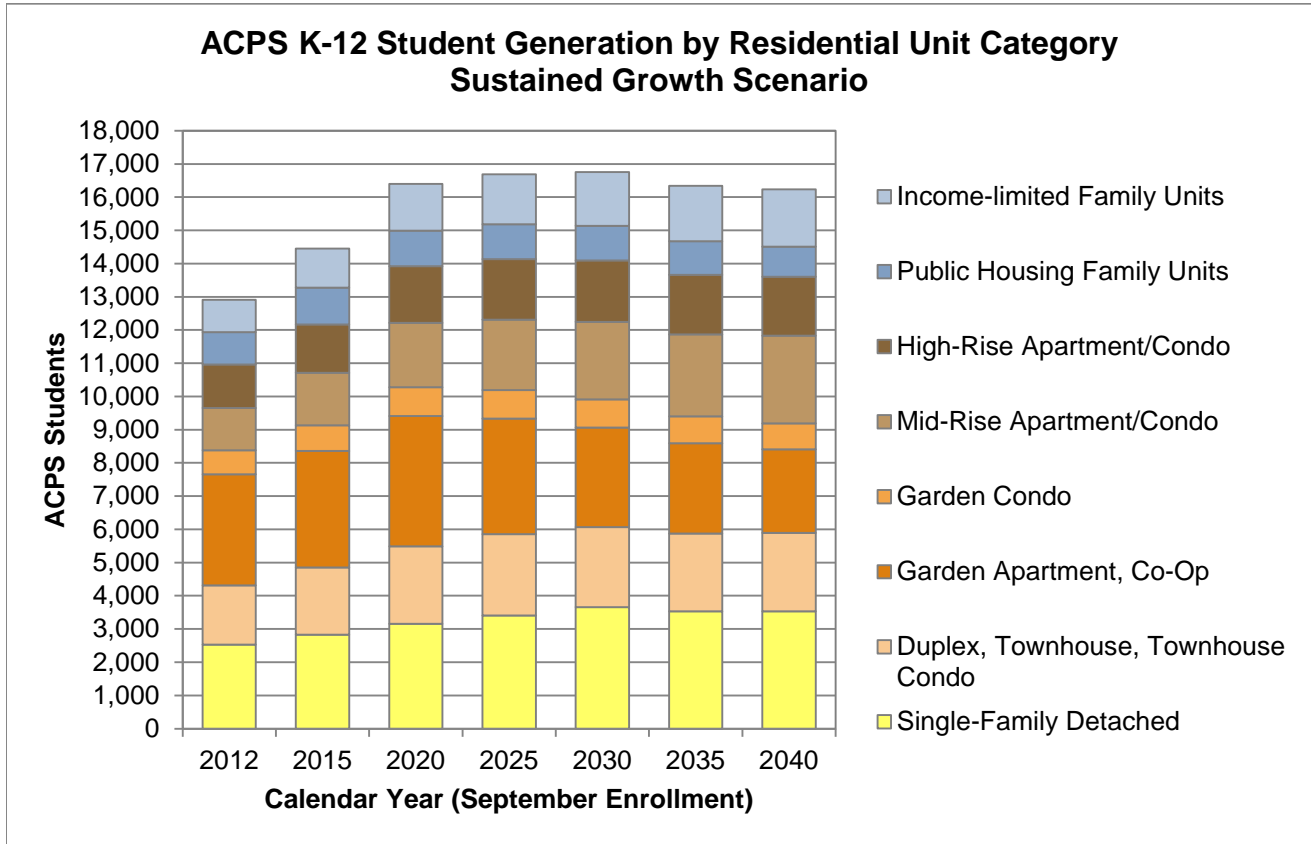
1. Gradual reduction in kindergarten capture rate to 0.55 to 0.6 over 5 to 7 years
2. Sustained cohort survival rate on the order of 0.95 to 0.98 for elementary and middle school grades.
3. Aging of the existing housing stock to increase affordability for families with children.
4. Gradual growth of the senior population, retaining the current relationship to the proportion of seniors in the U.S. population, adjusted slightly downward because of the high price of housing in Alexandria under the sustained growth scenario. This growth will reduce the share of housing units available to other components of the population and reduce the proportion of families with children as a share of all households.

DISCUSSION DRAFT

Not for Publication or Release

Development and Student Generation Scenarios

10/25/2013



Forecast Student Generation by Calendar Year							
Residential Category	2010	2015	2020	2025	2030	2035	2040
Single-Family Detached	2,526	2,833	3,157	3,409	3,662	3,535	3,535
Duplex, Townhouse, Townhouse Condo	1,785	2,023	2,335	2,446	2,410	2,339	2,358
Garden Apartment, Co-Op	3,351	3,504	3,916	3,477	2,997	2,716	2,512
Garden Condo	714	768	875	859	845	816	781
Mid-Rise Apartment/Condo	1,277	1,587	1,932	2,122	2,327	2,463	2,645
High-Rise Apartment/Condo	1,311	1,452	1,704	1,819	1,853	1,789	1,772
Public Housing Family Units	974	1,112	1,074	1,052	1,042	1,014	903
Income-limited Family Units	975	1,170	1,404	1,506	1,617	1,666	1,728
Senior Housing Units	0	0	0	0	0	0	0
Total	12,913	14,448	16,396	16,690	16,753	16,338	16,234

Forecast Dwelling Units by Residential Category							
Residential Category	2010	2015	2020	2025	2030	2035	2040
Single-Family Detached	9,021	9,021	9,019	9,019	9,019	9,019	9,019
Duplex, Townhouse, Townhouse Condo	12,992	13,201	14,009	14,258	14,647	15,073	15,732
Garden Apartment, Co-Op	9,335	9,145	8,947	8,142	7,175	6,769	6,548
Garden Condo	7,141	7,141	7,145	7,173	7,237	7,362	7,362
Mid-Rise Apartment/Condo	13,928	15,607	18,932	22,121	25,659	28,723	32,404
High-Rise Apartment/Condo	16,811	17,705	18,359	20,627	21,770	21,894	22,820
Public Housing Family Units	974	974	877	877	887	901	840
Income-Limited Family Units	1,500	1,588	1,763	1,931	2,117	2,279	2,472
Senior Housing Units	725	725	725	725	725	725	725
Total	72,427	75,107	79,776	84,873	89,236	92,745	97,922

Notes:

- Existing development not yet classified by age for student generation. All existing development is assumed to generate students at the base generation rate modified by the year factor.
- Residential units and category for this development scenario are based on the current COG Round 8.2 growth forecast for Alexandria.

Sustained Growth Scenario

Residential Category	Student Generation by Calendar Year, All Development						
	2012	2015	2020	2025	2030	2035	2040
Detached Residential	2,526	2,833	3,157	3,409	3,662	3,535	3,535
Semi-detached Residential	300	323	368	383	368	360	345
Row House Residential	1,254	1,415	1,642	1,745	1,730	1,680	1,728
Garden Condo Residential	714	768	875	859	845	816	781
Mid-rise Condo Residential	465	500	570	558	546	523	500
High-rise Condo Residential	503	541	617	604	599	587	588
Cooperative Residential	201	216	246	241	236	226	216
Townhouse Condo Residential	230	285	325	319	312	299	285
Garden Apt (1-3 Story)	3,150	3,288	3,670	3,235	2,761	2,490	2,296
Public Housing Garden Apartment	974	1,112	1,074	1,052	1,042	1,014	903
Income-Limited Family Units	975	1,170	1,404	1,506	1,617	1,666	1,728
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	812	1,087	1,362	1,564	1,781	1,940	2,145
High-rise Apt (7+ Story)	808	911	1,088	1,215	1,255	1,201	1,185
Assisted Living Facility	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	0	0	0	0	0	0	0
Sheltered Residences	0	0	0	0	0	0	0
Total	12,913	14,448	16,396	16,690	16,753	16,338	16,234
Subtotals by Major Category	2012	2015	2020	2025	2030	2035	2040
Single-Family Detached	2,526	2,833	3,157	3,409	3,662	3,535	3,535
Duplex, Townhouse, Townhouse Condo	1,785	2,023	2,335	2,446	2,410	2,339	2,358
Garden Apartment, Co-Op	3,351	3,504	3,916	3,477	2,997	2,716	2,512
Garden Condo	714	768	875	859	845	816	781
Mid-Rise Apartment/Condo	1,277	1,587	1,932	2,122	2,327	2,463	2,645
High-Rise Apartment/Condo	1,311	1,452	1,704	1,819	1,853	1,789	1,772
Public Housing Family Units	974	1,112	1,074	1,052	1,042	1,014	903
Income-limited Family Units	975	1,170	1,404	1,506	1,617	1,666	1,728
Senior Housing Units	0	0	0	0	0	0	0
Total	12,913	14,448	16,396	16,690	16,753	16,338	16,234

Residential Category	Student Generation by Calendar Year, 2010 Existing Development						
	2012	2015	2020	2025	2030	2035	2040
Detached Residential	2,526	2,829	3,152	3,404	3,656	3,530	3,530
Semi-detached Residential	300	323	368	383	368	360	345
Row House Residential	1,254	1,349	1,537	1,599	1,537	1,443	1,411
Garden Condo Residential	714	768	875	857	839	803	768
Mid-rise Condo Residential	465	500	570	558	546	523	500
High-rise Condo Residential	503	541	617	604	591	566	541
Cooperative Residential	201	216	246	241	236	226	216
Townhouse Condo Residential	230	248	282	276	271	259	248
Garden Apt (1-3 Story)	3,150	3,287	3,660	3,217	2,739	2,463	2,270
Public Housing Garden Apartment	974	1,047	1,001	980	854	744	574
Income-Limited Family Units	975	1,048	1,194	1,170	1,146	1,097	1,048
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	812	872	994	974	954	913	872
High-rise Apt (7+ Story)	808	860	962	932	904	856	818
Assisted Living Facility	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	0	0	0	0	0	0	0
Sheltered Residences	0	0	0	0	0	0	0
Total	12,913	13,887	15,457	15,196	14,640	13,783	13,142

Residential Category	Student Generation by Calendar Year, All Post-2010 Development						
	2012	2015	2020	2025	2030	2035	2040
Detached Residential	0	4	5	5	5	5	5
Semi-detached Residential	0	0	0	0	0	0	0
Row House Residential	0	67	105	145	194	237	316
Garden Condo Residential	0	0	0	2	6	13	13
Mid-rise Condo Residential	0	0	0	0	0	0	0
High-rise Condo Residential	0	0	0	0	7	21	47
Cooperative Residential	0	0	0	0	0	0	0
Townhouse Condo Residential	0	38	43	42	41	39	38
Garden Apt (1-3 Story)	0	0	10	19	22	27	26
Public Housing Garden Apartment	0	65	74	72	188	270	329
Income-limited Family Units	0	122	210	336	472	569	679
Townhouse Apartment (1-4 Story)	0	0	0	0	0	0	0
Mid-rise Apt (4-6 Story)	0	214	368	590	827	1,027	1,272
High-rise Apt (7+ Story)	0	51	126	282	351	345	367
Assisted Living Facility	0	0	0	0	0	0	0
Age-Restricted Senior Apartment or Condo	0	0	0	0	0	0	0
Sheltered Residences	0	0	0	0	0	0	0
Total	0	561	939	1,494	2,113	2,555	3,092