



DATE: 2/1/2023

TO: Paul DesJardin, Department of Community Planning and Services
Metropolitan Washington Council of Governments

FROM: Mark Buenavista
Director of Planning, Prince William County
Robert Mancini
Chief Information Officer, Department of Information Technology

THRU: Christopher Shorter, County Executive

RE: COG Cooperative Forecasting Round 10.0: Revised Population

Enclosed please find Prince William County's *revised* submission of Round 10.0 population control totals. Household and employment forecasts remain unchanged. Revisions were made to better align with COG's econometric model. The average household size forecasts in our original submission were adjusted downward to lower the population forecasts. Should you have any questions, please do not hesitate to contact David McGettigan at (703)-792-7189 or dmcgettigan@pwcgov.org.

Population Revisions (in thousands):

	2020	2025	2030	2035	2040	2045	2050
10.0 Submission	486.2	518.7	541.3	558.8	572.1	581.9	588.9
10.0 Revised	483.8	515.2	536.6	553.0	565.0	573.7	579.6
Change	-2.5	-3.6	-4.7	-5.9	-7.0	-8.2	-9.3

Average Household Size Revisions:

	2020	2025	2030	2035	2040	2045	2050
10.0 Submission	3.14	3.11	3.08	3.07	3.05	3.04	3.03
10.0 Revised	3.12	3.09	3.06	3.03	3.01	2.99	2.98
Change	-0.02	-0.02	-0.03	-0.03	-0.04	-0.04	-0.05

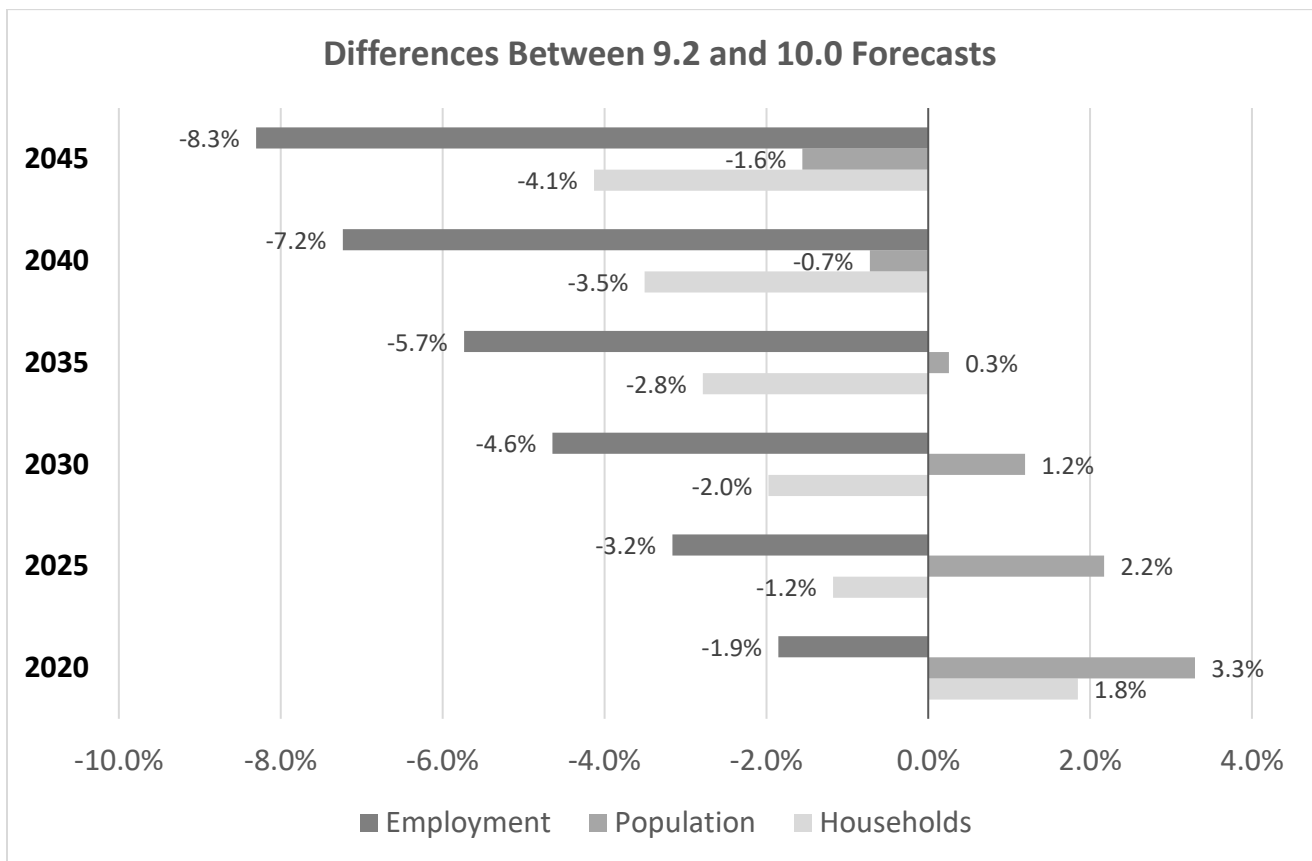
Attachment:

CC: Christopher Shorter, County Executive	David McGettigan, Long Range Planning
Rebecca Horner, Deputy County Executive	Brian Engelmann, County Demographer
Michelle Casciato, Deputy County Executive	Rick Canizales, Transportation Director
Mark Buenavista, Director of Planning	Angie Mills, DoIT Deputy Director
Robert Mancini, DoIT Chief Information Officer	Malcolm Echaluze, GTS Program Manager

Prince William County, Virginia
Households, Revised Population, and Employment Forecasts
Submission for COG Round 10.0
2/1/2023

	2020	2025	2030	2035	2040	2045	2050
Households	153.8	165.1	173.4	180.0	185.1	189.0	191.9
Total Population*	483.8	515.2	536.6	553.0	565.0	573.7	579.6
Employment	161.8	178.6	194.4	209.7	223.4	235.7	246.4

Note: Numbers in thousands. *Revised on 2/1/2023



Summary

Changes to household, population, and employment growth are attributed a myriad of factors, including COVID-19 impacts, 2020 Census figures, build-out capacity shifts due to

Comprehensive Plan Amendments, Small Area Plans, new construction, rezonings, and group quarters updates. Regional employment and population data and analysis from COG, the Census Bureau, and others have highlighted a slowed economy coupled with a jump in domestic out-migration in the years since the start of the COVID-19 pandemic. Accordingly, we have taken steps to adjust our 10.0 household and employment forecasts. Prince William’s COG 10.0 household forecasts dropped from 9.2 by an average of 2.7% between 2025 and 2040 and employment fell by an average of 5.8%. Population forecasts are slightly higher than 9.2 (by 1.3% on average) due to 2020 Census population and Prince William’s high average household size compared to the COG region.

Despite population decreases in many jurisdictions between 2020 and 2021 due to heavy domestic out-migration outpacing natural increase and international migration (estimated by the Census Bureau’s Population Estimates Program and the D.C. Policy Center), outer jurisdictions such as Loudoun and Prince William were able to sustain growth and will continue to grow in the coming years. Specifically, planned mixed use projects in Prince William such as North Woodbridge Town Center, The Quartz District, and Innovation Park will continue to spur population and employment growth through and beyond 2025.

Input Parameters and Growth Factors

- Buildout Analysis:** A comprehensive buildout analysis by the Planning Office resulted in the following buildout estimates by housing type. Occupancy rates for 2020 Quarter 4 were derived from the 2020 Census, 2015-2020 ACS 5-Year Estimates, and USPS Vacancy data and applied to housing units by census tract.

	Total	Single-Family Detached	Single-Family Attached	Multi-Family
Occ. Rate:		97.8%	97.2%	96.3%
2020 Q4 HU	158,016	84,798	44,502	28,716
2020 Q4 HH	153,842	82,932	43,256	27,654
Bld-Out HU	227,921	101,849	52,497	73,575
Bld-Out HH	221,488	99,608	51,027	70,853

Occ = Occupancy; HU = Housing Units; HH = Households; Bld-Out = Build-out

- Housing Type Adjustments:** For COG 10.0, 2-over-2 housing types (duplexes, stacked condo or stacked townhome, etc.), were moved from multi-family to the single-family attached category.
- Logistic Forecast for Households:** Some adjustments were made to our household and population forecast model, which relies on a logistic forecast of single-family households based on the upper limit method (Klosterman, 1990). We used a total of 27 observations for the model between 1996 and 2022. Based on recommendations from

COG's *Update on Round 10 Regional Econometric Model Projections (Sept. 2022)*, the upper limit of our model was slightly lowered from 9.2. The result is a curve that grows households by 7.3% between 2020 and 2025 (153,836 to 165,086) compared to an increase to 167,051 by 2025 in our 9.2 model. Households increase at a declining rate in the out years (5.9% to 1.5%, respectively) with the gap between 9.2 and 10.0 steadily increasing. By 2040, our 10.0 model forecasts just over 8,000 less households (-4.1%) compared to the 9.2 forecast.

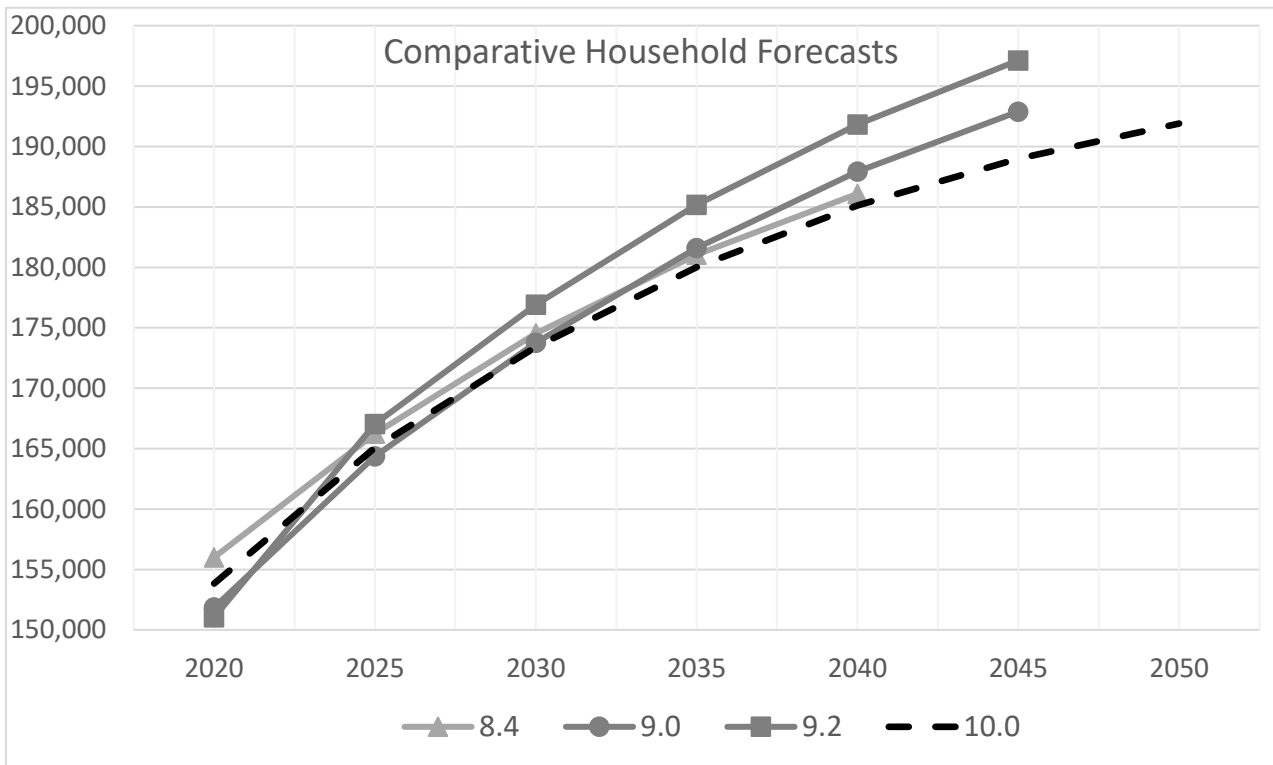
- **Average Household Size:** Based on guidance from the *COG Round 10 Cooperative Forecast Technical Assistance Memo (June 2022)*, average household size by housing type was gradually reduced every five years through 2050. According to the 2020 Census, Prince William, Manassas, and Manassas Park were among the highest household sizes in the COG region. *In late January 2023, our population forecasts were revised downward to better align with COG's econometric model. To accomplish this, we reduced 2020's average household size from 3.14 to 3.12 and aggressively decreased this statistic to 3.01 by 2040 (from 3.05) and 2.98 by 2050 (from 3.03). For detailed adjustments to household size by housing unit type (and resulting population changes), please see the tables on page 10.*
- **Group Quarters:** Updates to developments in the pipeline pushed our group quarters estimate from 3,821 in 2020 (2020 Census/PWC Gov't) to 5,897 in 2025. Unknown growth beyond 2025 translated to an addition of 500 group quarters units every five years between 2025 and 2050. Group quarters will likely encompass 1.1% of the county's total population in 2025, growing to 1.4% by 2050 as the aging population continues to rise more sharply compared to other age cohorts.
- **Employment Factors:** Prince William's 10.0 employment forecasts utilized the following from COG's *Update to Suggested Baseline Employment Estimates (March, 2022)*:
 - **CES adjustment factor:** 1.08
 - **Self-employment adjustment factor:** 1.07
 - **Base military employment:** 3,230
 - **2020 Employment:** Total employment from QCEW 2020 Quarter 4 was 127,600, slightly higher than listed on the memorandum.
- **Logistic Forecast for Employment:** Until COG 9.1 forecasts, we forecasted employment using a linear model. We then switched to a logistic growth model with an upper limit with the intention of matching our household method and to curb limitless growth. We used a total of 27 observations for the model between 1995 and 2021. Again, in accordance with COG's econometric model revisions in September 2022, the upper limit of the logistic model was decreased. After CES, self-employment, and military additions to our model's 2020 forecast of 135,931, 2020 baseline employment was calculated at 161,766, which closely matches our base employment analysis using Data Axle, QCEW, and our own sources. In this model, employment rises by 10.4% between 2020 and 2025 with the expectation that employer vacancies will drop. Even

though COG's econometric model revision decreased employment from 9.0 forecasts by 8.3% in 2020, our 10.0 model lessened our 9.0 forecasts for 2020 by only 1.9%, which steadily drop to a difference of -8.9% between models by 2040. Overall, we are forecasting employment to grow by 10.4% between 2020 and 2025, which then falls to an increase of 4.6% between 2045 and 2050. Compared to 9.2, we are forecasting 178,616 employees by 2025 (-5,833) and 235,688 by 2045 (-21,349).

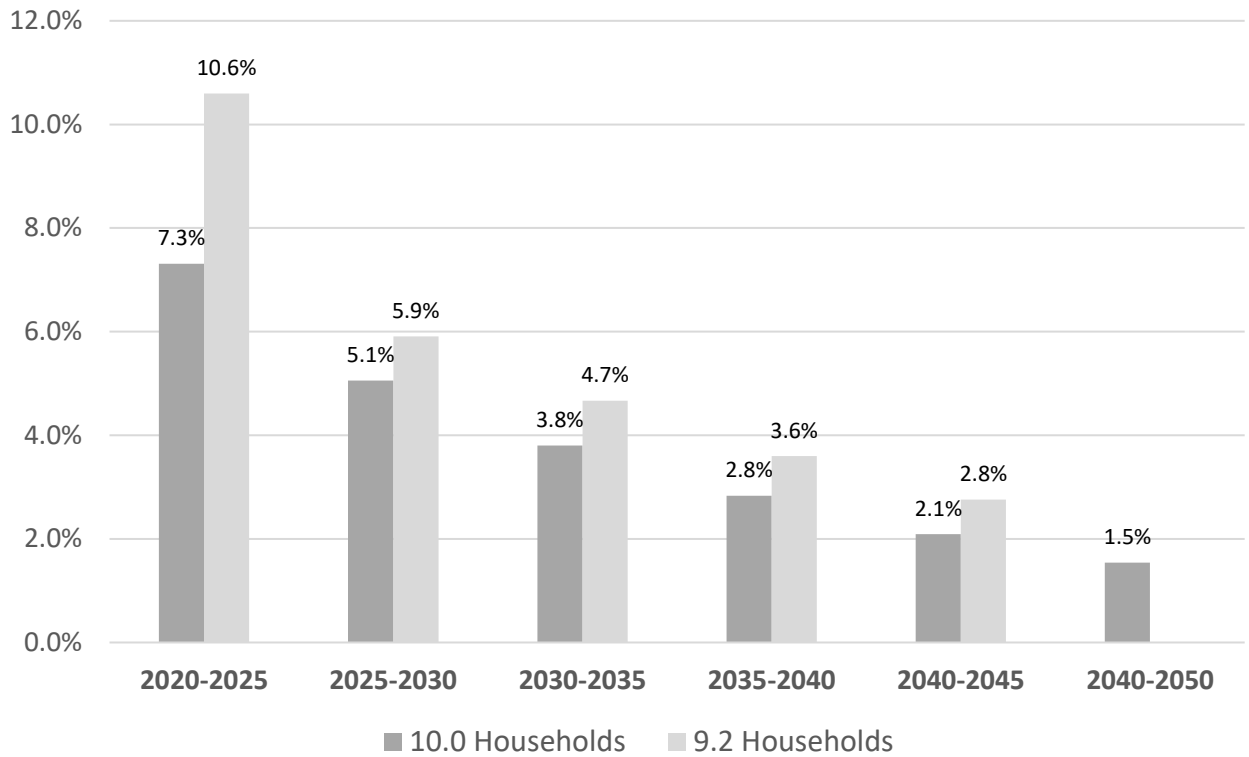
Klosterman, Richard E., Community Analysis and Planning Techniques, Rowman & Littlefield Publishers, Inc., Savage, MD, 1990 pg. 236-239

Forecast Charts

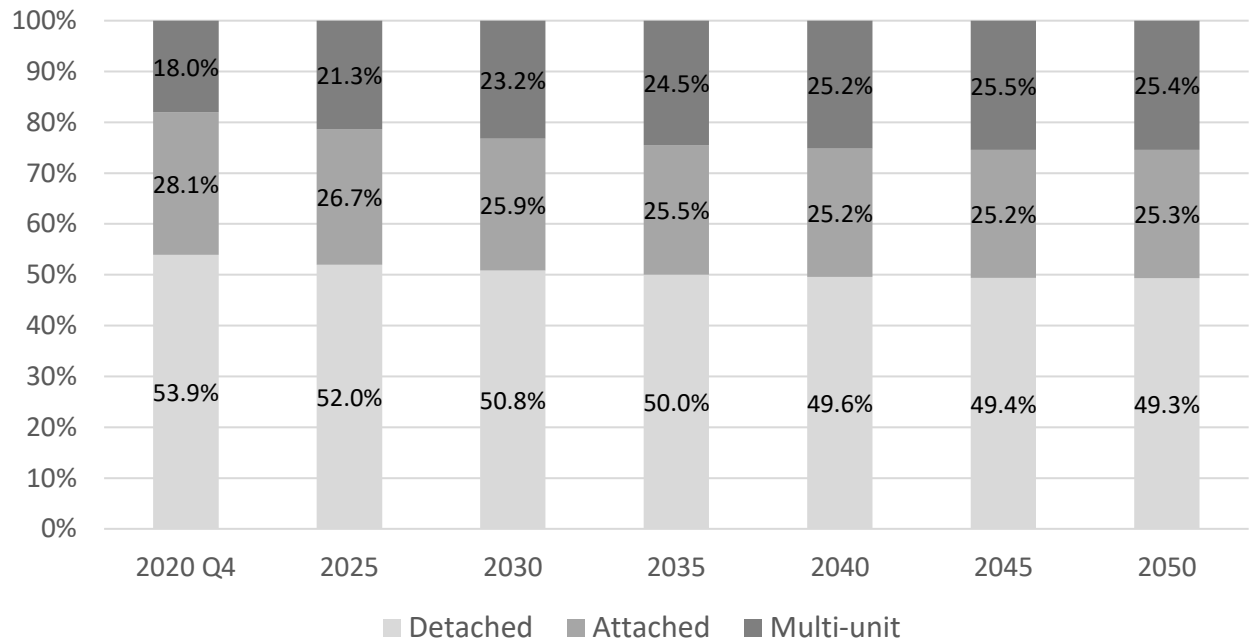
Households

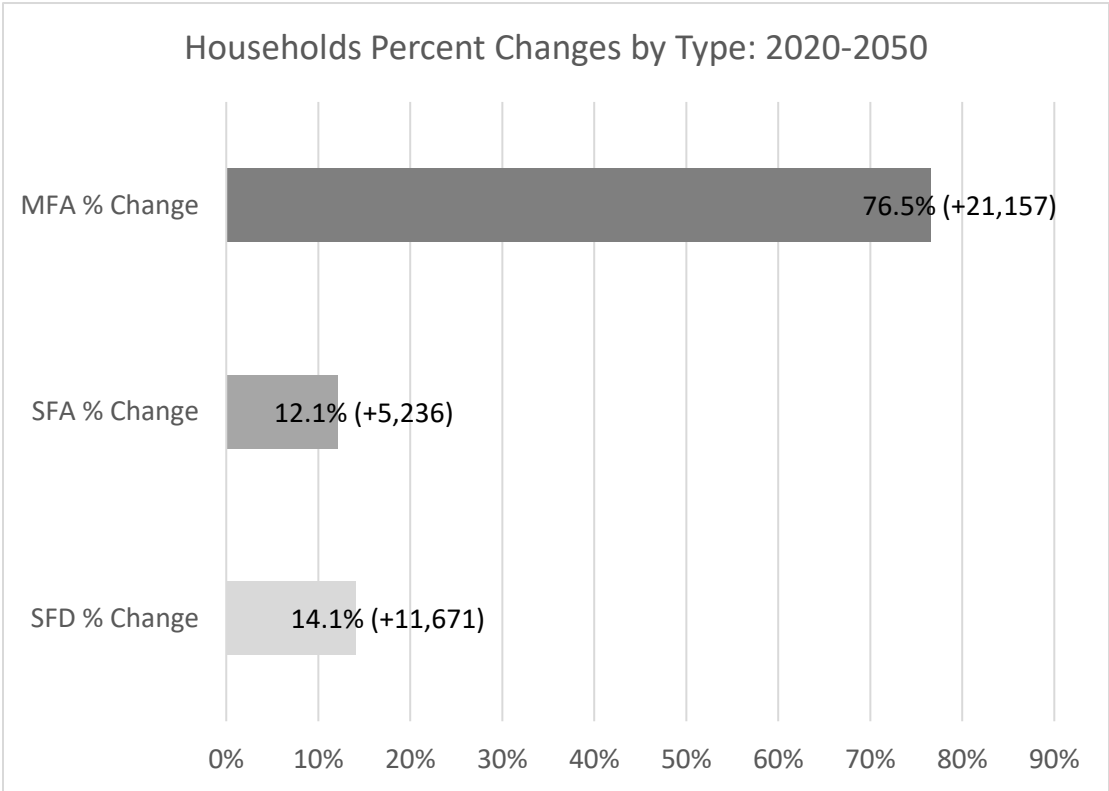
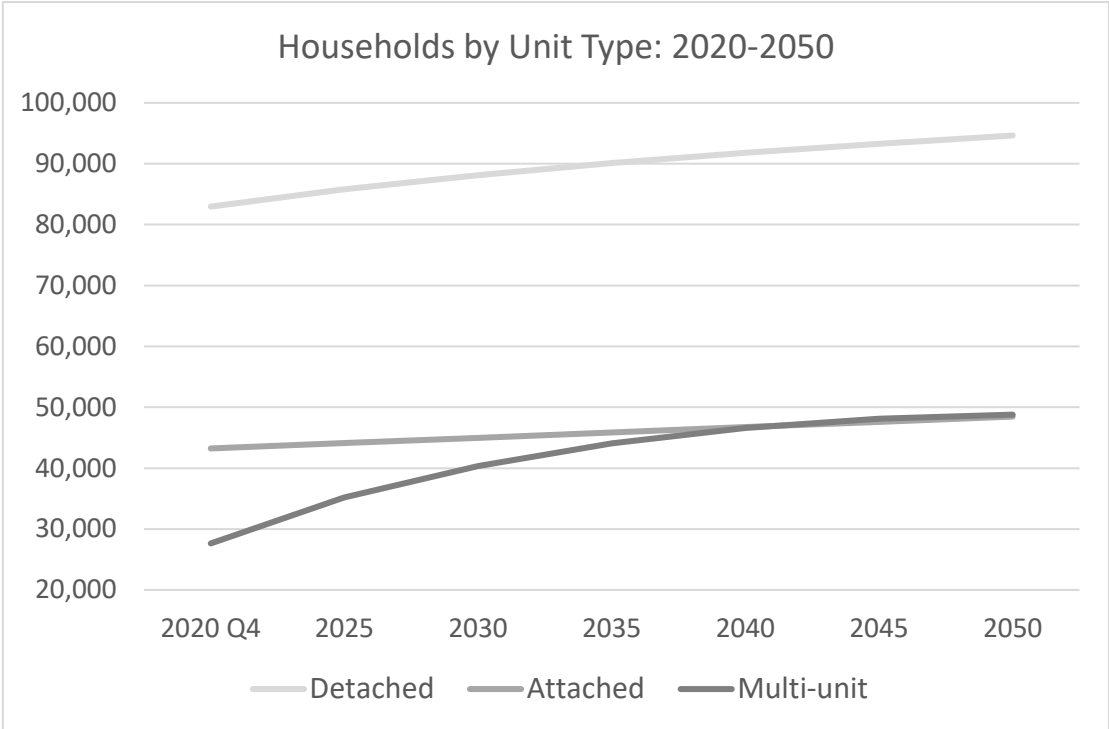


5-Year Percent Change in Households: 9.2 and 10.0

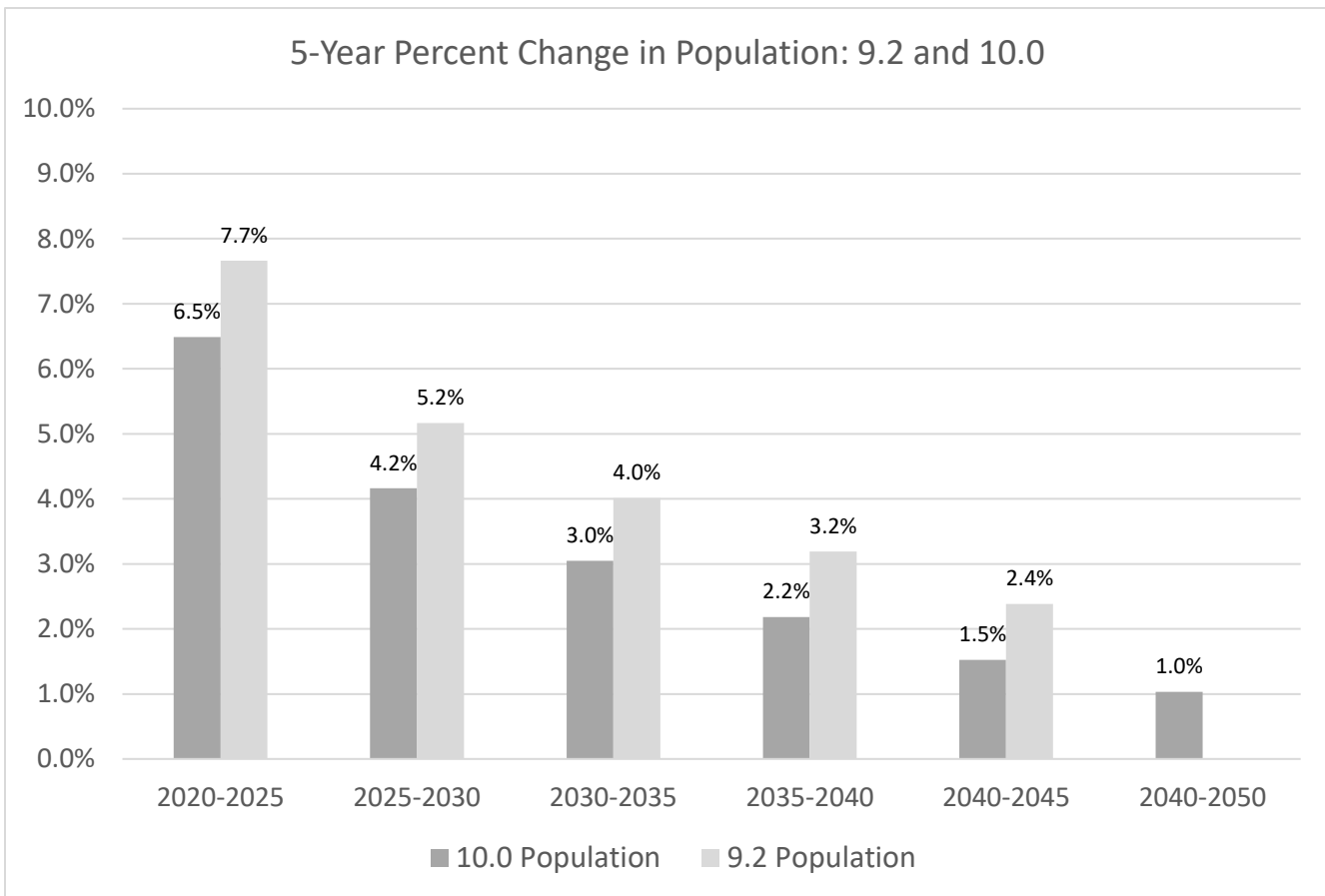
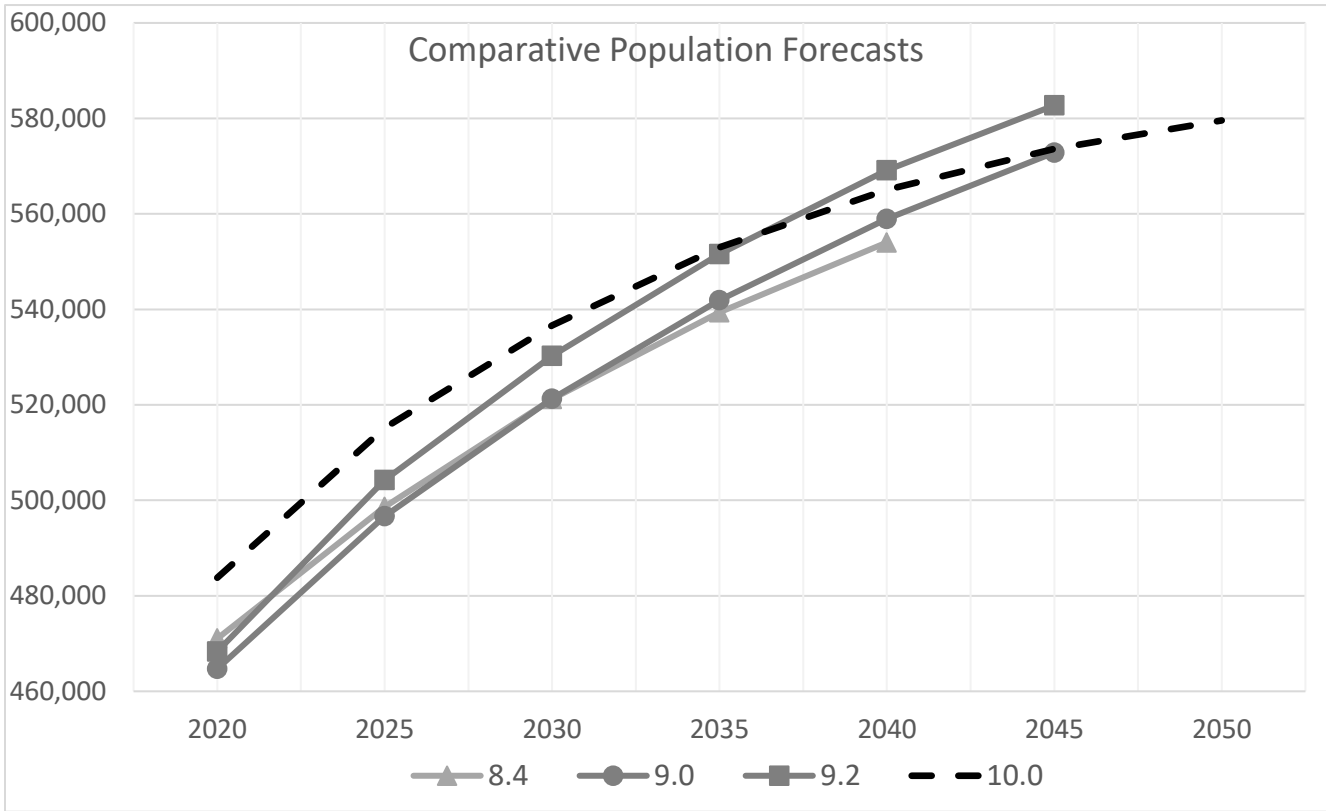


Unit Type as Percent of Total Households: 2020-2050

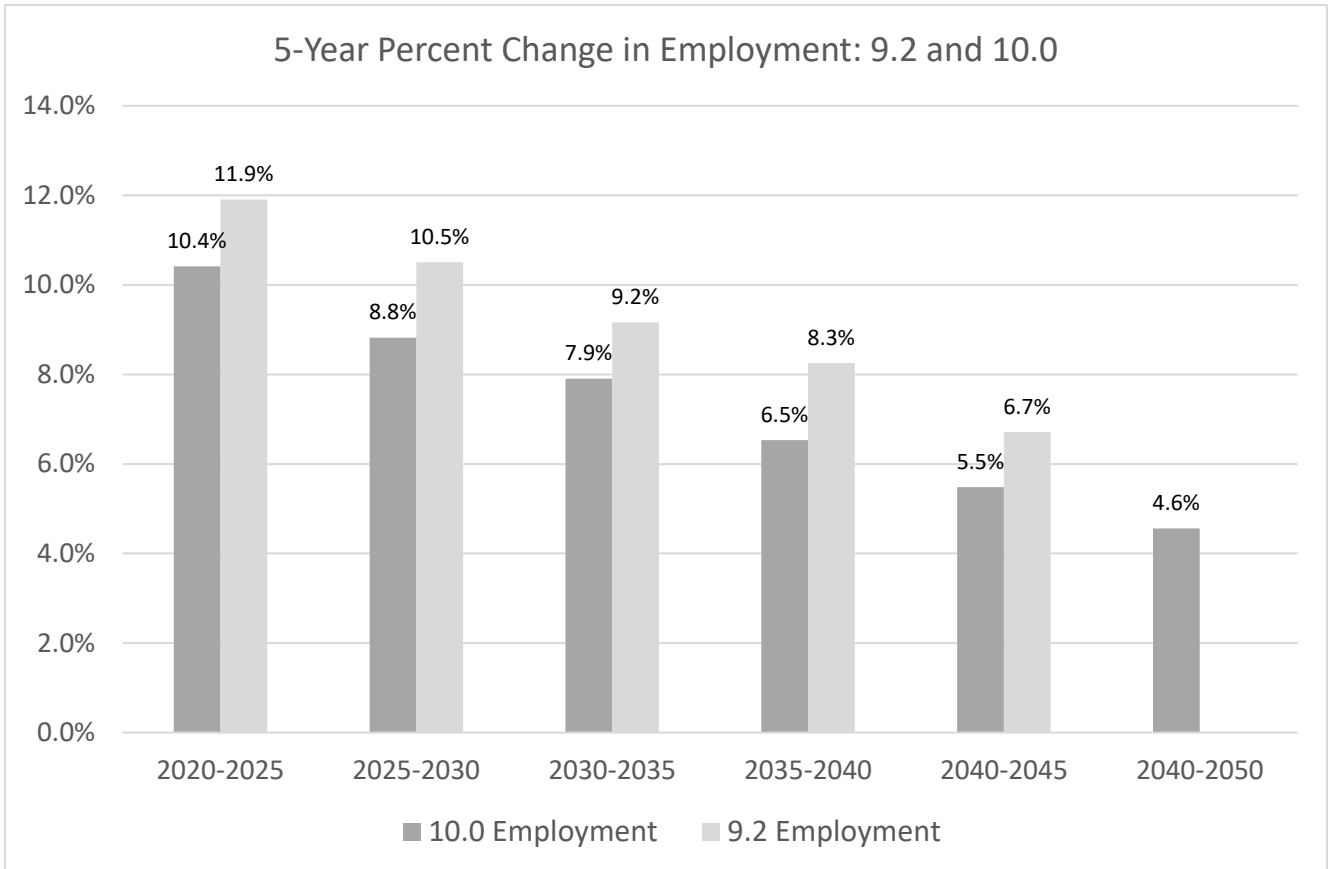
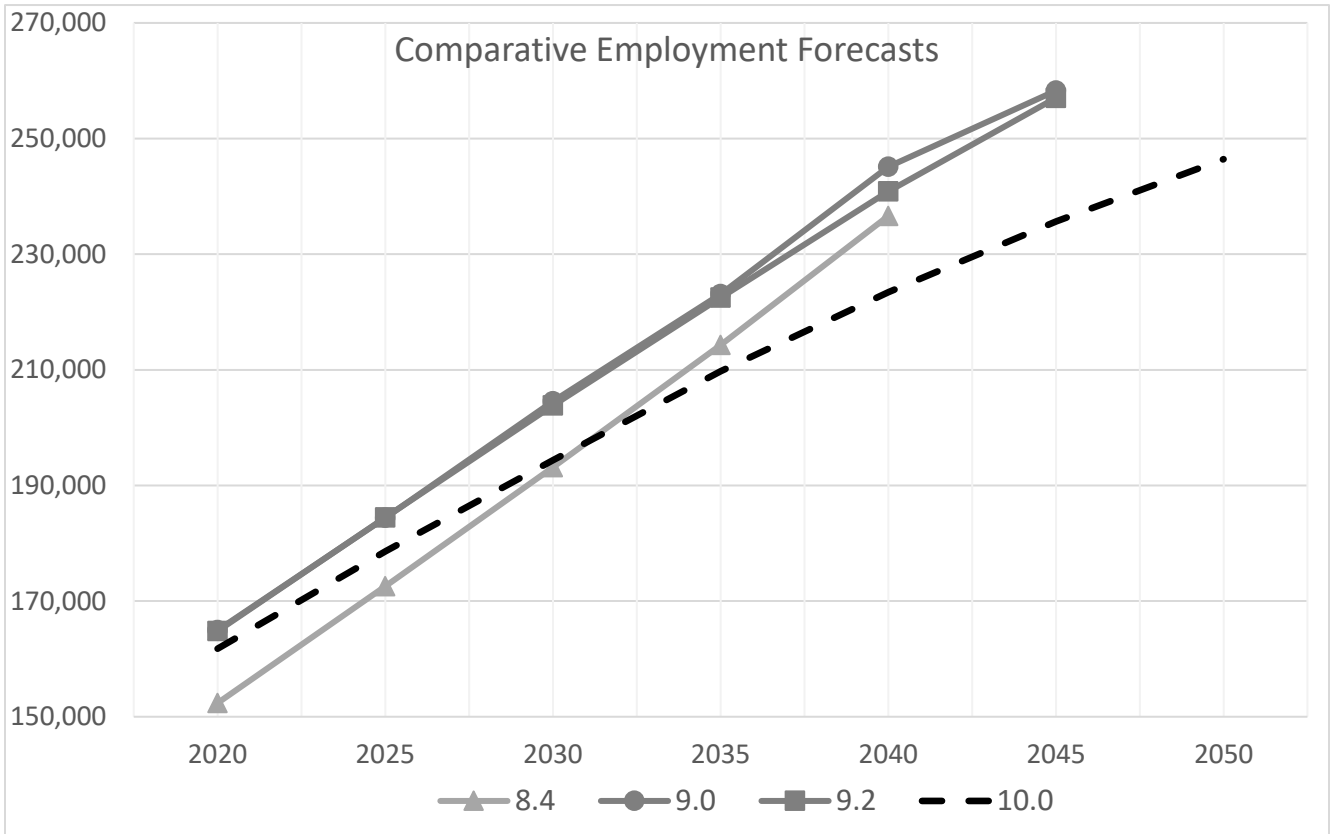




Population



Employment



Detailed Average Household Size and Population Revisions

	Single-Family Detached		Single-Family Attached		Multifamily		Weighted Average	
	Orig.	Rev.	Orig.	Rev.	Orig.	Rev.	Orig.	Rev.
2020	3.30	3.28	3.10	3.08	2.70	2.69	3.14	3.12
2025	3.29	3.26	3.09	3.07	2.69	2.67	3.11	3.09
2030	3.27	3.25	3.08	3.05	2.68	2.66	3.08	3.06
2035	3.26	3.23	3.06	3.03	2.67	2.64	3.07	3.03
2040	3.25	3.21	3.05	3.01	2.66	2.63	3.05	3.01
2045	3.24	3.19	3.04	3.00	2.65	2.61	3.04	2.99
2050	3.22	3.17	3.03	2.98	2.64	2.59	3.03	2.98

Orig. = Original; Rev. = Revised

	Single-Family Detached		Single-Family Attached		Multifamily		Total*	
	Orig.	Rev.	Orig.	Rev.	Orig.	Rev.	Orig.	Rev.
2020	273,758	272,363	134,044	133,361	74,625	74,245	482,427	479,968
2025	282,033	280,076	136,216	135,271	94,599	93,943	512,848	509,290
2030	288,537	286,004	138,369	137,154	108,018	107,070	534,924	530,229
2035	293,816	290,698	140,503	139,012	117,614	116,366	551,932	546,075
2040	298,195	294,485	142,618	140,843	123,860	122,319	564,673	557,647
2045	301,887	297,579	144,714	142,649	127,357	125,539	573,959	565,767
2050	305,036	300,126	146,792	144,430	128,697	126,625	580,525	571,180

*Group Quarters population *not* included; Orig. = Original; Rev. = Revised