

## Member Advisory Utility Connected Home

### The Potential Role of the Co-op in Smart Home Technology

#### What has changed?

Recent and continuing evolutions in the Internet of Things (IoT)<sup>1</sup> have given rise to an ever-expanding array of innovative applications and opportunities for consumers to use Internet enabled appliances and devices to provide comfort and convenience to their daily lives.

A subset of IoT is the “utility connected home.” The utility connected home pertains to the partnership between the co-op and the end-use member to more effectively manage energy use. This would include enhanced insights into how members use energy and their enrollment of HVAC, pool pumps, water heaters, and electric vehicle chargers into co-op demand response programs. Focusing on these well-defined areas, instead of the entire IoT universe, promotes more successful co-op programs.

#### What is the impact on cooperatives?

A connected home not only encompasses a technology platform; it is a purpose-driven affair. While the technology employed in the establishment of a connected home is powerful and interesting, it is the value delivered to users that is the essence of why the investment is worth the cost. Convenience and comfort are the driving factors today. The question is how these devices can be used in partnership between the member and the cooperative to enhance value to the user and the system.

The utility connected home is made up of a combination of applications that are centered on the partnership between the end-use member and the cooperative. A close parallel to the utility connected home may be found in the relationships a co-op has with its commercial and industrial (C&I) members. In these cases, C&I members engage in close collaboration with the co-op to leverage communications, monitoring, and control systems to manage energy demand and oversee efficiency. A connected home functions in much the same way, only on a mass-market scale with a common technology platform.

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<sup>1</sup> The Internet of Things (IoT) is the network of physical objects — devices, vehicles, buildings and other items — embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data. (definition by Wikipedia)

## What do cooperatives need to know about it?

From a technological standpoint, the chief definition of a utility connected home is the interconnection, interoperability, and integration of communications, sensing, monitoring, tracking, analyzing, and controlling devices primarily oriented around a home's gas and electric energy infrastructure. These devices allow for automated control of energy use through the monitoring and management of specific appliances and features in the home, such as water heaters, HVAC, water pumps, lighting, and electric vehicle charging systems. By providing enhanced awareness of energy usage overall, members can make more informed energy usage decisions.

For the greatest value to be realized, the utility connected home needs to be a partnership between the member and the co-op. It operates in much the same way that today's HVAC or water heater load control program operates. The major difference is that the utility connected home utilizes IoT, and the appliances under control would be capable of learning the user's behavior. This advanced feature would allow load control programs to be deployed that minimize inconvenience and discomfort – which increases the likelihood of people participating in the program and, thus, the resources co-ops have available to them to manage peak.

Not all co-op members will be ideally suited with respect to the interest or ability to take advantage of a connected home platform. A modest percentage of members will be ready to embrace utility connected home programs and technologies.

In order to progress from just the small group of 'early adopters' to engaging a more meaningful share of members, key decision factors should be kept in mind. Income, demographics, home ownership, technology orientation, broadband access, affinity for 'green' solutions, and retail services channel preference all play a part in the decision making of a given group. In addition, the concept of clustering may also influence adoption rates within a geography, or other defined community. For example, a tech-savvy suburban population may be more inclined to adopt utility connect home programs in meaningful percentages when compared to a more rural, geographically isolated area that lacks broadband access. It is important for a co-op to understand their member segments and their needs and desires.

Co-ops also need to recognize that, as with all connected devices, cybersecurity is an important consideration for the utility connected home. Cyber threats are a stark reality for everyone these days, and mitigating the potential for such attacks is a critical component of planning programs that involve connected devices. For more information on cybersecurity resources available from NRECA, visit our cybersecurity topic on [cooperative.com](http://cooperative.com).

*It is important to note that protocols such as CTA 2045 could play a critical role in connected the co-op to appliances. NRECA is a member of the USNAP Alliance which is establishing the standard for utility communication to appliances using CTA 2045. We will have a report on CTA 2045 available to members in mid-2018.*

## Potential Impacts to the Co-op

The value promise of the utility connected home is oriented around developing energy awareness and the potential for improved partnership in lowering energy costs while enhancing member satisfaction. At the very least, the expectation is that enhanced awareness created by the devices' data will empower members with additional information about their energy habits and needs when making energy decisions. In more advanced cases, the co-op can assume an active role in the connected home relationship, whether via rate programs, integration with smart grid systems, or perhaps direct control over devices and functions at the members' premises. Managed loads on the premises of residential members may include water heaters and HVAC systems, or more flexible options such as pool pumps and electric vehicle charging systems that lend themselves to management with less member inconvenience. The co-op would have little interest in smaller appliances, such as toasters or televisions, as they do not contribute large enough load to be worth managing in a program.

NRECA is planning a field demonstration in late 2018/early 2019 in conjunction with a national lab to test how these systems would function and member attitudes toward them. Information about this demonstration and insights gained will be available to members on our [website](#) and communicated through our newsletter, [TechUpdate](#).

## Additional Resources

- [Do Smart Thermostats Make for Smart Demand Response Programs?](#)
- [Distributed Energy Resources Compensation and Cost Recovery Guide](#)
- [Sign-up for our newsletter, TechUpdate](#)

## Contact for Questions

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