Delivering Highway Services at the Town Level in New York State:

Home rule accountability for effective and efficient highway maintenance on neighborhood roads and streets.

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An Overview of Function and Service

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About the author

Brian O. Rowback is a 1974 graduate of Cornell University with a Bachelor of Science degree in Civil and Environmental Engineering. Mr. Rowback served in the public sector for over 35 years retiring from the New York State Department of Transportation in 2009 having held Regional Group Director Positions in Geotechnical Engineering, Traffic and Safety as well as Planning. His career in Executive management in the Department included Regional Directorships in the Buffalo and Capital District Region as well as Acting First Deputy Commissioner and Director of the Operations and Delivery Divisions in the Main Office. Mr Rowback also served as City Engineer in Gloversville, New York and Senior Planner for the Capital District Transportation Planning Committee.

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Introduction

In New York, all residents who do not live in a city or on an Indian reservation live in a town. Towns are among the oldest incorporated places in the state with the Town of Hempstead being formed in the year 1644[1]. 500 towns in New York have been in existence for over 200 years. No other level of government of the people in New York can boast such a history of self-governance. Towns provide or arrange for the primary functions of local government. In New York 45.8% of residents were living in one of 932 towns; 35.9% were living in a town but outside of a village[2]. Outside the Boroughs of New York City, eight out of ten people reside in a town.

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This report, commissioned by the New York State Association of Town Superintendents of Highways, (NYSAOTSOH) will review the importance and nature of the provision of highway services within and among the various levels of governments who perform such service. This report will show the unique nature of town highways, the level of accountability and incentive for providing efficient services to the public who travel these roadways. The report will outline the system that governs the continued care of this highway network and the long-term essential practice of inter-governmental cooperation and shared services which are built into the culture of the men and women who deliver these services.

[1] Town Guides, New England Ancestors.org

[2] US Census 2000

Executive Summary

New York State Towns, like all levels of state government, have felt the strain of rising costs and difficult budget shortfalls. State sponsored local government assistance programs like the Consolidated Local Street and Highway Improvement Program (CHIPS) have not increased at the same rate of inflation as highway construction costs.

Not only has an important source of highway assistance been undermined, but populist governance ideas have taken root for consolidation and merging of governmental units, functions and services into more regional or county based structures. In the specific case of highway services these precepts are misguided as the town highway infrastructure and its needs are unlike that of higher functioning county and state-owned highways. Town highway networks, in general, differ substantially from those of the counties and states in geometry, wearing surfaces, drainage, shoulders and posted speeds. In many towns these differences can be seen in the make-up of town highway budgets and in the equipment in the town highway barns.

County and state operational guidelines and policies reflect the higher speeds, longer continuous routes and structurally superior roads they service. Response times during snow and ice events reflect a balance born of practical experience and optimization of beats and serve the public directly where the majority of trips begin, on town highways. The hierarchy of roadway function is matched by the driver's expectation that these higher level roads are cleared to bare pavement in a reasonable length of time after each winter storm event. This results in a synergy between state and county routes by virtue of their contiguous nature and higher operating speeds. Higher traffic volumes assist in these goals by providing needed "working" of the de-icing treatments further enhancing the effectiveness of treatment towards a "bare roads" policy.

The network of town roads are not mutually exclusive of these policies but are heavily influenced by the nature of the town highway system which includes many unpaved surfaces in rural areas (20% of town-owned mileage[3]) and many "dead end" facilities. State and county highway facilities frequently have numerous sub-residencies and patrol locations to minimize the "dead head" time to get to routes more distant from the central location. Towns however, infrequently have more than one garage.

Certainly opportunities abound for continued and aggressive cooperation and shared services between contiguous and adjacent local governments. This is particularly true with the "back office" costs in support of human resources, health care, and purchasing of equipment, materials and supplies. With cost savings and improved efficiencies in the balance, town officials and highway superintendents have a vested interest in these outcomes.

Town supported highway services have been a part of the social fabric of New York for hundreds of years, obtaining the most efficient and effective service to the taxpayers who pay for these services is the goal of all of those who provide it.

While mergers and consolidations receive the hype, many case studies have failed to show the appreciable savings. Fewer governments usually brings bigger government with more layers between the taxpayer and the public official accountable for the services that the government is providing.

In addition, in the case of highways and bridges, these reforms fail to address the much more significant fiscal issue of underfinanced capital needs. As the recent Lt. Governor Richard Ravitch's transportation report concluded: "*In this period of austerity, national economic uncertainty, unpredictability of federal funding, and rising social service costs, there is an increasing risk that funding for infrastructure investments will be curbed to dangerous levels. In order to prevent a self destructive backsliding on investment, the State*

[3] NYSDOT Highway Mileage Report 2008

must craft a multi-year transportation capital investment strategy that sets clear and attainable priorities, identifies reliable revenues, and balances competing regional demands. Avoiding this obligation means surrendering any plausible chance for a prosperous future for New York ."

Future programs and policies from the executive and legislative branches of all levels of government needs to continue to incentivize efficiencies in highway service delivery through shared services, while at the same time address the deferred capital needs of the entire transportation network, especially the local system.

"In order to prevent a self destructive backsliding on investment, the State must craft a multi-year transportation capital investment strategy that sets clear and attainable priorities, identifies reliable revenues, and balances competing regional demands"
Lt. Gov. Ravitch Report on Transportation Nov.2010

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Town Highways in Context

Town Highway Evolution

From the earliest days of town incorporation, the movement of people and goods was a primary function of the town fathers. The earliest budgets and tax levies supported the improvement of the transportation system in each town as growth patterns and commerce demanded. The care of travel ways allowed residents to more easily get their goods to markets, attend church and school, and travel to the clusters of development that served as community centers and places of employment and commerce. These beginnings were rough on travelers as roads were scraped from cart paths and walking trails. Animals powered all things mechanical from plows and scrapers to wagons and stages. Water and rail transportation development helped solidify the pattern of settlement which exists to this day.

From the earliest days of town incorporation, the movement of people and goods was a primary function of the town fathers.

Significant investments were occurring to promote intercity and interstate travel. The vast majority of these investments were sponsored by higher level governments and private investors, capturing and promoting the wealth of the Industrial Age. In large part, town highways were not a part of this growth and expansion of roadways which had its real spurt during the creation of US highways in the 1920's and reached its zenith during the post war era of interstate and arterial highway construction through-out the United States. However, as the population grew and became more affluent the agricultural nature of towns was transformed in many areas as suburbanization set in. This resulted in significant increases in town highway mileage in the suburbanized towns of New York as developers built their subdivisions and town populations grew. Table 1 shows the mileage changes by ownership from 1975 to 2009. At both the county and state-owned level, mileage remained relatively constant if not declining. Town mileage, however, shows an increase of over 9%.This increase alone equates to 24% of the County's and 34% of the State's owned mileage.

Table 1- Growth in Mileage by Ownership in New York State[4]

COUNTY	1975 Town Mileage	2008 Town Mileage	Select Increases	1975 County Mileage	2008 County Mileage	1975 State Mileage	2008 State Mileage
Albany	832	1030	198	282	288	321	293
Allegany	1258	1251		326	346	263	229
Broome	990	1066	76	338	339	292	297
Cattaraugus	1199	1201		423	405	325	315
Cayuga	691	710		521	513	284	276
Chautauqua	1200	1210		569	552	353	353
Chemung	552	579	27	240	244	124	119
Chenango	1114	1112		302	309	249	262
Clinton	725	815	90	369	360	274	282
Columbia	871	917	46	265	267	231	264
Cortland	517	514		253	248	196	199
Delaware	1466	1527	61	259	261	316	341
Dutchess	1221	1463	242	395	393	341	372
Erie	1371	1751	380	1205	1178	564	498
Essex	535	639	104	356	357	309	329
Franklin	763	786		267	266	266	266
Fulton	430	441		146	144	144	143
Genesee	462	461		253	258	212	192
Greene	601	667	56	259	262	217	193
Hamilton	163	177		96	95	170	179
Herkimer	573	566		578	579	260	240
Jefferson	989	1025		550	539	408	408
Lewis	878	892		255	249	134	154
Livingston	765	763		237	242	242	269
Madison	714	728		439	439	176	170
Monroe	1107	1649	542	657	665	456	466
Montgomery	298	298		395	394	194	179
Nassau	2104	2157		733	483	137	215
Niagara	536	614	78	288	283	251	251
Oneida	1286	1277		584	594	432	425
Onondaga	949	1273	324	800	793	409	412
Ontario	854	929	75	238	239	239	221
Orange	1161	1360	199	297	312	434	368
Orleans	386	388		199	197	151	157
Oswego	931	973		499	502	299	287
Otsego	1228	1241		479	477	243	290
Putnam	481	577	96	118	117	119	133
Rensselaer	864	947	83	332	336	273	266
Rockland	543	583		143	170	119	98
Saratoga	1011	1293	182	359	361	265	268
Schenectady	271	338		220	220	137	149
Schoharie	630	652		310	321	167	188
Schuyler	455	451		121	121	98	104
Seneca	362	357		156	157	165	158
St. lawrence	1839	1851		570	576	517	516
Steuben	1902	1911		678	676	348	364
Suffolk	4882	5779	887	394	419	394	483
Sullivan	1317	1394		387	387	200	202
Tioga	765	770		147	142	153	155
Tompkins	610	632		309	304	155	163
Ulster	1256	1402	146	423	425	296	283
Warren	630	708		244	247	236	219
Washington	957	984		278	286	225	232
Wayne	809	848		404	406	181	174
Westchester	1211	1344	133	na	no data	na	na
Wyoming	no data	na		na	no data	na	na
Yates	483	488		181	180	108	107
Totals	52998	57759		20126	19920	14072	14174
1975-2008 differences	Towns 4761			Counties -206			State 102

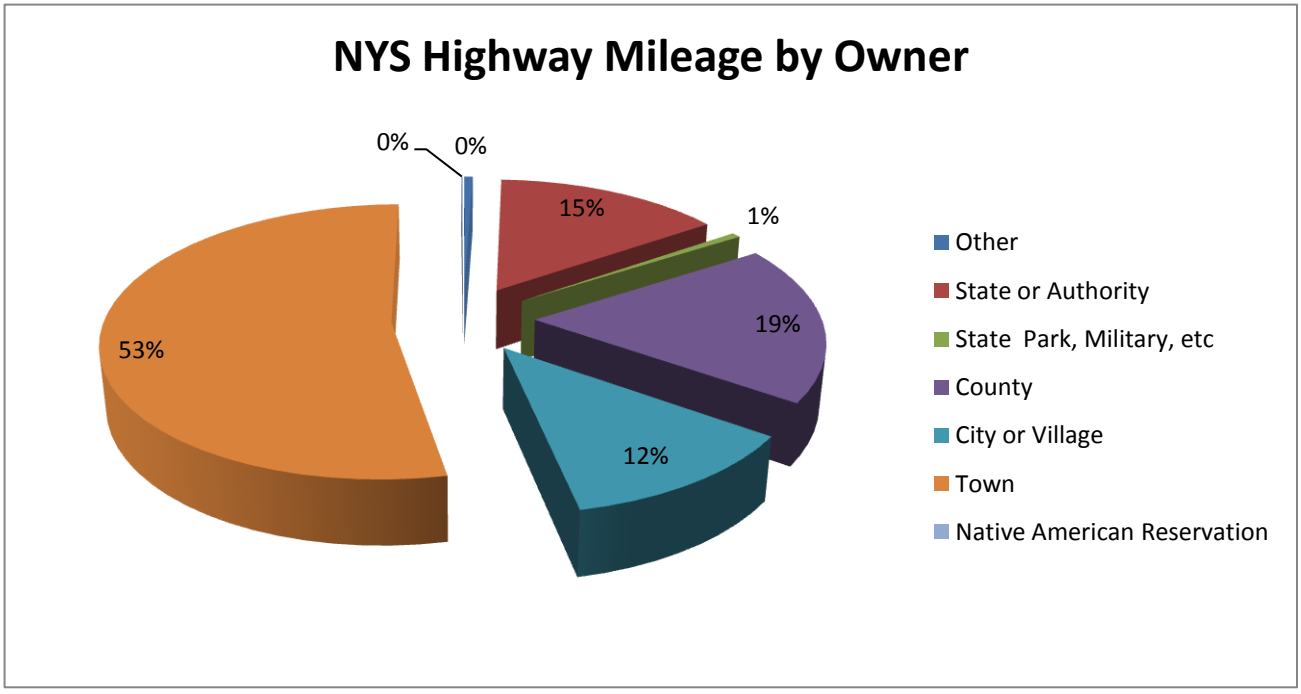
[4] NYSDOT Highway Mileage Reports

New York State Town Statistics

In 2002, rural local roads represented 52.9 percent of total U.S. road mileage. Local roads carried only 12.3 percent of rural travel, or 4.9 percent of total travel, in the United States. Urban local roads accounted for 16.2 percent of total U.S. road mileage and 13.9 percent of urban travel, or 8.4 percent of total travel, in the United States.[5]

Figure 1 below shows the percentage of highway mileage in New York State by owner. Towns are responsible for more than two and a half times more mileage than any other level of government.

Figure 1 – New York State Highway Mileage by Jurisdiction[6]



[5] FHWA National Statistics

[6] 2008 NYSDOT Highway Mileage Report

Table 2 below shows the breakdown in a number of categories by jurisdiction. In the area north of Long Island and New York City, towns have 70% of the population, 98% of the land area and 56% of the total highway mileage.

Table 2 – Population, Land Area, Housing Units and Highway Mileage by Jurisdiction[7]

			Population	Housing Units	Area in sq. mi.	State touring rte. Mileage	Municipality owned Mileage	County owned Mileage	NYSDOT owned Mileage	Other owned Mileage
Cities										
	Total		10,274,175	4,217,215	1,116	838	12,038	113	499	294
	NYC		8,008,278	3,200,912	469	191	5,822	0	142	102
	Rest of State		2,265,897	1,016,303	647	647	6,216	113	356	191
Towns	Total		8,692,132	3,458,535	49,452	13,631	58,358	19,585	13,309	1,710
	Nassau Co.		1,272,460	432,289	430	86	2,157	250	151	2
	Suffolk Co.		1,418,594	522,029	2,372	341	5,779	394	453	109
			2,691,054	954,318	2,802	427	7,936	644	604	111
	Less L.I. Towns		6,001,078	2,504,217	46,650	13,203	50,422	18,941	12,705	1,598
Villages	Total		793,772	315,956	507	940	5,853	513	925	94
	Nassau Co		449,503	156,942	122	54	1,155	218	63	10
	Suffolk Co.		124,117	53,632	94	31	665	25	30	0
			573,620	210,574	215.63	84.9	1820.6	243.3	92.4	10

Owner	Mileage
State	14,733
County	20,211
Town	58,358
City (w/o NYC)	6,216
Village	5,853
Total	105,371

[7] 2000 U.S. Census, 2008 NYSDOT Highway Mileage Report

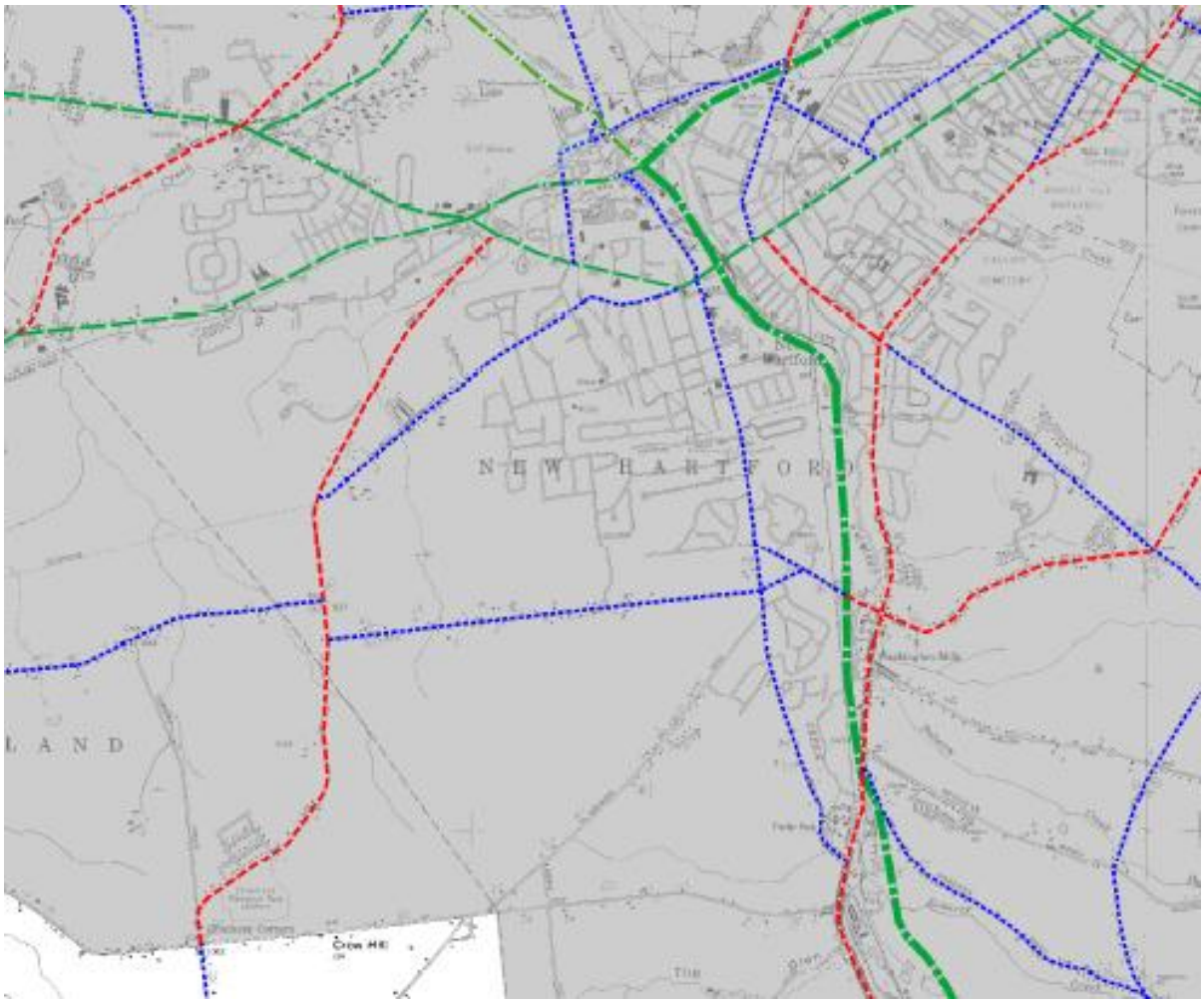
Town Highway Functional Classification

Functional classification is the process by which roads, streets, and highways are grouped into classes according to the character of service they provide to the motorist. Individual roads and streets do not serve travel independently but as part of a network of roads through which the traffic moves. Functional classification defines the nature of this movement by defining the part that any particular road or street should play in serving the flow of trips through a highway network and the type of access it provides to adjacent properties. Functional classification describes the importance of a particular road or network of roads to the overall system and, therefore, is critical in assigning priorities to projects and establishing the appropriate highway design standards to meet the needs of the traffic served. Functional classification is also used to determine which roads are eligible for project funding under the Federal Highway Administration's Surface Transportation Program.

There are currently twelve functional classifications (six urban and six rural) all of which are Federal Aid eligible except three: Urban Local, Rural Minor Collector, and Rural Local (codes 19, 8, and 9, respectively). Federal Aid (STP) may also be used for projects on Rural Minor Collectors (8) although they are not typically considered to be part of the Federal Aid eligible system. All twelve classes are shown in the legend on the official functional classification maps (see Figure2) and are included in Table 3. Although ownership is not shown on Figure 2 it is safe to assume that the majority of non-colored routes are town owned.

Roadways serve two important functions: land access and mobility. The better any individual road segment is at serving one of these functions, the worse it is at serving the other. For example, the Interstate Highway System will allow a driver to travel long distances in a relatively short time, but will not allow the driver to enter each farm field along the way.

Figure 2 – Functional Classification Map - Oneida County[8]



Functional Classification System			
Urban	Functional Classification	National Highway System	**Rural**
Interstate 11			01 Interstate
Principal Arterial (Expressway) 12			
Principal Arterial (Other Street) 14			02 Principal Arterial
Minor Arterial 16			06 Minor Arterial
Collector 17			07 Major Collector
			08 Minor Collector
Local 19			09 Local
Urban Area			

[8] NYSDOT website

Contrarily, a subdivision street will allow a driver access to any address along its length, but will not allow the driver to travel at a high rate of speed and will frequently be interrupted by intersections, often controlled by stop signs.

Arterials provide the highest level of mobility, at the highest speed, for long and uninterrupted travel. Arterials typically have higher design standards than other roads. They often include multiple lanes and have some degree of access control.

Thanks to the Interstate Highway System, it is now possible to travel across the country from coast to coast without seeing anything. From the Interstate, America is all steel guardrails and plastic signs, and every place looks and feels and sounds and smells like every other place." -- Charles Kuralt, On the Road with Charles Kuralt

The rural arterial network provides interstate and inter-county service so that all developed areas are within a reasonable distance of an arterial highway. This network is broken down into principal and minor routes, of which principal roads are more significant. Virtually all urbanized areas with more than 50,000 people, and most urban areas with more than 25,000 people, are connected by rural principal arterial highways. The rural principal arterial network is divided into two subgroups, interstate highways and other principal arterials.

Similarly, in urban areas the arterial system is divided into principal and minor arterials. The urban principal arterial system is the most important group; it includes (in descending order of importance) interstate highways, other freeways and expressways, and other principal arterials. The urban principal arterial system serves major metropolitan centers, corridors with the highest traffic volume, and those with the longest trip lengths. It carries most trips entering and leaving metropolitan areas and provides continuity for rural arterials that cross urban boundaries. Urban minor arterial routes provide service for trips of moderate length at a lower level of mobility. They connect with the urban principal arterial system and other minor arterial routes. *Collectors* provide a lower degree of mobility than arterials. They are designed for travel at lower speeds and for shorter distances. Generally, collectors are two-lane roads that collect travel from local roads and distribute it to the arterial system. The rural collector system is stratified into two subsystems: major and minor collectors. Major collectors serve larger towns not accessed by higher order roads, and important industrial

or agricultural centers that generate significant traffic but are not served by arterials.

Rural minor collectors are typically spaced at intervals consistent with population density to collect traffic from local roads and to ensure that a collector road serves all small urban areas.

In urban areas, the collector system provides traffic circulation within residential neighborhoods and commercial and industrial areas. Unlike arterials, collector roads may penetrate residential communities, distributing traffic from the arterials to the ultimate destination for many motorists. Urban collectors also channel traffic from local streets onto the arterial system. Unlike rural collectors, the urban collector system has no sub-classification.

Town highway segments are ineligible for the majority of federal aid highway programs.

Local roads represent the largest element in the American public road network in terms of mileage.[9] For rural and urban areas, all public road mileage below the collector system is considered local. Local roads provide basic access between residential and commercial properties, connecting with higher order highways.

As can be seen in Table 3 the classification of town highways predominantly make up the local functional class with 94% of the mileage falling into this category while 77% of the remaining mileage being in the collector class. This is significant on two levels. First, this means that town highway segments are ineligible for the majority of federal aid programs. Second, by definition the routes themselves will be of shorter length and connect to other (not town-owned) highways. (This can also be seen in examining Figure 2)

[9] USDOT

Table- 3 Highway Mileage by Functional Classification and Ownership[10]

		Ownership							
	Functional Classification and Codes	Other	State or Authority	State Park, Military, etc	County	City or Village	Town	Native American Reservation	Totals
Rural	Principal Arterial 1	0	909	0	0	0	0	0	909
	Principal Arterial 2	0	1649	17	13	0	0	0	1679
	Minor Arterial 6	0	3753	28	60	6	0	0	3847
	Minor Arterial 16	0	1882	20	1643	1031	676	0	5253
	Major Collector 7	0	3606	0	1923	45	71	15	5660
	Minor Collector 8	30	503	15	7643	69	1068	8	9336
	Local 9	219	37	158	5968	1367	35535	73	43357
Urban	Principal Arterial 11	0	850	0	0	0	0	0	850
	Principal Arterial 12	0	609	55	33	1	0	0	698
	Principal Arterial 14	4	1775	0	309	386	22	0	2496
	Collector 17	0	395	9	1821	1165	1490	2	4882
	Local 19	360	35	343	702	8900	18363	7	28711
	Total	613	16003	645	20115	12970	57225	105	107678
	Minor Collector 8	30	503	15	7643	69	1068	8	9336
	Local 9	219	37	158	5968	1367	35535	73	43357
	Local 19	360	35	343	702	8900	18363	7	28711
	Sub-Total	609	575	516	14313	10336	54966	88	81404

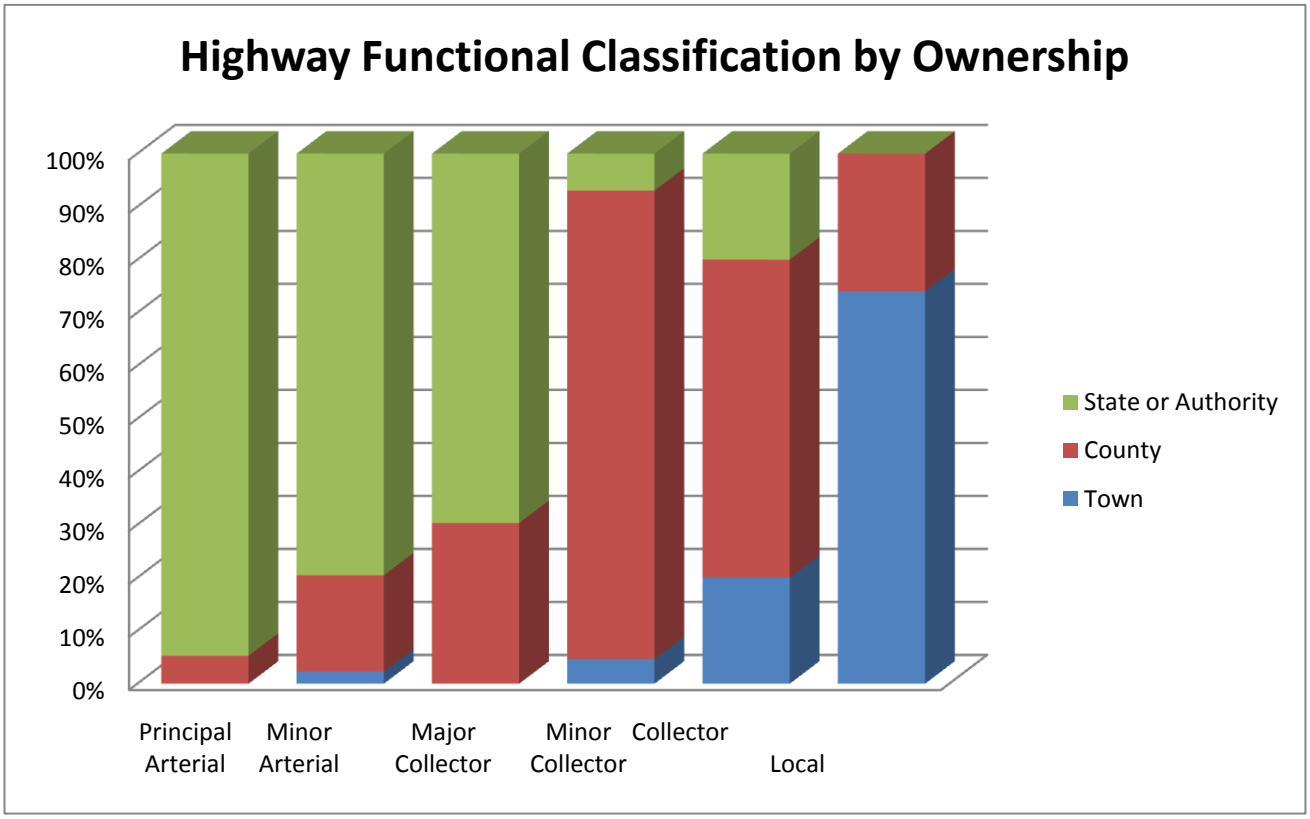
The functional basis of roadway classification can be summarized as analogous to a tree, where the relative diameter of the parts represent traffic flow which is distributing from the longest member (the trunk) to the smallest (the twig). The functional network and its ownership also follows this model where twigs are the local road network (mostly town owned) extending to branches, (the collector system which is mostly county-owned) to limbs, (the arterial system, largely state and county owned) to the trunk(the state and authority owned interstate system).

[10] New York State Department of Transportation 2008 Detailed highway inventory

The state-owned system serves intercity and interstate travel. The two digit interstates and US route numbered highways generally provide long distance, multiple state routes. This system receives the most travel and the most investment per mile on a national scale, state by state. It serves a nationwide interest, hence, the label the "National System of interstate and Defense Highways." The three digit interstate system serves a more regional role in urbanized areas, although continuity through several counties is not uncommon. The state touring route system and other two digit state highways also tend to traverse multiple counties as well as across the entire state.

Figure 3 below shows the relative makeup of the State, county and town highway systems by functional class. This clearly demonstrates how the counties, unlike the towns or the

Figure 3- Highway Functional Classification by Ownership[11]



[11] New York State Department of Transportation 2008 Detailed highway inventory

state can have arrangements for services in the higher classified roadways with the state, while also working with towns for the lower class facilities.

County owned routes will frequently connect to higher functioning routes and have generally shorter lengths than state routes with most beginning and ending in a given county. Town routes will generally be of even less length, connecting more frequently to county routes or states route than other town routes.

This network arrangement is important to understand when examining the nature of highway services performed by the towns. State maintenance forces respond and deploy almost exclusively on the state-owned system to access any road segment from their county-based maintenance residencies. Conversely, county forces must travel on elements of the state system to access their facilities and likewise town highway workers travel predominantly on county and some state roads to access theirs.

This fact can be seen visually by viewing county functional maps. This network of branches helps define how, where and why synergies for shared highway maintenance exist. Those opportunities have traditionally aligned themselves between the counties and the state for a portion of this network and the town and county as well as villages for another. Dispersed versus centralized garaging of manpower and equipment is an important consideration in timely response and efficient operations, especially during snow and ice season and demand maintenance activities. It is not uncommon for some sections of highway to have state, county and town equipment pass over them all season long in response to service needs on their respective roadways.

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Town Highway Engineering Characteristics

Form does follow function, and for a majority of town-owned highways, the engineering characteristics include: narrow lanes as well as shoulders, steep grades in mountainous regions, sections with limited vertical and horizontal sight distance, low traffic volumes, shallow roadside drainage, poor road foundation, and minimal clearance along the roadside. These general characteristics have a direct relationship to the provision of highway services provided by the towns, as well as the safety of users. As an example, the minimal shoulder widths which accompany many miles of town highways in New York diminish these important provisions[12]:

- Entry and departure from the highway to side streets and driveways.
- Truck turning movements.
- Off -tracking of trucks around curves.
- Evasive maneuvers.
- Increased horizontal and intersection sight distances.
- Storm water flow in curbed and gutter sections.
- Stopped vehicles.
- Mail delivery.
- Maintenance and protection of traffic.
- Maintenance operations such as snow removal.
- Oversized vehicles.
- Bicycle and occasional pedestrian use.
- Fewer passing conflicts with bicyclists and pedestrians.
- Improved visibility of pedestrians crossing the highway.
- Emergency use.
- Garbage pickup.
- Bus Stops.
- Structural support of subbase and surface courses.

[12] NYSDOT Design Manual

Design characteristics of roadways have standards which are promulgated nationally by the American Association of Highway Officials (AASHTO). These standards reflect minimums and desirable parameters based on the functional classification of the highways, and the design speed chosen. Table 4 shows this relationship with reference to the New York Sate reconstruction of highways.

Table-4 Design Criteria Relationship to Functional Classifications[13]

DESIGN CRITERIA

Functional Classification of Highways - Various Sources[1,4]

Classification is based upon the service the highway is intended to provide and is dependent upon census data and urban boundaries		Classification determined by the designer based upon conditions anticipated during the design life of the project. [2]		
NYSDOT Highway Inventory & Functional Classification Maps		Design Classification	Character Per HDM §2.4	Criteria Section
Description	Code			
Urban – Principal Arterial Interstate	11	Interstate	Urban and Rural	2.7.1.1
Rural – Principal Arterial Interstate	01			
Urban – Principal Arterial Expressway	12	Other Freeways	Urban and Rural	2.7.1.2
Rural – Principal Arterial - Other	02			
Urban – Principal Arterial - Other	14	Arterial	Urban	2.7.2.2
Urban – Minor Arterial	16			
Rural Principal Arterial – Other	02		Rural	2.7.2.1
Rural – Minor Arterial	06			
Urban – Collector	17	Collector	Urban	2.7.3.2
Rural Major Collector	07			
Rural Minor Collector [3]	08		Rural	2.7.3.1
Rural Local [3]	09	Local	Rural	2.7.4.1
Urban Local [3]	19		Urban	2.7.4.2

Notes:
1. This table presents the general relationship between the Functional Classifications and the Design Criteria.
   There may be situations where the association presented will not coincide as shown.
2. Classifications are based on AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2004.
3. Classification that is typically not federal-aid eligible.
4. Highway Data Services Bureau maintains the official, most current, record of Highway Functional Classifications and National Highway System (NHS) designations.

[13] New York State Department of Transportation Highway Design Manual

Table 5 shows the variables for a range of design criteria applicable for local roads. In each category the values expressed represent the lowest values among these criteria as compared to all other highways whose functional class is above a local road. Narrower lanes, steeper grades, less stopping sight distance and narrower shoulders are, therefore, a characteristic that is present by design. Again these values do not represent actual conditions. A detailed inventory would show how town roads vary from these guidelines and it is reasonable to expect that exceptions from these values would be commonplace.

Table 5- Design Criteria for Local Rural Roads[14]

DESIGN CRITERIA

Design Criteria for Local Rural Roads

Design Speed	Travel Lane Width (ft.) Based on Design Year ADT				Turn Lane (ft.)		Max. Percent Grade			Minimum Stopping Sight Distance (ft.)	Minimum Radius Curve (ft.)	
	ADT Under 400	ADT 400-1500 [3]	ADT 1500-2000 [4]	ADT Over 2000 [4]	Minimum	Desirable	Terrain				e max = 6 %	e max = 8 %
							Level	Rolling	Mountainous			
20	9	10	11	12	10	Match Travel Lane Width	8	11	16	115	81	76
25	9	10	11	12			7	11	15	155	144	134
30	9	10	11	12			7	10	14	200	231	214
40	9	10	11	12			7	10	13	305	485	444
45	10	11	11	12			7	9	12	360	643	587
50	10	11	11	12			6	8	10	425	833	758
55	11	11	12	12			6	7	10	495	1060	960

Shoulder Width (ft) [1]				
All Speeds	2 [5]	5 [6,7]	6	8

Notes:
1. For bridges, determine the lane and shoulder width from the NYSDOT Bridge Manual, Section 2.
2. Minimum travel lane width is 11 ft. for routes designated as Access Highways and for routes within 1 mile of Qualifying Highways on the national network of Designated Truck Access Highways
3. For roads in mountainous terrain with design volume of 400 to 600 ADT, use 9 ft. lanes (except where note 2 applies).
4. 11 ft. lanes remain where accident history is acceptable
5. Minimum width is 4 ft. if roadside barrier is used on low-volume roads.
6. For roads in mountainous terrain with design volume of 400 to 600 ADT, use 2 ft. shoulders.
7. Shoulders may be 4 ft. where speeds are > 40 mph.

[14] NYSDOT Design Manual

Provision of Highway Services in Towns

Supervision and Oversight

The responsibilities and organizational structure of town highway departments vary across the state in keeping with overall size of the town, its budget and assigned responsibilities to the highway superintendent. Most towns have a stand-alone department responsible for roads and bridges, while others have a larger department of public works headed by an appointed official. In any event, by state statute, there must be a superintendent of highways. A vast majority of superintendents are elected to office (873 out of 932). There is an exception where towns, with a contract with another municipality to provide highway maintenance and repair that is in effect for five years, may adopt a local law subject to permissive referendum to abolish the office of town highway superintendent.

The term of office of the elected highway superintendent is two years, but can be set at four years locally.[15] A town can abolish the office of elected town highway superintendent and make it an appointive one by local law.[16] Both actions are subject to approval by mandatory referendum.

It is the responsibility of the highway superintendent, whether elected or appointed, to prepare an annual budget for his department, subject to modification and approval by the town board. Once agreed to by the highway superintendent and the town board, funds intended for highways may not be diverted for other projects. In addition, the highway superintendent may not incur debts or expenses in excess of the amount budgeted except in an emergency.

[15] Town Law Section 24-a

[16] Public Officers Law Section 36

State statute provides specific authority to the town board to oversee the work of the town highway superintendent, and to prescribe additional duties to the superintendent that are reasonably related to those listed in statute. These might include such things as, town wide refuse pick-up, park maintenance and repair, storm drain installation/repair and water management. Town boards can influence the repairs and improvements of roads by executing an agreement between themselves and the highway superintendent. In this manner they could outline the location and manner of such work. Payment for work is made in accordance with the aforementioned agreement with the superintendent's overspending possibly resulting in personal liability.

However, the highway superintendent has control over who is hired and how many employees there are in the highway department. This, of course, is within the budgeted amount for the department which the board approves. The board may exercise its authority at any time to audit any expenditure by town officials.

Town Highway Budgets

It has been documented that highway and bridge expenditures in towns represent a much greater share of their overall budgets than any other level of New York Government. According to information from the Office of State Comptroller, in 2005 , towns were responsible for approximately 50 percent of the $2.9 billion spent annually by local governments for highway services. Highway expenditures comprise a larger share of town spending than any other level of local government. It is not uncommon that as much as 25% of town spending is for transportation purposes. This amounts to two and as much as four times greater a percentage then other local governments. This is partly due to the larger network and the lack of other services which may be the responsibility of other governments.

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Because of the tax burden placed on town residents for this upkeep and its significant proportion of many town budgets, investments and decisions on highways has a very "hands on aspect" to those elected to oversee it. The variability of town budgets with regard to highways is influenced by a number of factors including: pavement type, miles of highway, traffic, level of service, culverts and bridges. The level of service expected by local travelers and officials is also a factor. Public expectation may go beyond what is necessary from an engineering standpoint in terms of how smooth a road should be, or whether a road should or should not be paved. The number and type of bridges in the segment makes a difference as well. The long-term cost of construction and maintenance of a small bridge (50 to 70 feet long) can, at times, equal the long-term cost of construction and maintenance of a single mile of road. Occasionally, sidewalks and bicycle paths may also impact the available resources for highway maintenance.

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In most town budgets the following services are included under the highway superintendent:

- Construction, repair and reconstruction of roads, bridges and culverts;
- Maintenance of road signs and markings, as well as traffic signals;
- Snow plowing and ice control;
- Maintenance of shoulders and roadside areas;
- Maintenance of department vehicles and equipment; and
- Project planning and design (new construction and maintenance of existing infrastructure.

Sources of funds, for highway purposes, from outside of town revenues are limited. Occasionally, federal aid may be employed to replace a large or critical bridge but the primary source of aid comes from the state sponsored Consolidated Highway Improvement Program (CHIPS). CHIPS provides state funds to towns for capital projects including the

construction and repair of highways, bridges, highway railroad crossings, and other facilities not on the state highway system.

CHIPS includes two funding streams (Transportation Improvement Fund – TIF and Local Assistance Fund – LAF) that are allocated to local governments using formulas specified in statute. These distribution formulas are somewhat complex with TIF funding percentages based on motor vehicle registrations, centerline lane miles, vehicle miles of travel and municipal class. These amounts are then adjusted in the end so they will not be less than the average amount that the municipality received in State Fiscal Years (SFY) 1980-81 and 1981-82 from the four programs that preceded CHIPS. LAF is allocated using the following percentages established by the 1979 Safer Local Roads and Streets Program (SLRSP): towns – 38%, counties – 30%, New York City_ 14%, other cities – 9%, and villages – 9%. Amounts are then apportioned within each class using each municipality's historical SLRSP percentages.

Funding levels in the CHIPS program, like many other transportation funding programs are too low given the needs and the manner in which the funds are allocated is not transparent. The later point is partly due to the above mentioned allocation formula. Local officials have argued unsuccessfully in the past for a simplified formula that relies more heavily on the size the system in each municipality (e.g., lane miles and bridges). Recently adjustments were made in the program to eliminate a disincentive for the consolidation or transfer of highway departments and functions as well as incentives for a short term enrichment of aid to encourage them. The New York State Commission on Local Government Efficiency and Competitiveness (LGEC) gave the following illustration of a potential scenario of such a disincentive - under the old formulas, a highway services agreement that might include the transfer of lane miles between the Village of Lakewood and the Town of Busti would mean that the Town of Busti would be reimbursed $57,000 less than the village for maintaining village roads.

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Snow and Ice

Snow and ice removal and control is one of the most important services performed for the public for the taxes they pay. At all levels of government, inadequate or non-responsive control of the elements in winter is a lightning rod for public dissatisfaction, reaction by elected representatives and critical attention of the media. The most important policy issue in terms of providing snow and ice control treatment is level of service. The highway superintendent has to balance cost, environmental impacts, the safety of the users of the facilities, and the safety of the people performing snow and ice control operations. Level of service may be defined in a number of ways. The most common is to define the level of effort needed to achieve a desired result or service level for an average condition or storm.

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Topography can also impact the level of service necessary during snow response. Arterials and collectors that are usually maintained by counties often travel through valleys. Many towns maintain roads that go over the hills, some of which require three times as many trips to maintain. This is just another example of the fundamentally different level of service between towns and counties.

In the case of the service provided for snow and ice on state highways the New York State Department of Transportation (NYSDOT) defines their service goal this way - "Provide highways that are passable and reasonably safe for vehicular traffic as much of the time as possible within the limitations imposed by weather conditions and the availability of equipment, materials, and personnel. It is recognized that due to resource limitations and weather conditions, pavement surfaces will be snow covered and/or slippery some of the time."

A good 'textbook' definition of 'Level of Service' is: *observed or desired pavement conditions at various points in time, during and after winter weather events.*

The NYSDOT has chosen traffic volume as a basis for defining service levels and snow and ice equipment distribution across the state. Through research and historical information parameters are chosen for determining the allocation of plow trucks statewide. These include classes of roadways based on their volumes (four classes) an average snowfall rate that is exceeded infrequently statewide (1.1 inches per hour), and an average speed for trucks for the assigned class of roadways (either 14.5 or 16.5 MPH) . Based on these parameters an assignment of vehicles is made on the basis of how many miles of each class of highway exist in each county. Coverage is based on 20 lane miles per truck for the highest class of highway and 30 lane miles per truck for all others. Levels of service are defined for two periods to reflect the workday commuting period (4am to10pm) and then a modified service level for late evening and weekend on all but the most heavily traveled routes(AADT greater then 50,000).

The actual, versus the "planned" winter storm response, is always a function of the availability of trucks, personnel and de-icing and abrasive material.

For the most part, town highways follow a similar, if not a formalized response plan. The actual, versus the "planned" winter storm response, is always a function of the availability of trucks, personnel and de-icing and abrasive material. Few operations have the luxury of "spare" vehicles, or an excess of operators to drive them or a surplus of stockpiled materials to treat the roads. This delicate balance between service and cost plays itself out during each winter storm event and the responsible highway official and key personnel adapt to the variability of the event as well as the availability of equipment and materials in the best manner they can with the experience and expertise to optimize the results.

Unique Aspects of Town Highway Maintenance

As mentioned earlier in the functional and engineering characteristics of the town highways, the town owned highway network has many unique features which influence the maintenance responsibilities of highway superintendents. Some of these aspects are outlined below:

-Lack of a good road foundation and narrow roadway widths may limit the weight/size of equipment used in snow and ice and other maintenance operations.

-This limits the capability to haul abrasives, salt and gravel thereby limiting the time/distance between re-loads. This in turn will affect beat lengths and service levels in winter depending on dead head times and challenge lighter equipment during extreme snow events.

-The ownership of many unpaved miles of roads means a very aggressive seasonal maintenance program requiring frequent “dressing“ of the road surface. This is especially true during the spring and after significant rain events. York rakes, tractors, gradalls, front end loaders, graders/maintainers and a large stockpile of well graded gravel are essential components of many town highway headquarters.

- Lack of shoulders, clear area and good drainage means an encroaching snow bank which in turn means added effort to clear drainage ways to preserve driving surfaces during rain and melting periods, and more frequent post storm benching and mechanical clearing of critical drainage areas.

- Intensity of rain events in mountainous regions can overwhelm culverts and bridges frequently constructed without benefit of any margins for the conveyance of runoff from storms of even moderate frequency in the drainage area.

- Town highway mileage includes many more dead end routes requiring longer overall snow and ice response times for turning around and cleaning of highway entrances from other jurisdiction's roads snow clearing.

- Due to the narrowness of many highways, roadside care for the removal of vegetation obstructing visibility and dangerous trees becomes a more critical seasonal activity.

-The closeness of adjacent objects to the roadway, such as trees, dwellings and parked vehicles means an extra degree of diligence and reduced speeds on part of operators of maintenance equipment.

-In general, unlike counties and upstate cities, towns are underrepresented in the state's 13 Metropolitan Planning Organizations (MPO's). MPO members in urbanized areas and the New York State Department of Transportation (NYSDOT) in rural areas selects projects to be financed with federal aid and to be included in the transportation improvement program. Collaborations and consultation does occur in these selections, especially in the rural areas, through the regional offices of NYSDOT. However, these discussions more frequently occur with county, city and village representatives.

-It's town roads that usually provide access to agricultural regions. They are more frequently travelled by equipment that is getting bigger, wider and much heavier causing additional strain on the local system.

Collaborations and Shared Services

Historical Perspective

Shared service arrangements are not new to New York's municipal governments. There are many examples of counties, towns, villages and cities coming together to jointly perform public functions more efficiently. This is certainly the case for highway services where cooperative arrangements, both formal and informal, are prevalent.

Although interactions between governments vary across the state, town highway departments are generally characterized as working more closely with county and village officials rather than with state and city. In fact, several town highway superintendents serve as village highway superintendents.

Lending equipment and/or materials during a time of need has been common place among highway departments for decades. This fact has fostered what many have seen to be a culture of mutual aid and assistance from one municipality or jurisdiction to another. Due to the bare bones staffing, unreliable aged equipment and intensity of weather events, help needed from others is becoming more frequent. These informal arrangements have built a level of trust and partnership among highway managers that has been part of the culture of highway maintenance practice. This extends beyond the immediate time of need and also may include sharing of expertise, specialized equipment, materials and supplies. Taxpayers have long benefited from this "community of practice", whereby projects and services are completed, despite unforeseen circumstances, due to the aid of other levels of government. Shared services and more formal arrangements for these practices are paramount to meet the expectations of a tax weary public who expect every level and function of government to be efficiently executed.

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Sharing services includes the following aspects:

Sharing equipment − Many local governments share equipment with either a neighboring community or another level of government. This includes sharing existing equipment or jointly purchasing new equipment.

Sharing facilities − Local governments may share facilities such as salt sheds, garages, fuel storage facilities, etc. This occurs occasionally when local governments face the need to replace facilities.

Sharing highway services − Combining services such as roadside maintenance, plowing, street lighting, engineering studies, etc. with another local unit may be economically beneficial.

Sharing administrative services − Combining back office or administrative functions with another local unit. Functions for consideration include, but are not limited to, customer service operations, payroll, information technology, etc.

Cooperation that occurs often consists of “handshake” agreements between governments and is not formalized where responsibilities are spelled out in a way that provides legal protection for all parties involved. Where they exist, they can generally be divided into two categories:

1. Service Agreements: formal written agreements between governments in which one local government contracts with another to provide a service at a stated price. Service agreements may be more appropriate where the participants are substantially different in size or capability and/or a readily definable commodity is being provided.

2. ***Joint agreements:*** formal written agreements in which participating governments agree to share in the performance of a function or the construction and operation of a facility. Such an agreement usually provides for significant participation by each of the local governments. Joint agreements usually imply a rough equality among the participants with regard to resources and facilities, so that the potential contribution of each is similar.

Home Rule

Home rule in New York evolved from the 19th century political struggle between New York City, dominated by one political party, and the rural areas of the State, represented by another political party. The City sought protection under the State Constitution and in 1894 the Constitution was amended, providing the first constitutional basis for home rule in New York. The 1894 amendment basically entitled the mayors of affected cities to accept legislation that impacted them. If the mayor(s) rejected the law, it then needed to "pass" in the legislature a second time and then was referred to the Governor for action.

The next major revision occurred in 1963 when Article IX of the State Constitution was enacted, providing home rule authority to all levels of local government - towns, cities, villages and counties. Article IX strengthened local government from intrusion into their governmental operations and control of their property and affairs. Unlike the 1894 Constitution, Article IX includes not only a restriction on the Legislature when acting in local affairs but also an extensive grant of power to local governments. Under Article IX, § 2(c), as implemented by §10 of the Municipal Home Rule Law, every local government is empowered to enact local laws covering a broad range of subjects. Local laws must be consistent with "general laws" enacted by the Legislature. A general law, as applied to towns, is a State law that applies to *all* towns in the State. State laws classifying towns according to population or some other criterion are not general laws. A town local law is required to be consistent with only a State law that applies to *all* towns. This provision protects a town or several towns from legislative interference in its affairs.

James D. Cole, special counsel to the Associations of Towns has offered the following succinct opinions on the issue of home rule and shared services:

"Local government officials and residents are in a unique position to determine the effectiveness of their governments, judged by the efficiency and adequacy of provision of services and their costs. In some cases, local governments, with the support of their residents, may decide that discrete services can best be performed through municipal cooperation or some other method of sharing of services. But this is a judgment that can only be made by local governments and their residents in the exercise of discretion and on a voluntary basis as provided by the express provisions of the State Constitution."

Governance Principles

New York has a complex layering of 1,607 general-purpose local governments made up of 57 counties, 932 towns, 62 cities, 556 villages, all of which have taxing power, can issue debt and are covered by home rule protections under the State Constitution, as well as 14 Native American reservations. The cities and towns completely cover all of the territory of the counties, leaving no unincorporated areas.

When polled and in listening sessions conducted in the past, New Yorkers put local government first and state government last in providing the best value for the public tax dollar spent. According to work done by the Cornell Land Grant, rural residents consider their local officials, and local governments in general to be accessible and responsive to public needs. In contrast, they consider state agencies to be unresponsive.

These views are easily understood since large government structure brings with it a certain level of bureaucracy. This bureaucratic structure brings layer after layer of public servants beneath appointed and elected officials. In the case of highway services this is easily demonstrated when comparing the staffing structure of the NYSDOT with that of a typical town highway department. An individual plowing snow for the state will have a supervisor, who in turn is supervised by the assistant resident engineer who is overseen by the resident engineer who reports to the regional highway maintenance engineer who reports to

the regional director who reports to a division head in the central office who works for the commissioner who is appointed by the Governor and confirmed by the Senate. In this example, the chief executive elected by the people and is ultimately accountable for the service being provided, is removed from the constituency by no less than 7 layers of oversight. In the typical town highway organization, that same plow truck driver may report to a foreman or directly to the superintendent, with only one or two separating the service and the responsible elected official. This level of accountability is palatable to town residents.

In no other New York State governance model is an essential service to the taxpayer so close to the official elected to provide it.

In no other New York State governance model is an essential service to the taxpayer so close to the official elected to provide it. Without question this fact helps drive service delivery to improved efficiencies and effectiveness in local highway operations. Poor performance and lack of responsiveness to taxpayer concerns can mean a quick exit during the next local election for highway superintendents.

New York Government Reorganization and Citizen Empowerment Act

The "New York Government Reorganization and Citizen Empowerment Act" (the "2009 Reorganization Act") which was passed by the legislature and signed into law in June, 2009 and became effective in March, 2010. This piece of legislation facilitates the consolidation of towns, villages or districts (but not school districts, city districts or county created special purpose districts), the dissolutions of villages and certain districts, and grants counties additional powers to initiate dissolutions as well.

The 2009 Act is made of to two sections: a new Article 17-A which sets forth procedures to consolidate or dissolve government entities by the local governing board or by citizens' themselves by initiative; and an amendment to Section 33-a of the municipal home-rule law enabling counties to abolish "units of government," something previously not allowed.

Consolidations can occur across county borders as long as at least one of the government entities, if a town or village, is contiguous to another and if together the entities would form a consolidated government entity of a kind or class that is authorized under state laws (i.e., town, village, and certain districts). Consolidating districts do not have to be contiguous. Consolidations and dissolutions can be initiated by an approved joint resolution of the bodies of the government entities to be consolidated or dissolved, or by a citizen-initiated petition.

> "With this new law, taxpayers are now empowered to cut the nation's highest local tax burden by reigning in the bloated and antiquated system that has left the State with layer upon layer of government entities." Attorney General Andrew Cuomo.

Under the 2009 Act, the dissolution of towns is not addressed, except to the extent that a county might dissolve a town under its new authority. It is likely that most dissolutions would involve villages and districts.

Conclusions and Recommendations

- The provision of highway services through Town Government has been an essential and significant component of resident services provided by town revenues for many decades.
- The Superintendents who are accountable for the delivery of these services are not separated by layers of bureaucracy to the men and women who actually perform the work.
- In many areas the makeup of town roads is unique among all municipal owners with many un-paved road miles, less stable roadway foundations, less robust drainage facilities and fewer safety features such as wider shoulders and better road alignment.
- Town Maintenance Facilities are well positioned to provide reasonable response to weather driven needs in times of flooding, wind storms, and snow and ice events.
- Equipment is “right sized” in consideration of the types of facilities and the operating experience that comes with decades of experience in the locale.
- The collaborations and camaraderie that exists among and between Superintendents and their counterparts at the Village, City ,County and State level should be taken to a new level to support shared services.
- Highway Departments should agree to more centralized “back office” functions, such as purchasing of road maintenance materials, supplies, equipment and payroll.
- Centralized specialized engineering services and centralized ownership of infrequently used, expensive or specialized equipment should be undertaken to support multiple municipalities as demand and budgets allow.

Snow and ice removal optimization between government service providers based on an “all plows down” approach should be examined where long “dead heads” and reloads are problematic.