



Asset Mapping Project Profile

Lessons Learned from the Greater Golden Horseshoe Collaborative Process

Asset Mapping is a tool that can be used to collect, reflect upon and document the businesses and resources in a defined area. This tool can be used in many forms, including creating maps of resources, identifying strengths and opportunities, or to show networks, trends and gaps. The types of assets can be any kind of entities, including businesses, organizations, people, places, and natural resources. The Golden Horseshoe Food and Farming Alliance collected data and mapped assets of the agri-food value chain within the Greater Golden Horseshoe Region.

Golden Horseshoe Food and Farming Alliance

The Golden Horseshoe Food and Farming Alliance (GHFFA) is comprised of the Toronto and Region Conservation Authority, the Friends of the Greenbelt, the Ontario Ministry of Agriculture Food and Rural Affairs, the Regions of Durham, Halton, Niagara, Peel, York and the Cities of Hamilton and Toronto, as well as local representatives from the food and farming value chain. In 2012, the GHFFA released the Golden Horseshoe Food and Farming Action Plan 2021 (Action Plan), which identifies pathways for a more integrated and coordinated approach to food and farming viability in the area to ensure that the Golden Horseshoe retains, enhances and expands its role as a leading food and farming cluster.

The Action Plan is unique because it develops a regional approach to ensuring a strong and vibrant food and farming cluster in the Golden Horseshoe. Over the last several years, many actions have occurred regionally and locally that have provided support for and activity directed to the “*Growing the Food and Farming Cluster*” in the Golden Horseshoe, including the Asset Mapping Project.

The Asset Mapping project further builds on the Action Plan under *Grow the Cluster* (page 16 of the Action Plan) to “Develop solutions to close gaps in the infrastructure required to support the food and farming industry”.

Three of the tasks outlined in this part of the Action Plan are:

- 1) Complete and maintain an inventory of existing production, processing, distribution and marketing infrastructure that supports food and farming activity.
- 2) Identify the production processing, distribution and marketing infrastructure required to achieve integration between different parts of the cluster.
- 3) Identify gaps in the infrastructure that are inhibiting growth in food and farming operations.

These tasks essentially represent the objectives of asset mapping. To support the Action Plan priorities, the GHFFA required the mapping of agri-food supply chain assets across the region which included farms, food processors, suppliers, distributors, as well as infrastructure, research centres, and the service industry. The asset mapping project represented a decisive step towards building “Foundational Data” to support the Action Plan, and assist the GHFFA partnership in presenting the strengths and challenges of the agri-food industry across the Golden Horseshoe area. Information collected as part of the project forms the focal point for advancing economic and social analysis of the existing assets and identify gaps and trends within the food and farming cluster. This became the basis of the asset mapping projects for the GHFFA.

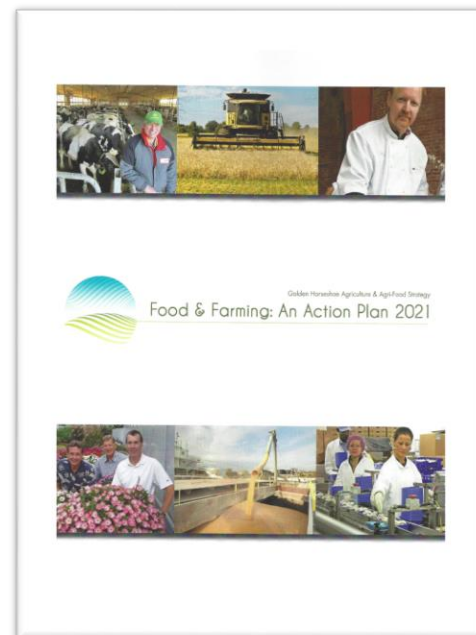


Figure 1: GHFFA Food and Farming Action Plan

Project Background

In 2013 the GHFFA developed a tool, as a pilot project, that defined a process for collecting available information about food and farming assets from municipal partners in the Golden Horseshoe. The pilot project led to the learnings that there were many gaps in the asset information available and a number of barriers at the municipal level for the collection and sharing of data. More than 15,000 records were collected in the pilot phase but there were many gaps in the information, a lack of consistency in data attributes, and more up to date information available. Also, the pilot project did not address data use protocols, data-sharing, housing and maintenance, and data enhancement.

Phase 2 of Asset Mapping, conducted in 2014/2015 with the support of Growing Forward 2, addressed the barriers identified by creating solutions for data collection and verification, harmonizing the data attributes to facilitate storage in a centralized database and develop protocols for future use, sharing and updates of the information. Phase 2 resulted in an enhanced database structure, a template for data provision to streamline the process, data sharing agreements and protocols for housing and maintaining the database into the future. Existing data was cleaned and refined, and secondary data was also imported to the database, resulting in almost 20,000 database records.

Asset Mapping and the Greater Golden Horseshoe

Through the implementation of the Action Plan, the Alliance is providing leadership to municipalities to work together, problem-solve and develop business processes that advance food and farming in the Golden Horseshoe, a unique approach. Economic development strategies for the food and farming sector are more effective when applied across a regional geography. Key learnings and processes can be applied to other municipalities and collaborations across the province.

Using the methodology developed in the Asset Mapping projects, a process was created that can be replicated throughout Ontario to assist other municipalities, or collaborations, determine the size, value and economic impact of their local or regional food and farming value chain.

With the support of OMAFRA, the project geography expanded in 2015 to align with the growth planning boundaries of the Greater Golden Horseshoe (GGH). Mapping the agrifood assets across this region, and analysis of the collected information, allows for development of effective planning and decision-making relative to food and agricultural businesses across this growth region. As such, the GHFFA worked with OMAFRA to expand the Asset Mapping project and data collection to the Greater Golden Horseshoe municipalities. The expanded project was conducted from March 2015 to March 2016.



Figure 2: Municipalities in the Greater Golden Horseshoe

This regional/collaborative approach to Asset Mapping benefits Ontario agriculture through strengthening a regional approach to planning and economic development in a regional food system, by:

- providing elected officials, planners and economic developers at the municipal level with evidence based information about the key sectors for growth and retention in the food and farming sector
- identify gaps and sectors at risk that could be strengthened through targeted investment
- strengthen municipal understanding of the role near urban agriculture plays in an integrated urban-rural landscape
- identify potential partnerships that would help increase the food production capacity of Ontario grown products
- offering to other regions/areas in Ontario an original, innovative and replicable process for collecting and analyzing food and farming assets in a regional food system
- communicate results through mapping visualization of asset clusters in the region

Why is Asset Mapping important?

Many regional food systems and value chains exist in the Province of Ontario. These food systems are enabled or inhibited by decisions that are made at the municipal and provincial levels. In an effort to focus on job creation and economic development, the value and importance of the food and farming value chain is often overlooked. Urban municipalities in the Golden Horseshoe have realized the strong connection that is made between the food processing jobs located in urban areas and the food and fibre production of the countryside. In identifying this linkage, the GHFFA has created a collaboration that models innovative approaches to a variety of common issues across the food and farming value chain.

Once asset data is compiled and collected, an adequate analysis of gaps and investment opportunities can be conducted and emerging opportunities identified, particularly on a regional basis. A collaborative approach to asset mapping also furthers the relationship between regional/municipal staff as they seek to provide business leadership to the economic development of the region.

Asset Mapping:

- Provides municipal staff with a database that will lead to enhanced decision making regarding the sector
- Provides accurate data that will support economic development strategies that encourage increased investment, productivity and jobs in the farming and food sector
- Creates increased awareness at the municipal and regional levels of the size and scope of the food and farming sector and its' economic impact to the Region, the Golden Horseshoe and the province

As the food and farming cluster grows, there will be more opportunity for increased capacity in the sector, job creation and connection between primary producers and processors. This will ultimately lead to more demand for, and access to, Ontario grown food and bio-products, keeping jobs and investment dollars in our communities.

The data and data analysis from Asset Mapping provides municipalities with the information needed to make good policy and informed decisions at the municipal/regional levels. In addition, municipalities will think of economic development more holistically, across a regional geography, in their efforts to retain and expand existing businesses and attract new investment to the food and farming sector. This is a progressive approach.

What are Assets?

The GHFFA required the mapping of agri-food supply chain assets across the region from production to consumption, which included farms, food processors, suppliers, distributors, as well as infrastructure, research centres, and the service industry. The North American Industry Classification System (NAICS) was used to define the aspects of the value chain included in the project and to categorize the assets.

Asset Mapping Approach

One of the keys to success was the organizational structure of the Asset Mapping projects. A project Steering Committee, consisting of representatives from the partnering Golden Horseshoe cities and regional municipalities and project staff, governed the projects, ensuring consistency with the project goals and objectives and providing guidance at key project stages. The GHFFA assigned a project manager to coordinate the Steering Committee and oversee the day-to-day aspects of the project, while a second project manager coordinated and supported the Greater Golden Horseshoe municipalities. At the outset, the Steering Committee decided on a few key values to guide the project:

- Data integrity was a key value of the exercise, and was used as a guiding principle;
- The scope would focus on collecting what information was currently available to, or easily accessed by, municipal economic development staff from the partnering municipalities;
- The boundaries of the Greater Golden Horseshoe formed the geographical boundary for data collected as part of the project;
- A list of NAICS codes relating to agri-food industries was utilized to determine what types of assets were to be included in the project, and what was not included, resulting in a list of 129 types of businesses by code; and
- As it was important to be able to map the results of the project, it was important that point-source data be utilized (where available) for the assets included in the data collection.

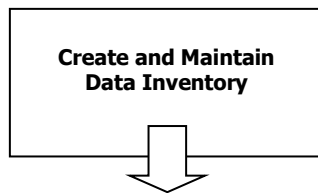
Any discussions and/or decision-making were handled through weekly conference calls to inform, identify, and clarify the specific data issues, as well as identify the follow-up action items.

Due to the technical nature of the project, consultants were hired to deliver the data processing and management, and data analysis components of the project. GHFFA hired 4DM Inc. for data services and Synthesis Agri-Food Network for data analysis.

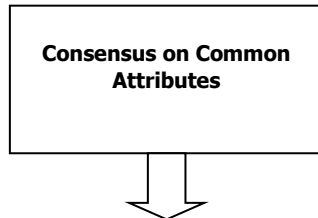
The project approach consisted of a sequence of steps that are listed below:



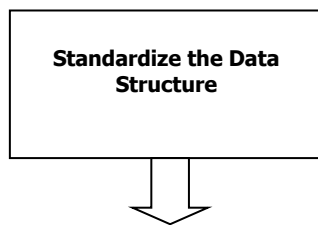
The first step involved determining the datasets available through the municipal partners, and of that data, which would be retained. Datasets provided by the municipalities, third-party and open sources included employment survey results, lists of farmers' markets, agri-food business directories, agri-tourism inventories, lists of food processors and packaging companies, meat processors and sales force data. A number of datasets, particularly third-party data, overlapped with municipal data and it was determined to use municipal data first, where it existed. The goal of this step was to identify which datasets were available, as well as their completeness, quality, and any data gaps. Where there were gaps in the data, such as missing address information or NAICS codes, the municipal partners were challenged to fill in those gaps wherever possible.



All data acquired was inventoried to catalogue the information describing the data to capture the metadata (i.e. data describing the data). Metadata identified the data source, coverage, type, format, owner, restrictions, and date of creation. The data inventory also connected the data files with their providers. This allowed for identification of the source of the data included in the data base and to update data as more current or additional information becomes available.

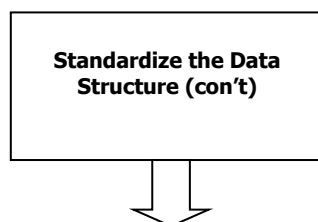


Each dataset was reviewed and catalogued to identify the information the datasets contained (i.e. their attributes). File field-mapping was done for all the datasets to establish common fields, similar attributes, and non-common attributes. A spreadsheet was created to organize the datasets' attributes by a level of commonality. The information was then circulated to the Steering Committee for input to determine the attributes to retain. This was a key step, as the attributes included outline the types of queries that can be made of the data. The consensus was to include attributes such as the name of the organization, location (address/coordinates), business information (line of business, sales, employees, products, and classification), data quality index, and information field (data owner, data creation date, comments). This became a critical foundational step for future project phases and expansion of the collaboration. Ultimately a template of mandatory and optional data attributes was developed and standardized, allowing for streamlining the data submission process.

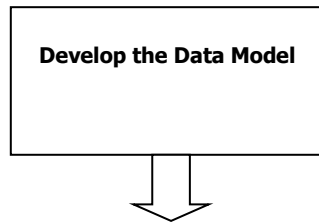


The next step was to move towards standardizing the attribute fields of the dataset. The intent of standardizing the asset datasets was to enable a data structure that could easily and confidently be used to query asset information when data mining, as well as maintaining data integrity.

Two key objectives were in mind while conducting the discussions with the Steering Committee – to identify key attribute fields for standardizing the datasets and to determine where look-up tables and indexes could be implemented to minimize future issues associated with incorrect data entry and with improving the data.



Other key decisions were that locational data would be retained in the database as point data, the business classification would be associated with 2012 Canadian NAICS codes, the locational data was retained in two geographic coordinates systems: Latitude/longitude and UTM Zone 17 NAD83 (original), address information would migrate from Canada Post Guideline to the Civic 911 standard, and an Assessment Roll Number field would be added as common attribute field to all datasets. This standardizes the future collection of information among the partnering municipalities, allowing for easy enhancement of the existing dataset when new information becomes available.



The final step was to create a conceptual data model to determine what data grouping would be used to associate the asset data to each other. The source of these groupings was based on feedback from the Steering Committee. A logical data model was developed and diagrammed to illustrate how the relational tables connect to each other and how the data are retained (see Figure 3 below).

Another key decision made by the Steering Committee was to utilize a geocoding method to attempt to fill in missing mapping coordinates. Also the Steering Committee decide to utilize their municipal road network files, accessed via data sharing agreements with the IT and GIS departments of the partnering municipalities, in order to maximize the accuracy of the geocoding exercise. This ensured the highest success rate in having the data points appear on the GIS maps resulting from the project.

The data consultant worked closely with the Steering Committee to develop the above process and to guide the work through it. The business decisions mentioned above were key to building a dataset that met the project goals and objectives.

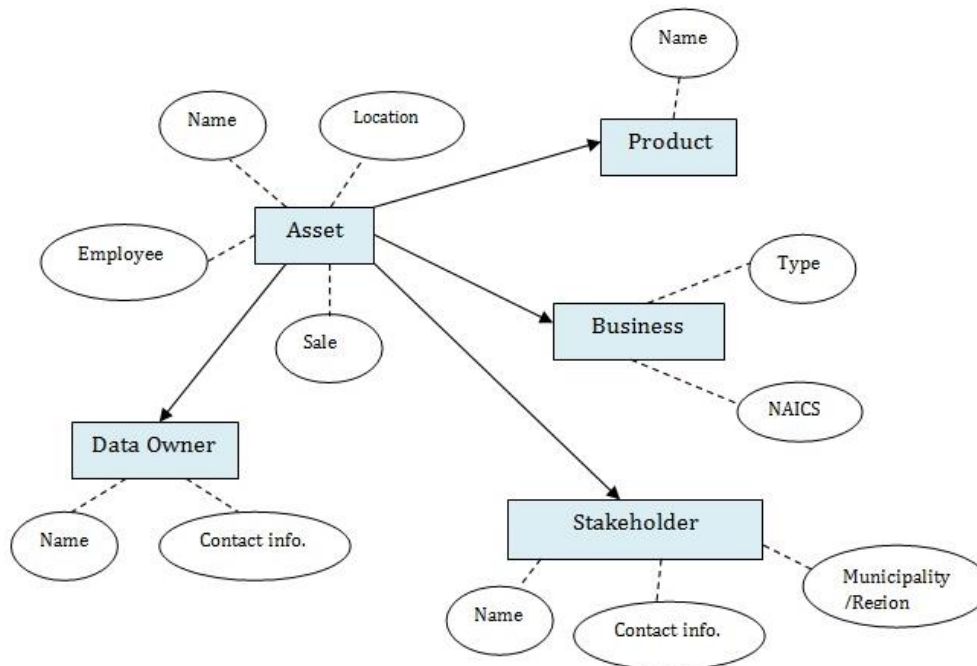


Figure 3: Conceptual Data Model

The data consultant used the information provided by the Steering Committee to develop the relational aspect of the data model above. This became the basis of the database. Initially the GHFFA database used Microsoft Access for asset information, due to ease of use and searchability, while the geolocation information was housed separately for mapping. Cost was ultimately a deciding factor in the initial project stage. Phase 2 of the Asset Mapping work provided resources for a web-based tool to house the dataset. The web-based tool allows for searchability, mapping and also provides for security by

controlling access to data as prescribed by the data providers. The web-based system will be enhanced and expanded as the Asset Mapping project moves into additional phases.

Data Sharing & Security

How to securely store and share data is an important part of any project that collects, houses and provides data. This is of the utmost importance when working within a collaboration, where data policies for collection and sharing can differ greatly. The approach for the Asset Mapping project was to honour the data policies of each of the municipalities providing data, recognizing that some data will be shared with the partners in the project while some will only be accessible to the municipalities providing it. To ensure a fulsome dataset, this is offset by the addition of open source data as part of the project. Ideally, as project partners become more comfortable with the tool, data sharing will be enhanced.

The restriction of the data is reflected using a coded system within the database. Login information is assigned to coordinate with the data restriction, resulting in a secure system where each user can only access the data sources allowed. Use of the web-based system makes this control simpler. Similarly, because the system can only be accessed by users granted login codes, the tool and data contained within are secure. This is not a public-facing tool at this time, but rather one used by project partners and contributors.

Data sharing documents govern the use of the data. For instance, users cannot share their access codes or directly share data accessed through the tool. Rather, the intent is to use the tool for informed, internal decision-making. Where required, partners may use the data contained within the tool to create new products, as meets their needs, and which can be shared when proper credit is acknowledged. Ultimately, partners who do not comply with the data sharing agreement would have access to the tool revoked. The Steering Committee will continue to be engaged as needed, to provide guidance and decision-making on data sharing.

Data Analysis Results & Products

Once asset information is collected, processed and housed in a searchable manner, analysis of the data can provide valuable information. By profiling the assets of the agriculture and food industry, the value of this sector in the area can be clearly demonstrated in relation to the provincial economy. In addition, gaps that exist within the food and farming infrastructure can be identified through synthesis of the information. These gaps create barriers to growth and once identified will be used to develop and implement strategies to strengthen and grow the food and farming cluster of the Golden Horseshoe.

Analysis of agri-food assets can:

- Identify and profile the region's Food and Farming infrastructure and products grown, harvested and processed in the region; and services rendered;
- Identify and profile the business, education, research, development and innovation assets that are part of the Food and Farming industry; and
- Analyze the strengths and weaknesses of the existing assets, identify existing gaps and emerging economic opportunities within the Food and Farming cluster of the region.

GHFFA hired Synthesis Agri-Food Network to apply their knowledge of agriculture and economics to analyze the Asset Mapping info and draw meaningful conclusions. The following is an excerpt of their work on the Asset Mapping project:

“The analysis of the food and farming sector in the Greater Golden Horseshoe (GGH) area has re-confirmed that it is a diverse and dynamic sector that contributes a significant benefit to the region and the overall economy. The agriculture value chain included in the asset mapping database includes the full spectrum, from primary production agriculture and services to agriculture through to food services such as restaurants and institutions.

Our analysis has revealed many opportunities for economic development of the agri-food sector in the GGH Region. Each of these opportunities to grow the cluster is based on an overarching theme of trying to increase employment, investment and production value on this high value land base, but doing so in a sustainable manner.

On average, the GH Region already produces higher value crops than most Ontario farms due to quality soils, great climate and proximity to market^{43F1}. Similar to the previous GH analysis, our conclusion is that further increasing the average production value per acre should be a key economic development focus for the GGH Region.

The increased presence of livestock and poultry production as you move farther from the built up areas offers an additional opportunity that is not as prevalent closer to urban areas of the GTA. Livestock production creates a higher economic value compared to producing field crops on the same land base². Retaining the current livestock production base will be a key factor in achieving agri-food growth in the GGH.

Food, beverage and bio-product processing operations also add additional value to the agricultural products produced on farms and create significant economic impact through domestic sales of food ingredients and finished products, bio-products as well as export sales. While the sector has enjoyed a strong presence in this area, some key sectors like fruit and vegetable processing have a significantly reduced footprint due to competitive pressures. As the North American industry goes through a major restructuring, there is a need to retain existing large processing operations (business retention and expansion) as well as some opportunities for new investment attraction in various sectors. In addition, economic development efforts to support smaller, niche operations (small to medium enterprises and on-farm processing) will greatly benefit the GGH region.”

Also of significance are the maps and visuals that can be created to convey messages and demonstrate conclusions. The following map (Figure 4) illustrates the GGH asset map database showing all of the business locations data points separated into the four main steps in the value chain by three digit NAICS code. This represents one example of the types of maps that can be created using Asset Mapping work.

Summary

By participating in the Asset Mapping project, GGH municipalities have access to the robust, regional dataset that will provide planning & economic development staff with the tools to:

Best Business & Leadership Practices:

- communicate across the regional food system
- access accurate, current data allowing for key decision-making at municipal level using database as a new, innovative tool
- assist other municipalities/collaborations to replicate the methodology

¹ Agriculture By The Numbers, GHFFA information sheet 2014

² for example a 100 acre hog farm has a greater economic impact compared to a 100 acre grain farm because of higher sales, more people involved on a daily basis, trucking, veterinary and other services

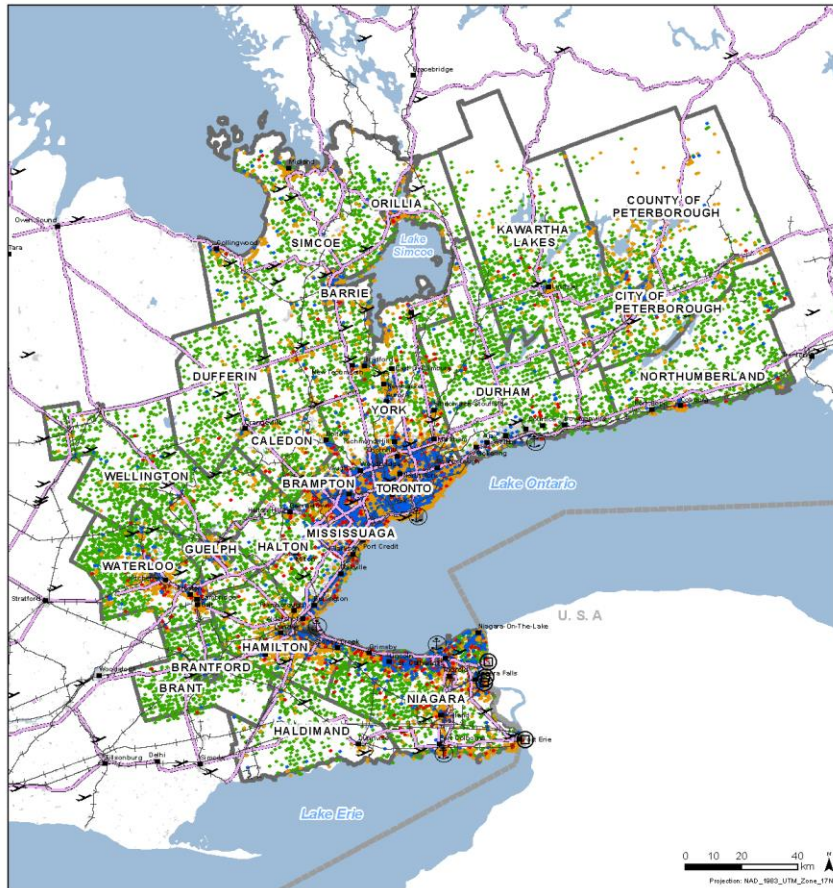


Figure 4: Agri-food asset by industry type within the Golden Horseshoe

Farming (Green)	Primary production
Processing (Red)	Food processing
Distribution (Blue)	Food wholesaling and distribution
Access (Orange)	Grocery stores and restaurants

Access New & Emerging Markets:

- access regional, ground-truthed data that creates awareness and provides market intelligence to guide investment into appropriate sectors
- identify trends in real-time to respond to new/emerging market opportunities

Retain & Expand Existing Markets:

- identify sectors at risk and develop strategies for targeted investment
- develop understanding of relative investment in one part of the Golden Horseshoe and its impact on individual municipalities based on market intelligence provided in the regional dataset
- encourage new entrants to the sector, and support growth in existing businesses through positive municipal policy
- create more business to business connections

Respond Quickly & Effectively to Risk:

- plan appropriate emergency response measures that may be required at the municipal level (i.e. avian influenza, food safety issues)