



CONSULTANT AGREEMENT

THIS AGREEMENT is made and entered into this 7th day of July, 2015, by and between the **CITY OF BILLINGS, MONTANA**, a municipal corporation organized and existing under the laws of the State of Montana, P.O. Box 1178, Billings, Montana 59103, hereinafter referred to as “**CITY**,” and Geodata Services, Inc., of Missoula, Montana, hereinafter referred to as “**CONSULTANT**.”

WITNESSETH:

WHEREAS, the **CITY** proposes to develop long range growth scenarios and desires to hire **CONSULTANT** as an independent contractor to perform the services as described in the Scope of Work attached hereto as Exhibit “A” and by this reference made a part hereof.

WHEREAS, the **CITY** has authority to contract for such services, and;

WHEREAS, the **CONSULTANT** represents that he/she is fully qualified to perform such services personally and is in compliance with the Montana statutes relating to the provisions of such services.

NOW THEREFORE, in consideration of the mutual covenants and agreements herein contained, the receipt and sufficiency whereof being hereby acknowledged, the parties hereto agree as follows:

1. **PURPOSE:** **CITY** agrees to hire **CONSULTANT** as an independent contractor to perform the services as described in the Scope of Work attached hereto as Exhibit “A” and by this reference made a part hereof. In performing these services, the **CONSULTANT** shall at all times comply with all federal, state and local statutes, rules and ordinances applicable. These services and all duties incidental or necessary therefore, shall be performed diligently and completely and in accordance with professional standards of conduct and performance.

2. **TERM:** This **AGREEMENT** shall be for a period of six (6) months, from the execution of this **AGREEMENT**. This **AGREEMENT** may be extended for six (6) months by mutual agreement of both parties, in writing, thirty (30) days prior to termination.



3. **PAYMENT:** In consideration of the services provided by the **CONSULTANT** under this **AGREEMENT**, the **CITY** agrees to pay **CONSULTANT** a price not to exceed \$20,000.00.

In the event scope of work issues arise, the **CONSULTANT** shall immediately discuss them with the Project Manager for the **CITY**. It is understood that the Consultant will not perform any work that the **CITY** deems outside the scope prior to receiving written approval from the **CITY**, and at a rate agreed upon by both parties. Any payment for work not agreed upon by the **CITY** shall be denied.

4. **INDEPENDENT CONTRACTOR STATUS:** The parties agree that **CONSULTANT** is an independent Contractor for purposes of this **AGREEMENT** and is not to be considered an employee of the **CITY** for any purpose. **CONSULTANT** is not subject to the terms and provisions of the **CITY**'s personnel policies handbook and may not be considered a **CITY** employee for workers' compensation or any other purpose. **CONSULTANT** is not authorized to represent the **CITY** or otherwise bind the **CITY** in any dealings between **CONSULTANT** and any third parties.

5. **INDEMNITY AND INSURANCE:**

- A. The Consultant agrees to indemnify, defend and save City, its officers, agents and employees harmless from any and all losses, damage and liability occasioned by, growing out of, or in any way arising or resulting from any intentional or negligent act on the part of Consultant or its agents or employees.
- B. The Consultant shall not indemnify, defend, save and hold Billings harmless from claims, causes of action, lawsuits, damages, judgments, liabilities, and litigation costs and expenses or attorneys' fees and costs arising from wrongful or negligent acts, error or omission solely of Billings occurring during the course of or as a result of the performance of the **AGREEMENT**.
- C. Where claims, lawsuits or liability, including attorneys' fees and costs arise from wrongful or negligent act of both Billings and the Consultant, the Consultant shall indemnify, defend, save, and hold Billings harmless from only that portion of claims, causes of action, lawsuits, damages, judgments, liabilities, and litigation costs and expenses including attorneys' fees and costs, which result from the Consultant's or any subcontractor's wrongful or negligent acts occurring as a result from the Consultant's performance pursuant to this **AGREEMENT**.
- D. The **CONSULTANT** shall maintain in good standing the insurance described in this Section. Before rendering any services under this **AGREEMENT**, the **CONSULTANT** shall furnish the **CITY** with proof of insurance in accordance with this Section.
- E.

The **CONSULTANT** shall provide the following insurance:



1. Workers' compensation and employer's liability coverage as required by Montana law.
2. Commercial general liability, including contractual and personal injury coverage's -- \$1,500,000 per occurrence.
3. Automobile liability -- \$1,500,000 per accident.
4. Professional liability in the amount of \$1,500,000 per claim.

Each policy of insurance required by this Section shall provide for no less than 30 days' advance written notice to the **CITY** prior to cancellation.

The **CITY** shall be listed as an additional insured on all policies except Professional Liability and Worker's Compensation Policies.

In addition, all policies except Professional Liability and Worker's Compensation shall contain a waiver of subrogation against Billings.

CONSULTANT shall comply with the applicable requirements of the Workers' Compensation Act, Title 39, Chapter 71, MCA, and the Occupational Disease Act of Montana, Title 39, Chapter 71, MCA. **CONSULTANT** shall maintain workers' compensation insurance coverage for all members and employees of **CONSULTANT's** business, except for those members who are exempted as independent **CONSULTANTS** under the provisions of §39-71-401, MCA.

CONSULTANT shall furnish **CITY** with copies showing one of the following: (1) proof of registration as a registered Contractor under Title 39, Chapter 9, MCA; (2) a binder for workers' compensation coverage by an insurer licensed and authorized to provide workers' compensation insurance in the State of Montana; or (3) proof of exemption from workers' compensation granted by law for independent Contractors.

6. AGREEMENTS OF CONSULTANT: As an inducement to the execution of this **AGREEMENT** by the **CITY** and in consideration of the agreements to be performed by the **CITY**, the **CONSULTANT** agrees that:

A. Qualifications

The **CONSULTANT** is qualified to perform the services to be furnished under this **AGREEMENT** and is permitted by law to perform such services, and all personnel engaged in the work shall be qualified and so permitted to do the work they perform.

B. Solicitation of Agreement

The **CONSULTANT** has not employed any person to solicit this **AGREEMENT** and has not made, and will not make, any payment or any agreement for the payment of any commission, percentage, brokerage, contingent fee, or other compensation in connection with the procurement of this **AGREEMENT**.



C. Facilities and Personnel

The **CONSULTANT** has and will continue to have proper facilities and personnel to perform the services and work agreed to be performed.

D. Subcontracting

None of the work or services covered by this **AGREEMENT** shall be subcontracted without the prior approval of the **CITY**.

E. Affidavits of Compliance

The **CONSULTANT** will, if requested by the **CITY**, furnish the **CITY** affidavits certifying compliance with the provisions of this Section.

7. **AGREEMENTS OF CITY:**

- A. To furnish all labor, materials, equipment, supplies, and incidentals necessary to conduct and complete the City of Billings' portion of the project as designated in the scope of work.
- B. Name a Project Manager who shall be the liaison between the Consultant and the City of Billings. For this project, the Project Manager for **CONSULTANT** designated is Kenneth Wall and the Project Manager for **CITY** designated is Candi Millar, Director, Planning and Community Services Department.

8. **NONDISCRIMINATION:**

- A. The **CONSULTANT** will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, age, sex, or marital status or who is a "qualified individual with a disability" (as that phrase is defined in the Americans With Disabilities Act of 1990). The **CONSULTANT** will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, or mental or physical impairment/disability. Such action shall include, without limitation, employment, upgrading, demotion or transfer, recruitment or recruiting advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The **CONSULTANT** agrees to post, in conspicuous places available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.
- B. The **CONSULTANT** shall state, in all solicitations or advertisements for employees to work on jobs, that all qualified applicants will receive equal consideration for employment without regard to race, color, religion, national



origin, ancestry, age, sex or marital status, or mental or physical impairment/disability.

- C. The **CONSULTANT** shall comply with any and all reporting requirements that may apply to it that the **CITY** may establish by regulation.
 - D. The **CONSULTANT** shall include the provisions of Subsections A through C of this Section in every subcontract or purchase order under this **AGREEMENT**, so as to be binding upon every such sub-consultant or vendor of the **CONSULTANT** under this **AGREEMENT**.
 - E. The **CONSULTANT** shall comply with all applicable federal, state, and city laws concerning the prohibition of discrimination.
9. **PERMITS, LAWS, AND TAXES:** The **CONSULTANT** shall acquire and maintain in good standing all permits, licenses and other entitlements necessary to its performance under this **AGREEMENT**. All actions taken by the **CONSULTANT** under this **AGREEMENT** shall comply with all applicable statutes, ordinances, rules and regulations. The **CONSULTANT** shall pay all taxes pertaining to its performance under this **AGREEMENT**.
10. **NONWAIVER:** The failure of either party at any time to enforce a provision of this **AGREEMENT** shall in no way constitute a waiver of the provision, nor in any way affect the validity of this **AGREEMENT** or any part hereof, or the right of such party thereafter to enforce each and every provision hereof.
11. **DECLARATION OF NO FINANCIAL INTEREST:** The **CONSULTANT** hereby declares that he does not have any interest (including that of real estate agent or broker), direct or indirect, present or prospective, in any property described in Section 1 or in its sale, or any other interest, whether or not in connection with the property, which would conflict in any manner or degree with the performance of the services and the submission of impartial reports, and has not employed and will not employ, in connection with the services to be furnished under this **AGREEMENT**, any person having any such interest. Until the property is acquired by the **CITY** or excluded from its project by resolution of its governing body, the **CONSULTANT** and any employees of the **CONSULTANT**, so long as they are employed by the **CONSULTANT**, will not acquire any such interests and will not, for their own account or for other than the **CITY**, negotiate for any of the property, perform services in connection with the property, or testify voluntarily as a witness in a condemnation or other proceeding with respect to the property.
12. **SUCCESSORS AND ASSIGNS:** This **AGREEMENT** and all of the covenants hereof shall inure to the benefit of and be binding upon the **CITY** and the **CONSULTANT** respectively and his partners, successors, assigns, and legal representatives. Neither the **CITY** nor the **CONSULTANT** shall have the right



to assign, transfer, or sublet his interest or obligations hereunder without written consent of the other party.

13. **CHANGES IN WORK:** Any change in the scope of **CONSULTANT'S** services as stated in this **AGREEMENT** for whatever reason, will be negotiated between the **CITY** and the **CONSULTANT** and an amendment to this **AGREEMENT** will be issued with the appropriate change of services and **AGREEMENT** fee noted.
14. **LEGAL RELATIONS:** The **CONSULTANT** shall comply with all Federal, State, and local laws and ordinances applicable to the work to be done.
15. **TERMINATION OF AGREEMENT:** The right is reserved by the **CITY** to terminate this **AGREEMENT** at any time upon not less than thirty (30) days written notice to the **CONSULTANT**.

In the event the **CITY** terminates this **AGREEMENT**, the **CONSULTANT** shall be paid for the amount of work performed or services rendered to date of termination per the **AGREEMENT** fee.
16. **ENDORSEMENTS:** The **CONSULTANT** shall furnish signatures, statements, or other suitable means to signify responsible endorsement of work on all reports furnished by him.
17. **OWNERSHIP OF DOCUMENTS:** All information relating to the project and prepared under the terms of this **AGREEMENT**, including reports, data, recommendations, exhibits, analyses, and plans shall be deemed the property of the **CITY**. Reproducibles of all notes, reports, and plans shall be made available at the **CITY'S** request.
18. **PUBLIC INFORMATION:** The **CONSULTANT** shall not issue any statements, releases, or information for public dissemination without prior written approval of the **CITY**.
19. **PROPRIETARY RIGHTS:** If patentable discoveries or inventions should result from work required herein, all rights accruing from such discoveries or inventions shall be the property of the **CITY**.
20. **RECORDS:** The **CONSULTANT** shall maintain accounting records and other evidence pertaining to the cost incurred and to make the records available at all times during the **AGREEMENT** term and for three (3) years from the date of final payment. Such accounting records and other evidence pertaining to the cost incurred will be made available for inspections authorized by the **CITY** and copies thereof shall be furnished if requested.
21. **ATTORNEY'S FEES AND COSTS:** That in the event it becomes necessary for either Party to this **AGREEMENT** to retain an attorney to enforce any of the



terms or conditions of the **AGREEMENT** or to give any notice required herein, then the prevailing Party or the Party giving notice shall be entitled to reasonable attorney's fees and costs.

- 22. **LITIGATION LOCATION:** The parties agree that this **AGREEMENT** shall be governed in all respects by the laws of the state of Montana, and the parties expressly agree that venue shall be in the Montana Thirteenth Judicial District County for Yellowstone County and there shall be no other venue for resolution of disputes arising from the **AGREEMENT** or the performance of its terms.
- 23. **MODIFICATION AND AMENDMENTS:** That any amendment or modification of this **AGREEMENT** or any provisions herein shall be made in writing and executed in the same manner as this original document and shall after execution become a part of this **AGREEMENT**.

IN WITNESS WHEREOF, the parties hereto have executed this instrument the day and year first above written.

CITY OF BILLINGS, MONTANA

Geodata Services, Inc.
CONSULTANT (Print Name Above)

By *Christina F. Volek*
CHRISTINA F. VOLEK,
CITY Administrator

By *Kenneth E. Wall*
Print Name Kenneth E. Wall
Print Title President

APPROVED AS TO FORM:

By *Brent Brooks*
BRENT BROOKS, CITY Attorney



EXHIBIT A SCOPE OF SERVICES

Scenario Planning for Billings, Montana Growth Using Esri GeoPlanner and Placeways CommunityViz Geodata Services, Inc.

July, 2015

Scenario Creation

This workplan proposes consulting services by Geodata Services, Inc. to the City of Billings to develop three future growth scenarios envisioned within 20 year timeframe in the future, leveraging the Billings growth plan update and public engagement titled :”Billings Beyond”. We propose assisting the City in developing the growth scenarios using ArcGIS Online and Geoplanner along with ArcGIS extension CommunityViz for scenario generation, quantification and visualization. The present city limits and population and service parameter provides a baseline against which alternatives generated in the growth scenarios will be measured.

The three geographic growth scenarios envisioned outside the current city limits will draw upon on previous work accomplished by the City of Billings Planners and staff during the last year, along with numerous public meetings and analysis they completed. We did not budget for a CommunityViz scenario capturing the current land use situation but metrics on the current conditions will provide comparative measures for scenario growth parameters and indicators.

The City will provide a user account for the Consultant for the duration of the project on the City of Billings ArcGIS Online (AGO) account and access to the GeoPlanner AGO application and Geo-Job Admin Tools for ArcGIS Online (Pro) licensed by the City. The City will also license CommunityViz software and support from Placeways for the duration of the project to enable their own use of the CommunityViz project files which will be a final deliverable by the Consultant. The City’s software and subscriptions costs with Esri and Placeways are not part of this scope of work or budget for the Consultant. The Consultant will be supporting the project remotely, and the intent is for the City to work with the project stakeholders using the deliverables from the Consultant running with the City hardware and software and subscriptions.

The geographic focus includes three distinct scenario locations for growth, (1) Infill adjacent to Billings city boundary; (2) Grow north (Inner Belt Loop area) and; (3) Grow west.

The overall workflow steps for the project include:

- 1) Discuss, and define constraints and incentives for growth scenarios, enhancing and refining the suitability layers and no-growth areas listed in this scope of work via conference call and WebEx session(s).
- 2) Define and compile/process suitability layers for constraints and incentives to growth. City will take the lead on documentation and data processing, with the Consultant advising where appropriate.
- 3) City will advise Consultant which of the layers and criteria rules will be used to define no-growth areas to mask out and exclude in build-out scenarios
- 4) The Consultant will prepare a hexagon polygon feature class to provide a base for theoretical maximum build-out models in CommunityViz for the north and west scenario areas. The hexagon size will be at an appropriate scale determined by the City to allow random or gridded build out for residential structures adequate to meet the projected growth estimates (primarily required for large rural parcels in the western and northern scenario areas). A conference call and WebEx session will be held to define the final external boundaries to be used for the north and west scenario areas. The City will provide the Consultant with the



parcels in GIS format for the infill scenario alternative in GIS format for theoretical maximum build out. The City will provide existing structures in GIS format (or direct the Consultant to use the Montana MSDI structures framework layer) along with minimum spacing and set back criteria to complete build out models.

- 5) Consultant will prepare a weighted suitability model for the area encompassing the three geographic areas for scenarios using the suitability layers provided by the City. Suitability models in CommunityViz can be weighted dynamically. The City will determine the initial weighting to be used for a basemap layer for Geoplanner scenario sketching exercises by stakeholders and provide those weighting parameters to the Consultant. The Consultant will use those to create a tiled map service for the City to use with Geoplanner geo sketching sessions.
- 6) The Consultant will set up an editable web feature service template and GeoPlanner project in ArcGIS Online for City planners and GIS staff to apply with stakeholders in ArcGIS Online. This geo sketching process can be effective when implemented in an iterative fashion with a couple of increasing levels of geographic granularity. The Consultant will provide up to 8 hours of training and work session simulation with City staff to teach them how to apply the GeoPlanner tool. The editable web services can be worked on in an asynchronous manner individually before or during stakeholder sessions, or in groups during a planning session. This can be accomplished on Apple or Android tablets, Windows based personal computers, Macs, or smartphones. In an interactive session these can be imported and overlaid and compared to each other with consensus reporting, with dashboard tools showing business graphs of the scenarios metrics.
- 7) For proposed suburban type low or medium density residential areas in the northern and western scenario geographies, the City will provide a representative road network framework (cut and paste from elsewhere in Yellowstone County for potential medium and low density residential areas) or attribute suburban hexagon units to allow the Consultant to randomly place new residential structures with CommunityViz. For all other hexagons not designated as low or medium density residential, the City (will classify parcels with proposed APA land use classifications. For the infill geographic area the City will classify parcels with proposed APA land use classifications, or classify the hexagon representation of these parcels.
- 8) The City may wish to add additional point, line or polygon features, or simply attribute the hexagon grid cells with APA standard land use types for the scenario build out and analysis. For indicators and metrics such as infrastructure cost and public services, the Consultant can work with per capita or rule based metrics associated with averages per land use and proximity measures, or measurements from infrastructure points (service area drive time, etc.) and linear features. The editable web services should provide the bulk of the land use scenario creation, since everything the stakeholders and city planners create will already be in digital ArcGIS format, unlike marking up or drawing on paper maps,. The City will be responsible for finalizing up to three scenario alternatives for each of the three geographic scenario areas, with or without stakeholder involvement. Each scenario will be delivered to the Consultant as a feature class in shapefile or file geodatabase format. The Consultant will provide advice on geospatial processing techniques if desired, and could assist in python scripting and and modelbuilder processing efficiencies.
- 9) The Consultant will run CommunityViz spatial buildout for each scenario. This differs from the initial theoretical build out by incorporating the parcel size and shapes for setback constraints. The City will provide rules on floor area ratios (FAR) and building height or each APA land use type and for commercial and industrial structures for mixed residential/commercial areas. The Consultant will run CommunityViz to automatically fit rectangles representing mixed use and commercial buildings using the FAR rules, or the City may choose to digitize some of these structures, or vary the rules by hexagon planning units if they wish, as long as the attribution accompanies the scenarios provided to the Consultant.
- 10) If desired, the Consultant will aggregate the results of the build out into larger hexagon grid cells to generalize and display scenario units of analysis for public review at the conclusion of the project to avoid individual focus on specific locations from a generalized future scenario. Whether or not this is needed will depend on the City planner's judgment calls based on the initial size of the build out hexagons. If this technique is used, summation of the component parts or majority or predominant values will be used to apportion from the smaller hex grid cells to the larger ones used for public review. The procedure for this must be able to be done in an automated fashion, not editing individual units.
- 11) The Consultant will run standard CommunityViz pro 360 indicators wizard and train the City GIS analysts



and planners how to add, adjust and configure indicators, graphs and charts, and document the dynamic formulas and assumptions within the CommunityViz software. We have budgeted this training for 4 to 16 hours depending on the level of adjustments required to customize local indicators and dynamic formulas. The training will be conducted remotely via WebEx.

- 12) The Consultant will prepare Web Shots and Analysis Publisher with initial results, and supplement with AGO map apps for stakeholder analysis of scenarios and public use of the final scenarios.
- 13) Consultant will prepare and install selected AGO maps and applications on the City of Billings AGO account. The consultant will train the City staff to run the standard and custom CommunityViz reports, and final Analysis Publisher. We have budgeted this training for 8 to 12 hours depending on the level of adjustments required to customize local indicators and dynamic formulas. The training will be conducted remotely via WebEx.

The Consultant licenses all the software and data required in this scope of work. Given the funding limits, it will be necessary for the City staff to be able to run and manipulate the models locally that the Consultant develops in CommunityViz and ArcGIS Online (AGO) to work internally and with stakeholder groups. We also anticipate training planning staff in Billings in certain aspects of the model development that are best suited to their input, to allow the limited funding to apply to all required aspects of the project. The primary goals of the project are to successfully develop the scenario models, not to train planning staff in all aspects of the software techniques. That said, we have proposed efficiencies wherever possible to facilitate accomplishing the project minimum requirements and as many of the supplemental objectives as possible.

CommunityVizTools we will apply to support scenario development and application

- **Suitability Analysis** - Suitability analysis is a fundamental building block of scenario development. Suitability expresses a range of factors that are most important in determining a given site's attractiveness for growth and development. These factors could include a variety of factors including education, healthcare, social services, recreation and leisure, environmental amenities and constraints, housing and transportation. Suitability involves both rating of features (building site in relation to other features such as major roads, environmental constraints) and weighting (an option for factors). Suitability takes into account environmentally sensitive areas where development is to be precluded or discouraged in the future, a key consideration focused on achieving sustainability. Weighting the importance of some factors (e.g., proximity to roads, utilities) and placing less importance on others (e.g., slope) is likely given the attractiveness of certain sites in the study area for receiving future development, for example, areas proximate to the major transportation interchanges. Other sites may be considered less attractive for receiving growth. Note some factors are considered more favorable for non-residential growth and less favorable for residential growth and these differences must be examined. Interaction with identified stakeholders during the planning process will provide a key opportunity to have expert input on the weighting of factors best used to determine suitability.
- **Build-Out** - Next, a build-out analysis is often prepared to estimate the amount and location of development specified. This step in the process identifies the holding capacity of the land. Build-out can be performed for multiple future timeframes. A set of assumptions for build-out will be used in estimates including physical constraints to development and current regulations that affect the amount of development that can occur on building sites. Using a set of assumptions, the amount of additional residential and non-residential growth, commercial, industrial, mixed use will be estimated. Build-out will also consider rural and agricultural land uses and how these areas may be impacted by growth. Build-out is a supply side calculation of a theoretical maximum. It is important to calibrate estimates with existing and projected demographic and employment growth information developed to have a more realistic view of demand for development in the study area (demand side calculation). In this manner, more accurate demand for the amount of developable land needed in the planning horizon for a variety of categories can be taken into account and better translated for these categories (residential, industrial, commercial, office, institutional and government facilities and parks and open space). Resulting data is typically presented



using charts and tables for each of the growth projection timeframes. These reports also include direct comparisons with maps, reports and charts of the different growth scenarios side by side. The reports are in web read HTML format or printable.

- **Common Impacts Wizard, Custom Impacts Wizard and 360 Indicators** - The Common Impacts Wizard automatically generates several commonly used impact indicators associated with growth and development over time. Twelve “standard” impacts can be generated solely on the basis of a buildings layer you specify. Indicators can be generated when you provide additional information or layers to use for reference. Based on preliminary discussion and our previous experience for growth scenario modeling, these 12 will not be sufficient. We plan to use the **360 Indicators** from the Professional version of CommunityViz and the Custom Impacts Wizard for any additional required indicators for the model. This will create up to 101 indicators and dozens of analysis components (formulas, indicators, attributes, charts, etc.) to give a comprehensive, well rounded set of standard planning measurements (indicators) related to the scenarios in the three geographic scenario areas. Topic areas cover demographics, employment, environment, housing, land use, recreation, and transportation. The training we will provide will allow for local modification of these standard indicators to adjust for local data, conditions, dynamic assumption parameters and formula modifications to adjust for unique local data.
- **Web Ready Reports and Web Shots and Analysis Publisher** - Scenario WebShots will provide snapshots of your analysis which allows you to display your results website as a slideshow, or in a partly interactive format. Report Wizard will create data, charts, maps and images, web links provide definitions and explanations in a web browser environment. Analysis publisher will create freely sharable versions of your Scenario 360 analyses to share with clients and members of the public.

ArcGIS Online tools we would apply to support growth scenario development and application

We plan to use selected components of Esri ArcGIS for Organizations (AGO) for this project to supplement the desktop software, CommunityViz, and it’s web display and analysis publisher. The City of Billings already licenses this software through their Esri enterprise license, but it has not achieved widespread adoption yet within the city or county. The primary AGO application will be GeoPlanner and editable web maps applications for tools to work with stakeholders and staff in preparing the growth scenarios. Throughout the project with the stakeholders and community, there may be some additional ArcGIS Online applications to facilitate public review of the growth scenarios and results.

Geoplanner provides the ability for asynchronous or synchronous stakeholder “geosketching” via web or mobile devices to develop draft scenarios. This sketching can occur at multiple scales and at different times in the planning process in an iterative workflow. This can also be done within CommunityViz software running on a workstation with the CommunityViz Land Use Designer Scenario sketch tools, but this requires all participants being in the same place and working on a computer with CommunityViz installed. GeoPlanner is more flexible and can provide the ability for stakeholders, together in a synchronous mode using web or mobile tools (e.g. tablets) to sketch alternatives, or remotely in an asynchronous mode at different points in time and place to do the same. From a workflow perspective, we envision this being the most useful following the suitability modeling and initial theoretical build out for each scenario, in the early phases of scenario development.

We anticipate using the Custom Web App Builder for stakeholders and staff to access and view the composite suitability layers and source map features defining the suitability analysis for review, ground truthing and scenario and project understanding. The City will use their ArcGIS Online (AGO) licenses for the stakeholders involved to enable sharing of the data layers within the organization without premature release to the public.



Project Constraints & Caveats

- Geodata Services will set up a Basecamp collaborative site to facilitate the workflow and collaboration with the City of Billings Planners and GIS staff. The Basecamp site will also serve as a project notebook and archive. Basecamp will also serve as a base for work orders and tasks to facilitate administering and coordination on the project. Geodata will work with the City GIS staff and coordinate data sharing and coordination using the City ArcGIS Online account and the Geo-Job Administrative Pro tools.
- Geodata Services, Inc. will provide monthly reports on time spent on the project framed within the workflow steps defined in this scope of work, and have regular coordination sessions with contract manager to maintain on-going communications on project scope and allocation of the limited resources available.
- Whenever possible, GIS work will be identified that could be completed by the City of GIS staff, reserving as much of Geodata's time to prepare the CommunityViz models and ArcGIS Online apps as possible.
- City GIS staff and planners will invest reasonable efforts to watch Placeways CommunityViz Overview and training videos to understand basic concepts of using the software. Although the purpose of the contract is not to fully train Billings staff to build and configure all aspects of CommunityViz, training will be used whenever it is determined to be the most efficient way to conserve budget. For example, creating, modifying, configuring and documenting indicators and their associated charts and graphs and reports will be a key responsibility of the City to complete with Geodata's advice and training.
- The City will provide the source data layers in GIS format in Montana State Plane, NAD83 for use on the project. In some instances, Geodata will engage in this process if they already have the data processed.
- Geodata will prepare and compile the suitability model and provide it to the City along with training on how to adjust assumptions built into the weighted model. [If the city licenses and uses the Esri Spatial Analyst module, we will have them process the final grids preferred for the suitability model.

Data Processing

The following data layers will be included in the suitability analysis and provided by the City to the Consultant for inclusion in the CommunityViz suitability model. This list is not exhaustive, and may be modified by the City with advice from the Consultant during the initial stages of the project.

Hard Constraints (typically no-growth constraint defined in statutes or planning frameworks)

- Slopes greater than 25%
- Wetlands
- Floodplain (DFIRM)
- Sensitive species
- Cultural sites

Soft Constraints (not necessarily no-growth, but general constraints to growth)

- Proximity to existing and proposed water treatment
- Sensitive areas
- Greenways and open space
- SUURGO soil characteristics
- Historic sites and development
- Existing trails, parks and open space



for web based components. We use several proprietary and open source software for integrating 3D visualization. Scenario 3D, packaged with CommunityViz, Google SketchUp, and ESRI 3D Analyst are typically applied for site models and visual scenarios for more limited geographic areas, and for generating visualizations of indicators or groups of indicators, build outs and scenario drivers. ArcGlobe, Google Earth, and ArcGIS Online are global visualization environments. We use all these tools for different aspects of 3D visualization, depending on the environment they are to be used in, the level of interaction desired with participants and the form and function of the visualization. No one tool fits all situations. In addition to physical 3D models of buildings, vegetation, street furniture, and infrastructure, we often use oblique visualizations of infrastructure and planning areas to convey extruded points or polygons, essentially creating 3D business graphs shown in a globe or regional view with real world context..

Schedule

The project is scheduled for 6 month duration, with an option for the City to extend for six additional months. We anticipate the following schedule depending on City staff and stakeholder availability.

- **Mid-July:** Project start date
- **Mid July–August:** Suitability model data development, first stage theoretical build-out
- **September:** Suitability model run and Geoplanner and Editable Web Service developed and GeoPlanner Training
- **October:** Indicator, graphs, charts and dynamic formula staff training
- **October-December:** City engages stakeholders and modifies Scenario 360 indicators
- **January, 2016:** The Consultant will prepare Web Shots and Analysis Publisher with initial results, and supplement with AGO map apps

Deliverables

- A hexagon polygon feature class to provide a base for theoretical maximum build-out models in CommunityViz for the north and west scenario areas
- A conference call and WebEx session will be held to define the final external boundaries to be used for the north and west scenario areas.
- Weighted suitability model for the area encompassing the three geographic areas for scenarios using the suitability layers provided by the City. The City will determine the initial weighting to be used for a basemap layer for Geoplanner scenario sketching exercises by stakeholders and provide those weighting parameters to the Consultant. The Consultant will use those to create a tiled map service for the City to use with Geoplanner geo sketching sessions.
- An editable web feature service template and up to 8 hours of training and work session simulation with City staff to teach them how to apply the GeoPlanner tool.
- A theoretical (non-spatial) build out feature class
- Provide a CommunityViz model including spatial buildout for each scenario for residential and optionally commercial, industrial and mixed land use.
- If desired, the Consultant will aggregate the results of the build out into larger hexagon grid cells to generalize and display scenario units of analysis for public review
- Run standard CommunityViz pro 360 indicators wizard and train the City GIS analysts and planners how to add, adjust and configure indicators, graphs and charts, and document the dynamic formulas and assumptions within the CommunityViz software.
- Prepare CommunityViz Web Shots and Analysis Publisher with initial results, and if desired supplement with AGO map applications for stakeholder analysis of scenarios and public use of the final scenarios.
- Consultant will train the City staff to run the standard and custom CommunityViz reports, and final Analysis Publisher and selected AGO maps and applications



Budget

The budget for this project for Geodata Services, Inc will not exceed \$20,000 arranged through a sole source contract. Monthly invoices will be submitted by the Consultant with net 30 day payment terms.

