

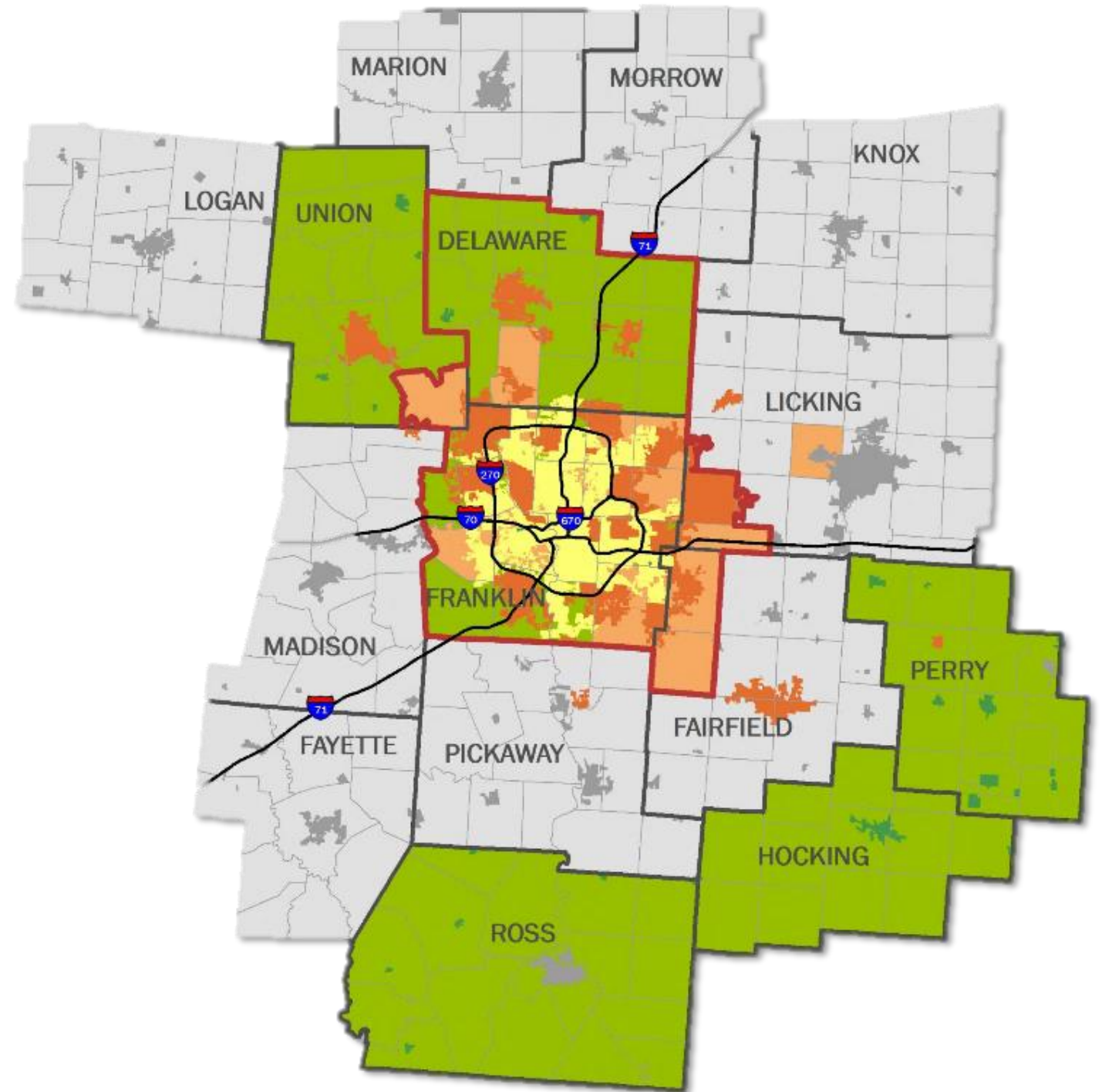
UTILIZING ENERGY STUDIES FOR STRATEGIC INTERVENTIONS

*Jon-Paul d'Aversa, AICP
Energy Planner*



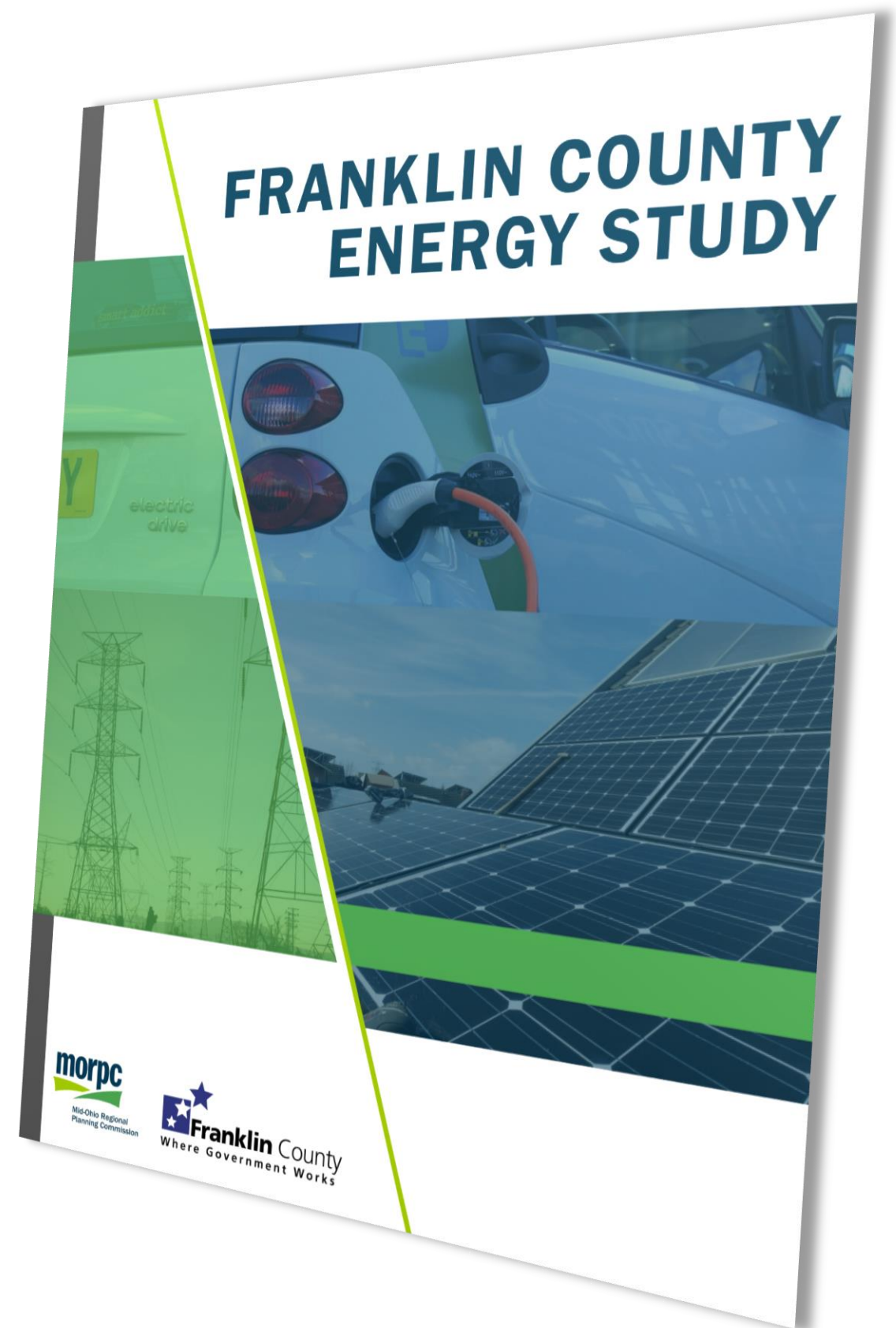
Mid-Ohio Regional Planning Commission

- Central Ohio's MPO
- Over 60 local government members
- Assist in transportation initiatives, sustainability, public policy, data and mapping



Franklin County Energy Study

- Catalogue of energy production, consumption, expenditures and emissions since 2010
- ZIP Code-level analysis
- Included overview of assets and resources available within the County



Franklin County Energy Burden and Percent Poverty by Zip Code

Percent Household Income Used On Energy

(Energy Burden)

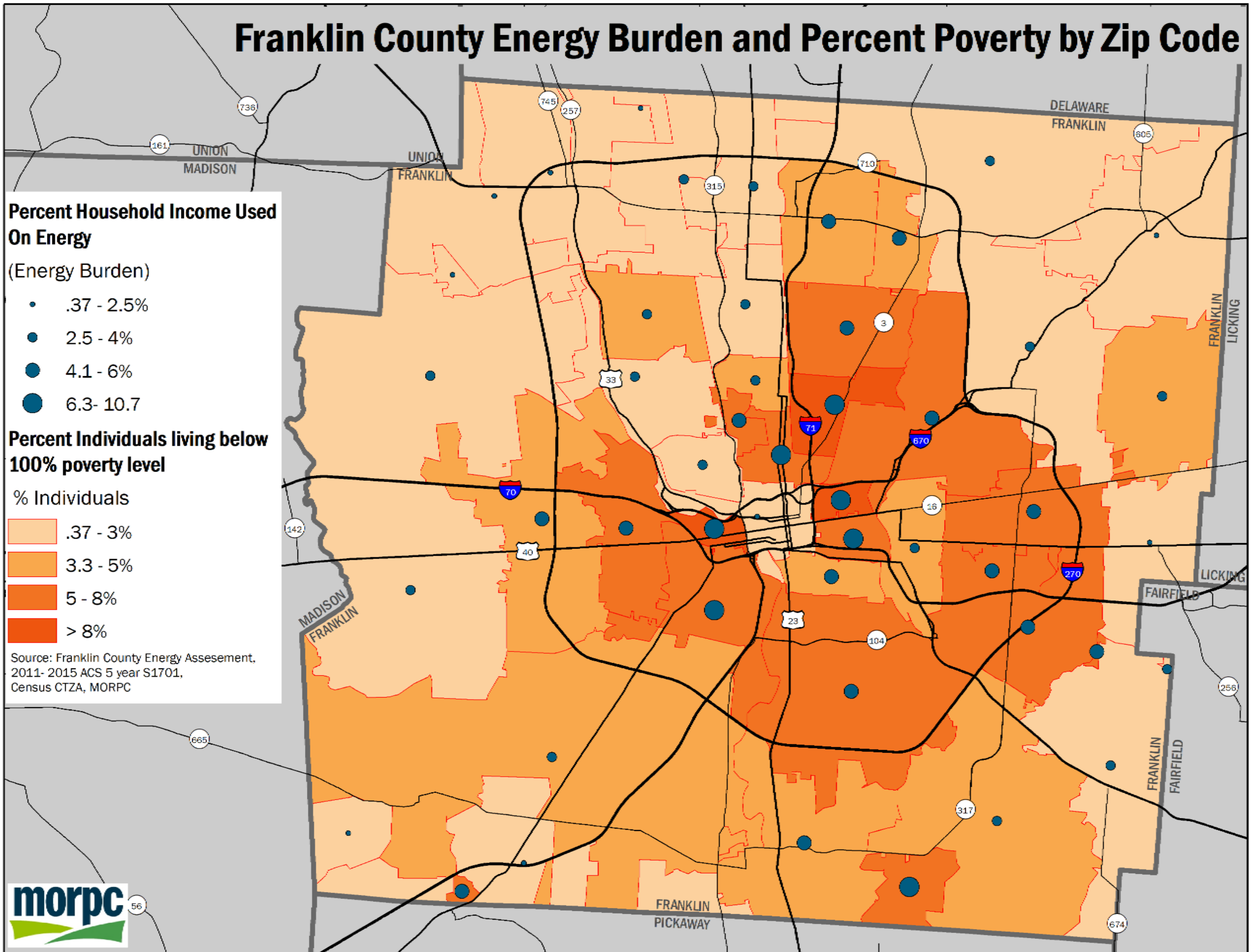
- .37 - 2.5%
- 2.5 - 4%
- 4.1 - 6%
- 6.3 - 10.7%

Percent Individuals living below 100% poverty level

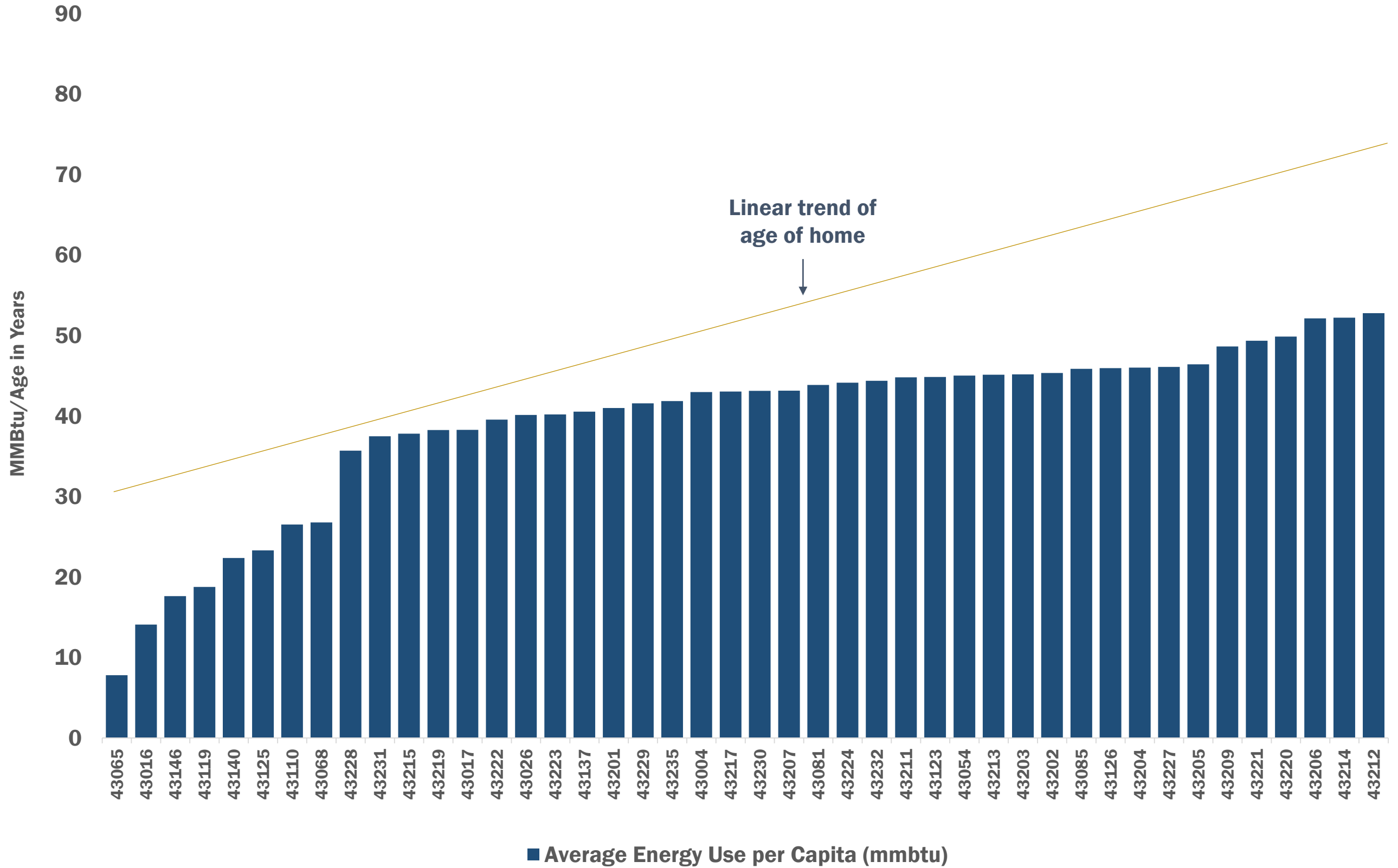
% Individuals

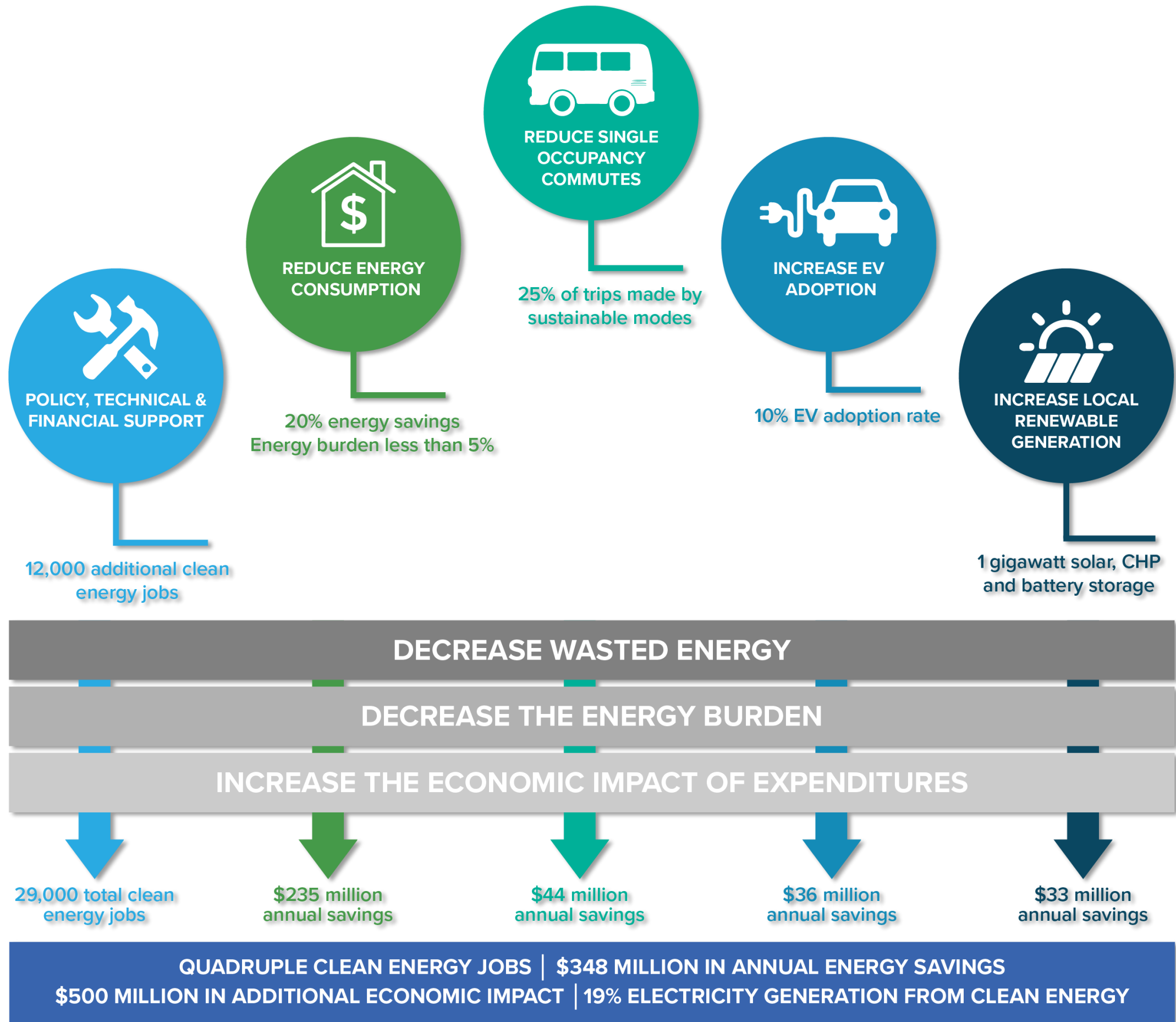
- .37 - 3%
- 3.3 - 5%
- 5 - 8%
- > 8%

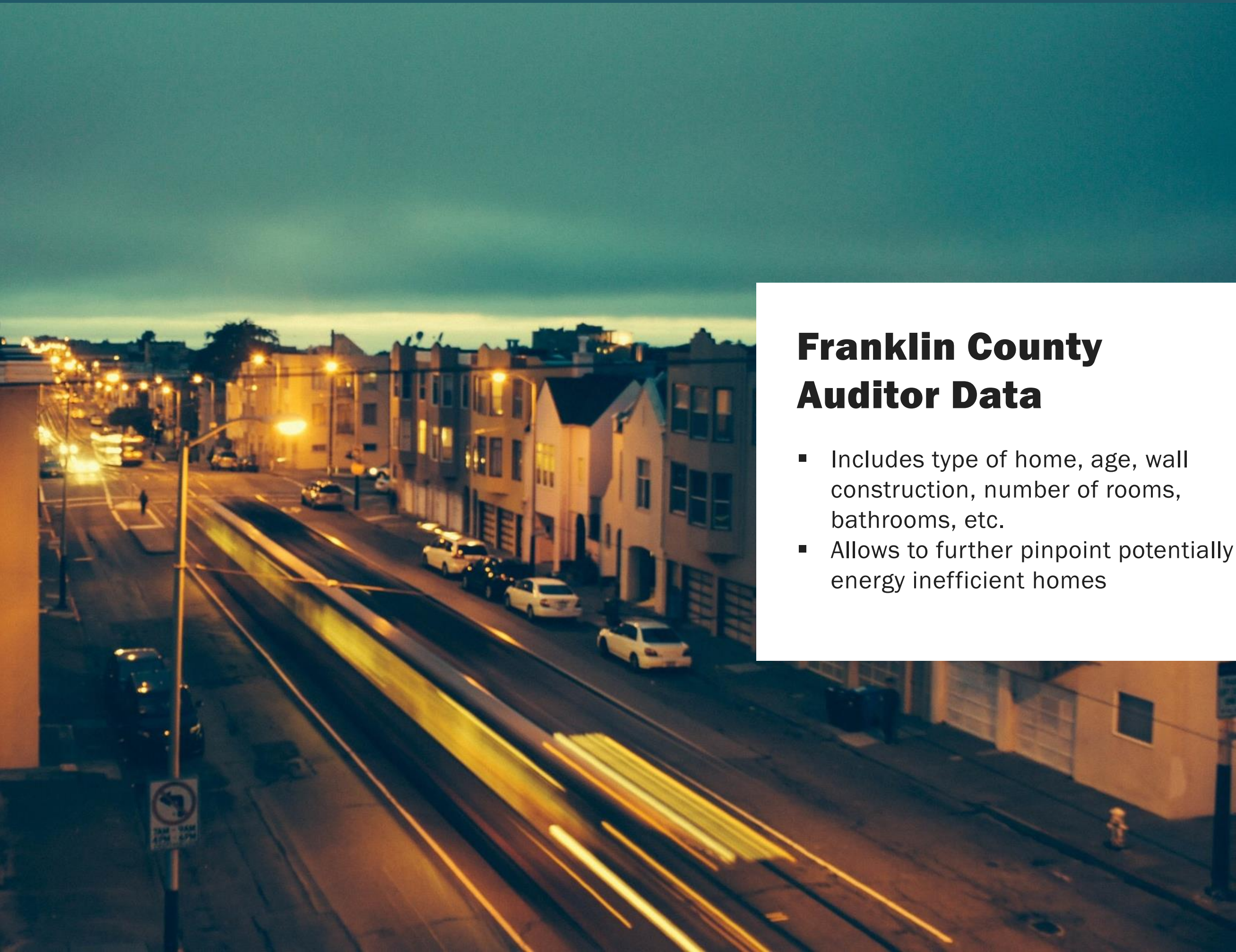
Source: Franklin County Energy Assessment, 2011-2015 ACS 5 year S1701, Census CTZA, MORPC



Franklin County - 2015



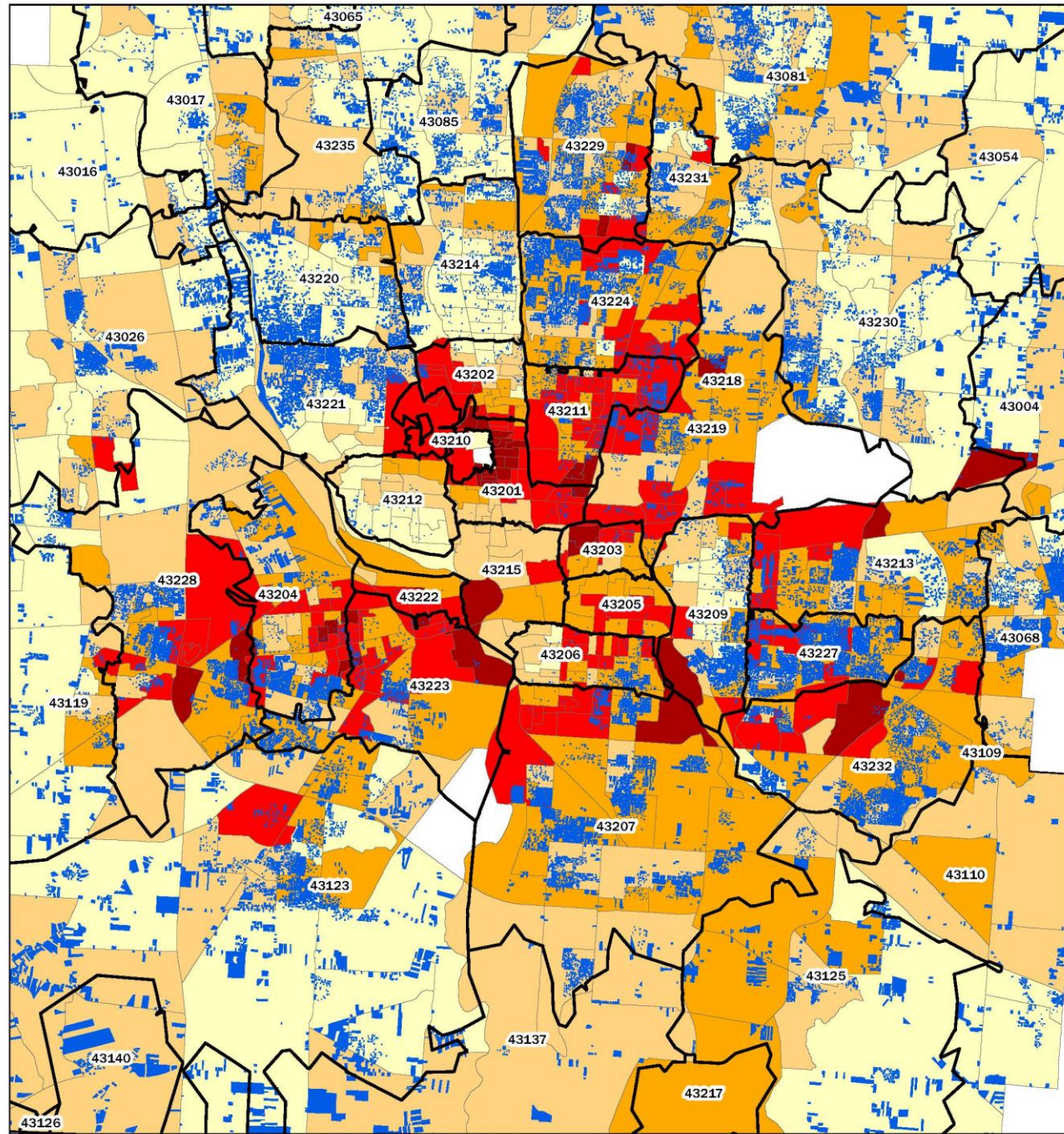




Franklin County Auditor Data

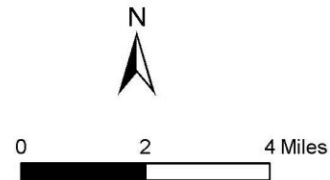
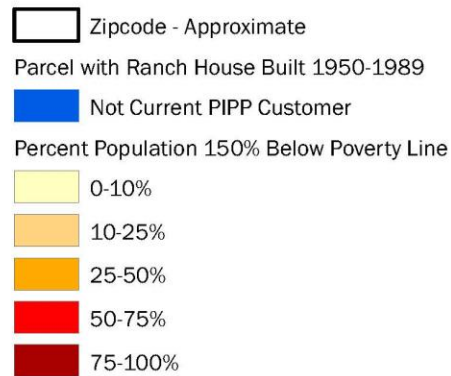
- Includes type of home, age, wall construction, number of rooms, bathrooms, etc.
- Allows to further pinpoint potentially energy inefficient homes

Weatherization Outreach
Franklin County, Ohio



Combining Demographics, Energy and Program Data

- To further pinpoint outreach and program effectiveness, multiple sources of data were combined
- Energy burden, poverty, HWAP and PIPP





COLUMBUS
is an American Cities
Climate Challenge Winner

Bloomberg
Philanthropies

American Cities
Climate Challenge

**Franklin County Energy
Study Provides Data for
Winning Application**

- Train local workforce to perform energy audits
- Double the amount of energy audits, specifically in high energy burdened areas
- Provide tools to increase sustainable transportation modes



Community Energy Planning

- In development
- Partners local government with local leaders
- Designed to uncover barriers unique to each community
- Aligns with existing programs, uses existing resources

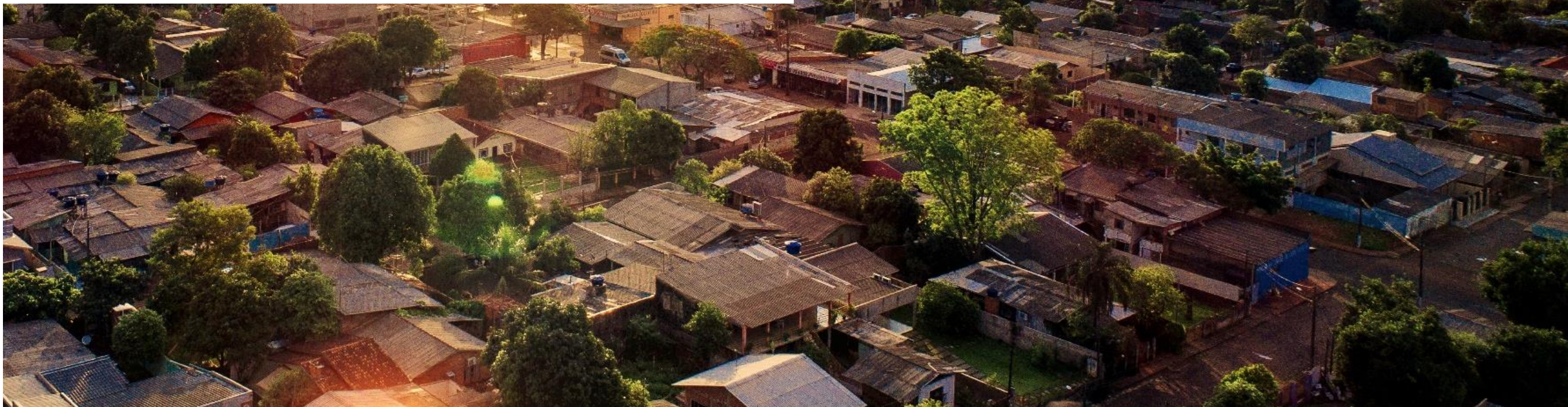
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UTILIZING ENERGY STUDIES FOR STRATEGIC INTERVENTIONS

Jon-Paul d'Aversa, AICP
Energy Planner

Title Slide

For this presentation, we'll be taking you through how energy studies can be used to help support multiple initiatives, increase capacity for collective approaches and most importantly, help us ask the right questions.

All of which are essential for bridging the gaps in our current system and taking strategic action.

Slide 2

Metropolitan Planning Organizations are uniquely situated to take a regional approach to energy issues, and yet still be able to have a direct impact at the local level.

MORPC is the MPO for Columbus, Ohio and the 15 counties comprising the Mid-Ohio region. The yellow region on the map represents nearly one million residents, and the region as a whole nearly 2.4 million. Our region is both urban and rural, and it is growing significantly. By 2050, we are expecting another million people to call this place home, to build their lives, and to raise their children.

We are a member-based organization of over 60 local governments. As the region's MPO we handle federal transportation dollars, air quality responsibilities and additional planning assistance to our members. For almost 3 decades, MORPC has been providing residential energy efficiency and home repair services for income-qualified residents. In 2017, we added energy planning services to our tool-kit. Success for us means that we have not only provided sustainable solutions, but that we've increased the capacity for our local governments to serve the needs residents and businesses.

Slide 3

At its simplest, an energy study is a look at how an area's energy is made and how it is used (for transportation, in the home, businesses and industry). An energy study should also consider the costs associated with energy production and consumption. Environmental impacts should be evaluated as well.

For the Franklin County Energy Study, we looked at these areas through a ZIP Code-level analysis of all sectors. We developed a suite of metrics for evaluating the impact of the current system. One of the most important metrics was energy burden of the residential sector; this looks at the costs of heating and powering our homes as a percentage of household income.

Also, as a part of the Study, we performed essentially a SWOT analysis of policy and programs available to residents and businesses. Franklin County is fortunate to have a multitude of sustainability focused organizations and actively engaged utilities.

Which leads to one of the most important aspects of an energy study; the collaboration necessary to develop a useful tool that can be used to stir action. We had an advisory group of over 50 stakeholder groups, individuals, utilities and local governments. The expertise they provided was essential, however this process led to something even more important. Their engagement ensured the Study would be useful to them, and it was the start of dialogues between groups that would need to work together in future. I'll discuss a few of those projects in later in the presentation.

Slide 4

Energy burden was one of the metrics that everyone latched on to; we all want lower energy bills.

For the Study we assumed anything over 6% was unacceptable. We found some averages surpassing 10% across the entire ZIP-Code where individuals could be experiencing an individual energy burden well over 50%. Of course, energy burden is highly influenced by income, and it played a significant role as can be seen in this map. Yet, we were able to see that income was not the only factor in whether a ZIP Code had an exceptional energy burden. It appeared as though energy burden was mimicking development patterns. So we dug a little deeper.

Slide 5

We looked at the age of homes in each ZIP Code. The blue columns represent the average residential energy consumption for each person. The gold line is the trend line for the age of homes in the same ZIP Codes. From this analysis, we found that age of home was a more statistically significant predictor of energy use in the home than income.

That being said, we immediately understand that for the greatest impact, we need to focus our attention on homes built prior to 1980.

Slide 6

Although we did not turn the Energy Study into an Energy Plan, we did provide recommendations for 2030 goals, objectives, strategies and partners. These recommendations have played a significant role in the development of new initiatives and interventions as well as helping to gauge the progress and impact of current activities.

The recommendation of a 20% reduction in energy consumption is primarily a continuation of current utility programs through 2030. Reaching this target however, still leaves three ZIP Codes with an energy burden above 6%. To rectify this we need more strategic action focused in these areas. We've been able to approach this from a few angles... more in a moment regarding this.

Energy use in transportation is one of the largest contributors to poor air quality in neighborhoods. We recommended a relatively ambitious goal of 25% of commutes being made via sustainable modes, mass transit, bicycling, etc. The Central Ohio Transit Authority is very active in making this a reality, and with the Energy Study, is able to quantify improvements against a baseline. There is also a recommendation for a greater adoption of electric vehicles which Smart Columbus is actively pursuing. Ideally this transition is fueled by renewable sources, however, in the meantime the pollution from grid energy is situated away from population centers and monitored.

Slide 7

Before we get into some of the initiatives resulting from the Study, I wanted to mention a source of information that has been invaluable in increasing the impact of the Study's usefulness. Although the robustness and availability of auditor data varies between municipalities, in Franklin County we have available the type of home, age, how the walls are constructed, number of bathrooms, etc. All of this allows us to identify a particular style of home or age of home to address issues particular to them. Additionally, we can make decent estimations of potential energy savings.

Incorporating income estimations from the census or other datasets, we are now able to identify areas where improving the energy burden will be the most helpful to residents, focusing some programs to the neighborhood level or in some cases, right down to the parcel.

Slide 8

In this example, we were conducting analysis to further identify zip codes and neighborhoods to target increased marketing efforts for MORPC's free home weatherization programs. MORPC provides home weatherization and energy efficiency improvements for income-eligible renters and homeowners in Franklin County. These services include energy audits, safety checks of gas appliances, furnace and hot water tank repair and replacement, insulation, air sealing, and replacement of light bulbs and refrigerators with more efficient models.

Here we focused on age of home and type of structure in order to maximize the number of homes to be serviced. Then census data was used to identify the percent of population at 150% and below the federal poverty guidelines at the census block level. The darker the red shading, the higher percentage of households meeting this income level. This represents the income qualification for MORPC's largest weatherization program, WarmChoice, with funding from Columbia Gas of Ohio.

Additionally, we were able to incorporate PIPP customers in order to further maximize the impact of outreach activities.

Slide 9

In October 2018, Columbus became one of the recipients of Bloomberg's American Cities Climate Challenge award. The award provides \$2.5 million in assistance to achieve climate-related targets. The Energy Study played an integral role in the application and interview process as you can see by three of the initiatives to come out of the Challenge. Columbus wants to not only double the number of energy audits to over 30,000 by 2020, but also focus these in the areas where the energy burden is the highest. To do so, Columbus is focusing on training a local workforce to undertake the effort, thus addressing part of the income component of energy burden.

Adding to this, Smart Columbus is developing apps and various tools to assist in multi-modal transportation adoption.

Slide 10

Through the Energy Study process and our Local Government Energy Partnership, we have developed a group of engaged stakeholders and enough data to know where to focus our efforts. Even still, this isn't the entire equation. Barriers exist that existing programs can't address. How do we uncover the barriers specific to each community? Is it age of home, income, renting vs. owning? Is it awareness of programs? Is it a feature of the program that bars participation? Is life simply so hard that energy efficiency is at the bottom of the priority list?

To understand and hopefully eliminate these barriers, we're developing a community energy planning program that:

- Matches local government energy advocates with local leaders and anchor institutions;
- Trains them to conduct a needs assessment and gap analysis;
- Provides them with facilitated engagement opportunities to truly understand residents perspectives and encourages their participation in solutions;
- And in the end, develops an energy solutions implementation plan.

The point isn't to reinvent the wheels or duplicate ones that are already turning, so through the program we'll be working with partners that have established efforts already underway.

Contact Slide

You are encouraged to reach out with any questions or thoughts. Thank you.