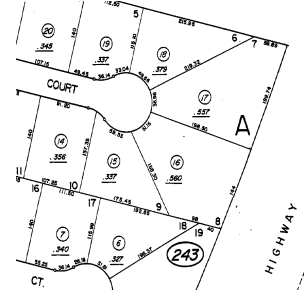


NEW YORK STATE



Business Plan for Centralized Access to Consistent Cadastral Data

FINAL

October 2011



State of New York Office of Cyber Security

PREPARED BY



Applied Geographics, Inc.

&

MRB Group, P.C. | Oswald Associates

The project described in this publication was supported by Cooperative Agreement Number G10AC00171 from the United States Geological Survey. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USGS.

[This page intentionally blank]

Table of Contents

Executive Summary 2

1 Vision Program & Goals..... 4

1.1 Background..... 4

1.2 Context & Objectives..... 5

2 Requirements & Costs 7

2.1 ORPTS Survey Of Digital Parcel Data & Tax Mapping Status..... 7

2.2 Overview Of Approach 11

2.3 Details Of Recommended Approach 12

3 Program Benefits & Justification..... 23

3.1 To GIS Stakeholders, In General 23

3.2 To Counties In Particular 25

4 Implementation Plan..... 28

4.1 Implementation Program For Near Term RESULTS..... 28

4.2 Phasing & Milestones 32

4.3 Budget Plan 32

5 Measuring Success & Recalibration 35

5.1 Measuring Success 35

5.2 Feedback & Recalibration..... 36

Appendices 37

Appendix 1: Project Methodology 38

Appendix 2: Findings From Input From Local Government 40

Appendix 3: Summary Report of ORPTS Survey..... 48

EXECUTIVE SUMMARY

The New York State GIS Coordinating Body (CB) and New York State Office of Cyber Security and Critical Infrastructure Coordination (now the Office of Cyber Security, or OCS) identified the development of a statewide parcel layer as one of the highest priority recommendations resulting from the 2008 Strategic Plan. This business plan lays out the steps required to achieve this goal and describes the business case for investing in a statewide parcel data layer.

At a national level, the assembly and standardization of statewide parcel data is increasingly being recognized as an important and achievable goal with wide-reaching benefits to stakeholders. In New York, statewide parcels would provide a variety of benefits to different GIS stakeholders, including:

- Eliminating duplicated efforts to collect, process and store parcel data by multiple state agencies
- Improving access to parcel data by allowing one-stop shopping vs. the current practice of needing to visit individual counties.
- Improved availability and access to parcel data better supports planning, decision making, and management particularly for land and facilities.
- County and local governments that maintain the source parcel data and have fewer technological resources will benefit from the state providing parcel data hosting and through increased opportunities for shared web applications
- Data availability to support regional and multi-jurisdictional issues such as watershed planning, transportation planning, economic development, and emergency response

This plan recognizes, and aims to address existing challenges that have so far prevented universal sharing of parcel data in New York. In spite of the fact that parcel data currently exist in some electronic form for all counties in the state, current challenges include:

- Data exist in a variety of formats and are of varying quality making it difficult to assemble a statewide data set
- Several counties are reluctant to give up revenues generated from the sale of parcel data.

While the long term objective remains a publicly available, statewide parcel data layer, this plan focuses on the practical, *first steps* towards realizing that goal that can be pursued and completed during the next two years. The proposed process includes:

- Initiating a pilot project to test the methods proposed in this plan and to initiate the development of a multi-county parcel data set

- The pilot will initially focus on outreach to counties that *currently* and *willingly* share parcel data with the goal of incrementally increasing the volume of voluntary contributions over time.
- To alleviate any perceived burden on counties, the parcels will be collected “as is” and OCS will take responsibility for harmonizing these disparate data sets into a seamless parcel data layer that will eventually cover the entire state.
- The data created from the pilot will be made available in a variety of formats including data download and consumption as a web-service

The measurement of long-term success of the program can be better calibrated following the completion of the pilot project that is proposed. The initial goal is to achieve participation by 95% of counties within a 5 year timeframe.

1 VISION PROGRAM & GOALS

1.1 BACKGROUND

During 2007 and the first half of 2008 New York completed a comprehensive, statewide GIS strategic planning exercise that produced a Strategic Plan that set a vision and priorities for the next five years. Based on the deliberations of New York State GIS Coordinating Body (CB) and senior management at the New York State Office of Cyber Security and Critical Infrastructure Coordination (formerly CSCIC and now the Office of Cyber Security, or OCS), it was determined that “formally pursuing a program to develop a **statewide parcel data layer**” was one of the two highest priority programmatic recommendations from the Strategic Plan (see Section 5.2 of the Strategic Plan¹) and that the next step was establishing a detailed business plan for that activity. Subsequently, OCS received a second Cooperative Agreements Program (CAP) grant from the USGS/FGDC to produce such a Parcel Business Plan.

This Parcel Business Plan provides key details of this recommendation, as further clarified by the State’s solicitation for this work, and presents a business case that supports the state and other levels of government making investments in implementing these recommendations. Several factors support OCS’s and the CB’s shared interest in statewide parcels:

- ★ In New York, parcel data exist in some electronic form, or are in the process of being automated for *all counties* in the state. However, these data exist in a variety of formats and are of varying quality thereby limiting the utility for regional or statewide projects.
- ★ Nationally, assembling statewide parcel inventories is becoming increasingly important and there is an emerging body of experience on both the utility of statewide parcels and approaches for constructing this kind of data resource.

In addition to these positive factors, there are several known challenges that are inhibiting progress towards a statewide parcel data resource in New York:

- ★ Several counties obtain revenues from the sale of cadastral data and are concerned about losing this revenue source.

¹ The strategic plan is available at: <http://www.nysgis.state.ny.us/coordinationprogram/stratplan/>

Many counties fear the loss of “control” over their data by sharing it with other government entities, especially the State. In particular, there is concern about the state further sharing their data to other parties without their knowledge or involvement.

1.2 CONTEXT & OBJECTIVES

Free, universal sharing of parcel data within New York has remained elusive in spite of several efforts to encourage and promote this kind of data sharing. The challenges with existing approaches are well understood and achieving this goal will not be an easy task. As such, this plan aims to lay out a pragmatic approach that generates *near-term progress* if not a comprehensive solution for the short-term. The approach presented in the plan aims to address stakeholder concerns directly and to the extent possible builds on existing data sharing mechanisms, such as the New York State Data Sharing Cooperative.

While it is important to acknowledge the sovereign responsibilities of counties and local municipalities regarding parcel data, it is also important to recognize the broader regional uses of parcel data and the local benefit and efficiencies that are derived by such applications. Examples include multi-jurisdictional watershed plans; efforts to address combined sewer overflow consent orders; meeting the requirements of municipal separate storm system regulations; addressing regional greenhouse gas emissions, including regional inventory requirements; metropolitan planning organization transportation planning, which includes regional analysis of land use patterns; and regional economic development initiatives in which robust and easily accessible parcel data affords a competitive edge. In addition, the challenge of emergency response in relation to natural disasters, severe weather events, and terrorist incidents are greatly assisted by the use of regional-scale, accurate, and accessible parcel data. All of these examples, though regional in scope, provide local benefits and economies of scale and efficiency that otherwise would not exist without a seamless statewide parcel data. Given the current economic climate, the sharing of data is an essential component to creating and maintaining such a data set.

Furthermore, this plan supports the vision for the National Spatial Data Infrastructure (NSDI) by creating a process where local, authoritative cadastral is compiled into a statewide data set and, in turn, can be integrated at a national level. Benefits at the national level echo those gained at the local and regional levels as NSDI will reduce duplication of effort and ensure that the best available cadastral information is used in decision making.

While the long term objective remains a **publicly available, statewide parcel data layer**, this plan focuses on the **practical, first steps** towards that goal that can be pursued and completed during the two year timeframe. This approach includes short-term pilot studies that leverage existing progress as well as encouraging further voluntary data sharing.

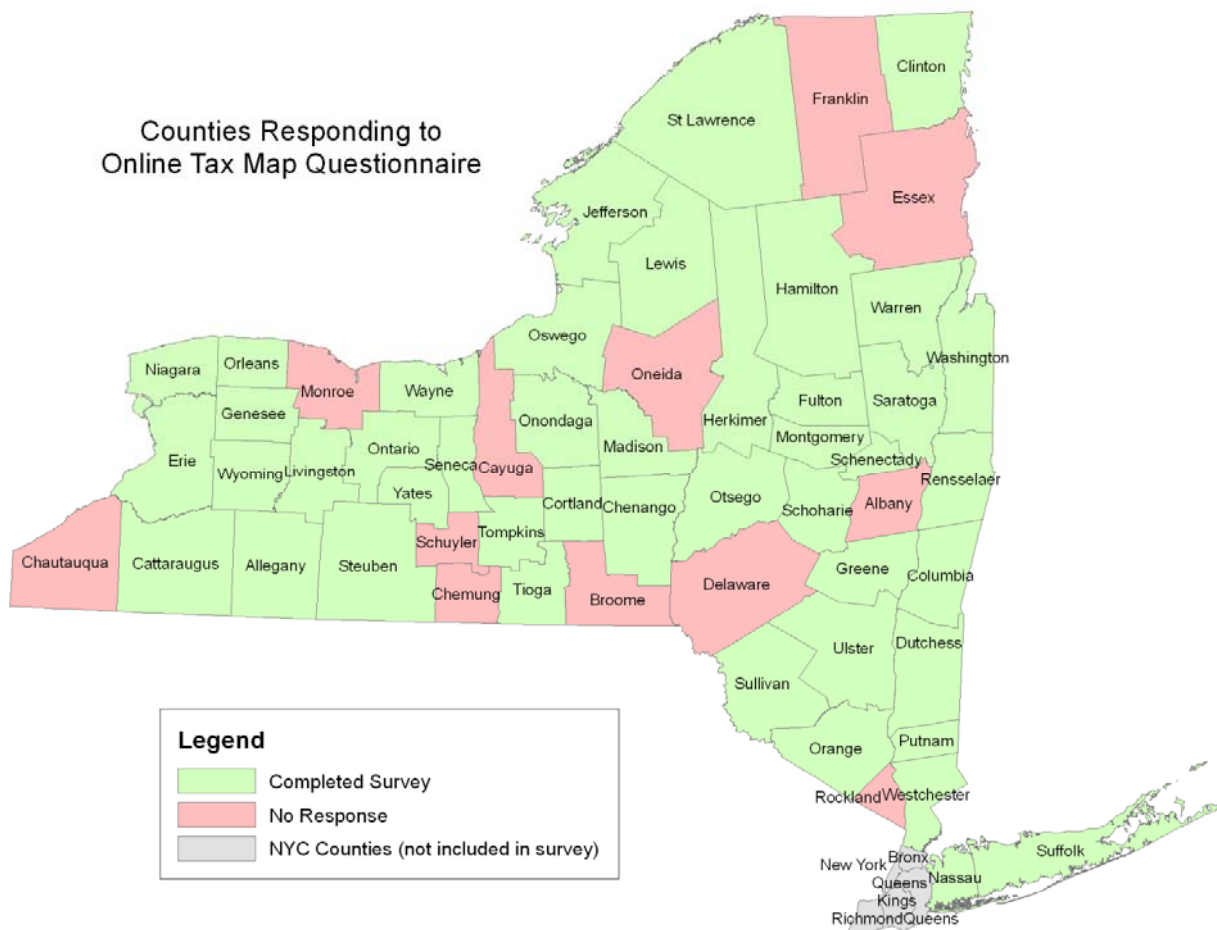
- ★ Process of building a statewide parcel data layer will be **incremental** and will unfold over time. The process will begin with outreach aimed at counties that **willingly** share their data at present.
- ★ Further **voluntary contributions** of county data will be sought from all counties. To encourage further contributions, parcels will be sought and accepted by OCS in an “**as-is**” format so that counties do not need to perform preparatory work to share their data with the state.
- ★ OCS will be responsible for taking on the work necessary to **harmonize** county contributions into a seamless data layer.

The resulting parcel data collection will be **publicly available**; both as consumable web services and for data download.

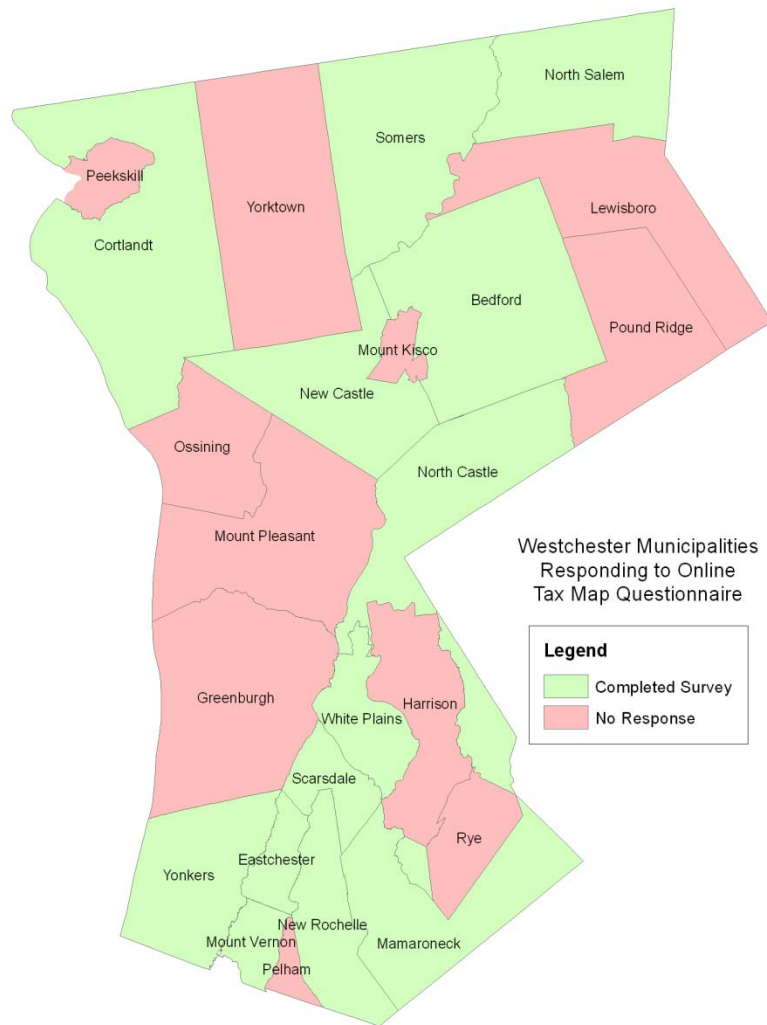
2 REQUIREMENTS & COSTS

2.1 ORPTS SURVEY OF DIGITAL PARCEL DATA & TAX MAPPING STATUS

ORPTS conducts an annual survey to collect information on existing parcel data holdings at all levels of local government. Overall, the 2010 survey had excellent, but non-universal response from the counties and other jurisdictions (Westchester municipalities and the five boroughs of New York City were surveyed separately). Outside of NYC, 46 out of 57 counties participated (see map below).



In Westchester County, 24 out of 43 municipalities participated (see map below).



2.1.1 Survey Findings

The following overview of the 2010 survey aims to characterize parcel data, maintenance, and distribution practices throughout the state. These details about existing conditions ultimately helped inform the recommendations in this plan. Statistics presented in this section represent percentage of respondents, not percentage of the entire state.

- ★ **Data Format:** While a majority of parcel data is most frequently maintained as Geodatabase polygon features (57%), other data formats and features types are widely used for digital

- parcel maintenance including Geodatabase lines (25%), DWG polylines (25%) and lines (16%), Shapefile polygons (48%), Shapefile lines (16%), Coverage polygons (16%) and coverage lines (9%). Some counties maintain data in multiple formats.
- ★ **Data Update Frequency:** Respondents indicated that map updates are occurring on a daily basis for a majority of the state (66%), weekly for another 10% and an additional 24% are updating on a monthly basis. A backlog of map corrections and updates is virtually non-existent in the state with no respondents indicating a delay of more than 90 days.
 - ★ **Source Materials:** County Real Property Directors were asked to describe the materials received from their local assessor for the purposes of map updates. Nearly 80% of respondents indicated that they receive a copy of a deed for parcel splits. Other common source materials include copies of revised tax maps, sketches, copies of index cards, and surveys.
 - ★ **Completeness of Metadata:** Metadata maintenance appears to be a weak point in the parcel update process. A majority (60%) of respondents indicated that they do not maintain metadata in conjunction with tax maps. Of those that do maintain metadata, approximately 50% are conforming to the FGDC standard.
 - ★ **Labor:** For departments maintaining parcel data in-house, an average of 2 staff and as many as 10 staff are assigned to this task. Often contract staff are hired to supplement in-house parcel maintenance efforts. Nearly 80% of respondents indicated that a vendor was used for the initial automation of parcel data.
 - ★ **Map Extent:** Seamless local parcel data is an essential step toward statewide parcel data and it appears that most local data is maintained as either a seamless municipal-wide or countywide data set. However, nearly 60% of respondents indicated that digital data was maintained as individual map sheets. One cannot discern from the question whether map sheets are then aggregated into a seamless layer as a matter of course or whether current data only exists as disparate data files.
 - ★ **Linking to Assessment Roll Information:** Nearly one-third of respondents skipped the question aimed at understanding which unique identifier allows linking to local assessment roll information. While this may indicate that the respondent simply did not know the answer off-hand, it may also indicate that parcel data is not consistently coded with an

attribute that will allow linking to the tax roll (such as an SBL format or Print Key). This perhaps explains the fact that nearly 60% of respondents could not identify the match rate between their parcel data and their assessment rolls.

- ★ **Public Availability:** Most respondents indicated that assessment information is available online, and a majority of these (54%) provide access via an online web mapping application. Other types of public access include a variety of published map services, direct data download, or electronic distribution (via email, CD, or DVD). A handful of respondents are specifically using ImageMate Online to publish tax assessment information without maps.
- ★ **Cost:** While 83% of respondents indicated that they charge for access to their tax assessment data, it is unclear from the survey whether agencies are charging fees for online access versus charging fees for distribution of actual data via download/CD/DVD. Thus, it is not clear whether the results represent the full set of counties that charge for data.²

2.1.2 Survey Assessment

A large percentage of the tax directors are fully versed on the range of technical options that can be implemented for efficient maintenance and access to parcel data. Most data is maintained in a seamless, modern data format that may be easily integrated into a statewide parcel data layer. The level of spatial accuracy and match rate to tax roll information is more difficult to extract from the survey as many respondents were not able to assess these characteristics and ORPTS does not provide any quality control for tax maps after their initial digital conversion.

Most counties provide some degree of access to tax maps via the Internet, with 57% of survey responses indicating they use GIS viewer applications for this purpose and a handful of respondents providing access to web map services. While the majority of respondents indicated they do not charge for data access (83%), several counties are collecting fees for access to their data.

After working with the 2010 survey data it is apparent that some improvements could be made to the structure of the survey questions to enable a more thorough analysis. For instance, most questions required the respondent to select one of multiple choices but offered no “other” option or room for

² The ORPS survey question regarding fees for access was limited in that it did not differentiate between charging fees for online access vs. charging fees for distribution of actual data. In addition, it did not force counties to answer “Yes” or “No” on the question about charging for data and it is unclear whether the 8 positive responses represent the full set of counties that charge for data. Thus, results do not support detailed analysis of the type of access provided for free, or for fee.

comments. Ultimately, this may have skewed results or allowed for the loss of nuanced information that did not necessarily fit into one of the options. In addition, some information key to informing the implementation plan presented here was not captured in an optimal fashion. For instance, with regard to map extent, respondents were not asked to definitively describe the seamless extent of their data. If they responded that parcel data is maintained at both the county level and tax map sheet level, does this indicate that tax sheets are generated from seamless countywide data or that individual data files are maintained for each tax map sheet? This needs to be clarified in future surveys. Also, as mentioned above, the survey does not capture whether agencies are charging for online access versus charging for distribution of data files.

2.2 OVERVIEW OF APPROACH

The following general approach emanated from project team analysis and extensive discussions between the consulting team, OCS and the New York State Coordinating Body (CB). The CB, which includes stakeholders that create and manage parcel data as well as other stakeholders that have strong needs to consume parcel data, provided an excellent venue for exploring both the benefits that a statewide resource would provide as well as the legitimate concerns of county and local data custodians. The following approach emanated directly from a CB proposal made during a special meeting of the Coordinating Body explicitly on the topic of this project. This approach was designed to lower the barriers to parcel data sharing while also providing some tangible benefits to counties that are not currently sharing their parcels.

- ★ Process of building a statewide parcel data layer will be **incremental** and will unfold over time. The process will begin with outreach aimed at counties that **willingly** share their data at present.
- ★ Further **voluntary contributions** of county data will be sought from all counties. To encourage further contributions, parcels will be sought and accepted by OCS in an “**as-is**” format so that counties do not need to perform preparatory work to share their data with the state.
- ★ OCS will be responsible for taking on the work necessary to **harmonize** county contributions into a seamless data layer.

The resulting parcel data collection will be **publicly available**; both as consumable web services and for data download.

2.3 DETAILS OF RECOMMENDED APPROACH

2.3.1 Organizational Approach

The Office of Cyber Security that operates the Statewide GIS Coordination Program will be responsible for leading this effort. The New York State Coordinating Body will continue to be briefed on this initiative and provide advisement on improving the program.

Given that New York state agencies are involved in overseeing county tax assessment and are also major consumers of parcel data it is recommended that OCS seek a broad-based and coordinated approach across state government. Potential collaborators include, but are not limited to:

- ★ The New York State Office of Real Property Tax Services (ORPTS) which has historically worked with counties on parcel mapping and tax assessment. The survey information presented above in [Section 2.1](#) provides an example of ORPTS's regular communications with the county tax mapping community. This kind of outreach could be extended in the context of a statewide parcel mapping initiative and regardless, ORPTS's dialog with communities surrounding tax mapping should be aimed at *electronic* parcel mapping and not the historical hard copy orientation. For example, ORPTS maintains hard copy parcel mapping standards but does not maintain digital parcel mapping standards. The recent reorganization of ORPTS under the New York State Department of Taxation & Finance (NYSDTF) provides the potential for ORPTS's role in parcel mapping to be reassessed and to evolve further. It should be noted that ORPTS has been engaged throughout the statewide parcel business planning process and is supportive of the concept and the plan.
- ★ The New York State Division of Budget (NYSDOB) is responsible for managing the state's portfolio of "state owned parcels" and has strong internal needs for electronic parcel records. There has been recent outreach between OCS and NYSDOB and this should continue as NYSDOB could be a forceful advocate for statewide parcels and could potentially influence NYSDTF to consider reevaluating the potential for ORPTS to help catalyze broader parcel data sharing with the state.
- ★ The State Agency Advisory Group (SAAG) has identified strong needs for parcel data across many agencies as well as overlapping and redundant efforts aimed at collecting the data from counties on an individual basis. This group should be kept informed of the statewide

parcel initiative and to the extent possible can help advocate for the initiative both within their agencies and via their interactions with local government.

Finally, there should be additional levels of active outreach and coordination between state government and county GIS programs. Generally, it will be more beneficial to *persuade* counties to participate than to try and *compel* their participation. Ultimately, further outreach and communication should help to highlight the *opportunities* and benefits of data sharing while also attempting to address legitimate local government *concerns*.

2.3.2 Standards

Accepting data from counties in an “as-is” format is a core element of the chosen approach as it will make broader participation more feasible. With this approach, there is not an immediate requirement to develop and implement a new, formal and comprehensive standard that counties need to meet. Rather, the Cadastral Data Work Group, with input from relevant stakeholders (e.g., counties, the CB) will develop a “**statewide parcel data schema**” which will be published and made available to stakeholders. This schema will act as a container for receiving county data that is obtained in a wide variety of formats. The development of the schema will be based on the existing, preliminary and basic NYS Cadastral Data Standard but will, at least initially, only require that parcel data are represented as a closed parcel polygon attributed with a unique parcel identification number. Section 2.3.4 provides a more detailed explanation of this approach.

Although the short term focus will be on collecting and harmonizing existing “as-is” data into the statewide parcel data schema, there is a longer term goal of encouraging the improvement of parcel data quality across the state. Articulating these improvements could take the form of an expanded data standard that goes beyond “parcel data formatting” and identifies data **content**, data **accuracy** and data **documentation** standards. This expanded data standard would benefit stakeholders by providing a **consistent framework** for the management and maintenance of parcel data, a **format for the exchange and aggregation** of tax parcel mapping and associated attributes, and minimum specifications for **mapping accuracy** and for the implementation of consistent and **complete attribution**. Planning and development of such a standard should be pursued in parallel with initial data collection and harmonizing activities. Such a standard might include guidelines for:

- **Data content** for both geometry and attributes
- Data **quality** for **accuracy** and consistency with an identified base map
- **Metadata** that describes the origin and lineage of parcel data sets

To the extent possible, any new New York State cadastral data standard should be consistent and compatible with existing standards such as federal standards promulgated by the Federal Geographic Data Committee (FGDC). These include:

- FGDC Metadata Standard
- FGDC Cadastral Data Content Standard

In the short term, OCS should promote the parcel schema as a feasible first step toward achieving the benefits of statewide parcels. After initial benefits have been realized, OCS should begin encouraging counties to adopt the more expanded parcel standard.

2.3.3 Existing Data Characteristics

The following enumerates the current characteristics of New York state parcel data. Please note that as described in [Section 2.1](#), limitations in the ORPTS survey prevent a comprehensive quantification of the condition of county parcel characteristic.

1. **ORPTS Compliance Level:** Tax maps in New York, outside of New York City, have been determined by NYS ORPTS as having either **full compliance** or **substantial compliance** with Part 189 of the Rules and Regulations established by ORPTS. Substantial compliance was given to tax maps that were created before the Assessment Improvement Law was passed in 1970, and after they were upgraded to meet a reduced standard. In most cases, that reduced standard involved grid ticks being transcribed (usually from USGS quadrangle maps) onto the existing tax map sheets. Coordinate locator dots (centroids) were placed in the visual center of each tax parcel and coordinate values digitized or scaled from the grid ticks for each parcel centroid. The counties or municipalities were then required to provide the parcel numbers and associated coordinate values for each municipality to ORPTS. Generally, the counties and towns that received substantial compliance had non-standard parcel numbering and were not spatially accurate. Some of these have been upgraded to full compliance as part of digital conversion projects and some have not. The compliance level should be specified in metadata for each tax parcel data set.
2. **Digital Conversion:** Almost all of the counties in New York were converted from paper maps to digital between 1995 and 2007. ORPTS developed a parcel model for use with Esri Arc/Info in the mid-1990s as part of a contract with NYC DEP to manage a tax parcel conversion within the

NYC Watershed. In addition to the eight counties in the watershed, a few other counties adopted that parcel model, with the largest being Monroe County. Of the remaining non-watershed counties, approximately three counties were converted using the Microstation CAD software and most of the remaining counties were converted into an AutoCAD format, with GIS layers being exported using AutoCAD Map or Esri ArcCAD. Since 2003, counties have been upgrading their tax maps to Esri Geodatabase format with at least half of the tax maps now in that format, including New York City. The NYS GIS Coordinating Body adopted a parcel standard in 2007 which has been adopted by several local governments; however, most conversions to Geodatabase have not used a standard schema. In some instances, data on the original tax maps, such as easements and original subdivision information, were dropped during the conversion process.

3. **Tiling Structure:** ORPTS approved a “seamless municipal tax map” format in 1997 which allowed tax maps to be published from digital files tiled by municipality, rather than having an individual digital file for each tax section map. Most of the counties eventually adopted this format. As desktop computer capabilities evolved, some counties adopted a seamless countywide tax map format, although the actual data maintenance process is still usually organized by municipality. Some counties continue to maintain individual section map files and aggregate those files periodically for GIS applications.
4. **Boundary Issues:** As tax maps were digitized, it became apparent that many potential boundary issues existed between municipalities and counties. Some of these issues were reconciled when the conversions were being completed and some still exist. A few of the existing issues can only be resolved by boundary surveys and may require legislative action.

2.3.4 Statewide Data Aggregation

The initial approach for data aggregation will be to encourage counties to voluntarily share their parcel data in an “as-is” format. Participants will be asked to provide minimal parcel content such as a closed parcel polygon attributed with a unique parcel identification number, but will be strongly encouraged to include all tax map data layers and attributes with which they are comfortable sharing, in particular the minimal and suggested additional attributes listed in the NYS Cadastral Data Standard. Accepting data in “as-is” format means that those responsible for tax map maintenance will continue to manage their data using the technology and tools that they are familiar with and best meet their needs.

This approach recognizes that not all counties or municipalities have the same willingness to share parcel data:

- Some willingly share all data for free
- Some share data to public partners via the NYS Data Sharing Cooperative
- Some sell data for fees and have legitimate concerns about potential lost revenues
- Many share only *access to data* via web viewers, but not to the data themselves

Over time, participation should increase as counties better understand the program.

It is recommended that tax **parcel map layers** and **ownership data** be handled independently from **tax assessment data**. In most counties, assessors manage data locally (town, village, or city) and periodically provide assessment updates to their respective counties and to ORPTS. It is less often the case that assessment data is managed centrally with each assessor accessing their assessment data on a county server through a Citrix server arrangement or similar technology. This means that statewide, the assessment data only matches the tax maps on the taxable status date for each municipality – which may be March 1, May 1 or June 1 of each year. In many cases, by the time the ORPTS data is merged with parcels, the tax assessment information can be up to 1 ½ years out of date.

In all instances except Westchester County and New York City, tax maps are maintained by the County Real Property Tax Service. ORPTS requires each county to also maintain ownership history for each tax parcel for at least five years. In most counties, this ownership history is joined to the tax parcels for GIS applications because it almost always matches the tax map.

The recommended approach for statewide aggregation of parcel data is to:

- 1 Obtain the digital tax map and ownership data from counties and municipalities that are willing to participate (e.g., NYC, Ontario County, etc.). Assemble those data into a multi-county aggregation that will be published as a service and available for download. In addition, assemble and publish links to existing, individual parcel map services as a supplement to the data collection and aggregation effort. It is expected that over time, contributions to the aggregated model will increase as benefits are demonstrated.
- 2 Focus initial data management activities on standardizing the tax map layers ownership data obtained from counties

- 3 Perform a linkage and reconciliation QA/QC test on assessment data (i.e. attributes) that are obtained from ORPTS on an annual basis with the data being current to the respective taxable status dates.
- 4 Provide quality control reports on the success of linking parcel geometry and ORPTS assessment data to the Directors of Real Property Tax Services in the respective counties, including Westchester

It should be anticipated that the data provided to ORPTS by the assessors will have some flaws, both spatial and attribute-related. The most likely problems will be tax parcels that do not have a corresponding assessment record or assessment records that are not reflected on the tax maps. Those errors, once identified, will need to be addressed at the county level. Spatial issues such as centroid values that do not fall within the appropriate tax parcels should also be identified and resolved. OCS should work with ORPTS to develop the QA/QC processes needed to identify these shortcomings and attempt to improve the data where feasible. Some issues will require local knowledge and will need to be resolved at the local level. This will require a sustained effort over time, but incremental progress should be possible.

2.3.5 Technological Approach

The approach described above will require the development and deployment of two classes of technology that are detailed in the sub-sections below:

1. Creation of a **repeatable process for extracting, transforming and loading (ETL)** the data received from counties in an “as-is” format into the “statewide parcel data schema” (described above in [Section 2.3.2](#)).
2. Creation of various **data services for publishing** and making the data available.

2.3.5.1 COUNTY DATA ETL ENGINE

The process of creating and running ETL routines and workflows is becoming increasingly common in a variety of information technology contexts such as data warehousing. The OCS is familiar with these technologies as they have become heavily engaged in ETL as part of their support of statewide broadband mapping. In general, ETL workflows are straightforward and involve:

- ★ Obtaining source data

- ★ Documenting its “as-is” format
- ★ Identifying the target format for the translation (which in this case will be the “statewide parcel data schema” described above in [Section 2.3.2](#))
- ★ Developing tools/scripts that will “transform” the data from the “as-is” format into the target schema. Ideally, the ETL routines are developed so that they can be run in a repeatable, automated way.
- ★ Validating that the transformation has been completed accurately

In order to develop parcel-specific ETL workflows the OCS will need to undertake the following tasks:

- ★ Identify appropriate staff for working on parcel data that are voluntarily supplied
- ★ Choose the appropriate ETL tools for parcel data (e.g., FME, Esri ArcGIS Interoperability Extension, etc.)
- ★ Perfect ETL routines on a county-by-county basis. ETL routines will vary based on the condition of the “as-is” data and may include but not be limited to the following types of transformations:
 - Coordinate/projection/datum adjustments
 - Feature class and attribute field re-mapping and re-naming
 - Conversion into the statewide parcel data schema format
 - Consolidation of individual tiles/municipal data sets into seamless, countywide data sets
 - Application/correction of polygon topology and unique feature numbering by SBL
- ★ Assemble individual county data that has undergone ETL into a composite, multi-county data set that will potentially house statewide data over time
- ★ Develop a strategy for accepting “as-is” data updates from counties and re-running the ETL processes and re-integrating the results into the multi-county data set. A key component of this element is to work with counties to ensure that they can provide the same “as-is” data on a regular basis. If the “as-is” data changes format, then the ETL routines will need to be adapted and this can consume significant amounts of time.

Once the ETL routines are complete, OCS should plan on supplying the final, transformed data back to the counties. In some cases the ETL process may add value to the counties. For example if a county had

tilled CAD files and seamless GIS parcel data didn't previously exist, the ETL process would provide a seamless GIS data set. Similarly, in other cases parcel data may not have previously been linked to assessment data. If this is the case, some counties may elect to utilize and update the transformed data going forward. In these cases, the OCS would be providing a valuable data processing service to counties that had not previously been able to achieve this level of seamless GIS data. Having counties adopt the "improved" post-ETL data would help simplify future data submissions from those communities and would potentially provide a value-add for their own internal operations. In other cases, returning the data to the counties would simply enable counties to validate that content was not lost during the ETL process.

For the long term, OCS should work towards a parcel data replication model. Under this model, counties would maintain a version of their parcel data in the statewide parcel data schema and updates could automatically be completed through server-to-server replication communications. When this technology can be established it will provide a data update capability with the lowest labor costs for both the counties and OCS and would thereby enable more frequent updating.

2.3.5.2 DATA PUBLICATION

One of the most fundamental elements of this program is that the state's multi-county parcel data collection will be in the public domain. As such, an approach and infrastructure is needed to make the data publicly available. There are a variety of technologies that can be used to share statewide data sets:

- Providing a *physical copy* of the data for download
- Providing *access* to the data via a consumable web service
- Providing access to the data via a *web viewer*

While some counties already provide their data via web viewers and are mainly interested in fostering their own user communities, many communities would welcome state support for the hosting of web viewers to help reduce costs to local governments. Therefore it is recommended that, at least initially, OCS pursue implementation of the first two options and commence planning for the development and hosting of a shared, multi-county parcel web viewer to be implemented following the first year of the program. Given that OCS already publishes other data sets for download, services consumption, and web hosting this should not involve any significant new investments in technology or the development of new tools. Rather, this will require a series of decisions on the types of capabilities these services should supply. Potential options include:

★ **Data download unit(s):**

- Entire data set (eventually statewide) and/or
- By county and/or
- By user defined area (e.g. clip box)
- ★ **Data download format(s):**
 - Native Esri format (e.g., Geodatabase, file Geodatabase) and/or
 - Simplified Esri format (e.g., SHP) and/or
 - CAD format (e.g., DXF), etc.
- ★ **Type(s) of supported consumable services:**
 - Open Geospatial Consortium (e.g. WMS, WFS)
 - Native Esri ArcGIS Server
 - KML (e.g., for consumption by Google Earth)
 - Cached map/tile based services (e.g., parcel depictions on top of orthophotos)

Understanding that it will likely be some time before the state is able to publish a statewide service, it is appropriate to consider other supplemental activities that can help GIS end users both within, and outside of state government to locate the parcel data they need (i.e., those data sets that are not yet part of the multi-county data set). Thus it is recommended that OCS also construct a **parcel data/services directory** that can be easily accessed from the same place that multi-county parcel data set is published. This directory would be a simple inventory, including web-links to direct users to existing county resources, such as OCS's "Online GIS Parcel Data Resources Inventory" spreadsheet, for obtaining both parcel data and access to consumable parcels services and data download/ordering. Absent having a single location to obtain all required data, a road map to finding existing data resources can be extremely valuable.

2.3.6 Human Resource Requirement

Given that OCS would take on the responsibilities for harmonizing "as-is", voluntary contributions, the chosen approach will require some level of dedicated staff time devoted to obtaining the raw data, assembling and managing contributed parcel data. The amount of staff time required is hard to predict due to the fact that the number of counties that will voluntarily participate is unknown at present. A reasonable estimate is that 15-20 of the 62 counties (including NYC) would participate in the first year.

The activities that need to be staffed include, but are not limited to:

- ★ Outreach and communication with stakeholders to identify and develop the statewide parcel data schema and to address any issues/concerns

- After the first year, ongoing outreach to encourage additional counties to consider contributing their data and to encourage counties to contribute more than the minimal data content (e.g. additional attribute information)
- ★ Liaison with county data providers
 - To collect existing data from voluntary contributors; and to return post-ETL data sets to contributors
 - To collect information on existing parcel data services and download capabilities from counties that choose not to contribute data
- ★ Technology development and deployment
 - Development and execution of ETL scripts to transform contributed data into the statewide parcel data schema
 - Effort to integrate the multi-county data set with ORPTS assessment information and to develop QA/QC reports that can be returned to both ORPTS and counties
 - Deploying and managing the state's own web services for mapping and download.

2.3.7 Risks

Implementing statewide parcels is not easy nor without risk. Currently, only a small minority of states – notably Montana, Tennessee and Delaware - have completed statewide parcel automation. The following provides an overview of the major risks that need to be avoided:

- ★ **Failure to gain a critical mass of initial voluntary contributions and to gain momentum in obtaining new contributions over time.** Given that nearly all parcel data is maintained at the county level, steadily increasing participation from all counties is essential to constructing a statewide resource.
- ★ **There is a reluctance to share digital parcel data with the state.** Even counties that have successfully created and maintain parcel data may not be willing to share these data with the state. This reluctance can emanate from several sources and will require active effort to overcome. Reasons for a reluctance to share include:
 - ★ There is an inconsistent understanding and **lack of awareness about the Freedom of Information Law (FOIL)** and as a result the digital geospatial data distribution practices of counties and local governments vary widely. This can cause some confusion and frustration when people are trying to obtain these

types of public records. There is no clear precedent to follow when a county is establishing its data distribution practices. Ultimately the FOIL statute itself contains language that guides the process and it also sets up a process for both exemptions and challenges. While FOIL does not make a distinction between records and geospatial data, it should be made clear to counties and local governments that geospatial data is included in this statute. Until this is made clear, this issue will be addressed on a case by case basis via the FOIL challenge process, and potentially, litigation. Some **communities “sell” their data and generate revenues that exceed the cost of duplication called for** under FOIL. These communities may fear that freely sharing data will lead to **lost revenues** and understand that it is up to data requesters to initiate FOIL challenges.

- ★ Concerns and potential misconceptions about the **spatial accuracy of parcel boundaries and associated liability**. In other words, some parcel data maintainers understand that their data are imperfect and are concerned about exposing information that is known to have problems. Experiences elsewhere have shown that proper disclaimers can alert users to the limitations of data, and more importantly that active use of data by others helps expose errors so that they can be corrected.
- ★ There can be legitimate **concerns over privacy issues** related to property ownership information and related data in municipal tax parcel data. While these **concerns may be made in good faith, these data are public records**, including owner names (except in a few cases specified by legislation). Ultimately, property ownership involves asserting rights to property and the public is entitled to validate ownership claims via public access to the records. The technology to preserve privacy for the small number of legislated exceptions to this open data norm should be employed.
- ★ **Failure to successfully engage ORPTS in this effort and to sustain state government stakeholder support**. One of the biggest challenges with GIS data in general is performing ongoing work to keep the data current in light of constant administrative and environmental changes. Parcel ownership changes and parcels get subdivided frequently. The program’s success will not be realized unless the processes are in place to help ensure that the parcels are kept current. Hence, it is critical that the support of ORPTS, who communicates with parcel data custodians on at least an annual basis, and other state government stakeholders is sustained as the program evolves.

3 PROGRAM BENEFITS & JUSTIFICATION

Parcel data are essential to GIS practitioners at all levels of government throughout the state. These data are useful in municipal and county operations, whether in planning and zoning, public health, building inspections, assessing, education, conservation, public safety or other departments. Parcel data are also used by county and state programs with regional goals or with involvement in specific sites, such as economic development, transportation infrastructure, broadband infrastructure planning, natural resource protection, land use and environmental permitting, large-scale emergency response and disaster recovery, energy facility siting, property management and other state agency missions. **In short, investments in parcels will benefit a very broad cross section of government stakeholders** at multiple levels of government.

3.1 TO GIS STAKEHOLDERS, IN GENERAL

- ★ **Removal of duplication of effort within state government:** The 2008 Statewide Strategic Plan documented that at least 11 separate state agencies have a variety of needs for parcel data and spend their own agency resources collecting, processing, and storing these data.

AGENCY	PARCEL USE
Criminal Justice	<ul style="list-style-type: none"> ▪ Geocoding ▪ Crime prevention analysis
DEC	<ul style="list-style-type: none"> ▪ Property management ▪ Abutters notification
DEC Water	<ul style="list-style-type: none"> ▪ Natural resource modeling ▪ Drought management
DEC Fish and Wildlife	<ul style="list-style-type: none"> ▪ Wetlands notification ▪ Identifying land access for wildlife survey
NY Canal Corporation	<ul style="list-style-type: none"> ▪ Management of activities in right-of-way ▪ Abutter notification ▪ Economic development opportunities
NY Thruway Authority	<ul style="list-style-type: none"> ▪ Land holdings assessment ▪ Land disbursement opportunities
NYS DOT	<ul style="list-style-type: none"> ▪ Right of way assessment ▪ Abutters determination
Public Health Research	<ul style="list-style-type: none"> ▪ Land use mix assessment ▪ Walkability determination

AGENCY	PARCEL USE
Secretary of State, Division of Coastal Resources	<ul style="list-style-type: none"> ▪ Identification of non-point source pollution ▪ Open space acquisition
State Museum	<ul style="list-style-type: none"> ▪ Identifying owners of oil and gas wells
State Parks	<ul style="list-style-type: none"> ▪ Open space land acquisition

Given that the Strategic Planning process did not comprehensively contact all state agencies (i.e. participating in the planning process was voluntary), it is likely that there is an even broader requirement for parcels. Assembling parcel data once for the benefit of all state government users will remove duplication of effort and will provide efficiencies. In addition, further efficiencies will be gained in the process of establishing the appropriate data sharing agreements.

- ★ **Federal government** agencies also have business requirements for gaining access to parcel data for New York State and these agencies are currently expending resources to collect and process NY parcel data on a county-by-county basis. Several examples from the USDA include:
 - Farm Service Agency
 - Provides efficient service to landowners receiving agency benefits
 - Assists with updates to FSA GIS database of cooperator lands
 - Natural Resources Conservation Service
 - Agency outreach for National Farm Bill programs through landowner notifications
 - Development of landowner environmental conservation plans
 - Assist Soil Survey planning and field work
 - Identify contacts for National Rapid Carbon Assessment program spot check locations
 - Provides efficiency in management of national easement initiatives
- ★ **Improved planning and decision making:** Agencies require parcel data for activities as diverse as crime prevention and analysis to open space land acquisitions to right-of-way abutters' assessment. Having these data readily available across the state will improve the ability of all levels of government to properly plan and manage these activities.

- ★ **Improved management of state owned facilities:** The New York State Division of Budget manages the state’s own parcel holdings and has indicated that parcel data would be useful for assisting in the management of the state’s own real estate portfolio.
- ★ **Improved quality of data:** Increased parcel data availability and accessibility will lead to increased use of data by wider numbers of people and, in turn, **increased use will lead to additional geometric/geographic data issues being uncovered as users report errors.** As supported by Jason Baum, GIS Coordinator for the Town of Bethlehem, “We all know how making the data visible can often lead to its improvement.”³In addition to geometry improvements, OCS may complete quality control checks on the success of linking ORPTS data obtained from assessors with county-based tax parcel data. Such quality reports can assist counties in improving the linkage between their parcel data and assessment data that emanates from multiple municipalities to help ensure that all tax parcels are being assessed appropriately. It is understood that parcel data are imperfect and both county data and the multi-county data set should include appropriate disclaimers such as “Not appropriate for survey purposes”. Over time, data errors will be reduced and data will improve and participants should not be embarrassed by routine data problems.

3.2 TO COUNTIES IN PARTICULAR

Identifying county-based benefits is challenging due to the fact that different counties have different levels of GIS maturity and thus different perspectives on benefits. Some counties such as Westchester and Rockland have very mature systems with high-quality data and are largely self sufficient and able to actively publish and share their parcel data. Thus, they have a lower perception of the benefits of statewide parcel data availability. Other, smaller and more rural counties, such as Schuyler and Wyoming have less developed programs with poorer quality data that lacks associated metadata, and limited access to server-based software that allows them to publish and share their parcel data. These counties may perceive a **richer set of benefits if the state is able to provide data quality checks, metadata guidance and standardization, and data publication tools** as part of statewide parcel data program. With recent budget stresses additional counties may perceive these benefits as some counties have reportedly had to discontinue contracted provision of web services.

³ Based on email sent to the project team on 1/28/2011.

- ★ **Potential benefits to counties:** While counties primarily require data only about their own jurisdictions, there are several opportunities where statewide approaches might provide benefits to the counties. These include:
- Currently, a single county may be asked to provide parcel data to as many as 11 separate state agencies via 11 separate data requests. With a statewide approach, **a county would only need to provide the data to the state once**, and the state could be responsible for sharing it amongst its own agencies.
 - Consistent cadastral data will aid federal agencies in damage assessment during emergencies which could speed disaster funding allocation.
 - Significant county staff time is spent fulfilling data orders, collecting fees, and accounting for fees obtained. In the end, the fees collected may not adequately cover the time expended to distribute the data. Centralized data access would reduce the high cost of selling and distributing cadastral data at the local level. This served as an incentive in New York City where they share their data because “the cost of selling data is too high and a money loser”.⁴
 - Public safety situations such as a missing person’s search, or, conducting a large scale evacuation can benefit from access to detailed data from neighboring jurisdictions. Furthermore, state emergency response to, and planning for county and local governments can be made more efficient with centralized access to parcel data (e.g., for locating potential staging areas).
 - County border disputes may be alleviated with access to parcel data for the adjoining communities. During the 2007-2008 statewide GIS strategic planning project, a wide variety of stakeholder reported a need to address these issues and confirmed that parcel data would support resolution of disputes.
 - Statewide parcel data linked to property owner information would support “STAR exemption” checking to ensure that an owner is claiming only one primary residence.
 - Broader regional sales comparisons become possible with statewide parcel data. Often, in rural areas there can be a need for cross-county sales comparison checks due to an inadequate number of “in county” comparable sales.
 - The New York City Department of Environmental Protection is responsible for managing the water supply for all of NYC plus several upstate counties up-to-date digital parcel data is a critical component of this system. According to Matthew Schwab of NYCDEP, “Hundreds of DEP staff use this data every day to manage City lands, review private landowner applications for regulatory

⁴ As verbalized during the January 26 Coordinating Body meeting.

approvals, support landowner solicitation for land acquisition and a myriad of other uses related to watershed protection and management. It is literally hard to imagine DEP operations without this critical data layer.”⁵ A similar sentiment was expressed by Elisabeth DeGironimo of the Mohawk Valley Watershed.⁶ In short, significant local government resources are invested in maintaining this system to support management of regional water supply operations and watershed protection and statewide parcel data could help alleviate this local burden.

- While an admittedly a minor benefit, some rural counties develop snow mobile routes that cross county boundaries as a means of attracting winter tourists. Access to neighboring county parcel data would facilitate this planning activity⁷. It is expected that there will be numerous additional minor benefits of this nature that will accrue due to improved parcel data availability across the state.

★ **New opportunities for benefits arise with consistent statewide parcel data:** An example of a new class of benefit that might arise if there was broad access to standardized parcel data would be the state potentially developing and hosting “shared applications” that would run against the multi-county parcel data set and could be made available to participating counties.⁸ These applications would be particularly valuable to counties that have less well developed GIS programs and limited technology and budget availability for application development. The following applications support common county workflows and could be feasibly developed and hosted back to participating counties:

- Automated tool for preparing “**soil group worksheets**” for agricultural parcels
- Automated tool for identifying DEC spills and hazards on parcels. Identifying these kinds of hazards can be a requirement for foreclosure proceedings
- Automated tool for identifying DEC wells and reservoirs on parcels
- Parcel abutter identification and owner notification within specified distances of a subject parcel or parcels.
- Wetland and Floodplain data overlay analysis with statewide parcels
- Administrative areas such as zoning, emergency services, school districts, and others are best maintained as an aggregation of parcels. Some of these cross county lines.

⁵ Email correspondence to project team January 25, 2011.

⁶ As verbalized during the January 26 Coordinating Body meeting.

⁷ Jeff Quackenbush, Oneida County, via conversation with Frank Winters of OCS.

⁸ A standardized municipal boundary map would serve as a valuable basemap to a multi-county parcel data set however existing accuracy issues would be costly to resolve (see the 2008 Strategic Plan for a full description).

4 IMPLEMENTATION PLAN

4.1 IMPLEMENTATION PROGRAM FOR NEAR TERM RESULTS

The following presents a structured implementation program for pursuing key elements of the overall vision. These key activities are presented below and are described in more detail above in **Details of Recommended Approach** ([Section 2.3](#)):

1. As described in **Standards** ([Section 2.3.2](#)), a key initial activity will be to assemble a group of stakeholders to work with OCS on the development of a “**statewide parcel data schema**”. This schema will act as a container for receiving county data that is obtained in a wide variety of formats and will, at least initially, only require a closed parcel polygon attributed with a unique parcel identification number.
2. The section **Existing Data Characteristics** ([Section 2.3.3](#)) enumerates the current characteristics of the New York state parcel data. The implementation program will require additional **data assessment**, building on the information collected via the ORPTS survey, to build a **complete inventory** of parcel data holdings and county practices for the entire state. This effort will involve identifying and documenting the following characteristics for each county:
 - a. **Parcel data availability** (technology format, schema format, quality, currency, spatial accuracy, etc.)
 - b. **County “willingness to share”** existing parcel data identifying the initial set of willing participants that would contribute data to this program (e.g., Ontario, New York City, etc.) and potentially rating other counties according to their likeliness for participation.
 - c. Complete a full inventory of all available county **on-line parcel data resources** (i.e., viewers, consumable web services, data download). The online GIS Parcel Data Resources Inventory created by OCS would serve as an appropriate and useful starting point for this type of inventory.
3. To support the implementation program, appropriate **Technology** ([Section 2.3.5](#)) will need to be deployed by OCS. Key activities related to this deployment are described below:

- a. Create a **repeatable process for extracting, transforming and loading (ETL)** ([Section 2.3.5.1](#)) the data received from initial counties in an “as-is” format into the “statewide parcel data schema” and validating that the transformation has been completed accurately. Ideally, at least 3 counties would be involved in the initial pilot project. OCS already has in place robust ETL tools that have supported recent broadband mapping efforts. As part of this activity, OCS will need to evaluate these existing ETL tools and determine whether any additional investments in ETL technology will need to be made to support the parcel program.
 - b. The implementation program will require that OCS publish contributed data using various technologies ([Section 2.3.5.2](#)). This will involve establishing an initial set of “**data access services**” for collected parcel data. Initial services should include data for download, with various options for user-defined extents, as well as a variety of consumable web service types. It is also recommended that OCS begin planning for the deployment and hosting of a shared, multi-county web-viewer application that would provide cost savings opportunities for participating counties.
 - c. Create an **on-line index of existing, available and consumable parcel resources** (i.e., viewers, consumable web services, data download) based on the results of the inventory completed as part of the “data assessment” phase of implementation.
4. The approach described here will require a substantial level of **Human Resources** ([Section 2.3.6](#)) devoted to obtaining the raw data, assembling and managing contributed parcel data. As described earlier, the amount of staff time required will depend on the number of counties that will voluntarily participate. Staff resource requirements presented here assume that approximately 15-20 of the 62 counties (including NYC) would participate in the first year of the implementation program. Staff activities to support the program will include:
 - a. **Assessment of current OCS human resource availability** and assignment of pilot program tasks to appropriate staff. The pilot program is estimated to require a total of 0.5 FTE divided across several personnel categories:
 - Coordinator/GIS Analyst: 0.2 FTE to manage outreach and stakeholder discussions to create an initial “statewide parcel data schema”. This level

of effort assumes that multiple drafts will be distributed, reviewed and edited prior to arriving at an acceptable initial schema.

- Coordinator: 0.1 FTE for outreach to counties to complete the “data assessment” inventories.
- Programmer/Developer: 0.1 FTE to perform ETL routine writing for at least 3 contributed parcel data sets
- Web Developer: 0.1 FTE to stand up consumable web services for OGC services and data download and to stand up a web-site for publishing county parcel data resources for counties that are not yet participating in the statewide parcel program.

b. Following the pilot project, OCS will need to **identify longer term staffing requirements** for operational management of statewide parcels. These requirements would likely be phased in over time as increasing numbers of counties choose to participate. The results of the pilot project specified above will be critical for properly estimating the long term staffing requirements.

5. The success of the implementation program presented here will require that certain **Risk Mitigation** activities are pursued. The following provides direct recommendations for addressing the risks that were identified in [Section 2.3.7](#) above:

a. Pursue **explicit direct communication and engagement to counties encouraging their participation** in the program. It will be important to demonstrate forward momentum for increased county parcel data contributions. Communications should be aimed at:

- **Documenting participation trends** to better understand where promotional activities should be targeted
- **Identifying positive “use cases” and testimonials** from participants.

Examples of use cases that may emerge include:

- o Staff time saved by removing the need to respond to and fulfill data requests

- Hosting fees and application maintenance costs saved through participation in a multi-county, shared parcel viewer
 - Documented support for regional emergency response following a severe weather event
 - Equally, it will be important to document **use cases that address county concerns** including:
 - Comparison of historic data sale revenues to staff time saved by removal of data distribution burden
 - Documentation of improved spatial data accuracy and link to tax records through quality control reports and recommendations from OCS
 - The benefits of the program should be documented, consolidated and quantified to the degree possible. **Evidence of benefits presented in clear, quantifiable terms** will garner further support for the program and participation by counties.
 - Pursue **explicit, direct communication and engagement with other key state agencies** such as NYS DT&F, ORPTS and NYSDOB. These agencies should be aware of the program and cognizant of the progress that is being made.
6. As discussed above, outreach is an essential component to the recommended program for the purposes of encouraging county participation and risk mitigation. **Outreach** efforts to those who would benefit from the program should be sustained throughout implementation in order to maintain awareness, publicize milestone achievements, and build long-term support for the statewide parcel program. As described in Program Benefits & Justification ([Section 3](#)), these stakeholders would include municipal and county governments, Real Property Directors, State agencies (such as Criminal Justice, DEC, DEC Water, DEC Fish & Wildlife, NY Canal Corporation, NY Thruway Authority, DOT, Public Health Research, Division of Coastal Resources, State Museum, State Parks), and Federal agencies (such as USDA). Long-term outreach activities should include the **development of a marketing plan and promotional materials** that share the program details, present program progress, and

highlight use cases and testimonials from participants. Key venues for outreach include the annual meetings of the County RPTS Directors, County Assessors, Association of Counties, Association of Towns, Conference of Mayors and Municipal Officials, NYS Association of E911 Coordinators, Regional GIS Groups, and the NYS GIS Conference.

4.2 PHASING & MILESTONES

The following presents a general timeline for pursuing the activities identified above in [Section 2.1](#):

Activity	Year 1												Future years	
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12		
Finalize and distribute the Business Plan	■													
Outreach & engagement to counties on initiation of statewide parcel program		■	■											
Outreach & engagement to ORPTS & NYST&F		■	■											
Assemble group of stakeholders to work with OCS on the development of a statewide parcel schema			■	■										
Identification of pilot study scope & minimum of 3 willing counties					■	■								
Parcel data collection for pilot							■	■						
Parcel ETL for pilot								■	■					
Parcel map and download services for pilot										■	■			
Post-pilot revision of implementation plan												■		
Outreach & engagement to counties for further participation												■	■	

4.3 BUDGET PLAN

At present, the budget requirements for this program include investments in OCS staff time (approximately 0.5 FTE) and technology to support the pilot activities described above in [Section 4.1](#) under “Human Resources” (item 4) and “Technology” (item 3). These staff and funding requirements are presented in the two tables on the following page:

Staff Requirements

Program Activity	Human Resource Category	Human Resource Requirements (FTE)
Manage outreach to create initial statewide parcel schema	Coordinator/ Analyst	0.2
Complete data assessment inventory	Coordinator	0.1
Create ETL scripts for initial data sets	Programmer/ Developer	0.1
Stand up consumable web services, data download, and website for online parcel resources	Web Developer	0.1
	TOTAL FTE REQUIREMENTS	0.5

Funding Requirements

Program Activity	Technology Resource	Technology Resource Estimated Cost
Stand up consumable web services, data download, and website for online parcel resources	Purchase new server	\$ 10,000
	TOTAL FUNDING REQUIREMENTS	\$ 10,000

At present, it is anticipated that one FTE would be required to administer the program for the longer term. While staff time demands will increase as more counties begin to provide parcel data, the staff time required to maintain ETL scripts and deploy data access technologies will decrease. As described above, this FTE may need to be a combination of different staff categories that will likely include the following functions:

- Management: Program oversight and guidance
- Coordination: Continued outreach efforts and engagement with counties and state agencies
- GIS Analyst: Collect and inventory data assets
- Programmer/Developer: Maintain ETL routines
- Web developer: Maintain consumable web services, data download, and online resource web page as well as support planning for shared web viewer

5 MEASURING SUCCESS & RECALIBRATION

5.1 MEASURING SUCCESS

The twelve month timeline presented in [Section 4.2](#) identifies several key milestones. The most obvious measure of success is to see whether those milestones have been met and whether the initiative is progressing according to schedule. The following provides a summary of key implementation milestones that will help to measure the success of this effort:

1. Complete full inventory of parcel data availability based on county “willingness to share” and all available county on-line parcel data resources by month 3.
2. Assemble a group of stakeholders to develop a “statewide parcel data schema” by month 4.
3. Identification of pilot study scope and implement an on-line index of existing, available and consumable parcel resources by month 6.
4. Pilot Program to collect and develop ETL routines into the statewide parcel data schema for counties that volunteer to contribute their data by month 9.
5. Stand up an initial set of “data access services” for contributed data by month 11.

As presented in this plan, the near-term objective is to develop a working model for receiving and harmonizing voluntary county parcel contributions into a standard, multi-county data set. Although statewide parcel data is the ultimate goal, it is unrealistic to expect that 100% of the state’s parcels can be assembled in a short amount of time. As such, success should be measured incrementally after the initial multi-county data sets become available. The following measure of success is based on county contribution targets for the next 5 years. Hopefully, this program will result in a parcel data collection with 95% county participation within the 5 year timeframe:

- Year 1: **25% of counties** voluntarily contribute their data to OCS to create the initial “multi-county collection”
- Year 2: **35% of counties** voluntarily contribute their data to OCS to the “multi-county collection”
- Year 3: **50% of counties** voluntarily contribute their data to OCS to the “multi-county collection”
- Year 4: **70% of counties** voluntarily contribute their data to OCS to the “multi-county collection”
- Year 5: **95% of counties** voluntarily contribute their data to OCS to the “multi-county collection”

5.2 FEEDBACK & RECALIBRATION

New York has a good history of active engagement between the state GIS coordination program and GIS stakeholders both inside and outside of state government. The success of this plan will depend on maintaining this dialog and obtaining timely and relevant feedback from these stakeholders. To this end, it is recommended that:

- ★ Active and ongoing **education** and **briefing** should be provided to both state and non-state GIS stakeholders
- ★ Active **input** and **comment** on the approach being taken by OCS should be sought from both sets of stakeholders
- ★ Ongoing input via the NYS Coordinating Body

The program should be prepared to recalibrate and reprioritize efforts based on early success and/or failures and be based on the input that is provided from GIS stakeholders.

APPENDICES

APPENDIX 1: Project Methodology

APPENDIX 2: Findings from Input from Local Government

APPENDIX 3: Summary Report of ORPTS Survey

APPENDIX 1: PROJECT METHODOLOGY

PROJECT TEAM. The development of this business plan was performed under the direction of the New York Office of Cyber Security with guidance and input from the New York State GIS Coordinating Body.

The consulting team consisted of:

- Applied Geographics, Inc. (AppGeo)
- MRB Group
- Oswald Associates

PROJECT ACTIVITIES.

- ★ **Kick-Off Meeting:** The team participated in a kick-off meeting with OCS to review management, communications, roles, schedule and task distribution. The meeting also identified terms and goals as well as policy issues that needed to be researched, evaluated and addressed in the Business Plan.
- ★ **Coordinating Body Presentations:** Throughout the business planning process, several presentations were given by the consulting team, either in person or via conference call. Feedback received at the following Coordinating Body meetings was key to the development of the plan.
 - December 9, 2010
 - January 26, 2011 (special meeting)
 - March, 2011
- ★ **Review and Analysis of Parcel Inventory Survey:** The team reviewed results of the ORPTS survey and evaluated the content and completeness and ability to address technical and policy issues based on the results.
- ★ **Stakeholder Outreach - Meetings and Correspondence with Local Government**
Stakeholders: The team conducted interviews with county and local governments in order to ensure that a diversity of opinions was collected to inform the development of the Business Plan.
 - Meeting with Essex and Warren Counties (September 2010)
 - Cattaraugus County (email correspondence)
 - Schenectady County (email correspondence)
 - Warren County (email correspondence)

- Ontario County (email correspondence)
 - Westchester County (email correspondence)
 - Rockland County (email correspondence)
 - Nassau County (email correspondence)
 - Suffolk County (email correspondence)
 - County Real Property Tax Directors' Meeting (October 2010)
 - NYS Association of Counties Meeting (February 2011)
 - Town of Bethlehem (email correspondence)
 - New York City
 - Meeting with New York City Departments of Finance (DOF) and Information Technology and Telecommunications (DOITT) Representatives (January 2011)
 - New York City Department of Environmental Protection (email correspondence)
- ★ **First Draft of Business Plan:** Based on OCS guidance and stakeholder input via email and at the Coordinating Body meeting of January 26, 2011, the AppGeo team created an outline and initial draft of the business plan. The content reflected the required elements for the FGDC CAP grant as well as the priorities set by OCS and the CB.
- ★ **Second Draft of Business Plan:** Feedback from the initial draft was incorporated and details of the plan were fleshed out to create a full draft of the Business Plan. This availability of this draft will be announced at the Coordinating Body meeting took place on June 15, 2011 prior to the NY GeoSpatial Summit. Feedback will be requested in a timely manner for incorporation into the final version.
- ★ **Final Business Plan:** The business plan will be finalized following feedback on the second draft.

APPENDIX 2: FINDINGS FROM INPUT FROM LOCAL GOVERNMENT

As part of process of developing the Business Plan for Centralized Access to Consistent Cadastral Data for New York, input was solicited directly from specific County and local governments to determine both ideas on how such a program might be best framed and what major hurdles that needed to be overcome to insure its success. This included a geographically diverse group of counties representing both sophisticated GIS users as well as those not as knowledgeable on the technology. The counties contacted directly included: Essex, Warren, Cattaraugus, Ontario, Schenectady, Westchester, Rockland, Nassau, and Suffolk. Input was also obtained from New York City as well as from the Town of Bethlehem. In addition, presentations were made and discussions held at the New York State Association of County Directors of Real Property Tax Services Conference in Syracuse as well as the NYS Association of Counties Meeting in Albany to obtain additional input. Below are the summaries of the information obtained.

MAJOR ISSUES NOTED
1. Concern over loss of control of data.
2. Concern of loss of revenue from data sales.
3. Concern over unfunded State mandates.
4. Data sales show the “value” of parcel data to county upper management. Lack of sales may diminish that perception of value.
5. Concern over quality (and age) of data currently available for use and distribution on national websites.
6. Concern over the amount of county resources required to respond to data requests by State & Federal Agencies.
7. Need for demonstrations and training on any new system for counties.
8. A statewide cadastral program won’t succeed if Tax Directors don’t “buy in.”
9. There will be a significant influx of new Tax Directors shortly who may be more receptive to technology than current ones.

POTENTIAL INCENTIVES FOR PARTICIPATION IN A STATEWIDE PROGRAM

1. Obtain a group discount on software and maintenance.
2. Develop a tool that allows county staff to automatically update the statewide data.
3. Offer quality control for data.
4. Develop applications that could be used by County and local governments to enhance or leverage a statewide layer.
5. Provide centralized state web services and applications that would allow county governments to forgo hardware and software maintenance and application development costs.
6. Provide funding to assist Counties with putting data on-line as well as for certification training of County Real Property Tax Directors
7. Reduce or eliminate County data distribution efforts for State and Federal government agencies.

- Input from meetings, phone calls and e-mail with County representatives
 - Meeting with Essex and Warren Counties – September 2010

A meeting was held with Essex and Warren Counties in September 2010 to obtain input on important issues with both counties regarding cadastral data. Important details from the meeting were:

 - Both counties support public access to tax maps and assessment data.
 - Both counties sell this data. Their annual revenue has shrunk since the introduction of internet access and is:
 - Essex ~ \$18,000
 - Warren ~ \$25,000
 - Both counties share data for free if they can get something of value back in return (i.e. they provide local surveyors with digital parcel data and the surveyors return their surveys to the county.
 - Both counties use SDG Image Mate Online software with annual fees.
 - Both counties use Esri products (Warren – ArcGIS; Essex – ArcIMS)
 - Staff reductions – Warren saw a 40% reduction in staffing (5-3) with the advent of Internet access to their data. Essex did not see any reduction.
 - Warren has a GIS Coordinator. Essex does not have GIS staff.
 - Updating of assessment data – Warren County – Updates done regularly; Essex County – Updates done annually.
 - Counties will need demonstrations and training so that they understand the technology of any statewide cadastral program.

- The provision of software tools and/or services, such as quality control of the tax maps and attributes, or reconciliation of the digital tax maps with the corresponding RPS data, would be helpful to the counties
 - Presentations on the statewide parcel initiative could be given at regional meetings of the tax directors. If continuing education credits were given for the presentations, attendance would be likely to improve.
 - The program won't work if the tax directors don't buy in.
 - Develop automatic replication tools or services that would replicate data on a consistent time frame and send automatically to a central site.
 - Is there a coordination role for the state to play that helps counties minimize their data distribution efforts?
 - How would FOIL requests for data be handled?
 - Keep assessment data separate from the tax map data that would be in a statewide database.
 - With 1/3 of the county RPTS Directors expected to retire in the next 18 months, many new RPTS Directors will need training. Historically online training has not been embraced by the RPTS Directors and assessors. Is this attitude changing and is there a role for the state to assist with this?
 - ORPTS has dropped funding in two areas: 1. Funding assistance needed to help them put their data online. 2. County RPTS Directors are no longer reimbursed for taking courses toward maintaining certification, once the director has accumulated the 24 credits required for one year. If funding opportunities occur, perhaps they could be leveraged to help fill the gaps in these two areas.
- o Discussion with Cattaraugus County (Cattaraugus) – A series of e-mails with Cattaraugus provided the following input:
- The county has a cadastral data parcel viewer as a service (ArcIMS).
 - It had "open" parcel viewer, but county shut it down once they found out.
 - Surrounding counties were added at one point, but the county had to get rid of them because if one of their services went down, it also brought Cattaraugus' down.
 - The county would have no trouble replicating its parcel data to a statewide program.
 - Data updates – County parcel lines get updated on the fly; assessment data gets created in March and updated 3 times a year.
 - The county would love to be able to refer state and federal government agencies to one "statewide" parcel service.
- o Discussion with Schenectady County (Schenectady) – In addition, to a proposal made by Mark Storti at a NYS GIS Coordinating Body Meeting, a series of e-mails with Schenectady provided the following input:
- RPTS Directors are not versed in the technical GIS options. Directors' hands have been tied by budget cuts and lack of support for State (money & technology knowledge).
 - ORPTS does not provide tax map QA/QC after initial digital conversion or other financial support when converting to Geodatabase. Grants are too ridged in requirements upon counties.

- Counties are sensitive to unfunded mandates and losses of revenue. They sometimes sell data to pay for GIS and equipment upgrades.
 - The willingness to share parcel data varies greatly across counties.
 - Private companies that request real property data expect to acquire that data at no cost or very minimal cost to them. These companies use data in their own products and charge their customers for product for fee. They are very reluctant to share data because of this.
 - Local town and city governments are resistant to provide data to county when requested.
 - State Agency or other agencies request data or want data but don't give anything in return except on State GIS Clearinghouse.
 - Lots of work on standards is needed. Standards should be developed by asking for input from the people that have the data.
 - The State can help by:
 - o Keeping the process simple
 - o Providing tech support when needed
 - o Being cooperative
 - Participating counties will "lose control" (and feeling of ownership) of contributed data. As a result the State better be prepared to answer any questions and not send them back to counties.
 - County IT departments need to be on board with any technological solution and be willing to host web map services.
 - Counties should have access to RPS data without any State license fee.
 - Counties are aware that the State is making life easier for themselves.
 - There needs to be a process to resolve "border Issues" between municipalities effectively.
- o Warren County - Mike Swan – E-mail correspondence.
 - Mike Swan noted that, to be successful, any business plan develop must clearly identify how the counties would benefit from participating in a statewide (or even a regional pilot) cadastral program and must be able to answer the questions for the county of "What's in it for me?"
 - He suggested that attractive incentives for counties to participate in the program would include:
 - o The ability to obtain a group discount on software and maintenance; and
 - o The development of a tool that allows county staff to just click on an icon once a day to automatically update the statewide data without any other work being required.
 - o Kevin Schultz – Ontario County – E-mail correspondence. Kevin Schultz noted that Esri already has NYS tax parcel boundaries on line.
 - o The County noted that privacy is still a major concern even recognizing the fact that parcels are public information.
 - Incentives for the county to participate would include:
 - o Expending less staff resources to fill data requests.
 - o Currently Ontario County pays approximately \$20k annually for RPSv4 (including municipalities). If this could be provided for free in exchange for the parcel layer, there would be broad support for the program.
 - o Another suggestion from the County was to put the reassessment aide back in the budget as an incentive for participation.

- Also, suggested that development of applications (desktop, web based, GPS, widgets, etc.) that could be used by county and local governments could enhance or leverage a statewide layer. He suggested that these applications could be distributed via the clearinghouse and help to create a more level playing field across the state. Suggestions for these applications included one for MS4 Storm water, where instead of giving each coalition grant funds to do the same thing as the guys next door, create a uniform MS4 storm water tool. He also suggested one for onsite Wastewater Treatment.
- Sam Wear – Westchester County – E-mail correspondence. Sam Wear stated that Westchester County does not maintain countywide digital tax parcel data. It has 26 tax mapping jurisdictions. The county obtains copies of these municipal tax maps.
 - The county hopes to be publishing a countywide digital tax parcel map service (WMS) that would contain minimal variables. There are no current plans to publish owner names and assessment values.
 - Sam sees no advantage in contributing to the “statewide cadastral database/clearinghouse” concept. He would instead encourage these same local governments to build the capacity and/or systems to direct external traffic to their map services that contain tax parcel content.
- Doug Schuetz – Rockland County – E-mail correspondence. Doug Schuetz noted that the majority of Rockland County’s data is now released through the county’s GIS Portal.
 - Data, such as the cadastral data, is only made available via its Portal for those with a License Agreement. Presently, they have agreements with various local governments as well as Federal and many State agencies. There is no fee for access to data for government agencies. However, there are restrictions as to its use. Fees do exist for other users.
 - Any possibilities for Rockland County to participate with the State would require the State's strategy to be consistent with its digital data release policy, or would require an internal policy change.
 - Since its data exists in a central repository already, via its GIS Portal, it would want customers to continue to go through the county site for access. Without this, Rockland County feels that it would be a significant negative impact on its program.
 - Rockland County does not anticipate any savings or efficiencies to joining a statewide program as they already upload/update their data on the GIS Portal in the form of GIS data, maps and applications.
 - The County does not receive data requests for another county’s cadastral data.
 - They do not have any applications that would benefit from acquiring another county’s data.
- Nassau County –Joe Jones – E-mail correspondence.
 - Joe Jones believes that a statewide cadastral system should be designed providing access through web services with the data coming from the original source not the State.
 - One of the State’s first priorities should be to clean up their own ownership of parcels with appropriate government jurisdictions prior to commencing on Statewide parcels project. Nassau County has found the State (ORPTS) to have inaccurate parcels and poor knowledge of its inventory of parcels.























- Experience has shown that, when access to data has been given to the private sector, they do not refresh the data on a timely basis and the data is used in their own profit making goals, not providing an accurate representation to the public. Giving access to the data on a sneaker net basis or through State System to stale versions of the data would provide a disservice to taxpayers.
 - Joe does not envision savings or efficiencies for Nassau County if it participates in a statewide program. It sees such a system causing the State transferring cost of supporting the system to the Counties while causing revenue (from data sales) being taken from the County.
 - Nassau Counties is planning to expand upon their Cadastral access in the future through WEB Services.
 - It is suggested that data correction incentives should be provided through the State. (ORPTS recently drastically reduced these services.)
 - Joe notes that access to data from surrounding counties, if required, could come through arrangements with the other Counties such as MOU's.
- o Suffolk County – Penny LaValle – E-mail correspondence. (Penny LaValle noted that her opinion does not necessarily reflect the County's) – Penny expressed concern over the definition of the statewide cadastral program as well as who would be participating in it and how it would be related with the national program being discussed.
 - Penny noted Suffolk County data would need to be licensed (which would restrict its publication) to government entities. A fee based license would be required for any other organization or private entity.
 - Data access would only be allowed through the County's web services.
 - As the County maintains its tax maps and obtains income from them, she does not envision any appreciable advantage to joining a statewide system at this time.
 - The County would be interested in considering incentives to participate in the program if they were attractive.
- Input from meetings, phone calls and e-mail with New York City representatives
 - o Meeting with New York City Departments of Finance (DOF) and Information Technology and Telecommunications (DOITT) Representatives – January 2011
A presentation was made to DOITT and DOF to obtain input from them and determine if NYC would contribute data to a statewide parcel data program. DOF provided a briefing on the NYC tax parcel mapping and data delivery process. Important details from the meeting were:
 - Quarterly data updates are provided to City agencies.
 - DOITT didn't see any initial issues with providing quarterly updates (with no distribution restrictions) from NYC to a statewide plan after formal approval was obtained from DOF.
 - It was not likely that DOF would agree to change NYC's ~ 860,000 parcels to meeting a new state cadastral standard if that was requested.
 - DOITT couldn't provide web services (which would have daily updates) to a statewide cadastral data set at this time using their current resources because of concerns over internet traffic issues.

- NYC doesn't have cadastral data from the counties surrounding NYC. Having this data might be of assistance at times for transportation, public safety and health issues.
- o Discussion with New York City Department of Environmental Protection (DEP) – A series of e-mails with DEP provided the following input:
 - DEP has invested significant resources in a state-of-the-art GIS system to support NYC water supply operations and watershed protection.
 - Up-to-date digital tax parcel data, including parcel shapes and associated assessment roll data are a critical component of the GIS.
 - Hundreds of DEP staff use this data every day to manage City lands, review private landowner applications for regulatory approvals, support landowner solicitation for land acquisition and a myriad of other uses related to watershed protection and management.
 - DEP has various data-sharing agreements with many of those counties to this day. However maintaining those relationships, and merging the myriad data models employed by different counties into a seamless, watershed-scale parcel dataset is a continuing challenge, and requires an ongoing and significant input of City resources.
 - DEP has an ongoing need for up-to-date tax parcel and assessment GIS data.
 - DEP would be extremely interested in any efforts to coordinate and simplify aggregation and dissemination of those datasets, including web download capability.
- Input from meetings, phone calls and e-mail with the Town of Bethlehem
 - o Town of Bethlehem – Jason Baum – E-mail correspondence. Jason indicated that the State do the hard work to develop a statewide system with input by local government. He suggested that an incentive offered by the state for participation in such a program might be that the State would pay for ½ of a staff salary for 3 years to allow the Counties to work on the program while being properly compensated for the costs that they might incur.
- County Real Property Tax Directors' Meeting – October 2010
 A presentation was made at the County Real Property Tax Directors' meeting to obtain input on important issues with both counties regarding cadastral data. Important details from the meeting were:
 - o Concern about loss of control of "their" data.
 - o Concern about loss of revenue from sales.
 - o Cost of sales greatly exceeded revenue in some cases, but sales was continued to show "value" of data.
 - o Embracing of a statewide parcel data program would require incentives for large-scale adoption to occur.
 - Suggested "incentives" included:
 - o State licensing of Esri software.
 - o Funding.
 - o Centralized state web services and applications that would allow county governments to forgo hardware and software maintenance and application development costs.

NYS Association of Counties Meeting – February 2011 – Mike Swan of Warren County made a presentation outlining the project and providing an update on its progress and early findings. No unfunded mandates, loss of control of their data, concern over inaccurate data currently being presented by private firms via the Internet, and concern over loss of revenue as well as State takeover of the real property tax data.

1. Select your County:

		Response Percent	Response Count
Albany	<input type="checkbox"/>	1.6%	1
Allegany	<input type="checkbox"/>	1.6%	1
Broome		0.0%	0
Cattaraugus	<input type="checkbox"/>	1.6%	1
Cayuga	<input type="checkbox"/>	1.6%	1
Chautauqua		0.0%	0
Chemung		0.0%	0
Chenango	<input type="checkbox"/>	1.6%	1
Clinton	<input type="checkbox"/>	1.6%	1
Columbia	<input type="checkbox"/>	1.6%	1
Cortland	<input type="checkbox"/>	1.6%	1
Delaware		0.0%	0
Dutchess	<input type="checkbox"/>	1.6%	1
Erie	<input type="checkbox"/>	1.6%	1
Essex		0.0%	0
Franklin		0.0%	0
Fulton	<input type="checkbox"/>	1.6%	1
Genesee	<input type="checkbox"/>	1.6%	1
Greene	<input type="checkbox"/>	1.6%	1
Hamilton	<input type="checkbox"/>	1.6%	1
Herkimer	<input type="checkbox"/>	1.6%	1

Jefferson		1.6%	1
Lewis		1.6%	1
Livingston		1.6%	1
Madison		1.6%	1
Monroe		0.0%	0
Montgomery		1.6%	1
Nassau		1.6%	1
Niagara		1.6%	1
Oneida		0.0%	0
Onondaga		1.6%	1
Ontario		1.6%	1
Orange		1.6%	1
Orleans		1.6%	1
Oswego		1.6%	1
Otsego		1.6%	1
Putnam		1.6%	1
Rensselaer		1.6%	1
Rockland		0.0%	0
Saratoga		1.6%	1
Schenectady		1.6%	1
Schoharie		1.6%	1
Schuyler		1.6%	1
Seneca		1.6%	1
St Lawrence		1.6%	1
Steuben		1.6%	1

Suffolk		1.6%	1
Sullivan		1.6%	1
Tioga		1.6%	1
Tompkins		1.6%	1
Ulster		1.6%	1
Warren		1.6%	1
Washington		1.6%	1
Wayne		1.6%	1
Westchester		25.4%	16
Wyoming		1.6%	1
Yates		1.6%	1
answered question			63
skipped question			0

2. First and Last Name:

			Response Count
			63
answered question			63
skipped question			0

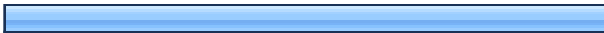

3. E-Mail Address:

			Response Count
			63
answered question			63
skipped question			0

4. Phone Number:

	Response Count
	63
answered question	63
skipped question	0

5. Best method to contact you in case of follow-up questions:

		Response Percent	Response Count
E-Mail		90.5%	57
Phone		9.5%	6
	answered question		63
	skipped question		0

6. Please select your Municipality below:

		Response Percent	Response Count
Bedford (T)	<input checked="" type="checkbox"/>	6.3%	1
Cortlandt (T)	<input checked="" type="checkbox"/>	6.3%	1
Eastchester (T)	<input checked="" type="checkbox"/>	6.3%	1
Greenburgh (T)	<input type="checkbox"/>	0.0%	0
Harrison (T)	<input type="checkbox"/>	0.0%	0
Lewisboro (T)	<input type="checkbox"/>	0.0%	0
Mamaroneck (T)	<input checked="" type="checkbox"/>	6.3%	1
Mount Kisco (T)	<input type="checkbox"/>	0.0%	0
Mount Pleasant (T)	<input type="checkbox"/>	0.0%	0
Mount Vernon (C)	<input checked="" type="checkbox"/>	6.3%	1
New Castle (T)	<input checked="" type="checkbox"/>	6.3%	1
New Rochelle (C)	<input checked="" type="checkbox"/>	6.3%	1
North Castle (T)	<input checked="" type="checkbox"/>	6.3%	1
North Salem (T)	<input checked="" type="checkbox"/>	6.3%	1
Ossining (T)	<input type="checkbox"/>	0.0%	0
Peekskill (C)	<input type="checkbox"/>	0.0%	0
Pelham (T)	<input checked="" type="checkbox"/>	6.3%	1
Pound Ridge (T)	<input type="checkbox"/>	0.0%	0
Rye (T)	<input checked="" type="checkbox"/>	6.3%	1
Rye (C)	<input type="checkbox"/>	0.0%	0
Scarsdale (T)	<input checked="" type="checkbox"/>	6.3%	1
Somers (T)	<input checked="" type="checkbox"/>	6.3%	1
White Plains (C)	<input checked="" type="checkbox"/>	6.3%	1

Yonkers (C)	<input type="checkbox"/>	6.3%	1
Yorktown (T)	<input type="checkbox"/>	6.3%	1
answered question			16
skipped question			47

7. How many parcels are in the entire county or municipality?

	Response Average	Response Total	Response Count
Number of parcels:	61,108.00	3,544,264	58
answered question			58
skipped question			5



8. How many map sheets do you have?

	Response Average	Response Total	Response Count
Number of Map Sheets:	1,041.76	60,422	58
answered question			58
skipped question			5



9. Are you maintaining tax maps digitally or manually?

		Response Percent	Response Count
digitally	<input type="checkbox"/>	96.6%	56
manually	<input type="checkbox"/>	3.4%	2
answered question			58
skipped question			5




10. Where applicable, what is the time frame from recording the deed to submitting the information to the Assessor?

		Response Percent	Response Count
Not Applicable		10.3%	6
Weeks:		89.7%	52
answered question			58
skipped question			5

11. Are approved tax map SBL numbers used to describe the parcel on the assessment roll?

		Response Percent	Response Count
Yes		93.1%	54
No		6.9%	4
answered question			58
skipped question			5

12. How often are tax map sheets updated or revised?

		Response Percent	Response Count
Daily		65.5%	38
Weekly		10.3%	6
Monthly		24.1%	14
answered question			58
skipped question			5

13. What backlog, if any, exists for tax map corrections/updates as of taxable status date?

		Response Percent	Response Count
No backlog exists		44.8%	26
Less than 90 days		55.2%	32
More than 90 days -- please explain:		0.0%	0
answered question			58
skipped question			5



14. Where applicable, when you have a split in a parcel, what do you give to the assessor?

		Response Percent	Response Count
Not Applicable		19.0%	11
Material and/or data provided (e.g. parcel split sheet, map and deed, digital copy, etc.):		81.0%	47
answered question			58
skipped question			5




15. When you have a split in a parcel, are copies of deeds provided to the assessor?

		Response Percent	Response Count
Not Applicable		13.8%	8
Yes		79.3%	46
No		6.9%	4
answered question			58
skipped question			5



16. Where applicable, are a set of updated tax maps provided to the assessors annually?

		Response Percent	Response Count
Not Applicable		17.2%	10
Yes		82.8%	48
No		0.0%	0
answered question			58
skipped question			5

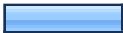


17. Where applicable, when there is a change in the acreage of a parcel, do you send a revised map to the assessor?

		Response Percent	Response Count
Not Applicable		17.2%	10
Yes		74.1%	43
No		8.6%	5
answered question			58
skipped question			5

18. Are the parcel coordinate locator numbers maintained on a computerized assessment roll?

		Response Percent	Response Count
Yes		91.4%	53
No		8.6%	5
answered question			58
skipped question			5



19. In what projection are tax maps maintained?

		Response Percent	Response Count
NAD27		17.2%	10
NAD83		77.6%	45
Both		5.2%	3
answered question			58
skipped question			5

20. How many staff are assigned to tax-map maintenance?

		Response Average	Response Total	Response Count
In-House Staff:		2.10	122	58
Contract Staff:		0.34	20	58
answered question				58
skipped question				5



21. Tax Map Conversion Status

		Response Percent	Response Count
In Progress		10.3%	6
Completed		89.7%	52
answered question			58
skipped question			5






22. Please provide the date that your conversion is scheduled to be completed or was completed.

	Response Count
	58
answered question	58
skipped question	5



23. Vendor used to complete the conversion

		Response Percent	Response Count
Not Applicable		20.7%	12
Vendor Used:		79.3%	46
	answered question		58
	skipped question		5



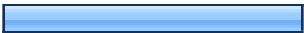
24. What Digital Maintenance Software is being used for editing?

		Response Percent	Response Count
Arc/Info		22.4%	13
ArcGIS - Coverage		12.1%	7
ArcGIS - GeoDatabase		53.4%	31
AutoCad		31.0%	18
Novalis		0.0%	0
Other:		10.3%	6
answered question			58
skipped question			5




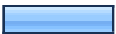





25. Do you maintain Digital Tax Maps?

		Response Percent	Response Count
Yes		96.6%	56
No		3.4%	2
answered question			58
skipped question			5



26. What extent(s) are your digital Tax Maps maintained? (Check all that apply)

		Response Percent	Response Count
Individual Sheets		58.9%	33
By Municipality		73.2%	41
Countywide		44.6%	25
answered question			56
skipped question			7



27. What Data Formats are these maps and specifically your parcels maintained in? (Check all that apply)

		Response Percent	Response Count
DWG – Closed Polylines		25.0%	14
DWG – Lines		16.1%	9
Shapefile – Polygons		48.2%	27
Shapefile – Lines		16.1%	9
Geodatabase – Polygons		57.1%	32
Geodatabase – Lines		25.0%	14
Coverage – Polygons		16.1%	9
Coverage – Lines		8.9%	5
Other – Polygons or Lines. Specify Software program and data format:		7.1%	4
answered question			56
skipped question			7



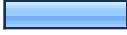



28. Do you have the ability to attach Assessment Roll information to your Tax Maps?

		Response Percent	Response Count
Yes		78.6%	44
No		21.4%	12
		answered question	56
		skipped question	7






29. What is your approximate percent mismatch rate from Assessment Roll to Tax Map?

		Response Percent	Response Count
Unknown		59.1%	26
Percentage:		40.9%	18
		answered question	44
		skipped question	19



30. How often are these attributes updated?

		Response Percent	Response Count
Daily		38.6%	17
Weekly		2.3%	1
Monthly		18.2%	8
March 1 Roll Cycle		18.2%	8
July 1 Roll Cycle		25.0%	11
Annually on:		6.8%	3
answered question			44
skipped question			19




31. What parcel identifier could be used to attach Assessment Roll information to your Tax Maps?

		Response Percent	Response Count
16 Digit SBL		13.6%	6
20 Digit SBL		22.7%	10
26 Digit SBL		13.6%	6
Print Key		45.5%	20
Other – Please explain:		4.5%	2
answered question			44
skipped question			19




32. Do you maintain metadata in conjunction with your tax maps?

		Response Percent	Response Count
Yes		40.0%	22
No		60.0%	33
		answered question	55
		skipped question	8













33. What format is your Metadata maintained in?

		Response Percent	Response Count
Complete FGDC Metadata		50.0%	12
Limited FGDC Metadata		29.2%	7
Other Metadata Format		20.8%	5
		answered question	24
		skipped question	39

34. Is your Assessment Information available to the public via the internet or other electronic method?

		Response Percent	Response Count
Yes		87.3%	48
No		10.9%	6
No, but planned within next year		1.8%	1
		answered question	55
		skipped question	8

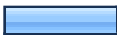

35. What methods are used to make your Assessment Information available to the public?

		Response Percent	Response Count
Online mapping application		54.2%	26
Published map service - ArcIMS		16.7%	8
Published map service - ArcGIS Server SOAP/REST		8.3%	4
Published map service - Web Map Service (WMS)		4.2%	2
Published map service - Web Feature Service (WFS)		4.2%	2
Published map service - KML		0.0%	0
Published map service - Other		2.1%	1
Direct Download – Maps Only		12.5%	6
Direct Download – Attributes Only		4.2%	2
Direct Download – Both Maps & Attributes		8.3%	4
Distribution by CD/DVD		35.4%	17
Distribution by Email		25.0%	12
Other -- Please Explain:		39.6%	19
answered question			48
skipped question			15

36. URL:

	Response Count
	48
answered question	48
skipped question	15

37. Do you charge for this access?

		Response Percent	Response Count
Yes		16.7%	8
No		83.3%	40
	answered question		48
	skipped question		15

38. General Comments

	Response Count
	11
answered question	11
skipped question	52