



**WEBINAR
SERIES**

SCE's Smart Speaker Project

Integrating with the Smart Home

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About Southern California Edison

One of the nation's largest electric utilities

- 15M residents in service territory
- 5M customer accounts
- 50,000 square mile service area

Significant infrastructure investment

- 118k miles of distribution/transmission lines
- 3200 MW owned generation

The Big Picture

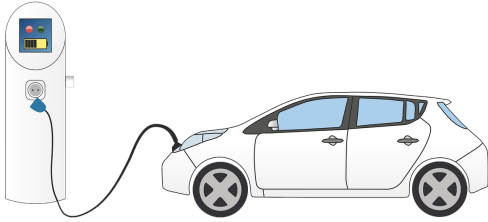
- Relentless focus Safety & Reliability
- Helping California achieve Carbon Neutrality in 2045 by
 - Decarbonizing energy production – 50% of homes w/solar
 - Electrifying Transportation – 75% of EVs run on electricity
 - Electrifying Buildings – 70% of homes all-electric



The Smart Home

- What is a Smart Home
 - A smart home is defined as a home with 1 or more connected devices according to McKinsey
 - At least 35% of homes are smart homes in the US
- Smart Home Barriers
 - Single product value drivers
 - Slow cycle replacement time
 - Communication protocols
- Why you should care about the smart home!
 - Research suggests that an inflection point has been reached in technology adoption. 40% of homes have a smart speaker according to Voice.Ai

Key Ecosystem Technologies



TriStar VS 950 Omni

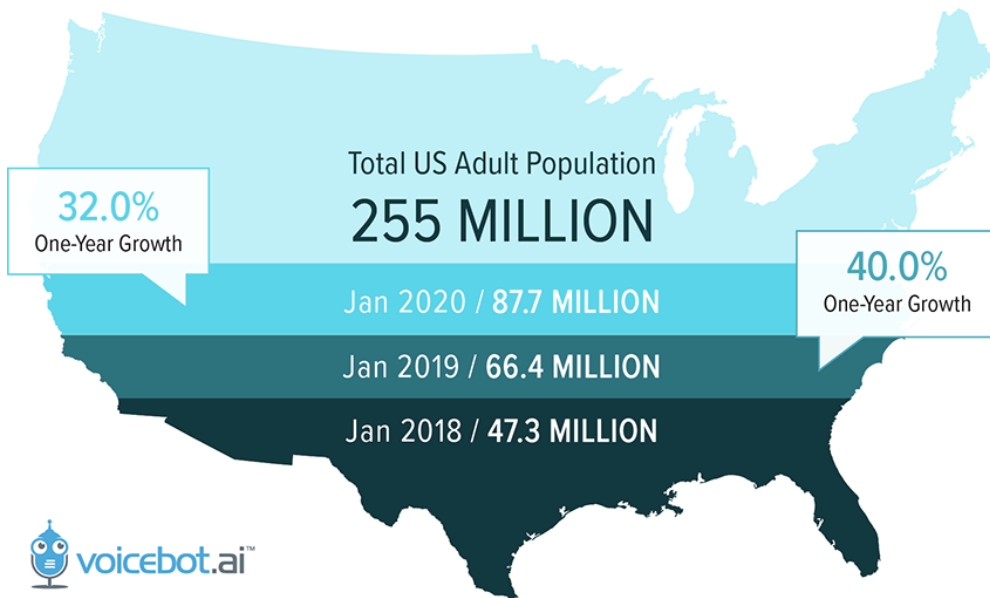


Why Smart Speakers – Adoption & Engagement

- 35% of U.S. households are currently equipped with 1 smart speaker
 - According to research by statista.com as of 2019 an estimated 35% of U.S. households are equipped with one smart speaker and by 2025 forecasts suggest the penetration rate will increase to 75%
- A 2018 report by Edison Research had some interesting smart speaker findings:
 - Broad Category Interest - Ownership rates for these devices are nearly equivalent among people 25, 35, 45 or 55 years old
 - Increased Engagement - 48% of first adopters use the device more often now than they did in the first month of ownership
 - Virality - 61% of new smart speaker owners have encouraged their friends to buy a device

Millions of Smart Speaker Users

U.S. Adult Smart Speaker Installed Base January 2020



Source: Voicebot.ai 2020

Why Smart Speakers – Customer & Utility Interests

- Customers Indicate an interest in voice capabilities for their utility
 - E-Source 2018 Report: Why Utilities should care about Virtual Assistants
 - 60% of smart speaker owners said they’re “probably” or “definitely” interested in a utility app that makes use of voice activated skills
- Potential Utility Use Cases:
 - Improve the customer experience around transactions & information
 - Deflect & reduce call volumes
 - Intelligently connect customers with utility programs
 - Help customers understand & “adhere” time-variant rates
 - Help customers control smart devices

SCE's Approach

Crawl, Walk, Jog & Run

Crawl - System Preparation

- Several years ago SCE invested in a strategic shift from on-premise to a cloud-based identity and access management system
- Although this transition was significant in terms of cost and integration work with some legacy systems, it resulted in the following benefits:
 - Improved Cybersecurity and Privacy policies
 - Use of standard protocols like OAuth
 - More secure communication and data transfer
 - Reduced IT work needed for integrating with third-party systems

Walk – SCE's 1st Smart Speaker Solution

- SCE's 1st Smart Speaker Solution
 - A simple alexa skill
- Utilized Existing FAQ Database
 - Started with approximately 300 of the most asked FAQs from our online chat and call center
 - E.g. Input: Which credit cards and debit cards do SCE accept?
 - E.g. Output: Visa and Mastercard. Sorry, we don't accept American Express
- Added High Interest Intents
 - FAQs related to Time of Use Rates, Electric Vehicles, Etc.

Walk - FAQ Skill Pros & Cons

- Pros:
 - Fairly quick and straightforward development
 - Complimentary Channel - potential replacement for online chat or call center FAQs
 - “Innovative” - takes advantage of smart speaker/virtual assistant technology
- Cons:
 - Only offers generic information
 - Initial results showed customer use was low

Walk – Lessons Learned

- Using SCE's existing FAQ database and integrating with the voice skill was more difficult than anticipated
 - More effort required for identifying the phrasing for questions
 - Fewer analytics available than with native Alexa database
- Some invocation words or phrases for triggering custom voice responses work better than others
 - During testing "SCE" was only successful 50-70% of the time
 - "Southern California Edison" was successful over 90% of the time

Jog - Current Smart Speaker Project Overview

- Objectives
 - Understand how customers interact with smart speakers & other technologies
 - Understand customer satisfaction impacts
 - Estimate the change in customer energy use attributable to smart technology usage and & engagement
- Marketing & Enrollment
 - Targeted 200 TOU customers initially. Settled on 102 due to COVID
 - Enticed customers free equipment
 - Customers were most interested in the free smart speaker
- Technology
 - The UDI gateway device that wirelessly connects to AMI & other smart peripherals
- Partnerships
 - Have leveraged 3rd party equipment to integrate IOT devices & worked with 3rd parties to install and commission equipment in homes

Smart Speaker Project Architecture

How much energy have I used last month
"What's the best time to charge my EV"



1



2

3



- 1) Created Alexa Skill
- 2) Customers ask energy related questions
- 3) UDI algorithms use customer's TOU rates, energy use and preferences to respond to questions and optimize devices
- 4) Connected device settings are adjusted to run less during peak times

SCE & UDI Have Developed a Great Alexa Skill!

- Play Recording

Smart Speaker – Pros & Cons

- Pros:
 - No IT integration needed; data collected directly from customer meter
 - Collects data from other connected smart home devices
 - Uses near real-time data
- Cons:
 - Requires additional equipment (UDI gateway) and connection to smart meter
 - Difficult for customers to self-install the required equipment

Run – The Next Iteration of the Smart Speaker Effort

- Provide the following individualized information:
 - Bill information (amount, due date, projections, etc.)
 - Rate information (peak times, rate analysis, etc.)
 - Energy use (comparisons, disaggregation, costs, etc.)
 - Energy Saving Tips
 - Alerts (high bill, outage, energy use during peak times, etc.)
- Improved conversational capabilities
- More intelligence and control
 - When a question is asked about energy use and the smart speaker knows there is a connected thermostat, customers can be prompted if they want to adjust set points
 - When a customer with a connected EV asks if their car is fully charged, they could be prompted to adjust their charging schedule based on their TOU rate

Lessons Learned

- Timing
 - Smart Speaker projects take longer than anticipated
 - Rollout full solutions to prevents gaps that impact customer engagement
- Anticipated Problems
 - Customer's home networks leads to installation and connectivity challenges
 - Some customers just want the equipment & aren't responsive to other requests
- Installation
 - The user experience for setting up smart home devices still needs improvement
 - It was difficult for some customers to have installations on weekdays

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