

Memorandum

AIC Mobile Homes Study

To: Jamey Neal, Nick Warnecke, Ameren Illinois Company; Seth Craig-Snell, SCS Analytics; Elizabeth Horne, David Brightwell, Illinois Commerce Commission

From: Opinion Dynamics Evaluation Team

Date: May 8, 2023

Re: Mobile Homes Community Mapping Results

This memorandum provides mobile home (MH) community mapping results as a part of the Ameren Illinois Company (AIC) 2022 Mobile Homes Study. The MH segment is historically underserved by AIC, as few MH customers participate in its energy efficiency offerings, yet they have significant need for them. AIC's 2021 Low Income Needs Assessment (LINA) found that MH residents experience higher average energy burdens (i.e., incur energy costs more disproportionate to their income) and more commonly have critical health, comfort, and safety concerns, compared to other types of "site built" single family homes residents.¹

Recognizing these needs, AIC piloted a Manufactured Homes & Air Sealing (MHAS) offering in 2021 to deliver energy efficiency improvements, energy literacy education, and select health and safety improvements to income qualified (IQ) customers residing in MHs; and then scaled the offering up to a full channel of the IQ Initiative in 2022. At the time of this research, the MHAS Channel operated only in the Champaign-Urbana metropolitan area, but AIC has begun to expand the offering to additional parts of its service territory where sufficient Program Allies and community partners are available. One challenge associated with ramping up the offering is that AIC's current residential customer database does not track whether customers specifically live in MHs, making it unclear how many MH customers exist or where they reside within AIC service territory. As such, in support of the rollout of the MHAS Channel, Opinion Dynamics used a combination of mapping and data mining to identify MH communities in AIC's service territory, characterize the communities at a high level, and develop a recommended prioritization strategy for AIC's future rollout of the channel; both within Champaign-Urbana and beyond.

Key Findings and Recommendations

This analysis produced the key findings and recommendations below. More detailed results, including several maps of recommended priority regions, are available later in this memorandum.

- **Key Finding #1:** Ample opportunities remain to service MHs in the Champaign-Urbana metropolitan area. The MHAS Channel has already completed projects in eight of the top 15 MH communities but

¹ <https://www.ilsag.info/wp-content/uploads/AIC-2021-LINA-Report-FINAL-2022-06-01.pdf>

has served relatively few homes in each. There are an additional seven communities, with between 20 and 60 MHs each, that the MHAS Channel had not served as of September 2022.²

- **Recommendation:** Continue to concentrate channel activity in the Champaign-Urbana metropolitan area in 2023, focusing on refining the MHAS Channel approach (e.g., design, partnership structures, or implementation processes). We recommend specifically prioritizing the top 15 communities identified in Table 1. AIC has already served some of the communities identified, but significant opportunities may remain within them.
- **Key Findings #2:** Several of the smaller communities (between 10 and 60 homes) in Champaign-Urbana have some of the highest priority scores.
 - **Recommendation:** In 2023, continue to serve Shadowwood (the top priority community) and other large communities to achieve overall participation goals, but consider whether it's possible to prioritize some of the relatively small, but potentially more vulnerable, communities (e.g., Edgebrook Estates and Chief Illini Village). When selecting communities, AIC should consider whether there are opportunities to service small communities that are nearby large communities; or two relatively small communities together.
- **Key Finding #3:** There are over 350 MH communities in AIC's service territory, which we estimate are comprised of over 6,000 homes. There are MH communities in most areas of the territory, but there is a significant density of communities in the Peoria metropolitan area, St. Clair County (Southeast of St. Louis), and Madison County (Northeast of St. Louis). More primary research, like surveys or site visits with MH residents, and implementation team groundwork (e.g., visits to potential MH parks; discussions with local leaders, organizations, or MH park management) are needed to fully understand the needs, opportunities, and targets in communities. Further, a key barrier to expansion is the lack of available and willing Program Allies and/or identified community partners in these areas.
 - **Recommendation:** Consider prioritizing Peoria metropolitan area (particularly Peoria, Tazewell, and Woodford counties), St. Clair County, and Madison County for longer-term expansion of the MHAS Channel beyond Champaign-Urbana, in that order. Note, in late 2022, the MHAS Channel began providing services in parts of Madison County. Consider these opportunities as stretch goals. In preparation for expansion, AIC must first lay the foundation by recruiting additional Program Allies with the technical knowledge and willingness to service MHs, as well as identify the appropriate community partners. In 2023 or 2024, consider targeted Program Ally research in these areas to identify the primary barriers and potential motivators for local contractors to become Program Allies.
 - **Recommendation:** When this groundwork is complete, and the channel is ready to expand, we recommend prioritizing the top five communities, in terms of size, in each of these three regions, shown in Table 2. The identified communities should be used as a starting point for entering these areas and could potentially be the focus of the primary research we recommend above.

² Although AIC has continued to expand the communities served throughout late 2022, the full annual dataset is not available for analysis yet.

Summary of Approach

This section provides information on our analysis methods and data sources.

Defining the Target Customer

We defined the target types of MHs for this study in coordination with AIC and its MHAS Channel implementation partners, Future Energy Enterprises and the Champaign County Regional Planning Commission (CCRPC). We focused on identifying MHs in communities (e.g., MH parks) first, rather than standalone MHs outside of communities. Standalone homes are more challenging to target, recruit, and service cost-effectively and, as such, will not be top priorities in the initial phases of MHAS rollout. Further, based on the MHAS eligible customer definition, as well as the implementation team's desired target customer, we prioritized communities with more IQ, racially diverse, and non-English-speaking households.

Mapping and Characterization

We employed the following data sources to identify, characterize, and map AIC's MH customers:

- Online MH real estate databases (Illinois Mobile Home Association and Mobile Home Village), which provided us with a dataset of MH communities across Illinois. These datasets also included estimated site (i.e., homes, or lots) counts for the communities. We used these data as the primary basis for estimating the total number of MHs in each community and across AIC territory. However, we made some subjective adjustments to these estimates, focusing on the largest communities, by comparing real estate data site counts with the following:
 - Illinois County Tax Assessor parcel data (a parcel being an individual designation of real property for tax purposes), which provided another approximation of individual sites. Since the Tax Assessor data was not exhaustive (i.e., did not cover every community we identified), and some parcels may include multiple or no MHs, we used this data as supplemental information only.
 - Review of satellite imagery via Google Maps and other publicly available internet resources.
- American Community Survey (ACS) five-year data (2016–2020) at the census tract level, which we used for initial community density mapping; and census tract or census block level demographic data for the purposes of characterizing and prioritizing individual MH communities. Census tract level demographic data was used when block level data was not available.
- AIC residential customer database to ensure we limited the analysis to AIC's service territory and likely residential customers.
- IQ Initiative tracking data, from January 2021 through September 2022, which we used to understand which communities the MHAS Channel had already served.

Prioritization

Once we mapped MH customers, we prioritized AIC MH communities as follows:

- To help inform the MHAS Channel's rollout in the near term, we segmented the Champaign-Urbana communities into two groups: relatively large communities (100 or more sites) and relatively small communities (less than 100 sites). We also included communities the MHAS has already served based

on 2021 and 2022 IQ Initiative tracking data but considered the number of homes already served to understand the amount of remaining opportunity.

- To guide the MHAS Channel’s medium- to long-term expansion, we identified the top regions in AIC’s service territory, outside of the Champaign-Urbana metropolitan area, with the greatest concentrations of MH communities.
- Once we identified the top regions by MH count, we further rank-ordered the top communities by prioritizing communities with characteristics the MHAS Channel is seeking to target:
 - **Income qualification:** Customers can qualify for the MHAS Channel in multiple ways. Customers qualify if their household income is 300% of the federal poverty line (FPL) or lower, by household size; or 80% of Area Median Income (AMI). FPL is the primary measure for qualification at this time, so we chose to use this metric. However, census block level data did not allow us to specifically identify the percentage of homes at or below 300% of the FPL. As such, we used two census datapoints, census block data for percentage of households at or below 200% of the FPL (“% low income”); and census tract data for percentage of households at or below 300% of the poverty line (“% income-qualified”).
 - **Greater racial and ethnic diversity:** Census block level data on percentage of the population that is racially non-White (“% non-White”) and percentage of the population that is of Hispanic/Latino origin (% Hispanic/Latino).
 - **High incidence of non-English language households:** census block level data on percentage of households that speak a non-English language at home (“% non-English households”).
- We developed a weighted average “priority score” for these socioeconomic factors as follows:
 - Gave income qualification a 50% weight, as MHAS Channel participants must be IQ. We used the higher of the two census datapoints, “% low income” and “% income-qualified”, as both have different limitations but, together, they provide a reasonable approximation of MHAS Channel eligibility.³
 - Gave the racial and ethnic diversity factor a 25% weight overall, with “% non-White” and “%Hispanic/Latino” weighted at 12.5% each. The Census asks a separate question about Hispanic/Latino origin, and then another question on race; and does not include Hispanic/Latino as a race. As such, “% non-White” excludes some people who consider themselves Hispanic/Latino; and “%Hispanic/Latino” includes some people who consider themselves White. To ensure we captured both concepts of diversity, we equally weighted both factors.
 - Gave the non-English language households (“% non-English households”) a weight of 25%.

³ The “% low income” datapoint does not include households from 201% to 300% of the FPL, who would qualify for the MHAS Channel. As such, it may be an underestimate of community eligibility. The “% income-qualified” datapoint is at the census tract level, which is roughly double the size a census block. Considering that many MH communities are much smaller than even a census block, data at the tract level has significantly reduced accuracy compared to census blocks.

- The steps above produced values between 0 and 1. To ease interpretation, we multiplied the values by a factor of 1. Very few communities exceeded 4.0, meaning a score of 4.0 or greater is a high priority.

Limitations

This research is subject to the following limitations:

- Demographic data is at the block group level, with some exceptions, which is typically between 600 and 3,000 people according to the U.S. Census. 300% of FPL or lower and disability status was only available at the tract level, which is typically between 1,200 and 8,000 people. MH communities are rarely, if ever, this large. As such, the demographic data for MH communities may reflect areas outside of the MH community and may be different from the specific demographics of the community alone. More primary research is needed to confirm the characteristics of specific MH communities.
- The data used for this analysis have limitations in their comprehensiveness and accuracy, as discussed earlier in this section. As such, the estimates may significantly over or under count the number of MHs in a specific community, and especially across the entire AIC service territory. We attempted to address this limitation by conducting additional quality checks on larger communities and making subjective adjustments to MH estimates, where appropriate.

Recommended Targets

Table 1 provides the top 15 communities we recommend targeting within the Champaign-Urbana metropolitan area. There are many large communities on this list, some with several hundred homes each. MHAS Channel activity has concentrated on several of these communities but has served fewer than 10% of any of them, suggesting significant opportunities remain for recruitment in all communities on this list. Further, many of the large communities do not rank highly within the list because there are several relatively small communities (like Chief Illini Village and Carriage Estates) that may have relatively more low-income households. There is one key exception, Shadowwood, which is both large and predominately low income. This ranks highest on the list of recommended communities; and we note that the MHAS channel has already completed a small number of projects there. Most households in these communities appear predominately White and English speaking; however, these data are at the census block level and may capture areas outside of the MHs communities. As such, it is possible there are higher numbers of non-White and non-English-speaking households within these MH communities than the data suggests.

Table 1. Recommended MHAS Targets in Champaign-Urbana

MH Community	Number of MHs (Estimated)	Priority Score out of 10	% Low Income	% Income Qualified	% Non-White	% Hispanic / Latino	% Non-English Household	Number of Homes Served by MHAS
Large MH Communities (100 or More Sites)								
Shadowwood Mobile Homes	272	4.4	62	70	6	51	6	4
Liberty Estate Commons	433	3.3	34	55	19	16	6	23
Ivanhoe Estates	323	3.3	36	61	16	0	1	2
Wood's Edge	170	3.2	55	55	14	13	6	6
Northwood Estates	113	3.2	55	55	14	13	6	9

MH Community	Number of MHs (Estimated)	Priority Score out of 10	% Low Income	% Income Qualified	% Non-White	% Hispanic / Latino	% Non-English Household	Number of Homes Served by MHAS
New Century Estates	160	2.5	33	28	51	8	3	7
Smaller MH Communities (Less Than 100 Sites)								
Edgebrook Estates	47	4.5	54	70	56	11	6	0
Chief Illini Village	64	4.0	69	61	32	14	1	0
Carriage Estates	57	4.0	69	61	32	14	1	0
Wilson's on University	42	4.0	69	61	32	14	1	0
Spruce Commons	34	3.2	55	55	14	13	6	0
Powell's Mobile Home Park	26	3.0	9	55	3	6	6	0
Arleen Trailer Park	13	3.0	9	55	3	6	6	0
Surbana Estates	95	2.7	47	45	25	7	1	2
Woodland Acres Mobile Home Park	93	2.6	16	45	17	9	1	3

Table 2 provides the top five communities in each of the three regions we recommend targeting in the future: Peoria metropolitan area, St. Clair County (Southeast of St. Louis), and Madison County (Northeast of St. Louis). Among these three regions, Peoria metropolitan area MH communities tend to have the highest proportions of IQ households, as well as the greatest number of MHs overall, suggesting this county should be the top priority for MHAS Channel expansion. St. Clair County should be the next priority: it has the lowest proportion of IQ households but the second largest number of MHs; and relatively higher proportions of non-White households compared to the other two counties. Madison County has the lowest estimated number of MHs of the three regions, however, it still has a relatively large number of MHs compared to other parts of AIC service territory and several large communities where around half of the households may be IQ.

Table 2. Recommended MHAS Targets Outside of Champaign-Urbana

Region/MH Community	Number of MHs (Estimated)	% Low Income	% Income Qualified	% Non-White	% Hispanic/Latino	% Non-English Household	Priority Score out of 10
Peoria Metropolitan Area	3,295^a						
Cedar Ridge Village	340	67	53	6	1	1	3.4
Royal Oaks Estates	585	53	43	25	10	3	3.2
Four Seasons	215	33	51	8	0	0	2.7
Oak Lawn Estates	470	38	33	0	4	0	2.0
Royal Highlander MHC	279	4	11	37	0	0	1.0
St. Clair County	2,266^a						
Castle Acres Manufactured Home Community	167	26	41	42	2	0	2.6
Meadowbrook Mobile Home Park	155	5	28	20	8	1	1.8
Dutch Hollow Village	464	22	30	21	1	0	1.8
Valley View Estates	233	19	17	31	2	1	1.4

Region/MH Community	Number of MHs (Estimated)	% Low Income	% Income Qualified	% Non-White	% Hispanic/Latino	% Non-English Household	Priority Score out of 10
Country Meadows	231	6	13	15	7	0	0.9
Madison County	1,885^a						
Mallard Lake Manufactured Home Community	278	33	53	4	17	1	2.9
Holiday Mobile Home Park	217	33	53	4	17	1	2.9
Village Green Commons	135	25	46	9	14	0	2.6
University Flats Mobile Home Park	284	46	20	14	5	1	2.5
Woodland Trails Homes	287	17	22	5	10	1	1.3

a. Region totals do not match row totals because we only show the top five communities in terms of size (i.e., Estimated MHs) in this table.

Detailed Findings

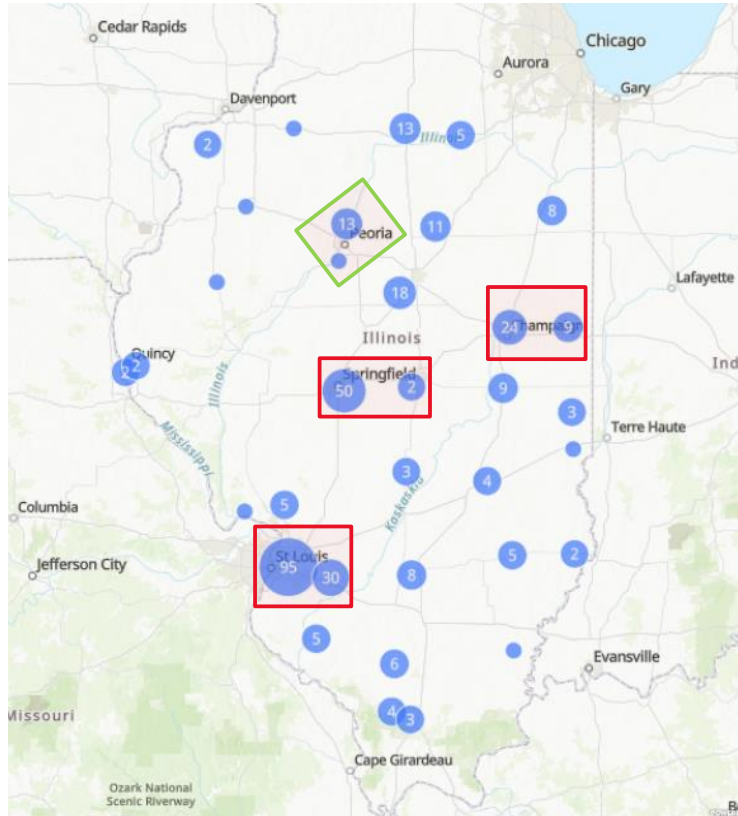
This section provides additional insights from the mapping exercise. We begin with an overview of the territory, followed by deeper dives into the four high-priority regions we identified.

Estimates of MHs in AIC Service Territory

We identified 360 MH communities and approximately 6,700 sites (i.e., possible unique MHs) within the AIC service territory. It is important to recognize that this is an estimate only, using available real estate and tax assessor data. On one hand, there may be additional MH communities or standalone MHs in the territory that are not part of designated communities. On the other, the site counts may include lots that do not currently have MHs on them (i.e., they have been torn down or moved; or are being rebuilt).

Figure 1 presents MH communities we found throughout AIC service territory. As shown, while MHs exist throughout the territory, there are three clear aggregations of communities (shown approximately in red): outside of East St. Louis, followed by Springfield, and then by Champaign-Urbana (where the MHAS Channel already operates). However, AIC does not provide electric service to many parts of the Springfield area, making it a lower priority region to target. As such, while not as close together as the other regions, we identified an aggregation of communities in three counties in the Peoria metropolitan area: Peoria, Tazwell, and Woodford; shown approximately in green.

Figure 1. MH Communities within AIC Service Territory

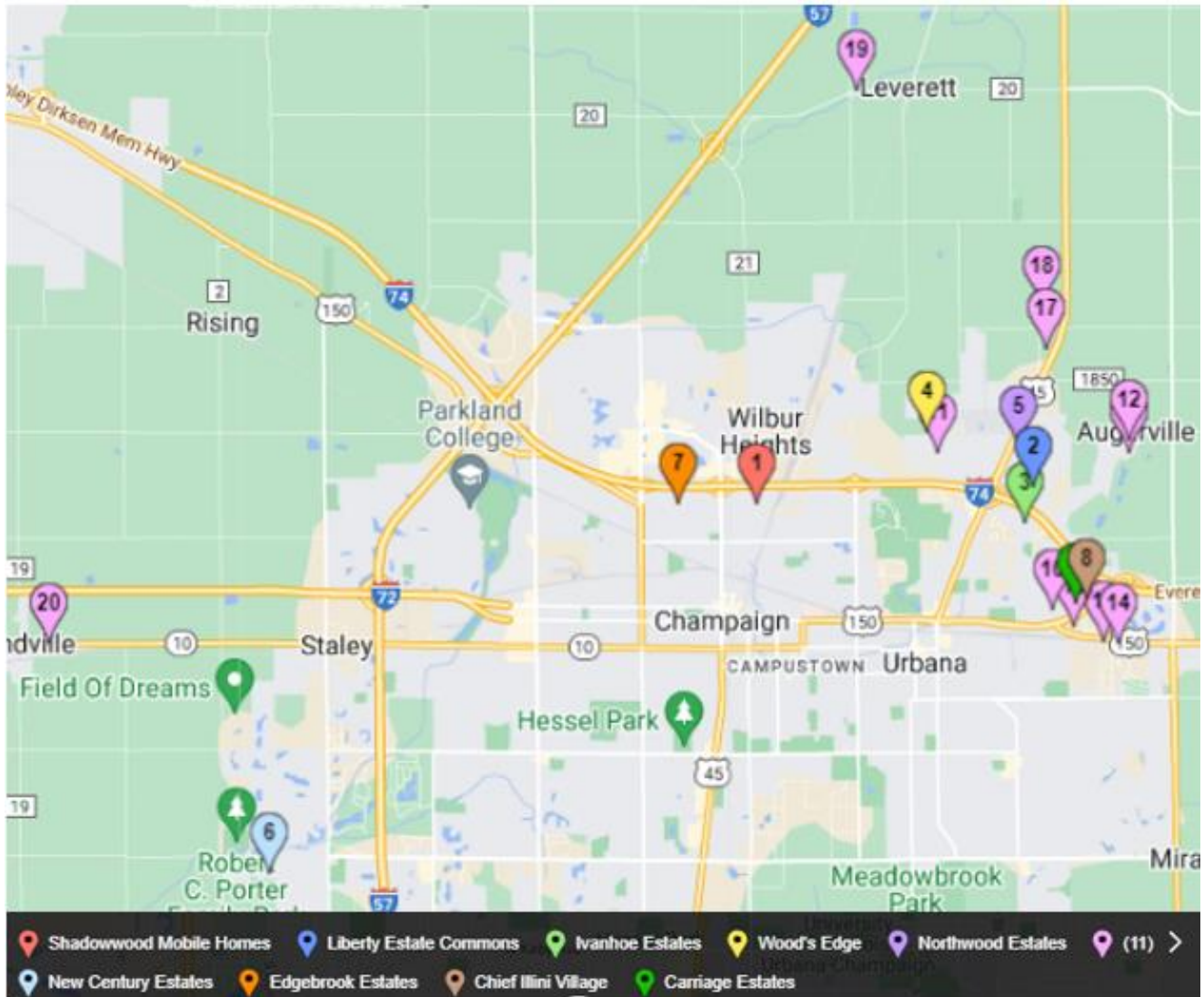


Source: Power BI mapping from online MH real estate databases.

Champaign-Urbana Metropolitan Area

As shown in Figure 2, most communities are in the eastern part of the area, including most of the largest communities. According to IQ Initiative data, almost all MHAS Channel activity has been concentrated in this eastern part of the region, with a few exceptions. In the figure below, the top recommended communities are represented by individual colors, with the remaining in pink.

Figure 2. MH Communities in Champaign-Urbana

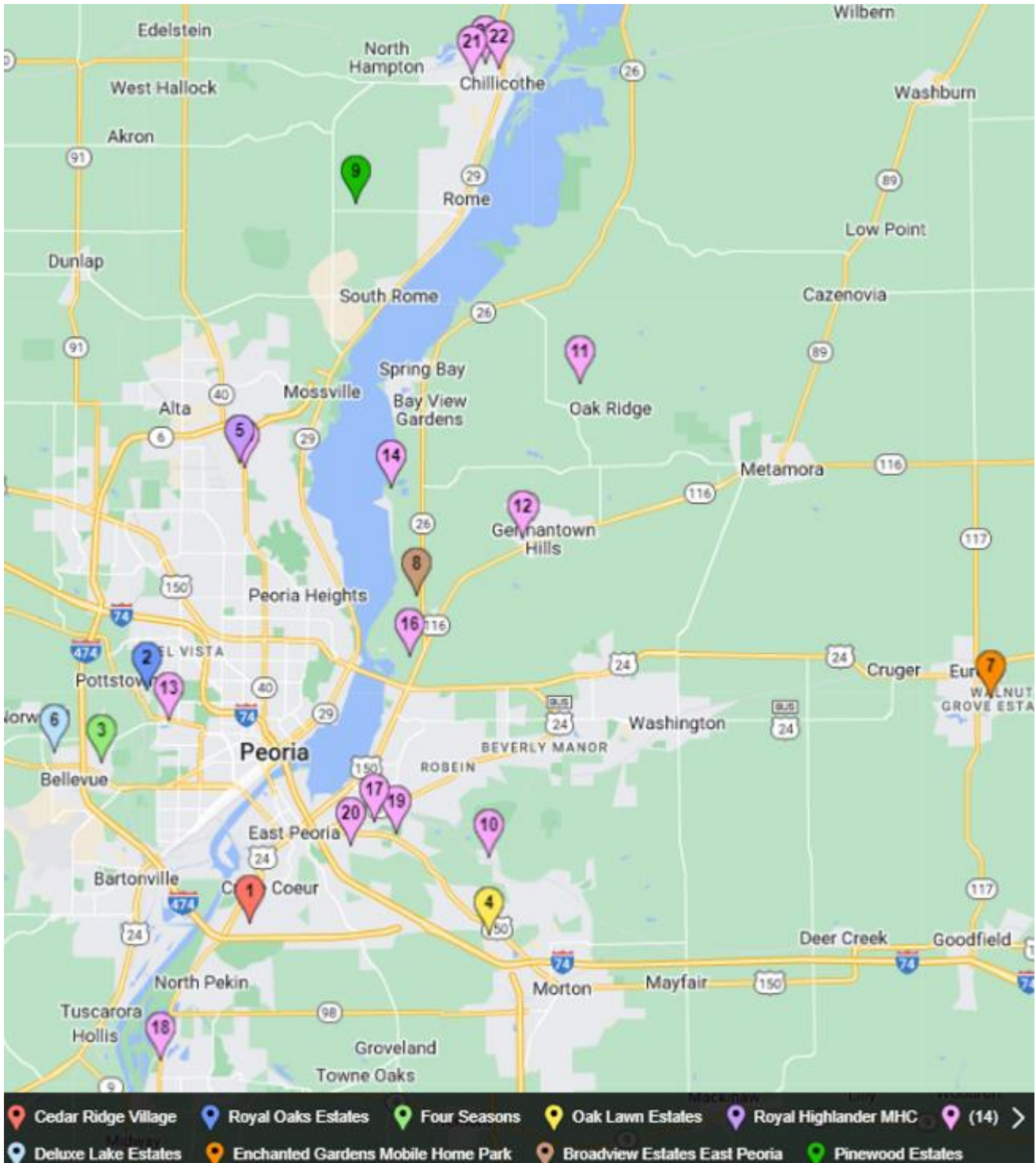


Source: BatchGEO mapping software displaying the recommended communities and community characteristics within Champaign County. Numbers correspond to the community order in Table 1. Pink represents communities ranked 10 or above.

Priority Counties for Future Expansion

As shown Figure 3, many of the MH communities in Peoria Metropolitan area are spread out along the river, with one additional cluster west of Peoria. In the figure below, the largest communities are represented by individual colors, with the remaining pink.

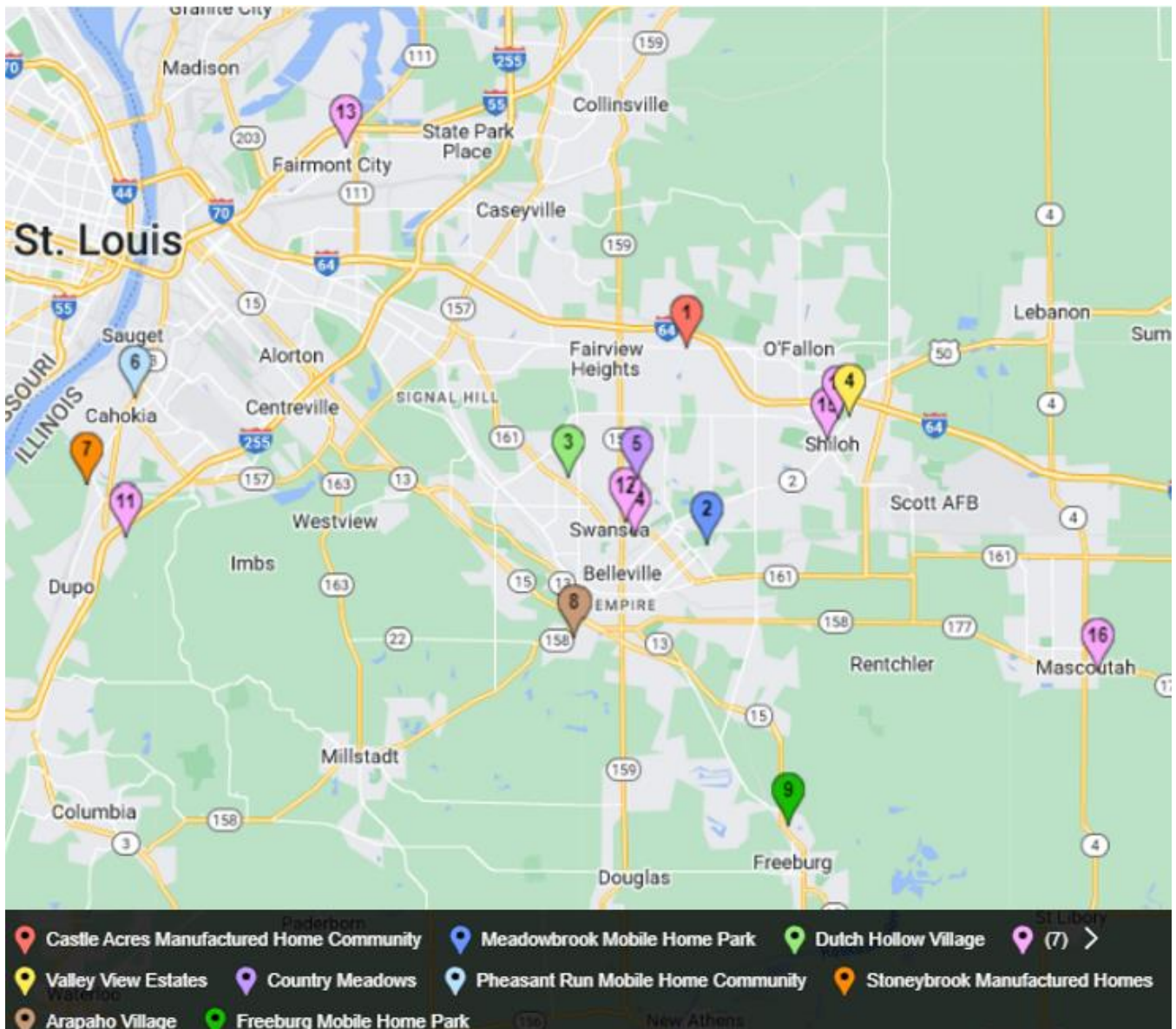
Figure 3. MH Communities in Peoria Metropolitan Area



Source: BatchGEO mapping software displaying the recommended communities and community characteristics within Peoria metropolitan area. Numbers correspond to the community order in Table 2. Pink represents communities ranked 10 or above.

As shown in Figure 4, most MH communities in St. Clair County are spread out between East St. Louis and Shiloh, with three of the five largest communities concentrated around Swansea. In the figure below, the largest communities are represented by individual colors, with the remaining pink.

Figure 4. MH Communities in St. Clair County

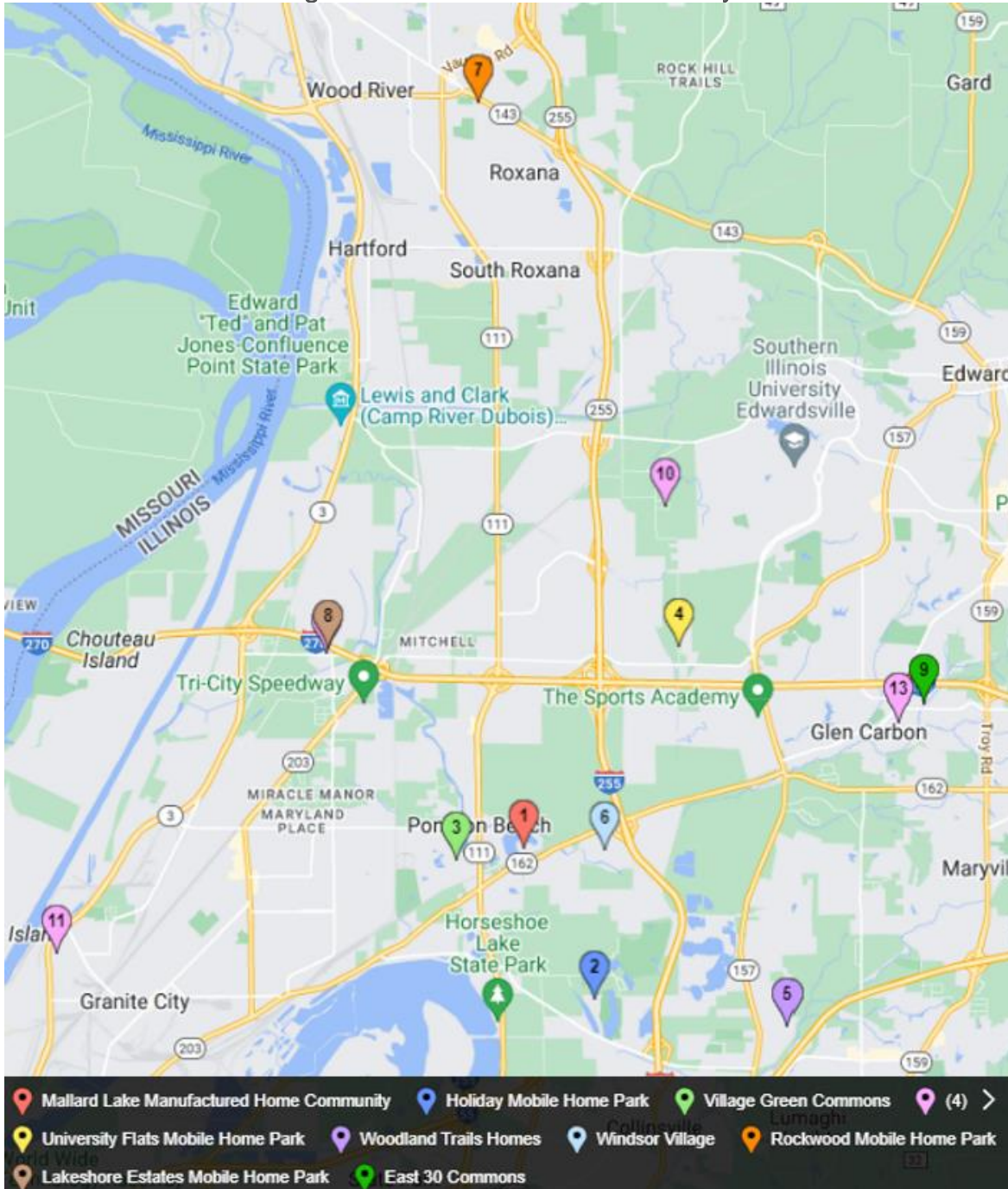


Source: BatchGEO mapping software displaying the recommended communities and community characteristics within St. Clair County. Numbers correspond to the community order in Table 2. Pink represents communities ranked 10 or above.

As shown in Figure 5, most of the MH communities in Madison County are located around the Pontoon Beach and Glen Carbon areas. There are also two relatively large communities between Pontoon Beach and

Collinsville. In the figure below, the largest communities are represented by individual colors, with the remaining pink.

Figure 5. MH Communities in Madison County



Source: BatchGEO mapping software displaying the recommended communities and community characteristics within Madison County. Numbers correspond to the community order in Table 2. Pink represents communities ranked 10 or above.