Cities Can Go Their Own Way on Energy Efficiency, Even in IOU Territory

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ABSTRACT

States, not cities, generally have jurisdiction over utility demand-side management programming, while cities often have climate and/or energy goals that are stronger than that of the state. This control vs motivation dichotomy leaves cities without municipal utilities feeling as though they have little opportunity to drive energy efficiency improvements. In addition, criteria such as cost effectiveness for state-approved utility programs do not necessarily produce programs that adequately incentivize participation in diverse communities within cities. But what if cities could go their own way on energy efficiency initiatives without upsetting the balance of current utility territories and ownership structures? What if this way could address energy efficiency in all building types with low-overhead and nearly unanimous buy-in? What if utilities could leverage this when developing new programs?

Here, we describe how a Midwestern city, Minneapolis, has taken advantage of the franchise fee policy and created a comprehensive suite of programs and policies that addresses energy efficiency in all existing buildings. The programs and policies tailor mostly carrots and a few sticks to both owners and occupants of residential, multifamily, commercial, and industrial buildings. Critically, the suite leverages existing utility programs and fills the gaps where such programs are not meeting the needs of unique communities and goals in the city. Overall, we show that a city without express control over utility programs can still maximize energy efficiency through programs and policies funded through a franchise fee that augment utility programs and how such experimental city programs can inform future utility program development.

Influencing the Four Factors of Energy Efficiency Decision-making

Energy efficiency doesn't happen in a vacuum. Utilities and energy efficiency implementers understand that a number of factors determine whether a building decision-maker – a builder, owner, manager, or operator – works to improve the efficiency of a building. First, building decision-makers must be motivated either intrinsically or by government regulation. Second, sufficient funding must be available to implement the energy efficiency action. Next, implementation staff must have adequate knowledge or accessible expertise as well as time. And lastly, a process is required for any energy efficiency improvement to be carried through completion. These ingredients can exist in varying amounts in order for energy efficiency action to occur. For example, a highly-motivated building decision-maker could perhaps withstand a complex process or execute a project with few financial incentives. Or a building decision-maker with low motivation, but a small incentive, a very easy process, and lots of time and expertise may similarly carry out energy efficiency projects.

Creating tools that ratchet or enhance any or all of these four components increases the likelihood for energy efficiency projects to be done in a building. And doing so at scale multiplies the number of projects and buildings saving energy. For cities with climate goals, the

ability to pull these levers to accelerated energy efficiency projects and reduce related greenhouse gas emissions is essential.

Four Decision Factors of Energy Efficiency Investment

All cities can influence the motivation factor whether through creating voluntary programs, establishing information and education campaigns, or developing mandatory policy. Cities can also assist with funding through grants, cost shares, Property Assessed Clean Energy (PACE) loans, or other low-interest financing; although dedicating precious general fund dollars to energy efficiency can often be a tough political sell when such ideas are competing against city services such as police, fire, and other essential operations. In many cities, often utilities are the main incentive providers for energy projects, as they are able to charge minimal utility bill fees that add up to fund rebate and related programs. Utilities incentive programs also often help address the process and capacity factors by bringing step-by-step pathways and expertise for completing projects. Figure 1 summarizes the functional influences of the four factors.

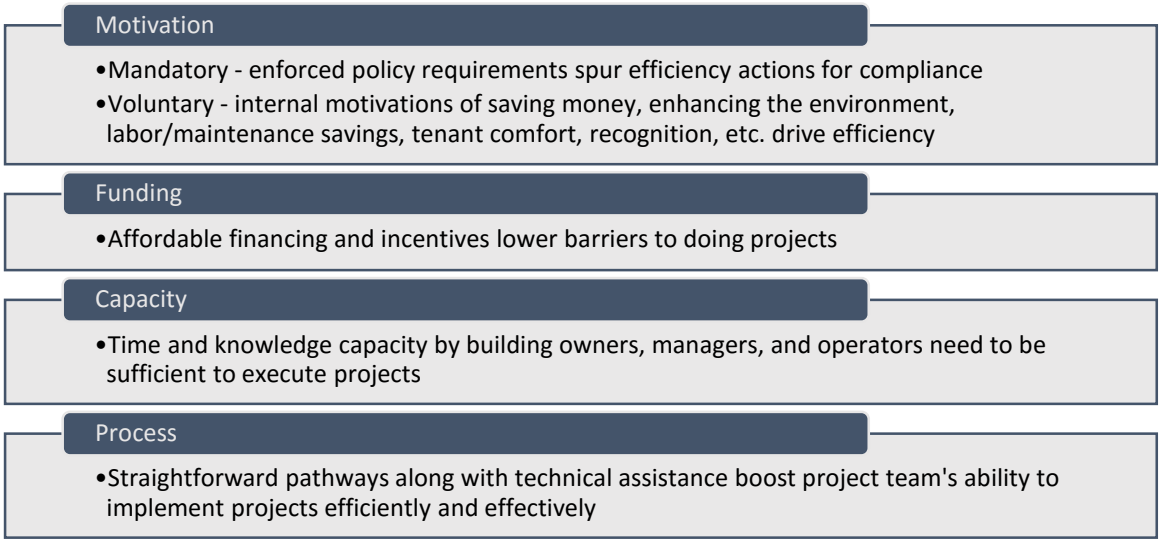

Figure 1. Influencing Factors of Energy Efficiency Investments - Four key factors that influence building builders, owners, managers, and operators decisions in taking energy efficiency actions and the mechanisms for reducing the barriers of a factor.

Cities with municipal utilities, which are owned and operated by the city and its elected officials, have the ability to steer all four factors. On the other hand, cities with investor-owned utilities (IOUs), like Minneapolis, have traditionally lacked access to or control of dedicated energy efficiency funds, the technical knowledge to verify whether efficiency investments are wise and cost effective and the processes for scaling energy efficiency. In this paper, we describe how the City of Minneapolis has gained more influence over these factors. By collaborating with its IOUs, leveraging an innovative funding mechanism, flexing its policy arm, and growing its understanding of efficiency programs, the City is pragmatically and equitably targeting big energy savings opportunities community-wide.

Background

Minneapolis' Place in Minnesota

Minneapolis is the largest city in Minnesota with a population of 422,000. It is part of a larger metropolitan area of 3.28 million along with its "twin" city, Saint Paul, the state capital, and is seen as a major economic engine for the state. The energy consumed by this economic center is majority supplied by two investor-owned electric and gas utilities, Xcel Energy and CenterPoint Energy respectively. As with all IOUs operating in the state, they are subject to the State of Minnesota's energy efficiency program called the Conservation Improvement Program or CIP, which requires them to save 1.5 percent of their retail energy sales annually through efficiency programs. Although Minneapolis makes up just 13% and 19% of Xcel Energy and CenterPoint Energy's retail sales respectively, Minneapolis homes and businesses take great advantage of these programs securing over 23% of rebate dollars.

The Foundation

The Clean Energy Partnership is Formed

With many residents passionate and concerned about a changing climate and environmental sustainability, the City of Minneapolis adopted a Climate Action Plan in 2013 as a roadmap to reduce citywide greenhouse gas emissions by 80% by 2050 from a baseline in 2006. Through this planning process, it came to light that buildings were responsible for over two-thirds of the greenhouse gas emissions in the city. For the City of Minneapolis, this is a result of the electricity and natural gas used in Minneapolis homes and business – two utilities the City has very little control or jurisdiction over.

It quickly became clear to City elected officials that to meet the adopted climate goals, the City would need to engage Xcel Energy and CenterPoint Energy. This proved more difficult than first imagined. The City initially struggled to garner the support and participation of CenterPoint Energy and Xcel Energy in its climate strategies. Neither utility had adopted the same goals as the City, nor did the utilities feel the same pressure from residents frustrated by climate inaction. The City was faced with two paths forward to choose from: figure out how to get the utilities to cooperate and collaborate more closely with the City on climate initiatives or figure out how to replace them as energy suppliers and become a municipal utility.

In 2013, the City commissioned an Energy Pathways Study to understand the best direction. The study detailed a sustainable, 21st century energy system with short-term strategies for the City to influence over how energy is produced, used, and distributed (Center for Energy and Environment 2014). The Energy Pathways Study concluded that though municipalization would give the City the greatest control, it would come at a steep cost – an estimated $3 billion, a figure that is more than twice the City's annual budget and does not include fees associated with likely legal battles and regulatory hurdles with the Minnesota Public Utilities Commission. Instead, the study recommended the City leverage its franchise agreements with the two utilities, which were soon up for renewal. The City's franchise agreements allow the utilities to use its public right of way to run distribution lines and connect gas and electric services to homes and businesses. Under the agreement, these utilities collect and pay the City fees in exchange for use of the right-of-way.

As a result, in October of 2014 the City signed new franchise agreements with Xcel Energy and CenterPoint Energy along with clean energy agreements to establish a Clean Energy Partnership amongst them. The Minneapolis Clean Energy Partnership (Partnership) is a first-of-its-kind collaborative leadership approach through which the City and utilities study, prioritize, plan, coordinate, implement, market, track, and report progress on clean energy activities in the city (Minneapolis Clean Energy Partnership n.d.). Coordinated by a group of working staff from the city and utilities, known as the "Planning Team", the Partnership is overseen by a Clean Energy Partnership Board (Board) made up by a few City Councilmembers, the Minneapolis Mayor, and executive representatives of both utilities. Additionally, the Energy Vision Advisory Committee (EVAC) made up of residents and technical experts advise the Planning Team and Board. Together, the Planning Team, Board, and EVAC create and implement biannual clean energy work plans with annual community impact reports.

2018 Franchise Fee Increase for Climate and Energy Action

In the first few years of the Clean Energy Partnership, the City and the two utilities worked together to advance toward the City's energy and climate goals. However, it soon became clear that additional funding was needed to accelerate that progress.

The utilities could not directly allocate further CIP funds to Minneapolis specifically due to State rules and fairness among all ratepayers in their territory, and it would have been politically difficult for the City to allot further dollars from the general fund. Encouraged by technical experts on the Energy Vision Advisory Committee, in 2018 the City updated its utility-specific ordinance regarding franchise fees to increase the percent levied by 0.5% of the total charges paid by utility customers (City of Minneapolis 2018). The resulting roughly $8.5 million collected from the "2018 Franchise Fee Increase for Climate and Energy Action" would be used to create a fund to help residents and businesses participate in and make the best use of the utilities conservation programs (City of Minneapolis 2017). In effect, these funds have functioned to create new financial incentives and enhance existing utility rebates to motivate sustainable energy developments and provide financial assistance in concert with municipal clean energy policy requirements.

Minneapolis Goes Its Own Way

A Suite of Energy Efficiency Tools

As with the utilities' CIP offerings, the City also seeks to drive energy efficiency savings. Unlike the utilities though, the City wants to see savings go further, faster than the territory-wide 1.5% savings requirement set in State policy within its borders. Because the utilities are required to balance the distribution of their CIP resources territory-wide and because existing CIP offerings have not been attractive enough to take the energy efficiency actions needed to reach the City's goals, the City could not rely solely on the utilities. It needed to go its own way. The result is leveraging the Partnership's agreements and collaboration as well as the new franchise fee funding to create a comprehensive suite of tools to promote energy efficiency in buildings communitywide.

A critical step in the development of this suite of tools has been to gather information. Collaboration with the utilities has yielded new and important data around energy opportunities

and the scope of potential savings. This data is used to understand the geographic impact of energy use as well as utility program participation. Beyond counts and kBtu numbers, both as part of the Partnership and on its own, the City has studied barriers and opportunities to energy efficiency that exist in certain contexts such as in rental properties and the time of home sales. Beyond that, the City has also examined policies and best practices from other cities as well as investigated the legal context under which the City and utilities operate. This research yielded two important insights: 1. that mandatory policies produce greater participation and actions by orders of magnitude and 2. that Minnesota cities are preempted by state law from creating policy requiring physical alterations of a building that are stronger or stricter than the State building code. This means that cities may not require capital or operational energy improvements be made in a building, but they may require building owners to collect and report information about a building and require energy improvements where city funding is involved. Armed with this information, Minneapolis' approach to-date has been two-fold: 1. drive higher motivation by adopting energy disclosure policies that make energy information transparent and universally understandable to the market, and 2. leverage that motivation by providing support for less efficient buildings to make improvements.

Energy disclosure requirements have been developed for most residential and commercial property types in the city in practical ways that increase likelihood of yielding the greatest energy efficiency improvements for a given property type (City of Minneapolis 2019d, 2019e). The additional funds from the increase of the franchise fee opened opportunities for the City and the Clean Energy Partnership to focus on equitable access to energy efficiency, renewable energy, and workforce development in the energy sector and to provide positive incentives to taking action. The City has sought to match requirements, or "sticks", with "carrots" to ease perceived and/or real burdens of businesses and residents. Table 1 below lists these energy efficiency tools – both city and utility programs - along with the decision factors they aim to address. Employing the "sticks" and "carrots" in close tandem to one another is aimed to drive high participation and action. Even with this new influx of funding, the City has been strategic in its allocations aiming to leverage existing City and utility programs and endeavoring to spread the financial investments fairly between the residential and commercial sectors to spur as many individual projects as possible. Further detail on these tools is provided in subsequent sections.

Table 1. Energy efficiency promotion tools

	"Sticks"	Applicable "Carrots"	Decision Factors Addressed
1	Energy Benchmarking and Disclosure Policy	Energy Efficiency Cost Share	Funding
		• Solar Cost Share	Funding, Capacity
		• Green Business Refrigeration Cost Share	Funding, Capacity
		4d Tax Classification Residential Energy Efficiency Cost Share	Funding, Process, Capacity

		Economic development financing*	Funding
2	Energy Evaluation Policy	Building Energy Advisor Program (BEAP)	Funding, Process, Capacity
		Multi-Family Building Efficiency (MFBE)**	Funding, Process, Capacity
3	Time of Sale Energy Disclosure	Free and subsidized home audit visits for eligible homes	Funding, Process, Capacity
		0% Financing for improvements	Funding
		Free Home Energy Advisor services	Capacity
4	Time of Rent Energy Disclosure Policy	None currently for renters. Rental owners have access to Green Cost Share, MFBE, and City economic development financing	Funding
5	Sustainable Building Policy	Passive House Pilot Funding Existing City economic development incentives	Funding, Process, Capacity

Table 1: Summary of incentive tools the City of Minneapolis has developed to promote energy efficiency investments in buildings citywide. The City has a multi-layered approach that marries both punitive policies, "sticks," with positive incentives, "carrots" that address the one or more of the four factors that influence energy efficiency decisions. * Not funded through the franchise fee. Includes 2% interest loans and PACE financing. ** Leveraged utility program. No City funding provided.

The "Sticks"

Energy Benchmarking and Disclosure Policy

Target audience: large commercial and multifamily buildings
Relevant carrots: Green Cost Share – Energy Efficiency, Solar Project, Refrigeration; 4d Residential

In 2013, Minneapolis became the first city in the Midwest to adopt a benchmarking policy. The Commercial Energy Rating and Disclosure policy requires commercial buildings 50,000 ft^2 and greater and city-owned buildings 25,000 ft^2 and greater to annually benchmark energy and water performance and report this information to the City, which the City then discloses publicly. This ordinance, as well as its amendment in 2018 to include multifamily

properties of the same size threshold[1], gives owners, the City, and the market an understanding of the efficiency of buildings. Building owners, the City, and prospective buyers and tenants can track energy and water performance to determine opportunities for improvement, award high performers, and select spaces for purchase or lease.

During the development of the commercial policy as well as the expansion to include multifamily buildings, some in the property owner and manager community like the Building Owners and Managers Association (BOMA) and Minnesota Multi-Housing Association (MHA) voiced concerns over the cost of compliance as well as buildings with poor performance being stigmatized following the public disclosure of metrics. In addition, interviews with commercial building owners years after the initial policy adoption revealed a need for incentives beyond existing rebates. Hearing these needs, the City and utilities developed extensive compliance assistance with free trainings, one-on-one assistance, and data aggregation tools. The City also expanded its Green Cost Share program to serve energy efficiency projects thereby giving owners of low performing buildings greater funding resources to address their scores.

Energy Evaluation for Large Buildings

Target audience: low performing large commercial and multifamily buildings
Relevant carrots: Building Energy Advisor Program, Multi-Family Building Efficiency, all Green Cost Shares

In 2018, though results of the benchmarking program were showing savings between 1-2% annually the City needed to spur more savings from the community's largest consumers to reach its climate goals. Other cities around the country were requiring building decision-makers to study the specific savings opportunities in their buildings through audits and/or to make energy improvements based on an audit or to meet a specific energy efficiency or greenhouse gas emission target. Knowing it was preempted by the State from requiring physical changes to buildings beyond code, the City developed an ASHRAE Level 1 energy evaluation or audit requirement applicable every five years to equip building decision-makers with information about the unique savings opportunities in their buildings. During the policy development process, BOMA and MHA expressed concern about the value of auditing already high performing buildings as well as the cost of an audit itself. To address those, the City designed the policy such that it applies only to buildings in the bottom quartile of energy performance and is only triggered if a no-cost audit is available to buildings.

The no-cost trigger idea grew initially from City staff engaging in the Partnership, as they had become familiar with the utility programs, including one that the Partnership had inspired the utilities to create – the Multi-Family Building Efficiency (MFBE) program. MFBE is an audit and direct install program provided jointly by the utilities at no-cost to building owners. With MFBE in place, the policy would be immediately triggered for multifamily buildings. Building decision-makers could choose any ASHRAE Level 1 audit provider; though, it was assumed that many would take advantage of the free resource. Due to the utilities' concern that

[1] Multifamily properties were initially excluded from Minneapolis Energy Benchmarking and Transparency policy because their large number of meters would have made data collection too onerous without data aggregation tools. Because commercial properties usually have smaller and more manageable number of meters, the City Council felt it could require benchmarking of commercial buildings. Xcel Energy developed a data aggregation policy and tool in 2015 that allowed for seamless, whole-building data collection after an initial set up. CenterPoint Energy followed suit in 2018 with the launch of their Energy Data Portal tool, thereby overcoming the final technical hurdle to benchmarking multifamily buildings in Minneapolis.

MFBE would quickly become over capacitated and no longer cost effective for CIP, the policy targets only low performing buildings, which are defined by the implementing City department and phases in buildings based on size over four years (City of Minneapolis 2019a). This approach limits the number of required audits each year to a manageable number for the utilities and to those buildings that will likely yield the greatest savings, keeping the program cost effective.

The no-cost trigger applies on the commercial side as well, though when the policy originally passed, no no-cost audit existed in Minneapolis. So the City set about coordinating with the utilities to leverage existing programs and using franchise fee funds to subsidize the cost of an audit program. The result is the Building Efficiency Advisory Program (BEAP), which provides 100% subsidized whole building audits, which recommend and connect building decision-makers to further utility programs.

Time of Sale Energy Disclosure Policy

Target audience: buyers and sellers of single family and duplex homes
Relevant carrots: Free and subsidized home audit visits for eligible homes, 0% Financing for improvements, Free Home Energy Advisor services

Energy efficiency information that is made available when other high-order decisions are being made about a building can increase the likelihood of energy improvements being considered and completed. In 2019, the City leveraged an existing policy to highlight a home's energy efficiency to sellers and prospective buyers. With such information made public, sellers may be motivated to make energy upgrades as a way to improve the home's appeal. On the other end, buyers may see some worthwhile investments to make before they move in and have to pay the energy operation costs.

The existing policy, called Truth in Sale of Housing or TISH, requires a seller have a home inspection conducted by a qualified evaluator and that the resulting health and safety report be disclosed to potential buyers prior to the home sale (City of Minneapolis 2020a). The amended policy adds a few energy asset data points to the inspection and a new energy report inside the TISH report. The cost to sellers with this new requirement is an estimated additional $50 compared to a typical $200 TISH inspection. With the energy asset data points, a home energy score is tabulated, and this score along with energy improvement recommendations unique to the house are included in the energy report. By leveraging an existing policy, the City avoided creating additional major processes, the need for new FTEs, and additional significant financial burdens on sales transactions while unleashing a significant energy efficiency engagement opportunity. Energy efficiency can now much more readily be a consideration at the time of sale, and TISH evaluators and real estate agents, who the City has trained on this policy, now have more reason to engage on it.

Armed with this new information, home buyers and sellers may have greater motivation to make energy improvements, but they may be lacking in knowledge or the processes for making improvements may seem unclear. At the same time, the utilities are regularly looking for new ways to achieve their CIP savings goals. Through the Partnership, the City and CenterPoint Energy are jointly solving these problems by contributing funds for the Home Energy Advisor service, a helpline for those with questions about their energy reports. The report and the advisors also inform buyers and sellers about the City's 0% loan program for energy efficiency projects.

Time of Rent Energy Disclosure Policy

Target audience: all residential rental buildings
Relevant carrots: None for renters currently. Rental owners have access to Green Cost Share, MFBE, and City economic development financing.

As with homebuyers, the City of Minneapolis believes it is valuable for prospective renters to have energy information about rental units before they sign a lease. Energy costs can be a significant component in the cost of housing, especially for renters in Minneapolis, who are more at risk of being energy burdened than homeowners. For that reason, the City will require energy disclosure at the time of rent beginning in 2021 (City of Minneapolis, 2020b). For buildings over 50,000 ft^2, they will make their benchmarking results available. Smaller buildings will disclose energy use and cost per ft^2 averaged over the whole building and over multiple years. Disclosure mechanisms are flexible and include lobby postings and inclusion in rental listings, applications, or leases.

During policy development, the City heard concerns from landlords about the additional time and effort that would be needed on their part for implementation; they said gathering consent forms and making their own calculations in spreadsheets would be overly burdensome and inaccurate. To address these concerns, the City is collaborating with the utilities to create online portals that will supply the necessary information[2]. Property managers will be able to enter basic building identifiers, such as an address, to access the information.

Sustainable Building Policy

Target audience: new construction with any City funding
Relevant carrots: Passive House Pilot, existing City economic development incentives

The City's current policy requires LEED silver certification for new and significantly renovated municipal buildings. It is now working to expand this policy to encompass as many buildings it is legally able without running into State preemption of building code control– plainly this means that any project receiving City funding is eligible for sustainable building requirements. As of this writing, Minneapolis City Council has directed staff to develop standards by Q3 2020 along four paths based on the following building types: multifamily buildings, 1-3-unit housing, commercial buildings, and municipal buildings. (Gordon 2020) Council has already determined that multifamily buildings with city funding must meet Enterprise Green Communities standards, though staff are directed to devise an alternative and higher energy standard. For 1-3-unit housing, the City is using franchise fee funding to conduct research through a net-zero/passive house pilot and to use results to inform the sustainability standard for this building type (City of Minneapolis 2019c).

[2] To date, Xcel Energy and CenterPoint Energy have agreed to provide information only when there is no conflict with their data privacy policies. Both utilities operate with the 4/50 rule, which means that they will not release data without a consent form for properties with fewer than four accounts or if any single account consumes more than 50% of the load on the property. In practical terms, this means that as of this writing, there is no data solution for single family, duplex, and triplex, rentals for this policy.

The "Carrots"

Green Cost Share

Established in 2012 as part of the city's efforts to control pollution, the Minneapolis Health Department issues Pollution Control Annual Registration (PCAR) licenses to businesses with equipment that emit hazardous air pollutants, such as carbon monoxide, sulfur oxides, nitrogen oxides, volatile organic compounds, and particulate matter (City of Minneapolis 2020c). These buildings pay a fee for the license, which allows them to emit pollutants to permitted levels set by the Minnesota Pollution Control Agency.

The City used the fees collected through PCAR licenses to create a grant match program to share the costs of projects that reduce or eliminate hazardous air pollutants. Realizing that energy consumption from buildings also contributes air pollution, the City in 2016 made funds available for energy reduction projects as well. The fund serves as a de facto "bonus rebate" since the projects are required to qualify for utility rebates as well. Because the City is not equipped with technical energy staff, this ensures projects are high quality and will save energy. While funding was initially small for efficiency, the programs budget was significantly increased by utility franchise fee increase dollars, allowing the expansion of both the amount of match funds awarded as well as project types eligible. While nearly all businesses in Minneapolis that have utility rebate-eligible projects (or contractor-supplied kWh production estimates in the case of solar projects) can apply for Green Cost Share funds, the City's project scoring process allows it to prioritize neighborhoods that have experienced historic environmental injustices.

Funds have always been on a first come first served basis, with several rounds of application due dates awarded in a given year to apply. Specific cost shares are detailed below:

- **Energy Efficiency Cost Share** - This program provides match funding for rebate-eligible energy efficiency projects. Funding after the franchise fee increased the amount of match funding as well as the number of projects awarded to allow commercial and multifamily buildings to apply for funds to cover 25-30% of project costs up to $25,000 - $50,000. Buildings that are required to benchmark and disclose their data publicly have access to the highest total cost share value - an example of how the City has paired an incentive with a mandate. Priority is also given to buildings located in the City's "Green Zones," or areas of the city that are overburdened by environmental pollution, high rates of negative health outcomes, and unemployment.
- **Solar Project Cost Share** - With revenue collected from the increased franchise fee agreement, the City of Minneapolis was able to expand the portfolio of eligible energy projects that receive cost share funding to include solar energy. For buildings that install solar projects during the grant year, they are eligible for $0.20 - $0.40 per estimated annual kWh produced up to $50,000. Priority for solar projects is once again for buildings in the Minneapolis Green Zones and further, those located in a Green Zone that also participates in the City's affordable housing 4d Tax program. Providing this funding citywide is helping the city progress toward its 100% renewable electricity goal.
- **Green Business Refrigeration Cost Share** - The City of Minneapolis expanded the portfolio of energy projects eligible for a cost share to refrigeration efficiency projects that result from an Xcel Energy refrigeration audit. Specifically, the City provides cost funding for up to 20% of the project cost or 30% of the project cost if the business is located in the Minneapolis Green Zones.

- **4d Energy Efficiency Cost Share** - Like many places across the country, Minneapolis suffers from a lack of affordable housing. From the City's perspective, lowering utility bills is an important strategy to protect the City's supply of private, naturally occurring affordable housing. Through the existing 4d tax program – a program established at the State level - property owners who commit to keeping at least 20% of their units affordable to households making 60% of Area Median Income (AMI) can receive a 40% property tax break. Using funding raised with the utility franchise fee increase, the City of Minneapolis was able to couple an enhanced cost share program with the property tax break to help properties participating in the 4d program fund energy retrofits. In these qualifying multifamily buildings, the City matches up to 90% of the total cost of energy efficiency projects up to $50,000. Owners are first encouraged to take advantage of existing utility rebate programs. Leveraging existing funding from the utilities allows the City to offer its franchise fee dollars as match funding so that property owners can implement energy improvements to the property owners at 10% of the total cost. As of December 31, 2019, over 120 multifamily properties had committed to provide affordable housing for ten years through the 4d program. Twenty-two of these properties applied for energy efficiency funding through the Minneapolis Green Cost Share program assisting over 115 low income units. A total of 126 projects with a combined 2520 MMBtu annual savings, over 320 thousand pounds of CO2 per year, and over $1,000,000 in lifetime savings have been approved to date. Examples of projects funded through the program include wall insulation, attic insulation, air sealing, high efficiency furnaces, high efficiency boilers, air-source heat pumps for electric heat, heat pump water heaters, and high efficiency power vented water heaters. The program success can be attributed to the unique coupling of affordable housing and energy policy which has resulted in a streamlined outreach process, a streamlined application process, and increased participation. In addition, property owners have cited the high cost match, project management support, assistance reviewing bids, and help navigating utility programs as added benefits of the program.

Building Efficiency Advisor Program

To trigger the Energy Evaluation Policy, the City needed a no-cost, whole building audit program for commercial buildings. Xcel Energy and CenterPoint Energy offered their own separate audits, and the third energy supplier in the city, Clearway Energy, which serves district steam and chilled water to many Downtown commercial buildings, did not have a standard audit offering. With no existing streamlined commercial audit program, the City opted to subsidize the Building Efficiency Advisor Program (BEAP), a basic, whole-building audit program provided by the Center for Energy and Environment (Center for Energy and Environment 2020a). For BEAP, the City wanted to take lessons from interviews of building managers and operators of buildings required to benchmark. Feedback from the interviews showed a need for greater energy project assistance, particularly for operators, in making the case for energy projects to decision-makers. For that reason, BEAP focuses on building capacity by forming and engaging a building's "energy team" – the group of stakeholders from the head custodian and accounts payable person to the property manager and owner – in audit result meetings to drive more energy improvements.

With BEAP, the City has filled a gap and, in essence, established an energy efficiency program just as a utility might. The benefit of this program is that the City may dictate the

services (whole building audit) and is not bound by the cost effectiveness or other rules required of state regulated utilities.

Multi-Family Building Efficiency

This utility program is provided jointly by CenterPoint Energy and Xcel Energy to multifamily buildings with 5 or more units. It is a no-cost CIP program that delivers an energy audit of a building to a level between ASHRAE Level 1 & 2 and direct installation of LEDs, faucet aerators, showerheads, and related energy efficiency equipment in tenant and common spaces (Xcel Energy and CenterPoint Energy 2019). Approximately 30 buildings participated in MFBE annually prior to the adoption of the Energy Evaluation Policy. It is expected that an estimated 20 buildings 50,000 ft^2 and greater will participate as a result of the policy each year.

Free and subsidized home audit visits for eligible homes

The City subsidizes the utilities' joint home energy audit from a cost of $100 to $0 for income-qualified homeowners. For home sellers needing to comply with the Time of Sale Energy Disclosure policy and who have difficulty affording the additional ~$50 cost[3] of the energy component of TISH inspection, they may qualify for a free home audit. The resulting report from this audit is incorporated into the TISH report when both inspections have been completed.

0% Financing for Improvements

All homeowners in Minneapolis are eligible for 0% financing for qualified energy efficiency projects such as insulation, air sealing, and high efficiency electric heating and cooling equipment (Center for Energy and Environment 2020b). This financing is made available from the franchise fee funds and is marketed through the TISH energy reports as well as the Home Energy Advisor services.

Passive House Pilot

Utilities and research groups commonly pilot energy efficiency technologies and techniques as they continuously develop and enhance conservation programs. It is much less common for cities to play such a role. In Minneapolis the franchise fee funds are enabling the City to invest in research for energy efficiency policies. The Passive House Pilot is exploring net-zero/passive house building techniques to inform the City's sustainable building standard for 1-3 unit buildings. The pilot is an addendum to the Minneapolis Housing request for proposals for developers of vacant lots. The funds provide developers an incentive of up to 10% of total development costs through the RFP process to ensure that the home achieves passive home or zero energy ready certification[4] (City of Minneapolis, 2019c).

[3] TISH evaluators are licensed by the City and set their own prices. $50 is the approximate average increase in cost reported by evaluators for additional collection of energy asset data points.

Free Home Energy Advisor Services

Home Energy Advisor is a free service offered by the utilities jointly to homeowners, particularly those who have recently had a home energy audit. As home sellers and buyers begin to see the TISH energy reports, the City bargained that they likely will have questions regarding the reports and what next steps should be. Not home energy experts themselves, City staff sought to leverage the existing utility Home Energy Advisor program to address a need and spur greater energy action. The TISH energy report features contacts, listed with the names and photos of the actual advisors, for buyers and sellers to call/email with questions such as how to improve an energy fitness score, how to claim a rebate, and where to find a contractor to install the recommended upgrades. Thinking that the increased engagement around energy efficiency from the TISH reports would likely to lead to claimable energy savings, CenterPoint Energy has also invested in enhanced Home Energy Advisor services on a pilot basis.

Measuring Impact and Continuing Work

The impact of these efforts is measured in a number of ways. Though not common in many IOU territories, Minneapolis receives valuable aggregate utility consumption and program participation data specific to that within its city borders thanks in large part to the Partnership.[5] This data feeds into the Clean Energy Partnership's annual report, which provides the most comprehensive, high level summary of program participation and savings as well as sector wide trends electricity and natural gas energy consumption (Clean Energy Partnership n.d.). In addition, the City develops reports and online dashboards for certain policies or programs such as Energy Benchmarking (City of Minneapolis 2020d) and Green Cost Share (City of Minneapolis 2020c), which analyze trends, highlight successful strategies, and discuss continued barriers. Overall progress is measured by the City's annual greenhouse gas emission inventory (City of Minneapolis 2019b). Table 2 summarizes the impacts of the "stick" and "carrot" tools. Due in part to these initiatives and to the "greening" of Xcel Energy's electricity mix, the City has seen emissions drop 17% between 2006 and 2018. Many of these initiatives are still in their infancy and their effects are not yet visible in the greenhouse gas inventory. It is, however, recognized that accelerated efforts will likely be needed in order to meet the 30% reduction goal by 2025.

Going forward, the City will continue optimizing and refining implementation of its existing benchmarking and time of sale policies ensuring that the sticks and carrots sufficiently address the four efficiency decision factors, while launching energy evaluation and time of rent policies. In addition, staff will propose standards for the sustainable building as they glean information from the Passive House Pilot and other resources. Beyond this docket, the City is looking at ways to expand its potential toolbox. The City, its utility partners, and neighboring cities have been active participants at the State legislature in discussions around giving cities the option for adopting "stretch code" or advanced building performance standard beyond the State building code. All members of the Partnership are being watchful that any advanced building

[5] In response to data needs like that of the Partnership in Minneapolis and the growing interest of other cities to make progress toward energy and climate goals, Xcel Energy has made significant effort to standardize available data within geographic boundaries by developing the Community Energy Reports. Provide summary data on generation sources, consumption, and certain program participation by sector, these reports are now publicly available for other cities and jurisdictions in Xcel Energy territory as well.

performance option would preserve savings opportunities with CIP – the bedrock incentive program on which the City develops further energy efficiency tools.

Cities in Minnesota are learning from Minneapolis' example. Taking lessons from Minneapolis' benchmarking policy development and implementation process, three neighboring cities have adopted policies and joined the Efficient Buildings Collaborative, a standardized implementation cost-sharing model founded and supported by Hennepin County, where Minneapolis resides. In addition, two cities are actively exploring time of sale energy disclosure and are preparing for negotiations for when their utility franchise fee agreements expire. Furthermore, following the Partnership formation and noting other cities with energy and climate goals may be inspired to have a more direct link with their utility, Xcel Energy created an offering called, Partners in Energy, which provides cities targeted planning, technical, and marketing resources to make strides toward their goals.

Table 2. "Stick" and "Carrot" Tool Status and Impact Summary

<table>
<tr><th></th><th>"Sticks"</th><th>"Carrots"</th><th>Individual Carrot Impact</th><th>Overall impact</th></tr>
<tr><td rowspan="4">1</td><td rowspan="4">Energy Benchmarking and Disclosure Policy</td><td>Energy Efficiency Cost Share</td><td>5,704,235 kWh & 131,571 therms saved from 2016-2018</td><td rowspan="4">Commercial building energy savings 5.5% from 2015-2018

Multifamily building benchmarking phase-in 2019 and 2020</td></tr>
<tr><td>Solar Cost Share</td><td>6,327,057 kWh produced, 2017-2018</td></tr>
<tr><td>Green Business Refrigeration Cost Share</td><td>114 participants & 779,498 kWh saved in 2019</td></tr>
<tr><td>4d Energy Efficiency Cost Share</td><td>117 participants, 66,899 kWh & 15,630 therms saved in 2019</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Energy Evaluation Policy</td><td>Building Energy Advisor Program</td><td>11 buildings to receive free audit</td><td rowspan="2">New in 2020</td></tr>
<tr><td>Multi-Family Building Efficiency</td><td>22 buildings to receive free audit</td></tr>
<tr><td>3</td><td>Time of Sale Energy Disclosure</td><td>Free and subsidized home audit visits for eligible homes
0% Financing for improvements</td><td>New in 2020.</td><td></td></tr>
</table>

		Free Home Energy Advisor services	1,100 home-owners received information of efficiency improvement services	2,303 homes received an energy report and score in first 6 months of policy
4	Time of Rent Energy Disclosure Policy	None currently for renters. Rental owners have access to Green Cost Share, MFBE, and City economic development financing	In development	In development
5	Sustainable Building Policy	Passive House Pilot Funding Existing City economic development incentives	In development	In development

Table 2: Summary of available impacts and status of development of the City's energy efficiency promotion tools. Calculated impacts do not disaggregate the effects of other programs such as utility rebates. *Cost share source:* City of Minneapolis, 2020c, *Benchmarking impact source:* City of Minneapolis 2020d.

Conclusion

The City of Minneapolis, though without complete control over its energy system, is breaking down barriers around motivation, funding, capacity, and process to advance energy efficiency in buildings across the community and is demonstrating strategies for other cities to do the same. New policies and programs are bringing awareness to efficiency and motivating action. The foundational Clean Energy Partnership has given the City a platform to collaborate with the utilities, expand City staff's understanding of the utility incentive system, and supplied a space for City and utility leaders, staff, and constituents to engage specifically on energy. This space is critical for developing mechanisms that address the four factors that influence energy efficiency decision making. The innovative new source of funding provides fertile ground for growing carrots – the positive incentives and processes that make it easier for building decision makers to make energy improvements. Furthermore, strategic deployment of the new funds across neighborhoods and building sectors to implement projects and conduct research not only addresses climate goals, but also equity and economic development ones. On the whole, the Minneapolis is showing that through collaboration and creativity it can create the tools necessary to advance energy efficiency further and faster, even in IOU territory.

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