



Lancaster County School District

2020-21 MEMBERSHIP FORECAST – FINAL REPORT

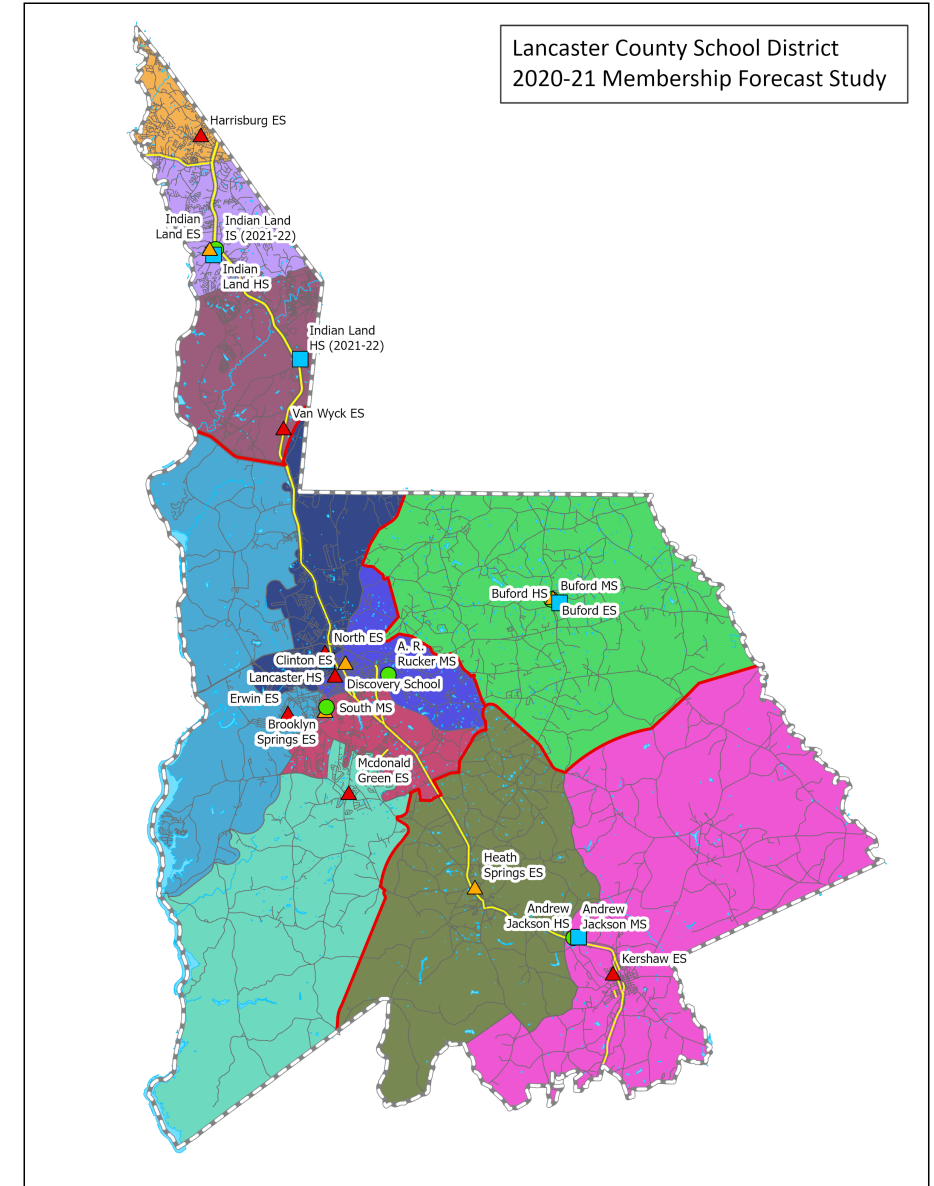
JANUARY 28, 2022

MICHAEL MILLER, NUMERIX LLC

numerix,y)solutions

Overview

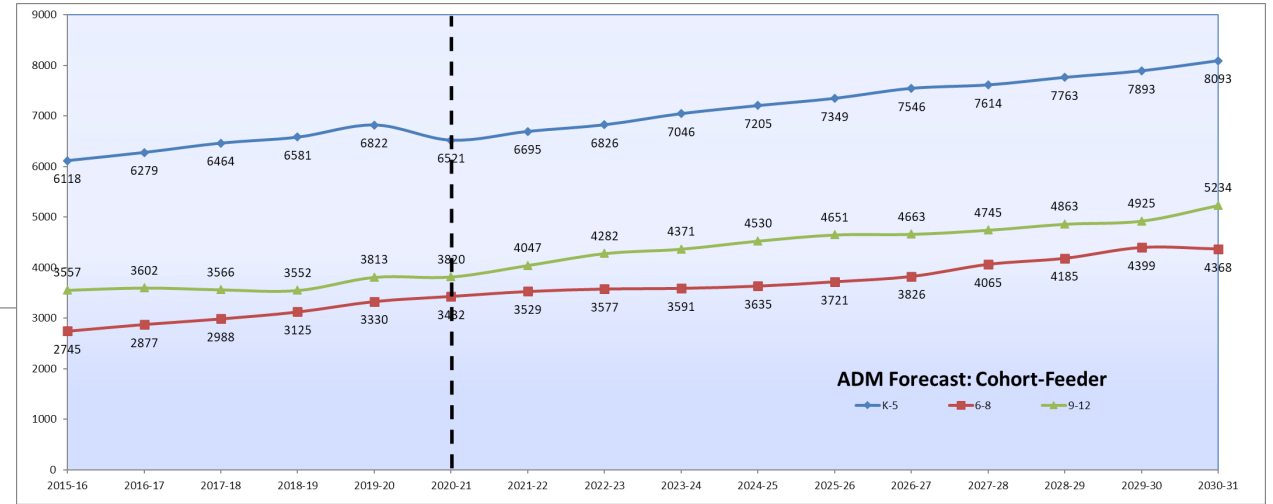
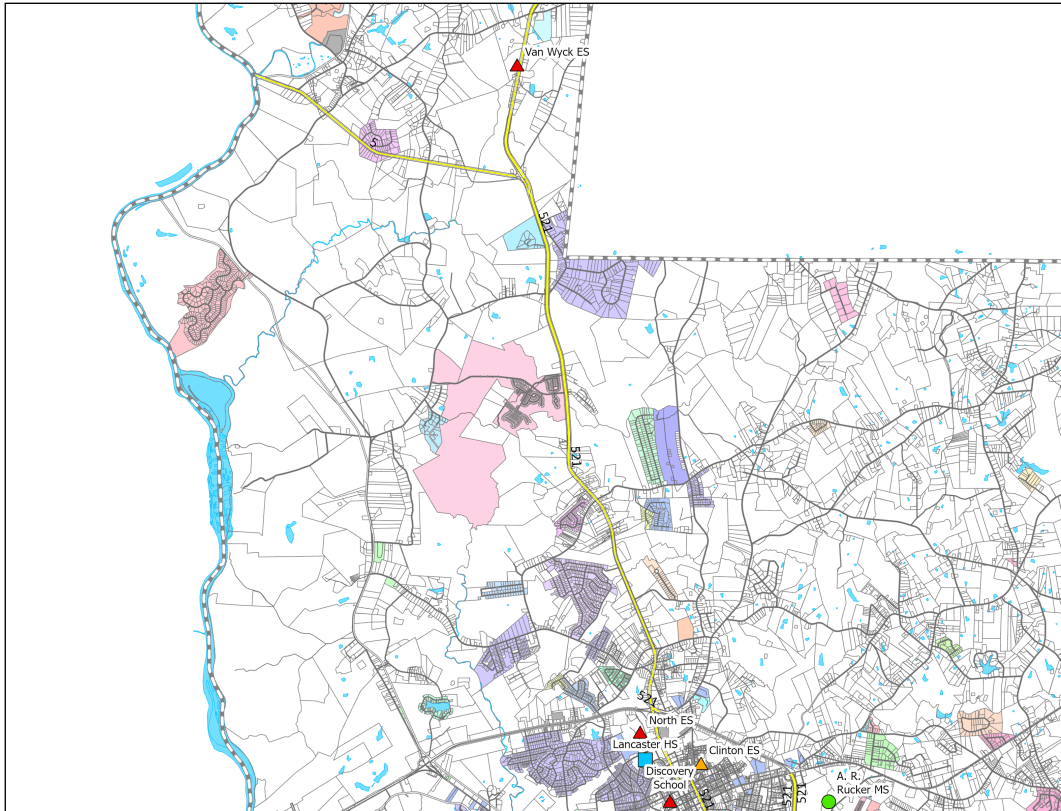
- Data and Methodology
- 2020-21 Membership Forecast
- Appendix



Data and Methodology

- Methodology
- Data
 - Resident Live Births
 - Historic Membership
 - Residential Developments

Methodology



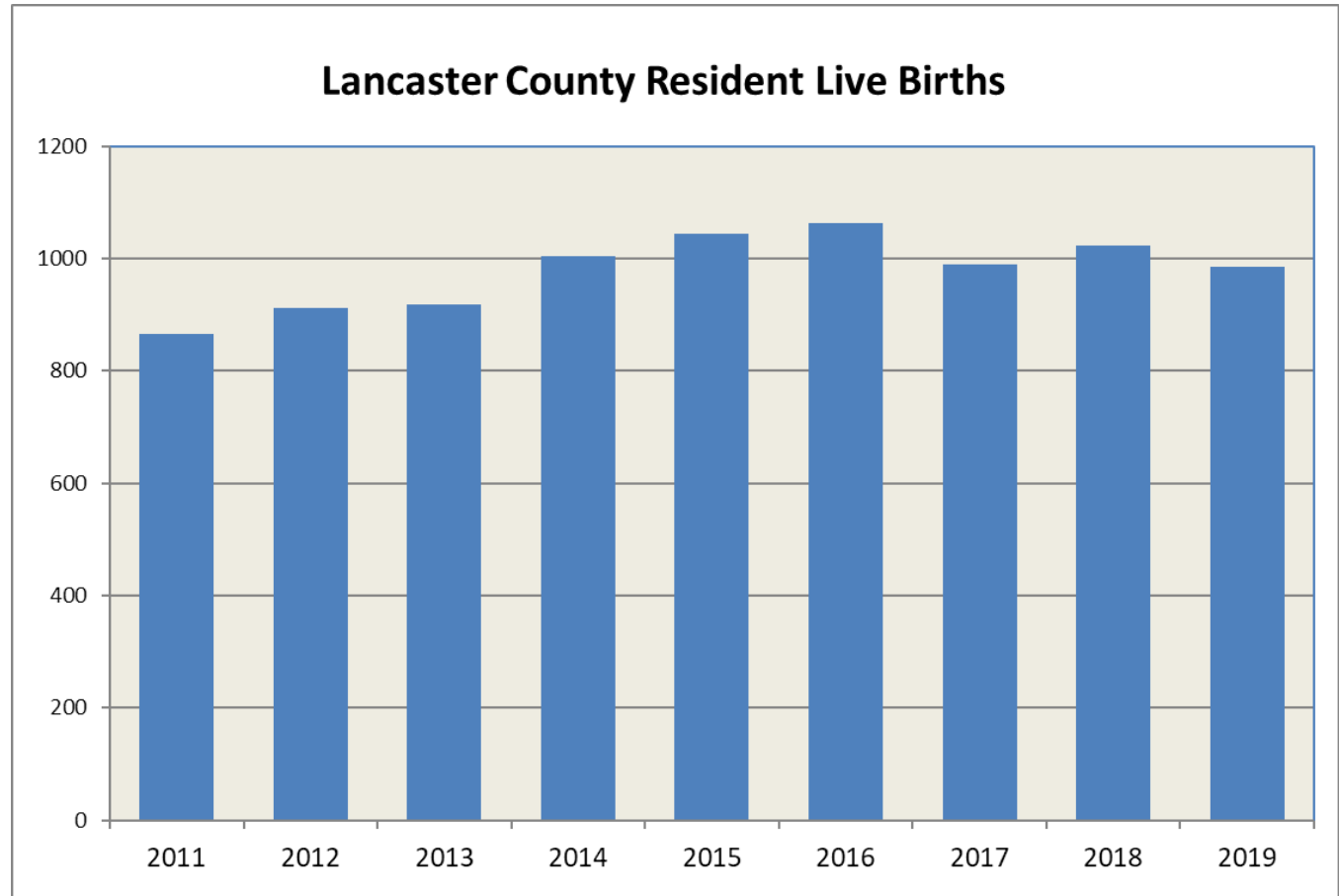
The Numerix forecasting process combines analysis of historical trends with GIS (Geographic Information Systems) analysis of potential growth from planned developments.

- Based on cohort-survival techniques
- Tracking membership through feeder system
- GIS database of current and future developments, school boundaries, parcels and other relevant data

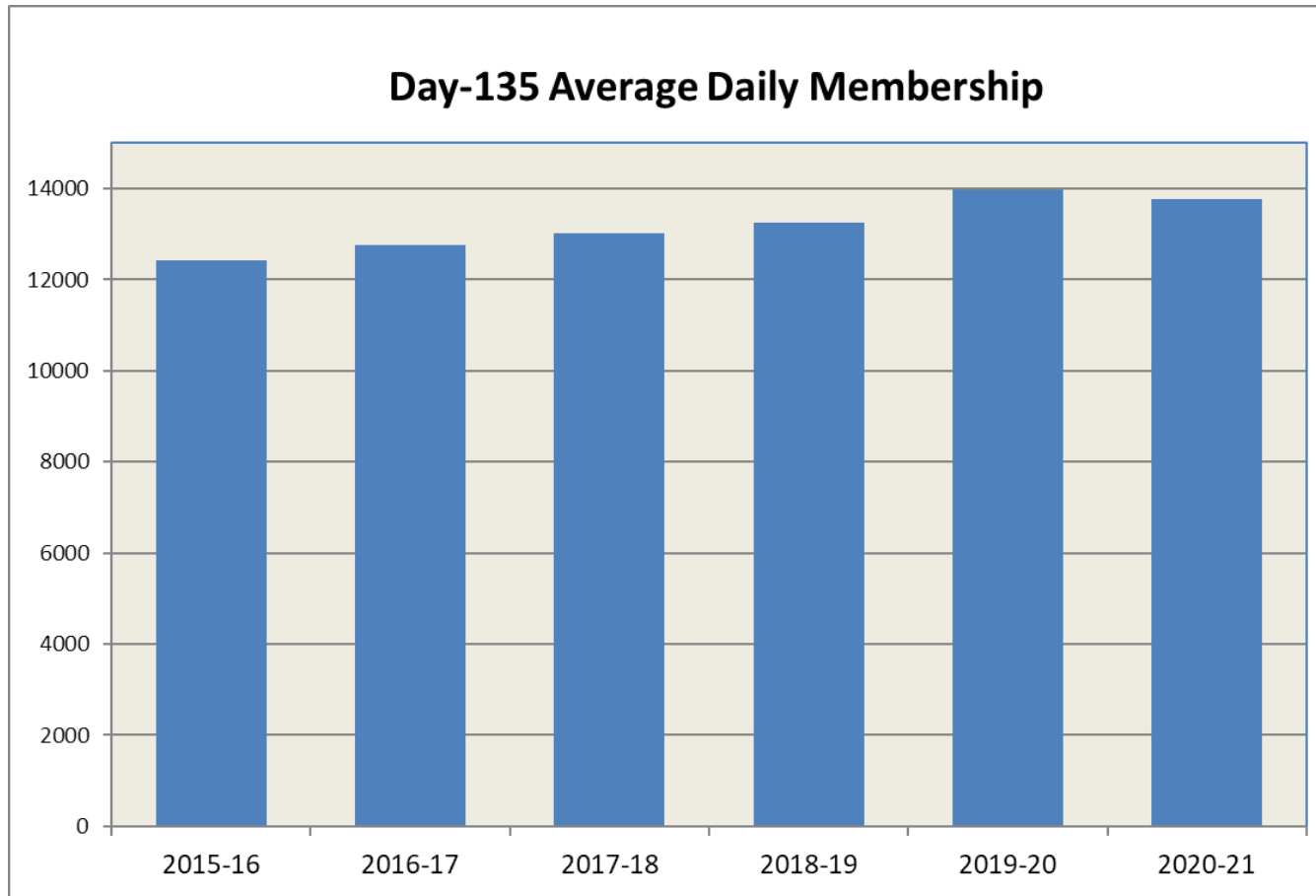
Data: Resident Live Births

Lancaster County Resident Live Births (RLB) have seen an average increase of 1.74% per year for 2011 – 2019.

Update: 2020 RLB = 1,044



Data: Historic Membership



For 2015-16 – 2020-21, the Day-135 K-12 Average Daily Membership (ADM) has increased by an average of 271 students (2.1%) per year.

** Update: 2021-22 Day-045 K-12 Enrollment (Headcount) = 14,380*

Data: Residential Developments

In addition to historical demographic trends, the forecast model also incorporates GIS and other data to estimate growth trends of existing and anticipated residential developments.

GIS analysis focused on these areas:

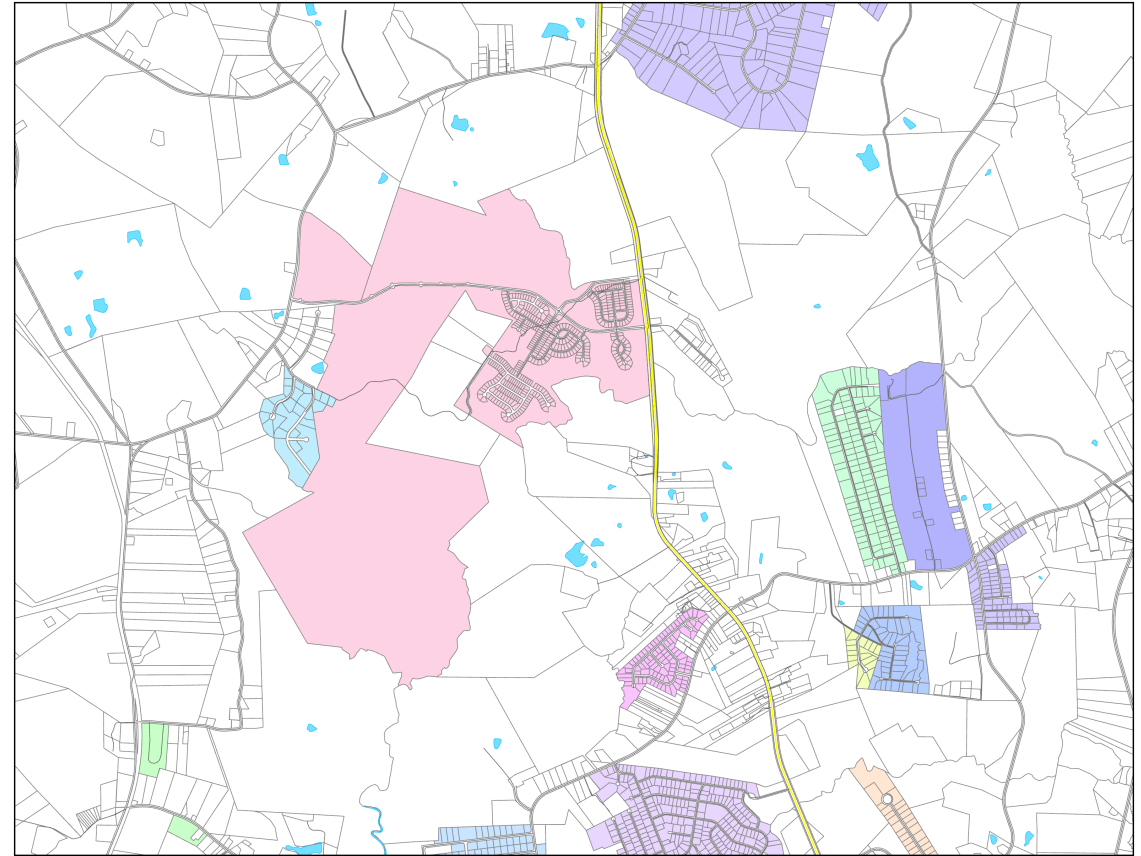
- Identifying/classifying residential developments,
- Quantifying student impact from existing residential developments and
- Estimating student impact from anticipated developments.

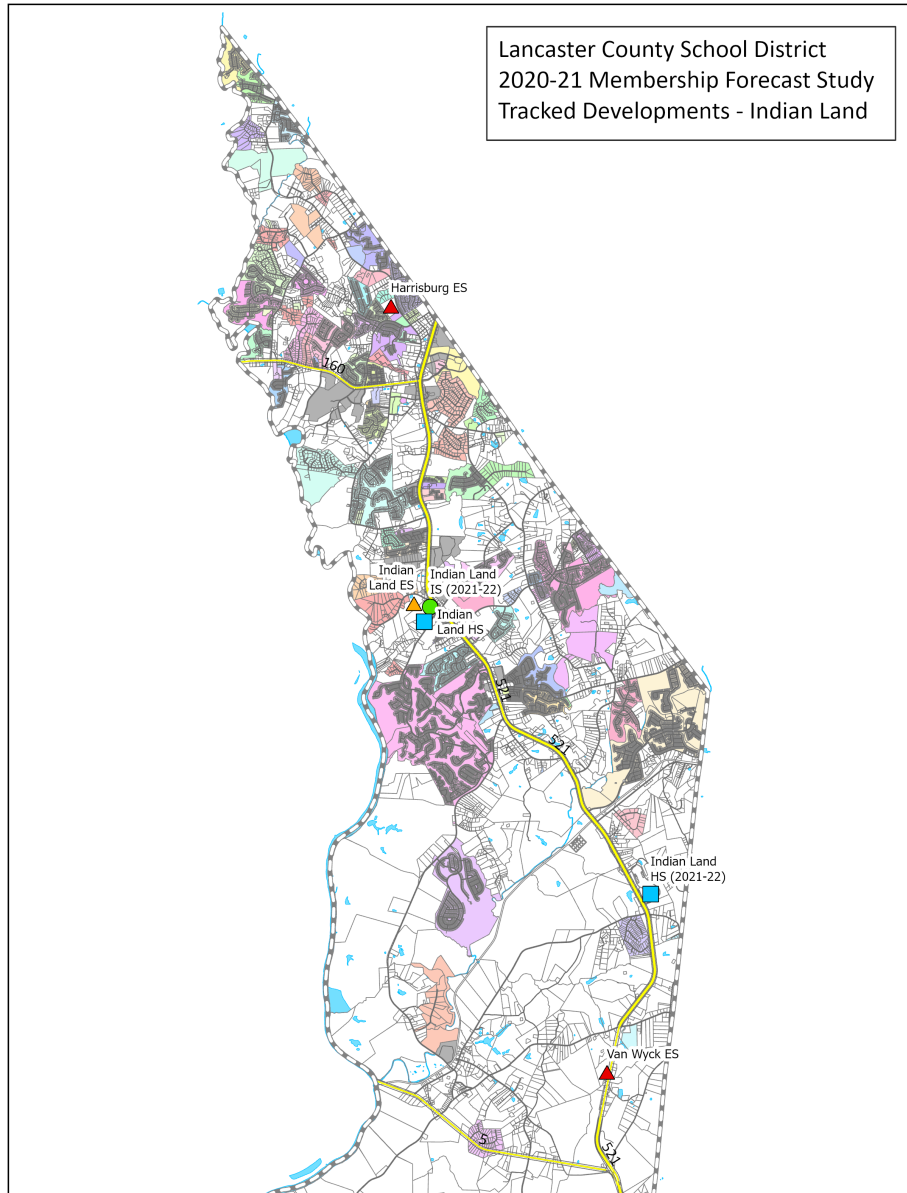
Thanks to Lancaster County Planning for data and support.

Data: Residential Developments

As of early 2021, almost 200 developments of various types were being tracked: single-family subdivisions, multi-family developments, mobile homes, townhomes, apartments, mobile home parks. Tracked developments are investigated for these attributes (dependent on data limitations):

- Number of LCSD students (based on the 2020-21 student geocode)
- Number of developed parcels or units
- Total number of existing parcels or units
- Expected number of parcels or units upon build-out – provided, in part, by the Lancaster County Planning Department.





Data: Residential Developments

As of July 2021, there are almost 19,000 SF lots and 7,000 MF units being tracked in the development inventory, including built-out subdivisions and developments pending approval.

The current estimate for remaining residential lots/units being tracked by Numerix is 5,300 SF lots and 2,000 MF units, not including developments that have been identified as “age-restricted”.

2020-21 LCSD Membership Forecast

- **Off-Target Analysis**
 - 2019-20 Membership Forecast Error
 - 2020-21 Membership Forecast Error
- **Forecast Assumptions**
- **Forecasts**
 - 2020-21 Membership Forecasts (at 100% and 75% Utilizations)
 - 2020-21 Utilization Forecast (at 100% Utilization)

Off-Target Analysis – 2019-20

2019-20 Membership Forecast

- Presented to LCSD Board on October 26, 2019
- Predicted Day-135 ADM, 2020-21: 14,456 K-12 (14,715 PreK-12)
- Actual Day-135 ADM, 2020-21: 13,773 K-12 (13,981 PreK-12)
- Error: 683 K-12 (about 5%)
- Most of the error occurs in grades K-5: Membership decreased by 301 K-5 students over 2019-20

Off-Target Analysis – 2020-21

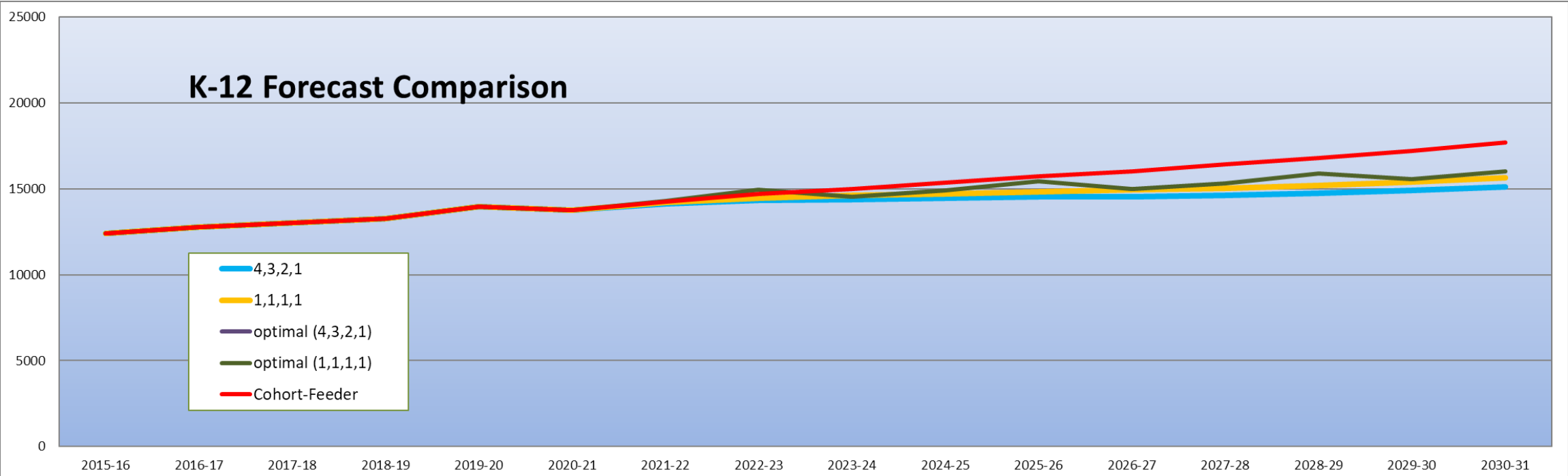
2020-21 Membership Forecast

- Final Report generated July 27, 2021
- Presented to LCSD Board on January 28, 2022
- Predicted Day-135 ADM, 2021-22: 14,271 K-12 (14,479 PreK-12)
- Active **Day-045 Headcount***, 2021-22: 14,380 K-12 (14,609 PreK-12)
- Error: 109 K-12 (< 0.1%)

* <https://ed.sc.gov/data/other/student-counts/active-student-headcounts/>

Forecast Assumptions

- Numeric Cohort-Feeder Forecast Model
- County Resident Live Births projected to increase at 2.50% per year – 2020 through 2025
- Current trends in residential development will continue



Forecast Assumptions

- Forecast models are built from historic trends and future development potentials
- The 2020-21 Membership Forecast is built on historic Day-135 Average Daily Membership (ADM) for 2015-16 – 2020-21
- Includes impact from existing and anticipated residential developments
- Forecast is intended for medium- to long-range planning (3-10 years)
- “Next-year” short-range membership forecasts are best aligned with current/on-going student data captures
- Estimated 2021-22 membership is based on the planned opening of a new high school and related grade configuration changes for schools in the Indian Land area
- Building capacities are from the Program Capacity Study conducted by H. Dale Holden & Associates, February 2010. 100% and 75% of program capacity are included separately.

2020-21 Membership Forecast

Three versions of the forecast are presented here:

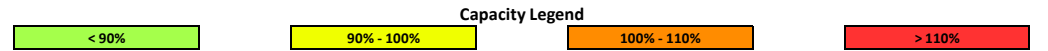
- 2020-21 Membership Forecast by Area with 100% Program Capacities, 7/27/2021
- 2020-21 Membership Forecast by Area with 75% Program Capacities, 7/27/2021
- 2020-21 Utilization Forecast by Area with 100% Program Capacities, 7/27/2021

Versions are available as separate documents

Lancaster County School District Membership Forecast

1. Historic Day-135 ADM supplied by SC DOE (no Pre-K). 2020-21 Day-135 Enrollment (including Pre-K) supplied by LCSD 4/14/2021.
2. Program capacities are from the Program Capacity Study, H. Dale Halden & Associates, February 2010. Portable classrooms are not included, 100% program capacity.
3. Forecast includes impacts from residential growth as described in Lancaster County development inventory through January 2021.
4. Forecast generated by Numerix Cohort-Feeder model. Projected RLB annual gain = 2.5%, 2019 to 2025. K-12 average annual gain = 2.31%, 2021-22 to 2030-31.
5. Forecast includes estimated membership impacts from proposed assignment changes related to a new High School, Indian Land HS, Indian Land MS, Harrisburg ES, Indian Land ES and Van Wyck ES effective in 2021-22.

Grades 2020-21	Capacities			Pre-K 2019-20	Historic Day-135 ADM (No Pre-K)					Day-135 2020-21	Forecasted Day-135 ADM										
	2020-21	2021-22	2022-23		2015-16	2016-17	2017-18	2018-19	2019-20		2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
Andrew Jackson																					
Heath Springs ES	K-5	446	446	446	17	375	395	380	401	381	358	361	341	346	347	351	355	361	366	374	
Kershaw ES	K-5	565	565	565	39	420	400	427	436	492	528	547	565	576	574	571	567	566	575	582	595
Andrew Jackson MS	6-8	628	628	628		461	488	477	498	498	487	483	500	496	513	514	532	544	541	540	526
Andrew Jackson HS	9-12	974	974	974		654	633	631	610	633	614	618	629	639	628	643	645	655	672	678	701
SubTotal		2613	2613	2613	56	1909	1916	1914	1945	2003	1987	2009	2036	2057	2062	2078	2100	2120	2148	2165	2197
Buford																					
Buford ES	K-5	929	929	929	19	719	716	710	704	720	715	700	717	699	715	701	702	702	713	723	740
Buford MS	6-8	694	694	694		417	398	413	431	439	437	449	420	425	384	420	401	429	410	410	400
Buford HS	9-12	1046	1046	1046		636	624	600	572	571	529	555	562	573	590	558	570	535	533	553	541
SubTotal		2669	2669	2669	19	1772	1738	1722	1707	1730	1681	1704	1699	1698	1690	1678	1674	1665	1656	1686	1681
Indian Land																					
Harrisburg ES (K-4 in 2021-22)	K-5	970	970	970		1010	1128	1269	886	975	989	898	931	968	997	1054	1050	1065	1080	1107	1134
Indian Land ES (K-4 in 2021-22)	K-5	1052	1052	1052		906	968	1103	1036	1097	1031	904	970	1031	1074	1117	1125	1140	1153	1182	1212
Van Wyck ES (K-4 in 2021-22)	K-5	1170	1170	1170	21					708	732	652	689	730	756	791	824	853	872	894	915
Indian Land MS (5-6 in 2021-22)	6-8	1174	1174	1174		844	947	994	1042	1195	1309	908	933	931	984	993	1081	1194	1217	1234	1234
Indian Land HS (7-8 in 2021-22)	9-12	1127	1127	1127		881	975	1049	1166	1310	1345	937	953	1008	1034	1033	1092	1101	1203	1325	1351
New HS (Opening 2021-22)	9-12		2000	2000								1475	1591	1677	1798	1922	1961	2014	2099	2105	2272
SubTotal		5493	7493	7493	21	3641	4018	4415	4130	5285	5406	5774	6066	6345	6642	6910	7132	7368	7623	7846	8118
Lancaster																					
Brooklyn Springs ES	K-5	618	618	618	19	496	505	472	443	431	404	410	414	423	429	439	447	447	455	461	472
Clinton ES	K-5	527	527	527	38	396	403	418	433	461	476	485	507	518	521	529	523	524	531	539	551
Erwin ES	K-5	564	564	564	37	472	453	418	398	392	438	449	459	493	507	533	566	580	600	616	636
McDonald Green ES	K-5	528	528	528		519	484	459	420	398	347	337	325	332	336	348	353	353	359	364	373
North ES	K-5	762	762	762	18	698	720	701	678	660	605	591	572	571	560	550	557	557	566	574	588
AR Rucker MS	6-8	994	994	994		532	516	547	562	556	570	566	581	593	637	691	745	782	793	817	806
South MS	6-8	921	921	921		491	529	557	592	643	629	648	628	598	572	537	553	587	625	661	654
Lancaster HS	9-12	2569	2569	2569		1385	1369	1286	1205	1299	1332	1399	1501	1481	1514	1528	1487	1541	1560	1589	1720
SubTotal		7483	7483	7483	112	4989	4979	4858	4731	4839	4801	4885	4986	5010	5077	5156	5231	5372	5487	5622	5801
Special/Alternative																					
Discovery School	K-5	n/a	n/a	n/a		107	108	108	106	108	106	106	106	106	106	106	106	106	106	106	106
System Total (excluding Spec/Alt)		18258	20258	20258	208	12312	12651	12909	12513	13857	13875	14372	14788	15110	15472	15822	16137	16525	16913	17319	17797
System Total (including Spec/Alt)		18258	20258	20258	208	12419	12758	13017	12619	13965	13981	14479	14894	15216	15578	15929	16244	16632	17020	17425	17903



Lancaster County School District Membership Forecast

1. Historic Day-135 ADM supplied by SC DOE (no Pre-K). 2020-21 Day-135 Enrollment (including Pre-K) supplied by LCSD 4/14/2021.
2. Program capacities are from the Program Capacity Study, H. Dale Holden & Associates, February 2010. Portable classrooms are not included, 75% program capacity.
3. Forecast includes impacts from residential growth as described in Lancaster County development inventory through January 2021.
4. Forecast generated by Numerix Cohort-Feeder model. Projected RLB annual gain = 2.5%, 2019 to 2025. K-12 average annual gain = 2.31%, 2021-22 to 2030-31.
5. Forecast includes estimated membership impacts from proposed assignment changes related to a new High School, Indian Land HS, Indian Land MS, Harrisburg ES, Indian Land ES and Van Wyck ES effective in 2021-22.

Grades 2020-21	Capacities			Pre-K 2019-20	Historic Day-135 ADM (No Pre-K)					Forecasted Day-135 ADM											
	2020-21	2021-22	2022-23		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
Andrew Jackson																					
Heath Springs ES	K-5	446	446	446	17	375	395	380	401	381	358	361	341	346	347	351	355	355	361	366	374
Kershaw ES	K-5	565	565	565	39	420	400	427	436	492	528	547	565	576	574	571	567	566	575	582	595
Andrew Jackson MS	6-8	471	471	471		461	488	477	498	498	487	483	500	496	513	514	532	544	541	540	526
Andrew Jackson HS	9-12	731	731	731		654	633	631	610	633	614	618	629	639	628	643	645	655	672	678	701
SubTotal		2213	2213	2213	56	1909	1916	1914	1945	2003	1987	2009	2036	2057	2062	2078	2100	2120	2148	2165	2197
Buford																					
Buford ES	K-5	929	929	929	19	719	716	710	704	720	715	700	717	699	715	701	702	702	713	723	740
Buford MS	6-8	521	521	521		417	398	413	431	439	437	449	420	425	384	420	401	429	410	410	400
Buford HS	9-12	785	785	785		636	624	600	572	571	529	555	562	573	590	558	570	535	533	553	541
SubTotal		2235	2235	2235	19	1772	1738	1722	1707	1730	1681	1704	1699	1698	1690	1678	1674	1665	1656	1686	1681
Indian Land																					
Harrisburg ES (K-4 in 2021-22)	K-5	970	970	970		1010	1128	1269	886	975	989	898	931	968	997	1054	1050	1065	1080	1107	1134
Indian Land ES (K-4 in 2021-22)	K-5	1052	1052	1052		906	968	1103	1036	1097	1031	904	970	1031	1074	1117	1125	1140	1153	1182	1212
Van Wyck ES (K-4 in 2021-22)	K-5	1170	1170	1170	21					708	732	652	689	730	756	791	824	853	872	894	915
Indian Land MS (5-6 in 2021-22)	6-8	881	881	881		844	947	994	1042	1195	1309	908	933	931	984	993	1081	1194	1217	1234	1234
Indian Land HS (7-8 in 2021-22)	9-12	845	845	845		881	975	1049	1166	1310	1345	937	953	1008	1034	1033	1092	1101	1203	1325	1351
New HS (Opening 2021-22)	9-12		1500	1500								1475	1591	1677	1798	1922	1961	2014	2099	2105	2272
SubTotal		4918	6418	6418	21	3641	4018	4415	4130	5285	5406	5774	6066	6345	6642	6910	7132	7368	7623	7846	8118
Lancaster																					
Brooklyn Springs ES	K-5	618	618	618	19	496	505	472	443	431	404	410	414	423	429	439	447	447	455	461	472
Clinton ES	K-5	527	527	527	38	396	403	418	433	461	476	485	507	518	521	529	523	524	531	539	551
Erwin ES	K-5	564	564	564	37	472	453	418	398	392	438	449	459	493	507	533	566	580	600	616	636
McDonald Green ES	K-5	528	528	528		519	484	459	420	398	347	337	325	332	336	348	353	353	359	364	373
North ES	K-5	762	762	762	18	698	720	701	678	660	605	591	572	571	560	550	557	557	566	574	588
AR Rucker MS	6-8	746	746	746		532	516	547	562	556	570	566	581	593	637	691	745	782	793	817	806
South MS	6-8	691	691	691		491	529	557	592	643	629	648	628	598	572	537	553	587	625	661	654
Lancaster HS	9-12	1927	1927	1927		1385	1369	1286	1205	1299	1332	1399	1501	1481	1514	1528	1487	1541	1560	1589	1720
SubTotal		6363	6363	6363	112	4989	4979	4858	4731	4839	4801	4885	4986	5010	5077	5156	5231	5372	5487	5622	5801
Special/Alternative																					
Discovery School	K-5	n/a	n/a	n/a		107	108	108	106	108	106	106	106	106	106	106	106	106	106	106	106
System Total (excluding Spec/Alt)		15729	17229	17229	208	12312	12651	12909	12513	13857	13875	14372	14788	15110	15472	15822	16137	16525	16913	17319	17797
System Total (including Spec/Alt)		15729	17229	17229	208	12419	12758	13017	12619	13965	13981	14479	14894	15216	15578	15929	16244	16632	17020	17425	17903

< 90%

90% - 100%

100% - 110%

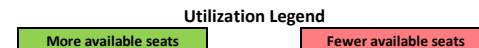
> 110%

Capacity Legend

Lancaster County School District Utilization Forecast

1. Historic Day-135 ADM supplied by SC DOE (no Pre-K). 2020-21 Day-135 Enrollment (including Pre-K) supplied by LCSD 4/14/2021.
2. Program capacities are from the Program Capacity Study, H. Dale Holden & Associates, February 2010. Portable classrooms are not included, 100% program capacity.
3. Forecast includes impacts from residential growth as described in Lancaster County development inventory through January 2021.
4. Forecast generated by Numerix Cohort-Feeder model. Projected RLB annual gain = 2.5%, 2019 to 2025. K-12 average annual gain = 2.31%, 2021-22 to 2030-31.
5. Forecast includes estimated membership impacts from proposed assignment changes related to a new High School, Indian Land HS, Indian Land MS, Harrisburg ES, Indian Land ES and Van Wyck ES effective in 2021-22.

Grades 2020-21	Capacities	Historic Available Seats					Day-135	Forecasted Available Seats										
	2020-21	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
Andrew Jackson																		
Heath Springs ES	K-5	446	71	51	66	45	65	88	85	105	100	99	95	91	91	85	80	72
Kershaw ES	K-5	565	145	165	138	129	73	37	18	0	-11	-9	-6	-2	-1	-10	-17	-30
Andrew Jackson MS	6-8	628	167	140	151	130	130	141	145	128	132	115	114	96	84	87	88	102
Andrew Jackson HS	9-12	974	320	341	343	364	341	360	356	345	335	346	331	329	319	302	296	273
SubTotal		2613	704	697	699	668	610	626	604	577	556	551	535	513	493	465	448	416
Buford																		
Buford ES	K-5	929	210	213	219	225	209	214	229	212	230	214	228	227	227	216	206	189
Buford MS	6-8	694	277	296	281	263	255	257	245	274	269	310	274	293	265	284	284	294
Buford HS	9-12	1046	410	422	446	474	475	517	491	484	473	456	488	476	511	513	493	505
SubTotal		2669	897	931	947	962	939	988	965	970	971	979	991	995	1004	1013	983	988
Indian Land																		
Harrisburg ES (K-4 in 2020-21)	K-5	970	-40	-158	-299	84	-5	-19	72	39	2	-27	-84	-80	-95	-110	-137	-164
Indian Land ES (K-4 in 2020-21)	K-5	1052	146	84	-51	16	-45	21	148	82	21	-22	-65	-73	-88	-101	-130	-160
Van Wyck ES (K-4 in 2020-21)	K-5	1170					462	438	518	481	440	414	379	346	317	298	276	255
Indian Land MS (5-6 in 2020-21)	6-8	1174	330	227	180	132	-21	-135	266	241	243	190	181	93	-20	-43	-60	-60
Indian Land HS (7-8 in 2020-21)	9-12	1127	246	152	78	-39	-183	-218	190	174	119	93	94	35	26	-76	-198	-224
New HS (Opening 2020-21)	9-12								525	409	323	202	78	39	-14	-99	-105	-272
SubTotal		5493	682	305	-92	193	208	87	1719	1427	1148	851	583	361	125	-130	-353	-625
Lancaster																		
Brooklyn Springs ES	K-5	618	122	113	146	175	187	214	208	204	195	189	179	171	171	163	157	146
Clinton ES	K-5	527	131	124	109	94	66	51	42	20	9	6	-2	4	3	-4	-12	-24
Erwin ES	K-5	564	92	111	146	166	172	126	115	105	71	57	31	-2	-16	-36	-52	-72
McDonald Green ES	K-5	528	9	44	69	108	130	181	191	203	196	192	180	175	175	169	164	155
North ES	K-5	762	64	42	61	84	102	157	171	190	191	202	212	205	205	196	188	174
AR Rucker MS	6-8	994	462	478	447	432	438	424	428	413	401	357	303	249	212	201	177	188
South MS	6-8	921	430	392	364	329	278	292	273	293	323	349	384	368	334	296	260	267
Lancaster HS	9-12	2569	1184	1200	1283	1364	1270	1237	1170	1068	1088	1055	1041	1082	1028	1009	980	849
SubTotal		7483	2494	2504	2625	2752	2644	2682	2598	2497	2473	2406	2327	2252	2111	1996	1861	1682
Special/Alternative																		
Discovery School	K-5	n/a	107	108	108	106	108	106	106	106	106	106	106	106	106	106	106	106
System Total (excluding Spec/Alt)		18258	5946	5607	5349	5745	4401	4383	3886	3470	3148	2786	2436	2121	1733	1345	939	461



July 27, 2021

Forecast generated by Numerix LLC

Forecast Summary

- Average annual K-12 growth: 392 over the next ten years
- Average annual K-12 growth rate: 2.54% over the next ten years
- Day-135 K-12 Average Daily Membership by level *:

Level	2020-21	2025-26	2030-31
Elementary (K-5)	6,521	7,349	8,093
Middle (6-8)	3,432	3,721	4,368
High (9-12)	3,820	4,651	5,234

** PreK remains constant throughout forecast at 208*

Additional Information

The 2020-21 Membership Forecast Report (final version: 7/27/2021) contains additional data and detail, including general population forecasts in the Appendix.

All Forecast tables are available as separate documents.

Appendix

- Data Sources
- About Numerix LLC

Data Sources

- 2020-21 LCSD student geocode – Approximate 92% match rate
- LCSD Day-135 Average Daily Membership – 2015-16 through 2020-21
- LCSD 2020-21 Day-135 Average Daily Membership for Pre-K
- Lancaster County Resident Live Births for 2011 – 2019
- Building capacities – As reported in the Program Capacity Study conducted by H. Dale Holden & Associates, February 2010. Both 100% and 75% (for middle and high schools) program capacities with no portable classrooms were used for this membership forecast.
- Lancaster County GIS data, including parcels, schools, attendance areas, streets, address points and other features.
- Lancaster County residential development data – Information on active and anticipated developments was collected from Lancaster County Planning and various other sources during the spring 2021. Data collected includes location, impacted parcels, total number of expected lots/units.

Numerix LLC

numerix,y)solutions

Numerix LLC – GIS-based Demographics and Planning Solutions for Schools

- Membership forecasts
- GIS analysis
- Mathematical modeling
- Demographic analysis
- 18+ years of school planning experience in 50 districts in SC, NC and VA
- Michael Miller – Founder and Managing Member, Numerix LLC
 - Since 2016: Numerix LLC, Charleston SC
 - 2003 – 2016: Operations Research and Education Laboratory, ITRE @ NCSU Centennial Campus