

Investing in Main Street: An Energy Program to Support Small Businesses in Disadvantaged Communities

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ABSTRACT

The Tennessee Valley Authority (TVA) EnergyRight® Community Centered Growth (CCG) Pilot, launched in 2020, focuses on supporting energy efficiency and decarbonization upgrades for existing, local business located in under-served communities within the Tennessee Valley Authority's service territory. The pilot provides building energy audits to identify operational and capital improvements. The TVA team then helps businesses make smart energy choices that save money with decreased energy use, improved facilities and reduced carbon emissions by providing 100% funding for improvements and managing the upgrade process.

This discussion will provide participants with an overview of the pilot design and implementation, followed by insights from the pilot participants. Focus will be on projects in disadvantaged areas in Tennessee Valley urban and rural communities. Discussion topics will include low-cost operational and capital measures specific to small businesses as well as engagement opportunities for customers. Additionally, we will discuss TVA's evolution from traditional incentives to targeted community programs designed to serve diverse and hard-to-reach commercial markets.

Introduction

In 2018, 35% of small businesses in the United States claimed energy costs as one of the top three business expenses that tugged at their bottom line. (www.nfib.com/advocacy/energy/) In 2020, TVA launched a targeted pilot program, CCG, to help address this staggering statistic in their territory. The pilot is intended to bring communities together by improving relationships, promoting sustainable businesses and stimulating existing small businesses while also supporting energy efficiency and decarbonization upgrades in their spaces. The pilot partners with Local Power Companies (LPCs) to target economically distressed, community-based, small businesses. This initiative utilizes energy investments and valuable resources as a catalyst to lift capital burdens from the shoulders of hard-working citizens across the valley. The first year of the pilot (Year One) has been successfully completed, while the second year (Year Two) is currently underway, and the third year (Year Three) is starting to take shape.

TVA is the largest public power company in the United States. It stretches across 80,000 square miles and supplies power to more than 10 million people in seven different states in the southeastern United States. TVA partners with 153 LPCs comprised of both municipal utilities and regional cooperatives that assist with the distribution and sale of electricity that TVA generates for end-use customers. (www.tva.gov)

Since its inception, TVA has been committed to improving the lives of the people of the Tennessee Valley by providing safe, reliable, and cost-competitive power while promoting

responsible environmental stewardship and advancing economic development opportunities through investment and partnerships with local communities.

Pilot Development

Over the years, many in the energy industry have referred to small businesses as the “forgotten middle.” ([The Forgotten Middle, assets.cdnma.com](https://assets.cdnma.com)) Recognizing the large footprint of small businesses in the nation’s economy, utilities began course correcting to offer more inclusive programs. (Nowak et al. 2013; Nowak, Kushler, and Witte 2014; York et al. 2013; York et al. 2015) ACEEE research conducted in 2016 recommended several practices for utilities to execute successful small business energy efficiency programs. The list below addresses areas they found to be important factors when designing these programs:

1. Provide streamline installation of energy efficiency measures.
2. Segment the market.
3. Tailor and target marketing and communications to customer needs.
4. Address upfront cost barriers for deeper savings.
5. Offer a larger set of eligible measures.
6. Provide dedicated project managers.
7. Establish trusted partnerships within the community.

([Big Opportunities for Small Businesses, www.aceee.org](https://www.aceee.org))

TVA is continually seeking to be at the forefront of utility program offerings that better the lives and communities in which their customers live. Successful programs in the residential market as well as the commercial and industrial markets have thrived and evolved over many years, however like other utilities the small business sector was often overlooked. After team members reviewed a successful new residential pilot that installed energy efficient upgrades for low-income houses, they knew more could be done in these under-served communities across the valley. A task force was created and met with community-based organizations and leaders to help some of the most integral parts of the TVA landscape – small business owners. The desire to keep the community as the focus of this new pilot led to the name Community Centered Growth.

For a community to be eligible for CCG, they must fall within a National Opportunity Zone. These tracts are identified as underserved areas by census data that consider factors such as income, graduation rate and population. These zones can represent whole rural communities or small pockets within larger cities. (opportunityzones.hud.gov/) This initiative was founded as part of the 2017 Tax Cut and Jobs Act (TCJA); however, it has taken on an entirely new meaning after many Americans found themselves in poverty-stricken areas while trying to recover from the COVID-19 pandemic.

(opportunityzones.hud.gov/sites/opportunityzones.hud.gov/files/documents/OZ_Best_Practices_Report.pdf) There are 257 opportunity zones within TVA’s service territory as shown in dark blue in Figure 1, and TVA wants to aid in bringing economic and community revitalization to some of these heavily impacted areas across the Valley.

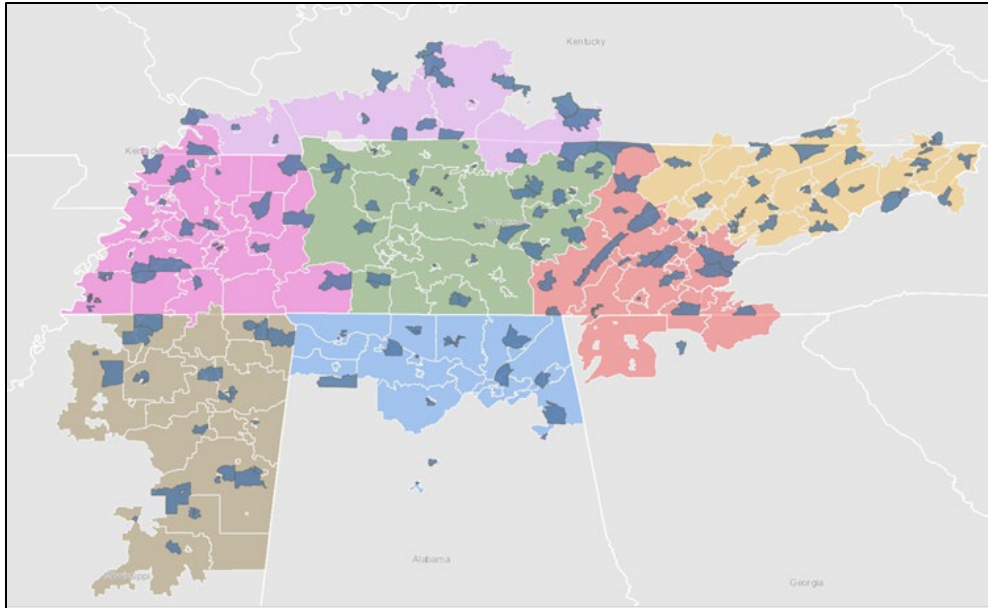


Figure 1. TVA Territory & Opportunity Zones. *Source:* TVA, 2022.

The foundation of the CCG pilot is “change through connection.” Many businesses feel like they are on their own when it comes to paying power bills but CCG changes that dynamic, allowing LPCs and TVA a unique opportunity to connect directly with customers like never before. By engaging small businesses located in economically distressed areas, TVA aims to not only promote energy efficiency but also provide facility upgrades to make spaces healthier and safer for owners and customers. TVA encouraged the LPCs to be intentional when selecting participants to ensure the pilot impact was diverse, equitable, inclusive and accessible. Fifty percent of participants in the first two years of the pilot have been minority or women owned businesses.

Three pillars were established as guidelines to create the CCG pilot. First, TVA sought to *Invest* funds, time, and resources into under-served areas. TVA aimed to improve safety, health, and a business’ bottom line. Next, TVA strives to *Invigorate* surrounding areas within a community to bring in possible new businesses. The program design team envisions connecting a small business owner needing a brick-and-mortar location with a building owner looking for a tenant to help add new life to a vacant space. Third, TVA desires to *Inform* small business owners across the valley about other possible opportunities and resources that many may not know how to locate or utilize. The team researched the possibility of providing a digital hub for “all things small business.” Following Year One of the pilot, TVA decided to prioritize *Investing* in the communities and small businesses.

Participant Selection

At the beginning of each pilot year, four LPCs from across the valley were selected to participate in CCG. A map of the specific opportunity zones in their service territory was provided along with expectations and a timeline. The LPCs then worked with community

partners and leaders to identify ten small businesses to participate within their respective service territories. When reviewing businesses to participate in the pilot, some suggested considerations included:

- The building was at least ten years old.
- No major renovations in the last two years.
- Space had been occupied for at least six months.
- Ideal space size was under 10,000 square feet, and nothing over 20,000 square feet.
- No national accounts or chains.
- Businesses that were beneficial to the local community.

Each LPC and their respective community partners determined how to select participants in their region. Some opted to stay within a centralized downtown location, while others gave each city council member the option to nominate a business in their district. Once businesses were identified, the business owners were contacted regarding participation. Joe Gehrdes with Huntsville Utilities stated, “CCG has been an excellent tool for opening some new lines of communication with leaders in underserved areas in our city. It has also given us a way to reach out to small businesses to let them know Huntsville Utilities and TVA are here for them and we are looking for ways to help them succeed.” Some hesitation was met during recruitment in Year One. The idea of “It’s too good to be true” or “What’s the catch?” was asked quite often. Being able to provide published success stories from the inaugural year helped ease uncertainty with participants of Year Two. Two different small business owners asked how they were the lucky ones to win the “energy lottery,” and others broke down in tears when it was confirmed they would not have to pay for the measures that would be installed.

To formally enter CCG, owners of the building must sign a participation agreement. This allows our team access to the building, retrieval of past utility bills from the electric, water, and gas companies and gives approval for energy upgrades to be performed on location. This agreement also addresses the need for possible follow-up with public relations articles and communication pieces to be able to share success stories on behalf of the business owner, the LPC and TVA. Follow-up from TVA helped address concerns and answer any new questions that might have come up. During Year Two, TVA introduced informal meet-and-greets with the small business owners so they could put a face with a name and start to build a trusted relationship with their point of contact.

Energy Assessment

Prior to the initial energy assessment, surveys were sent to business owners to gather basic building information, typical occupancy, and comfortability in the space. Utility bills from the previous 24 months were also collected so previous usage could be analyzed and compared after upgrades were completed. This information helped prepare targeted questions and develop a more focused evaluation approach. The assessments began with a brief “kick-off” meeting to help explain the pilot, its intent, and answer questions the customer may have. This meeting was important to establish relationships and open communication, especially for those customers that expressed hesitation that the pilot was “too good to be true.” Successful case studies from Year One that demonstrated quality work and effective partnerships helped to ease these concerns for participants of Year Two. During this meeting engineers discussed on-going maintenance issues

and the business owner's anticipated needs over the next five years. Often the owner would recognize a need during the walk-through that may not have been otherwise identified. The site assessment ended with a wrap up discussion where the engineer reviewed potential measures identified and talked through the customer's priorities. This wrap-up conversation aided the measure prioritization process and ensured the selected measures reflect the customer's needs and desired savings.

During site visits, engineers maintain thorough notes and photographs of the facility and all energy using equipment. Items documented typically include lighting counts, HVAC systems, building envelope deficiencies, and other notable energy users. These are imported into an in-house energy tool to estimate energy savings and anticipated cost on a per measure basis. Measures reported following the engineering site assessment are not limited to the anticipated budget but are intended to represent a full menu of energy saving upgrades that could be available for the small business owner. Measures primarily represented energy efficiency upgrades but could also include quality of life upgrades as well. For example, Big Al's Deli located in Nashville, TN had been operating for years with only two window units for cooling both the kitchen and dining areas during hot summers in the southeast. Through the CCG pilot, new high efficiency air conditioning and ductwork were installed. While the addition of the new adequately sized unit resulted in a net increase in site energy usage, the selection of a higher efficiency option resulted in incremental savings associated with the measure as compared to the standard efficiency unit the tenant may have installed in the future.

Identified measures were then compiled into an Energy Conservation Measure (ECM) Report. In Year One, TVA aimed to provide enough information in the ECM Reports so the bids could be completed sight unseen to minimize the frequency of site visits and disruptions to regular business operations. To explore multiple avenues of delivery, TVA planned to have two of the four regions use an experienced third-party, direct-install contractor and the other two regions bid out to local trade allies. The first region to begin the multiple trade allies bidding process revealed various difficulties. Contractors were uneasy providing confident and reasonable bids without performing a site visit with their own staff. Also, due to the rural nature of the pilot, contractor availability was limited. TVA corrected course and for the remaining regions opted to use the third-party, direct-install contractor. Using the direct-install contractor proved beneficial by streamlining communications through a single point of contact and consolidating project management. Because the direct-install contractor had a better understanding of the pilot goals, they were able to help TVA identify realistic improvements, communicate associated lead times, and have a one-on-one relationship with the customer on behalf of TVA. These features are vital to the efficient management of the fast-paced program offering.

Results

In Year One, TVA realized an average of 11,326 kWh annual savings (\$1,048 cost savings ¹⁾ per site with an overall Year One savings of 317,119 kWh. When considered with measures that increased site usage the net year one pilot savings was 240,228 kWh and net carbon reduced was 132,125 lbs. CO₂. Net savings and decarbonization are demonstrated in Equations 1 through 4 below.

$$(1) \text{ Net } kWh_{\text{savings}} = kWh_{\text{savings}} - kWh_{\text{increase}} = 317,119 \text{ kWh} - 76,891 \text{ kWh}$$

$$(2) \text{ Net } kWh_{\text{savings}} = 240,228 \text{ kWh}$$

$$(3) \text{ lbs } CO_2 \text{ reduced} = kWh_{\text{savings}} \times 0.55 \frac{\text{lbs } CO_2}{\text{kWh}} = 240,228 \text{ kWh} \times 0.55 \frac{\text{lbs } CO_2}{\text{kWh}}$$

$$(4) \text{ lbs } CO_2 \text{ reduced} = 132,125 \text{ lbs } CO_2$$

When considering the savings over the useful life of the installed equipment Year One saved 3,753,404 kWh. This energy reduction over the life of the equipment results in 2,064,372 lbs. CO₂ removed from the atmosphere. Lifetime savings and decarbonization values are demonstrated in Equations 5 and 6 below. Lifetime savings was calculated on a per measure basis with a degradation factor of 0.9 to account for the loss of efficiency over time.

$$(5) kWh_{\text{lifetime savings}} = kWh_{\text{annual savings}} \times 0.9 \times \text{Standard Useful Life}$$

$$(6) \text{ Lifetime lbs } CO_2 \text{ reduced} = kWh_{\text{lifetime savings}} \times 0.55 \frac{\text{lbs } CO_2}{\text{kWh}}$$

Year Two is on-going and is on track to achieve similar savings estimates per site based on current approved scope. As demonstrated by Figure 2 and 3 below, Year Two has an increased variety of facility types. Year Two facilities range from rehabilitation centers and community kitchens as well as small restaurants and family-owned funeral homes.

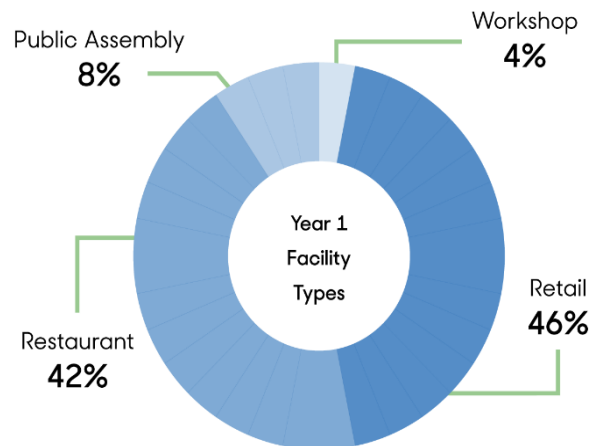


Figure 2. Year One Facility Types. Source: TRC, 2022.

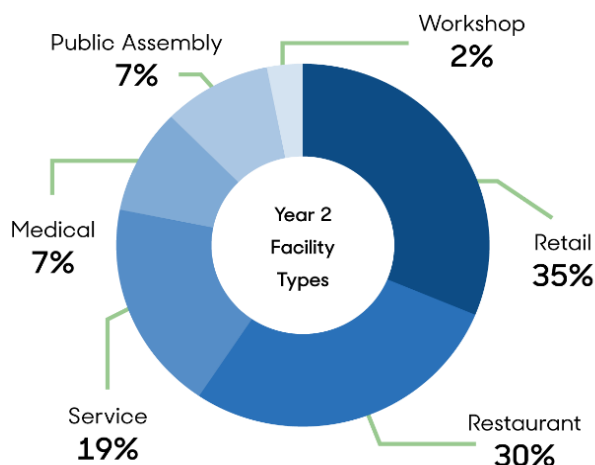


Figure 3. Year Two Facility Types. *Source:* TRC, 2022.

Following Year One, TVA wanted to add a mechanism for follow up and continuous energy awareness. To track past, current, and future energy consumption, TVA is utilizing the EPA's ENERGYSTAR® Portfolio Manager and has created a profile for each location. (www.energystar.gov/buildings/benchmark) Following installation, TVA will connect with the business owner and LPC periodically to update the energy billing data and benchmark usage with similar facility types across the country. After one year of operation, the building's portfolio will be passed to the customer as a free tool to help guide and grade future energy usage. If a building achieves a high enough score to qualify and is interested in official EnergyStar certification, TVA plans to assist and financially sponsor the official certification process and secure applicable building signage.

Impact

TVA seeks to be a thought leader in the industry and wanted to build on the idea of small business direct install programs (SBDI). CCG offers solutions that are more in touch with the customer's needs and helps foster relationships between the energy suppliers and end users. As opposed to a fixed checklist approach that may not suit all locations, CCG provides dedicated time with educated professionals who are seeking the overall health and wellness of the facility while saving energy and reducing its carbon footprint. As Tony Richman with Nashville Electric Service stated "The Community Centered Growth pilot is so much more than simply providing funding to solve a problem. This pilot provides a multi-faceted value stream that will benefit North Nashville area small businesses and their neighborhood for years to come." Completion of Year One brought many success stories that can be measured in comfort, safety, and actual savings on utility bills.

A Year One participant originally opened its doors in 1928 in Sheffield, AL. However, the Ritz Theatre's doors were shuttered in the 1950s after a new movie theater opened around the corner, which led it to sit vacant for nearly thirty years. The theatre opened again in the 1980s as a children's theatre. The facility had limited financial support and could only complete upgrades

as funding became available. The theatre has continued to operate and expand over the last 35 years, however choices sometimes had to be made if funds were used for building renovations or theatre programs. Due to the CCG energy upgrades, community theatre and children's arts programs can now take center stage at the Ritz Theatre. Christi Britten, the Executive Director of the theatre excitingly stated, "the help that TVA EnergyRight has offered us in developing the future and bringing us up to date with our technology. We're saving a lot on our utility bills, and we're also bringing a better experience to our viewers and our audience when they come in." ([Community Centered Growth EnergyRight](#)) With the help of the CCG pilot, new life is being breathed into downtown Sheffield, AL.

Hidden in the mountains of East Tennessee, just off the Appalachian Trail, you can find the quaint downtown of Erwin, TN. CCG was able to assist with energy improvements at 12 different small businesses that included pharmacies, a florist shop, an art gallery, restaurants, and retail spaces. As Mitch Barton with the LPC explained, "For Erwin and Erwin Utilities, it has been the perfect complement to activities started by some of our local businesses over the past year. We have several businesses that were in the planning stages of remodeling or redeveloping their facilities. CCG has given them access to industry experts who have helped guide their decision-making. As we all know, small businesses often operate on tight budgets; CCG has allowed those businesses to stretch their hard-earned capital further and enabled them to undertake projects that they otherwise would not be able to tackle. For others, the upgrades and improved efficiency will provide additional profitability at the end of each month, improving their overall health. CCG is proving to be a key cog in redeveloping our downtown area."

Small neighborhood restaurants can be found throughout the northern section of Nashville, TN that fall within a National Opportunity Zone. Many were still helping neighbors clean up from the devastating tornado in March of 2020 when the pandemic shut almost everything down. Small businesses like Rocky's Wing Shack lost neighboring buildings directly across the street. They've seen tough times and were incredibly thankful to receive assistance through TVA's CCG pilot. Upgrading all lighting to LEDs, installing a new high efficiency HVAC system, and a new exhaust hood in the kitchen has made for a better dining experience for customers and cooking experience for the kitchen staff. A few blocks over, Big Al's Deli has seen a \$500 per month reduction in their electric bills since they installed new kitchen equipment, new high efficiency HVAC, a new ECM motor on its kitchen exhaust hood, and all new LED lighting inside and out of the small restaurant. The energy upgrades were also completed just weeks before Ed's Fish and Pizza was able to celebrate being in their north Nashville neighborhood for 50 years. Correctly sizing the ductwork and installing high efficiency HVAC units helped to make their celebration even better.

Lessons Learned

With almost two years of successful implementation completed, TVA has identified several lessons learned that will help continue the success and impact of the CCG program. In 2015, ACEEE found that some small business owners "have to be actively sold to before they will buy into energy efficiency, or in some cases, even accept installation of efficient equipment for free." ([Expanding the Energy Efficiency Pie, www.aceee.org](#)) To help demonstrate legitimacy and quality TVA created a landing page on their website to provide program information and showcase stories of past participants in the CCG program. Adding a public

facing site helps to establish credibility with potential participants and alleviate concerns regarding authenticity.

Due to the success of Year One and Year Two, Year Three of the CCG program will increase the number of participants and LPCs across the Tennessee Valley. TVA plans to engage up to sixty small business owners across seven LPC territories in 2023.

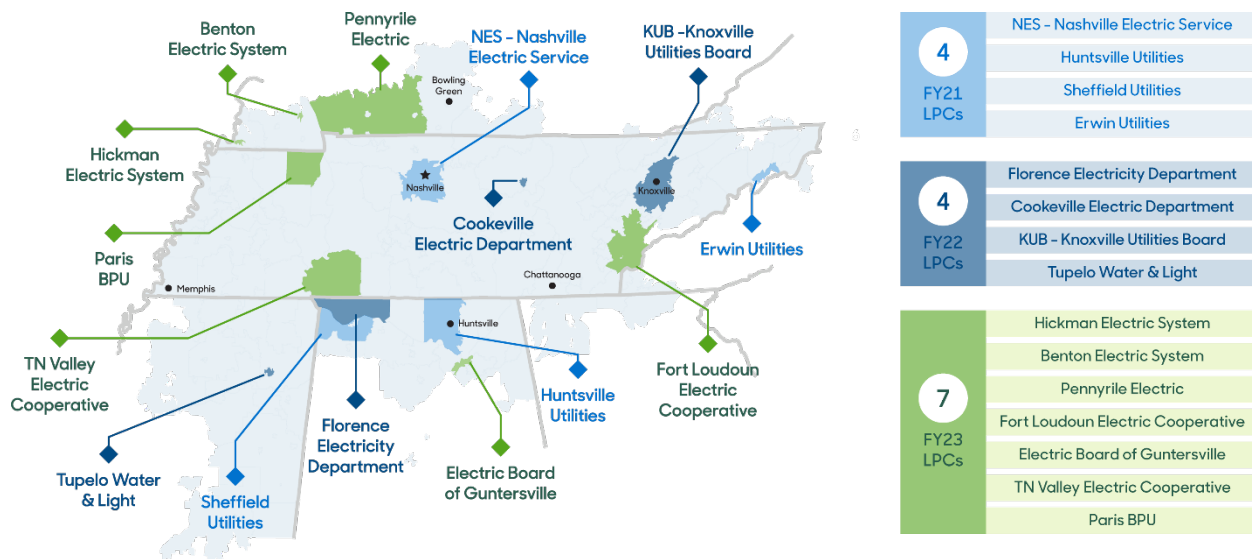


Figure 4. Year One to Year Three LPC Map. *Source: TRC, 2022.*

To effectively scale the program TVA will streamline the offerings to three primary measures: lighting, HVAC, and kitchen equipment. As demonstrated by Figure 5 below, nearly all of Year One savings was achieved through these three measures.

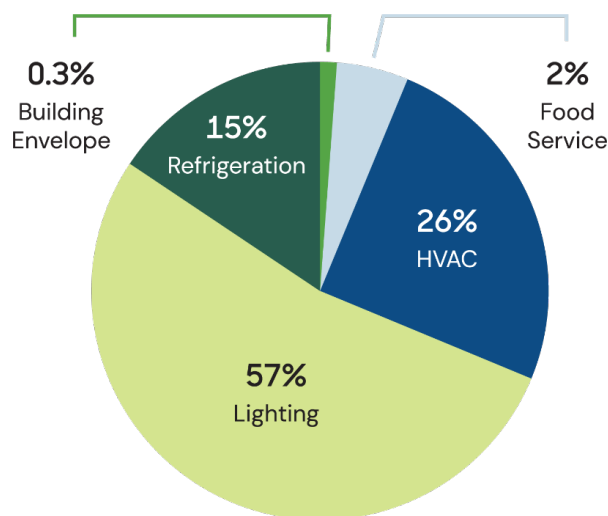


Figure 5. Year One Percent Savings by Measure. *Source: TRC, 2022.*

Focusing on these three measures will help the third-party contractor source materials faster and easier. Bringing a focus to LED lighting upgrades, high efficiency HVAC replacement, and replacing outdated kitchen equipment and refrigeration with Energy Star certified equipment allows the program to serve the participants swiftly and effectively while also delivering solutions that reflect the participants needs.

Another way TVA will continue serving economically distressed areas is by utilizing local contractors. Moving forward, TVA and the third-party general contractor will have early conversations with each LPC to find trusted trade allies in the area. TVA has found that local HVAC contractors and electricians have been particularly helpful. Being able to use these local contractors in turn helps additional local small business owners in these underserved areas across the Tennessee Valley.

Conclusion

According to the SBA, in 2021 there were 32.5 million small businesses in the U.S. proving that small businesses are the backbone of communities across the United States, and some are now bending to the point of almost breaking. ([2021 Small Business Profiles for the States](#)) Profit margins are always tight, giving any opportunity to reduce operational costs without cutting back on the quality of services provided extremely valuable. Any time assistance can be provided with ways to cut utility bills and overall energy usage, most will jump at the opportunity after asking if it's too good to be true. These owners are still dealing with the harsh reality of the current landscape of doing business during a pandemic, and many are looking for ways to just keep their doors open. After two years of the Community Centered Growth pilot in the valley there will be nearly 80 small businesses that have felt some of their daily burdens lifted by the help of their LPC and TVA, and there are already plans to expand the outreach of this program to include even more small businesses per year and to have more LPCs involved in the pilot.

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