

Designing Virtual Assessments That Work

Lee Ann Head, Franklin Energy

Sabrina Oudin, Franklin Energy

ABSTRACT

COVID-19 social distancing orders forced utilities to shut down many in-home energy efficiency programs and scramble for replacements. In response to the pandemic, Franklin Energy fine-tuned three virtual assessment formats and successfully launched five virtual assessment programs across the U.S. in 2020. Below, we identify and discuss four best practices in virtual audit programs. First, customers need choices for their virtual assessment experience; online self-guided, phone assessor-guided, and video assessor-guided options should be offered in addition to the traditional in-home assessments. Second, easy-to-use online and telephone scheduling, cancellation, and rescheduling tools are required to ensure a positive customer journey. Third, the assessor must be well prepared, confirm eligibility and investigate the home to minimize time and ensure an excellent virtual assessment experience. Fourth, recommendations should be prioritized clearly and framed correctly, and measures should be offered in a no-contact format. Finally, we discuss the unexpected engagement benefits of virtual assessments and opportunities for expanding the reach and impact of these assessments.

Introduction

When COVID-19 hit the U.S. in late March of 2020, utility energy efficiency programs grappled with maintaining operations and serving customers effectively. Social distancing orders forced many utilities to shut down in-home residential energy efficiency programs and scramble for replacements. While some utilities offered online self-guided home assessments, these assessments could be difficult for the utility customer to complete and were rarely integrated with the direct installation of program measures. Further, few utilities offered a phone or video assessment assisted by a trained assessor. Thankfully, Franklin Energy had virtual assessment programs in the field at the time. Franklin Energy completed an innovation sprint in 2020 to accelerate innovation and improve our virtual assessment offers. Based on the learnings from this sprint and our experience, we were able to quickly ramp up five new virtual assessment programs amidst social distancing orders to fill the gap for utility customers.

For this research, we define virtual assessment as an energy audit, based on building science principles, that is self-guided or guided by a trained energy auditor and completed in a format that requires no person-to-person contact, such as phone, online, or video.

This paper identifies and discusses four best practices in virtual assessment programs. First, customers need choices for their virtual assessment experience; online self-guided, phone assessor-guided, and video assessor-guided options should be offered in addition to the traditional in-home assessments. Second, easy-to-use online and telephone scheduling, cancellation, and rescheduling tools are required to ensure a positive customer journey. Third, the assessor must be well-prepared, confirm eligibility and investigate the home to minimize time and ensure an excellent virtual assessment experience. Fourth, recommendations should be prioritized clearly and framed correctly. Finally, we discuss the unexpected engagement benefits of virtual assessments and opportunities for expanding the reach and impact of these assessments

The Importance of Customer Choice and Virtual Assessment Format

Iyengar (2010, 8) describes *choice* as a natural drive that often operates independently of concrete benefits. "In such cases, the power of choice is so great that it becomes not merely a means to an end but something intrinsically valuable and necessary." Customers love to be given a choice, but utility energy assessment programs are rarely able to provide one. Programs are generally prescriptive and designed around regulatory requirements, not user needs or user experience. Furthermore, energy assessments are a critical educational tool to inform customers about the energy systems in their homes and ways to save energy, but the number of utility in-home assessment programs is dwindling. The eSource (2022) Spending and Savings by Program Category Report lists only six onsite audits or assessment programs offered by member utilities in the U.S. in 2022, compared to 28 programs in 2018.

To improve participation rates in assessment programs and uptake of assessment recommendations, Franklin Energy conducted proprietary research, surveying 500 consumers in June 2020 (Franklin Energy 2020). Results found that 57% of respondents would be likely or very likely to schedule a virtual energy audit. The most important perceived benefits of an audit were 1) receiving a free or discounted bundle of energy-saving products (23%) and 2) getting a personalized energy-saving action plan (21%). The most popular virtual audit option was an online self-guided format with chat support (44%), followed by a video assessor-guided format (38%), and a phone assessor-guided format (17%). The least popular option was an in-person audit (10%). Finally, we learned that 60% of consumers were unwilling to spend more than 30 minutes on an assessment.

We also gathered feedback from utility DSM program decision-makers to determine the perceived importance of virtual assessment features (Franklin Energy 2020). A card-sort exercise with respondents found that the most critical features of a virtual assessment product are 1) the ability to send customers a link to the video session ahead of time and 2) an experience that does not require a software application or "app" for the customer to download and 3) preference (93% of utilities preferred) to send the assessment report to customers via a follow-up email.

Based on these findings, Franklin Energy developed a Personalized Recommendations platform prototype in June 2020 to meet the needs and preferences of utilities and their customers. The platform includes three assessment options: online self-service, phone-assisted, and video-assisted. Customers who are just beginning to explore home energy efficiency or prefer a private, self-directed experience can take a simple, intuitive online assessment. Customers who prefer to interact with a certified energy auditor but are reluctant or unable to video chat due to privacy concerns or technology constraints can choose a phone assessor-guided format. Finally, customers can use a video chat platform for a video assessor-guided format conducted by a certified energy auditor. During user testing, we learned that customers liked to choose an assessment format that matched their time constraints and desires for detail and depth of information. We also learned that customers preferred to receive recommendations they could afford, which we discuss in the **Framing Assessment Recommendations** section below. User testing responses included:

"This is so cool that we can do this remotely. This allows people with great expertise, no matter where they are, to help me."

"Having someone evaluate my home via video chat would have seemed strange five years ago, but now it just seems normal. I think people will really respond to this product. It was fun!"

"It was simple; it was quick. In this day and age, more of this stuff will be necessary virtually. It worked great!"

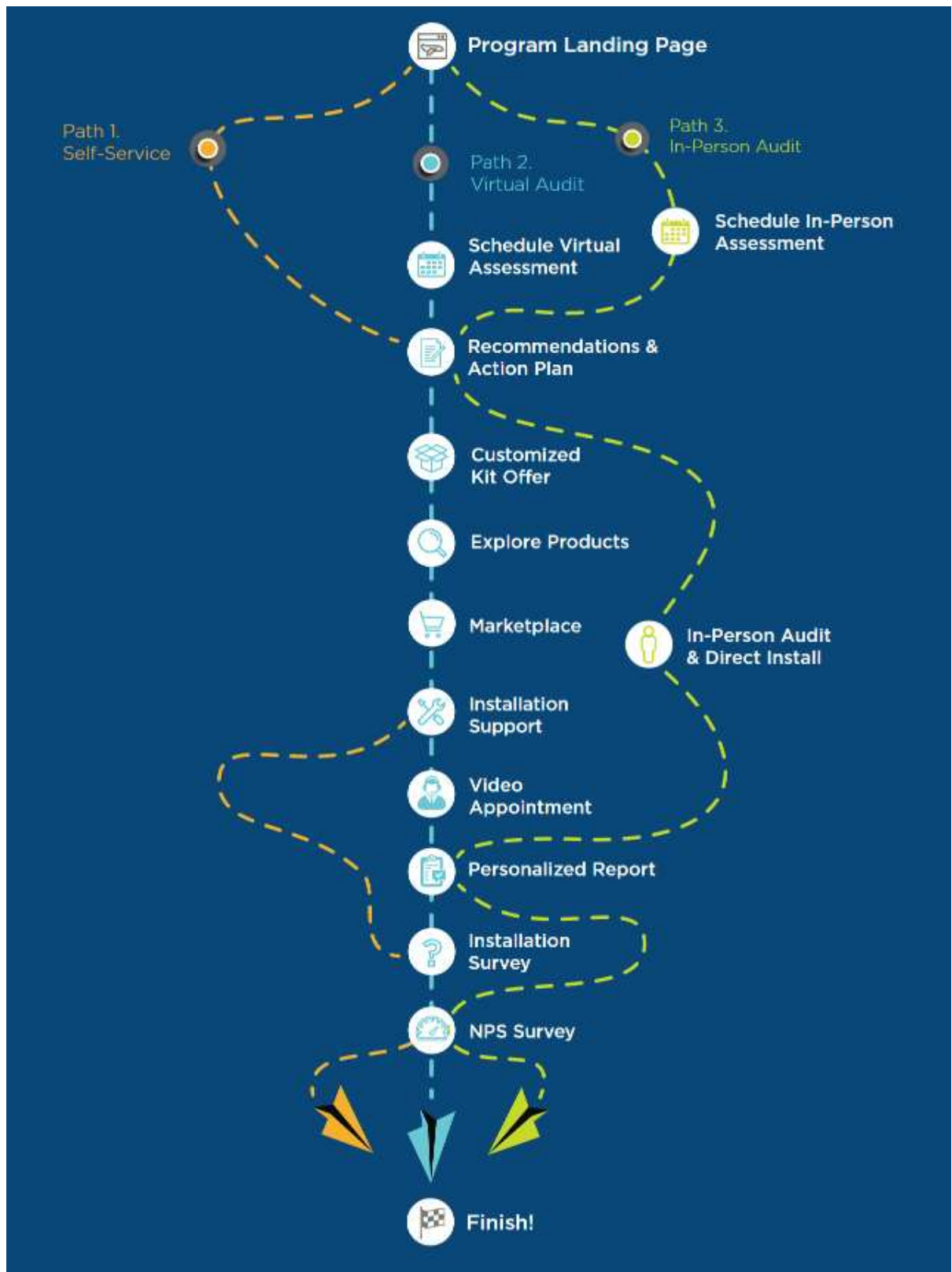


Figure 1. Franklin Energy Personalized Recommendations Assessment Journeys

Assessment Format Examples from the Field

An investor-owned utility in Florida offers a virtual assessment program that claims deemed savings from free energy-efficient measures installed. The program offers measures through direct install or self-install options via kits shipped. The program now offers three home energy assessment formats: in-person, online self-guided, or phone assessor-guided.

In November 2021, the utility launched the online self-guided format to provide a comprehensive but easy-to-understand self-service home energy assessment. Franklin Energy's program tracking metrics shows that the new online, self-guided assessment is responsible for 90% of all kits distributed year-to-date.

In July 2022 the utility plans to switch its phone assessor-assisted assessment to a slightly modified configuration of the same online assessment platform. The easy, intuitive nature of the self-guided format works well for a phone assessor-guided application. An assessor can easily read the self-assessment questions. The phone assessor-guided format includes a few additional questions, and the assessor captures additional equipment details that can be easily explained and visually confirmed by the customer.

While the underlying recommendation engine, which utilizes an energy model to generate energy efficiency measure recommendations and calculate average savings for each measure, is the same for the two virtual assessment formats, the assessor can hide or add appropriate recommendations to the phone assessor-assisted assessment report.

Features for a Positive Customer Journey

Providing an experience that aligns with customer preferences is key to customer participation in a virtual assessment program. At each step of the customer journey, which includes scheduling appointments, appointment reminders, and appointment canceling or rescheduling, customers need options that work with their technology and communication preferences while nudging them to the next step of the journey.

First, a scheduling experience that aligns with participants' communication preferences ensures customers do not drop off during the early stages of engagement. Customers typically prefer to schedule virtual assessments online, but an option to quickly schedule via phone is also critical for customers with technology constraints.

During the scheduling step, most programs collect additional data from the customer to confirm eligibility, like a customer account number. Some programs introduce a short survey to screen for specific home or customer characteristics like home type or preferred language. It is critical the survey is not so long that customers lose patience and drop out.

Next, providing appointment reminders and nudges to customers to keep the appointment helps to cement their participation. It is important to offer email, phone, and text reminders to meet customer preferences. When customers first schedule their assessment, they choose their messaging channel preference for reminders. Reminder preferences may not align with scheduling or assessment format, i.e. a customer may prefer a phone call reminder but a video assessor-guided audit.

Franklin Energy captures an email address for all virtual assessor-guided appointments. While text confirmation/reminders include text to confirm/cancel/reschedule options and can

include additional short links, email is the best channel to provide step-by-step instructions. The email example in Figure 2 includes preparation information and instructions for a video chat invitation participants receive. Emails can also include links to program participation forms, pre-assessment instructions, safety tips, and technology FAQs.

A phone call, email, or text reminder occurs one week before the virtual assessment. Twenty-four hours before the virtual assessment, the customer receives a reminder call, email, or text. Some programs also include a day-of reminder. Providing an easy experience to cancel or reschedule is important, especially with COVID-19 still a concern for many customers. As with an in-person assessment, customers may, at any time, elect to cancel a virtual assessment appointment.

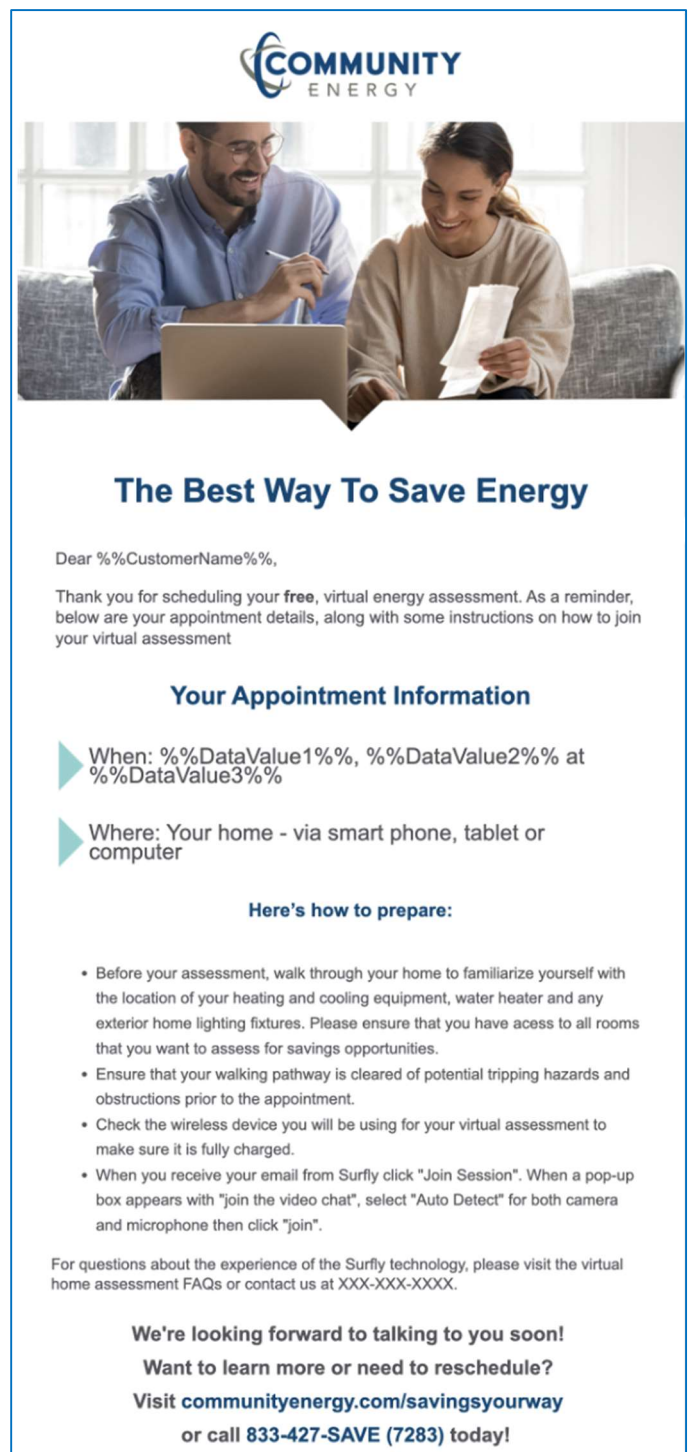


Figure 2. Franklin Energy Video Assessment Reminder

Comparing Customer Drop-Off Rates from In-Person and Virtual Assessments

Data from three virtual assessment programs in the Midwest, implemented by Franklin Energy, show a cancellation rate of approximately nine percent, with 17 percent of cancellations happening the day of the scheduled assessment. This cancellation rate is significantly lower than that of in-home assessments. In-home assessment cancellation rates rose during the onset of COVID-19 in 2020 and have remained elevated in 2021 and 2022, with a cancellation rate of more than 22%. About 40% of customers who cancel in-home assessments reschedule.

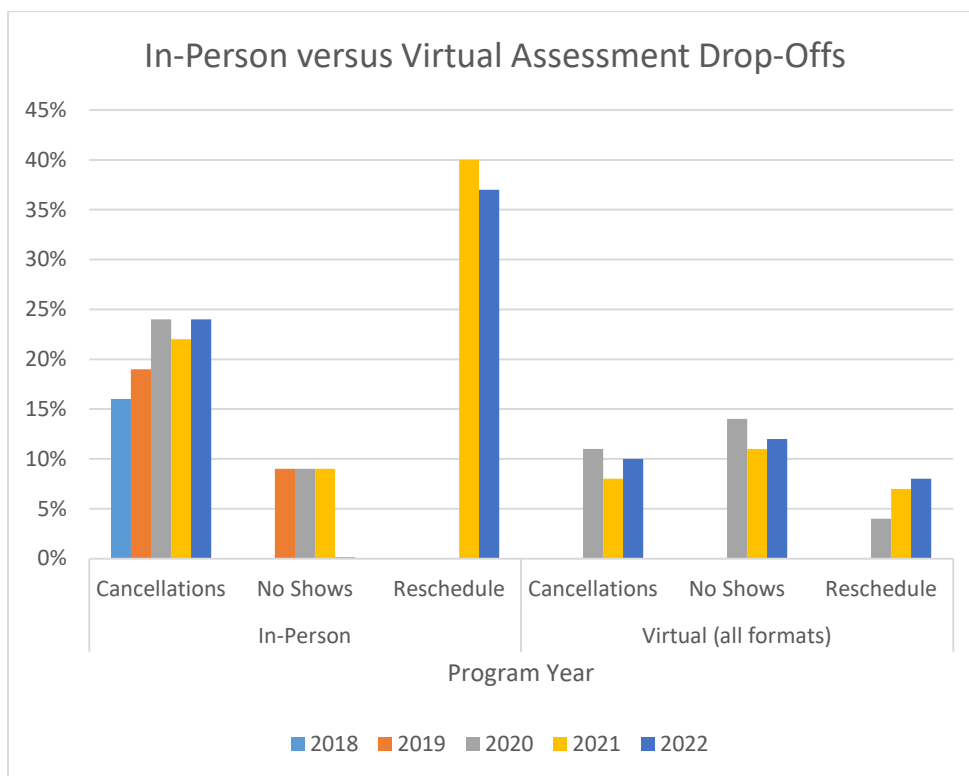


Figure 3 In-Person versus Virtual Assessment Drop-offs

The foremost reason cited for the cancellation of in-home assessments was scheduling conflicts, which grew from about 20% in 2019 to 46% in 2022. During the peak of COVID-19 in 2020, 26% of customers cited illness as a reason for cancellation; this dropped to 9% in 2021 and 2022. Cancellation statistics are very similar for virtual assessments.

While not the same as a cancellation, assessment programs have "no-shows" where the customer does not show up or answer the door to complete the audit. Not surprisingly, virtual assessments have a higher no-show rate (12%) than in-home assessments (9%).

Cancellations, no-shows, and rescheduled appointments place a strain on program resources. Last-minute cancellations, no-shows, and reschedules all have the similar effect of creating unpredictable work time for auditors and can create a long "schedule-out" time, where customers may have to wait months for an appointment opening. Finally, no-shows can be

extremely costly for programs that generate program costs for each "truck roll," i.e., transportation time, staff time, and fuel costs.

We were surprised by the high cancellation and no-show rates in both in-person and virtual formats. We explore potential solutions to reduce cancellations and no-shows in the final section of this report.

Tips for Creating a Positive Virtual Assessment Customer Experience

Several factors can lead to a successful virtual assessment customer experience, including assessor experience level, assessor preparation to minimize time to completion, ascertainment of customer motivation for completing an assessment, ability to troubleshoot technology issues, and finally, the direct installation process. Below, we summarize each factor and the overall process for a successful customer experience.

Experienced assessors are best suited for conducting virtual assessments, as experience in the field is even more important for virtual assessments than for in-person assessments (Cooper, E, Reuven, S, and Rosenberg, B. 2021). From our observations of virtual assessments, we have also found that strong verbal skills, technology skills, and patience are critical to the customer experience. An assessor may have to troubleshoot technology and explain a concept or instructions in multiple ways using vivid language to gain customer understanding. Finally, field expertise enables those experienced assessors to effectively guide homeowners to collect the most relevant information and make recommendations remotely (Cooper, E, Reuven, S, and Rosenberg, B. 2021).

Franklin Energy's goal for the new personalized recommendations platform was to generate good recommendations without asking excessive questions. The new automated recommendation engine energy model inserts air-sealing and other building system assumptions based on the home's location, type, and vintage into engineering calculations to produce a robust set of recommendations, with a minimum number of direct responses required from the customer or certified energy auditor.

The online self-assessment can be completed in as little as 20 minutes. The virtual assessment can be completed in as little as 45 minutes, but most phone- or video-assisted assessments take an hour to complete. While this timeframe exceeds the customer-preferred assessment timeframe of 30 minutes, as determined by our research described in **The Importance of Customer Choice and Virtual Assessment Format**, it is significantly less than the average in-person assessment time of 1.5 hours.

To ensure the most effective use of time, we recommend preparation by the assessor before the appointment time. The assessor should review any details supplied by the customer in the scheduling survey to confirm eligibility and prepare for the assessment. Eligibility details might include utility account number, utility fuels provided (gas, electric, or both), and completion of requisite program paperwork.

Collecting additional detail before the assessment is key to reducing assessment time and ensuring the customer's expectations about free kit eligibility are set appropriately. Details collected include building type (single-family detached home, attached condominium, or individually metered condominium), building square footage, the presence and fuel type of heating systems, cooling systems, and major appliances, and the presence of pools, spas, or hot tubs. The assessor uses a combination of utility-provided data and publicly available data sources like street views, satellite images, real estate listings, and tax records to confirm details about the premises.

Virtual Assessment Experience

At the outset of the assessment, the assessor asks the customer why they are seeking an assessment. Common reasons include bill concerns, recent bill increases, and comfort concerns. This will help direct the assessment questions and the framing of recommendations. Understanding the customers' needs is key to keeping the customer engaged throughout the audit and, most importantly, it ensures that the customer receives the resolution they seek through the audit. The assessor then checks the details collected about the home before the assessment begins.

Then, the assessor follows a detailed assessment guide that collects vintage and efficiency information on HVAC systems, appliances, electronics, lighting, and any special equipment, like hot tubs and pool pumps. The assessor takes the customer through each room of the house that contains a potential program measure. If completing an assessment in the video assessor-guide format, when the customer reaches a measure, the assessor captures a screen image to be included in the recommendations report. The assessor may prompt the customer to turn on lights in a room for a better image. Next, the assessor asks the customer questions about the measures, their use of the measures, and any concerns they have. The assessor collects data and notes as the assessment progresses, using Franklin Energy's assessment platform.

Once the assessment is complete, the assessor recaps the recommendations, highlights products the customer will receive in a free kit shipped directly to their home, and explains available programs and incentives for recommended upgrades. After they hang up, the assessor will complete the recommendations report and email it promptly to the customer.

Technical Issues During the Virtual Assessment

Our virtual assessment participants occasionally experience technology problems that disrupt the assessment. Of all virtual assessments completed, only 2% experienced technical issues, and only two audits had to be canceled due to technical issues that could not be resolved. The average technical issue lasted 16.4 minutes. Consistent with Cooper, Reuven, and Rosenberg (2021), we have found that tech-savvy customers are generally easily able to troubleshoot the problems and rejoin. Furthermore, customers seem more comfortable with the virtual format and have more patience with technology in a post-COVID society.

The most common problem is that customer phones and tablets run out of power and shut down mid-assessment. We recommend that at the outset of the assessment, the assessor ensures that the customer's phone or tablet is fully charged; it is critical to ensure the customer has a fully charged device at the start of the assessment.

Unexpected Virtual Assessment Benefits

Virtual assessments support customer interaction with their home, encouraging them to learn about the systems firsthand. Cooper, Reuven, and Rosenberg (2021, 5) noted that remote assessments "force homeowners to engage in the process" rather than rely on the assessor during the in-person assessment, and this active engagement is key to changing behavior and encouraging the adoption of energy upgrades. Our assessors concur and note that during in-person assessments, customers often wander off and leave the assessor alone to complete the in-home assessment. In a virtual assessment, the customer is an active participant; assessors note that customers are more invested and engaged. This engagement can translate into program

outcomes. Cooper, Reuven, and Rosenberg (2021, 5) noted that virtual assessments present opportunities for customers to personally experience issues such as air drafts and heat loss—experiences that can persuade customers to act.

Most of our in-home assessments also include the direct installation of energy-efficient products during the appointment. In contrast to in-person assessments, the virtual assessor does not have to spend time installing products as the customer guides them through their home in virtual assessments. This allows more time for interaction with the customer, answering questions, and coaching on energy efficiency tips. Assessors note that participants are typically surprised by the thorough, informative, and educational nature of the assessment. Franklin Energy's average customer satisfaction score for 2022 virtual assessments is 4.79 out of 5.00, compared to 4.70 for in-home assessments.

Framing Assessment Recommendations

Energy assessments can provide great information, but the EPA (2017) has found that energy assessments alone do not produce energy savings. Utilities must empower the customer with more than just a long list of deficiencies and to-dos. Instead, recommendations should be framed to promote action, and utilities should "create a clear pathway for acting on recommendations."

So, how do we create assessment reports that encourage action? Sussman and Chikumbo (2017) recommend using subtle framing techniques. For example, when low- or no-cost "no brainer" recommendations like easy behavioral changes are included alongside more impactful yet costlier or more involved upgrades, like an HVAC replacement, the more expensive or difficult recommendations look less attractive. Easy low- and no-cost options should be presented separately from other recommendations. For this reason, Franklin Energy's virtual assessment reports have three sections:

1. "Your Recommended Energy Saving Projects," a customized list of recommendations, are presented first.



123 Home Blvd.
Winter Haven, FL 33880
Year built: 1999
Square footage: 1,800
Suggested tips: 10



 = Easy DIY
  = Hard DIY or easy for contractor
  = Complicated contractor job

*Savings percentages are based on the average kWh savings potential for each repair or upgrade for homes in your area and are not meant to be added together for "cumulative" impact.

Your recommended energy-saving projects:



Consider an ENERGY STAR® certified heat pump/hybrid water heater.
 Difficulty: 
 ENERGY STAR® certified heat pump/hybrid water heaters use less than half the energy compared to a conventional electric water heater.
 Cost: \$500-5,000
 Savings*: 8.4%



Check and repair weatherstripping.
 Difficulty: 
 Air leaks from windows and doors reduce comfort and increase energy use. This is an easy DIY project, and inexpensive weatherstrip is widely available at home improvement stores. It can help you save up to 20% on energy bills!
 Cost: \$1-499
 Savings*: 6.7%



Repair leaks in your heating & cooling air ducts.
 Difficulty: 
 This can greatly reduce air loss and energy waste. Have your ducts inspected by an HVAC vendor that specializes in energy efficiency. They'll help ensure your rate of air leakage is 15% or less. Single-family home residents with centrally ducted electric cooling and electric heat could be eligible for the Duct Test and Repair Program.
 Cost: \$1-499
 Savings*: 6.0%
[Check for available incentives →](#)



Consider adding more ceiling insulation.
 Difficulty: 
 The proper amount of insulation will keep your house cool in the summer and warm in the winter. Upgrade to R-38 to save up to 30% on energy bills.
 Cost: \$1-499
 Savings*: 2.3%
[Check for available incentives →](#)



Schedule an HVAC system tune-up.
 Difficulty: 
 Regular maintenance and cleaning will keep your HVAC system running at peak efficiency. Keeping your HVAC system clean and properly adjusted every two years will reduce energy use and repair costs. Implementing good maintenance practice can save at least 5%-10% of space-heating energy usage.
 Cost: \$1-499
 Savings*: 1.5%



Choose an ENERGY STAR® washing machine.
 Difficulty: 
 ENERGY STAR certified clothes washers use about 25% less energy and 33% less water than regular washers.
 Cost: \$1-499
 Savings*: 0.90%

Figure 4 Personalized Recommendations Assessment Report

2. "Easy Weekend Energy Saving Projects," nine low-cost DIY projects, are shown on the next-to-last page of all reports.



Easy weekend energy-saving projects:



Plant shade trees and shrubs to save energy.

Plant tall deciduous trees to the south of your home to screen 70-90% of the hot summer sun. Plant shrubs and trees, with crowns lower to the ground, on the west to shade from afternoon sun.



Wrap older water heaters with insulation jackets.

If your water heater shell is hot to touch, you may need to add an insulation jacket. Insulating older uninsulated water heaters will reduce heat loss by 25-45%, saving 4-9% in water heating costs.



Install Door Sweeps To Block Drafts Under Your Doors

Conditioned air can escape through gaps under your doors. Door sweeps are effective in stopping these drafts and saving you money. You can purchase stationary door sweeps at most home improvement stores.



Install water-saving WaterSense® aerators.

Faucet aerators can reduce a sink's water flow by 30 percent or more, saving water and energy.



Install Electrical Outlet Gaskets

Energy loss occurs through light switch and outlet covers. To reduce these losses, install inexpensive gaskets underneath the covers. These gaskets are available at most home improvement stores.



Clean your refrigerator coils.

Cleaning the coils beneath or behind your refrigerator helps it operate more efficiently. Dust accumulation can block air flow and act as an insulator, preventing heat from dissipating. When coils are dirty, the refrigerator cycle runs longer and more often, requiring as much as 25% more energy.



Use caulk to seal air leaks.

Plug air leaks around windows and door frames with caulk to save 10% or more on your energy bill.



Check your heating and air filters monthly.

Dirty filters restrict the airflow of your heating and cooling system, making your system run more often which increases energy consumption and wear and tear on your system.



Install advanced ("smart") power strips.

Many electronic devices, such as gaming systems, DVRs, computer monitors, and printers, consume power all the time, whether they're being used or not. Smart power strips help eliminate this "vampire power" load, while providing surge protection. When the main device (e.g., TV or computer) is shut off, the energy draw from connected equipment is also eliminated.

Figure 5 Easy Weekend Projects Assessment Report Page

3. "Helpful Habits that Reduce Energy Waste" is the last page of all reports and includes nine no-cost tips like adjusting window treatments and thermostat settings.

"Financial concerns are both a benefit of and barrier to upgrading." (Sussman and Chikumbo 2017, 5). While reducing monthly energy bills is the primary driver for making energy-efficient

improvements, the cost of these improvements is the primary barrier. To make matters worse, the return on investment is often small and the payback period long, which makes framing tricky. In focus groups conducted on the topic, customers said they need some idea of potential savings and improvement costs to help prioritize actions and ensure that recommendations are within their budget. Franklin Energy added a budget question to our virtual assessment survey instruments based on this feedback. Customers only see recommendations with estimated costs that fall within their budget constraints.

In addition, we provide a relatively broad cost range for each recommendation (\$1- \$500, \$500-\$5000, >\$5000), and we present savings as an estimated percentage bill reduction based on an energy model configured to the customer's geographic region. Report disclaimers note that savings and cost information are based on engineering assumptions and approximations and that actual values might differ. The report also explains that recommendation savings percentages are not cumulative. User testing has found that the cost and savings information provided in the reports is enough to encourage the first step, i.e., contacting a contractor, clicking through to view available incentives, or visiting the utility's marketplace for product purchases.

Finally, we email customers their virtual assessment reports in an interactive PDF format with links embedded in the recommendations. The email delivery directly links to available rebates and products, removing the guesswork for customers and an immediate purchase while interest is high. The interactive format can also help with program attribution if a utility has the budget for marketing analytics.

Opportunities to Expand the Use of Virtual Assessments and Improve Outcomes

Virtual assessments can unlock many new ways of interacting with and supporting customers in reducing their energy use and bills. They can also reduce program costs, wait times, and reach new customers.

Firstly, utilities can use virtual assessments to get more assessments completed quickly and at a lower cost due to reduced fuel costs and drive time (7, Cooper, E, Reuven, S, and Rosenberg, B. 2021). In-home assessments for some of our implementation programs have a months-long wait time, while virtual assessments can be scheduled, in most cases, within a week and a half. Programs can include assessments coupled with kits and drop-shipping to reduce delivery and installation costs further. If, during a virtual assessment, the assessor determines that the customer is eligible for additional measures, they can be ordered and drop-shipped afterward. In the case of smart thermostats, the assessor can schedule a follow-up installation with notes that will be helpful for the installer – removing the "unknowns" that can sometimes make these installations difficult.

Customer Scheduling Improvements

While strong text, email, and phone reminder communication flows are critical to reducing no-shows, perhaps we are making canceling or rescheduling too easy. We would expect that the zero-price effect or the "irrational urge towards getting free stuff" (The Decision Lab 2022) would entice customers to complete an auditor-assisted virtual assessment to get free measures. However, with cancellation rates between nine and 22 percent, we surmise that canceling may be too frictionless for customers. With one-click options to cancel or reschedule,

customers may be too enticed to change plans at the last minute. We may test how removing the cancellation option from the day-of reminder impacts no-shows and cancellation rates.

Is "Free" Costing Programs?

It is also possible that because the virtual assessment is free, there is a perceived value problem. Gorn, Tse, and Weinberg (1991) found that services offered for free were perceived to be lower in quality than when offered in a normal price range. In further research, we hope to explore a nominal scheduling fee to be refunded when the customer completes the assessment. The investment stickiness created by completing a transaction could encourage customers to complete the audit. A strong messaging flow that conveys the value of the assessments can also help. Ways to communicate value include providing a sample recommendations report and emphasizing the customized pre-assessment investigation that the assessor will provide. Finally, messaging should emphasize the specific customer benefits of virtual audits: convenience, privacy, and interactive learning opportunities.

Reaching New Customers

Previously, income-qualified customers who fall into the low- or moderate-income bracket have been considered poor candidates for a virtual assessment due to technology barriers. However, the opportunity for customer education on low- and no-cost ways to reduce energy bills, particularly time-of-use impacts, are abundant in phone assessor-guided and video assessor-guided formats. Pew Research (2021) finds that 87% of adults with household incomes below \$30,000 report having home broadband services, a smartphone, a desktop, or laptop computer or a tablet, and 27% of these lower-income households use their smartphones for going online. There is an opportunity for utilities to use virtual assessments to support income-qualified programs, particularly as a channel for delivering direct install measures more cost-effectively. Programs can ship the measures to the home before the virtual assessment and walk the customer through the installation over the phone during the assessment to ensure correct installation and program attribution.

Virtual assessments also offer a solution for those who are uncomfortable inviting a person of another gender into their home. Cooper, Reuven, and Rosenberg (2021) found that the virtual format alleviates safety and privacy concerns from customers who prefer not to have strangers in their homes. This issue is even more pertinent during a lingering pandemic. A virtual format can alleviate safety concerns and comply with religious traditions that prevent some customers from participating in an onsite assessment, making utility programs more inclusive.

Virtual assessments also open new possibilities for implementation, including in-language services and appointments outside of business hours. With a diverse staff at Franklin Energy, we can pair an assessor in one area of the country with a customer located in a totally different region to provide in-language support. Virtual assessments can also be offered in a way that exploits time zone differences. With staff based across the U.S., we can offer evening assessments for the east coast and Midwest customers who work regular business hours. Virtual assessments could be offered on weekends. With assessors able to conduct work remotely, and customers more likely to be home, weekend options could offer flexibility that increases program participation.

COVID has changed the way we work, consume goods and services, and deliver and provide goods and services; because of these shifts, customer expectations have been forever

altered. While many utilities saw the inclusion of virtual assessments to be a necessary pandemic-era fix, we believe they should be made standard for home energy assessment programs, regardless of the pandemic. In conclusion, the many customer satisfaction, cost-effectiveness, and reach benefits noted in this paper should encourage utilities to add virtual assessments to their DSM program portfolio.

References

- EPA (Environmental Protection Agency). 2017. *Local Residential Energy Efficiency, Home Improvement*. Washington, DC: EPA. <https://www.epa.gov/statelocalenergy/local-residential-energy-efficiency>.
- Iyengar, S. 2010. *The Art of Choosing*. New York: Grand Central Publishing.
- eSource. 2022. Spending and Savings by Program Category.
- Franklin Energy. 2020. *Virtual Audit: B2C Feedback with Click Test*.
- Franklin Energy. 2020. *Virtual Audit: B2B Feedback w/Card Sort*.
- Sussman, R. and Chikumbo, M. 2017. *How to Talk about Home Energy Upgrades*. Washington, DC: ACEEE. [aceee.org/research-report/B1701](https://www.aceee.org/research-report/B1701).
- The Decision Lab. 2022. The Zero Price Effect. <https://thedecisionlab.com/reference-guide/psychology/zero-price-effect>
- Gorn, G., Tse, D. and Weinberg, C. 1991. *The Impact of Free and Exaggerated Prices on Perceived Quality of Services*. Marketing Letters 2, no. 2: 99–110.
- Vogels, E. 2021. *Digital divide persists even as Americans with lower incomes make gains in tech adoption*. Washington, DE: Pew Research Center.
- Cooper, E, Reuven, S, and Rosenberg, B. 2021. *Remote Home Energy Audits*. Washington, DC: ACEEE. <https://www.aceee.org/research-report/b2102>