

December 14, 2025

Howell Township Planning Commission
3525 Byron Road
Howell, MI 48855

To the Howell Township Planning Commission:

The members of the Resident Research Committee have begun compiling an exhaustive collection of research, references, and ordinances from across the state and the country.

One of the first issues we have identified as needing clarification, before any real ordinance details can be hashed out, is which zoning district “data centers” or “data processing facilities” belong under. Committee member Kristin Dennison has spoken to the Planning Commission before, about why she personally felt Industrial was a much better fit than Research & Technology for the particular data center proposal the township was considering, but in our continued research we have all come to believe that there is simply no one-size-fits-all answer to this question.

The reason lies in the history of data centers, and in the Township’s own ordinances. Howell Township’s Research & Technology district was created in 1983, to encompass the airport. The ordinance book mentions, in the RT Section 5.01 “Purpose”, the district was intended for the “...development of land uses that directly relate to airport service...”. The ordinance was last updated in 2013, though it is unclear what was changed, when “data processing” was originally included, or if any other updates had occurred between ‘83 and ‘13.

The earliest data centers emerged in the 1940’s and 1950’s, initially utilized by Universities for research applications and as part of the US military’s Cold War defense projects—creating an atomic-bomb air defense network. This use subsequently inspired the first commercial application when IBM partnered with American Airlines to create airline ticketing reservation systems around 1960. We find this piece of history particularly interesting, given the purpose of our RT district being largely centered around airport functions, and “data processing” being specifically listed as part of “Scientific Research” uses.

This first “data centers” were a large rooms of computer servers within a larger office building. Like all technology, data centers’ use and function has evolved tremendously since that time. Through the ‘80’s, when Howell’s ordinance came to be, “data centers” were these types of office-scale rooms or average-sized buildings, directly serving the enterprise functions of the primary use of the facility. In the ‘90’s, the birth of the internet resulted in data centers beginning to expand into larger office buildings and dedicated facilities for web-hosting and e-commerce. In the early 2000’s, cloud computing began to revolutionize the industry, and that is when the first “hyperscale”-size data centers began to appear (note: “hyperscale” is defined as more than 5,000 servers and 10,000 square feet—which pales in comparison to what was recently proposed in Howell: an entire campus of millions of square feet of multiple hyperscale facilities). Even as recently as 2013, when the RT ordinance was last updated, data centers were still essentially ordinary office buildings with relatively average infrastructure needs; even at “hyperscale” size, 10,000 square feet is far smaller than the average Walmart, which typically spans on average 106,000 square feet. It wasn’t until 2017 when purpose-built, AI data centers began being constructed, and only as recently as 2022 when they began overtaking “regular” hyperscale centers in terms of size and power consumption.

This timeline is critical to consider, because the inclusion of “data processing” is inherently tied to the intent of the ordinance whenever the term was initially listed in the permitted uses, and how data centers looked and functioned at the time.

As mentioned in the history of data centers, they were relatively unimposing, ordinary buildings throughout most of their evolution. Where they began to diverge, is with the advent of Artificial Intelligence, and AI purpose-built facilities. Ordinary data centers house racks of CPU processors. These processors perform fundamental computing functions, and are useful for managing the many different activities you may be running on your computer simultaneously—think: listening to music while checking your email. They are also the primary processors for even more modern “hyperscale” facilities such as those used for cloud hosting and storage. These processors don’t use an exceptional amount of power—although, of course, the larger the facility, the more server racks they contain, and the more power the facility as a whole requires. Typically, racks of CPU processors in these facilities only consume 5-10kW per rack.

Enter Artificial Intelligence. These purpose-built data centers are newcomers to the scene, and are why we seem to only recently be hearing about problems with data centers, when they have existed for over 70 years without much noise (literally). AI data centers house racks of GPU processors, which are significantly different from CPU processors. Where CPU’s have a few powerful cores, GPUs have thousands of less-powerful ones. These processors excel at graphics for videos and gaming, by being able to perform millions of similar mathematical calculations—the same type of calculations that are required for artificial intelligence and machine learning. One analogy we have come across is that CPU is like a Swiss Army knife, and GPU is a specialized tool for a specific job, such as a chainsaw. That is not the only difference, however. GPU processors require significantly more power to run; a single rack may consume anywhere from 50 to as much as 500kW. Recall that CPU racks range from 5-10kW.

There is even more nuance to be considered with regard to the differences between the types of data centers that have been the focus of our recent attention, and other related uses such as cryptocurrency mining facilities. Crypto mining is more akin to AI data processing in terms of power consumption per square foot. A single Bitcoin transaction consumes the same amount of power that a single household would consume over approximately 40 to 50 days. Like AI, Cryptocurrency mining is most efficiently done using specialized processors. GPU processors are, once again, better suited to this task than CPU processors, but an even more specialized processor called ASIC is beginning to take precedence in crypto mining operations due to their increased efficiency. In terms of power consumption, a single CPU processor uses 35 to 125 watts. A single GPU uses around 400 watts, and a single ASIC processor uses approximately 3,000 watts—or more. While crypto mining facilities may serve similar functions to data processing, and often are found in much smaller facilities than hyperscale data centers, they may have impacts on utilities and noise that rival the AI data centers, and need to be carefully zoned accordingly. A school in Michigan has experienced this problem, and has filed a lawsuit against a cryptocurrency mining facility across the street, whose incessant noise is proving to be disruptive and harmful to their educational environment.

This enormous difference in power consumption is at the root of the fundamental change we are seeing in the impacts of data centers. AI campuses—including the one recently proposed here—consist of multiple hyperscale facilities, which collectively consume more power than entire cities. All that computing power also generates a ton of heat, which is why the new-wave AI data centers consume such alarming quantities of water for cooling systems. The noise complaints often tied to data centers and crypto mining facilities is directly related to the sound of the cooling systems. The number of diesel generators required to provide backup power also grow with the power demand. Once you understand the fundamental differences in the type of computing done at different types of data centers, you begin to understand there is a wide range of potential impacts to communities, and a wide range of land-use and zoning implications.

If you recall, the developers proposed a definition for “data processing”, and it included an exhaustive list of industrial-scale features. As Kristin mentioned at the last Planning Commission meeting, it seems clear by comparing the uses in their own definition with the uses listed in Howell’s Industrial ordinances, that a Special Use under Industrial Zoning is a more appropriate designation for a facility such as a hyperscale AI data center campus. Still, given the fact that not all data centers are dedicated to AI processors, it is worth considering whether there *is* room in the ordinances and the Township for data centers of a different nature —the “old-school”, CPU-based, office-scale buildings that we have lived amongst without noticing for over 20 years now—within other districts such as Industrial Flex; or perhaps as an ancillary or accessory use in RT, where the idea of “data centers” first began as a closet of servers dedicated to running an airline ticketing program, directly serving the enterprise functions of the primary use facility. In fact, *that* seems to be the context in which “data processing” is listed among “Scientific Research” uses. This is one aspect the Resident Research Committee intends to continue studying, to ensure Howell responsibly incorporates and addresses the variety of types of data centers that exist.

We would like to reiterate one last time, that cryptocurrency mining, and hyperscale, AI data centers—much less entire *campuses* of them spanning hundreds of acres— simply **did not exist** when Howell’s RT ordinance was written and when “data processing” was included in the permitted uses list. The uses listed in RT are all clearly office-scale facilities, and proceeding to allow data centers of *any* variety in that district without careful consideration of the history and context of data centers and the ordinance would be premature.

We look forward to presenting more of our research and ordinance findings to you at upcoming meetings. We have already begun to identify other areas in the ordinance book that should be reviewed and potentially revised, to further ensure cohesiveness in ordinances and land uses. There is a lot of ground to cover, and Howell has an opportunity to write some of the most thoughtful and comprehensive ordinances in the state. Other towns statewide are watching, and the ordinances this community crafts together—with citizens and township officials working hand-in-hand—can serve as a model of what careful planning and zoning is all about: ensuring harmonious land uses for the development of a strong, healthy community. We are eager to see the ordinances take shape, but are committed to helping ensure they are crafted thoughtfully, carefully, and without rush.

Sincerely,
The Howell Township Resident Research Committee
Jodi Fulton, Co-Chair
Cory Alchin, Co-Chair
Kristin Dennison, Secretary
Dan Bonello, Treasurer

Sources:

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