Vulnerable Populations

N19. Identify representative advocacy organizations for diverse and vulnerable populations

N20. Facilitate cross-cultural dialogue, offer training for service providers, and share best practices

N21. Ensure diverse modes of communication during environmental hazard emergencies to reach diverse and vulnerable populations

N22. Implement educational campaign on environmental hazard preparedness to reach diverse and vulnerable populations

N23. Develop a public-private partnership to manage food and water access for vulnerable populations during environmental hazard emergencies

A24. Require disclosure of known property problems for sale or rental of property

A25. Require or incentivize that monthly utility costs for rental properties be reported to potential tenants

Our society has generally accepted that there is a collective responsibility to account for the needs of the most vulnerable citizens. This responsibility holds true in our actions to adapt to climate change. Factors such as age, race, health, culture, socioeconomic status, social integration, and primary language spoken interact in complex ways to yield a vulnerability for a particular individual. According to Thoughtwell, over 30% of the population in Columbus is less than 18 years of age or greater than 65 years of age, while in neighborhoods like Franklinton and the Near East, this number exceeds 35%.[1] In fact, Columbus has one of the youngest populations across a spectrum of U.S. cities and youngest of the Midwest major cities (current median age of 35.9).[2] The estimated number of people in Columbus City Schools living below the poverty line is 27.2%, the highest of any school district in Franklin County. In areas such as Hilltop, Linden, and Weinland Park, the number rises to over 40% of the population. And Columbus boasts the most diverse population in Franklin County, with people of color constituting 38.5% of the population. Columbus was identified as one of the most socioeconomically segregated cities in the country as measured by the inequity between the most advantaged and most disadvantaged neighborhoods.[3] In order to adequately prepare for climate change in Columbus, it is important to understand the risks that these vulnerable populations face from different climate impacts and environmental hazards.

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[1] "DataSource Static Report." *Thoughtwell.* Based on U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates. https://www.thoughtwell.org/projects/2017/8/4/datasource-static-report. Accessed Jan. 2018.
[2] "Central Ohio Benchmarking Report 2016." *Thoughtwell.* https://www.thoughtwell.org/projects/2016/11/1/central-ohio-benchmarking-report-2016. Accessed Jan. 2018.
[3] R. Pendall and C. Hedman. The Urban Institute. "Worlds Apart: Inequality between America's Most and Least Affluent Neighborhoods. Jun. 2015. https://tinyurl.com/ydd3mm4q. Accessed Jan. 2018.

Events such as the 1995 Chicago heat wave and the 2015 South Carolina floods revealed how specific populations are often disproportionately affected by natural disasters. During the Chicago heat wave, there were over 700 heat-related deaths concentrated in particular neighborhoods, with the majority of fatalities occurring amongst the elderly poor who lived alone.[4] In South Carolina, the counties that sustained the highest rates of damaged homes were the same counties that had the greatest social vulnerability, as measured by an index score that accounts for a number of socioeconomic factors.[5] In Louisiana during Hurricane Katrina, 49% of all fatalities occurred among people age 75 or older, despite that population representing only 5.4% of the city's total population (2010 Louisiana Census).[6] These types of events illustrate how the risks associated with extreme events, including but not limited to heatwaves and flooding, are magnified for populations that are already vulnerable. For example, if a major flood requires evacuation of particular neighborhoods, limited access to transportation can result in the inability of people to leave an area; often, this is the case for elderly and impoverished communities. At emergency shelters or cooling centers, problems may arise due to language differences, cultural barriers, and addition of pets. During heat waves, people with pre-existing medical conditions are much more susceptible to heat-related illnesses and death. Likewise, individuals living in poverty are less likely to have housing with air conditioning. Therefore, having both a pre-existing medical condition and living in poverty compounds an individual's inability to overcome a heatwave. All of these factors must be accounted for as Columbus prepares to respond to both changing average conditions in the city and a greater frequency and intensity of certain extreme events.

FCEM&HS has identified a number of organizational liaisons that can represent and engage particular communities during disasters. Collaboration and communication with vulnerable populations, often achieved by working in concert with trusted community partners who intimately know and understand the population's needs, will lead to the most effective solutions. Since these populations are quite diverse in Columbus, careful consideration should be given to all of the populations to include in the conversation and realize that not all populations will need the same supports. While not an exhaustive list of vulnerable populations, special considerations should be given to individuals who are elderly, have medical conditions, lack transportation, are socially isolated, and do not have good comprehension of English. Individuals who fall into two or more of these populations are likely to be at greater risk. Involving leaders and representatives from different populations in emergency and resiliency planning makes it more likely that effective steps can be taken to increase resilience to climate impacts and environmental hazards. Rather than wait for events to occur, investing in planning, building relationships, providing training, and increasing coordination well in advance of emergency events will pay dividends.

While on average, over the past few decades, 65% of the U.S. population has owned their homes, approximately one-third of the country's population does not.[7] There are many federal and state

[4] Eric Klinenberg. Heat wave: a social autopsy of disaster in Chicago. (Chicago: University of Chicago Press, 2002).

[5] South Carolina Disaster Recovery Office (SCDRO) of the South Carolina Department of Commerce. *"South Carolina Action Plan for Disaster Recovery."* Jul. 19, 2016. https://www.sccommerce.com/sites/default/files/hud_submittal_action_plan_160719.pdf. Accessed Jan. 2018.

[6] J. Brunkhard, G. Namulanda, and R. Ratard. "Hurricane Katrina Deaths, Louisiana, 2005." Disaster *Medicine and Public Health Preparedness* 2, no. 4 (2008):215-223. https://doi.org/10.1097/DMP.0b013e31818aaf55. Accessed Jan. 2018.

[7] United States Census Bureau. *"Home ownership rate by area: 1960 to 2015."* https://www.census.gov/housing/hvs/files/annual15/ann15t_14.xlsx. Accessed Oct. 2017.

regulations and mortgage considerations in place to provide a potential homeowner with information about known problems with a property, such as roof leaks or electrical issues, and known hazards, such as the location of the property within a floodplain. These same protections are not afforded to individuals renting properties, resulting in a weakened ability to make informed decisions amongst those individuals who are not aware of the questions they should ask and the sources for accurate information they can seek out. Likewise, renters, especially those renting for the first time, are unaware of the significant costs that utilities can add to their monthly expenses.

Whether it is through new educational campaigns targeted at specific populations, creating cross-cultural dialogues, or utilizing an array of communication modes during emergencies, the necessary actions have a strong focus on improved communication. The aspirational actions increase transparency in rental properties so that tenants are made aware of annual utility costs and the potential for environmental hazards. With increased collaboration and communication during all stages of resiliency planning, we can ensure that the needs of Columbus' most vulnerable citizens will be met.

N19. IDENTIFY REPRESENTATIVE ADVOCACY ORGANIZATIONS FOR DIVERSE AND VULNERABLE POPULATIONS

During the creation of this report, the wide diversity of populations within Columbus, including vulnerable populations, and their particular needs became apparent. Likewise, the Task Force recognized the difficulty in reaching key leaders and representatives within these populations who could provide an overview of the populations' concerns and needs. To overcome this obstacle, the Task Force reached out to key advocacy organizations. Following a similar approach on a much wider scale would allow the city to more efficiently learn about specific needs and, when necessary, deliver information and services by drawing on trusted organizations that already work closely with diverse and vulnerable populations. Over time, both the populations and their needs will change, requiring vigilance in maintaining open lines of communication with groups that are already part of the conversation while inviting participation of groups that represent newly emerging populations. Establishing a network of such organizations, with a forum for exchanging ideas, would benefit more than the city's work on climate resilience.

N20. FACILITATE CROSS-CULTURAL DIALOGUE, OFFER TRAINING FOR SERVICE PROVIDERS, AND SHARE BEST PRACTICES

Cross-cultural dialogue is a forum in which two or more populations gather to better understand one another. Areas of concern can be raised, clarifying questions asked, and intersecting goals and interests explored. This type of forum allows participants to gain a greater understanding and empathy for the circumstances of others within the community, and it can lead to positive and productive interactions between them in the future. Cross-cultural dialogue has been deployed by government agencies, from public health commissions to police departments; educational institutions, from elementary schools to universities; and nonprofit organizations, from food pantries to community foundations. When planning for climate change, the dialogue will focus on those individuals that are most impacted by climate change but have the least capacity to respond (discussed in greater detail in section **N19**). These conversations need to include both the agencies/organizations that deliver services to the vulnerable populations and representatives from the communities that receive those services. A

number of examples of guiding principles employed by agencies/organizations facilitating cross-cultural dialogue, including by those in public health, are available online.[8]

Due to limited time and resources for professional development, training should be broad enough to include information that would lead to productive interactions with any population, while also highlighting the populations that are most likely to be audiences for educational campaigns and environmental hazard emergency services in Columbus. Specific bulletins and supplemental information can be developed in collaboration with the representative advocacy organizations discussed in section **N19**. Collaborative development makes it less likely that, amongst other things, obvious information is omitted or materials are insensitive. Realizing that there is a wide network of collaborators with the city on any education campaign or emergency response, developed materials should be shared with service providers, community organizations, and city staff, as warranted. Needs that are identified during cross-cultural dialogues can inform city policy and subsequent training opportunities. Therefore, the dialogues discussed above can serve both as a solution, and as a means to better communication and training.

Online learning platforms offer a number of novel strategies that could supplement or replace in-person professional development. Use of these online tools could increase the pool of participants, allow for just-in-time delivery, and avoid expenses related to travel to a particular location (including both employee time and mileage). Online training, done well, can include digital interactions between individuals. Considerations should be made for those individuals with limited or no internet connection.

Development of training should include an iterative process, with integrated evaluation to inform subsequent revisions. Training should be evaluated for efficacy in understanding, skills, and attitudes of participants, in addition to efficiency in terms of return on investment. Deliberate attention should be paid to innovations in delivery, with best practices developed elsewhere deployed, methods that work best in Columbus refined and expanded, and an acknowledgement that not all audiences are best reached by same delivery method.

N21. ENSURE DIVERSE MODES OF COMMUNICATION DURING ENVIRONMENTAL HAZARD EMERGENCIES TO REACH DIVERSE AND VULNERABLE POPULATIONS
N22. IMPLEMENT EDUCATIONAL CAMPAIGN ON ENVIRONMENTAL HAZARD PREPAREDNESS TO REACH DIVERSE AND VULNERABLE POPULATIONS

While there is pressure to focus exclusively on electronic communications via websites and mobile applications, it is important to consider that not all vulnerable populations have access to either computers or smartphones, and many receive their information from a diverse array of sources. For instance, older populations still rely on radio and television for information. Some populations in poverty might rely on a smartphone rather than a computer but have a limited data plan. For those with language barriers, friends, family members, or members of a faith community might serve as their conduit for information. Although the messaging will be different during emergencies and education campaigns, there will most likely be overlapping pathways of communication.

With regard to reaching targeted vulnerable populations, having a directory of leaders or representatives to consult with for guidance on messaging and reach during an emergency could prove

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[8] "Ground Rules: Cross-Cultural Dialogue." *Minnesota Department of Health.*
http://www.health.state.mn.us/communityeng/multicultural/cross.html. Accessed Jan. 2018.

invaluable. Technical experts, emergency personnel, and communications specialists are more likely to craft a successful message in consultation with these individuals. Likewise, a similar agency capable of rapidly translating written and oral communications to key languages (Spanish, Somali, etc.) should be readily available to emergency personnel. For events that are highly likely to occur, a collection of pre-written and pre-recorded messages could be created. When particular neighborhoods are impacted or likely to be impacted by an event, door-to-door canvassing might be necessary before, during, or following that event.

This data was designed to guide planning, emergency response, and support following an emergency. Additional data, determine by the city and county to be particularly relevant to the local community, could be gathered and customized for inclusion in the GIS tools. To ensure maximum impact, these data must be integrated into the existing GIS system, explained to planners, decision makers, and emergency personnel, and made available in formats appropriate for their particular needs.

Both the city and county should determine how to utilize different emergency alert systems (e.g., Wireless Emergency Alerts, used for Amber Alerts, or systems that rely on individuals pre-registering e-mail addresses or mobile phone numbers, such as Ohio State's Buckeye Alerts) for various circumstances and different populations. Following the October 2017 wildfires in California, post-mortem analyses of emergency evacuations revealed that problems arose in deploying evacuation alerts as systems often did not allow fine-scale communication (neighborhood-level) but rather only course-scale communication (county-level).[9] Emergency managers had to carefully determine whether to deploy alerts systems; when seconds matter to individuals fleeing threatened neighbors, this could result in large populations evacuating simultaneously, clogging escape routes, and leaving evacuees in the most threatened neighborhoods unable to leave or bringing individuals from otherwise safe neighborhoods into greater danger. As was mentioned in **A21** under Emergency Preparedness, this emergency alert system should integrate with any other mobile application deployed by the City of Columbus.

In addition to communications during an emergency, consideration should be given to developing a way for vulnerable populations to contact friends and family members following an event. The city and county should work with the OP3 to ensure that barriers are reduced for permanent repairs to and, when necessary, temporary deployment of telecommunication assets - including cellular networks, landlines, and data providers.[10] Likewise, novel technologies could be deployed, such as Facebook's Safety Check , to allow simplified communication between those experiencing the disaster and their friends and family members.[11] These supports can offer help to affected individuals, hopefully returning their lives to a greater sense of normalcy, while also reducing strain on emergency workers who would otherwise need to check on reports of unaccounted individuals.

While communication during environmental hazard emergencies could be urgent and include recommendations for immediate actions that individuals should take, educational campaigns on environmental hazard emergencies will likely focus on ways to prevent harm to individuals and property during future events. There are a number of innate challenges with educational campaigns including (1)

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[9] Associated Press. "Northern California Wildfires: Emergency Alerts Scrutinized Amid Deadly Blazes." *NBC News*. Oct. 12, 2007. https://tinyurl.com/y7pnx277. Accessws Jan. 2018.

[10] Welcome to Ohio Homeland Security Ohio Public Private Partnership." *Ohio Homeland Security.* https://homelandsecurity.ohio.gov/op3.stm. Accessed Jan. 2018.

[11] "Crisis Response." *Facebook.* https://www.facebook.com/about/crisisresponse/. Access Jan. 2018.

the need to identify which vulnerable populations are most at risk during particular environmental hazards, (2) determining the best method of educating these populations in ways that allow knowledge to be retained, and (3) convincing community organizations and individuals, who might already be facing a number of pressing needs, that the education campaign is worth their attention. Since occurrences of environmental hazard emergencies are based somewhat on probability, there is always the chance that an event will occur long after an audience is targeted by a campaign. Similarly, it is natural to focus attention on preparedness after recent devastating events, but this focus tends to wane as previous events retreat in time. Flooding, extreme heat, and air quality emergencies, which all have an increased likelihood of occurring in the future and have identifiable audiences for educational campaigns, are three hazards where attention could first be prioritized. With any campaign, increased education could also lead to greater awareness of actions that organizations and individuals could take immediately to mitigate occurrences of these emergencies in the future.

CHAPTER INSET: The CDC has created a social vulnerability index to help local officials identify the ability of specific communities to prepare for hazards or recover from disasters.[12] While taking actions to reduce social vulnerability can decrease both human suffering and economic loss during a disaster, it might also be necessary to respond to communities that have high social vulnerability. An online tool makes this data available by census tract for emergency planning and response. The Social Vulnerability Index tool is composed of four themes: 1) socioeconomic status, 2) household composition, 3) race/ethnicity/language, and 4) housing/transportation. To inform both communication and education campaigns, GIS tools that were discussed in the Emergency Preparedness chapter of this report under action **N16** should include this information on vulnerable populations within Columbus neighborhoods.

N23. DEVELOP A PUBLIC-PRIVATE PARTNERSHIP TO MANAGE FOOD AND WATER ACCESS FOR VULNERABLE POPULATIONS DURING ENVIRONMENTAL HAZARD EMERGENCIES

During the summer of 2014, the water supply of Toledo, Ohio was contaminated due to an algal bloom near the water intake located in Lake Erie.[13] A toxin released by the bacteria rendered the water system unusable for approximately 400,000 individuals (could be as high as 500,000). In addition to the aid of neighboring communities with separate water treatment facilities and the Ohio National Guard creating distribution points, the OP3, operating under Ohio Homeland Security, was instrumental in working with large corporations to redirect bottled water to Northwest Ohio.[14] The partnership allowed better communication and coordination between government agencies and private companies that were able to provide tangible assets during the emergency. Having sufficient bottled water in stores where individuals were accustomed to shopping was more convenient for a majority of the population, and it also allowed emergency personnel and public distribution points to service those most in need. A similar arrangement could be utilized for food access during an environmental hazard emergency such as a flood.

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[12] "The Social Vulnerability Index (SVI)." *Agency for Toxic Substances & Disease Registry.* https://svi.cdc.gov/. Last updated May 9, 2013. Accessed Jan. 2018.
[13] "Toledo's Water Crisis." *The Blade.* http://www.toledoblade.com/watercrisis. Accessed Jan. 2018.
[14] Welcome to Ohio Homeland Security Ohio Public Private Partnership." *Ohio Homeland Security.* https://homelandsecurity.ohio.gov/op3.stm. Accessed Jan. 2018. REPEATED

Rather than create its own public-private partnership, the City of Columbus should ensure that emergency planning and response personnel are part of OP3. Likewise, in working with FCEM&HS, OP3 should be seen as an effective way to mount a more robust response to an emergency by bridging the strengths of the public and private sectors. Participating with OP3 does not preclude the city from working with its typical community partners and non-profits.

A24. REQUIRE DISCLOSURE OF KNOWN PROPERTY PROBLEMS FOR SALE OR RENTAL OF PROPERTY

Many of the protections provided in federal and state law that govern real estate transactions and mortgages provide protections for buyers that are not afforded to renters. For real estate transactions, state law requires individuals selling property to disclose problems with the property, including roof leaks, electrical issues, malfunctioning appliances, and pests, on a property disclosure form. (Sellers only need to legally disclose the problems that they have prior knowledge of and are not required to complete a thorough or independent assessment to look for problems.) Under Ohio landlord-tenant law, landlords have no obligation to disclose known issues, but there are no restrictions on local governments requiring such disclosures.

During the flooding in Houston in 2017 associated with Hurricane Harvey, some renters had no knowledge that their apartments had flooded multiple times in the past and that they were located in areas known to be at high risk for flooding according to federal guidelines. Of the environmental hazards listed in this plan, flooding has the greatest potential to render buildings unusable, resulting in burdens on renters to evacuate, relocate, and/or replace personal property, which all have associated costs of time and money, or live in unsafe conditions. Of greatest concern to the task force were properties located within floodplains and those that have flooded in the past. Flooding does not just include inundation by a river or stream, but also localized flooding due to insufficient drainage or sewer backups that flood basements. Past flooding can result in structural issues in addition to health and safety issues such as damaged electrical systems and growth of mold.

Two recommended disclosures that would be of particular benefit to tenants are disclosing (1) whether the property is in the 100-year and 500-year floodplains as determined by NOAA and (2) if the property has flooded within the past 10 years or, if the landlord has owned the property less than 10 years, over the interval that the landlord has owned it. In addition to allowing tenants to determine whether they would like to rent properties with known flood risks, this information would allow them to consider the level of insurance coverage that might be needed to protect their interests. Both of these disclosures could be included on a standard form developed by Columbus that would also include links to web resources with maps of the 100-year floodplain in Columbus, damage that can be caused by flooding of a property (including health risks due to mold), and considerations for insurance coverage.

It is important to note that any requirements to disclose problems with a property need to be backed by sufficient penalties. Likewise, if renters do not have an affordable way to pursue recourse with a landlord who has not disclosed problems for which there is evidence of prior knowledge, or renters do not have other affordable options than to accept substandard properties with known problems, the intent of this requirement is rendered moot.

A25. REQUIRE OR INCENTIVIZE THAT MONTHLY UTILITY COSTS FOR RENTAL PROPERTIES BE REPORTED TO POTENTIAL TENANTS

A 2013 study completed by the University of North Carolina at Chapel Hill Center for Community Capital suggested that energy expenses can undercut the ability of homeowners to make mortgage payments, and therefore, should be factored into mortgage risk.[15] Homeowners are estimated to spend over $2,500 annually on energy bills, making these bills a significant cost that in some cases exceed costs for homeowners insurance and property taxes.[16] The situation is no different for renters, with low-income renters facing a larger financial burden from energy costs that high-income renters. While higher income renters (those earning $75,000 or more) pay approximately 1% of their income on utilities, low income renters (those earning less than $15,000) pay approximately 15%. This higher percentage is due to both lower incomes and less-efficient properties.[17] In Columbus households that both own and rent, low-income and African American households face a greater financial burden from energy costs (as measured by percentage of income paid for energy bills) than median households.[18] Besides purely economic considerations, difficulties in making utility payments and fear of losing service results in stress for affected households. Under the currently opaque energy market - with utility expenses for properties not publically available and a vast majority of properties not having a completed energy audit - making such information available could result in new behavioral norms for renters with both economic and environmental benefits.

One of the challenges in promoting energy efficiency in rental properties is that landlords determine the physical plant of the property, but tenants generally pay for utility costs. Because of this, economic incentives that would typically motivate improvements to a property do not function properly.[19] In such a case, additional information provided to tenants might allow them to adjust their rental choices accordingly. For instance, a renter would be more likely to prefer a more energy efficient property with lower utility bills over a less energy efficient property with higher utility bills if all other factors were equal. Such a change in behavior would create a greater demand for efficient properties and reduce demand for inefficient properties. Landlords, to remain relevant in the market, would need to upgrade their properties, thus realigning economic incentives to favor efficiency. The City of Chicago has an ordinance in effect that requires electric or gas heating costs for properties up for rent or sale to be provided, regardless of whether a tenant or landlord is paying directly for such services.[20] This ordinance also has requirements on disclosure of the portion of the year a building was occupied. It should be noted that this market-based incentive only works if renters generally understand the information, it factors into their decision-making, and there are sufficient rental properties from which

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[15] University of North Carolina. Center for Community Capital. Institute for Market Transformation. *"Home Energy Efficiency and Mortgage Risk."* Mar. 2013. https://tinyurl.com/y9yaee9e. Accessed Jan. 2018.

[16] J. Corvidae and R. Gold. Rocky Mountain Institute. 2017. *"An MPG for Homes."* https://tinyurl.com/y7kmvdvb. Accessed Jan. 2018.

[17] Joint Center for Housing Studies of Harvard University. *"America's Rental Housing: Evolving Markets and Needs."* 2013. http://www.jchs.harvard.edu/research/publications/americas-rental-housing-evolving-markets-and-needs. Accessed Jan. 2018.

[18] A. Drehobl and L. Ross. "*Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Income and Underserved Communities."* 2016. http://energyefficiencyforall.org/resources/lifting-high-energy-burden-americas-largest-cities. Accessed Jan. 2018.

[19] J. Corvidae and R. Gold. Rocky Mountain Institute. 2017. *"An MPG for Homes."* https://tinyurl.com/y7kmvdvb. Accessed Jan. 2018. REPEATED.

[20]" Business Affairs and Consumer Protection." *City of Chicago.* https://www.cityofchicago.org/city/en/depts/bacp/supp_info/energy_disclosureapplication.html. Accessed Jan. 2018.

they may select.[21] Landlords who wish to make their properties more energy-efficient, thus making them more attractive to potential renters, may take advantage of some programs described under actions **N4** and **A3.**

In the process of creating this report, the Task Force learned that a growing number of properties have utilities provided or billed directly by third party rather than a regulated distributor. This can impact both the rates paid by the tenant (as there are often additional fees incurred) and the options available to select renewable sources (tenants would not be able to select a different supplier). Tenants, especially those from out-of-state or that are first time renters, might not know their utility providers or rates upon signing their lease.

A standard disclosure form, similar to the one mentioned under **A24** for flood risk, could include the utility provider (for electricity, natural gas, and water), a link to the website with current rates and average usage per square foot (for either the distributor or third party), and a link to the PUCO Energy Choice Ohio website with a notice of whether it applies to the property.[22] Additional information on the specific energy efficiency of a property, derived from the actual prior year's usage or an indirect evaluation based on some of the tools described in the inset, could be included on this form. The city would need to determine what information should be included and whether it would be regulations or incentives for its inclusion. This information would allow renters to better understand the full cost of their rental decision and seek out additional information when necessary. As one can imagine, properties that are more efficient than average might have market incentive to advertise this information without regulations or incentives from the city, thus resulting in renters asking to see similar information of all prospective landlords.

CHAPTER INSET: Information on energy efficiency could be gathered by prior utility expenses, energy audits of properties, or algorithms based on publicly available property data. Two recently available online tools in this arena are RealEstate.com with UtilityScore and Redfin with Tendril. While neither tool is perfect, they are examples of how available data can be used to provide greater information to homebuyers and renters. In locations where utilities or landlords are not required or not allowed to share information on energy use, these tools are an attempt to provide renters with some useful information on properties that they are considering. Landlords may always provide potential tenants with additional information if they feel that the online tools do not adequately capture the energy use of their properties.

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[21] J. Burbank. Demand Institute. *"The Housing Satisfaction Gap."* Dec. 3, 2014. http://demandinstitute.org/housing-satisfaction-gap/. Accessed Jan. 2018.

[22] "Energy Choice Ohio." Public Utilities Commission of Ohio. http://www.energychoice.ohio.gov/. Accessed Jan. 2018.