



MetroGIS Fair-Share Financial Model Final Project Report

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¹ The Metropolitan Council is the regional planning organization for the seven county Minneapolis-St. Paul Metropolitan Area. Its responsibilities include running the regional bus system, collecting and treating waste water and managing water resources preservation, overseeing growth management policy, planning regional parks, and administering funds that provide housing opportunities for low and moderate Income families. See www.metrocouncil.org for more information.

² The members of the MetroGIS Fair-Share Financial Model Project Steering Committee were: Clifton Aichinger (*Ramsey-Washington-Metro Watershed District*); Dr. David Arbeit (*LMIC*); David Claypool, MetroGIS Coordinating Committee Vice Chair (*Ramsey County*); Dr. William Craig (*U of M - CURA*); Virginia Erdahl, MetroGIS Policy Advisory Team Chair, (*Washington County*); Brad Henry, MetroGIS Coordinating Committee Chair (*City of Minneapolis*); Richard Johnson (*Metropolitan Council*); Margo LaBau and Paul Leegard (*Anoka County*); Patrick O'Connor and Gary Caswell (*Hennepin County*); Gary Stevenson (*Dakota County*); and Dennis Welsch (*City of Roseville*).

³ See Appendix B.

⁴ See Section 5.1.

⁵ See Section 4.5.

⁶ Dr. William J. Craig, Assistant Director of the Center for Urban and Regional Affairs (CURA) at the University of Minnesota, received a 1999 NSDI Benefits Grant to conduct a study entitled "MetroGIS Benefits Study". This study involved a series of interviews to identify and evaluate benefits that accrue from access by government organizations to data maintained by other government organizations in this metro area. The study also involved a mailed survey to evaluate the perceived benefit of 22 MetroGIS-sponsored functions that promote and facilitate data sharing among MetroGIS stakeholders. The study findings will be a critical resource during Phase 2 -- preparation of the MetroGIS Business Plan.

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1. EXECUTIVE SUMMARY

MetroGIS is a multi-participant, GIS collaborative⁷ serving the seven-county, Twin City Metropolitan Area in Minnesota. In 1994, the Metropolitan Council of Greater Minneapolis-St. Paul Area⁸ recognized that it needed parcel level data to accomplish its responsibilities. The Metropolitan Council also recognized that collaborating with each of the seven metro area counties, as opposed to developing the data on its own, would be the most cost-effective means to secure the parcel data it needed. Out of this data need, the MetroGIS initiative found its beginnings in December 1995. A voluntary organization, as yet without, without legal organizational standing, its stakeholders include 250+ local government units serving the seven county area; metropolitan, state and federal agencies; and assorted non-profit and private-sector interests. The intent of the organization is to become self-sustaining.

The Metropolitan Council, since the beginning, has accepted the role as the primary sponsor of MetroGIS, having provided project funding in excess of \$1.3 million and up to four FTE's annually in staffing thus far. These resources have been used to address five strategy initiatives⁹ designed to move MetroGIS from concept to reality. The MetroGIS Fair-Share Financial Model and Organizational Structure is the last of these five strategic initiatives and is critical to establishing of a politically acceptable strategy to achieve self-sufficiency. The goals of the latest strategic project are to develop broadly supported strategies to secure long-term sustainable financing and an organizational structure appropriate for the authorities required achieving the MetroGIS mission.

A \$100,000 grant was received through the National Spatial Data Infrastructure (NSDI) program, which provided the majority of funding for the first phase of this critical project. The grant funding permitted MetroGIS to retain the services of a multi-disciplinary consultant team¹⁰. Phase 1 began October 1, 1998 and effectively concluded on October 27, 1999. The major tasks, each of which were achieved, involved comparing and contrasting principles of NSDI to those of MetroGIS concerning both data and operations objectives; identifying roles and responsibilities necessary to achieve data sharing in a regional, multi-participant, environment; estimating the costs of supporting these functions; developing a cost allocation scheme to equitable distribute these costs among the beneficiaries, and identifying an appropriate legal organizational structure for MetroGIS.

This NSDI-funded project has had a profound affect on helping us refine and mature MetroGIS' philosophy, understand the issues, and move significantly closer to achieving MetroGIS' goal of attaining *"an on-going, stakeholder-governed, regional mechanism through which participants easily and equitably share geographically-referenced graphic and associated attribute data that are*

⁷ A one-page summary of the MetroGIS regional GIS collaborative is provided in Appendix A. Additional information about MetroGIS' vision, interim organizational structure, strategic initiatives, major accomplishments, remaining challenges, and the Metropolitan Council's "sponsor" role is provided in the Background Section of the consultant's Fair-Share Financial Model Project final report available on the MetroGIS Internet site (www.metrogis.org).

⁸ See Footnote #1.

⁹ A summary of each of the five MetroGIS strategic initiatives is provided in Section 3.6 of the consultant's report available on the MetroGIS Internet site at www.metrogis.org.

¹⁰ The team members and their responsibilities are listed in Appendix B.

accurate, current, secure, of common benefit, and readily useable". Examples of significant findings and conclusions include:

- Corroboration of an assumption that MetroGIS is a micro NSDI in terms of both data and operational objectives.
- Corroboration of our preliminary conclusion that most of the tasks involved to effectively support a regional data sharing effort exceed the internal business needs of the individual participants and that the costs to effectively support these costs are not trivial. The annual cost to fully support each of the 21 non-data functions MetroGIS had endorsed as desirable is estimated at \$635,000. When development and maintenance of data solutions for MetroGIS' priority information needs are added the annual cost of support increases to between \$905,000 to \$1,482,000, depending upon the regional data solutions involved.
- Through the corollary MetroGIS Benefits Study¹¹, we were able to document that the non-data functions supported by MetroGIS to facilitate and foster data sharing are highly valued by the stakeholder community in addition to improved access to data. We learned that all stakeholders are generally supportive of a modest fee to insure continued support of these functions.
- Implementation of a subscription-based funding mechanism is premature with relation to development and maintenance of region data (integration / merger of multi-county data into a single dataset). Regional, state and federal agencies acknowledged the benefit of not having to internalize the cost to integrate / merge multiple county data on their own but until local government buy-in is achieved or until intellectual property policy obstacles are resolved and non-government partners are permitted to participate, the proposed fee-based approach is not feasible. The Policy Board concluded that most local government GIS programs are too new to provide adequate understanding of the benefits that could be reaped from collaboratively financing regional solutions.

On October 27, 1999, the MetroGIS Policy Board endorsed the project team's conclusions and, more importantly, authorized Phase 2 of the Fair-Share Financial Model and Organization Structure Project, that being preparation of a detailed Business Plan to guide implementation of MetroGIS to full maturity.

Upon completion of Phase 2, MetroGIS will have completed its definition and design phases, which began with a strategic planning retreat on December 14, 1995.

We believe the results of this study, as documented herein and in the accompanying report from the project consultant team, and MetroGIS' guiding principles and methods are applicable to other aspiring multi-participant GIS collaboratives. As such, they are hereby offered for use by others in furtherance of achieving common data sharing objectives. Data sharing objectives which, if attained, will significantly enhance our collective abilities to implement smart growth policies and to measurably improve our effectiveness as institutions. These outcomes will, in turn, create the environment in which to achieve livable communities goals, improve quality of life, and improve economic competitiveness.

We are grateful for the opportunities made available to MetroGIS because of undertaking this project, opportunities that would not have been possible without our affiliation with the NSDI program.

¹¹ See footnote #6.

2 INTRODUCTION

MetroGIS is a voluntary, multi-participant GIS collaborative conceived in December 1995. Its accomplishments and objectives reflect significant commitments from a broad cross-section of organizations including the 250-plus local government units; metropolitan government; state and federal agencies; academic and non-profits; and the private sector firms that serve the seven-county, 3000 square mile, Minneapolis-St. Paul Metropolitan Area.

The MetroGIS Fair-Share Financial Model and Organizational Structure Project is the final component in a five-part strategy¹² conceived in 1996 to achieve the MetroGIS vision. That vision being:

Provide an ongoing, stakeholder-governed, metro-wide mechanism through which participants easily and equitably share geographically-referenced graphic and associated attribute data that are accurate, current, secure, of common benefit, and readily useable.

Phase 1 of the MetroGIS Fair-Share Financial Model and Organizational Structure Project is the subject of this report. It involved the following components:

- a) Identifying tasks in excess of internal business needs of the stakeholder organizations necessary to collaboratively accomplish data sharing in a regional, multi-participant environment;
- b) Estimating the costs of supporting these tasks;
- c) Developing the foundation for a politically acceptable cost allocation scheme to achieve stable long-term financing for these tasks; and
- d) Evaluating options for an appropriate legal organizational structure to govern MetroGIS.

Phase 1 was effectively concluded on October 27, 1999. At that time, the MetroGIS Policy Board acted on recommendations that evolved with the assistance of funding provided through a NSDI Framework Demonstration Program grant. Those recommendations are explained in this report. This report was prepared in partial fulfillment of the grant-funding requirement to share the results of our work with the boarder NSDI community¹³.

Phase 2, the final phase, began November 1, 1999 and is tentatively scheduled for completion March 2000. It involves refining the cost allocation scheme developed in Phase 1 and adopting a detailed Business Plan to guide implementation of MetroGIS to full maturity. Phase 2 could not have been effectively undertaken without the research, evolution of philosophy, and consensus building that occurred during Phase 1.

Prior to undertaking this project, there was an intuitive sense among most MetroGIS stakeholders that data sharing and collective support of the tasks necessary to facilitate and promote data sharing are in

¹² See Footnote #9.

¹³ A presentation of the project findings is also tentatively scheduled for March 2000 at the NACO National Legislative Conference in Washington D. C. The presentation, like this report, is in accordance with our obligation to share the results of this NSDI-funded project with the broader NSDI community. In addition to the materials presented in this report, we will present as much information as possible about progress made on the MetroGIS Business Plan (Phase 2).

the public interest. However, the MetroGIS leadership recognized that securing long-term stable financing requires tangible evidence that its stakeholders can collectively address their common geodata needs for less time and resources than if they each developed and integrated the data themselves. Consequently, this project and its companion MetroGIS Benefits Study¹⁴ were conceived to answer the following questions and to document the conclusions:

- Does achievement of the MetroGIS collaboration vision require resources beyond the collective internal business needs of individual stakeholders?
- If so, do the added costs associated with collaboration offer enough value to the collaborating organizations that they will provide long-term financial support?
- If so, how can these costs be equitably shared?

This report summarizes major Project milestones, how the Project and its results fit into the vision for MetroGIS, relevance of the companion MetroGIS Benefits Study, MetroGIS' guiding principles and project assumptions, version one of the MetroGIS cost allocation scheme, conclusions regarding an appropriate legal organizational structure, what we learned in terms of answers to the three above-cited questions, challenges for 2000 and beyond, and advice for future start-up regional GIS collaboratives.

3 GUIDING PRINCIPLES

The principles stated below guided the Fair-Share Financial Model and Organizational Structure Project, as they have guided all other aspects of the MetroGIS initiative. Principles "g" and "h", in particular, provided the philosophical foundation for this Project, although, all eight were incorporated into the project design.

- Actively Involve Policy Makers.* The MetroGIS Policy Board was created to include high-level representation of key stakeholders and to keep MetroGIS focused on stakeholder needs. The Board has set the direction for strategic initiatives, provided a reality check for proposed courses of action, identified appropriate areas for collaboration, and, of course, set policy.
- Promote Understanding.* To help Policy Board members understand the value of geodata and GIS, Policy Board meetings include demonstrations by organizations represented on the Board using GIS to support their business operations and to point out benefits associated with data sharing.
- Seek Consensus on Policy Decisions.* Consensus among Policy Board members is sought for courses of action on issues and opportunities fundamental to MetroGIS.
- Represent Diverse Perspectives.* MetroGIS decision-making derives from work performed by broadly representative committees and workgroups, comprised of managers and technical staff with appropriate expertise. These committees and workgroups identify common needs, develop work programs, and formulate solutions to these needs.
- Maintain Focus on Business Information Needs.* MetroGIS took pains to identify common business information needs of key stakeholder organizations and embarked on a regional geodata strategy consistent with these common needs.

¹⁴ See footnote #6

- f) *Focus on Stakeholder Benefits.* Identifying stakeholder benefits is fundamental to strengthening commitments to MetroGIS, whether or not benefits can be precisely measured.
- g) *Acknowledge Fair-Share Contributions.* Contributions to the sustained operation of the regional collaborative, from any one stakeholder, may be in the form of funding, data, and/or people and equipment.
- h) *Compensate for “Costs of Collaboration”.* No stakeholder organization will be asked to perform a function exceeding their internal business needs for the collaborative without appropriate compensation.

4 PROCESS AND MILESTONES

4.1 ORIGIN OF PROJECT CONCEPT

The basic concepts for this project were conceived by Randall Johnson, MetroGIS Staff Coordinator, while participating in the January 1998 NSDI Institutional Workshop held in Annapolis, Maryland. In late 1997, MetroGIS had begun to investigate appropriate legal organizational structures and options to secure long-term financing. Mr. Johnson was invited to attend the Annapolis Workshop to share MetroGIS' experience. After two days of stimulating dialogue, it became obvious that MetroGIS was heading into generally uncharted territory; that the results of MetroGIS' efforts would most likely have relevance to the broader NSDI community; and the subject matter was worthy of consideration for an NSDI Framework Demonstration Grant. Subsequently, an application was submitted in March 1998¹⁵.

Mr. Johnson and Dr. David Arbeit, Director of the Minnesota Land Management Information Center and member of the MetroGIS Coordinating Committee, co-authored the application.

MetroGIS did not, and does not currently, have legal standing as an independent entity. Therefore, MetroGIS could not apply for the grant on its own behalf. The Metropolitan Council, serving its MetroGIS “sponsorship” role¹⁶, agreed to serve as the responsible organization for NSDI Framework Demonstration Grant application. Even if the grant funding had not been received, the substantial effort involved in writing the application greatly helped to mature the philosophy that underpins MetroGIS.

4.2 CONTRACTS AND PROJECT PREPARATIONS

Notice of the grant award was received on June 20, 1998. The project officially began, as proposed, on October 1, 1999 with a meeting between members of the consultant team and the Project Steering Committee¹⁷. The following tasks were completed in the three months following notification of the grant award to satisfy the proposed October 1st project start date:

¹⁵ See the MetroGIS Internet site at www.metrogis.org for a copy of the application.

¹⁶ The Metropolitan Council agreed to support the activities necessary to define the form and functions of MetroGIS', providing in excess of \$1.3 million in non-staff project funding from August 1995 to October 1999 and up to four FTE's annually to staff the effort. Randall Johnson was hired in August 1995 by the Council for the express purpose of coordinating start-up of the effort that has since become known as MetroGIS. The start-up phase should be effectively complete by March 2000. Refer to Section 3.4 and Appendix 2 of the consultant team's report (www.metrogis.org) for more information about the Metropolitan Council's facilitation role in the creation of a regional GIS (MetroGIS).

¹⁷ See Footnote #2 and Appendix B for the committee and consultant team members.

- a) A Request for Proposals (RFP)¹⁸ was developed and a national search was conducted for a consultant team that could bring the desired multi-disciplinary expertise to the effort. The desired expertise included: GIS data development and management, financial modeling and cost allocation, legal organizational structures, public policy development, telecommunications as related to GIS data transfer; and NSDI's principles and philosophy.
- b) A contract was negotiated and executed between the Metropolitan Council and the U.S. Geological Survey (USGS) for the NSDI grant funds.
- c) Four prospective consultant teams were interviewed, a team was selected, and a contract was executed between the Metropolitan Council and the selected team¹⁹.
- d) The MetroGIS Staff Coordinator attended a workshop for grant recipients in mid-September held in Charleston, S.C.
- e) A consolidated detailed scope of work²⁰ was negotiated with the consultant team.

4.3 DEFINITION OF A MATURE METROGIS

In September 1998, the MetroGIS Policy Board endorsed 22 functions (Table 1) it believed MetroGIS should consider supporting, once a mature organization. The primary objective of each of the 22 functions is to promote and facilitate data sharing. The consultant team was directed to base its cost estimates on achieving these functions. The functions fell into the following six categories:

- a) Regional data development / Integration²¹
- b) Coordination and Technical
- c) Data Distribution
- d) Services
- e) Research
- f) Outreach

Nineteen of these 22 functions were identified as “core” and three were identified as “desirable”, with the understanding the desirable functions would not be pursued unless funding had been secured for each of the core functions.

4.4 PROJECT ASSUMPTIONS

The MetroGIS Policy Board, at its April 1999 meeting, endorsed several assumptions to guide development of an equitable method to distribute the costs of MetroGIS and to govern its activities.

¹⁸ A copy of the RFP is available on the MetroGIS Internet site (www.metrogis.org).

¹⁹ Refer to Appendix B for a listing of consultant team members.

²⁰ Refer to Appendix C for the detailed Scope of Work.

²¹ In May 1997, the MetroGIS Policy Board endorsed thirteen priority business information needs for MetroGIS. They are listed in Appendix D. Addressing these thirteen priority information needs and any that may be subsequently identified comprise the “regional data development / integration” function.

These assumptions are listed below. The version of the fair-share financial model and organizational structure endorsed by the Policy Board on October 27, 1999 satisfy each of these assumptions.

Financial/Cost Assumptions:

- a) Broader funding support for MetroGIS is needed.
- b) Fair user rates will be established based on perceived benefit to the user.

Table 1: Functions Appropriate for MetroGIS

(Adopted by the MetroGIS Policy Board -- September 30, 1998)

	Functions	Scope	Is Function Currently Provided?
	<u>Coordination and Technical Functions</u>		
1	Promote and endorse voluntary polices which foster coordination of GIS among the region's organizations.	Core	Yes
2	Identify unmet GIS needs with regional significance and act on these needs.	Core	Somewhat
3	Facilitate data sharing agreements and licensing among MetroGIS stakeholders.	Core	Partially -- Interim agreements
4	Develop and endorse standards for GIS data content, data documentation, and data management.	Core	Regionally significant data
5	Require standardized GIS data content, data documentation, and data management for regional datasets.	Core	No
6	Endorse standards for telecommunication protocol and networks.	Core	No
7	Provide a repository of GIS human resources information (centralized job posting/position descriptions).	Desirable	No
8	Develop master contracts for regional GIS projects, when appropriate.	Core	Demonstration Orthoimagery Project
9	Promote development and exchange of GIS applications and procedures that serve GIS needs.	Core	Somewhat
	<u>Data Development and Distribution Functions</u>		
1	Create and maintain datasets for MetroGIS based on identified priorities.	Core	Yes
2	Fill gaps in metadata based on identified priorities.	Core	Partially -- County Agreements
3	Provide a directory of data within region and a mechanism for search and retrieval of GIS data	Core	Data Finder
	<u>Service Functions</u>		
1	Provide technical assistance to participants to retrieve, translate, and use data.	Desirable	Some -- Street Centerlines
	<u>Research Functions</u>		
1	Undertake research to meet common regional GIS needs.	Core	Some
2	Promote collaborative funding of pilot projects that meet regional needs.	Core	Ortho project, I-35W pilot
	<u>Outreach Functions</u>		
1	Identify GIS training and continuing education needs and encourage participation	Desirable	No
2	Advocate for MetroGIS needs and desires with state and federal policy makers	Core	Some - NSDI/PUC
3	Maintain liaison relationships with committees/organizations with similar objectives to MetroGIS.	Core	Yes
4	Promote forums for MetroGIS stakeholders to discuss common GIS needs and opportunities.	Core	Yes
5	Publish MetroGIS newsletter.	Core	Yes
6	Maintain MetroGIS world wide web site.	Core	Yes
7	Market MetroGIS data and products	Core	No

- c) Broader funding support for MetroGIS is needed.
- d) Fair user rates will be established based on perceived benefit to the user.
- e) Benefits to the user will be defined (financial and non-financial).
- f) User rates will be set to assure a financially stable MetroGIS.
- g) A flexible model will be developed as a tool for MetroGIS, allowing modifications based on MetroGIS' changing needs.
- h) Producers of endorsed primary data (data to be integrated into an approved regional data solution) that are contributed to the MetroGIS data pool will receive nominal compensation from MetroGIS for their participation in the form of a "supplemental data maintenance payment." This payment is to compensate the producer for sharing data to all governments at no cost other than to cover modest data reproduction expenses and to defray costs attributable to sharing data with organizations outside of their jurisdictions.
- i) Producers of primary datasets will not be asked to support tasks or data related activities that exceed their internal business needs. They will be encouraged, but will not be required, to update/enhance primary datasets that are inconsistent with regional specifications. (E.g. the amount of supplemental data maintenance payment will be proportionately higher for fully compliant primary datasets.)
- j) Regional data custodians will be compensated for all tasks in excess of their internal business needs.
- k) Data consumers will have free access to data obtained from MetroGIS' primary and regional data producers when by telecommunications transfer and shall not pay more than a modest fee to cover data reproduction costs for other means of data transfer.
- l) Not all primary data is of equal value in terms of counting toward defraying the costs of collaboration assigned to a particular organizational class (cities, counties, school districts, watershed districts, metropolitan, state, federal, and non government.) The model shall recognize the large investment counties have made to develop their GIS capabilities and the significant value of this investment to MetroGIS.
- m) Financial support for MetroGIS will come primarily from data consumers proportionate to the benefit perceived by organization class.
- n) Existing formal GIS cost sharing agreements among counties and units of government within their boundaries must be recognized in the fair-share financial formula.

Data Sales Assumptions:

- a) Intellectual property rights for producers of primary data contributed to MetroGIS shall remain intact.
- b) MetroGIS will not benefit from sales of data in the form contributed to MetroGIS by primary producers unless authorized by the primary producers.
- c) Data sales will be "zeroed-out" in the initial fair-share financial model.

4.5 PEER REVIEW FORUM

On September 19, 1999, the MetroGIS Policy Advisory Team hosted a Peer Review Forum²². The purpose was to obtain feedback from representatives of organizations assumed to be candidates for participation in MetroGIS regarding preliminary proposals for sharing the costs to support and govern MetroGIS. These preliminary proposals had been shared with the MetroGIS Policy Board on July 28, 1999 and the Board authorized the Team to present them for comment at the proposed Peer Review Forum.

²² A summary of the forum proceedings, entitled "A Report of the MetroGIS Fair-Share Financial Model Peer Review Forum", is available on the MetroGIS Internet site (www.metrogis.org).

Over 70 people attended, representing all major classes of prospective MetroGIS participants and many areas of professional expertise.

In brief, comments received at the Forum corroborated the preliminary findings of Dr. Craig's MetroGIS Benefits Study²³. These findings were that the MetroGIS stakeholder community highly values the collaborative functions provided over the past 3-4 years by MetroGIS to promote and facilitate data sharing.

We also learned, somewhat to our surprise, that local government (cities, school districts, and watershed districts) acknowledged little or no value to them of the proposal to integrate/merge parcel and other data needed to address each of the MetroGIS priority information needs into regional (seven county) data solutions. Going into the forum, MetroGIS leadership had assumed local governmental units would receive the least amount of benefit from the proposed regional datasets and, consequently, the fair-share financial model had been calibrated accordingly but we not anticipate the extent to which the benefit of regional datasets was questioned.

4.6 POLICY BOARD ACTION AND NEXT STEPS

In response to comments received at the Peer Review Forum, the Project Steering Committee, modified its recommended MetroGIS financing scheme²⁴ to eliminate, at least initially, its proposal to finance regional data development with subscription fees. On October 27, 1999, after considering the Project Steering Committee's findings and findings from the companion MetroGIS Benefits Study, the MetroGIS Policy Board concurred with the Committee's conclusions and found sufficient public purpose to authorize preparation of a detailed Business Plan to guide implementation of MetroGIS to full maturity with the modifications recommended by the Committee. Preparation of a Business Plan comprises Phase 2 of the Fair-Share Financial Model Project and the final component in the definition and design phases of MetroGIS.

The Board's endorsement to modify the subscription-based financing model, as recommended by the Committee, was with the understanding that the Business Plan would mature the subscription-based financing model for data development, as well as to support non-data related functions, for enactment when the time is appropriate.

With \$60,000 in funding provided by the Metropolitan Council, a contract was executed and work began on the MetroGIS Business Plan²⁵ immediately following the Board's action on October 27th. The project schedule anticipates MetroGIS Policy Board action on its Business Plan in March 2000.

5 STUDY OBJECTIVES AND WHAT WE LEARNED

5.1 COMPARISON OF NSDI PRINCIPLES WITH METROGIS PROGRAM NEEDS

²³ See Footnote #6

²⁴ The version of the financial model presented at the Forum is described in detail in Section 6 of the consultant's report, dated November 10, 1999. The consultant's report is available on the MetroGIS Internet site.

²⁵ The firms of Richardson, Richter and Associates (St. Paul, Minnesota), led by Trudy Richter, and Virchow, Krause and Company, LLP, (Holland, Michigan), led by Mark Beauchamp, will assist MetroGIS prepare a Business Plan. Both were members of the consultant team that assisted with Phase 1 of the project. The scope of work is presented in Appendix D.

In addition to developing schemes to finance and govern MetroGIS, two other objectives of this study were to compare and contrast MetroGIS' priority information needs with NSDI's seven Framework themes and MetroGIS' governance philosophy with NSDI's seven Framework functions²⁶.

MetroGIS, as we had speculated, is a micro NSDI. There is substantial overlap between the respective operational functions and data objectives. Each of MetroGIS' preferred functions can be associated with one or more of NSDI's seven Framework functions. Although, MetroGIS' Business Information Needs are a higher-level concept than the seven Framework themes, MetroGIS' Information Needs and the NSDI's Framework themes are similar in that they both are intended to provide a reliable, standardized source for commonly needed geographic data. The tasks identified by MetroGIS and NSDI for managing, developing, and sharing of their identified data resources are also similar. The major difference is that MetroGIS has identified numerous sub-functions that one would not expect the more theoretical NSDI blueprint to include.

Other differences between their respective data-related aspects are there is not a one-to-one correspondence between MetroGIS' Information Needs and NSDI's Framework themes and multiple datasets are often needed to address a single MetroGIS information need. Some of MetroGIS' priority information needs fit clearly into the information content of the seven NSDI themes; others do not. With the exception of "orthoimagery" all of NSDI's Framework themes show up in MetroGIS' listing of common information needs, although elevation data, is not among MetroGIS' thirteen priority information needs. Orthoimagery does not show up because it is generally viewed as a means to obtain desired data and not an information need in and of itself. Significant progress has been made to identify and implement collaborative acquisition of orthoimagery for this seven-county, metropolitan area. Finally, MetroGIS has cited several priority information needs that go beyond the seven NSDI Framework themes (e.g. rights to property, existing and future land use, and land regulations).

5.2 PRIMARY PRODUCER & REGIONAL INTEGRATOR RESPONSIBILITIES

The consultant team prepared a matrix of roles and responsibilities for each of MetroGIS' thirteen priority information needs, MetroGIS Data Finder²⁷, and non-data coordination functions, such as executive guidance, which apply to all information needs. MetroGIS' policy is to encourage, but not require, primary custodians (developers and maintainers of data that are integrated or merged into regional datasets) to adhere to MetroGIS-endorsed policy and procedures. NSDI adheres to a similar strategy of voluntary compliance. MetroGIS has also endorsed a principle that primary data producers will contribute their data in the form they produce it, which is also consistent with NSDI's philosophy.

5.3 DATA SHARING TASKS THAT EXCEED INTERNAL BUSINESS NEEDS

MetroGIS realized early-on that fostering and facilitating data sharing, as defined by the previously mentioned 22 preferred functions (Table 1), would require resources beyond the internal business needs of

²⁶ MetroGIS' priority Information Business Needs are listed In Appendix E. Refer to Section 4.2.3 of the consultant's report for a detailed evaluation of the similarities and differences between MetroGIS' Information Needs and NSDI's Framework themes.

²⁷ MetroGIS Data Finder is an Internet-based data search, view, and retrieval tool developed by MetroGIS and brought on-line in April 1998. It can be accessed at www.datafinder.org. Additional information about Data Finder's development and its characteristics is available on the MetroGIS Internet site at www.metrogis.org

its individual stakeholder organizations. The consultant team’s research corroborated this assumption. This premise does not appear to be recognized by the NSDI philosophy.

This Project was designed to: a) document tasks which exceed internal business needs and their respective costs to support MetroGIS decision-making and b) offer insight to operationalizing NSDI’s principles in environments such as MetroGIS’.

The matrices developed by the consultant team, and presented in the appendices to the consultant’s report, include only those tasks with exceed internal business needs. Numerous such tasks were identified²⁸. Herein lies a possible inconsistency between the MetroGIS and NSDI philosophies. NSDI’s philosophy appears to assume that data sharing-related functions are part of the internal business needs of the prospective participants. This is not the case for MetroGIS stakeholders.

Consequently, NSDI and MetroGIS philosophies also appear to differ with respect to the concept of providing compensation for support of activities for the collaborative, which exceed internal business needs; be it modifying primary data by a regional custodian that might be necessary to enable sharing or providing support for the variety of other tasks involved in fostering and facilitating data sharing, such as costs incurred to support Data Finder. MetroGIS’ policy is that costs incurred to support these “tasks for the collaborative” or “costs of collaboration” will be borne entirely by the users. To the author’s knowledge, there is no similar policy statement by NSDI. Absence of a clear statement of intent in this regard by NSDI leads one to conclude that compensation was not anticipated.

Enactment of this principle of compensation for tasks beyond internal business needs is fundamental to the success of MetroGIS. Consequently, the proposed fair-share financial model was conceived to allocate these costs among the beneficiaries, consistent with their perceived benefit. Federal agencies are cited among the prospective MetroGIS beneficiaries in the proposed model.

5.4 COSTS OF DATA SHARING RELATED TASKS

The consultant team estimated that the total annual staff and non-staff expenses to support all 22 endorsed functions (Table 1) would cost \$1,040,000 for each of first four-years of the program. No attempt was made to look beyond the first four years in terms of estimating additional data development costs or additional data maintenance costs. When MetroGIS has solutions to its thirteen priority needs in hand, a comprehensive survey of the remaining 74 of 87 original information needs will be undertaken to determine which if any of them are appropriate for MetroGIS to pursue.

The \$1,040,000 estimated annual cost, during the first four years of operation, is comprised of \$405,000 for development of regional data solutions for eleven of the thirteen priority MetroGIS information needs. Solutions for the other two priority information needs --“socio-economic characteristics of areas” and “where people live” -- were dropped from consideration for the time being due to their high cost compared to that for the other eleven information needs²⁹. The remaining \$635,000 is for support of the 21 non-data

²⁸ Refer to Section 4 of the consultant team’s project report for a detailed explanation of the analysis that supports these conclusions.

²⁹ Socio-economic characteristics of areas” – Estimates of \$1.5 million for development a regional solution and \$900,000 annually to maintain it. These estimates were arrived at by extrapolating the region the solution piloted by the North Metro I-35W Corridor Coalition. “Where people live” - \$272,000 to develop a regional data solution and \$272,000 annually to maintain it.

development and maintenance functions related to coordination, data distribution (Data Finder), outreach, research, and technical support. The consultant team concluded that MetroGIS would need 4.5 FTE's³⁰ to accomplish the 21 preferred non-data related functions. Staffing for each regional data custodian function was assumed to be out-sourced to a third party or part of the staff affiliated with a stakeholder organization. In either case, the cost for this support would be financed by a MetroGIS subscription fee or some other similar means of raising revenues.

The \$405,000 regional data cost estimate does not include costs for development and maintenance of regional datasets that stakeholder organizations need for its own internal business needs. Case in point. The Metropolitan Council developed the regional MCD (minor civil division) and county jurisdictional boundary dataset for its own needs and has agreed to contribute it to the MetroGIS data pool.

MetroGIS leadership believes strongly that MetroGIS' coordination functions cannot be effectively achieved without staff dedicated to that purpose; a conclusion that does not appear to be fully contemplated by the NSDI philosophy. In other words, fulfillment of the data sharing objectives of NSDI will likely require significant resources beyond the internal needs of primary data producers and regional integrators. And, as documented by this study, the cost to provide these functions is not trivial.

5.5 GUIDELINES TO FAIRLY ALLOCATE DATA SHARING COSTS

The proposed subscription fees presented for comment at the Peer Review Forum assumed the total cost to support MetroGIS³¹ would initially be borne by seven categories of government organizations, with the exception of \$50,000 annually anticipated from grants and \$75,000 annually from the Council as part of its Data and Cost Sharing Agreements with the seven metro area counties³².

The model incorporates logic (allocators)³³ designed to implement a fundamental premise that fees must be consistent with "perceived benefit". These allocators resulted in the following allocation of expenses among the seven governmental organization categories:

Organization Category	Percent of Total Cost
Metropolitan	40
Municipal	20
School District	17
State	9
Federal	7
Watershed District	7
County	0*

³⁰ Refer to Sections 5.5 and 5.8.2 of the consultant report for job descriptions, time allocations by MetroGIS function, and salary expectations for the full time staff positions of executive director, policy coordinator, technical coordinator, administrative assistance, and a half time Data Finder coordinator.

³¹ All 22 functions, including eleven regional data solutions, Data Finder, and twenty non-data functions to foster data sharing and collaboration.

³² Refer to the consultant's report and to the MetroGIS Internet site www.metrogis.org for an explanation of the objectives and conditions of the agreements.

³³ Refer to Section 6 of the consultant's report and to Appendix F of this report for an explanation of the logic incorporated into the model. The material in Appendix F is an excerpt from the Frequently Asked Questions Handout provided to those who attended the Peer Review Forum.

**Counties would satisfy their contribution through contribution of their data holdings of priority to MetroGIS.*

Estimated annual subscription fees derived from the first version of the model and presented for comment ranged from about \$4,000 for a modest-sized city, \$5,000 for a modest sized school district, \$5,000 for a modest-sized watershed district, \$364,000 for Metropolitan government, \$80,000 for Minnesota state agencies, and \$64,000 for the federal government. Refinements were made to the data development cost estimates after receiving comment at the Peer Review Forum. These refinements should reduce the initial fee estimates.

The revenue or fee side of the initial model was purposely limited to government organizations. The MetroGIS Policy Board's goal is to eventually expand the participants to include non-government organizations but recognizes that complex intellectual property rights issues must first be resolved. Consequently, the Board made a conscious decision to move forward initially assuming data sharing would occur only among government organizations. The revenue side of the initial version of the model, for the same reason, does not include data sales.

The model assumes that a participant can satisfy their fair-share through contributing data, funds, people/equipment, or any combination thereof. As MetroGIS' learns more about the specifics of how it will address each of its priority information and program needs, "balance sheets" will be refined to balance the value of these contribution options by organizational category and for participating organizations within each category. A high-level, partially completed balance sheet is presented in Section 6.5.9 of the consultant team's report.

At the Peer Review Forum, we learned there currently does not appear to be adequate support among local government in the Twin Cities Metro Area to implement a subscription fee for development and maintenance of regional data solutions. Representatives from several cities, school districts and watershed districts commented that the proposed subscription fees greatly exceeded the value they believe they would receive³⁴. The model presented for comment allocated 46 percent of the originally estimated \$771,000 annual cost for regional data development to local government units. (Subsequent refinements following the Peer Review Forum reduced this cost estimate to \$405,000). MetroGIS leadership believes that with more effort is needed to help prospective participants demonstrate to themselves the benefit of not having to internalize costs to integrate / merge data received from multiple sources that they will eventually agree that broad based financial support for the regional data solutions is the most effective way to address these data needs.

Despite the lack of support found for financing regional data development, we did however learn that a modest annual subscription fee of around \$1,000 would be acceptable to most prospective participant organizations to help support the highly valued coordination functions presently financed entirely by the Metropolitan Council.

³⁴ Few commenters at the Peer Review Forum appeared to grasp the logic behind the fee for the proposed regional datasets. That is, participants would not be buying the data (as implied by the "double taxation" comments) but rather the fee would cover the cost to integrate / merge, on a regular basis, data (parcel and other) maintained by the seven counties and to distribute the regional dataset to participants. Coordinating Committee Chairperson Henry offered an explanation for the difficulty communicating this message. He believes many of the prospective participants may not have yet used GIS technology or have not contended with integrating data from multiple sources and, consequently, may not have sufficient knowledge of the tasks and costs involved to effectively evaluate the value to them of the proposed subscription fee as opposed to doing the work themselves.

Consequently, at its October 27, 1999 meeting, the Policy Board declared as premature the concept of pursuing from the outset broad local government financial participation in the development and maintenance of regional datasets and, consequently, modified the meaning of the preferred function entitled “create and maintain (regional) datasets for MetroGIS based upon identified priorities”. This function now entails developing standards for regional datasets and facilitating partnerships to actually build them, including applying for supplemental grant funding, but not providing direct financing. This modification in philosophy will drastically reduce the initially proposed subscription fees. These changes will be incorporated into the model as a component of the Business Plan phase of the project. The Board also directed MetroGIS management to continue to mature the concept of a subscription fee for data development as part of the Business Plan so that it will be available to implement when the time is appropriate.

Notwithstanding this modification to the method of financing of regional dataset development, significant progress has been made to better understand philosophy shortcomings and to develop a politically acceptable scheme to allocate the cost of supporting agreed upon priority functions. The next challenge will be to expand the support base beyond government organizations in accordance with direction from the Policy Board to seek out partnerships beyond government to finance MetroGIS. To do so, requires resolution of complex intellectual property rights issues. These issues are among the priorities to resolve as part of the Business Plan phase, which is currently in progress.

5.6 APPROPRIATE LEGAL ORGANIZATIONAL STRUCTURE

An assumption was made early on in the evolution of MetroGIS philosophy that MetroGIS must be perceived as, if not in fact, a separate entity from its sponsor organization, the Metropolitan Council, to fully accomplish its objectives. This assumption was supported by the “stakeholder-governed” phrase stipulated in the mission statement; the need for a long-term, broad-based data sharing agreements; the ability to apply for grants; and ability to receive, manage, and spend funds as a collaborative. To build trust that the process was in fact “stakeholder governed, MetroGIS’ management also recognized a need early on to make a clear distinction between MetroGIS and the Metropolitan Council due to the Council’s various approval responsibilities that impact the operations of MetroGIS’ local government stakeholder community.

Significant effort has been invested in communicating that the Metropolitan Council is a participant in the MetroGIS process, one of twelve votes on the Policy Board, and that MetroGIS does not report to the Council. This communication effort appears to have been successful. According to the results of Dr. Craig’s MetroGIS Benefits Study, the Council’s image as a facilitator and a partner, as opposed to a regulator, has improved since it launched the MetroGIS initiative. Consequently, some participants now argue that the need for a separate organization is lessened, given the Council’s delivery on its goal to promote collaborative and cooperative solutions with its local government partners to address regional issues and opportunities.

Notwithstanding, an objective of this Project, which began a year before the findings of the MetroGIS Benefits Study, was to provide an in-depth analysis of legal organizational structure options for MetroGIS. The consultant team investigated three options³⁵, none of which would require special legislation. The

³⁵ Refer to section 7.0 of the consultant team’s report for an evaluation of the pros and cons of three organizational structures investigated by the consultant team: joint powers, non-profit corporation, and intergovernmental or contractual agreement.

Project Steering Committee was uncomfortable seeking with the option of seeking special legislation until MetroGIS has an operating history with an organizational option available under current law and can demonstrate to the Legislature any organizational shortcomings and their impact on MetroGIS' ability to achieve core functions.

With the assistance of research provided by the consultant team, the Project Steering Committee concluded a Joint Powers Agreement (JPA) structure would be the best option, at least initially, for MetroGIS to attain separate legal status. During subsequent dialogue that occurred at the Peer Review Forum and with the Policy Board, concerns were raised that MetroGIS seemed to be heading on a course that could lead to an unintended additional level of bureaucracy. Policy Board members also raised concerns about a JPA structure shortcoming concerning its inability to guarantee voting memberships on the Policy Board for cities and watershed districts³⁶.

Consequently, on October 27th, the Policy Board directed MetroGIS management to investigate, as a components of preparing the Business Plan, shortcomings of MetroGIS continuing as an informal association with regard to authorities needed to achieve all preferred functions, how these shortcomings could be corrected with special legislation, and legislative options to address the voting membership complications posed by the JPA organizational structure option.

Another reason cited for further study of this matter was to learn what we can from NSDI's GeoData Organizational Initiative, initiated October 1999. NSDI launched an initiative in October 1999 to pursue an organizational identity for NSDI separate from the FGDC. Because of the related work of MetroGIS, representatives from MetroGIS have been invited to participate³⁷, beginning with a forum held mid-October in Denver, CO. The 40 or so attendees concurred that the leading edge concept of "chaordic" organizational structure³⁸ should be further investigated for as a governance structure for the NSDI. Each of MetroGIS' representatives volunteered to assist on various support tasks, which are in progress.

The GeoData Organizational initiative grew out of the situation that NSDI stakeholders were becoming increasingly concerned that federal agencies had too much say in the evolution of NSDI policy and philosophy. Similarities between the Metropolitan Council and the FGDC are worth noting. MetroGIS has a similar relationship with the Metropolitan Council to that of NSDI's relationship with the FGDC. The FGDC is the primary sponsor of the NSDI project and the Metropolitan Council is the primary sponsor of the MetroGIS project. In both cases, the sponsors are stakeholder-participants trying to maintain a posture

³⁶ MetroGIS' Policy Board is comprised of twelve members, seven of which represent individual organizations (*seven counties, the Metropolitan Council, and TIES – super school district*) and three of which representative associations (*two from AMM – Association of Metropolitan Municipalities and one from MAWD- Metro Chapter of Minnesota Association of Watershed Districts*). Associations do not qualify for membership in a Joint Powers Agreement (JPA) Association in Minnesota. A work-around for this shortcoming was proposed that involved execution of the JPA by the two cities and one watershed district from which the association representatives are affiliated. This work-around was discussed by the Policy Board July 28, 1999 Policy Board. The conclusion was to seek legislation as soon as possible if a JPA is pursued, rather than struggle with the proposed work around.

³⁷ Attending the October 1999 forum in Denver, CO from MetroGIS were: the MetroGIS Staff Coordinator; MetroGIS Coordinating Committee members Dr. David Arbeit (LMIC) and Dr. William Craig (CURA - U of M); and MetroGIS Policy Board member Randy Johnson (Commissioner Hennepin County).

³⁸ Refer to the NSDI Internet site <http://www.fgdc.gov/whatsnew/whatsnew.html#geodata> for more information.

that is not perceived as “driving the bus”. Both are cognizant that support for the goal of a collaborative process will quickly wane if either is perceived in any way to be controlling the outcome.

MetroGIS officials are looking forward to participating in the leading-edge work underway to define an appropriate organizational structure for the NSDI, a process that has promise for shedding some light on how GIS regional collaborative organizations, such as MetroGIS, can effectively organize to achieve their objectives and connect with the larger NSDI vision.

6 BUSINESS PLAN

To achieve its vision, MetroGIS intends to come to grips with several strategic issues during the next four months. The vehicle to facilitate the required dialogue and policy setting will be the business planning process authorized by the Policy Board on October 27, 1999. Through its process, MetroGIS intends to develop a comprehensive strategy to:

- Solve the long-term financing puzzle
- Implement a sustainable organizational structure
- Phase-in support of preferred non-data functions to attain full maturity.
- Address defined priority business information needs.
- Phase-in desired enhancements to Data Finder and related data access tools.
- Continue to nurture county-based GIS Users Groups.
- Communicate the benefits of data sharing and collaboration to prospective participants.

As a component of this Business Planning process, agreement will be sought on policy pertaining to intellectual property rights and the role of the private sector.

7 SUMMARY AND CONCLUSION

This project has had a profound impact on furthering MetroGIS’ transition from concept to reality. In addition to providing research and documentation that helped the Policy Board conclude that sufficient public purpose exists to move forward, the grant funding also provided the opportunity to engage in in-depth dialogue that clarified and advanced philosophy about roles and responsibilities, issues of equity, functions that MetroGIS should support and MetroGIS’ relationship to NSDI.

These advancements did not, however, come without a significant investment of countless hours of advisory committee meetings and staff support. All told, the in-kind match from advisory committee and staff time dedicated to this project amount to \$172,800³⁹. In addition, \$23,600 of in-kind, out-of-pocket expenses were incurred to support the project for a total in-kind contribution of \$196,450. The local commitment to this project does not end there. A contract for \$60,000 has been executed to complete Phase II, a Business Plan to: 1) resolve outstanding issues involving intellectual property rights and the role of non-government and

³⁹ Refer to Appendix G for a summary of the \$196,450 of in-kind expenses incurred to support this project. \$132,000 of in-kind expenses was pledged in the grant application. The detailed source data are available upon request.

2) prepare a phased-in strategy to guide implementation of the financial model and organization structure identified through this project.

We believe MetroGIS' conclusions and experiences are applicable and transferable to others. With this information, others may be able to move forward faster and possibly at less expense. This document was prepared, in part, with the objective to share our work and to offer guidance to other regional GIS collaborative start-ups and to the NSDI as it promotes adoption of policies and practices necessary to achieve the goals of the NSDI.

In summary, the tasks required to effectively support data sharing among multiple organizations require resources beyond the internal business needs of participating organizations. This study documented this conclusion. These costs also are not trivial. The most important message that MetroGIS can convey to others seeking to form a GIS collaborative is the critical importance of the presence of a "sponsor" organization/entity. In the case of MetroGIS, the Metropolitan Council, acting on its goal to facilitate collaborative solutions among its local government partners, has allocated over \$1.3 million in project funds and up to four FTE's annually over the past four years to support MetroGIS activities, resources which exceed the internal business needs of the Council but which the Council believes will pay dividends in cooperation in the long term.

The Metropolitan Council's resources and commitment to the project gave MetroGIS leadership the freedom to develop MetroGIS from the ground up in a truly collaborative manner. These resources enabled involvement of diverse representation from data producers, data integrators, and users in the development of all aspects of the project, participation by organizations with limited resources, and utilization of an extremely labor and time intensive consensus-based process for all decisions critical to the achieving the mission of the MetroGIS. These principles were embedded, as well, into the design for the MetroGIS Fair-Share Financial Model Project.

We believe broad diversity of stakeholder representation (organizational type and professional expertise) and a process that seeks consensus on fundamental issues are critical elements to building trust, the cornerstone for any collaborative endeavor, and to sustaining creditable and achievable results. Assuming Dr. Craig's 1999 MetroGIS Benefits Study results are representative of the Twin Cities' GIS community, the increasing level of awareness and support for MetroGIS' activities and goals are harbingers of exciting work yet to be undertaken by MetroGIS.

We believe the challenges to MetroGIS and to NSDI include:

- 1) Finding ways, including provision of "bridge financing", to facilitate creation of MetroGIS-like GIS data sharing collaboratives that engender and promote NSDI's principles in areas where organizations with "sponsorship" capabilities and resources do not exist or are inadequate.
- 2) Developing and maintaining a thorough understanding of the significant benefits associated with coordination of activities that promote and facilitate data sharing in addition to the benefits received from the access to Framework data and create ways to broadly implement these activities.
- 3) Taking the lead to minimize legal and legislative overhead faced by data sharing collaboratives to address disparities in intellectual property right laws.

- 4) Effectively educating prospective participants about the benefits to be gained through data sharing and collaborating on common GIS program needs.
- 5) Creating incentives for local government to contribute data to the MetroGIS and NSDI pools without restriction in states where “cost recovery” is a legitimate business practice.
- 6) Creating incentives and documenting tangible and compelling evidence why local government has a business need to participate in MetroGIS and the NSDI.
- 7) Clearly communicating the relevance of MetroGIS’ priority information needs and the seven Framework Data Themes to the internal business needs of prospective partners needed to coordinate policy development, and develop, integrate, maintain, and distribute MetroGIS and Framework data.

APPENDIX A

MetroGIS: Collaboratively Meeting the Information Needs of the Minneapolis-St. Paul (Twin City) Metro Area Community

MetroGIS is a multi-organizational, stakeholder governed, collaborative initiative that began October 1995. The Metropolitan Council is facilitating the definitional phase through staff support, financing of strategic initiatives, and data sharing. The purpose is to facilitate widespread sharing of GIS data among organizations that serve the seven county Twin City Metro Area.

The MetroGIS Policy Board provides policy direction. The Board is comprised of twelve elected/senior administrative officials from eleven key stakeholder organizations: each of the seven counties, Metropolitan Council, Association of Metropolitan Municipalities (AMM), Metro Chapter of Minnesota Association of Watershed Districts, and Technology Information Education Services (*TIES-School Districts*). A Coordinating Committee, comprised of 21 management-level individuals from key stakeholder interests, supports the Policy Board. Policy and Technical Advisory Teams report to the Coordinating Committee. Over 125 people have/are participating on the advisory teams, coordinating committee, board and special purpose workgroups.

Four strategic initiatives are framing the decision making to move MetroGIS from concept to reality. They are: a) agree on data specifications to answer high priority information needs of stakeholders and designate a custodian for each of the regional solutions; b) manage interim data and cost sharing agreements to access commonly needed data; c) expand the core functionality of MetroGIS *Data Finder* (www.metrogis.org), a mechanism to search for and obtain data from others via the Internet, and d) identify equitable cost allocation and organizational mechanisms appropriate to accomplish desired functions and services. A \$100,000 grant was received October 1998 from the National Spatial Data Infrastructure (NSDI) Program for the latter initiative due to the national significance of the issues at hand. At its October 27th 1999 meeting, the Policy Board is scheduled to consider recommendations to secure long-term financing and an appropriate organizational structure.

Major accomplishments include endorsement of thirteen high priority information needs common to MetroGIS stakeholders and the functions that MetroGIS should support as a mature organization. Regional data solutions have implemented for the top two information need priorities: city, township, and county jurisdictional boundaries and addresses for people, places, and things (partial). Data specifications have been identified for regional solutions to the parcels, unique parcel identifier, and census geography information needs. The core functionality of MetroGIS Data Finder is operational. Data and cost sharing agreements are in place with all seven counties and data-sharing activity is being documented for an analysis of the benefits of collaboration and data sharing. Several local GIS projects, with regional significance, are underway in conjunction with these agreements to enhance local data holdings and system capabilities. Standards have been endorsed for metadata, address data, a regional projection and coordinate system, and coding components for the jurisdictional boundary datasets. In addition to the award of an NSDI Demonstration Grant, in 1998 MetroGIS's street centerline dataset project received a Governor's Commendation as an Exemplary GIS project and MetroGIS was one of four regional GIS collaboratives invited to testify before a US Congressional Subcommittee as part of the 1999 National GeoData Forum.

More information about MetroGIS is available at www.metrogis.org.

APPENDIX B

Project Consultant Team

The members of the MetroGIS Fair Share Financial Model and Organizational Structure Project consultant team were as follows:

BRW, Inc. (Minneapolis, MN)

Project Management

Comparison with NSDI

Roles and Responsibilities

*Gina Buss and Dr. Elizabeth Hobbs**

Dr. Elizabeth Hobbs

Gina Buss

Sufficient Systems, Inc. (Roseville, MN)

Cost Estimation

John Lunde

Richardson, Richter and Associates (St. Paul, MN)

Organizational Structure

Trudy Richter (lead)

Yvonne Chaillet

Virchow, Krause and Company, LLP (Holland, MI)

Financial Model

Mark Beauchamp

*Moved to Sufficient Systems part way through the project.

APPENDIX C

Scope of Work – Phase 1

Cost Estimates, Fair-Share Model and Governance

Consolidated Detailed Work Plan⁴⁰
(MetroGIS Fair-Share Financial and Organizational Model Project)

The following work plan details the procedures that will be followed by the BRW Team to complete this project successfully. We expect to begin work on the project October 1, 1998, and to complete our tasks by August 15, 1999, in conformance with the RFP. A detailed time line for the tasks and deliverables can be found at the end of the work plan.

The BRW Team appreciates the opportunity to negotiate the scope of work and schedule with MetroGIS at the onset of the project. Strict limits and priorities must be established in the project scope for a variety of reasons.

First, this project addresses many difficult questions. Obtaining adequate hard cost data for GIS in public sector organizations is difficult. The many organizations and individuals involved make the information gathering and internal validation activities theoretically endless. There are tricky legal and political considerations in issues such as revenue generation, liability, and fair-share of costs. Finally, the final review process must have some bounds for successful completion of the final report by August 15, 1999.

The work plan we put forth here could require several times the budget available for the project. To remain within this budget and still produce worthwhile results, we must stay on schedule and use project resources to maximum effect. The BRW Team and MetroGIS must initiate and execute the project with a careful definition of scope and priorities.

We reiterate that our approach to this project is completely collaborative. We look forward to working with MetroGIS participants and staff, as their substantial work is the foundation on which we must build. For the project to be successful, we will require the following from MetroGIS:

- Funding for the project and prompt payment of invoices
- Key participation in the formal determination of project scope, requirements, and resource allocation at project kick-off.
- Cooperation with the BRW Team in the maintenance and use of a formal project communication, reporting, and problem resolution process.
- Sharing responsibility for meeting project schedule while working within scope and budget constraints.
- Providing access to pertinent MetroGIS staff, documents, records, and resources necessary for the contractor to fulfill his role in the project.
- Assisting the contractor in obtaining the cooperation of MetroGIS stakeholders and access to pertinent records of MetroGIS member organizations.
- Participation in overall project review.
- Commitment to project completion and project sign off.

TASK A: CLARIFY APPROPRIATE ROLES AND FRAMEWORK FUNCTIONS

This task will address the NSDI Framework Functions to clarify two critical points. First, the specific activities necessary to realize MetroGIS goals in conformance with NSDI Functions. Second, the appropriate roles of MetroGIS participants with respect to the seven Framework Functions and three highest priority Framework

⁴⁰ This document has been compiled for easy of administration from the consultant's August 20th proposal and two subsequently approved documents that clarify the scope of work and quality assurance measures. The source documents are attached to or referenced in the contract between the consultant and the Metropolitan Council. If any discrepancies exist between this consolidated version and the source documents attached to or referenced by the contract, the latter shall prevail.

Themes. In addition, the task will address, in less depth and detail, the seven Framework Functions for all remaining priority Business Information Needs.

In Task A we will accomplish the following:

- Review definitions of NSDI framework functions, activities considered appropriate to each of these functions, and standards for the three high priority framework themes.
- Review the same for MetroGIS business needs corresponding to these framework themes.
- Analyze and document how local needs diverge and converge from NSDI Framework function guidelines.
- Extrapolate from work done on the three highest priority themes to outline the anticipated roles and responsibilities associated with each Framework Function for the remaining ten high priority information needs.

Throughout this process, we will take advantage of work completed by MetroGIS and others to minimize duplication of efforts. In the earliest stages of this project, the BRW Team will gather all available work products to determine where gaps exist. Duplication is justifiable only if necessary to achieve optimal results.

1. NSDI Framework Functions

Drawing upon NSDI function guidelines, MetroGIS documents, and our professional GIS consulting experience, we will examine the NSDI framework function and theme definitions to determine their meaning at the operational level for MetroGIS and its participating organizations. The BRW Team will review activities necessary to accomplish framework functions and identify the responsibilities and procedures pertaining to the highest priority data sets within each NSDI data theme. These are region-wide parcel boundaries, as part of the Cadastral Theme, jurisdictional boundary lines as part of the Government Units Theme, and street address ranges as part of the Transportation Theme. We will extend a less intensive version of this process to the range of NSDI functions for the 10 other datasets identified by MetroGIS as high priority.

We will review current NSDI and MetroGIS documentation to confirm the terms, language, and specific requirements of the two programs. We will be alert to subtle differences between NSDI and MetroGIS definitions and between the expressed needs and requirements of different participants. By these means we will develop an accurate and complete breakdown of the NSDI Framework Functions and identify where local needs diverge and converge with NSDI guidelines.

We will review the results of this subtask with the MetroGIS staff and committee members to verify that our interpretations of MetroGIS needs and corresponding Framework requirements are consistent with theirs. We will document similarities and differences for consideration by the appropriate MetroGIS player and for inclusion in project reports.

In addition, we will collaborate with MetroGIS representatives to evaluate the findings of previously contracted work which identified roles and responsibilities for developing and maintaining metadata and posting it with MetroGIS Data Finder and the State's Node of the NSDI Clearinghouse. If necessary, we will suggest clarifications of these roles and responsibilities to enable their integration with the findings of this project. The project reports will fully document the results of this evaluation and our recommendations. The findings of this task will provide input for the evaluation of Data Finder itself in Task B.

2. Clarify Appropriate Roles and Responsibilities

This step applies the results of Framework Function analysis, together with MetroGIS' prototype information needs and data evaluation process, to the resources identified by the MetroGIS Information Needs Workgroup to support the priority themes. In collaboration with the MetroGIS Information Needs Workgroup and staff, we will clarify appropriate roles and responsibilities for organizations in the execution of the activities identified above. These draft determinations will be based upon the most efficient,

effective, and equitable distribution of activities. However, appropriation of roles and responsibilities under the activities plan will not be finalized until Tasks B & C of this project have been concluded and their results considered.

In addition, we will evaluate the MetroGIS Information Needs Workgroup Process. MetroGIS has already applied this process to the jurisdictional boundary and address information themes. MetroGIS will conduct the process for the parcels theme this fall. BRW's role in that process will be to observe. MetroGIS will provide Information generated by this process for all three themes to BRW for analysis. By examining pertinent documents, interviewing selected participants, and observing the process, we will learn how progress made on assigning functions has been accomplished and gain an understanding of the process' perceived strengths and weaknesses. If appropriate, we will suggest ways of improving the process or making it more easily replicable.

We will document, from both MetroGIS and NSDI perspectives, criteria for determining the effectiveness of an organization in performing the framework function roles. We will then apply these criteria to the evaluation of information obtained from the Information Needs Workgroup Process. This evaluation will determine whether the organizations identified are best suited to fulfill framework functions with respect to the production, integration, maintenance, documentation, and sharing of these data sets.

We will fully document recommended assignments of roles and definitions of responsibilities and summarize them in matrices (as in Attachment 5 to the Scope of Work). We will evaluate whether these are consistent with NSDI guidelines. We will provide a completed matrix for each of the MetroGIS top three information needs. We will provide completed matrices to identify responsible entities for all other NSDI Framework Functions for all other MetroGIS priority information needs. Please note that we will devote most of our effort in this task to the three top MetroGIS information needs as specified in the RFP. The other 10 information needs will be handled with less rigor.

To the extent possible, without going through a formal needs assessment and data evaluation process, matrices for other priority data needs will also be created. We assume that MetroGIS will provide us with any work on these Framework themes that has been accomplished so far. We may be able to incorporate additional information based on our knowledge and experience with data sets of these types.

Based on our results, we will identify activities required to meet NSDI or MetroGIS data sharing requirements that are not currently supported by any local organization. We will also identify activities necessary for data sharing that may exceed the current needs of data providers or custodians in producing or maintaining data for their own use.

In addition, we will review the dataset standards recommended by the workgroup for each priority theme, as well as the standards met by the selected datasets, to determine whether they meet or exceed recommended NSDI standards.

These results will provide key input for Tasks B (Estimating Costs) and C (Fair-Share Financing Model and Organizational Structure). Task A findings will begin to identify areas of divergence and convergence between the Framework guidelines and the needs of local organizations. Task B will further refine this analysis to identify where costs of data sharing, in compliance with NSDI, may place an additional burden on local data providers.

Collaboration with the MetroGIS staff and Workgroups will be instrumental to the successful completion of this task. We will work with them on a proactive, as needed basis. We would anticipate having the same

successful relationship with MetroGIS that we have achieved with our clients on a number of complex projects, such as Mn/Model and NAIS.
Elizabeth Hobbs will direct work on this task.

TASK B: ESTIMATE COSTS OF COLLABORATION

Meeting MetroGIS needs and NSDI standards may incur costs beyond those already committed for meeting an organization's internal GIS needs. The objective of this task is to develop profiles and estimates for these additional costs. These estimates will include all seven Framework functions as detailed in Task A and concentrate the majority of effort on the three highest priority NSDI Framework Themes/MetroGIS information needs. These are government units/jurisdictional boundaries, cadastral/parcels, and transportation/address locations.

1. Develop Cost Profiles

For each of these themes, we will develop separate cost profiles for developing, maintaining, integrating, managing, and distributing data. Our work process will include:

- Creating a list of MetroGIS data providers and custodians to be actively included in the study. This list may include metro counties, the Metropolitan Council, city governments, other local units of government such as school districts, and some private sector organizations. We expect to be guided in this selection by the results of the MetroGIS Business Information Needs Workgroup process, the results of Task A and input from the MetroGIS Project Steering Committee. The selection of information sources will be a joint decision made by the Steering Committee and the consultant's key project staff.
- Conduct interviews with GIS practitioners from the selected responsible parties to obtain:
 - An overview of their GIS activities.
 - Breakdowns of their GIS work into component activities that are as similar as possible to the activities identified from Framework Functions for specific data sets in Task A
 - Estimate staff time for component activities to satisfy external standards.
 - Estimate any additional hardware, software, space, utilities, office supplies, and other resources needed for compliance with external standards.
 - Estimate costs of collaboration based upon break downs from high-level cost estimation guidelines and 'rules of thumb' (heuristics) in common use in our GIS consulting practice.
 - Build a well-documented list of assumptions. All methods listed above depend on an extensive set of assumptions, which we must document for the study to have validity.
 - Build a spreadsheet-based financial model for cost profiling that will calculate the marginal costs of external standards compliance based on variations in input kinds, values, and assumptions. This model will contribute to the Fair Share cost allocation work done in Task C. (In this case the accounting term, "marginal costs" refers to those costs that are incurred only for external standards compliance and for no other reason.)

Data Distribution

Our team will help evaluate work done under separate contract concerning MetroGIS Data Finder and NSDI Clearinghouse design. MetroGIS has invested in a web-based data search and retrieval tool, Data Finder. Its core functionality became operational this year, with the initial emphasis on the posting of metadata. Eventually, it should also become a mechanism for distribution of data. However, Data Finder will require modification to bring it into compliance with NSDI's Clearinghouse specifications. As we now understand it, there are two main differences between the Data Finder site and NSDI clearinghouse guidelines:

- Metadata: Data Finder uses the Minnesota metadata standard, which is a slightly refined version of the FGDC standard. This is a minor difference, as all essential fields of the FGDC are retained. We will

assess costs for correcting any discrepancies between Data Finder and NSDI stemming from different metadata standards.

- Indexing for search engines is the issue that keeps Data Finder from becoming a node on the NSDI search net. By NSDI standards, metadata are indexed according to z39.50 standard. The NSDI indexing method assures that the NSDI search engine of choice can perform multiple searches simultaneously across various sites like Data Finder. Currently, metadata at the Data Finder site have been assembled in a Microsoft Access database and completely indexed. This supports the desired functions at the site, but does not support inclusion into the grand network of NSDI metadata sites.

We will research these differences and determine all of the points of non-compliance. There may several ways to rectify the problem:

- A technological fix involving the use of commercial software as a gateway.
- Create a dual index by re-indexing the 70+ records at the Data Finder site so the ISITE search engine can read them.
- Switch site architecture and metadata retrieval to the NSDI indexing method.
- Other methods we may determine during research on this problem.

We will provide cost estimates and cost sharing breakdowns for each option we identify as feasible.

Though not part of the problem posed by the RFP, we are aware that the Land Management Information Center (LMIC) has been dealing with these issues as well. They would like to see a structure where they are the main node and entry point for Minnesota, in a network made up of other Minnesota nodes like Data Finder. Our report will aid LMIC as well as MetroGIS in this area.

2. Estimate Costs for Other Information Needs

The methods described above to determine the marginal cost of external standards compliance are also pertinent to the other information needs identified by MetroGIS. These information needs, some of which fall under the general Framework Theme definitions of NSDI, include existing land use, land use plans, rights to property, hydrology, census boundaries, addresses, land regulations, road networks, socioeconomic information, and parcel identifiers. In some cases, the data sources are the same as for the high priority needs (for instance, parcel identifiers are usually associated with parcel boundaries) or the data may be available from the same source as a higher priority item. In most cases, we can estimate the marginal costs of external standards compliance for these data sources from the same or similar investigation and modeling. Without going into the same level of detail, we will provide general estimates for the cost to address these additional needs.

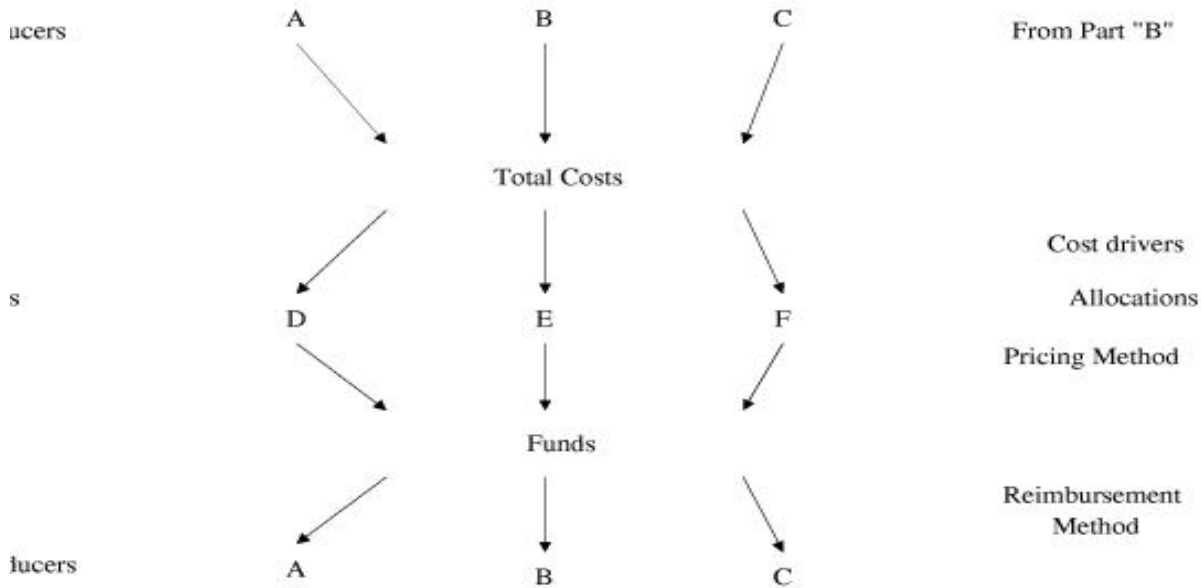
3. Other Costs of Coordination

Other costs of coordination are different in nature from those considered above. They will require a separate line of investigation during the interview and survey process with GIS practitioners. The MetroGIS Scope of Services document, adopted by the MetroGIS Policy Board on September 30, 1998, will provide the context for identifying costs of coordination in addition to data development, integration, and maintenance. We will also require input from MetroGIS about goals and plans for such coordination and services.

Technical Services

MetroGIS may need technical assistance from staff or consultants to help participants retrieve, translate, and use data. These needs will become at least partly apparent during the information gathering analysis accomplished to estimate the costs of coordination. Their costs will be included in the financial model. We will provide estimates of such costs, where possible, and ranges of likely costs in other cases.

MetroGIS Design of Fair-Share Financing Model



Coordination, Research, and Outreach

We will also estimate costs for a mature MetroGIS organization using any data that can be provided by MetroGIS, our professional judgment, and the experiences of other multi-jurisdictional consortia and governmental organizations in our professional practices. We assume that MetroGIS' past is not in itself adequate to serve as a guide to its future. Some examples of these costs may include:

- Supporting executive guidance activities (MetroGIS Policy Board, its Coordinating Committee, and the Advisory Teams)
- Maintaining Data Finder, supporting and maintaining multi-user data transfer facilities (ftp)
- Producing and maintaining metadata (if in excess of internal needs)
- Supporting a mechanism MetroGIS has prototyped to monitor user satisfaction with regional data sets
- Negotiating and administering contracts and agreements
- Communications and promotions costs (i.e., the MetroGIS web site and *Coordinates* newsletter, conferences, efforts to keep decision-makers informed about issues and opportunities, and efforts to extend the program to other participants)
- Providing technical assistance consistent with approved scope of services

Anticipated future activities include:

Identifying training and education needs and encouraging participation

- Research to meet common regional needs
- Promoting of collaborative funding of projects to meet regional needs

- Promoting exchange of applications and procedures
- Providing a repository of GIS human resources
- Marketing MetroGIS data and products

John Lunde of Sufficient Systems will manage the work for this task.

TASK C-1: DEVISE FAIR-SHARE FINANCING MODEL

MetroGIS is requesting development and design of a Fair-Share Financing Model to be used by its stakeholders. It is crucial that this model demonstrate the benefits of collaboration to all participants.

The objective of the Fair Share Financial Model is to ensure the long-term financial stability of MetroGIS, while keeping stable or reducing costs for data providers and data consumers. To achieve these objectives, constraints on fees and costs were developed by the MetroGIS Policy Board, Coordinating Committee, and county participants. These constraints limit the overall costs based on:

- 1) Equivalent Effort
- 2) Costs of Data Development
- 3) Costs of Data Distribution
- 4) Existing Business Functions
- 5) Forms of Contributions

In addition to these constraints on costs, the principles recommend that revenue, from sale of information in excess of the costs of delivery, may be considered as a source of revenue to support the ongoing financial stability of MetroGIS.

The primary input to this task will be the cost estimates developed in Task B. If available, findings of Will Craig's NSDI Benefits Grant project, "Evaluating the Effectiveness of MetroGIS" will also be used. Once the pricing to the data consuming organization is determined, then a model will be developed that reimburses the data producing organizations for the increased costs that they incur in providing an area wide GIS system.

1. Establishing Base Costs

To achieve the objectives outlined in the RFP, a cost of service study will be performed. This cost of service study will break out the cost to serve each type of organization based upon the costs of collaboration developed in Task B. Each type of cost will be analyzed to determine the appropriate cost-driver based upon cost-causation, that is, what causes the cost to occur. This will require separate analysis of each of the data producer organizations and the data consuming organizations they serve. The cost-drivers will be used to allocate costs to the organizations. Once the costs to serve are determined, then a fee structure will be established to recover the costs in a fair and equitable manner. The resulting fee structure will be compared with the fair-share principles established by the committee to ensure that it meets the established objectives.

The BRW Team will interview key MetroGIS personnel, policy board members, data producers, and data users (may be done as part of Task B). As part of the interview, we will review the overall concept and financial objectives of MetroGIS, the type of cost of service study to perform (cash basis, utility basis, marginal cost), and the strengths and weaknesses of each type. We will discuss each of the functions identified by MetroGIS as well as alternative allocation techniques that may be used to allocate the costs. We will also discuss the availability of accounting data and the implications that limited data may have on the cost of service study.

VK will use an activity-based approach to cost allocation. Cost-drivers will be developed based on why the costs were incurred. This will require us to research each function to determine the type of costs (i.e. labor, supplies, capital expenditure) that have been charged into the function and the primary benefit that the function provides to the participants. Cost-drivers will be developed based on the benefits to the

participants and used to allocate the costs to the various participants. Dr. Craig’s “Evaluating the Effectiveness of MetroGIS” will be used to assist us in development of the cost-drivers.

Based on our past experiences, we are aware that development and use of some cost drivers are relatively easy and others require the use of estimates, judgment, and experience. The large number of cost of service studies that VK has performed for electric, water, wastewater, fiber optic, and GIS utilities provides us with the experience to develop logical cost-drivers for Metro-GIS. VK will document any assumptions that are made in this process.

2. Develop Options

Based the cost to provide service we will develop pricing methodologies to recover the costs and revenue to be shared among the data producers. MetroGIS has identified three methods of cost recovery:

- Data Maintenance Supplement Fee: A data consuming organization would regularly contribute to a pool of funds that would be available to compensate the data producers and other organizations incurring special costs.
- Organization Category Subscription Fee: Assignment of costs to types of organizations, similar to customer classes. Each organization would then contribute an amount based on the number who participate.
- INDIVIDUAL ORGANIZATION SUBSCRIPTION FEE: ASSIGNMENT OF COSTS TO ORGANIZATIONS BASED ON OTHER FACTORS.
- Other options determined during the cost of service study.
-

Each pricing alternative will be reviewed to ensure it meets the evaluation criteria identified in the RFP.

It is important that the recommended pricing method be thoroughly reviewed, with the advantages and disadvantages identified for each type of participant. Collaborative efforts among governmental entities, although beneficial, can sometimes be viewed with a certain amount of skepticism by the participants. Our experience dealing with complex financial arrangements will assist us in developing a plan that is acceptable to participants. Virchow, Krause & Company, LLP will maintain its required independence in the development of the fair-share financial model.

Deliverables

The Fair-Share Financial Model will be presented in spreadsheet form. The model will include an input field for costs by data producer and an input field for the cost drivers. It will include an output field that will show the costs that are allocated to the various types of participants. This will allow MetroGIS to periodically update the Fair Share Financial Model.

The model will be documented in a report identifying significant assumptions used, how the model was developed, and recommendation on implementation. This report will be incorporated into the project final report.

Mark Beauchamp will manage Task C-1. As indicated in our proposed meeting schedule, Mr. Beauchamp will meet three times with the Steering Committee for direction and feedback. The three meetings will focus on 1) reviewing the conceptual/philosophical context of the financial model, including data, objectives, & pricing techniques; 2) reviewing the three alternative methods mentioned in the RFP, plus any others that might evolve from this study, and their assumptions; 3) presenting the recommended financial model.

TASK C-2: DEVELOP ORGANIZATIONAL STRUCTURE

To recommend the appropriate organizational structure for the MetroGIS, RRA will implement a study reviewing MetroGIS' organizational function, activities, and financing. The framework for this organizational structure evaluation will involve the following steps:

- Summarize the context for MetroGIS' structure. This activity includes a review of the mission, objectives, and challenges of the organization. This exercise will identify the critical elements necessary for MetroGIS' organizational structure.
- Research appropriate organizational alternatives for MetroGIS. There are many organizational models that could be considered for the MetroGIS structure. A limited number of options will be reviewed for their appropriateness. Organizational options could take a variety of forms, including an association, a joint powers board, and a single purpose unit of government. Each option would be evaluated and summarized based on the following information:
 - A general description of the alternative
 - Definition of organizational responsibilities
 - Intergovernmental relationships
 - Authority and powers of organization
 - Administration/staffing
 - Financing of organization
 - Decision making structure of organization
- Predict consequences for each structure alternative. The next step in the evaluation is to anticipate the issues that may arise under each organizational scenario. The areas that will be thoroughly reviewed are the legal considerations and the economic or cost implications associated with each option. Further, a review focusing on anticipated impacts on MetroGIS' service delivery will be conducted for each alternative considered.
- Examine each alternative in terms of criteria that is important to the organization. Prioritizing issues and concerns of the organization will further assist in identifying the criteria that should be applied to the considered options. Examples of criteria that may be reviewed:
 - Accountability
 - Efficiency
 - Political feasibility
 - Administrative capability
 - Equity
 - Service capacity
- Recommend an organizational/legal structure that would be most appropriate for the goals and objectives of MetroGIS. A synthesis of the evaluation will be analyzed, resulting in an appropriate recommendation for MetroGIS' organizational structure. This recommendation will be fully substantiated by the results of the evaluation, documentation of the advantages and disadvantages of each option, and clear rationale for choosing the recommended structure.

Trudy Richter will manage this task. In the initial stages of the task, RRA will explore a number of formal and informal governance structures, first by the consultant team sharing information and philosophical and other discussions they have had with the client that may be relevant to organizational structure issues. An initial work session to be held with the Steering Committee will be used to refine goals, roles and responsibilities of member organizations. In the same meeting, presentation and discussion of the breadth and variety of organizational options available to MetroGIS will be provided to the Committee. The Steering Committee will determine which three options should be developed further pursuant to the analysis/criteria laid out on page 31 of the

original proposal. Finally, an analysis of the three will be shared for discussion (second meeting) and a fully documented final recommendation made and implementation strategies identified (third meeting).

TASK D: DOCUMENT PROJECT RESULTS

MetroGIS has underscored the importance of project documentation by assigning it a separate task. Documentation provided by the BRW Team will provide for full disclosure of project findings to the client, to stakeholders, and to the funding agency. We will write it for completeness and clarity, with appropriate supporting tables and figures.

Three required components of documentation have been identified for this project:

1. Project Status Report

NSDI requires a project status or interim report. The agreement signed by NSDI and MetroGIS on September 11, 1998 indicates this report is due six months from the date of award. At the Grant Recipient Kick-off meeting in Charleston, SC, September 22-24, the report was tentatively scheduled for May 18, 1999. The BRW Team's Interim Report will be submitted to MetroGIS by April 20, 1999.

Task Managers for Tasks A, B, and C-2 will write separate sections of the Interim Report, documenting all findings to date. The Project Manager will edit these to a report format that will be determined in consultation with MetroGIS.

To keep MetroGIS informed of progress on an ongoing basis, we will prepare monthly progress reports. Task Managers will write separate sections of these for all ongoing tasks. The Project Manager will collate and edit these, then add any additional information that may be relevant. Report content will include descriptions of tasks accomplished, activities in progress, and activities anticipated in the period following each report. Describing anticipated activities and accomplishments will establish a mechanism for measuring progress with respect to project goals, the original time schedule, and any adjustments made in goals or schedules as the project proceeds.

2. Presentation of Draft Final Report

Upon completion of tasks A, B, and C, the BRW Team will prepare a draft final report. This report will be consistent with the NSDI reporting requirements and will document all of the activities, findings, and results of this project. The BRW Team Project Manager will be directly responsible for the final report. She will ensure that all NSDI reporting requirements are met, that the report contents are complete and accurate, and that the writing style is clear, concise, and consistent throughout. Where possible, information will be summarized in tables, flow charts, maps, or other figures for efficiency and clarity of communication.

Report contents will include:

- Executive summary
- Introduction
- Background
 - Review the goals and accomplishments of MetroGIS since its inception. Particular emphasis will be placed on priority information needs of MetroGIS stakeholders, as identified in May 1997, how these needs are being met under interim agreements, and the status and capabilities of Data Finder.
- NSDI Framework
 - Introduce the history and goals of NSDI, and outline the Framework. Identify how current practice falls short of meeting NSDI framework functions and goals. Clarify appropriate roles for MetroGIS stakeholders as data producers and integrators with respect to the NSDI Framework functions identified. Evaluate how these roles contribute to identified information needs.
- Costs of Collaboration

Identify the costs of collaboration for data development and maintenance, as well as the additional costs of providing ongoing data sharing mechanisms as envisioned by this project. Summarize the net value of collaboration to potential participants in balance sheets. Clarify the costs and benefits of NSDI framework functions in the same balance sheets. Provide a working digital copy of the Task B and C financial models in spread sheet form.

- Combined Use/Integration Needs
We will create an appendix documenting datasets and/or GIS practices that data custodians must improve to meet the needs of MetroGIS or NSDI for combined use or integration. This will not represent an exhaustive study of data integration issues, but will document information we collect in the course of other project tasks.
- Fair-Share Financial Models and Organization Structures
Identify the financial and organizational issues that must be resolved for MetroGIS and the NSDI framework model to succeed and suggest strategies for addressing these issues. Present specific guidelines for equitable allocation of MetroGIS costs among its stakeholders.
- Summary and Recommendations
Summarize the findings of the study, including the pros and cons of any alternative models presented. Identify and prioritize topics that may require further research.
- Conclusion

Progress reports will be the foundation for the development of the draft final report. These will be assembled and organized by the BRW Team Project Manager. Additional information required to fulfill the reporting requirements will be requested from the task managers. The BRW Team project manager will then write introductory and summary material and edit the report for style. Task managers will review the edited document, make suggestions, and submit any additional material needed to complete the report. BRW cartographic technicians and graphics staff will prepare figures. The BRW Team Project Manager will be responsible for the final edit.

On July 6, 1999, the BRW Team will submit an unbound original and eight copies of this draft report to the MetroGIS Project Manager for review and comment by the Steering Committee. We request that the Committee reviews this draft and is prepared with their comments for discussion on July 15, 1999. Comments received from the Steering Committee on that date will be incorporated into a revised draft report for presentation to a forum of MetroGIS stakeholders. BRW will provide XX (number to be negotiated with MetroGIS) copies of the revised report for this forum on July 23, 1999. We suggest that the forum take place between July 26 and July 30, 1999, to keep the project on schedule. The Project Manager for the BRW Team will attend the forum. BRW would appreciate receiving comments and suggested revisions from the forum by August 3, 1999. The Project Manager will discuss these with the Steering Committee on August 5, 1999, and incorporate them into the Final Report to be submitted to the Steering Committee August 16, 1999.

Submittal of Final Report

Upon receipt of the comments collected from the forum, the BRW Team will incorporate them into a final report that fully documents activities of the MetroGIS NSDI Framework Demonstration Grant Project. After final review by the BRW Team project manager, this report will be submitted to the MetroGIS Project Manager for acceptance. Within two weeks of this acceptance, a digital copy in MSWord/Office97 format, two bound hard copies, and an original unbound hard copy will be delivered.

Elizabeth Hobbs, of BRW, will be Task Manager for Task D.

WORK SCHEDULE

We assume that the schedule provided in Attachment 3 to the Scope of Work applies to activities undertaken by MetroGIS. Our proposed schedule is illustrated on the following page, with specific dates detailed in the table below. Our schedule shows several of the project tasks continuing past the August 15 deadline. To meet the deadline for completion of all consultant tasks, we have adjusted the start and end dates of most project tasks. We also show more tasks running concurrently. To provide adequate time for development of the costs estimates and cost model, we have proposed a very aggressive schedule for preparation and review of the final report. Meeting this schedule will require full cooperation by MetroGIS. To insure this cooperation, all of the start and end dates, as well as the dates for deliverables, are negotiable at the initiation of the project along with the scope of work.

Our revised schedule is detailed in the table below.

Task	Start date	Completion date
Task A: Roles and Functions	October 1, 1998	February 19, 1999
A1: Jurisdictional Boundaries	October 1, 1998	November 25, 1998
A2: Addresses	October 1, 1998	November 25, 1998
A3: Parcels	November 1, 1998	February 19, 1998
Task B: Estimate Costs of Collaboration	November 15, 1998	April 30, 1999
B1: Jurisdictional Boundaries	November 15, 1998	February 19, 1999
B2: Addresses and Streets	November 15, 1998	February 19, 1999
B3: Parcels	January 1, 1999	April 30, 1999
B4: Generalize to Other Needs	March 1, 1999	April 30, 1999
Task C: Design Fair-Share Model	February 1, 1999	June 30, 1999
C1: Cost model	May 1, 1999	June 30, 1999
C2: Organization Structure	February 1, 1999	June 30, 1999
Task D: Project Reports	May 1, 1999	August 15, 1999
D1: Interim Report	April 1, 1999	April 20, 1999
D2: Final Technical Report	June 1, 1999	August 15, 1999
Project Status Reports	November 6, 1998	Monthly
Submit draft final report for review & comment by Project Steering Committee		July 6, 1999
Submit revised draft report for comment at forum of stakeholders		July 23, 1999
Submit final report		August 16, 1999

APPENDIX D

Scope of Work – Phase 2 *MetroGIS Business Plan*

Timeline: November 1, 1999 through June 30, 2000, with the understanding that the target is for Policy Board adoption of some or all of the Business Plan components is March 29, 2000.

Services: To develop a comprehensive Business Plan for MetroGIS, the following topics will be studied and included in the Business Plan:

- 1) Integrate information developed to date in Benefits Study and reaffirm MetroGIS goals and objectives consistent with Benefits Study, Peer Review, various committees and Policy Board. At the same time, distinguish MetroGIS from other organizations and their functions e.g. GIS, LIS, LMIC and Governor's Council.
- 2) Address management considerations of coordination function
 - Evaluate the impact on cost to support each of the 22 preferred MetroGIS functions
 - Integrate the Benefit Study and matrix of preferred functions
 - Address management/oversight functions of data development
 - Evaluate the impact on cost using Peer Review and Benefits Study on continuing functions where consensus remains in providing the coordination function of MetroGIS
 - Specify timing and development of coordination services
 - Propose staffing and related administrative support plans/ outsourcing needs as coordination function is phased-in
- 3) Address policy considerations of coordination function
 - Role of Metropolitan Council
 - Need for separate entity, decisions points and timeline for appropriate governance structure
 - Reporting function and budget
- 4) Formalize a policy and process for the development of regional datasets by deferring to small groups of interested parties for data development (*differentiate between data development v. design*)
- 5) Reach consensus on a data development timing plan taking into consideration MetroGIS activities to define desired regional data specifications and appropriate roles and responsibilities for primary and regional custodians.
- 6) Identify financing opportunities/joint efforts for data development
- 7) Modify the subscription fee program proposed in the MetroGIS Fair-Share Financial Model and identify decisions needed and timeframe for implementation. Issues previously raised for discussion that will be considered when modifying the Model include:
 - Identifying perceived benefits
 - Role of Collar Counties
 - Educational process needed
 - Privatizing
 - Equity issues
- 8) Review the need to modify data sharing agreements to meet Business Plan objectives

- 9) Identify the need for licenses and limitations resulting from intellectual property rights and successful implementation of a Business Plan
- 10) Non-Government Sub Committee Coordination and private participation
 - Timing of participation
 - Appropriate roles
 - Cost/revenue
- 11) Identify survey questions to obtain from potential users information on current investment and on-going costs of GIS systems to their organizations. Actual survey conducted and results reported by MetroGIS, not consultant team.
- 12) Final Report – Business Plan

Meetings:

December 1999 –	Policy Advisory Task 1 and Start Task 2
January 2000 –	Policy Advisory, Tasks 3 and 4 Board, Tasks 1 through 4
February 2000 –	Policy Advisory and Coordinating Committee, Tasks 5, 6 and 7
February 2000 –	Policy Advisory and Coordinating Committee, Tasks 8, 9 and 10
March 2000 –	Business Plan Presentation includes Tasks 12, Policy Advisory and Board (including Summaries of Task 5 and 10)(Mark at Policy Advisory only)

APPENDIX E

MetroGIS Priority Information Needs

(Endorsed by the MetroGIS Policy Board on May 28, 1997)

- Rank: Information Need Statement (*I need to know...*) _____ -
- 1... the boundaries and characteristics of a specified jurisdiction (*ex: city, school district, county, police and fire districts*). (**Jurisdictional boundaries**)
 - 2.... the street addresses for specified locations. (**Street addresses**)
 - 3... about land use or development plans that have been officially adopted by public bodies. (**Land use plans**)
 - 4... who has rights to a property, including ownership, leases, easements, right-of-way (**Rights to property**)
 - 5... the boundaries and location of a specified parcel. (**Parcel boundaries**)
 - 6... the locations and characteristics of water features (*ex: lakes, wetlands, floodplains, aquifers, watersheds*). (**Lakes, wetlands, etc.**)
 - 7.... how a piece of land is being used, including whether or not it is vacant. (**Land use, existing**)
 - 8... the boundaries and characteristics of census areas (*ex: census blocks, block groups, tracts*). (**Census boundaries**)
 - 9... where people live and how to contact them. (**Where people live**)
 - 10... the regulations that affect the use of a piece of land, such as zoning. (**Land Regulations**)
 - 11... the locations and characteristics of roads/highways. (**Highway/road networks**)
 - 12... the socioeconomic characteristics of an area's population (*ex: census tract, count, city*). (**Socioeconomic characteristics of areas**)
 - 13... a unique identifying attribute of a land parcel, such as parcel ID. (**Parcel identifiers**)

Notes:

1. Refer to www.metrogis.org for an explanation of the consensus-based business object modeling process and survey methodology used to identify these priority information needs. These are 13 of 87 mutually exclusive common information needs identified. The process will be repeated to identify subsequent priorities.
 2. A consensus-based and repeatable process, developed by MetroGIS, is used to identify appropriate sources of data to answer each of these priority information needs. The process was prototyped June through October 1997 with the Jurisdictional Boundaries Information Need.
 3. In some cases, there is a many-to-one relationship between information needs and datasets that address the information need. MetroGIS has developed a consensus-based to identify and endorse as MetroGIS policy desired specifications for regional dataset solutions, roles and responsibilities for primary and regional data custodians, and assignment of primary and regional custodians. A matrix is presented in Appendix H that outlines the status of work to address each of these 13 priority information needs.
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APPENDIX F

Fair-Share Financial Model Allocators

EXCERPTS

FREQUENTLY ASKED QUESTIONS HANDOUT

MetroGIS Fair-Share Financial Model

September 16, 1999 Peer Review Forum

1. **How will equity in perceived benefit be achieved among participants?**

Reply: In 1997 MetroGIS conducted a survey to identify its priority business information needs. Over 125 representatives of broad professional expertise and organizational affiliation participated. Each was asked to rate, on a scale of 1 to 5, each of the candidate 87 business information needs (included in packet of materials) that has been identified in an earlier component of the study on the basis of: 1) how important is this information to carrying out my organization's responsibilities? and 2) how dependent is my organization on others for this information? These ratings, combined and summarized by organizational class, were used in the fair-share financial model as the basis to mathematically distinguish perceived benefit. Subsequent surveys are proposed on a regular basis to refine this methodology and to continue to improve the model's ability to fairly allocate costs on the basis of perceived need. For local government units, equity within each organizational class is achieved by an allocation factor that uses number of parcels within each jurisdiction relative to the total number of parcels within that organizational class.

2. **How are differences in scale needs incorporated into the model?**

Reply: The proposed model incorporates several "allocation factors" to derive a fair-share cost for each organizational class. Foremost, the model is driven by "perceived benefit" that each user group would receive from each of the proposed regional data solutions. This "perceived need" factor was derived from MetroGIS' 1997 Informational Needs Survey. The allocation formula also incorporates the estimated cost of each regional data solution; thus organizational classes that benefit from the more expensive solutions would have a proportionately higher fair-share fee. A scale (resolution) factor was also used to distinguish among varying data resolution needs among the organizational classes. All local and metropolitan government organizations have been assigned the factor. The model assumes a lower scale factor for state and federal governments, which reduces their relative share of the costs.

3. **How were the proposed subscription fees estimated?**

Reply: The MetroGIS Fair-Share Financial Model and Organizational Structure Project was guided by several policy assumptions endorsed by the MetroGIS Policy Board (in packet). A consultant team was retained with the assistance of a grant through the National Spatial Data Infrastructure (NSDI) program to: 1) identify roles and responsibilities necessary to accomplish each of the functions core to MetroGIS and to develop and maintain regional data solutions to each of the priority MetroGIS Business Information Needs. 2) estimate the costs to carry out the identified roles and responsibilities, 3) design a method to fairly distribute these costs among the beneficiaries, and 4) identify an appropriate legal structure for MetroGIS. The MetroGIS Policy Advisory Team met with the consultant team on a monthly basis throughout the yearlong project to provide direction and feedback. Information about the consultant team members is available upon request. The final project report will include detailed explanations of each of the component tasks and results.

4. Why is a “subscription fee” proposed?

Reply: The value of participating in MetroGIS will vary from organization to organization. The “subscription fee” concept was agreed upon to inherently recognize that only those who benefit and choose to participate should be looked to to support MetroGIS. This concept also permits distinctions to be made between the various organizational classes to account for varied benefit received. Benefit received, as perceived by a prospective participant, is a fundamental driver of the model. Participants also may satisfy their proposed “subscription fee” by contributing funds, data, people and equipment, or any combination thereof when consistent with the objectives of MetroGIS.

5. What data elements are included in the proposed subscription fee?

Reply: In May 1997 the MetroGIS Policy Board endorsed thirteen priority information needs for MetroGIS. These thirteen were at the top of a list of 87. Others on the list would be considered as MetroGIS matures. The proposed subscription fee includes development and maintenance of regional data solutions for eleven of the thirteen priority needs. Regional solutions for “Socio-economic characteristics of areas” and “Where do people live” are not included at this time. The North Metro I-35W Corridor Coalition and its consultant team from Insight Mapping and Demographics will, however, continue their work to develop and test methodologies applicable to these two priority information needs.

6. What services are included in the proposed subscription fee?

Reply: In September 1998 the MetroGIS Policy Board endorsed 19 functions it believed to be “core” to a mature operation and 3 others it believed “desirable” if adequate funding could be secured. The proposed subscription fee includes cost estimates to support all of these functions. Among the core services is the support and continued development of MetroGIS Data Finder www.metrogis.org. Data Finder is an Internet-based, data search, viewing, and retrieval tool financed by the Metropolitan Council in its role to facilitate the definitional phase of MetroGIS.

7. If my organization is already receiving the data we need from a county(ies) what is the advance to joining MetroGIS?

Reply: The majority of benefit from MetroGIS is assumed to be received by organizations that rely upon data for more than one county or which is maintained by more than one organization for a particular priority information need. In such cases, the primary benefit from MetroGIS’ proposed regional data solutions would be to minimize your need to internalize the cost of integrating/merging data received from the two or more outside sources. Other benefits would include access to services designed to improve data sharing efficiency.

8. How many organizations must participate to achieve the proposed subscription fees?

Reply: The total will vary depending upon the number of parcels contained within local governmental organizational classes the elect to participate. The current model assumes at least 50 local government units will participate and that the city, school and watershed participants will each account for 35 percent of the parcels in the region (274,000+/-). Fewer organizations would be needed if they contained higher counts of parcels and conversely more organizations would be needed if they accounted for fewer parcels. The model does not use parcels as a driver for agencies within the federal, state, and metropolitan organizational classes. A fee is set for the class and one agency or many within each of these classes could pay the proposed fair-share fee. The subscription fee for counties would be zeroed out by their contribution of geospatial data relevant to priority MetroGIS information needs. A detailed Business and Marketing Plan would be prepared to insure these thresholds would be attained. The proposed fees also assume MetroGIS would receive \$125,000 per year for the first four years from grants or partners other than those government units that serve the metro area.

9. How will the fees proposed for federal, state, and metropolitan organization classes be distributed among the individual agencies within these classes?

Reply: The agencies within the federal, state and metropolitan organizational classes would agree upon a fair distribution of the total class fee among themselves. As explained in Item #9, the fee for local government organizational classes (cities, watershed districts and school districts) would be allocated among the individual participants on the basis of number of parcels within each jurisdiction as a percent of the whole.

10. What is going to be expected of the participants and will participation increase my workload?

Reply: A fundamental premise of MetroGIS is that no organization will be asked to undertake any activity for MetroGIS that exceeds their internal business needs without appropriate compensation. Stakeholders who accept responsibility for MetroGIS support tasks beyond their internal business needs would receive compensation from funds raised through the proposed subscription fee program. However, staff and policy board members from participant organizations will be expected to participate, without compensation, as the need arises in the coordination and decision making activities of MetroGIS to insure its work is representative of the whole. Local government staff will also be expected to actively participate in county-based GIS users forums. Regular forums, at which local government officials share knowledge and discuss GIS-related issues and opportunities they have in common, are fundamental to an effective and responsive MetroGIS. Given the importance of these local forums, each member organization would receive a credit against their MetroGIS subscription fee. The current proposal is to grant a \$1000 credit.

11. Will the fee structure include flexibility to pay once and receive no updates, receive credit for past work with regional significance, etc.?

Reply: Specific policy in this area has not been decided and would be a topic of the proposed Business Plan. With that said, MetroGIS stakeholders include a wide variety of interests and experience with GIS technology. The subscription fee rules must account for and properly address differences among prospective participant to fully achieve the objectives of MetroGIS. The proposed Business Plan would be the first step to address these differences. Once MetroGIS is fully operational it would be the Policy Board's responsibility to continue to insure these differences are adequately addressed by MetroGIS policy.

APPENDIX G

SUMMARY^{1&9} IN-KIND MATCH EXPENSES 1999 NSDI FRAMEWORK DEMONSTRATION GRANT *MetroGIS Fair-Share Financial Model Project*

Support Expenses	Major Project Components								Subtotal	Total
	Project Administration ²	NSDI Reporting ³	Non-Data Tasks ⁴		Priority Data Tasks ⁵					
Time⁶										
MetroGIS Staff Coordinator		\$26,322		\$5,013		\$12,181		\$2,057		\$45,573
Sept 98-Dec98	\$3,551		\$1,446		\$1,024		\$324		\$6,345	
Jan 99-Jun 99	\$9,622		\$1,522		\$3,550		\$1,733		\$16,427	
Jul-99-Dec99	\$13,149		\$1,615		\$7,607		\$0		\$22,371	
MetroGIS Technical Assistant		\$3,944		\$27		\$7,664		\$19,374		\$31,009
Sept 98-Dec98	\$0		\$0		\$951		\$9,057		\$10,008	
Jan 99-Jun 99	\$3,766		\$27		\$281		\$10,015		\$14,089	
Jul-99-Dec99	\$178		\$0		\$6,432		\$302		\$6,912	
Other Support Staff		\$9,765		\$153		\$2,109		\$9,480		\$21,507
Sept 98-Dec98	\$4,449		\$49		\$221		\$6,997		\$11,716	
Jan 99-Jun 99	\$4,939		\$74		\$126		\$2,483		\$7,622	
Jul-99-Dec99	\$377		\$13		\$1,762		\$0		\$2,152	
Project Steering Committee		\$3,425		\$0		\$9,100		\$0		\$12,525
Sept 98-Dec98	\$2,625		\$0		\$1,050		\$0		\$3,675	
Jan 99-Jun 99	\$800		\$0		\$3,650		\$0		\$4,450	
Jul-99-Dec99	\$0		\$0		\$4,400		\$0		\$4,400	
Technical Advisory Team		\$0		\$0		\$0		\$5,889		\$5,889
Sept 98-Dec98	\$0		\$0		\$0		\$800		\$800	
Jan 99-Jun 99	\$0		\$0		\$0		\$4,089		\$4,089	
Jul-99-Dec99	\$0		\$0		\$0		\$1,000		\$1,000	
Special Workgroups / Consultation		\$7,950		\$200		\$16,345		\$20,967		\$45,462
Sept 98-Dec98	\$0		\$0		\$745		\$8,925		\$9,670	
Jan 99-Jun 99	\$6,625		\$0		\$0		\$11,842		\$18,467	
Jul-99-Dec99	\$1,325		\$200		\$15,600		\$200		\$17,325	
Coordinating Committee⁷		\$6,400		\$0		\$0		\$0		\$6,400
Sept 98-Dec98	\$0		\$0		\$0		\$0		\$0	
Jan 99-Jun 99	\$3,700		\$0		\$0		\$0		\$3,700	
Jul-99-Dec99	\$2,700		\$0		\$0		\$0		\$2,700	
Policy Board⁷		\$3,571		\$0		\$900		\$0		\$4,471
Sept 98-Dec98	\$0		\$0		\$900		\$0		\$900	
Jan 99-Jun 99	\$1,446		\$0		\$0		\$0		\$1,446	
Jul-99-Dec99	\$2,125		\$0		\$0		\$0		\$2,125	
Subtotal		\$61,377		\$4,946		\$48,299		\$57,767		\$172,836
Out-of-Pocket Expenses										
Sept 98-Dec98	\$2,018		\$0		\$1,115		\$1,912		\$5,045	
Jan 99-Jun 99	\$5,918		\$0		\$3,198		\$1,455		\$10,571	
Jul-99-Dec99 ⁸	\$1,409		\$40		\$6,549		\$0		\$7,998	
Subtotal		\$9,345		\$40		\$10,862		\$3,367		\$23,614
Grand Total		\$70,722		\$4,986		\$59,161		\$61,134		\$196,450

Notes:

- ¹ A cost tracking spreadsheet was maintained throughout the duration of the study. It includes detailed hour and out of pocket expenditure records and it is available upon request. Expenses incurred to prepare the application and select a consultant team are not included. The later equate to significant additional volunteer hours plus significant hours of the MetroGIS Staff Coordinator's time adding up to several thousand dollars.
- ² These costs include interaction with the consultant team, support of team and committee, project management, etc.
- ³ These costs include preparation of reports and **non-travel expenses** for the Sept 98 Kick off Workshop, Interim Report, and Final Presentation. The costs for the final presentation in Mar 00 are not included.
- ⁴ Non data components comprised roles and responsibilities, financial model and organizational structure.
- ⁵ During the grant period, work was proceeding on several MetroGIS priority information needs but these only reflect the on the four that correspond directly Framework Themes: Jurisdictional Boundaries, Parcels, Street Networks and Hydrography.
- ⁶ Staff Coordinator, Technical Coordinator, and Support Staff time is based on actual salary. A flat rate of \$50/hour was used for Committee members, which includes all travel and misc.expenses.
- ⁷ The agendas typically included non-data and data topics, therefore, the time is reported as a composite.
- ⁸ A \$60,000 consultant contract for Phase 2 of the Fair-Share Financial Project is **not** included. (Oct 99 Non-Data Component)
- ⁹ These in-kind match expenses are in addition to grant reimburseable expenses of \$90,000 to primary consultant team, \$5,900 for other out-of-pocket support, and \$4,100 for travel to NSDI reporting functions (9/98 Kick Off in Charleston S.C., 5/99 Interim Report in Portland OR, and estimated expenses for the 3/00 Final Presentation in Washington D.C.)

APPENDIX H

Progress Addressing Priority Information Needs

<i>Specification and Dataset Completion Schedule</i>			
		Data Specifications/ Guidelines	Regional Dataset
Number	Priority Information Need	Complete	Complete
1a	County Boundaries	May-97	Jul-97
1b	MCD Boundaries	May-97	Jul-97
2	Street Address (TLG)	Dec-97	Oct-97
8	Census Boundaries	May-99	Dec-99
13	Parcel Identifiers	Jan-99	FTBD
5a	Parcel boundaries	Apr-99	FTBD
5b	Parcel attributes	In-progress	FTBD
6	Lakes, wetlands, etc.	In-progress	DNR, MMCD
3a	Land use plans (designations)	In-progress	FTBD
3b	Land use plans (polygons)	In-progress	FTBD
7	Land use, existing	In-progress	FTBD
1c	School District Boundaries	Jan-00	FTBD
1d	Watershed District Boundaries	Mar-00	FTBD
12	Socioeconomic characteristics	Jun-00	FTBD
4	Rights to Property	Aug-00	FTBD
9	Where people live	Nov-00	FTBD
10	Land Regulations	Jan-01	FTBD
11	Highway/Road Networks	Mar-01	FTBD
			*FTBD - Funding to be determined