

IBM's Smarter Cities Challenge

Knoxville

Summary report

Introduction

In 2012, IBM selected the City of Knoxville, Tennessee, USA, as one of 31 cities to receive an IBM Smarter Cities Challenge® grant as part of IBM's citizenship efforts to build a Smarter Planet®. Madeline Rogero, Mayor of Knoxville, and her senior leadership team wished to:

Utilize the skills and expertise of a talented IBM team to brainstorm a way to track and measure emergency energy services and to recommend the best way to systematically improve Knoxville's older housing stock accordingly.

Background

Knoxville has an aging housing infrastructure that consumes energy in excess, often leaving residents with utility bills too large for them to pay and resulting in a drawdown of resources from supporting agencies. The cycle wastes millions of dollars annually and will continue to do so unless corrected.

More homes in Tennessee use electrical heat than in any other part of the country, and Knoxville is no different. Much of the city's older housing stock was poorly insulated, if at all; electricity was cheap when it was built in the 1940s and 1950s. These homes are now occupied by low-income residents, for whom Knoxville funds substantial emergency utility bill payments.

The City of Knoxville does provide funds to weatherize housing to help reduce utility bills, but like all Tennessee communities, from large to small, it faces a constant funding challenge. Current funding is not sustainable or perpetual. For example, American Recovery Reinvestment Act of 2009 (ARRA) funds for the Weatherization Assistance Program ended on 30 June 2012; the \$6.2 million that was provided to Knox County as part of this federal stimulus package has been exhausted.

In the past year, millions of dollars from local community organizations have funded utility assistance programs. These programs are designed to alleviate the financial pressure experienced by low-income families, rehabilitated citizens and people who have recently been or are in immediate danger of becoming homeless.

None of these funds were applied to weatherization or education services. Utility energy efficiency programs do not currently target or adequately incentivize low-income landlords or individual homeowners.

Highlights:

- Reduce percentage of non-revenue water
 - Enable earlier warnings for potentially high bills
 - Decrease volume of customer queries to call centers
 - Increase customer satisfaction with Tucson Water
 - Lower energy expenditure
 - Empower employees
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The challenge

The City of Knoxville recognizes the need for a system that connects its network of emergency utility bill services to the solution: weatherization and energy education. In applying for a grant from IBM, the City wanted an outside-in perspective to help resolve the following challenges:

- Multiple sources of data, each with its own rules and definitions
- A lack of integrated data leading to limited fact-based decision making
- Many voices with no common vision
- Inadequate funding sources that are disparate and not always easy to access
- A lack of collaboration across parties, policymakers, citizens, higher education institutions, businesses and investors
- Limited weatherization and energy efficiency education resources that are not well funded, coordinated or actively promoted
- Many low-income housing landlords not actively weatherizing properties because of a lack of regulation, incentives and/or interest in the issue

The City asked the global IBM Smarter Cities Challenge team to create a new systematic approach to an old problem; one that will generate better data and give City leaders tools to optimize their use of limited resources, make better decisions and best target their interventions.

The team's expertise across a diverse set of disciplines enabled it to approach the challenges in new and innovative ways. Bringing an alternative view to analyzing problems and developing solutions, the team worked with many different stakeholders to gain required buy-in and momentum.

Findings and recommendations

- **Culture:** Cultural norms could be a barrier to the community working together.
- **Communication/coordination:** Areas for improvement exist, but there is a strong desire by all stakeholders to address this.
- **Data:** Data exists that could prove the business case for weatherization and link funding to needs.
- **Weatherization and education models and efforts:** There is an opportunity to leverage models used by other cities; local educational resources are interested in participating and collaborating more proactively.
- **Funding sources:** Resources are inadequate, disparate and lack ease of accessibility.
- **Landlord regulations and incentives:** Many organizations see the need to work more closely with landlords in an effort to increase their accountability and involvement.

The team developed five recommendations that work together and build off the successes of each other. The recommendations are the following:

1. **Develop one voice around a shared vision:** Improve coordination and communication
2. **Harness the data:** Enable fact-based decision making
3. **Educate the community:** Develop and implement end-to-end education campaigns
4. **Fund the program:** Create a sustainable and perpetual funding system
5. **Engage landlords:** Incentivize, collaborate with and regulate property owners

The team provided a 12-month roadmap for immediate action coupled with a governance structure to kick-start energy efficiency measures.

Conclusion

The City will achieve sustainable energy efficiency targets through its commitment to collaboration and business-friendly practices and by engaging the landlord community. The City should leverage its academic and community assets to create a long-term solution that delivers education. In the future, the City should engage all its constituents and gain buy-in for a citywide campaign to create a stronger Knoxville. Through the system of systems the City will make fact-based decisions on how to best spend its precious resources.

For more information

To learn more, send an email to ccca@us.ibm.com or visit smartercitieschallenge.org

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