City of Fort Worth Case

The City of Fort Worth, Texas, is a national leader in promoting municipal energy conservation. As a U.S. Department of Energy Better Buildings Challenge (BBC) Partner, and with the approval of City Council, City Management has committed to decreasing its municipal building energy use intensity 20% by 2020, and to engage its community in a common effort to reduce building energy use 20% across the entire city. The City, under its Council-Manager form of government, has made significant progress on its own building stock, and now plans to shift focus to the rest of the community.

You are the City Manager's Chief Sustainability Officer and have been tasked with creating a strategy and implementation plan for the City to achieve its goals in private buildings. The City Manager has asked you to identify three priority building types and develop a strategy to achieve at least 20% savings in each sector. Your recommendations for which real estate sectors to prioritize should be based on an understanding of the local building stock, potential high-impact energy conservation measures and technologies, and their likely costs and savings.

Your implementation strategy should recommend policies, programs, and other activities that the City can undertake, as well as the best roles and responsibilities for local partners. These recommendations should tie into the 3-phased approach outlined by the City and underway currently. Fort Worth benefits from strong relationships with its Better Buildings Challenge Partner and Ally Networks. The Partners Network includes those local entities that have committed to achieving the City's goal, while the Ally Network includes local utilities, professional organizations, and business groups. Key among the allies are the electric and gas utilities, Oncor Electric Delivery and Atmos Energy.

You should recommend a suite of activities that combine the efforts of all interested parties to achieve the greatest impact given the conservative local culture, internal fiscal constraints, and various state and local regulations. You should primarily focus on what local Partners and Allies can achieve by 2020 assuming that state and national regulations and policies will not change significantly in the interim. However, you may also recommend that these local networks advocate for state and national changes that could have a longer term impact.

While Fort Worth could benefit greatly from collaborations among local partners, in doing so the City must also help ensure that each of its partners achieves the goals that matter to them, and that partners get credit for their contribution. Your implementation strategy should therefore also include recommendations for tracking and reporting key metrics, including which metrics should be reported, how they can be collected, and how they should be communicated to different audiences.

Overview

The city of Fort Worth's Energy Conservation Program is driven by both internal and external factors. As one of the nation's fastest growing large cities, there is considerable financial incentive to increase the sustainability of its infrastructure and developments in order to reduce current and future energy costs. At the same time, Fort Worth is a conservative city[1] operating in one of the more conservative states in the country[2], which is a political reality that City staff must account for when considering a "green" agenda.

In response to State of Texas legislative initiatives starting with Senate Bill 5 (*SB5/77th Leg./2001*), then superseded by SB12 (*80th Leg./2006*), and currently SB898 (*82nd Leg./2011*), the City set goals to reduce energy use in its municipal facilities by 5% per year. Air quality is also a major concern; the City Council adopted a Mobility and Air Quality Plan in 2009 which aims to limit future congestion levels, promote alternative transportation options, and improve mobility and air quality.

The City joined the U.S. Department of Energy's (DOE) Better Buildings Challenge in 2012. Through the Challenge, the City has committed to: 1) reduce the energy consumption of its municipal facilities 20% by 2020; and 2) encourage local businesses, universities, and other organizations to meet the same goal. Community organizations are invited to join the City in its Challenge, and to expand the city of Fort Worth's total square foot commitment to the national Challenge.

Fort Worth's participation in the Better Buildings Challenge builds upon substantial existing City efforts. In January 2009, City Council appointed a Sustainability Task Force to find ways to ensure that the City manages growth sustainably. The Task Force has taken a three-phased approach. Phase 1, *Sustainable Development*, targets actions the development community can take to make new and renovated construction more sustainable. Phase 2, *City Operations*, targets ways to improve practices at city facilities and in city business that help further sustainability goals. Phase 3, *Resident and Business Involvement*, targets strategies that residents and businesses can follow to help achieve the goal of a sustainable city at home and at work[3].

To date, Fort Worth has made the greatest progress in its City buildings (Phase 2). The City has over 900 public facilities totaling over 10 million square feet of building space, ranging from police stations, park shelters, and maintenance shops, to office complexes, coliseums, and airport hangars. The average size of a City building is about 13,300 square feet; however, the median size is only about 2,800 square feet as the vast majority of buildings are only one story tall. The median year of building construction is 1983, with the average built just a few years earlier.

In 2002, City staff identified and recommended energy savings performance contracts (ESPCs) as a technically-, financially-, and legally-viable vehicle to implement conservation projects in its public buildings. With City Council approval, staff began working with Johnson Controls, Inc. in 2003 on energy efficiency improvements to City Hall and other municipal buildings. The City's multi-phased ESPC currently involves 206 of its buildings, with the most recent phase continuing its performance measurement and verification reporting through 2025.

This ESPC currently provides the City a guaranteed 49% reduction in electricity consumption across its contracted buildings. Some of this reduction is due to development of onsite renewable energy projects. In addition to the ESPC, reductions related to traffic signal lighting have been achieved. The City is confident that its Energy Conservation Program is addressing both the "low hanging fruit" and more

1 The Bay Area Center for Voting Research, "The Most Conservative and Liberal Cities in the United States." http://alt.coxnewsweb.com/statesman/metro/081205libs.pdf

2 Gallup (2012) "State of the States." http://www.gallup.com/poll/125066/state-states.aspx

3 City of Fort Worth (2012). http://fortworthtexas.gov/sustainability/

exotic measures to reduce City facility energy demand and consumption. All projects are implemented as budget-neutral to the City, without increasing taxpayer's burden. Overall, the annual savings due to implementing these measures have exceeded the projected savings[4].

Project funding has been provided by a variety of methods including a Federal stimulus grant, utility incentives, and financing through loans and leases. Stimulus grant funding, an Energy Efficiency & Conservation Block Grant (EECBG), was administered by the DOE and utility incentive funding has been provided through implementing improvements under Oncor's energy efficiency programs. Financing has been provided through State Energy Conservation Office (SECO) LoneSTAR loan program and competitive market municipal equipment lease-purchase agreements.

The City's Energy Conservation Program continues to work to implement a wide variety of energy efficiency and renewable energy improvements, along with other sustainability initiatives in public buildings. Energy efficiency measures include those to improve building lighting, air-conditioning, and plumbing systems, as well as utility system power factor. Renewable energy measures include onsite electricity generation on a larger scale from biogas turbine-generators at the City's water reclamation facility as well as those on a smaller scale from solar photovoltaic arrays at City library and community center buildings. The City has also implemented solar-thermal systems that provide potable hot water at some community centers.

A community-based strategy must determine the types of private buildings and market sectors on which the City should focus its outreach efforts - small businesses, large commercial entities, industrial facilities, multifamily residential properties, educational institutions, and/or others – as well as the most effective way to target these groups and encourage participation in the City's Better Buildings Challenge. The City must also figure out how to best assist the local community in providing the technical and financial resources necessary to meet the challenge of a 20% energy reduction goal by 2020.

Local Real Estate Market and Economy

With a 2012 population of over 750,000, Fort Worth encompasses an area of about 300 square miles and has more than 950 million square feet of built space.

Type	Number of Buildings	Square Feet	% of Total
Single-Family, Mobile Home, Townhome, House on Limited Acres,	197,953	414,841,735	43.6%
Duplex, Triplex, Quadraplex	7,022	12,149,307	1.3%
Multifamily, Condo	35	127,829,396	13.4%
Commercial	24,363	322,998,661	34.0%
Industrial	1,188	72,775,035	7.7%
Total	230,561	950,594,134	
Source: Tarrant County Appraisal District, December 2012 - Based on living area field			

Some details of Fort Worth's downtown building stock are available in a presentation entitled *Transforming the Central City*[5], presented to the local Chamber of Commerce by a Fort Worth Assistant City Manager in January of 2012. Downtown Fort Worth features many restored buildings from the late 19th and early 20th centuries, some of which have been converted into residential lofts. Outside of the city center, population and building density decreases considerably.

4 Johnson Controls (2012), "Meeting a Texas Sized Challenge." http://www.johnsoncontrols.com/content/us/en/products/building_efficiency/smart_environments/july-2012/fort-worth.html

5 Costa, Fernando, Assistant City Manager City of Fort Worth (2012). "Transforming the Central City."
http://fortworthtexas.gov/uploadedFiles/Planning_and_Development/News_and_Information/Central_Area_Council_1-5-12.pdf

Fort Worth's biggest industry is mining, transportation and utilities (23%), followed by education and health services (13%), the government sector (13%), professional and business services (12%), leisure and hospitality (11%), and manufacturing (10%), among others. Details on specific industry clusters are available through the Fort Worth Chamber of Commerce[6].

Another element to consider is the increasing economic importance of natural gas to Texas, historically one of the world's great producers of oil and gas. The Energy Information Administration's *Annual Energy Outlook 2011* projects that natural gas demands in the United States will increase 16% over 2009 levels by 2035. In 2006, the oil and natural gas industry accounted for nearly 7% of all wages in Texas, and about 15% of the gross state product. The importance of natural gas to the local economy is expected to increase into the future, as new hydraulic fracturing technology has enabled access to the Barnett Shale formation that underlies the Fort Worth area. There are currently over 1,600 natural gas wells in the City[7].

Local Utilities and Energy Efficiency Programs

Fort Worth has particularly strong and collaborative relationships with its electric and natural gas utilities, Oncor and Atmos Energy. Both utilities have existing or planned energy efficiency programs that generally coincide with the City's goals, and are enthusiastic partners within their regulatory boundaries.

In Texas, electric utilities are regulated by the Public Utilities Commission of Texas (PUCT), while natural gas utilities are regulated by the Railroad Commission of Texas (Commission). Among other oversight responsibilities, both the PUCT and the Commission set rate structures, which determine how each utility will recover the costs of providing their various services and programs. Through this process, both the PUCT and the Commission consider requests from utilities to implement energy efficiency programs and incentives, approving or rejecting requests to expend capital that will have to be recovered from rate payers. The PUCT and Commission, by turn, are directed by state mandates such as the aforementioned Texas legislative bills SB5, SB12, and SB898, which ultimately drive energy efficiency incentive programs. To date, the PUCT has been more aggressive in requiring energy efficiency savings than the Commission, and as a result there are currently more energy efficiency programs and incentives available from electric utilities.

Oncor Electric Delivery (Oncor) is the city of Fort Worth's primary local electric utility and should be treated as such within the context of this case. While the City is also served by two electric cooperatives, Tri-County Electric Cooperative, Inc. and CoServ Electric, both serve very small sections of Fort Worth; Tri-County on the far west side and CoServ on the far north side. Electric cooperatives are not included under the PUCTs definition of the term "Electric Utility" and provide a very small portion of Fort Worth's electricity and, as such, are regulated differently than Oncor.

Oncor is required by the PUCT to reduce peak demand growth by 25% for residential and commercial customers in 2012 and by 30% in 2013. These reduction goals are determined by a 30% decrease in the five-year average demand growth. In addition, Oncor is encouraged by the PUCT to achieve additional demand reduction and energy savings through other cost-effective programs, as long as the measurable benefits outweigh the costs[8]. [Sub. Rule 25.181, SB1434, SB1125]

6 http://fortworthecodev.com/expand-relocate/industry-clusters/

7 Ireland, Ed PH.D; Barnett Shale Energy Education Council (2012). "Presentation to Dallas City Council"

http://www.dallascityhall.com/council_briefings/briefings0812/GasDrillingBriefingPro_080112.pdf

8 Public Utility Commission of Texas (2013), "25.181 Energy Efficiency Rule." http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.181/25.181.pdf

Oncor's *Take A Load Off, Texas* (TALOT) initiative began in 2007 as a an educational campaign, and now offers a wide range of programs and incentives for customers in the residential, commercial, education, non-profit, and public sectors. Oncor's Basic Commercial Standard Offer Program (BCSOP), for example, offers incentives to service providers who implement qualifying peak demand or energy saving projects for eligible Oncor commercial customers. The BCSOP budget for 2013 is $7.1 M, and the program aims to save 13,500 kW and 66,666,000 kWh; additional details on program measures, including incentive rates, can be found in the appendices.

Texas' unique market structure [SB7], requires that transmission and distribution utilities not engage in competitive services, therefore, energy efficiency programs are implemented in concert with trade allies, competitive electric retailers, and implementation contractors. One complicating factor for Oncor in general is that incentives are paid to the contractor or service provider, not the customer. Incentives are based on the project's energy and demand savings. Another factor is that industrial customers – those who produce goods and have a tax exemption – may opt-out of paying the energy efficiency cost recovery factor (the charge included in utility bills to fund energy efficiency programs), and therefore would not be eligible for incentives from its programs.[9] For additional details on Oncor's existing energy efficiency strategy, see its 2012 Energy Efficiency Plan and Report[10], and Oncor's Energy Efficiency Program Manuals.[11]

Atmos Energy MidTex Division (Atmos Energy) is the city of Fort Worth's natural gas utility, and serviced 1,565,685 commercial and residential customers with 366,000 MCF and 486,000 MCF of natural gas respectively in FY2012[12]. Prior to 2009, Atmos Energy had no energy efficiency programs. A Conservation & Energy Efficiency Rider approved in 2009, focused on low income customer weatherization and other envelope improvements, was revised on December 4th, 2012 to include energy-efficient natural gas appliances. Approximately $1.5 million will be dedicated to the appliance portion of the program, with $500,000 earmarked for the low income market[13]. Residents over 65 years of age who meet income guidelines, or qualify as a low-income household for state or federal assistance programs, can receive up to $1,500 in home energy-saving supplies[14].

Atmos Energy's *Conservation and Energy Efficiency* (CEE) *Portfolio* focuses on the following six end-use technologies: ENERGY STAR gas forced air furnace; ENERGY STAR high efficiency gas storage water heaters; ENERGY STAR tankless gas water heaters; gas dryers; commercial kitchen equipment; and low income weatherization. For each technology set, the appendices provide a table with projected first year therm savings, an estimate of first year participants, the program's proposed rebate and incremental customer investment, and the first year budget, including administration and rebate costs. To determine the energy savings results, Atmos Energy will use deemed savings values that are regionally appropriate for its Mid-Tex area[15].

While regulated by different agencies, Oncor and Atmos Energy are free to collaborate to their mutual benefit. There may be some ways to work together within the current regulatory framework; however, some goals and strategies may require broader regulatory changes. One area of potential collaboration is fuel-switching measures, which involves swapping older electric appliances, like water and space heaters,

9 Information received from Oncor Electric Delivery

10 http://www.texasefficiency.com/images/documents/RegulatoryFilings/EEPRs/2012_EEPRs/oncor%20%2040194%20energy%20efficiency%20plan%20and%20rpt_4-2-12.pdf

11 www.oncoreepm.com

12 Atmos Energy (2012) "Fort Worth Customers and Volumes - Fiscal 2012"

13 Information received from Atmos Energy

14 Atmos Energy (2010) "MidTX EE Poster"

15 Atmos Energy (2012) "Atmos Energy Mid-Tex Division's Conservation and Energy Efficiency ("CEE") Portfolio"

for more efficient natural gas appliances, like natural gas heat pumps. For the natural gas utility, fuel-switching increases the customer base, and the energy efficiency programs approved by the Commission will encourage this to an extent. The PUCT has approved fuel-switching from electric to gas-driven cooling equipment as a potentially qualifying energy savings retrofit measure,[16] however Oncor offers only limited incentives for fuel-switching measures, primarily in the residential sector. Custom projects may be developed to implement fuel-switching measures, but preapproval must be obtained and savings have to be verified through a measurement and verification process.

The Energy Efficiency (EE) Community

City Sustainability Task Force Phases 1 and 3 aim to excite and engage private sector community stakeholders, and to integrate existing efforts of those already striving to make a positive change. The City of Fort Worth continues to reach out to local organizations in growing its Better Buildings Community Partner network that currently covers approximately 10 million square feet in buildings and includes *UTA Fort Worth Center*, *Texas Christian University*, *Baylor All Saints Medical Center*, *Fort Worth Museum of Science & History*, *Lockheed Martin Fort Worth* and *JPS Health Network*. An introductory letter from the City's Mayor and City Manager to prospective partners can be found in the appendices.

To support their Partners, the City continues to develop its network of local Better Buildings Challenge Allies, paralleling the Ally system of DOE's national Better Buildings Challenge program. Allies are categorized as Utility, who provide incentives and can help with data access for benchmarking; Technical, who agree to provide technical assistance support; and Connector, who set the foundation for the relationship between the City and potential Partners and connect these Partners with the resources to encourage them to assess opportunities to promote measurable energy efficiency savings. Fort Worth's Allies must be non-profits or utilities. One challenge has been that some non-profit representatives also represent for-profit organizations, and they cannot engage in for-profit activities when interacting with Partners. While contractors cannot be Allies, the City is considering ways of engaging with this group, but must be especially careful to do so without offering preferential treatment.

Evaluation/Measurement

Accurately tracking the impact of its energy efficiency efforts is essential for Fort Worth to understand its program's strengths, to target areas for improvement, to justify the allocation of resources to its residents and City Council, and to provide clear metrics of success to be weighed by other local governments considering similar programs. Different stakeholders - City leaders, local businesses and residents, Atmos Energy and Oncor, and the BBC program - value different metrics for energy savings.

For example, the City's Budget Office, as well as most private building owners and managers, want to measure cost savings based on their electric and gas bills. However, Oncor and Atmos Energy need to track site energy savings for their required program measurement, verification, and reporting activities. Moreover, the DOE's Better Buildings Challenge, EPA's ENERGY STAR, and many national and international protocols for accounting greenhouse gases focus on source rather than site energy. And many programs translate individual project costs or energy savings into other metrics, or track savings at a group level, to make them more meaningful to the community. The City needs to determine how to best track and collect data against which metrics, and then communicate consistent claims of impacts of its efforts to these different audiences.

16 Oncor Electric Delivery (2013) "Technical Resource Manual." https://www.oncoreepm.com/commprogram.aspx