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A Facility Design Case Study of Tuscarora Organic Growers

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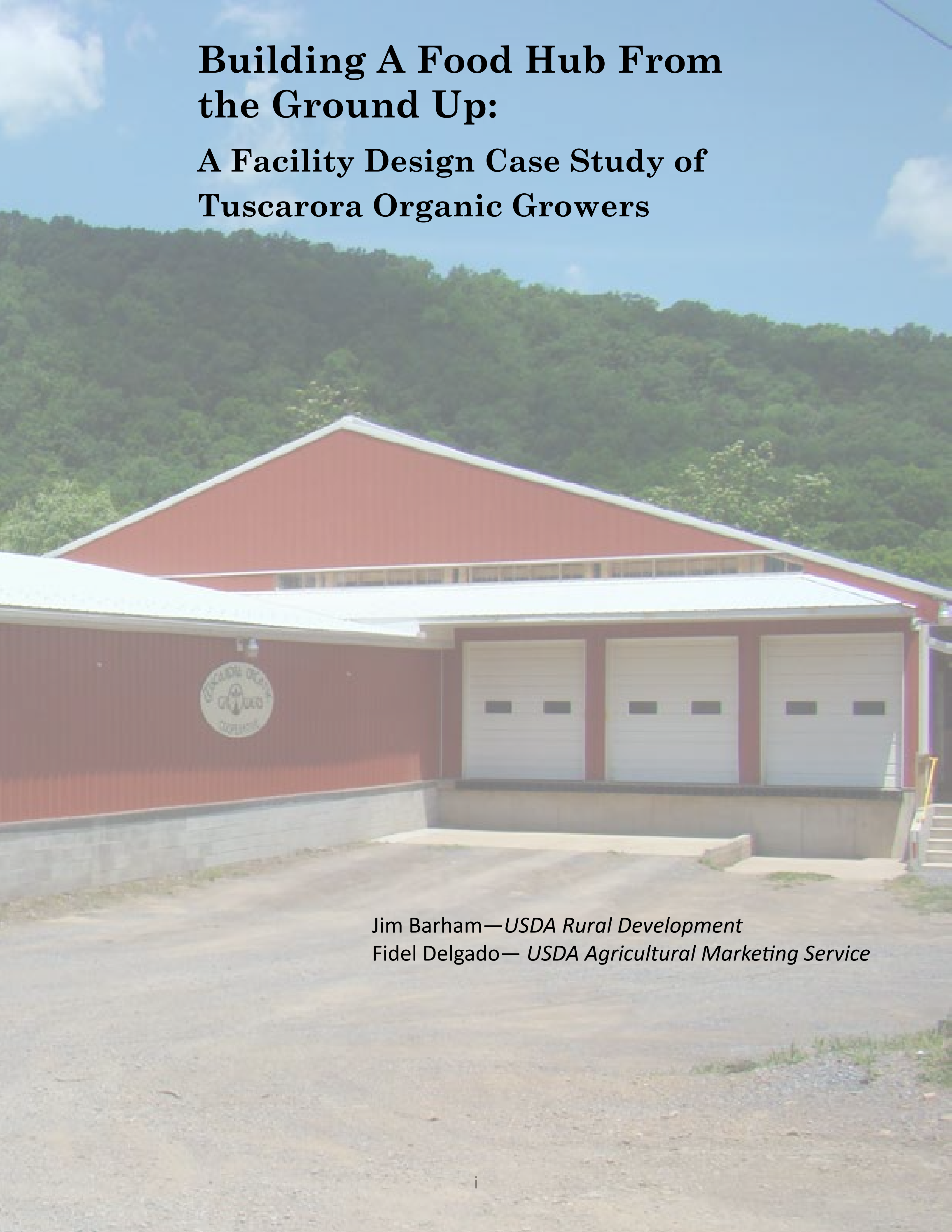

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TUSCARORA ORGANIC GROWERS
COOPERATIVE
AND
NEW MORNING FARM

Introduction

As part of USDA's commitment to supporting the development and growth of food hubs, it often responds to inquiries from food hub planners and operators requesting technical assistance on food warehouse layout and design, facility management and operations, and physical volume capacities. In an effort to provide food hub stakeholders with on-the-ground examples of how food hubs manage distribution infrastructure, USDA worked with Tuscarora Organic Growers, an established producer cooperative in Pennsylvania, to document the stages of development of its aggregation and distribution warehouse. This document describes the cooperative's solutions to warehouse layout, design, and function, and the associated costs of equipment and labor to gain the space capacity for handling certain amounts and types of product, with the hope that these insights will assist both new and expanding food hubs in making decisions about infrastructure investments.

Background

Tuscarora Organic Growers (TOG) is a producer-owned cooperative that aggregates, distributes, and markets USDA-certified organic fresh produce on behalf of its members to restaurants, retail outlets, farmers markets, and Community Supported Agriculture organizations (CSAs) in the metro areas of Baltimore, MD, and Washington, DC.[1]

History

TOG was started in 1988 in Hustontown, PA, by Jim Crawford, the owner of New Morning Farm, to take advantage of the growing demand from restaurants in the District of Columbia for locally grown and organic fresh produce. Since Crawford could not meet this demand on his own, he recruited farmers in his area to join him in establishing a producer cooperative. TOG has grown from three farmer members and a part-time manager in 1988 to 44 farmer members (about half of whom are Amish) with four full-time staff and 12 to 18 part-time and seasonal employees. TOG also buys from about 20 non-members annually. The majority of the farmer members live within 50 miles of the facility, and the majority of buyers are within 150 miles of the facility.

Markets and Sales

TOG currently offers 1,200 stock keeping units (SKUs) of produce items to its customers. Half of its sales revenue is from restaurants and retailers, such as MOM's organic markets, Whole Foods, and food retail cooperatives, with the remaining half being split evenly between institutional foodservice buyers, produce distributors, buying clubs, and TOG members (seven or eight TOG members buy produce regularly from the cooperative to sell at their farm stands, farm stores, or farmers markets). Seventy-five percent of TOG's sales revenue goes back to the farmer members, with the remaining 25 percent being retained by the co-op to cover management expenses, such as production planning, storage, sales, and transportation costs. In 2013, TOG's annual gross sales from products grown by TOG farmer members were \$3.1 million; farmer members received approximately \$2.3 million from the co-op. The organization also generated an additional \$1 million in annual gross sales in 2013 from non-member farmers.

Food Hub Services

TOG carries out five primary food hub functions on behalf of its members and non-member suppliers:

1. <u>Distribution and Marketing.</u> TOG offers its members effective sales and delivery services to ensure they have access to a consistent and profitable market for their products.

1 USDA staff visited TOG and its warehouse facility on June 8, 2012, to learn how facility design and function serves the needs of the cooperative and its members. Interviews were conducted with Jim Crawford, the founder and president of TOG Cooperative, and Jeff Taylor, the general manager, on site, with follow-up telephone and e-mail conversations between February and May 2014.

1. Production Coordination. TOG management and farmer members negotiate an agreement in advance of planting to determine who will be growing certain products for the upcoming season based on market demand. There is no written contract—farmer members make a good-faith effort to meet their supply commitments, and TOG management makes a good-faith effort to sell their products on their behalf.

2. Quality Control. TOG members are responsible for packing products on their farms; TOG management inspects all products delivered by farmers to ensure they meet the quality standards expected by their buyers. TOG management retains the right to refuse any product from farmer members that does not meet the agreed-upon specifications.

3. Group purchasing. TOG purchases inputs such as boxes, packaging labels, pest control materials, fertilizer, and starter plants in bulk at a substantially lower cost than can be realized by individual farmers.

4. Knowledge sharing. Farmer members get together at least twice a year to share production and agriculture-related knowledge with each other.

Distribution Logistics

Since its inception, TOG has relied on its farmer members to sort and pack on-farm, using industry-standard boxes and farm-identifying labels provided at cost by TOG. With few exceptions, farmer members are also expected to deliver products to the co-op facility. Buyers of TOG's products receive a price list and have the opportunity to submit orders twice a week; orders placed on Friday are delivered on the following Tuesday, and orders placed on Tuesday are delivered on the following Friday. TOG uses anywhere from one to four trucks on delivery days. The trucks are rented from Jim Crawford, founder and president of TOG Cooperative, who owns a fleet of six refrigerated straight trucks. Crawford rents his trucks to the cooperative at cost, which helps TOG save transportation expenses and enables Crawford to deploy his fleet of trucks and receive compensation when they are not needed for his own farm business. To use the trucks most efficiently, TOG also offers refrigerated freight service to those farmer members who produce perishable products like eggs and meat that are not sold through the cooperative.

TOG also works regularly with a trucking company that maintains a warehouse in Jessup, MD, between Baltimore and Washington, and makes the final delivery to some of the TOG customers. This company handles about a third of TOG's current deliveries.

Example of farm-identifying label provided by TOG.

Food Hub Facility and Operations

The TOG facility and its grounds are owned by the cooperative. They are next to Jim Crawford's New Morning Farm in the rolling hills of Fulton County, PA. The topography of the facility site is severe. On the east side, the facility abuts the property line; on the west and north boundaries, the land drops off at a steep angle into the flood plain of a river. The facility is only approachable from the southeast, via a winding, part-gravel road 1.8 miles from a paved county road. Although the entry to the TOG facility is large enough to handle a conventional semi-truck and trailer, there is limited space for maneuvering trucks.

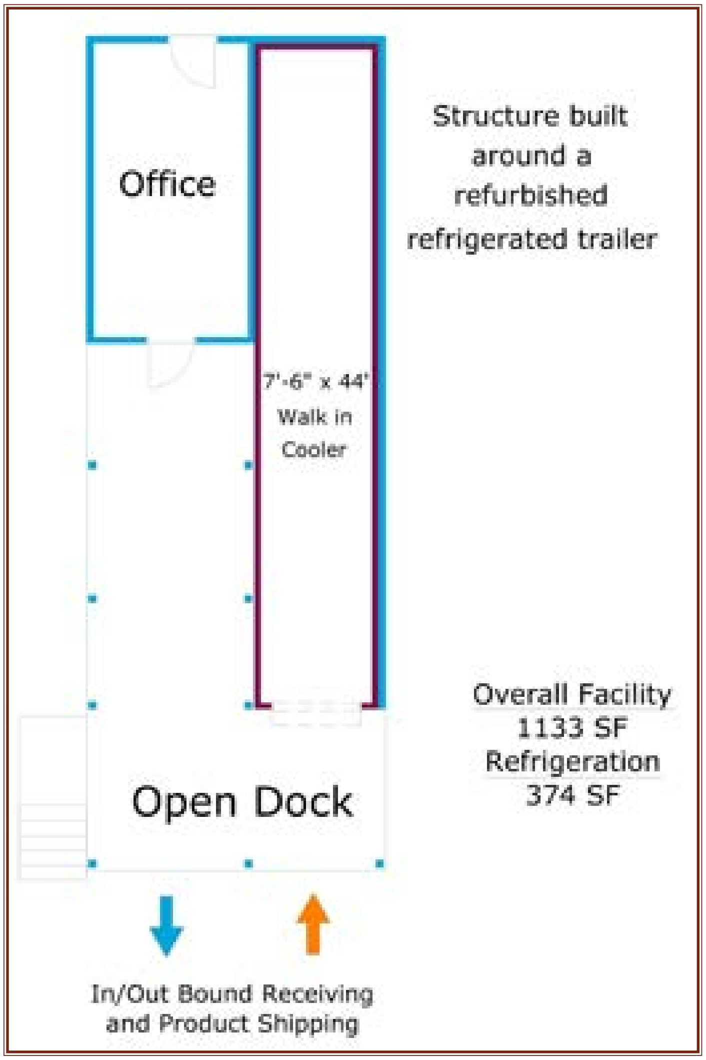
The facility building itself is a wood-frame structure on a concrete slab that was built in phases over a 20-year period as needs changed and financing became available. The overall layout of the facility reflects its phased growth, during which rooms were added as needed. The facility still uses available space efficiently. The structure has six loading docks without shelters but with canopies over the overhead roll-up doors.

From 1988 to 1991, TOG did not have a facility but used excess storage and trucking capacity from Jim Crawford's farm. In 1992, when its membership had doubled, TOG decided to rent a facility about 8 miles from its present location. Due to limited staffing and the difficulty of providing adequate oversight of business operations from a distance, TOG management decided in 1993 to relocate the facility to the property adjacent to Jim Crawford's farm.

Phase One – 1993

In 1993, TOG hired a new manager. At that time, six members, including Jim Crawford, invested about $7,000 to purchase a used refrigerated trailer and compressor that was incorporated into a shed built around it. The first phase included refrigerated storage, a loading area, and office space. Additional equipment and materials were either purchased or donated by members on an as-needed basis. The initial structure was a wood frame on a concrete slab totaling 1,133 square feet, with refrigeration capacity of 374 square feet (from the recycled refrigerated trailer). In 1994, TOG was officially incorporated as a producer cooperative with 14 farmer members. All of the members who had invested in the original structure were paid back with interest from co-op proceeds.

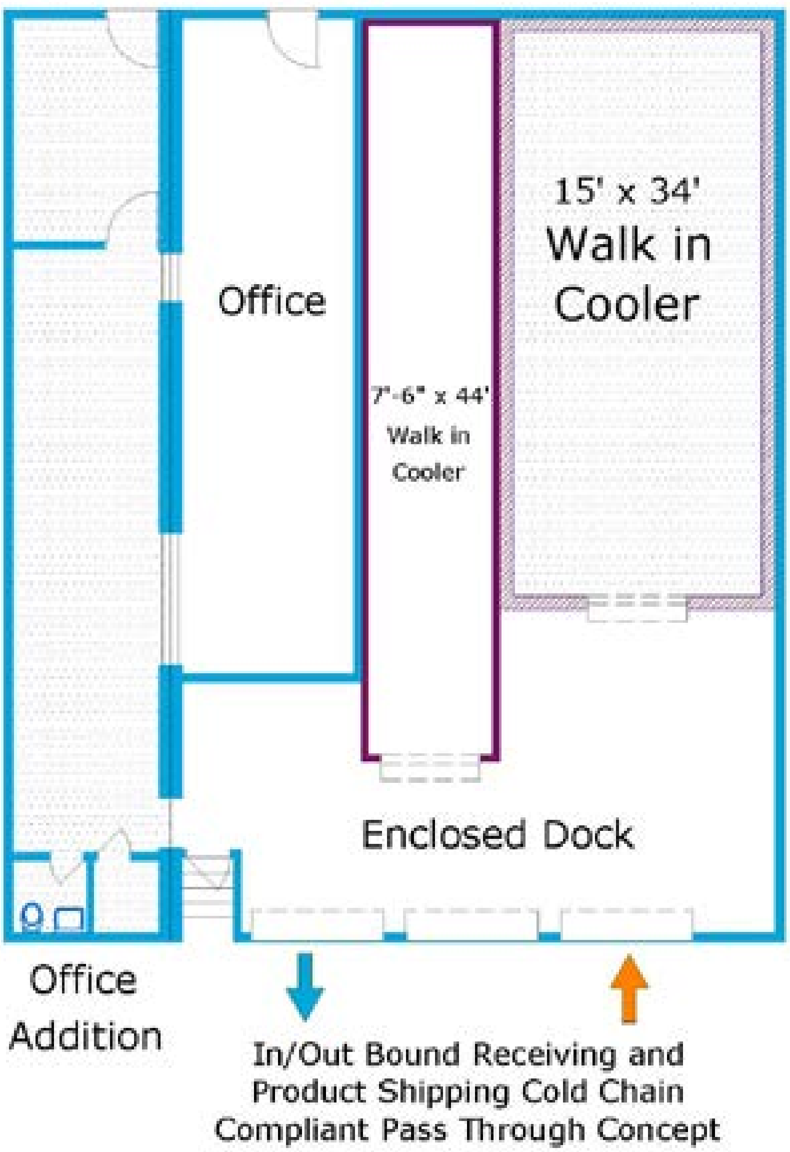
Phase one plans, 1993.



Phase Two - 1998

In 1998, the co-op raised $50,000 from the community and customers to finance additions to its facility, which was used to construct the front part of the present facility. This phase of development included the addition of three loading docks, more office space, an additional walk-in cooler, and an enclosed staging area. The cooler was purchased used and was incorporated into the facility, thereby expanding cooler capacity of the facility to 969 square feet, a 160-percent increase.

Phase two plans, 1998.



Constructed office space, a reused cooler was purchased and fitted into the facility increasing cooling capacity.

Overall Facility
2069 SF + 562 SF = 2,631 SF
Refrigeration
374 SF + 595 SF = 969 SF

Phase Three - 2004

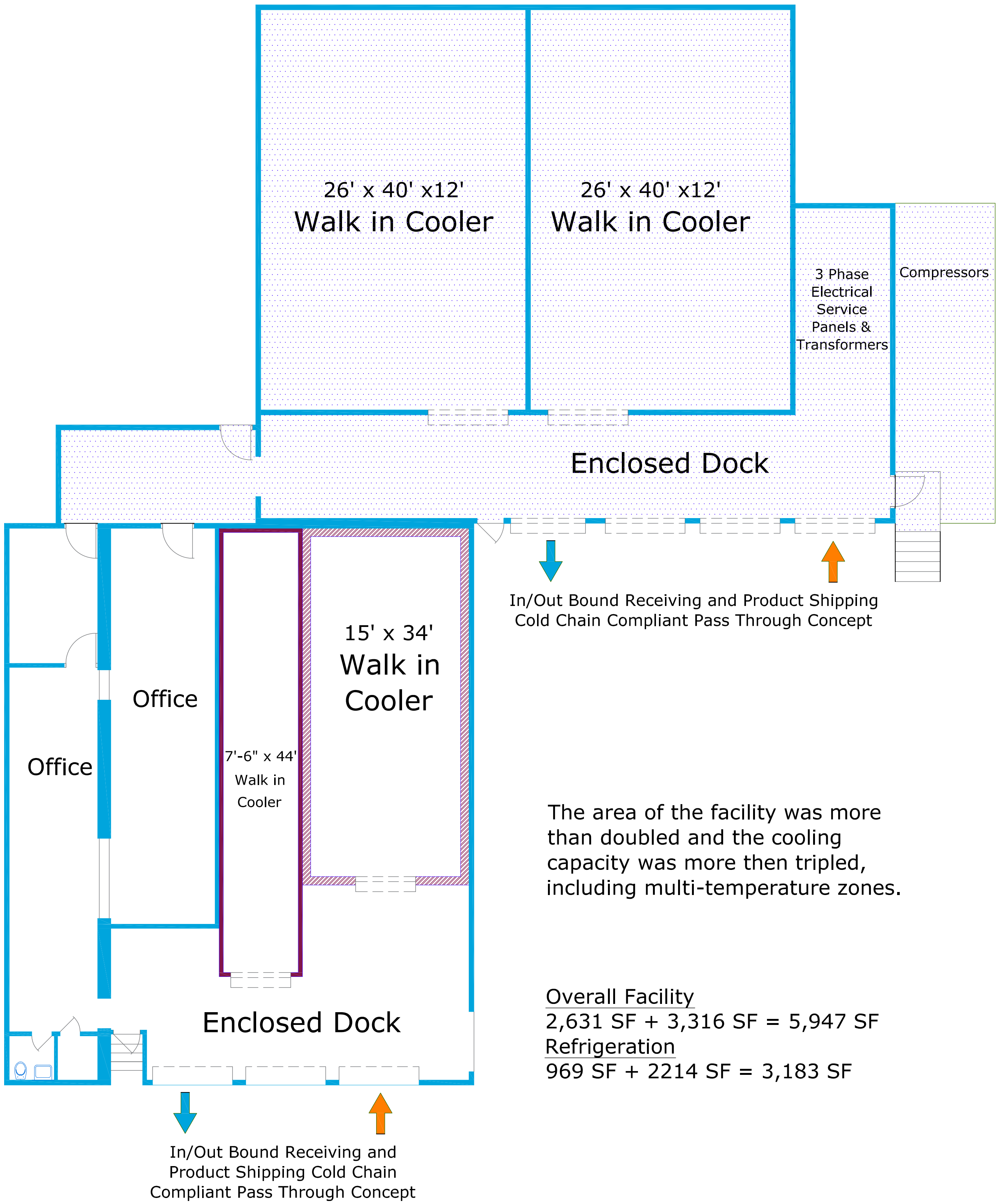
With an increase in market demand and more farmers joining the cooperative, TOG had expanded sufficiently to warrant additional investments in its facility. In 2004, the building size was effectively doubled with the inclusion of a second enclosed dock and two large coolers. The total refrigeration area was increased to 3,183 square feet, which tripled the available cold storage capacity and also provided the multi-temperature zones needed for optimal handling of a variety of produce items. The cooperative also installed three-phase electrical power to support its refrigeration equipment. This phase of expansion was financed by two loans totaling $180,000 (one from the PA Progress Fund and one from a local bank). This phase of development marked the first time that TOG relied on loans to finance its operations, having relied solely on community and member equity to fund its operations for the first 16 years of its existence.

Construction of 2004 addition.

Three-Phase Power

Easy to install, a three-phase electrical service system operates behind the scenes to power high-horsepower electric motors used by fan coil units and compressor motors for commercial-grade refrigerant systems and provides a smoother, more balanced power load. Three-phase power is 150 percent more efficient than a single-phase electrical power supply. Utility companies prefer three-phase systems for industrial environments because they require less cabling.

Phase three plans, 2004.



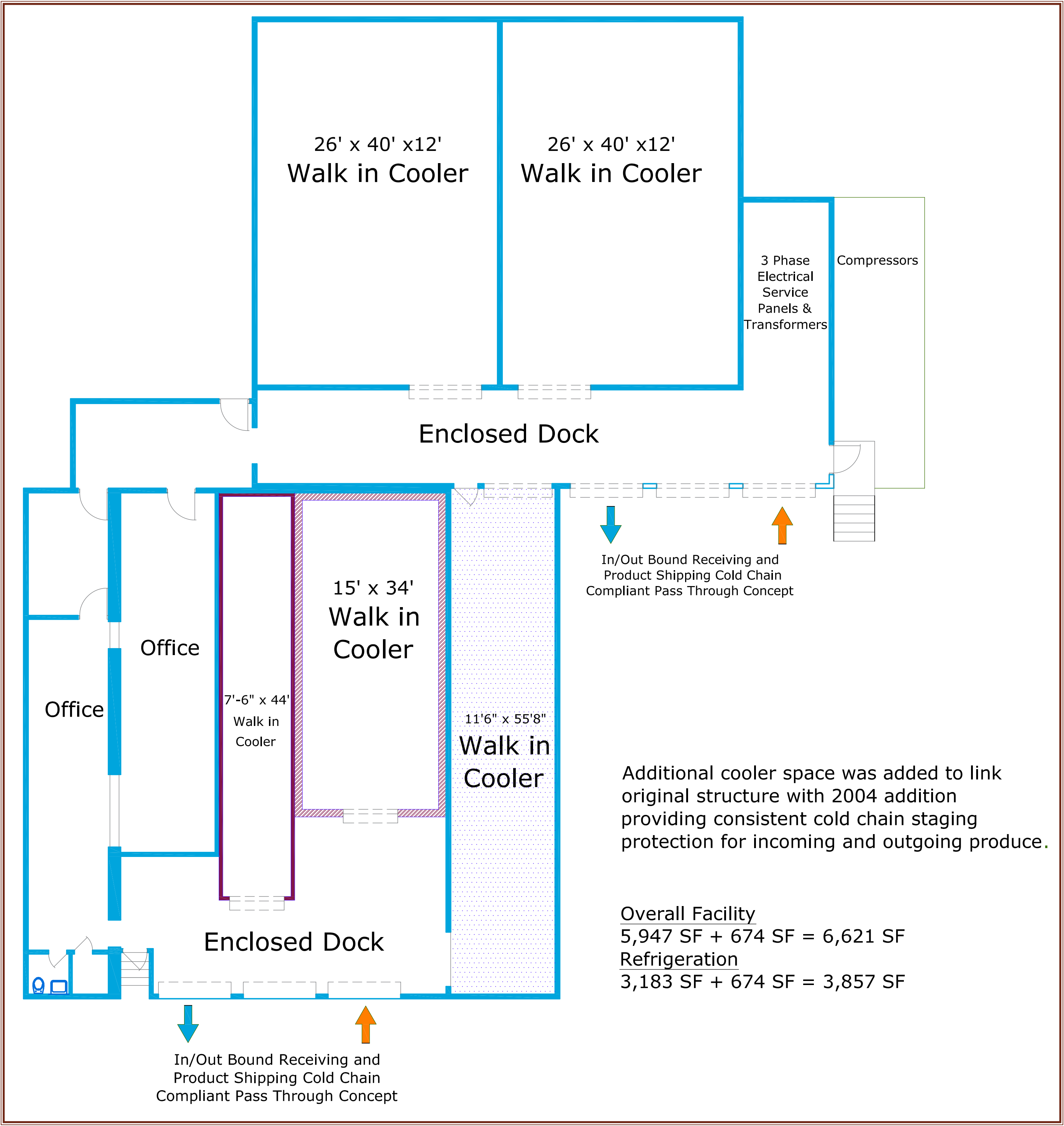
The area of the facility was more than doubled and the cooling capacity was more then tripled, including multi-temperature zones.

Overall Facility
2,631 SF + 3,316 SF = 5,947 SF
Refrigeration
969 SF + 2214 SF = 3,183 SF

Phase Four – 2011

In 2011, a receiving/shipping cooler for staging product was added to the growing business. This 12-by-56-foot addition added flexibility to operations for preparations of outgoing shipments and increased the facility's total refrigeration capacity to 3,857 square feet. At its present capacity, the facility is cold-chain compliant and can handle products in four different temperature settings, which ensures that TOG's diversity of products stay at the right temperature while in storage . The final phase of facility development cost about $60,000, financed by TOG sales revenue.

Phase four plans, 2011.



Phase four links the original structure with the 2004 addition, providing consistent cold-chain staging protection for incoming and outgoing produce. This addition allows TOG to use the "pass-through" concept by having incoming products flow from the front to the back storing area, and for outgoing products to be staged in a controlled-temperature environment.

Tuscarora Organic Growers' current warehouse facility.

Facility Costs and Capacities

Table 1 summarizes the stages of development of TOG's facility and the means by which each stage was financed.

Table 2 provides an estimate of the cost of running TOG's current facility.

Table 1: Summary of Facility Infrastructure and Financing

Year	Facility Investment	Costs (Financing)	Notes
1993	Repurposed refrigerated trailer with compressor, open shed, office space	$7,000 (Co-op member equity)	Total facility space: 1,133 sq. ft. Refrigerated space: 374 sq. ft.
1998	Enclosed staging area, three loading docks, additional office space, walk-in cooler	$50,000 (Customers and co-op member equity)	Total facility space: 2,631 sq. ft. Refrigerated space: 969 sq. ft.
2004	Second enclosed dock and staging area, two large coolers, three-phase electrical power	$180,000 (Two bank loans)	Total facility space: 5,947 sq. ft. Refrigerated space: 3,183 sq. ft.
2011	Additional refrigerated space to receive/stage product	$60,000 (TOG sales revenue)	Total facility space: 6,621 sq. ft. Refrigerated space: 3,857 sq. ft.

Table 2: TOG Facility Operational Expenses for 2013

Item/Activity	Estimated Annual Expense
Dock and office supplies	$10,400
Repairs and maintenance (facility only)	$5,500
Utilities	$21,200
Delivery (truck rental/gas)	$131,300
Labor	$452,600
Insurance (general liability)	$7,600
General expenses	$27,300
Total expenses	**$655,900**

Facility Capacities

TOG's current facility has roughly 10,500 square feet of total space, about 4,000 square feet of which is refrigerated. TOG's annual gross sales (member and non-member) of fresh produce exceeded $4 million in 2013. At its current sales volume, the facility is meeting the needs of TOG's operation. During peak season (August to October), the facility is at full capacity, but because product is usually turned over in 2 days, the product flow can be managed so the cold chain is maintained and their customers receive the freshest product. At times when the facility is exceeding capacity, it has been able to add another delivery day to move products through the facility more rapidly. Even with continued growth, TOG believes that it can figure out new ways to optimize the space without the need—at least for now—to build additional space.

Conclusion

This case study describes how a food hub can "bootstrap" an operation, relying on community equity to launch a lean startup. Growing in an organic way as demand increased and changing the scale of operations when necessary helped to build a thriving business. TOG never overextended its risk threshold and has made infrastructure investments that matched its growth. The cooperative ownership business structure has enabled a high measure of member control over investment decisions. Since the members are also the suppliers for the aggregation and distribution activities, there is good coordination between growth in demand and growth in facility scale and operational characteristics. TOG has continued to add members and has also expanded by purchasing from non-members, always accommodating changes with facility expansion. This growth pattern has prevented development of overcapacity, albeit at the expense of a uniform facility design.

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