Independent Review

Statewide Parcel Mapping Project

For the

State of Vermont
Agency of Transportation

Submitted to the
State of Vermont, Office of the CIO
By

Mike Maslack
Desai Management Consulting
mmaslack@desaimgmt.com
(802) 238-1527

April 25th, 2017

Table of Contents

1. Executive Summary

Provide an introduction that includes a brief overview of the technology project and selected vendor(s) as well as any significant findings or conclusions. Ensure any significant findings or conclusions are supported by data in the report.

Digital parcels are important for a broad range of government activities at state, regional and local levels of government for property assessment, planning, environmental, transportation, public health and public safety programs. In particular, parcel data can support the development of high quality address point data for emergency response and other field operations.

Currently, each community in Vermont is required by the Department of Taxes to maintain a complete map of property parcels as part of the property tax assessment process. Historically, these hard-copy maps have been maintained on Mylar or linen at varying scales. These maps show the approximate boundaries of each property parcel along with related information - such as parcel identification numbers, street names, dimension text, acreage, easements, building footprints, and natural features - to assist with property valuation. In recent years there has been an increasing trend for communities to manage their property parcel maps using geospatial technology and the resultant digital parcel data are among the most important and versatile of any Geographic Information System (GIS) data set. Some communities, however, have not had the resources to create a digital assessor map or have an inferior electronic dataset that is poorly done or out-of-date.

To further the goal of statewide, standardized parcels, the Agency of Transportation (AOT) is launching a 3-year multi-phase project, engaging multiple vendors, to construct and complete standardized digital parcel data for use in GIS systems. The effort is spearheaded by AOT because a statewide parcel dataset is an essential component to the long term Statewide Right of Way (ROW) Modernization Maintenance Lifecycle effort, as it creates the ROW data infrastructure “back bone” and supports data standardization across core data layers. Specifically, the availability of statewide parcel data provides important context for evaluating and understanding the state’s ROWs. Furthermore, the statewide parcel program management will solidify relationships with local officials and local Contractors. These relationships are key to the ongoing ROW data lifecycle.

Beyond simplifying ROW management, completion of statewide parcel data will bring value to multiple parties, both private and public sector. Studies completed in several other states, as well as the “National Land Parcel Data: A Vision for the Future” (2007), all indicate that statewide parcels have and will generate a substantial return on investment in terms of benefits and cost savings. As presented by the National Research Council, “It can be argued that in addition to the efficiencies that digital parcel data brings to the assessment community, the parcel layer used as a base map is the most information rich database with the broadest utility to local, state and federal agencies.” (Council, 2007)

Review of the proposed Vermont project corroborates this broad value statement. All indications are that for an upfront investment of $2.8 million ($550K from Vermont), multiple benefits will be realized and enabled across all affected parties. In addition, annual operating costs will be reduced by more than 90%, giving a break-even point of approximately 4.5 years. Maintenance of these benefits over time will be realized by a corresponding investment of 1 FTE in the Vermont Center for Geographic Information.

This role will be working with communities to develop and deploy standard governance processes to ensure timely and accurate updates to the parcel data, consistent with the Vermont Data Standards.

State resource engagement for the project will vary by community, as follows:

- If a town currently keeps their tax maps up to date and has digital parcel data that reflect those maps: the project will FUND the update and upgrade of their data for one year so that it meets the NEW state data standard (which means easy joining to their grand list)
- If a town hasn't updated their maps and/or digital parcel data recently: the project will FUND the update and upgrade of their data for one year so that it meets the NEW state data standard (which means easy joining to their grand list)
- If a town doesn't have tax maps or doesn't have digital parcel data: the project will FUND the creation of their parcel data so that it meets the NEW state data standard (which means easy joining to their grand list).

Examination of best practices across other states, along with the Federal viewpoint, points out that a State Parcel Management Program will be successful if:

- It meets the needs of the local government parcel data producers by assisting them with the resources they need for automation, and
- It provides users with ready access to publication data.

These same best practices have resulted in a clear role for the State as essential to program management and coordination. A state pursuing a Parcel Management Program will need to:

- Customize a Parcel Management Program for its own institutional infrastructure. This may include the availability of state resources, geography, demographics and the status of conversion.
- Adopt standards that meet the needs of local parcel producers and the user community.
- Provide technical support for implementation and adherence to standards.
- Ensure adherence to standards through contract management.
- Facilitate the publication and integration of the data for the user community.

The Vermont project as proposed is well-prepared to support these best practices. Ongoing collaboration with municipal and regional teams plus the vendor community has resulted in good project readiness. The established team and work within Vermont Center for Geographic Information (VCGI) will properly align work with the state GIS experience and infrastructure, enabling proper data management, and ready public access to the results. Finally, the Vermont data standard, its alignment with the Federal standard, and VCGI's governance processes will together ensure the longevity and extensibility of the project and subsequent program. This will result in continual growth in value to both the State and the user communities.

In summary, the funding and organizational readiness exist to begin project execution immediately, with well-qualified vendors to complement experienced State personnel. The State is taking an approach consistent with best practices, and a plan and funding are in place to institutionalize parcel mapping and its ongoing updates through time.

Considering these factors, and the lack of unique or extraordinary risks identified for this project, I recommend that it proceed to execution.

1.1 Cost Summary

IT Activity Lifecycle:	7 Years
Total Lifecycle Costs:	$3,370,828.04
Total Implementation Costs:	$2,759,308.04
New Annual Operating Costs:	$87,360
Current Annual Operating Costs:	$1,250,000
Difference Between Current and New Operating Costs:	$1,162,640
Funding Source(s) and Percentage Breakdown if Multiple Sources:	80% Federal, 20% State for Implementation 100% State for Operation

1.2 Disposition of Independent Review Deliverables

Deliverable	Highlights from the Review *Include explanations of any significant concerns*
Acquisition Cost Assessment	Vermont's per-parcel cost is below the national average ($4.71 vs $5.20)
Technology Architecture Review	Data-only project will comply with VT GIS Parcel Data Standard, Version 2.3, as well as Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata
Implementation Plan Assessment	3-year approach across State is reasonable for scope, timing, and risk; conversion to long-term program at end assures proper long-term governance to maintain data quality, integrity and completeness, and proper ownership by the Vermont Center for Geographic Information (VCGI)
Cost Analysis and Model for Benefit Analysis	Improvements in customer service for parcel-to-grand list mapping completeness (from 50-99%) as measured by the parcels in the Grand List that do not have a corresponding parcel entry in mapping; reduction in title search time (by 20%); and cycle time reduction for encroachment and highway access permitting (90% <30 days) are compelling, though intangible benefits
Impact Analysis on Net Operating Costs	93% reduction in annual operation costs ($1,250,000 annual as-is vs. $87,360 annual to-be costs)

1.3 Identified High Impact &/or High Likelihood of Occurrence Risks

Risk ID	Risk Description	Type of Risk	Risk Rating: Impact	Risk Rating: Probability	State Risk Strategy Summary (Avoid, Mitigate, Transfer, Accept)	State's Planned Risk Response	Timing of Risk Response	Reviewer's Assessment of Planned Response
1	If there are insufficient human resources to successfully complete project then it's not possible to establish long-term Parcel Maintenance Program	Resource Availability	High	Low	Mitigate	Increase lead time to vendors to enable suitable staffing and skills for this project.	During planning phase	Clarify to vendor community that 5/4 kickoff will provide sufficient planning inputs.
3	If the project requires implementing a Program of Projects, the Project Manager must have suitable experience and qualifications	Project Type	High	Medium	Mitigate	PMP in place (AppGeo) with multi-project experience, plus VT assist.	During planning phase	Ensure PMP addresses supervisory and communication processes, and proper stakeholder identification.
3A	If there are disruptions in the Vtrans to ACCD handoff, the long term maintenance process will be delayed in starting	Project Type	High	Low	Mitigate	Budget is in place for 1FTE add to VCGI for long-term maintenance	During planning phase	Implement metrics to track handoff and provide early warning for emerging issues.
5	If the project involves multiple Departments or Agencies and public organizations, then suitable command structure and communications are mandatory	Project Team Complexity	High	Medium	Mitigate through Comm. Processes	Implement Project Communication Plan plus physical Advisory Board	Planning phase and beyond	Prioritize inter-Agency participants by expected benefits and MOU contributions
12	If there is not a strong Multi-Vendor adherance to AOT data standards, then diversity in source data will grow over time.	Governance	High	Low	Accept	Data standard content has been validated as appropriate for work and for alignment with Federal standards	Planning phase and beyond	100% of vendor candidates interviewed, all express commitment to VT data standard and characterize it as good quality
13	If there is any loss of time due to excessive edge mapping reconciliation, then schedules will be adversely impacted.	Project Type	High	Medium	Mitigate	Optimize contiguous towns to vendors to minimize number of vendor-to-vendor edges to be compared; Have surveyors ready to help resolve conflicts	After Planning phase	Monitor town/vendor relationships for changes over time that would impact edge mapping complexity.

1.4 Other Key Issues

Recap any key issues or concerns identified in the body of the report.

No other key issues raised.

1.5 Recommendation

Provide your independent review recommendation on whether or not to proceed with this technology project and vendor(s).

Recommendation is to proceed with the project as currently planned, managing risks as identified.

1.6 Independent Reviewer Certification

I certify that this Independent Review Report is an independent and unbiased assessment of the proposed solution's acquisition costs, technical architecture, implementation plan, cost-benefit analysis, and impact on net operating costs, based on the information made available to me by the State.

e-Signed by Mike Maslack on 2017-04-26 15:17:28 GMT

Independent Reviewer Signature

April 26, 2017

Date

1.7 Report Acceptance

The electronic signatures below represent the acceptance of this document as the final completed Independent Review Report.

e-Signed by Barbara Cormier on 2017-04-26 13:51:33 GMT

State of Vermont Oversight Project Manager

April 26, 2017

Date

e-Signed by John Quinn on 2017-04-26 18:23:03 GMT

State of Vermont Chief Information Officer

April 26, 2017

Date

e-Signed by Darwin Thompson on 2017-04-26 17:02:56 GMT

State of Vermont

Interim Chief Information Officer 4/25/2017

April 26, 2017

Date

X Recommends Report Acceptance

2. Scope of this Independent Review

Add or change this section as applicable.

2.1 In-Scope

The scope of this document is fulfilling the requirements of Vermont Statute, Title 3, Chapter 45, §2222(g):
"The Secretary of Administration shall obtain independent expert review of any recommendation for any information technology initiated after July 1, 1996, as information technology activity is defined by subdivision (a)(10), when its total cost is $1,000,000 or greater or when required by the State Chief Information Officer."

The independent review report includes:

- An acquisition cost assessment
- A technology architecture review
- An implementation plan assessment
- A cost analysis and model for benefit analysis; and
- An impact analysis on net operating costs for the Agency carrying out the activity
- An overall risk assessment of the proposed solution

2.2 Out-of-Scope

If applicable, describe any limits of this review and any area of the project or proposal that you did not review.

A separate deliverable contracted as part of this Independent Review may be procurement negotiation advisory services, but documentation related to those services are not part of this report.

3. Sources of Information

3.1 Independent Review Participants

List the individuals that participated in this Independent Review.

Name	Employer and Title	Participation Topic(s)
Kevin Marshia	SoV Highway Director	TC, IC, CC
Ryan Cloutier	VTrans Business Lead	PD, CL, RM, IPL
Rob White	VTrans Business Manager	TC, IC, CC
Kate Hickey	AppGeo Project Manager	PD, CC, RM, IPL
Brian Coolidge	AppGeo Assistant Project Manager	PD, CC, RM, IPL
Shawn Nailor	VTrans Acting IT Lead	IT, TC, IC, CC, RM, IPT
John Adams	ACCD Business Manager	TC, IC, CC, RM
Leslie Pelch	ACCD Program Lead	TC, IC, CC, RM
Johnathan Croft	VTrans Mapping SME	TC, IC, CC, RM, IPT
Michele Giorgianni	AppGeo SME	TC, IC, CC, RM, IPT
Pete Fellows	VT Association on Planning and Development Agencies	TC, IC, CC, RM, IPT
Kevin Viani	VTrans Assistant Highway Director	TC, IC, CC, RM, IPT
Chris Cochran	ACCD Director, Community Planning	TC, IC, CC, RM, IPT
Randy Otis	Land Surveyor, Dubois & King	TC, IC, CC, RM, IPT
Seamus Loftus	DII Enterprise Architecture	IT, TC, IC, CC, RM, IPT
Gary Volta	SGC Engineering	TC, IC, CC, RM, IPL
Gary Santy	Stantec Consulting Services	TC, IC, CC, RM, IPL
Susan Marlow		
Matt Wagoner		
Jon Giles	Sebago Technics	TC, IC, CC, RM, IPL
Susan Boswell	Cartographic Technologies	TC, IC, CC, RM, IPL
Larry Kirkpatrick	Atlas Geographic Data	TC, IC, CC, RM, IPL
Dean Russell	Russell Graphics	TC, IC, CC, RM, IPL
Adam Saunders	NE Municipal Resource Center	TC, IC, CC, RM, IPL
Brian Dooley	New England Geosystems	TC, IC, CC, RM, IPL
Marwin Gonzalez		
Tim Fountain	CAI Technologies	TC, IC, CC, RM, IPL
Dale Abbott	Vanasse Hangen Brustlin	TC, IC, CC, RM, IPL
Steve Anderson		

Note: PD=Project Documentation, CL=Contact List, IT=IT Activity Costs, TC=Tangible Cost/Benefit, IC=Intangible Cost/Benefit, CC=Cost Comparison, RM=Risk Management, IPT=Integration Points, IPL=Implementation Plans

3.2 Independent Review Documentation

Complete the chart below to list the documentation utilized to compile this independent review.

Document Name	Description	Source
Project Weekly Status Minutes	13Sep2016 to 14Feb2017	Sharepoint
Project Monthly Progress Reports	Aug2016 to Dec2016	Sharepoint
Project RFP	Project #RWMP 001	Sharepoint
Project RFP Sample Data	Illustrative data used by vendors in their RFP responses	Sharepoint
Project RFP Q&A	Response to questions from prospective vendors	Sharepoint
RFP Response	Vanasse Hangen Brustlin	Sharepoint
RFP Response	CAI Technologies	Sharepoint
RFP Response	New England Geosystems	Sharepoint
RFP Response	New England Municipal Resource Center	Sharepoint
RFP Response	Russell Graphics	Sharepoint
RFP Response	Atlas Geographic Data	Sharepoint
RFP Response	Cartographic Technologies	Sharepoint
RFP Response	Sebago Technics	Sharepoint
RFP Response	Stantec Consulting Services	Sharepoint
RFP Response	SGC Engineering	Sharepoint
VT Parcel ROI Report	2015 report detailing ROI for parcel mapping	Sharepoint
VT Parcel Data Lifecycle and Maintenance Plan	2015 report describing data management for GIS inputs	Sharepoint
Project Management Oversight Process	SoV EPMO process description	Sharepoint
Parcel Mapping Risk Evaluation	2017 Cormier report	Sharepoint
AppGeo Coolidge Resume	AppGeo Assistant PM	Sharepoint
AppGeo Hickey Resume	AppGeo PM	Sharepoint
Parcel Mapping IT ABC Form	Nov2016 IT Business Case & Cost Analysis	Sharepoint
National Land Parcel Data: A Vision for the Future	National Vision and Strategy to achieve a national land parcel database	The National Academies Press
VT GIS Parcel Data Standard	Version 2.3 of Vermont guidelines for state parcel data integration	State web site
Content Standard for Digital Geospatial Metadata	Federal Geographic Data Committee guidelines for national parcel data integration	Federal web site
An Assessment of Best Practices in Seven State Parcel Management	A review of seven states' progress towards statewide parcel mapping	FGDC Cadastral Data Subcommittee

Programs		

4. Project Information

4.1 Historical Background

Provide any relevant background that has resulted in this project.

Parcel data in Vermont is currently incomplete, inconsistent in content, and varies in age from one town to another. Incomplete and inconsistent data lead to less efficient performance on the part of some state employees and prevent others from performing certain analyses and tasks. Existing data need to be improved to meet the state Parcel Data Standard and for some towns lacking parcel data, the data will need to be developed to meet the standard. The data that is produced through this project will meet or exceed the VT Parcel Data Standard, which will allow the joining of parcel data with grand list (tax assessment) data, thereby facilitating analysis, and other activities identified by state and private sector stakeholders as necessary to their work.

4.2 Project Goal

Explain why the project is being undertaken.

The goal of this program is to achieve consistent statewide parcel data to support VTrans business processes. A statewide parcel dataset is an essential component to the long term Statewide Right of Way (ROW) Modernization Maintenance Lifecycle effort as it creates the ROW data infrastructure "back bone" and supports data standardization across core data layers. Specifically, the availability of statewide parcel data provides important context for evaluating and understanding the state's ROWs. Furthermore, the statewide parcel program management will solidify relationships with local officials and local Contractors. These relationships are key to the ongoing ROW data lifecycle.

4.3 Project Scope

Describe the project scope and list the major deliverables. Add or delete lines as needed.

Contractors will be required to work with communities to build out each community's parcel dataset, which will be provided to VTrans, but will also be available to the community as well as other interested stakeholders. The work is expected to be completed in three phases over the course of a three-year period of performance, with approximately ⅓ of the total communities completed during each Phase. Task orders will only be assigned for communities specific to each phase of the project. Prior to task orders being awarded, VTrans will have identified approximately 85 towns (hereinafter known as the Phase 1 Towns), which are expected to have standardized digital parcel data completed during Phase 1 of the project. The remaining communities which are not considered Phase 1 Towns, will be divided between years 2 & 3 and determined at a later date.

The digital parcel data files delivered to VTrans through this procurement must comply with Level 1 of the VT GIS Parcel Data Standard, Version 2.3, herein referred to as the Standard. The Standard can be found on the Vermont Center for Geographic Information website at:
http://vcgi.vermont.gov/sites/vcgi/files/standards/VT_GIS_Parcel_Data_Standard.pdf

The Vermont Grand List (GL) is considered the authoritative source of all taxable property in the State of Vermont. As part of this effort, VTrans expects that Contractors will generate or update the digital parcel file for each community to ensure a match between the digital parcels and the Grand List to meet the minimum requirements of Level 1 of the Standard.
Communities will be broken down into groups, based on their expected parcel data source. The five source groups are:

- Group 1: These communities are not known to have any digital parcel data files nor hard copy tax maps
- Group 2: These communities are believed to have hard copy tax maps with no digital parcels.
- Group 3: These communities have paper tax maps, however it is likely that digital data may exist and is held by the community's mapping vendor.
- Group 4: These communities are believed to have digital parcel files in computer-aided design and drafting (CADD) format
- Group 5: These communities are believed to have digital parcel data files in Geographic Information System (GIS) format

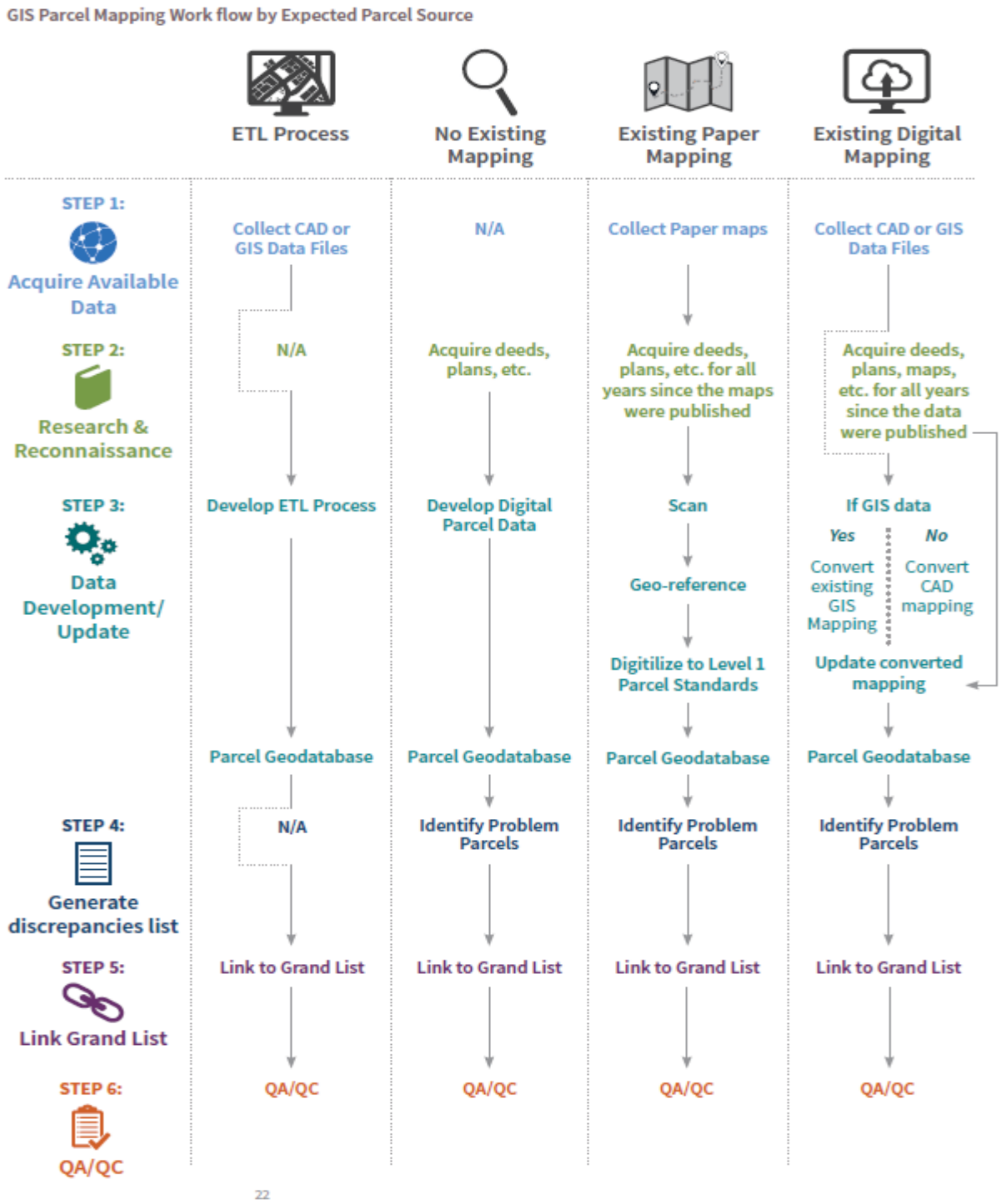
It is recognized that some communities may have well-established data models that serve their ongoing local data, mapping production and maintenance workflows. If these existing workflows are fairly entrenched in an existing data model, it may be desired for a community/Contractor to develop a Level 1 conversion process to retrofit its current workflows in order to adapt to the Level 1 data model. A Level 1 conversion tool would be an automated procedure which extracts, transforms and loads (ETL) the community's 'native' data model to a Level 1-compliant data model. A goal of the State Parcel Program is long term parcel data maintenance and in order for that to be successful, long term adoption of the Standard is imperative. Therefore, Contractors are encouraged to work with the communities to educate them and promote the program and Standard. Contractors should determine whether the community wants to modify their current parcel data to conform to the Standard, or to build a conversion tool in order to comply with the delivery requirements.

QA/QC Tests, in the form of tools and checklists, will be developed by VTrans and provided to Contractors for use in the review of the data prior to the draft data delivery. These tests are expected to be utilized by the Contractors to help ensure that draft and final deliverables are compliant with the Standard as referenced above. Contractors are expected to perform all their own QA/QC on data before submitting for delivery. Data that does not conform to the Standard's requirements will be rejected and will need to be resubmitted by the contractor after it is brought into compliance with the Standard.

4.3.1 Major Deliverables

1. **Digital Parcel Data** - The digital parcel data shall adhere to all of the requirements laid out in detail in Level 1 of the VT GIS Parcel Data Standard Version 2.3.
2. **Extract, Transform, Load (ETL) tools developed to convert to the Level 1 Standard** - If a community determines that their current workflow will be disrupted by utilizing the Standard data model as their internal production model, and they do not wish to adopt the standard model as part of their workflow, the Contractor shall build an ETL tool which will convert the community's parcel data into Level 1 Standard compliant data. A copy of the tool will be delivered to VTrans as part of this project but it is

expected that the town/contractor will continue to use it internally each time they wish to submit updated parcel data to the State.



4.4 Project Phases, Milestones and Schedule

Provide a list of the major project phases, milestones and high level schedule. You may elect to include it as an attachment to the report instead of within the body.

The project is broken into three phases, each dealing with approximately 1/3 of Vermont communities. As of the timing of this IR, no definitive calendar date plan has been defined. Instead, a more general desired timetable has been defined through the RFP, as follows:

VTrans Desired Schedule

EVENT	DATE
Issue Phase 1 Task Orders	2 weeks after contract execution
Phase 1 Draft Project Deliverables**	25 weeks after Phase 1 Task Orders issued
Phase 1 Final Project Deliverables	6.5 weeks after Phase 1 Draft Project Deliverables submitted
Phase 2 Draft Project Deliverables	TBD (est. Spring 2018)
Phase 2 Final Project Deliverables	TBD (est. Summer 2018)
Phase 3 Draft Project Deliverables**	TBD (est. Winter 2019)
Phase 3 Final Project Deliverables	TBD (est. Spring 2019)

**Although draft deliverables are due on the date specified, VTrans asks that contractors submit data for a community as soon as it is compiled and passes the QC tests even if it is in advance of the due date. In this way, VTrans can help to ensure that data is not being reviewed for the first time at the draft delivery due date and this will help to keep the project on schedule.

4.5 Long-Term Program Governance

Per Act 158 (2016), the Statewide Parcel Mapping program was formalized, with leadership to be provided by an Advisory Board as follows:

"Property Parcel Data Advisory Board. A Property Parcel Data Advisory Board (Board) is created for the purpose of monitoring the Statewide Property Parcel Mapping Program and making recommendations to the Agency of how the Program can be improved to enhance the usefulness of statewide property parcel data for State agencies and departments, regional planning commissions, municipalities, and the public. The Board shall comprise:
(1) the Secretary of Transportation or designee, who shall serve as chair;
(2) the Secretary of Natural Resources or designee;
(3) the Secretary of Commerce and Community Development or designee;
(4) the Commissioner of Taxes or designee;
(5) a representative of the Vermont Association of Planning and Development Agencies;
(6) a representative of the Vermont League of Cities and Towns; and
(7) a land surveyor licensed under 26 V.S.A. chapter 45 designated by the Vermont Society of Land Surveyors."

In addition, guidance for governance of the Program was spelled out in the same Act, as follows:

"(d) Standards. The Agency shall update the statewide property parcel data layer in accordance with the standards of the Vermont Geographic Information System (VGIS), as specified in 10 V.S.A. § 123 (powers and duties of Vermont Center for Geographic Information)."

4.6 Long-Term Program Ownership and Funding Contributions via Memorandum of Understanding (MOU)

An MOU has been established in May, 2016, to assist in the long-term funding assistance for the Parcel Mapping program. The following State organizations have been identified as the "Cooperating Agencies" comprising the MOU:

- Agency of Transportation
- Agency of Commerce and Community Development
- Agency of Administration
- Agency of Agriculture, Food & Markets
- Department of Taxes
- Agency of Natural Resources
- Agency of Human Services
- Department of Public Safety
- Department of Public Service

The terms of the MOU define the Agency of Transportation as the leader for Parcel Map development, and the Agency of Commerce and Community Development as the leader for regular maintenance of the parcel data, and also as the leader for making the property parcel data available "to State agencies and departments, regional planning commissions, municipalities, and the public…".

Regarding long-term funding contributions, the MOU states the following:

"2. **Cost Sharing**. The Statewide Parcel Mapping Program cost structure is expected to consist of 80% federal transportation funds allocated for the development and operation of the Program. The Cooperating Agencies will share the cost for the remaining 20% of the development costs and ongoing maintenance costs incurred in fiscal year 2018 and in succeeding fiscal years."

"3. **Duration Termination**. This Memorandum of Understanding shall remain in effect indefinitely, except that any party may terminate the Memorandum of Understanding upon six months' notice to the other parties."

Acquisition Cost Assessment

List all acquisition costs in the table below (i.e. the comprehensive list of the one-time costs to acquire the proposed system/service). Do not include any costs that reoccur during the system/service lifecycle. Add or delete lines as appropriate. Based on your assessment of Acquisition Costs, please answer the questions listed below in this section.

Acquisition Costs	Cost	Comments
Hardware Costs	$ 0.00	Not applicable
Software Costs	$ 0.00	Not applicable
Implementation Services	$ 1,618,360.00	
System Integration Costs	$ 0.00	Not applicable
Professional Services (e.g. Project Management, Technical, Training, etc.)	$ 163,800.00	
State labor for Project Management	$ 327,600.00	
State labor to Implement the Solution	$ 544,908.00	
3% for DII EA & Project Oversight	$ 79,640.04	
Independent Review cost	$ 25,000.00	
Total Acquisition Costs	$ 2,759,308.04	

1. **Cost Validation:**

   Describe how you validated the Acquisition Costs –

   Costs were validated through review of available state and federal benchmarks in comparison to projected Vermont costs.

2. **Cost Comparison:**

   How do the Acquisition Costs of the proposed solution compare to what others have paid for similar solutions? Will the State be paying more, less or about the same?

   It is difficult to directly compare costs, due to differences in control and aggregation (county vs state), relative maturity (hand-drawn vs partial/full digitization), topography and season (when survey follow-up is necessary. Accepting those differences, this comparative data does exist:

Conversion Costs per Parcel		#Parcels
Nationwide	$5.20	
Tennessee	$3.70	2,700,000
Montana	$4.00	1,000,000
Vermont	$4.71	318,341

3. **Cost Assessment:**
   Are the Acquisition Costs valid and appropriate in your professional opinion? List any concerns or issues with the costs.

   Cost projections are reasonable given the differences in data described above. Vermont is low in maturity, and fine-grained (town vs county), with a more diverse set of inputs as a result.

Additional Comments on Acquisition Costs: There are no additional comments.

5. Technology Architecture Review

After performing an independent technology architecture review of the proposed solution, please respond to the following.

1. **State's IT Strategic Plan:** Describe how the proposed solution aligns with each of the State's IT Strategic Principles:

1) Leverage successes of others, learning best practices from outside Vermont –

Project team has studied in detail both strategies and implementations in other states with similar and different models of control. Best practices have been identified depending upon the layer of Government control (e.g. state-wide, regional, county, municipality), for use in governance of the expanded dataset. States in formal Best Practices analysis include: Massachusetts, Tennessee, Wisconsin, Montana.

2) Leverage shared services and cloud-based IT, taking advantage of IT economies of scale –

No applicable, as project does not drive any new system development or expansion, thus not driving any new requirements for use of shared or cloud-based services and capabilities.

3) Adapt the Vermont workforce to the evolving needs of state government –

There are no direct Vermont workforce implications to this project.

4) Apply enterprise architecture principles to drive digital transformation based on business needs –

Not Applicable, data-only project.

5) Couple IT with business process optimization, to improve overall productivity and customer service –

Not Applicable, data-only project.

6) Manage data commensurate with risk –

long-term data governance processes will be introduced as part of the follow-on on program effort, once projects are complete.

7) Incorporate metrics to measure outcomes –

QA/QC Tests, in the form of tools and checklists, will be developed by VTrans and provided to Contractors for use in the review of the data prior to the draft data delivery. These tests are expected to be utilized by the Contractors to help ensure that draft and final deliverables are compliant with the Standard as referenced above. Contractors are expected to perform all their own QA/QC on data before submitting for delivery. Data that does not conform to the Standard's requirements will be rejected and will need to be resubmitted by the contractor after it is brought into compliance with the Standard.

2. **Sustainability:** Comment on the sustainability of the solution's technical architecture (i.e., is it sustainable?).

   Not Applicable.

3. **Security:** Does the proposed solution have the appropriate level of security for the proposed activity it will perform (including any applicable State or Federal standards)? Please describe.

   Since the project only involves expansion of data inputs into an existing SoV system, it will use that existing system's capabilities for security. The expanded data inputs carry no new requirements for data security, as parcel maps are in the public domain. During development, data will exist on AOT systems, which are at Tier 2 for TIA 942. In full implementation and under ACCD/VCGI ownership, the ultimate solution and data will be hosted in the DII Cloud.

4. **Compliance with the Section 508 Amendment to the Rehabilitation Act of 1973, as amended in 1998:** Comment on the solution's compliance with accessibility standards as outlined in this amendment. Reference: http://www.section508.gov/content/learn

   Not applicable

5. **Disaster Recovery:** What is your assessment of the proposed solution's disaster recovery plan; do you think it is adequate? How might it be improved? Are there specific actions that you would recommend to improve the plan?

   The GIS data that is housed on the VTrans servers at the National Life Building is available to GIS users there and nightly backups are performed by the IT staff through automated systems. The data is also stored offsite at the Dill Building in Berlin, providing redundancy and an external, offsite backup. Once operational, the system will be hosted in the DII Cloud, and subject to all of its regulations and procedures for disaster recovery.

6. **Data Retention:** Describe the relevant data retention needs and how they will be satisfied for or by the proposed solution.

   The current data retention procedures for GIS data is relative to the VTrans records management and the data is preserved to the point that it is obsolete, but with parcel data, it is important to retain previous final versions, as they reflect the historic parcel configuration and has been kept in an archive of data. VCGI also has a process to retain previous versions of the GIS data through an archiving process. This process is not expected to change as a result of the parcel mapping project.

7. **Service Level Agreement:** What are the post implementation services and service levels required by the State? Is the vendor proposed service level agreement adequate to meet these needs in your judgement?

   IT Service Management staff should be involved in VTrans/VCGI periodic planning in order to project growth in data storage in sufficient time to bring capacity online. Vendor service levels will most likely be contracted directly with Towns who desire their continued service for mapping updates in future.

8. **System Integration:** Is the data export reporting capability of the proposed solution consumable by the State? What data is exchanged and what systems (State and non-State) will the solution integrate/interface with*?*

   Project does not introduce new or unique data exchanges, and all data is capable of being processed through existing SoV capabilities for GIS data query and reporting.

Additional Comments on Architecture: There are no additional comments.

6. Assessment of Implementation Plan

After assessing the Implementation Plan, please comment on each of the following.

1. The reality of the implementation timetable –

The proposed implementation timetable is reasonable based on examination of comparable efforts in other states. By identifying and grouping municipalities at various maturities for parcel records, the project provides sufficient focus where workload is greatest.

2. Readiness of impacted divisions/ departments to participate in this solution/project (consider current culture, staff buy-in, organizational changes needed, and leadership readiness).

The only impact to SoV organizations lies in ACCD and VCGI, where ultimate responsibility for the Program will reside. At present 1 FTE additional resource is budgeted for that new role.

3. Do the milestones and deliverables proposed by the vendor provide enough detail to hold them accountable for meeting the Business needs in these areas:

A. Project Management - yes

B. Training – Not applicable, data-only project

C. Testing – Not Applicable, data-only project

D. Design – Not Applicable, data-only project

E. Conversion (if applicable) – Yes; where necessary, there is sufficient guidance provided to those municipalities that must engage in data conversions in order to meet the data standards.

F. Implementation planning - yes

G. Implementation - yes

4. Does the State have a resource lined up to be the Project Manager on the project? If so, does this person possess the skills and experience to be successful in this role in your judgement? Please explain.

The overall Project Manager engaged by the State works for AppGeo, and has in-depth subject matter knowledge and experience with GIS-related projects, along with suitable project

management skills and experience to be successful. They will be collaborating with an AOT project manager experienced in the subject matter, and working with the State EPMO for consistent methods and reporting.

Additional Comments on Implementation Plan: There are no additional comments.

7. Cost Benefit Analysis

This section involves four tasks:

1) *Perform an independent Cost Benefit Analysis. Information provided by the State may be used, but the reviewer must validate it for accuracy and completeness.*
2) *Provide a Lifecycle Cost Benefit Analysis spreadsheet as an **Attachment 1** to this report. A sample format is provided at the end of this report template..*

A. *The cost component of the cost/benefit analysis will include all one-time acquisition costs, on-going operational costs (licensing, maintenance, refresh, etc.) plus internal costs of staffing and "other costs". "Other costs" include the cost of personnel or contractors required for this solution, enhancements/upgrades planned for the lifecycle, consumables, costs associated with system interfaces, and any costs of upgrading the current environment to accept the proposed solution (new facilities, etc.).*

B. *The benefit side of the cost/benefit will include: 1. Intangible items for which an actual cost cannot be attributed. 2. Tangible savings/benefit such as actual savings in personnel, contractors or operating expense associated with existing methods of accomplishing the work which will be performed by the proposed solution. Tangible benefits also include additional revenue which may result from the proposed solution.*

C. *The cost benefit analysis will be for the IT activity's lifecycle.*

D. *The format will be a column spreadsheet with one column for each year in the lifecycle. The rows will contain the itemized costs with totals followed by the itemized benefits with totals.*

E. *Identify the source of funds (federal, state, one-time vs. ongoing). For example, implementation may be covered by federal dollars but operations will be paid by State funds.*

3) *Perform an analysis of the IT ABC form (Business Case/Cost Analysis) completed by the Business.*
4) *Respond to the questions/items listed below.*

1. **Analysis Description:** Provide a narrative summary of the cost benefit analysis conducted. Be sure to indicate how the costs were independently validated.

   Costs and benefits were analyzed through direct interview of project stakeholders, review of project and subject-matter documentation, and comparative analysis via vendors and benchmarks with other states pursuing same or similar parcel mapping efforts.

2. **Assumptions:** List any assumptions made in your analysis.

   It is assumed that municipalities, once engaged, will maintain proper inputs to the state-wide database, and will agree to normalize their data to meet the State data standards for GIS data. The range of input solutions built and deployed during this project will minimize impact to local municipality processes and data unless they wish.

3. **Funding:** Provide the funding source(s). If multiple sources, indicate the percentage of each source for both Acquisition Costs and on-going Operational costs over the duration of the system/service lifecycle.

% of Implementation Costs to be paid with State funds	20.00%
Total Implementation Costs to be paid with State funds	$ 551,861.61
% of Lifecycle Operating Costs to be paid with State funds	100.00%
Total Lifecycle Operating Costs to be paid with State funds	$ 611,520.00

Total Lifecycle Costs to be paid with State funds	$ 1,163,381.61

Note: remainder of Costs are covered by Federal funds
Please see Attachment 1 for the specific State legislation enabling this project.

4. **Tangible Costs & Benefits:** Provide a list and description of the tangible costs and benefits of this project. Its "tangible" if it has a direct impact on implementation or operating costs (an increase = a tangible cost and a decrease = a tangible benefit). The cost of software licenses is an example of a tangible cost. Projected annual operating cost savings is an example of a tangible benefit.

   Tangible benefits:

   - The projected annual operating cost savings for parcel mapping is 93%, reducing from $1,250,000 to $87,360.

5. **Intangible Costs & Benefits:** Provide a list and descriptions of the intangible costs and benefits. Its "intangible" if it has a positive or negative impact but is not cost related. Examples: Customer Service is expected to improve (intangible benefit) or Employee Morale is expected to decline (intangible cost).

   Intangible benefits will be realized in the areas of:

   - Customer Service, specifically parcel-to-grand list mapping completeness (from 50-99%),
   - reduction in title search time (by 20%), and
   - cycle time reduction for encroachment and highway access permitting (90% <30 days).

6. **Costs vs. Benefits:** Do the benefits of this project (consider both tangible and intangible) outweigh the costs in your opinion? Please elaborate on your response.

   Yes, the combination of ongoing Tangible and Intangible Benefits vs. negligible Costs, with the outlook for other diverse stakeholders benefitting, make this a compelling project, especially in light of the break-even point..

7. **IT ABC Form Review:** Review the IT ABC form (Business Case/Cost Analysis) created by the Business for this project. Is the information consistent with your independent review and analysis? If not, please describe. Is the lifecycle that was used appropriate for the technology being proposed? If not, please explain.

   Yes, the IT ABC form is consistent. No technology is being proposed, Data-Only project.

Additional Comments on the Cost Benefit Analysis:

VTrans believes that the statewide digital parcel mapping project described herein is likely to be a success based upon the following factors:

1. The findings of Applied Geographics' 2015 Return on Investment (ROI) study for a statewide parcel initiative at VTrans. In dollar terms, the estimated costs for the 5-year recommended parcel program are $2.3 million, and the expected benefits for the same period of time are from $6 million on the low side, to $12.9 million on the high side. Based on these low and high numbers, the resulting ROI
ratio ranges from a very conservative 1.58 to 4.55 for the potential ROI savings of implementing a statewide parcel data program.
2. State Legislature has heard the argument regarding a statewide parcel mapping program and deemed this project worth pursuing - ACT No. 158 (2016), Sec. 35 Development of Statewide Property Parcel Data Layer.
3. Development is expected to take three years; 80% of development costs are expected to be funded with Federal Highway Administration funds and 20% with State matching funds; VTrans is going to cover 100% of costs in fiscal year 2017. For fiscal year 2018 and beyond VTrans has entered into a Memorandum of Understanding (MOU) with other State agencies to cover the 20% State
match.

8. Impact Analysis on Net Operating Costs

1.) Perform a lifecycle cost impact analysis on net operating costs for the agency carrying out the activity, minimally including the following:
a) Estimated future-state ongoing annual operating costs, and estimated lifecycle operating costs. Consider also if the project will yield additional revenue generation that may offset any increase in operating costs.
b) Current-state annual operating costs; assess total current costs over span of new IT activity lifecycle
c) Provide a breakdown of funding sources (federal, state, one-time vs. ongoing)
2.) Create a table to illustrate the net operating cost impact.
3.) Respond to the items below.

1. Insert a table to illustrate the Net Operating Cost Impact.

Current Solution Costs

Description	Annual Operating Costs *(Reoccurring Costs)**
Software/Licenses	$ 0.00
Hosting Provider	$ 0.00
Hardware	$ 0.00
Equipment or Supplies	$ 0.00
State Labor to Operate & Maintain current Solution**	$ 1,250,000.00
Vendor Annual Maintenance/Service Costs	$ 0.00
State Labor Costs that will be eliminated as a result of automation provided by the new Solution.** (Leave line blank if freed-up resources will be reallocated to other work.)	$
Other Costs (Please describe)***:	$ 0.00
Total Annual Operating Costs	$ 1,250,000.00
Total Lifecycle Costs (using the new Proposed Solution's lifecycle)	$ 8,750,000.00

Current Operating Costs By Fiscal Yr *(take into account when you expect the new solution to be implemented)*:					
Current FY	$ 1,250,000.00	FY2	$ 833,333.33	FY3	$ 416,666.66
FY4	$	FY5	$		

Proposed Solution Costs

Description of Costs	Implementation Costs *(One Time Project Costs)*	Annual Operating Costs *(Reoccurring Costs)**
Configuration/Installation/Implementation	$ 0.00	$
Contracted Services for Project Management	$ 163,800.00	$
Other Contracted Professional Services for Implementation	$ 1,618,360.00	$
State Labor for Project Management**	$ 327,600.00	$
Other State Labor to Implement the Solution**	$ 544,908.00	$
Software/Licenses	$ 0.00	$
Hosting Provider	$ 0.00	$
Hardware	$ 0.00	$
Equipment or Supplies	$ 0.00	$
Vendor Annual Maintenance/Service Costs	$ 0.00	$
State Labor to Operate & Maintain the Solution**	$	$ 87,360.00
Other Costs (please describe):	$ 0.00	$
Total Annual Operating Costs		$ 87,360.00
Total Lifecycle Operating Costs		$ 611,520.00

Operating Costs of Proposed Solution By Fiscal Year *(take into account when you expect to implement)*:					
Current FY	$	FY2	$ 87,360.00	FY3	$ 87,360.00
FY4	$ 87,360.00	FY5	$ 87,360.00		

u

2. Provide a narrative summary of the analysis conducted and include a list of any assumptions.

   Analysis involved examination of roles involved in operational support for both current and future solutions. Responsibility for long-term governance moves to VCGI as part of the transition from project to program, and they have currently planned for 1 FTE to support Parcel Mapping.

3. Explain any net operating increases that will be covered by federal funding. Will this funding cover the entire lifecycle? If not, please provide the breakouts by year.

   There are no increases in net operating costs.

4. What is the break-even point for this IT Activity (considering implementation and on-going operating costs)?

   Including both implementation and on-going operating costs, the current planned break-even point for this activity is approximately 4.5 years. That is the point where project savings have accrued to offset project costs ($Acquisition – $Savings = $0). See table below:

	Current	FY2	FY3	FY4	FY5	FY6	FY7
AS-IS OPERATIONAL COST	$1,250,000	$833,333	$416,666	$0	$0	$0	$0
TO-BE OPERATIONAL COST	$0	$87,360	$87,360	$87,360	$87,360	$87,360	$87,360
ANNUAL OPERATIONAL COST	$1,250,000	$920,693	$504,026	$87,360	$87,360	$87,360	$87,360
ANNUAL SAVINGS		$329,307	$745,974	$1,162,640	$1,162,640	$1,162,640	$1,162,640
CUMULATIVE SAVINGS		$329,307	$1,075,281	$2,237,921	$3,400,561	$4,563,201	$5,725,841
ACQUISITION COSTS	$1,250,000	$833,333	$416,666				
	BREAKEVEN						
	ACQUISITION - SAVINGS = 0				*4.5 YEARS*		

9. Risk Assessment & Risk Register

Perform an independent risk assessment and complete a Risk Register. The assessment process will include performing the following activities:

A. Ask the independent review participants to provide a list of the risks that they have identified and their strategies for addressing those risks.

B. Independently validate the risk information provided by the State and/or vendor and assess their risk strategies.

C. Identify any additional risks.

D. Ask the Business to respond to your identified risks, as well as provide strategies to address them.

E. Assess the risks strategies provided by the Business for the additional risks you identified.

F. Document all this information in a Risk Register and label it Attachment 2. The Risk Register should include the following:

- ***Source of Risk**: Project, Proposed Solution, Vendor or Other*
- ***Risk Description**: Provide a description of what the risk entails*
- ***Risk ratings to indicate**: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)*
- ***State's Planned Risk Strategy**: Avoid, Mitigate, Transfer or Accept*
- ***State's Planned Risk Response**: Describe what the State plans to do (if anything) to address the risk*
- ***Timing of Risk Response**: Describe the planned timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)*

*1. **Reviewer's Assessment of State's Planned Response**: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.*

Additional Comments on Risks:

Attachment 1 – Parcel Mapping Legislation

Title 19 : Highways
Chapter 001 : State Highway Law; General Transportation Provisions
(Cite as: 19 V.S.A. § 44)
§ 44. Statewide Property Parcel Mapping Program
(a) Purpose. The purpose of the Statewide Property Parcel Mapping Program is to:
(1) develop a statewide property parcel data layer;
(2) ensure regular maintenance, including updates, of the data layer; and
(3) make property parcel data available to State agencies and departments, regional planning commissions, municipalities, and the
public.
(b) Property Parcel Data Advisory Board. A Property Parcel Data Advisory Board (Board) is created for the purpose of monitoring the
Statewide Property Parcel Mapping Program and making recommendations to the Agency of how the Program can be improved to
enhance the usefulness of statewide property parcel data for State agencies and departments, regional planning commissions,
municipalities, and the public. The Board shall comprise:
(1) the Secretary of Transportation or designee, who shall serve as chair;
(2) the Secretary of Natural Resources or designee;
(3) the Secretary of Commerce and Community Development or designee;
(4) the Commissioner of Taxes or designee;
(5) a representative of the Vermont Association of Planning and Development Agencies;
(6) a representative of the Vermont League of Cities and Towns; and
(7) a land surveyor licensed under 26 V.S.A. chapter 45 designated by the Vermont Society of Land Surveyors.
(c) Meetings of Board. The Board shall meet at the call of the Chair or at the request of a majority of its members. The Agency shall
provide administrative assistance to the Board and such other assistance as the Board may require to carry out its duties.
(d) Standards. The Agency shall update the statewide property parcel data layer in accordance with the standards of the Vermont
Geographic Information System (VGIS), as specified in 10 V.S.A. § 123 (powers and duties of Vermont Center for Geographic Information).
(e) Funding sources. Federal transportation funds shall be used for the development and operation of the Program. In fiscal year 2018
and in succeeding fiscal years, the Agency shall make every effort to ensure that all State matching funds are provided by other State
agencies or external partners, or both, that benefit from the Program. (Added 2015, No. 158 (Adj. Sess.), § 37.)

Attachment 2 - Risk Register

Risk ID	Risk Description	Type of Risk	Risk Rating: Impact	Risk Rating: Probability	State Risk Strategy Summary (Avoid, Mitigate, Transfer, Accept)	State's Planned Risk Response	Timing of Risk Response	Reviewer's Assessment of Planned Response
1	If there are insufficient human resources to successfully complete project then it's not possible to establish long-term Parcel Maintenance Program	Resource Availability	High	Low	Mitigate	Increase lead time to vendors to enable suitable staffing and skills for this project.	During planning phase	Clarify to vendor community that 5/4 kickoff will provide sufficient planning inputs.
2	If there are insufficient financial resources to successfully complete project then it's not possible to support long-term Parcel Maintenance Program (e.g. loss of Federal funding due to administration change)	Project Finances	Medium	Low	Mitigate	Reduce scope to add towns at a slower rate; Completion of Statewide project will be delayed.	During planning phase	Maintain prioritized town list for scenarios that may reduce project scope.

3	If the project requires implementing a Program of Projects, the Project Manager must have suitable experience and qualifications	Project Type	High	Medium	Mitigate	PMP in place (AppGeo) with multi-project experience, plus VT assist.	During planning phase	Ensure PMP addresses supervisory and communication processes, and proper stakeholder identification.
3A	If there are disruptions in the Vtrans to ACCD handoff, the long term maintenance process will be delayed in starting	Project Type	High	Low	Mitigate	Budget is in place for 1FTE add to VCGI for long-term maintenance	During planning phase	Implement metrics to track handoff and provide early warning for emerging issues.
4	If the Project requires more than minimal business process or operational changes, corresponding changes in training and support must be added.	Extent of Business/ Operational Process Change	Medium	Medium	Mitigate through Org Change processes	Impact to towns can be minimized as ETL option allows different types of input to still meet data standard	Planning phase and beyond	Accepting varied town-based processes and results can be possible with proper use of ETL capabilities. Minimize solution customization at all costs.
5	If the project involves multiple Departments or Agencies and public organizations, then suitable command structure and communications are mandatory	Project Team Complexity	High	Medium	Mitigate through Comm. Processes	Implement Project Communication Plan plus physical Advisory Board	Planning phase and beyond	Prioritize inter-Agency participants by expected benefits and MOU contributions

6	If a Department uses a PM methodology &/or is willing to try EPMO's methods, their overall risk may be reduced accordingly	Project Management Methodology	Medium	Low	Mitigate	Vtrans PM role accompanied by PMP from AppGeo for guidance	During planning phase	Track adherance to EPMO processes and deliverables; Escalate shortfalls immediately.
7	If Schedule is reasonable and has some flexibility, there will be minimal changes required	Project Schedule	Medium	Medium	Accept	Track plan to actual in all schedules to monitor variances	Planning phase and beyond	Understand degree of variance required to cause plan reset.
8	If Long-term upkeep of parcel data is required, then suitable plan and budget items are required	Governance	Medium	Medium	Mitigate	Budget is in place for 1FTE add to VCGI for long-term maintenance	Project to Program Transition	Measure growth in Year 2 vs. plan assumptions to validate adequacy of 1FTE.
9	If Individual municipality operations are not standardizing their parcel inputs, then ETL will be required to normalize inputs to State data standard	Governance	Medium	Medium	Mitigate	Impact to towns can be minimized as ETL option allows different types of input to still meet data standard	Planning phase and beyond	Maintain town Group classification, updating as appropriate, to keep dynamic view of work remaining and type
10	If there is perceived Privacy encroachment from increased data integration, property owners must be educated on	Change Management	Medium	Low	Mitigate	Customer interaction and vendor experience shows this to be a minimal concern	Planning phase and beyond	Vendor interviews show this to be minimal concern, plus data is public, but not Grand List integration

	processes and data usage.							
11	If there is increased community growth rate that outstrips planned capacity for data governance, then plans must be updated accordingly	Governance	Medium	Low	Accept	This is a longer-term concern that can only be dealt with by measuring year 1 growth vs productivity and reacting if needed	Long-term	Measure growth in Year 2 vs. plan assumptions to validate adequacy of growth plan and get early warning for additional growth required.
12	If there is not a strong Multi-Vendor adherance to AOT data standards, then diversity in source data will grow over time.	Governance	High	Low	Accept	Data standard content has been validated as appropriate for work and for alignment with Federal standards	Planning phase and beyond	100% of vendor candidates interviewed, all express commitment to VT data standard and characterize it as good quality
13	If there is any loss of time due to excessive edge mapping reconciliation, then schedules will be adversely impacted.	Project Type	High	Medium	Mitigate	Optimize contiguous towns to vendors to minimize number of vendor-to-vendor edges to be compared; Have surveyors ready to help resolve conflicts	After Planning phase	Monitor town/vendor relationships for changes over time that would impact edge mapping complexity.

14	If there are any changes in inter-Agency MOU commitment, then overall funding will be impacted	Project Finances	Medium	Medium	Mitigate	Ensure all Agencies include MOU commitment as budget line item and obtain approvals.	Planning phase and beyond	Ensure project features and capabilities are prioritized consistent with MOU participation.

Attachment 3: Lifecycle Costs

Project Name: AOT Statewide Parcel Mapping System								
Description	Qty	Unit Price	Initial Implementation FY20XX	Maintenance FY20XX	Maintenance FY20XX	Maintenance FY20XX	Maintenance FY20XX	TOTAL
HARDWARE								
Server Hardware								
Network Upgrades								
Desktop Hardware								
Other								
HARDWARE TOTAL								
SOFTWARE								
Product License								
Product Per-User Charges								
Database								
Operating System Software								
Additional Server Software								
Additional Network Software								
Other								
SOFTWARE TOTAL								
CONSULTING								
Third-Party - Technical			1,618,360					
Third-Party - Business								
Deployment PM			163,800					
Upgrade								

Other - IR			25000					25000
CONSULTING TOTAL			1,807,160					1,807,160
TRAINING								
Trainer								
Other								
TRAINING TOTAL								
OTHER								
Other 1 – State PM			327,600					327,600
Other 2 – State Implementation			544,908					544,908
OTHER TOTAL			872,508					872,508
PERSONNEL - ADDITIONAL								
Technical Staff – DII EA			79,640					79,640
Business Staff								
SoV Maint & Operations				87,360	87,360	87,360	87,360	349,440
TOTAL ADDITIONAL STAFF			79,640	87,360	87,360	87,360	87,360	429,080
GRAND TOTALS			**2,759,308**	**87,360**	**87,360**	**87,360**	**87,360**	**3,108,748**

Cormier, Barbara

From: Mike Maslack <mmaslack@desaimgmt.com>
Sent: Tuesday, April 25, 2017 9:23 PM
To: Cormier, Barbara; Cloutier, Ryan
Cc: 'Vijay Desai'
Subject: FINAL IR Report - AOT Statewide Parcel Mapping Project
Attachments: AOT Parcel Mapping Project IR Report FINAL REPORT 25Apr2017.pdf

Barb/Ryan….

There were four follow-up items from yesterday's review with Darwin. Here's their disposition:

1) Who ultimately owns the Parcel Mapping Program for long-term governance?
    - See report section 4.6, which has been added to describe the content of the May 2016 Memorandum of Understanding and its description of Parcel Mapping ownership through development (AOT), maintenance and use (ACCD).
2) What's a flow chart of the Parcel Mapping process look like?
    - See report page 14, describing the parcel mapping work flow
3) Can any deltas in GIS use be forecast as a result of the Parcel Mapping project?
    - Since the GIS application is web-based, input from the team suggests that there will be no appreciable impact to existing server workload due to parcel map completion
4) Is there any confirmation of the original MOU covering multi-Agency contribution to program costs going forward?
    - See report section 4.6, which has been added to describe the content of the May 2016 MOU, its longevity, and process to withdraw.

With these addressed as described, I think we're ok to call the IR Report complete in content.
Please review these updates, and let me know if you have any final questions or comments.
Thanks,
Mike

mmaslack@desaimgmt.com
mobile (802) 238-1527