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HUB CONNECTIVITY FEASIBILITY ASSESSMENT

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RCBI has further expanded its vision and mission to support the agricultural economy of West Virginia through our Agricultural Innovations program. With funding from the Claude Worthington Benedum Foundation, RCBI is introducing manufacturing concepts related to supply chains, lean operation, and support for agricultural technologies across the state and central Appalachian region.

The following report examines the effectiveness of going beyond standard farming to hub/market supply chains to create a consortia of aggregators for increased access to markets and products. This concept, common in the manufacturing community, is a novel approach to helping larger markets in metropolitan areas provide food items and support to similar, emerging operations in small and rural areas. It will offer the additional benefit of assisting start-up food hubs and markets by providing them a broader selection of products to sell as they are establishing their own constituencies and building their networks.

We would like to acknowledge Downstream Strategies for its assistance in completing this research. Its staff was professional, responsive and helpful in getting us to the crux of the information we were seeking.

We believe that through implementation of novel and innovative ideas such as this one coupled with the hard work of industrious agribusiness operations across our state, we can effectively grow our agricultural economy and increase local wealth.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charlotte Weber'.

Charlotte Weber
Director & CEO

ACKNOWLEDGEMENTS

THE PROJECT TEAM WOULD LIKE TO ACKNOWLEDGE THE CLAUDE WORTHINGTON BENEDUM FOUNDATION FOR PROVIDING SUPPORT, AND BILL WOODRUM AND AGRICULTURE INNOVATIONS AT THE ROBERT C. BYRD INSTITUTE FOR ADVANCED FLEXIBLE MANUFACTURING FOR PROVIDING INSIGHT AND GUIDANCE ON THIS PROJECT.

THANK YOU TO SURVEY RESPONDENTS, YOUR RESPONSES WERE THOUGHTFUL AND ENLIGHTENING. WE WOULD ALSO LIKE TO THANK UNLIMITED FUTURES INC., THE WEST VIRGINIA FOOD AND FARM COALITION, THE NEW APPALACHIAN FARM AND RESEARCH CENTER, THE WEST VIRGINIA AND OHIO FOOD HUB NETWORK, THE MICHIGAN FOOD HUB LEARNING AND INNOVATION NETWORK, AND THE WEST VIRGINIA FOOD AND FARM COALITION AGGREGATION AND DISTRIBUTION WORKING GROUP FOR SHARING INFORMATION AND PROVIDING FEEDBACK AND INSIGHT.

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EXECUTIVE SUMMARY

West Virginia has made great strides in redeveloping the local food economy over the past decade. Locally grown food is now available in most counties and there are over 25 food hub and aggregation projects devoted to connecting West Virginia products to consumers. A question that remains is how to support partnerships within the existing food infrastructure? What are the opportunities in creating potential consortia and efficiencies in local food distribution? This study builds on existing research and a distributor survey (conducted in summer of 2015) to provide an overview of inter-food-hub and distributor relationships. The results identify communities in West Virginia that show high probability for success in ongoing and future local food development efforts.

An analysis of relevant data identified several key findings and provided a foundation of information, including existing and potential distribution routes, food hubs and aggregation efforts, market density, and production centers. The project team hopes that this report will serve as a catalyst for developing consortia between existing distribution and aggregation efforts.

KEY FINDINGS

1

CHALLENGES REMAIN IN REACHING WHOLESALE AND DISTRIBUTION MARKETS

While six out of the eight distributors surveyed in 2015 indicated a willingness to distribute local products, many barriers keep them from buying local products. Barriers include reliable supply, food safety considerations, consistent pricing, quality and packing, and season length. These constraints, among others, limit their flexibility in carrying local products. Aggregators and food hubs face similar challenges as they start to expand and grow their producer supply chains[1] and it is important to look at how to meet these challenges across the state.

2

THERE IS GOOD COVERAGE OF FOOD DISTRIBUTORS WITHIN THE STATE

Based on survey responses it was determined that there is good coverage in the state by existing distributors and all have access to refrigerated trucking. Regional and national distributors have trucks running through the state every day and each of these could create an opportunity for an infrastructure site. The service areas and the coverage could allow better interconnection between local food aggregators and distributors.

3

VALUE-CHAIN AND PARTNERSHIP OPPORTUNITIES EXIST IN MULTIPLE AREAS

Four main regions were identified that had potential within the state, these include the Northern and Eastern panhandle, the Huntington and Charleston area, and the Greenbrier Valley. These regions exhibit several success factors: relatively high production, existing aggregation efforts, good distributor service area coverage, and market proximity. Potential aggregation sites were identified and mapped across the state, providing a reference for future projects. Additionally, existing West Virginia aggregation efforts were identified and mapped to show areas of potential partnership opportunities.

4

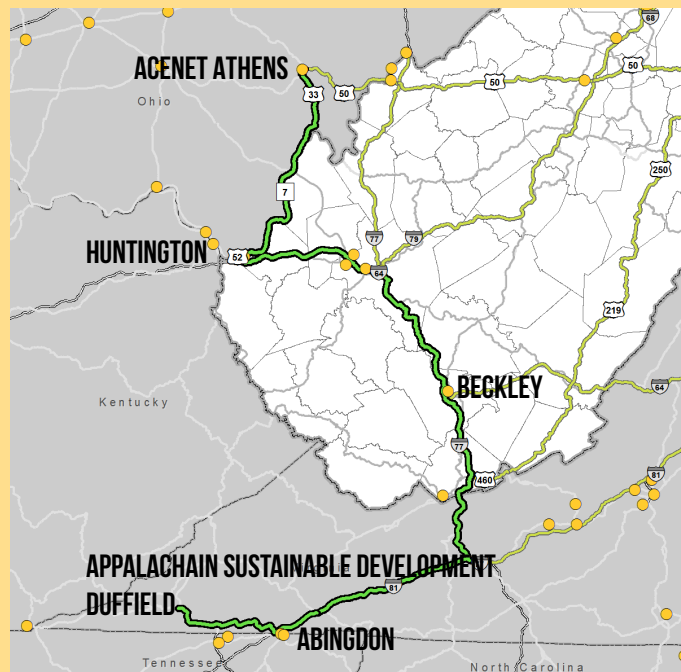
POTENTIAL ROUTES EXIST ACROSS THE STATE

Potential distribution routes across the state were characterized using demographics, existing production, and current efforts. This characterization identifies the potential routes best suited for further development and provides a reference for any organization considering expanding or starting distribution in the state. Key data on each route was calculated and compared to show the effect a potential route could have in reaching producers, aggregators, and consumers.

CASE STUDY: DUFFIELD - ATHENS POTENTIAL ROUTE

Appalachian Sustainable Development, Unlimited Future Inc., and ACEnet and other partners are examining the feasibility of a route between Duffield, Virginia and Athens, Ohio.

This potential route would connect local producers to existing local food hubs. The route will travel through Beckley and Huntington West Virginia. Success factors for this route were examined and details about the number of producers, distributors, population, cities with significant population, and median income data were summarized.



RECOMMENDATIONS

This assessment provides a springboard for partnership development and future project implementation. This data represents a snapshot of the West Virginia Food System as of summer of 2015. It is an exciting time for the West Virginia food system and many of these projects are growing and developing quickly. Another look in the future may reveal new ideas, businesses, and projects.

1

Support ongoing West Virginia food hub and aggregation efforts within the state.

2

Identify and compile a database of existing hub and aggregation projects, their resources, infrastructure, and needs.

3

Continue and increase communication between West Virginia food hubs and existing networks and projects.

4

Identify West Virginia food hubs willing and interested in supplying wholesale markets and connect them with existing distributors.

5

Develop alternative food-networks through projects like the Duffield-Athens route.

6

Identify short-route connections between production and market clusters within the state.

ADDITIONAL DATA IS REQUIRED

A complete dataset would enable a better understanding of existing distribution infrastructure and aggregation projects within the state.

This information would benefit organizations, projects, and existing aggregators in planning future work. Currently, the only data available on West Virginia Food Hub projects are through the West Virginia Food and Farm Coalition West Virginia Food Mapper (mapwv.gov/foodmapper).

This resource, while useful, does not include information on packing equipment, transportation infrastructure or loading docks, or interest in engaging in wholesale sales.

This information would be invaluable in determining which hubs and organizations are most ready to develop and expand.



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PROJECT OVERVIEW

The resurgence of farmers markets, independent grocery stores, and emerging food hubs in the Appalachian region are all part of the growing agricultural economy. As the demand for locally sourced food increases, direct marketing (farms selling directly to the end consumers) cannot compete or provide a robust alternative to conventional food systems.

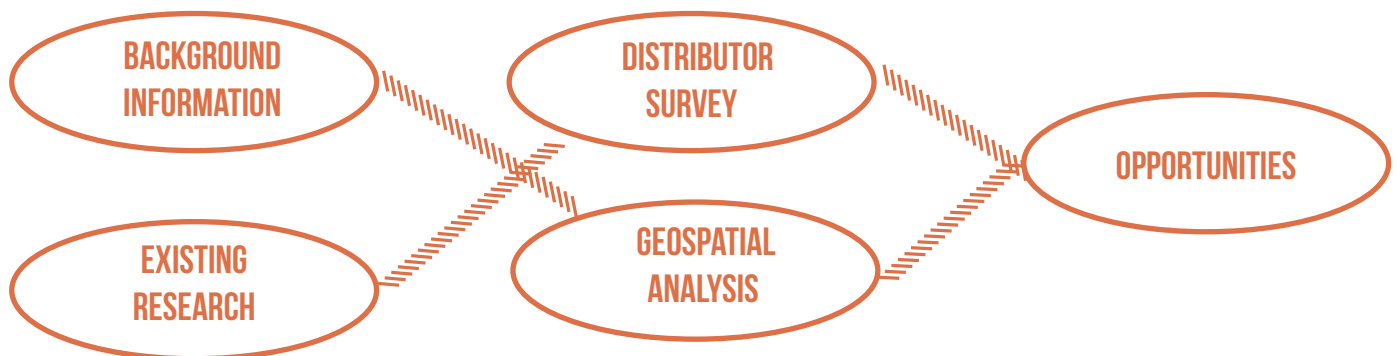
A recurring question remains, what is the opportunity within this new sector to create potential consortia and efficiencies in local food distribution? This study builds on existing knowledge and research to provide an overview of inter-hub and distributor relationships, the next step in the local food value-chain.

This assessment examines the existing distributors, aggregation efforts, and potential areas of West Virginia that exhibit a high probability for success; identifying potential

distribution routes to facilitate the connection between existing hubs, distributors, and markets for local food. Identifying these connections are critical for sustaining the profitability of businesses and farmers as they try and expand into wholesale markets.

ASSESSMENT PROCESS

This report examines three main components. First, a comprehensive review of existing models and literature relating to hub connectivity and local food distribution. Second, interviews were conducted with distributors that are based and operate in West Virginia. Third, an analysis was conducted to determine key regions for collaboration, potential sites for aggregation and distribution activities, and to characterize potential routes using available production, distributor, and producer data.



BACKGROUND

The project team started with an overview of current literature and existing distribution models. There are no formal consortia developed between food hubs and distributors in the Appalachian region, however, there is extensive research about connectivity between industry clusters. The research was focused on conventional-transitional food systems, industry clusters, and alternative food-networks.

CONVENTIONAL-TRANSITIONAL FOOD SYSTEMS

Conventional-transitional food systems value local producers for their reputation, quality, competitive pricing (in some cases), and in niche markets, local branding, but operate mostly by free market principles. This research explores the role of conventional food distribution and how and if local products can be integrated into the conventional food supply chain. The paper “Moving Local Food Through Conventional Food System Infrastructure: Value Chain Framework Comparisons and Insights”[2], identifies many of the challenges in integrating local food products into conventional systems.

The study examined two cases of Farm-to-School (FTS) programs that procure local food from a wholesaler that integrates local food with conventional producer sources. The study examines these traditional wholesale distribution systems from the value chain framework to see how they integrate four features of value chains: product differentiation, committing to welfare of all participants, creating partnerships, and the role of trust and shared governance.

These case studies revealed that the urban wholesaler put a lot more value and marketing on the local aspect of the product whereas the rural wholesaler did not. The commitment to welfare of all participants distinctly lacked more in the rural case than

the urban case as may be intrinsic to conventional distribution, even if the sentiment of sympathy remained.

In the case of the urban food network, the distributor fostered more partnership than the rural network, allowing more communication and flexibility within the system to accommodate buyers’ needs and producers’ restraints. The urban distributor found a lack of producers solely focused on producing for wholesale, which compromised reliability since the direct marketing opportunities vie for the producers’ productivity, creating tension in the system. This situation brought the urban distributor to partner with a non-profit to locate producers solely supplying wholesalers, ensuring consistency.

The role of trust showed to be more integrated in the rural food network due to social ties and history; the urban network struggled more to manage these relationships. The authors suggested a strategy that promotes a more shared ownership model to ensure that all participants have a vested interest in everyone’s benefit, even if this model does not particularly mesh well with conventional food networks.

INDUSTRY CLUSTERS

Another concept examined in the literature review was the importance of industry clusters[3]. Clusters are made up of firms in related industries that benefit from spatial proximity (higher density meaning access to more and consistent suppliers, workers, and distribution) as well as from the increased competitive pressure. Areas with an industry cluster are also often better suited for new related businesses as establishing a stable employment becomes more feasible.

ALTERNATIVE FOOD NETWORKS

Alternative Food Networks create distinct systems of production, aggregation, distribution, and marketing that both embed certain values into the system, but also pull from conventional economic systems in order to achieve economic sustainability. In the report “Values-Based Supply Chains Supporting Regional Food and Farms,” [4], local food value chains have been talked about as a potentially successful model of connecting local producers looking to produce at a higher volume with consumers through alternative networks and businesses. Local food value chains were found to operate less like chains and more like networks, relying on relationships.

LOCAL FOOD VALUE CHAIN STUDY CONCLUSIONS

1. Distributors may need conventional product lines as well as value-based to spread out overhead costs.
2. It is possible to develop strong relationships with distributors committed to similar values.
3. A large company with 400 growers (organic) is successful due to size, scale, and expertise.
4. A successful model can be retail driven distribution- or distribution specifically for partnering retail markets.
5. Some groups can stabilize by developing their own infrastructure.
6. Marketing is very important for value-based supply chains



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EXISTING FOOD HUB NETWORKS

Another way to increase connectivity between projects involves bringing the independent food hubs together to encourage communication and networking. With the development and proliferation of food hubs across the region many organizations have come to realize the importance of sharing resources, best practices, and potentially▶

collaborative business arrangements. There are several food hub networks across the country. These networks are generally focused around networking, education and sharing best practices. Two notable food hub networks the project team looked at are the Ohio/West Virginia Food Hub Network and the Michigan Food Hub Learning and Innovation Network.

OHIO/WEST VIRGINIA FOOD HUB NETWORK

The Ohio/West Virginia Food Hub network was sponsored and developed by the Ohio Cooperative Development Center. The Network is focused on bringing together food hubs that are looking to sell to institutions or wholesale and includes existing hubs and new hubs still in the planning phase.

The network seeks to help food hubs mature to reach institutional and wholesale sales by providing resources, networking and education. While this network does not formally connect hubs, commercially or through marketing itself, the resources available to them are invaluable. Additionally, the group seeks to effectively meet the needs of its member food hubs by surveying and tailoring the focus to best meet their needs.

The project has conducted surveys of members in the past and will finish another survey process to see how members needs have changed and what the network should focus on next[5].

THE MICHIGAN FOOD HUB LEARNING AND INNOVATION NETWORK

Another example is the Michigan Food Hub Network. This network is focused on bringing the Michigan food hubs together to facilitate increased learning, assistance, and communication between the existing hubs. The Michigan Food Hub Network was started in 2012 by the Michigan Department of Agriculture and Michigan State University.

The Network is driven by the needs of the food hubs and stakeholders and is responsible for three statewide meetings a year, including webinars on topics identified as important. They have created a space for food hubs to work together and for food businesses, farmers, institutions, and buyers to have a dialogue. They have found that the network has been an efficient way to allow food hubs to come together to share experiences, learn from the service providers and partners who attend, and create the connections necessary to allow collaboration to continue beyond the meetings.

One benefit beyond education and knowledge is increased trust and familiarity, many hubs have begun to work together closely, for example, smaller hubs working with larger ones to provide quantity and products for the larger distribution[6].



EXISTING DISTRIBUTION AND AGGREGATION IN WEST VIRGINIA

A review of existing local food systems identified potential partnership opportunities across the region. Existing components are identified, compared, and overlaid to show where location and resources overlap. The location, capacity, and coverage of existing distribution and aggregation efforts are key to determining which areas have success factors for future development. A survey was conducted of existing distribution companies. According to data from the West Virginia Food Mapper ►

(mapwv.gov/foodmapper), there are over 17 distributors located within the state, and more national companies exist. Eight distributor responses were collected, providing information about capacity, location, and coverage. There are at least 28 individual food hubs or aggregation efforts within West Virginia, all at varying stages of development. Due to time and funding constraints, the project team was unable to survey the aggregators and instead relied on previous research and partner knowledge.

DISTRIBUTORS

The survey of existing distributors was conducted from July 20th to August 12, 2015. The survey identified specific service areas and infrastructure, size and capacity, existing efforts purchasing local foods, willingness to expand more local food purchases, and the barriers that exist when purchasing local foods. Of the 17 West Virginia distributors contacted, only eight responses were collected, shown below.

- Tri-County Wholesale Produce
- Fuller Tomato Company
- Potomac Whole Foods
- Crook Brothers Wholesale
- A.F. Wendling, Inc.
- Jebbias Market Wholesale Fruit
- Corey Brothers Inc.
- Brewer Distributing Company

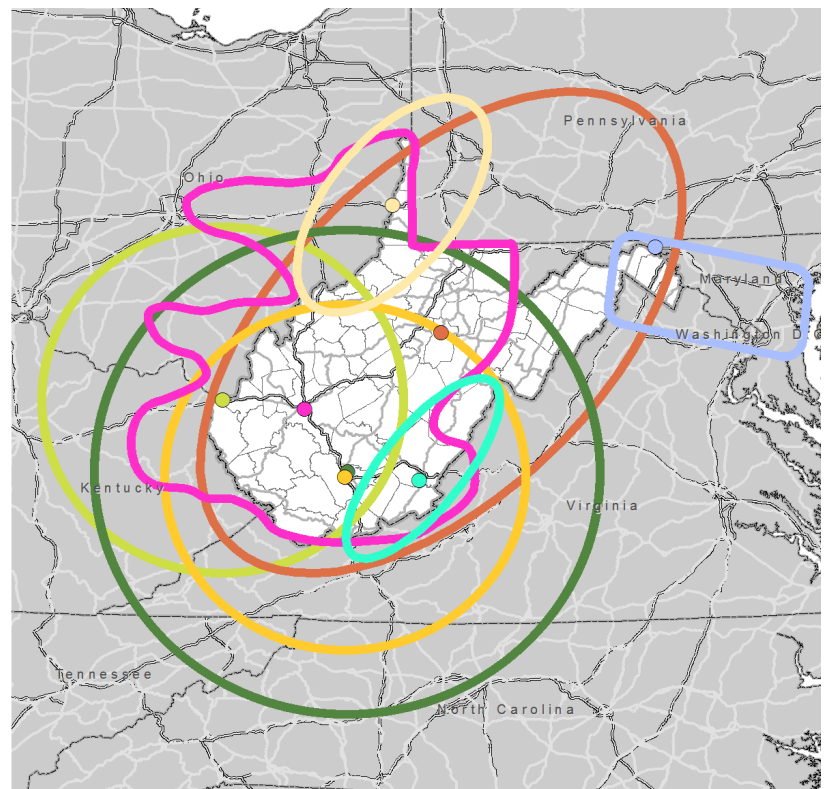


FIGURE 1: DISTRIBUTOR SERVICE AREAS

The service areas of each distributor are shown above. These service areas overlap and most respondents pass through their service areas on a weekly basis. The service areas show the viability of food distribution routes across the state, and the potential opportunity for partnership in the future.

CURRENT BARRIERS TO BUYING LOCAL FOOD

Price: Food distribution has low margins and prices required to meet their customer's demand and remain profitable are often too low for local producers. Price is the largest constraint across distributors

Adequate supply and packaging: Many of the distributors require adequate supply, consistent products unit sizes, and packaging to purchase and transport local products.

Food safety: Out of the eight distributors surveyed, four indicated that they require GAP certification Many require the ability to quickly recall and trace products they distribute.

Place-based marketing: Lack of a unified West Virginia grown marketing effort was identified as a challenge, it would help their businesses in marketing that product to their customers.

Barcodes/product codes: Some distributors indicated that some of their customers require specific codes or stickers to be on products for sale.

Packaging requirements: Most of the distributors surveyed indicated that they have packing requirements for select products and accurate place of origin is critical.

OPPORTUNITIES

- Six distributors indicated they presently purchase local food, while small, with a majority of sales under 10%; local food is becoming a priority.
- Seven of the distributors surveyed indicated that they were interested in purchasing local food.
- Value-added products were identified as a product that distributors were interested in distributing.

SUGGESTIONS FOR GROWTH

- Many distributors indicated that they could add new customers if the sites had a large enough quantity to make a route financially viable.
- A large customer would allow them to pick up smaller clientele along the route.
- Six distributors mentioned a desire to expand their customer base if it was financially viable. However, they require a consistent number of committed customers in an area to make financially sound route decisions. One distributor indicated that a barrier to their businesses expansion was the number of committed customers in new areas.

KEY FACTS

- All the distributors indicated **weekly routes** within West Virginia and at least three make multiple trips per-week.
- Distributors serviced between **30 and 800 customers**, with three serving over 600.
- The distributors also have a variety of customer types, though almost all **sell to restaurants, institutions, and direct**.
- The distributors have access to **refrigerated trucking** infrastructure and the number of trucks used ranged from two to 17 per distributor.
- **Logistics and planning** are key for profitability. Average pick up/drop off time for distributors can be as little as **15-20 minutes per stop** in order to make deliveries within required drive times[7].
- The majority of products are conventional, with five respondent's average only **4.7% local products**. One distributor indicated up to **10%** and two indicated less than 1%.

AGGREGATORS

Aggregation efforts have multiplied across the state, providing aggregation and purchasing opportunities for local farmers. These types of projects are an important step in developing alternative food networks. Not including farmer markets, there are at least 28 active food hubs and aggregation projects in West Virginia. These efforts include small retail food hubs, producer organizations, community support agriculture entities (CSA's) sourcing from multiple producers, non-profit projects, and some larger aggregators. At least twelve of the existing aggregation efforts have retail locations and

five are part of the West Virginia Food and Farm Coalition Mobile Market Mini-grant program. Data is not available on the current infrastructure of these ever-changing efforts and this project's scope did not provide an opportunity to conduct a full survey of aggregation capacity.

While these sites vary in scope, they do present an opportunity for developing networks for distribution between existing projects and retail locations, or as a way to aggregate farm products for sale through existing distribution channels.

1	WHEELING MOBILE MARKET
2	ALL THINGS HERBAL LOCAL MARKET
3	MOUNTAIN PEOPLE'S CO-OP
4	MOUNTAINEER COUNTRY FARMERS MARKET
5	ARTHURDALE CO-OP STORE
6	HIGHLAND MARKET
7	THE FARMERS DAUGHTER
8	MOCKS GREENHOUSE AND FARM
9	BLUE MOUNTAIN FARM
10	ORRS FARM MARKET
11	INWOOD FARM MARKET
12	KILMER'S FARM MARKET
13	MORGAN'S GROVE
14	HEART AND HAND
15	FISH HAWK ACRES
16	MID-OHIO VALLEY GROWERS ASSOC.
17	RURAL ACTION/CHESTER HILL PRODUCE
18	MINUTEMEN FARMERS COOPERATIVE
19	THE WILD RAMP
20	KANAWHA VALLEY CSA
21	NEW RIVER MARKET
22	POCAHONTAS PRODUCE ON THE MOVE
23	ALDERSON COMMUNITY FOOD HUB
24	MONROE FARM MARKET
25	MCDOWELL COUNTY FARMS
26	MINGO MOBILE MARKET
27	FULLER TOMATO
28	JOE N THROW CO-OP

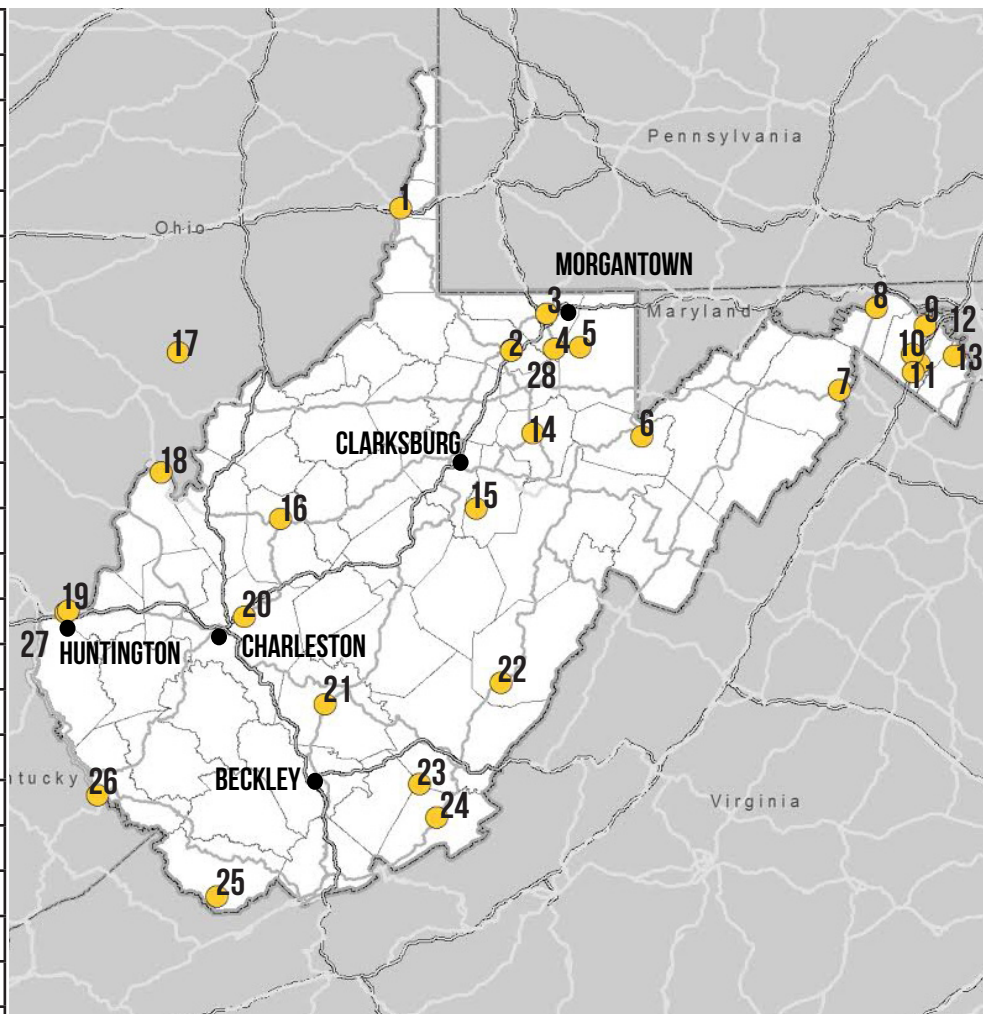


FIGURE 2: FOOD HUB MAP

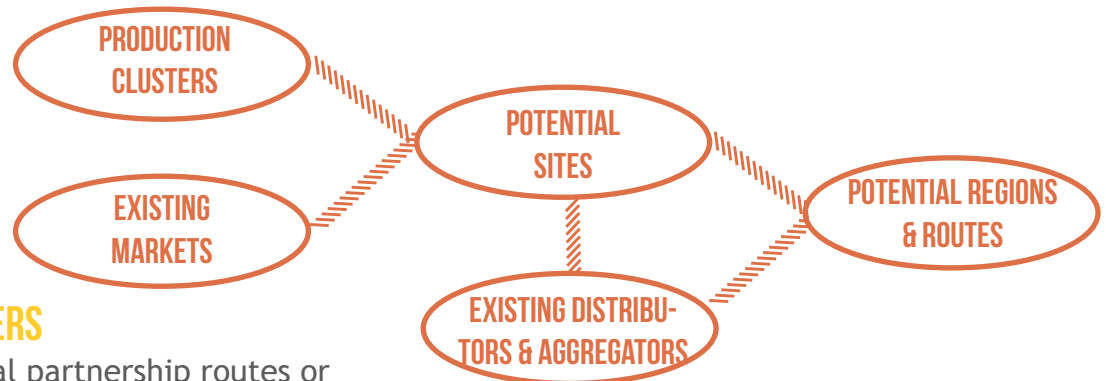


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DISTRIBUTION ASSESSMENT AND OPPORTUNITIES

CHARACTERIZATION

To determine the best locations for local food distribution development, three main factors were considered: (1) existing production clusters, (2) proximity to viable markets, and (3) existing distribution within the state. These factors are equally important in determining areas of potential collaboration and partnership between regions within West Virginia. The project team characterized these factors based on previous research, data collection, and geostatistical analytics. Through this characterization process, potential sites and potential routes were identified across the state.



PRODUCTION CLUSTERS

To visualize potential partnership routes or aggregation points it is important to first identify key production regions. Vegetable and fruit production across the state has been exhaustively studied [8,9,10]. Previous research combined with data from the USDA Agricultural Census provides the framework for visually mapping production and its spatial relation to existing distribution and markets.

A simple cluster analysis of farm production was employed to identify production regions. The primary source for identifying the spatial clusters of production was the 2007 and 2012 USDA Agricultural Census. Descriptors, such as farm income, number of operations, and total acres of vegetables are just a few of the many variables used to quantify regions of production. Data from existing local food producer databases was also included to supplement the USDA Census data.

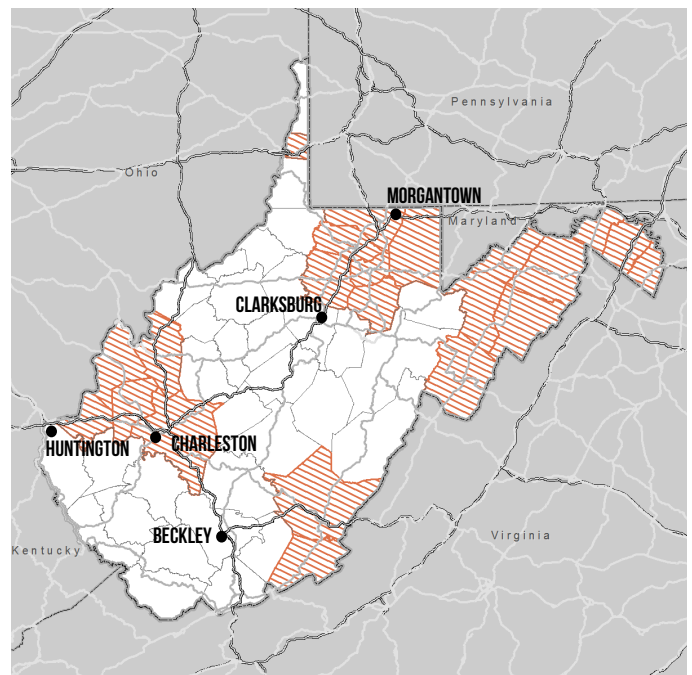


FIGURE 3: LOCAL FOOD PRODUCTION CLUSTERS

Using this data and geostatistical methods designed to find clusters, the project team identified regions of the state that have the strongest agriculture production. These regions have statistically significant high or (low values) and also have neighboring regions with high values.

The cluster analysis began by counting the number of times certain descriptors were included in a cluster of high values. This resulted in a cluster map as seen in Figure 3. This process identified four different regions of the state, these regions are similar to the new intra-state regions or “foodsheds” identified by the West Virginia Food and Farm Coalition. The regions that show the highest cluster participation are North Central, Kanawha, Eastern and Northern Panhandle, and the New and Greenbrier.

MARKETS

While the cluster analysis of farm production focused the area of interest for locating a hypothetical distributor of local food, it did not consider other factors related to that decision process. It was necessary to include a more detailed analysis of proximity to producers, as well as potential markets in the site selection exercise.

To understand the missing datasets and their relevance to the distribution system, the project team developed the following datasets for West Virginia using regional source data: distance to major roads, density of major roads within 5 miles, and density of producers within 20 miles.

Additionally, feedback from distributor surveys illustrated a few identifiable characteristics of delivery routes and markets. First and foremost, distributors identified their routes in two distinct manners: as a “line,” eg. Beckley, Charleston, Huntington or as a cluster connected in a circular route eg. Athens, Chilicothee, Lancaster and Gallipolis. These classifications define proximity to market for a

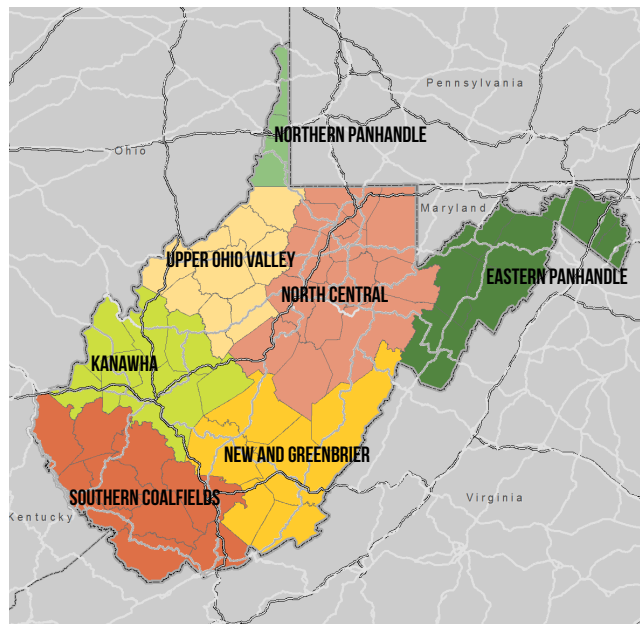


FIGURE 4: WEST VIRGINIA FOODSHED MAP

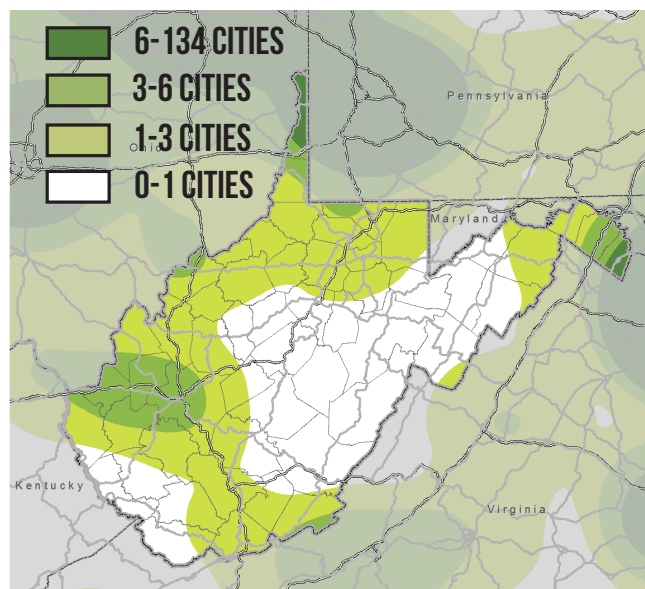


FIGURE 5: DENSITY OF CITIES WITH POP. OVER 10K.

food distributor that can be thought of as being close to individual cities of high population, but also as being close to groups of cities over a certain population. In this case, cities with population over 10,000.

Generally speaking, these groups of cities identified as viable delivery destinations fit within a 50 mile circle. To that end, we classified all areas within 300 miles of West Virginia by the number of cities within 50 miles (See Figure 5), and then found the distance to those classes.

LOCAL FOOD PRODUCTION AND DISTRIBUTION CLUSTERS

The above inputs were combined using a weighted sum to develop a final map for West Virginia that describes the best regions for locating a new food distributor. These regions take into account available producers of food, proximity to transportation assets, and distance to markets.

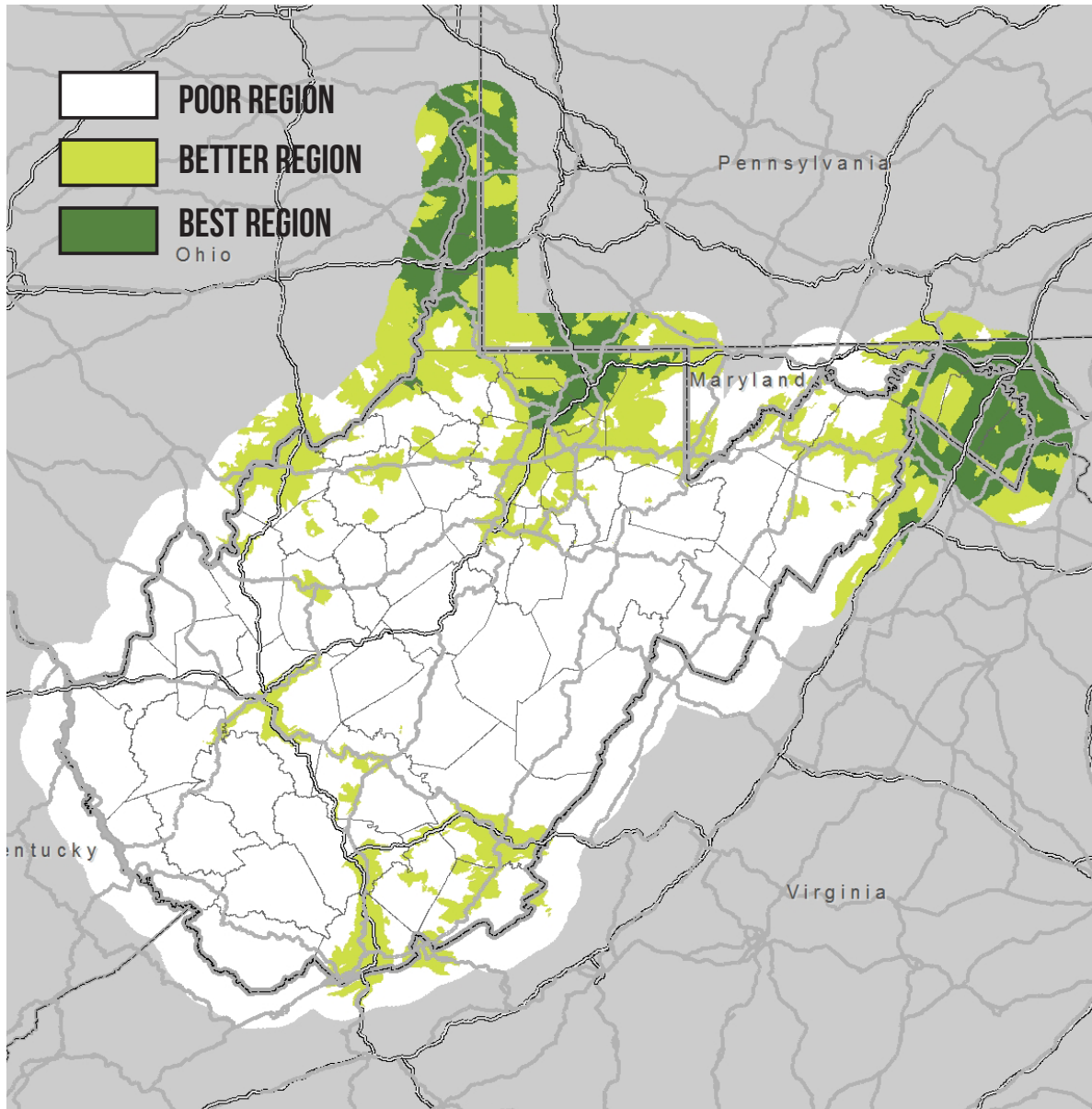


FIGURE 6: LOCAL FOOD PRODUCTION AND DISTRIBUTION CLUSTERS

POTENTIAL AGGREGATION SITES

The next step to identifying new or expanded distribution routes was to characterize potential sites that these routes would pass through. Based on the production clusters, 17 sites were selected for further characterization. These sites are largely from the West Virginia Development Office's list of ►

industrial buildings [11], though in some cases where buildings were not identified, a town in that region near a major road was selected. Potential sites that had the most overlap between distributor routes included Fairmont, Union, and Lewisburg.

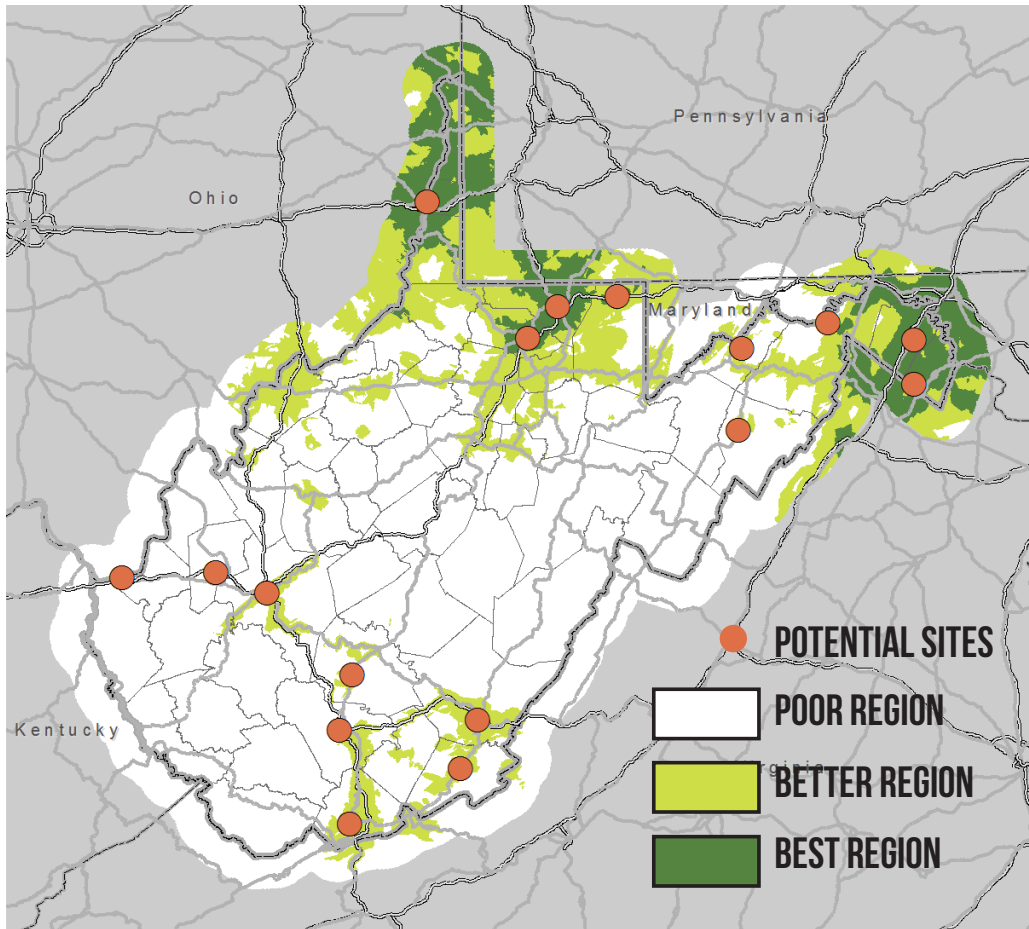


FIGURE 7: POTENTIAL AGGREGATION SITES

If a project was seeking to create a site to pull from existing producers without accounting for existing projects, the sites with the highest number of producers within 50 miles, and with the highest interest in food hubs are the Charleston and Fairmont areas. However, both of these areas have seven to eight existing food hubs or aggregation efforts within 50 miles, therefore it may be worth spending resources to work with these existing projects instead of ►

creating new ones. These areas would be positioned well to work with existing distributors, due to the high numbers of existing efforts.

The two test sites that have high numbers of producers and lower numbers of existing projects are Oak Hill and Beckley. Both of these areas have over 100 producers within 50 miles and have less than five existing aggregation projects within 50 miles.

POTENTIAL DISTRIBUTOR ROUTES

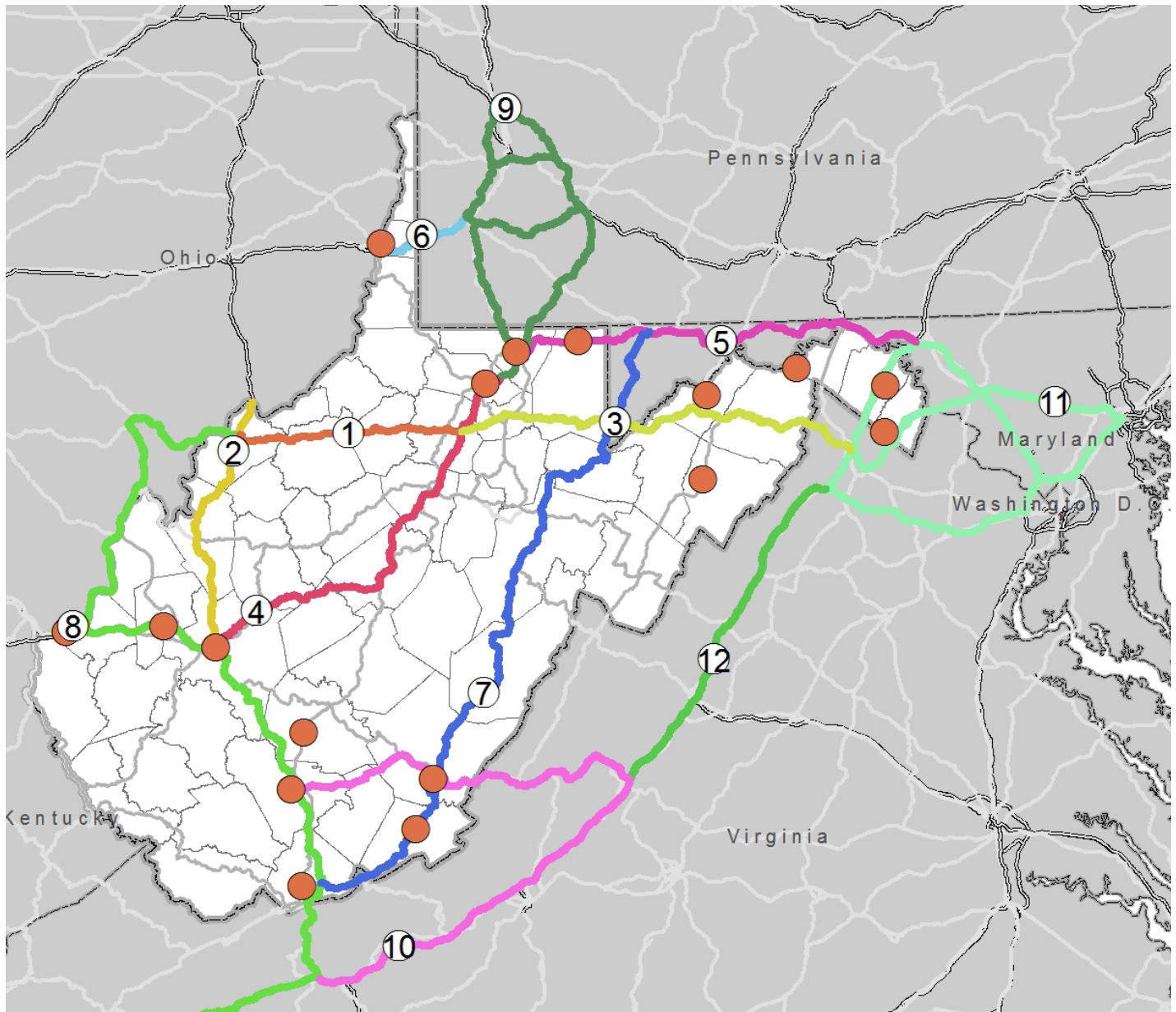


FIGURE 8: TEST DISTRIBUTION ROUTES

For the purposes of understanding the potential opportunity surrounding the distribution of local food products in West Virginia, several potential routes were identified and characterized. Routes were chosen following major roads and existing transportation hubs and routes between existing high production clusters. A total of twelve routes were identified (Figure 8), each route was summarized by existing aggregation efforts, producers, distributor routes, and demographic data for a 30-mile buffer of the route. Summarized data for all routes are available in Appendix III.

ROUTE NUMBER	ROUTE NAME	PRODUCERS IN ROUTE BUFFER	WV HUBS IN ROUTE BUFFER	LENGTH IN MILES	DISTRIBUTORS IN ROUTE BUFFER	POPULATION
1	US 50	107	6	72	3	553,322
2	I-77	112	4	90	3	708,248
3	US 50-VA	181	14	147	2	1,046,857
4	I-79	188	9	172	6	976,653
5	I68-I70	135	13	149	3	1,509,058
8	DUFFIELD-ATHENS	107	10	378	7	2,239,349

TABLE 1: BEST IN STATE ROUTES

BEST IN-STATE ROUTES

The best in-state routes were based on the highest number of producers and food hubs - two datasets that are only available within West Virginia. Routes 1,2,3,4 had the highest amount of producers per-mile of all the in state routes examined (Table 1). This suggests that efforts seeking to reach the highest number of producers within the state may want to consider these routes.

Routes that had the highest number of West Virginia food hubs per-mile included routes 3,5,1, and 4. These routes may be useful to consider if a distributor or other distribution business is considering sourcing from existing West Virginia aggregation efforts.

Another consideration in examining potential in-state routes is the total number of entities along a proposed route. The routes that pass near the highest number of West Virginia food hubs and aggregation efforts and the highest number of producers are routes 3, 5, 8, and 4.

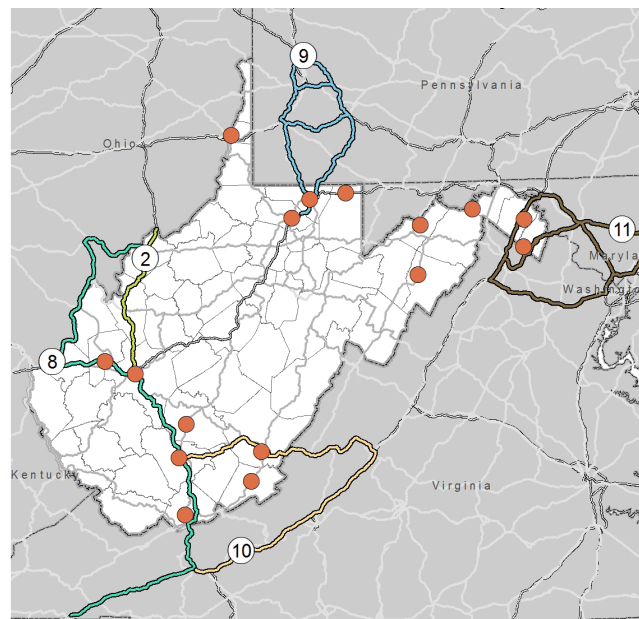


FIGURE 9: BEST OUT-OF-STATE ROUTES MAP

BEST OUT-OF-STATE ROUTES

Opportunity existing beyond state borders and outside markets. For producers and distributors looking to move larger quantities or specialty products, high population areas may offer higher prices along with a increased market. Additionally, this may be an opportunity for value-added products that have higher shelf life and need broader markets to be successful. As visible in Figure 9, routes 9, 11, 10, 2, and 8 have the highest potential for reaching urban markets outside of West Virginia.

EXAMPLE ROUTE OPPORTUNITY

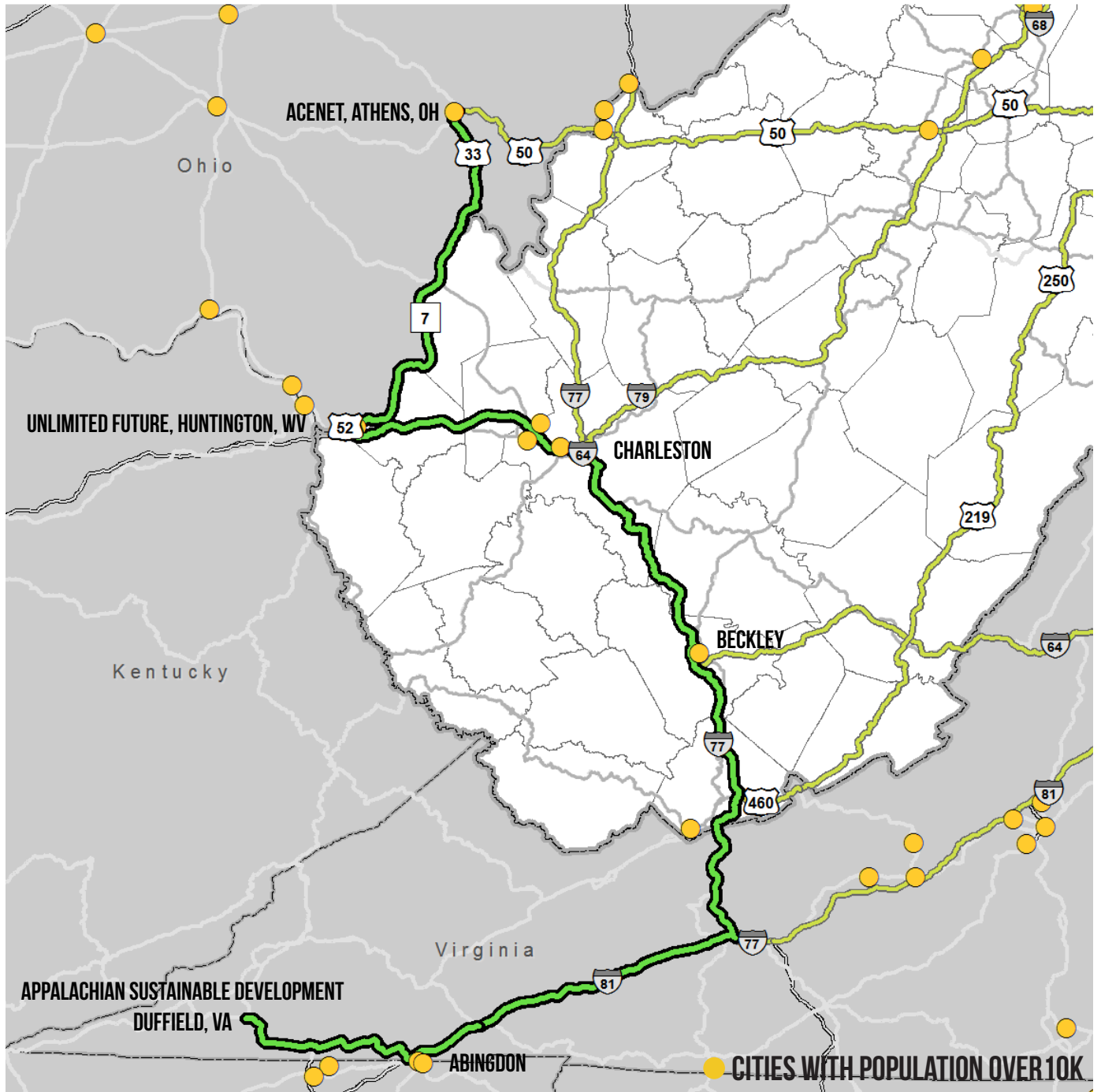


FIGURE 10: DUFFIELD, VIRGINIA TO ATHENS, OHIO ROUTE

Duffield is home to Appalachian Sustainable Development and Appalachian Harvest, an established local food distribution project that has been distributing food grown in Virginia to customers along the east coast[12].

Athens is home to Rural Action and ACEnet, two organizations that have worked for decades to develop the local food system in the region.

The Wild Ramp and Unlimited Future, Inc. are located in Huntington, West Virginia [13].

These three organizations are examining the feasibility of establishing a distribution route to create access to larger markets and distribution to new regions.

This routing example illustrates how to use the information developed in this study to inform future planning efforts. Route 8 extends from Duffield, Virginia to Athens Ohio, via Beckley and Huntington, West Virginia.

The route is 377 miles in length and includes an area of 14,612 square miles within the 30 mile buffer-zone. Within West Virginia, this proposed route passes within 30 miles of 161 producers and ten existing aggregation efforts.

As shown, four of those efforts are directly along the route and the remaining five are within easy driving distance of the proposed route. The markets along this route include aggregation efforts that operate retail spaces, including grocery stores, restaurants, and other local food buyers. Additionally, there are 208 cities with populations over 10,000, with a total population in the buffer zone of 2,239,349, containing 922,613 households, with an average median income of \$39,524. This route also intersects with seven of the distribution routes identified in the distributor survey.

 **20** FOOD OUTLETS/BUYERS

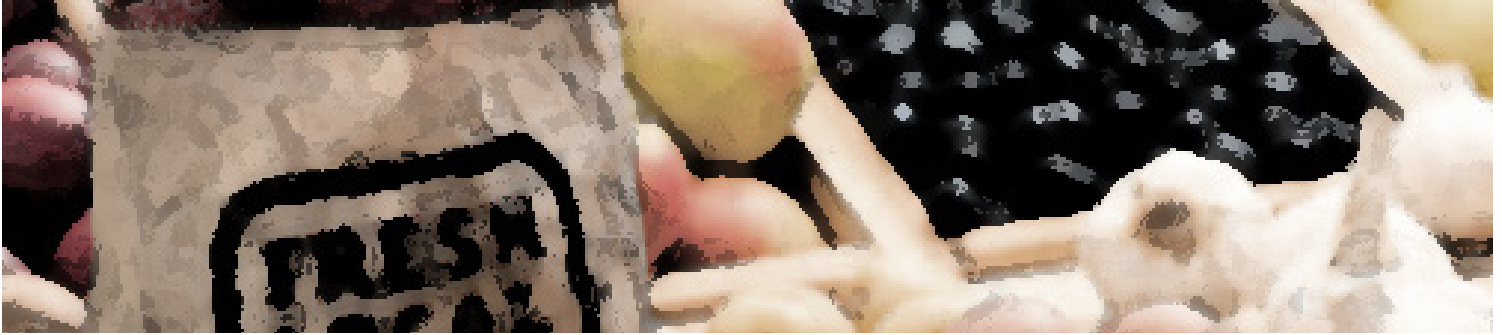
 **161** PRODUCERS

 **7** DISTRIBUTORS

 **9** WV FOOD HUBS

 **20** CITIES WITH POP. > 10,000

FIGURE 11: DUFFIELD-ATHENS ROUTE CHARACTERISTICS



FINDINGS

Opportunities for developing inter-hub networks and potential consortia do currently exist in West Virginia. While barriers remain, the development of these networks, even at this stage, will ultimately lead to a more efficient, sustainable, and beneficial food system for producers, distributors and aggregators, and consumers.

1

CHALLENGES REMAIN IN REACHING WHOLESALE AND DISTRIBUTION MARKETS

While distributors and conventional wholesale routes encompass the majority of the state, major barriers remain for local producers and aggregators trying to reach these new markets.

Challenges for distributors, wholesalers, and retailers include:

- **Seasonality** : Retailers and distributors prefer working with suppliers that can cover a longer supply season so they can offer consistent products to their customers.
- **Regular pricing**: Distributors require reliability in terms of price to keep their cost and delivery effective.
- **Reliable logistics**: Distributors and retailers need consistent and reliable scheduling to bring products to market effectively.
- **Reliable quality**: Distributors and retailers require consistent quality.
- **Consistent size**: Many retailers and distributors require specific sizing for wholesale products.
- **GAP/food safety certifications**: Most distributors require food safety certification or a means of tracking the product in case of recall.
- **Liability insurance**: Most distributors and retailers require liability insurance for all products they purchase.

Challenges for local producers in reaching wholesale or distribution markets include:

- **Pricing**: Many producers cannot produce wholesale products at a price point that is compatible with conventional wholesale prices.
- **Packing and grading**: Many producers are unfamiliar with this process and lack the resources to fill packing and grading requirements on their own.
- **Access**: In West Virginia, many producers are interested in selling wholesale, but lack access to the organization or hubs.

NEED FOR A LOCAL FOOD MARKETING EFFORT

Wholesalers and distributors use organic labeling in their marketing and sales, the label allows for a premium price within the wholesale market. If there was a strong locally grown marketing effort it could raise the demand for West Virginia products and help encourage distributors to offer more locally grown food.

2

THERE IS GOOD COVERAGE OF FOOD DISTRIBUTORS WITHIN THE STATE

Existing food distributors could provide an outlet for individuals and food businesses, particularly food hubs and farmers wishing to supply wholesale markets. The entire state is within the service area of at least one surveyed distributor, with most areas overlapping four to six distributor routes.

MANY OF THE DISTRIBUTORS ARE LOCATED IN AREAS NEAR EXISTING HUBS.

As indicated in the distributor survey, many distributors are interested in purchasing and using local products if certain specifications are met. The survey only accounts for the eight ►

distributors, but the actual coverage is likely much higher, especially when considering the major distributors such as US Foods, GFS, and Sysco. It is possible for local food producers and aggregators to partner with existing distributors and move local products into schools, providing a good opportunity for reaching regional buyers.

Accessing the existing distributors will be most successful if food hubs or other efforts work with producers and suppliers to facilitate requirements for packing, processing, and product storage.

3

VALUE-CHAIN AND PARTNERSHIP OPPORTUNITIES EXIST IN MULTIPLE AREAS

A diversity of locations, routes and regions present value-chain and partnership opportunities across the state.

AREAS OF POTENTIAL COLLABORATION

The regions identified that had the strongest levels of potential collaboration are the Northern and Eastern Panhandles, the Huntington-Kanawha corridor, and the Greenbrier Valley.

EXAMPLE AGGREGATION LOCATIONS

Additionally, potential aggregation locations were identified across the state for potential development. These sites were identified based on available sites from the West Virginia Development Office and could provide existing infrastructure for potential food hubs.

AREAS THAT MIGHT HAVE THE BIGGEST CHALLENGE

While many areas have good access to transportation and routes, there are a few regions that have less access to transportation options and existing projects. These regions include the central and southwestern portions of the state, however these regions do have some existing projects and producers and could be good areas to explore for satellite food hub models.



<http://www.producecornerwithbobcorey.com>

4

POTENTIAL ROUTES EXIST ACROSS THE STATE

Generally, routes with the highest density of roads and greater proximity to accessible markets are more suited for development. Additionally, routes between strong market or production clusters offer the best opportunity for mutually beneficial transport. This characterization shows which routes would be best suited for further ►

development and provides a reference for any organization considering expanding or starting distribution through the state. The I-64 corridor between Huntington and Beckley WV (passing through Charleston WV) seemed prime for development, along with I-79 and I-68 corridors in the north central and panhandle areas of the state.

RECOMMENDATIONS

1

Support ongoing West Virginia food hub and aggregation efforts. There are a variety of new projects taking place within the state, communication and coordination is crucial to developing and enhancing the local food system.

2

Identify and compile a database of existing hub and aggregation projects, their resources, infrastructure, and needs. This would provide an invaluable resource for the coordination of organizations, support partners, new businesses, and existing projects across the state.

3

Continue and increase communication between West Virginia food projects. Presently, there are two networks active in the state, The West Virginia Food and Farm Coalition Aggregation and Distribution Working Group [14] and the West Virginia and Ohio Food Hub Network[5]. Both organizations offers events, networking, and resources for projects within the state.

4

Identify West Virginia food hubs and aggregation efforts willing and interested in supplying wholesale markets and connect them with existing distributors. Through these networks and existing resources, find the aggregation projects that are most interested in supplying wholesale markets and pursue connections or partnerships with area distributors.

5

Develop alternative food-networks through projects like the Duffield-Athens route. The conventional food distribution model can be key in distributing local products, however, alternative food-networks offer the opportunity for higher returns and can provide a balance that will allow for greater financial sustainability throughout the food value-chain.

6

Identify short-route connections between production and market clusters within the state. These will create opportunities for West Virginia food hubs and aggregation efforts to connect to each other. Smaller projects in rural areas may wish to form partnerships to supply or distribute products in more populated areas, or with existing projects that have established relationships through larger distributors. It is important to not underestimate the importance of these short routes in bringing higher volumes to market.

In conclusion, this assessment provides a springboard for consortium development and future project implementation. It is an exciting time for the West Virginia food system and many of these projects are growing and developing quickly. With additional data, increased communication, and creative solutions West Virginia has the opportunity to boost sales and distribution of local food across the region.

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APPENDIX I: DISTRIBUTOR SURVEY DATA

TABLE 1: DISTRIBUTOR SURVEY, CUSTOMER TYPES

NAME	RESTAURANTS	INSTITUTIONS	OTHER DISTRIBUTORS	DIRECT SALES	GROCERY	OTHER
Corey Bros Inc. Wholesale Produce	X	X		X	X	
Crook Brothers Wholesale	X	X	X	X	X	service
Fuller Tomato Co.	X	X	X	X	X	fairs
Tri-County Wholesale Produce	X	X	X	X	X	
Jebbias Market Wholesale Fruit	X	X		X		
Potomac Whole Foods	X			X		buying club
A. F. Wendling, Inc.	X	X		X		
Brewer Distributing Company		X		X	X	Coal Companies, wholesale

TABLE 2: DISTRIBUTOR SURVEY, NUMBER OF TRUCKS

Name	Number of trucks
Corey Bros Inc. Wholesale Produce	10 (rentals)
Crook Brothers Wholesale	17
Fuller Tomato Co.	4
Tri-County Wholesale Produce	3
Jebbias Market Wholesale Fruit	3
Potomac Whole Foods	3
A. F. Wendling, Inc.	11
Brewer Distributing Company	no data

TABLE 3 : DISTRUBTOR SURVEY, FOOD SAFETY REQUIREMENTS

Do you require GAP Certification?			
Corey Bros Inc. Wholesale Produce	X		
Crook Brothers Wholesale	X		
Fuller Tomato Co.	X		
Tri-County Wholesale Produce			X
Jebbias Market Wholesale Fruit	X		
Potomac Whole Foods		X	
A. F. Wendling, Inc.		X	
Brewer Distributing Company			X

APPENDIX II: TEST POINT DATA

TABLE 4: TEST POINTS ATTRIBUTES WITHIN 50 MILE RADIUS

Name	Distributors	Distributor Service Areas	Producers	Median Income, Average	Population	WV Hubs
Oak Hill	4	5	124	\$39,554	641,440	4
Beckley	4	5	105	\$38,433	614,143	5
Scott Depot	6	5	110	\$40,954	843,245	6
Charleston	5	5	130	\$40,635	800,934	7
Morgantown	2	5	117	\$45,372	1,153,382	7
Fairmont	3	6	128	\$41,159	839,095	8
Lewisburg	1	6	87	\$44,008	722,912	4
Bruceston Mills	2	4	79	\$45,163	1,253,768	7
Union	2	6	78	\$43,467	813,001	4
Huntington	6	4	77	\$40,056	936,883	5
Paw Paw	1	3	76	\$54,443	998,584	7
Keyser	0	4	67	\$46,567	590,915	7
Martinsburg	1	2	66	\$87,727	2,292,111	7
Summit Point /Charles Town	1	2	66	\$99,204	3,030,026	7
Moorefield	1	4	52	\$47,107	635,959	2
Princeton	2	5	51	\$37,696	670,733	4
Wheeling	3	4	42	\$47,111	1,979,251	1

APPENDIX III: FULL ROUTE LIST

TABLE 5: ALL TEST ROUTES

Route number	Route name	Route Description	Cities with Population > 10,000 within 25 miles	Population	Length in miles
4	I79	I-79 through WV between Morgantown and Charleston.	8	976,653.00	172.0
3	US 50-VA	US 50 and US 220 from Clarksburg to I-81 in Front Royal, VA region.	7	1,046,857.00	146.6
8	Abingdon-Athens	Abingdon, VA north by way of I-81 to I-77 to I-64; Cross into Ohio in Huntington WV and follow state route 7 to US 33 to Athens, OH, and US 50 east to Parkersburg, WV.	20	2,239,349.00	377.8
11	Eastern Panhandle	Several loops from the Eastern Panhandle; East on I-70/I-270 to Washington D.C.; I-95/I-695 to Baltimore; I-66 from Washington D.C. to Front Royal, VA and I-81.	123	8,742,171.00	345.7
5	I68-I70	I-68 and I-70 through Western Maryland from Morgantown, WV	9	1,509,058.00	149.4
7	US 219-460	US 219, US 250 and US-460 through eastern West Virginia.	7	1,033,214.00	250.6
9	North Central	Loop north from Morgantown, WV around greater Pittsburgh region and SW PA utilizing US 119, I-79, I-70, I-76 and spur interstates.	34	3,128,250.00	257.8
2	I77	I-77 between Charleston, WV to Parkersburg region.	7	708,248.00	89.9
1	US 50	US 50 from Parkersburg region to Clarksburg, WV.	5	553,322.00	71.6
10	Lewisburg-VA	Loop through Greenbrier Valley Region and SW Virginia utilizing I-81 N/S and I-64 E/W (as well as I-77 N/S)	13	1,340,744.00	269.3
6	I70-NorPan	I-70 from Northern Panhandle to greater Pittsburgh region and North Central loop.	19	1,805,879.00	31.4
12	I81-I64	I-81 between I-64 and Eastern Panhandle region.	8	949,484.00	143.9

APPENDIX IV: EXISTING EFFORTS BY REGION

TABLE 6: KEY REGIONS AND EXISTING AGGREGATION EFFORTS IN WEST VIRGINIA

Existing Aggregation Effort	Region
Mock's Greenhouse and Farm	Eastern Panhandle
Kilmer's Farm Market	
Orr's Farm Market	
Inwood Farm Market	
Blue Mountain Farm	
The Farmers Daughter	
Morgan's Grove	
Alderson Green Grocer	Greenbrier Valley
Monroe Farm Market	
Minutemen Farmers' Cooperative	Huntington/Charleston
Kanawha Valley CSA	
Fuller Tomato Co.	
The Wild Ramp	
Arthurdale Co-op Store	North-Central
Mountain People's Co-op	
Mountaineer Country Farmers Market	
All Things Herbal Local Market LLC	
Joe N Throw Co-op	
Heart and Hand	
Wheeling Mobile Market	Northern Panhandle
Highland Market	
Fish Hawk Acres	
Mid-Ohio Valley Growers Association	
Pocahontas Produce on the Move	
New River Market	
Mingo Mobile Market	
McDowell County Farms	
Rural Action / Chester Hill Produce Auction	

These efforts are located in regions of the state that were not identified as potential areas based on the criteria outlined above

APPENDIX V: DUFFIELD-ATHENS DATA

TABLE 7: DUFFIELD-ATHENS ROUTE DATA

Route	Duffield-Athens
Food Outlets/Buyers	20
Producers within 25 mi. buffer	161
Distributors within 25 mi. buffer	7
Cities with Population > 10,000 in buffer	208
Distributor Service Areas in buffer	7
Average Median Income	\$ 39,524.21
Population within 25 mi. buffer	2,239,349.00
Households within 25 mi. buffer	922,613.00
Food Hubs within 25 mi. buffer	9
Route length in miles	377.8
Producers/sq mile/length	0.426
Hubs /sq mile/length	0.026
Buffer Area in Square Miles	14,612.21

TABLE 8: EXISTING AGGRGATION EFFORTS WITHIN 25 MILES OF THE DUFFIELD-ATHENS ROUTE

Minutemen Farmers' Cooperative
Kanawha Valley CSA
Fuller Tomato Co.
The Wild Ramp
Alderson Green Grocer
New River Market
Monroe Farm Market
McDowell County Farms
Rural Action / Chester Hill Produce Auction