Metropolitan
ENERGY CENTER

Needs Assessment Report

Transportation distribution systems for local specialty crop producers

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Introduction

This report was produced as part of the regular participation of Metropolitan Energy Center (MEC) in the Clean Cities program of the U.S. Department of Energy. MEC began housing Clean Cities Coalitions in 1996 as part of its mission to create resource efficiency, environmental health, and economic vitality in the Kansas City region and beyond. MEC's work within the Clean Cities Coalitions is funded largely by an ongoing contract with the U.S. Department of Energy to better understand and spread awareness about the uses of energy within the transportation sector. This report was produced in cooperation with a flex task assigned within that ongoing contract.

The goal of our flex task, Transportation Distribution System Needs Assessment for Local Specialty Producers, was to determine what local specialty crop producers in the Missouri/Kansas region need from a transportation and logistical perspective and to compare those needs with the Clean Cities framework to identify potential solutions that would meet our programmatic goals. To complete this task, we enacted a plan of identifying critical stakeholders, coordinating listening sessions, and understanding the transportation and logistics issues of each part of the food chain from farm to end consumer.

Stakeholders

The first task was defining our stakeholders. This included any person, organization, or business along the supply chain. The initial group of stakeholders contacted were pinpointed as farmers, aggregators, wholesale distributors, and their support organizations.

Rather than contacting individual farmers, we reached specialty crop farmers through their associations. Distributors collect produce and sell to larger operations like supermarkets, school systems, and restaurant chains. In our market, distributors for specialty crops are few and far between. We used our listening sessions with the farmers and aggregators to identify applicable distributors. Aggregators range in scale but typically collect and provide produce to individuals and smaller operations. We also engaged with Climate & Energy Project, an environmental policy NGO based in central Kansas with an interest in food deserts.

- Specialty Crop Farmer Association: Kansas Rural Center
- Specialty Crop Farmer Association: Kansas Specialty Crop Growers Association
- Aggregator: Harvesters
- Aggregator: Cultivate KC
- Aggregator: KC Food Circle
- Distributor: Kanbe's Market
- Environmental Policy NGO: Climate + Energy Project (Interest in food deserts)

Overall, 5 of the 7 organizations replied showing interest, with Harvester's and Climate + Energy Project being the only two organizations who did not reply.

Key Personnel

Once we established a working relationship with these organizations, it was important to include some individuals in forming our Project Advisory Committee. This committee consisted of two individuals within the organization and two not affiliated with MEC. The committee comprised of the following:

- Brandt Hertenstein (Project Lead, MEC)
- Tami Alexander (Project Coordinator, MEC)
- Natalie Fullerton (Stakeholder for Farmers, Kansas Rural Center)[1]
- Teresa Kelly (Stakeholder for Aggregators, KC Food Circle)

Goals

The goals of the Project Advisory Committee include assembling a list of questions to ask during listening sessions, reviewing submitted answers understanding the issues that plague the supply chain in the Missouri/Kansas region, and identifying and guiding to fruition potential projects addressed in this report.

[1] Please note that Natalie Fullerton is leaving her position at the end of 2020. We will continue to have a working relationship with Kansas Rural Center.

Methods

Once the stakeholders were identified, Metro Energy Center began the communication process with the organizations in the Project Advisory Committee to conduct listening sessions. After several conversations, we decided it was in the best interest of the stakeholders to group them by where they are in the supply chain. Farmers will have similar problems that need to be solved, philosophies, etc. Our worry was that stakeholders who were in a meeting together and were not involved in the same part of the supply chain may have grievances about another general stakeholder. Thus, it was important to keep the groups separate so that the listening sessions remained constructive. The idea was once we were able to hear each stakeholder's ideas, we then could have more constructive talks as a supply chain group.

We had a total of 3 listening sessions: two video-recorded sessions and one phone call session. We attracted stakeholders from the Missouri/ Kansas region and were able to learn about the problems they are facing from a transportation and logistics perspective. The listening sessions were as followed:

- Wednesday, October 21st 2020 - Aggregators
- Monday, October 26th 2020 - Distributors
- Monday, November 2nd 2020 - Farmers

Opportunities

Below is a list of the opportunities that were presented at the three sessions.

Truck Sharing Program

A truck sharing program was mentioned throughout all 3 listening sessions. This is a need everywhere down the logistical chain. Farmers need a truck to deliver their food to the end user, whether it be to individuals, aggregators, or distributors. Likewise, aggregators and distributors need to be able to push the produce they have acquired to their end users. Through the listening sessions, the frequency and location play a key role in demand for a truck sharing program. Farmers may only need a truck 1x a week; distributors need it every day in some instances. Furthermore, a farmer may need to travel hundreds of miles to reach their end user. Distributors may only have to travel within a metropolitan area to successfully distribute their food. Depending on their fleet size, a distributor also may need the truck all day, or only part of the day. No matter where you are in the supply chain, a truck sharing program is important.

Dual-temperature Cargo

Flexible temperatures in vehicles were brought up as a key initiative from all stakeholders in the supply chain. Produce needs to remain fresh and the best way to do that is by cooling. However, the optimal storage temperature is not necessarily the same for all produce. Because of this, it is imperative to have a truck that can

be climate-controlled at multiple temperatures. During the listening sessions, it was apparent that there is not an optimal cargo system in place to transport produce. Due to problems with the cooling system on an aggregator's truck, they had to resort to placing produce in a Styrofoam-esque box to keep produce at an appropriate temperature.

Clean Cities Fleet Support

Clean Cities can support in a variety of ways. One of the things MEC does best is connect people. MEC also can connect farmers to rebates and other sources of funding for equipment purchase, and we are available for technical assistance from application to install.

Produce Aggregators in Rural Areas

Farmers want to stay working on their farms - at least the farmers we talked to in the listening sessions. Aggregators would like to spend less time on the road collecting produce as well. However, to get their produce to the next person in the supply chain they must take time to transport to various locations. It would be convenient if there were multiple aggregators in rural areas.

Transportation from Rural Areas to Urban Hubs

This opportunity is in line with the previous item. If a rural aggregation system is put in place, then there will need to be transportation to urban areas, if that is where the produce is going to go.

Fuel Efficient and Alternative Fuel Trucks

Plain and simple, people need a vehicle to get the job done. The dual-temperature (or any temperature) cargo system will use plenty of energy along with transporting produce. The fuel also needs to be replenished easily. In an ideal world, the vehicle would be an alternative fuel. However, this vehicle would need to go through the rigors of the needs of every stakeholder in the supply chain.

Propane is often found on farms as a heating source. 800,000 farms in the US have propane on site[2]. Therefore, a truck fueled by propane is potentially an ideal alternative fuel source. If the infrastructure is already available to the farmers while being on their land, this makes for an easy fill up.

Results

Overall, the listening sessions were encouraging and constructive. Each conversation yielded interest on what Metro Energy Center can do to help and was unique in terms of needs from the stakeholders.

Below is a summary of the interest and topics brought up regarding each opportunity presented at the three sessions.

Truck Sharing Program

From the farmer's perspective: (1) assemble a list of farmers that would like to participate in a truck share program, (2) figure out a location that is relatively equidistant to each farmer that they would be willing to drive to get the shared vehicle, (3) Create an app or a website that makes it easier to reserve the truck on a calendar.

From the distributor's perspective, there are some (like Kanbe's) that would need a truck every day. For the simplicity of the argument, it may be easiest to work with a distributor. This would mean that it is not really a truck sharing program unless another user needs the truck during off hours. However, if we offered it as a truck-sharing program, it would help see what the demand of a truck is during off hours.. With this truck you could implement telematics to optimize the truck route (among many other things). Kanbe's is looking to increase their total number of stores. If the truck program works, they will become more efficient and decrease the amount of time on their routes. In turn, they may not need to buy additional trucks to support their business and if they do, it will behoove them to increase their fleet with telematics.

The final way to add truck-sharing is to work in partnership with ZipCar or another vehicle-sharing company. They have the business model already and to add a few "specialty" trucks to their fleet may alleviate potential problems on the supply chain's end (insurance, maintenance, etc.). If they partner with NREL, a presentation showing how this pilot program could help their outreach and potentially expand their usership may convince them to accept the proposal.Dual-temperature Cargo

To have a dual temperature-controlled cargo box, it would be ideal to be able to customize the cargo box space based on need. Especially given that the truck may be part of a truck sharing program and users need different things, it would be important to have that flexibility. We believe it would be ideal to have a cargo box that could have multiple sections or compartments with the ability to change temperature. Expanding the idea even further, the ability to have more than 2 temperatures would be even more optimal. Different produce has various optimal storage temperatures. If there was a way to keep that produce at optimal temperature, the decay in nutritional value would be delayed.

To do this, one would need a cargo space that could have flexible spacing along with a temperature control for each space created. To our imagination, the top and bottom panels could have a grid where spaces can be created by having poles move vertically to accommodate how large or small a space the harvest is. These compartments could then be controlled by an app or in the front of the truck. This would allow full flexibility for the user and an app that would be easy to be controlled after logging in.

Clean Cities Fleet Support

It was clear during the listening sessions that our stakeholders need help from a technological standpoint. The disconnect between farmers alike and others in the supply chain is noticeable. Specifically, in the farmer's listening session there were some farmers who were saying they did not know who they were going to sell their produce to, while there were other farmers who said they could not get enough produce to sell!

One attendee said that recently one of her trucks just died on them and they were scrambling to get another truck, regardless of whether it had the capabilities needed to keep produce fresh. This truck was a diesel truck and so we can point her to a DERA grant that may be able to help her replace the truck.

It would be interesting to have an app or a website that farmers could connect to easily displaying if anyone has a surplus or shortage of produce. In Kansas, one farmer was talking about driving to Colorado to get produce to sell. If there were farmers closer in distance, there could be savings in time and money. Also, if we were to introduce a truck-sharing program, an app would also be helpful in that regard.

Even if an app or a website does not come out of this, there needs to be some sort of forum that connects farmers with one another. When supply and demand can be met, and the impedance is communication, it is not acceptable in the modern day.

Produce Aggregators in Rural Areas

The first thing to do would be to see which farmers are interested in a rural aggregation spot. Next, we would need to determine a centralized rural location that satisfies the users' needs. Finally, we would need an aggregator to set up a location that would properly store produce while also having a customer down the supply chain.

Transportation from Rural Areas to Urban Hubs

These conversations led to questions being asked like, "Will a farmer or someone else for hire be making this trip?" and "Will this only go from hub to hub, or can it make additional trips?" This suggests that farmers would like to have options on where their produce goes. This makes sense. Each farmer has individual desires. The question remains though, how do we produce a comprehensive plan that can help a vast majority of our farmers?

This is similar to a truck sharing program. It also falls back on a support system. Transportation is needed in multiple facets throughout the supply chain. Having a program that the supply chain can use at their disposal regardless of need is the goal.

Fuel Efficient and Alternative Fuel Trucks

It was brought up during the presentation that PERC could do a demonstration project. Adding propane as an alternative fuel would also help farmers with bulk pricing for propane.

Automated Vehicles

This scenario was brought up due to a question about their idealistic future. It merges the two biggest advocations on either side. From the farmer's perspective, being able to stay on the farm to get work done rather than having to worry about the transportation of their produce. From our perspective, it is combining an alternative fuel vehicle that can autonomously pick up and drop off produce to create the best of both worlds. This is the most far-fetched outcome to have arisen from the discussions, but it is one that hopefully can become a realization sooner rather than later.

Recommendations

Some stakeholders that were sought out did not respond. A more diversified stakeholder portfolio may have yielded more comprehensive results. Also, expanding the stakeholder supply chain to include end users such as groceries would have given us a more complete perspective of logistical issues throughout.

Conclusion

The listening sessions that we conducted were proof that there is a need for assistance amongst specialty crop growers, aggregators, and distributors. Each link of the supply chain, and even within the link of the supply chain, has its own challenges. Nevertheless, there is a general overlap that can be seen: transportation plays a vital role in operations and costs both now and in the future. We have the ability as a group to spearhead projects that can help our farmers well into the future by investing in research, feasibility studies, and pilot projects. With our help, the future of specialty crop growers and the supply chain they rely on can evolve to significantly impact the economies of scale at every level, ensuring the production of healthy, locally grown produce gets to the people who need it most.