

## Course Project: GIS and Strategic Dispatch

Our founder, Donald Molnar, started in the industry over 30 years ago. He later formed a partnership with his employer and then became sole proprietor with his partner's retirement. Don operated alone for a number of years. In October of 2000, his two sons joined the company, reorganized as a Subchapter S Corporation, and renamed the company to M3 HVAC, which is currently doing business as M3 Mechanical.

Don has since passed on and M3 now operates with 35 employees as a full service Mechanical (C20) and Electrical (C10) contractor providing Service, Preventative Maintenance, Retrofit/Replacement, Construction (ground-up & TI), Energy Management, and Design-Build services. The company is centrally located in the city of Orange providing service and maintenance coverage from Ventura to the Mexican Border and east to Indio (Interstate 5, 10, and 15 corridors). Their retrofit and construction projects extend further to include Northern California. Despite having no website, no advertising, no marketing, no sales personnel, or even Yellow Page listing, M3 has enjoyed healthy growth in every year, except 2009, through only word-of-mouth and referral.

The commercial mechanical and electrical contracting field is highly competitive with relatively low barriers to entry and a particularly high failure rate. Viewing our industry generally and our company specifically through Harvard professor, Michael E. Porter's model of five forces to our company yield daunting results:

- **Supplier Power** is strong. Our single largest material cost is for large air conditioning systems. The sources for these systems are limited to two main players and only a handful of smaller competitors. Contractor's choices are

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narrow and the suppliers' ability to drive up prices is strong. Yet the price elasticity for contractors is not as generous.

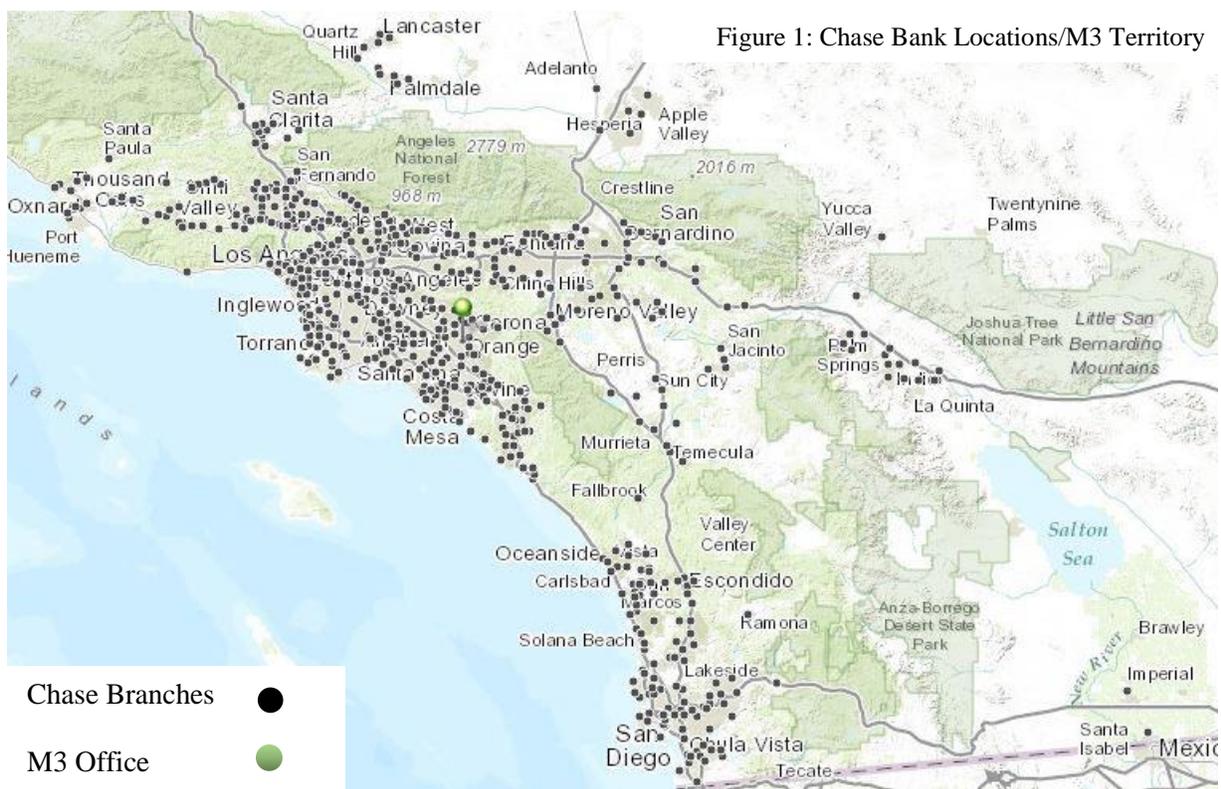
- **Buyer Power** is strong. One of our primary markets is large property managers who pay for a higher quality product and service. Market pricing is tight because of so few large buyers and so many competitors,
- **Competitive Rivalry** is intense. The number of competitors in our industry is high. Only the good ones rise to our market level but it is more crowded by the day. If one were to raise prices, one runs the risk that someone else will come in, undercut our prices, and hard-fought business will be lost.
- **Threat of Substitution** is moderate. On one hand, every business has an HVAC system. On the other hand, there are advances in technology that could pose a threat if we do not stay on top of market while we train our staff to adopt these new technologies.
- **Threat of New Entry** is high. Take a test, buy a ladder, buy a truck, and you are practically in business. Ninety-five percent of the companies in our industry have less than five employees, which puts M3 in the top 5% of all companies in terms of size. Establishing an HVAC company is commonplace but raising to our level of quality and sophistication is quite a bit more challenging. Nevertheless, we are tested daily.

Porter's Five Forces noted above point to an industry in which differentiation is difficult and the opportunity for high profitability is fleeting. This highlights an imperative that M3 continue to serve our customers and execute in a way that separates us from the pack.

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One of the key strengths of M3 has been our ability to be nimble and respond quickly to our customer's needs. However, in a recent development, the company's largest customer, Chase Bank, increased their contract with M3, which took the service area from 175 branches to 705 branches. The company has had steady growth with Chase for the last 10 years but this new contract represents a significant increase in business. The 3-year contract to perform "reactive services" (service calls) to all 705 branches in Southern California is just the beginning. Chase's medium-term goal is to have M3 take on all of California and Arizona over the next couple of years. This new contract is an opportunity to be wildly successful or a wild failure.

Figure 1 shows the new territory and location of the branches.



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The mixed blessing of new business has taxed our ability to respond in a way that earned M3 the business to begin with and therefore the main differentiator between our competitors and us reduced. In short, our performance has gone from bar raising excellence to just about average. Regardless of how well intentioned we were, it was time M3 be more strategic with our approach to serving Chase Bank and our other highly valued customers.

Although M3 has 35 employees, only 17 are service technicians that can be deployed to the make repairs on the Chase account. That number of deployable technicians drop as the required expertise level increases dictated by the nature of the service call. These technicians are typically dispatched from their residence right to the service call. The dispatchers are good at what they do but up until this point, it has been more art than science as dispatching has been somewhat as hoc. The shortcomings came to light as the volume increased and our mostly manual systems became stressed. A review of our performance showed equally talented technicians passing each other on the highway going opposite directions. Consequently, man-hours and drive-times were increasing while productivity was decreasing as a result of fatigue from longer drive times. It became apparent that M3 needed to be more intentional in strategizing how and whom we dispatched. M3 also needed to evaluate “where” we hired technicians with the intention of reducing the windshield time on the road and quicker response times for our customers.

Figure 2 shows our technicians’ residence locations relative to the Chase branches. The technicians tend to be clustered in along the 57 freeway and out towards the Inland Empire along the 10 and 210 freeways. This has served M3 well up until this new Chase contract was implemented.

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Figure 2: Technician Residence Relative to Chase Branches

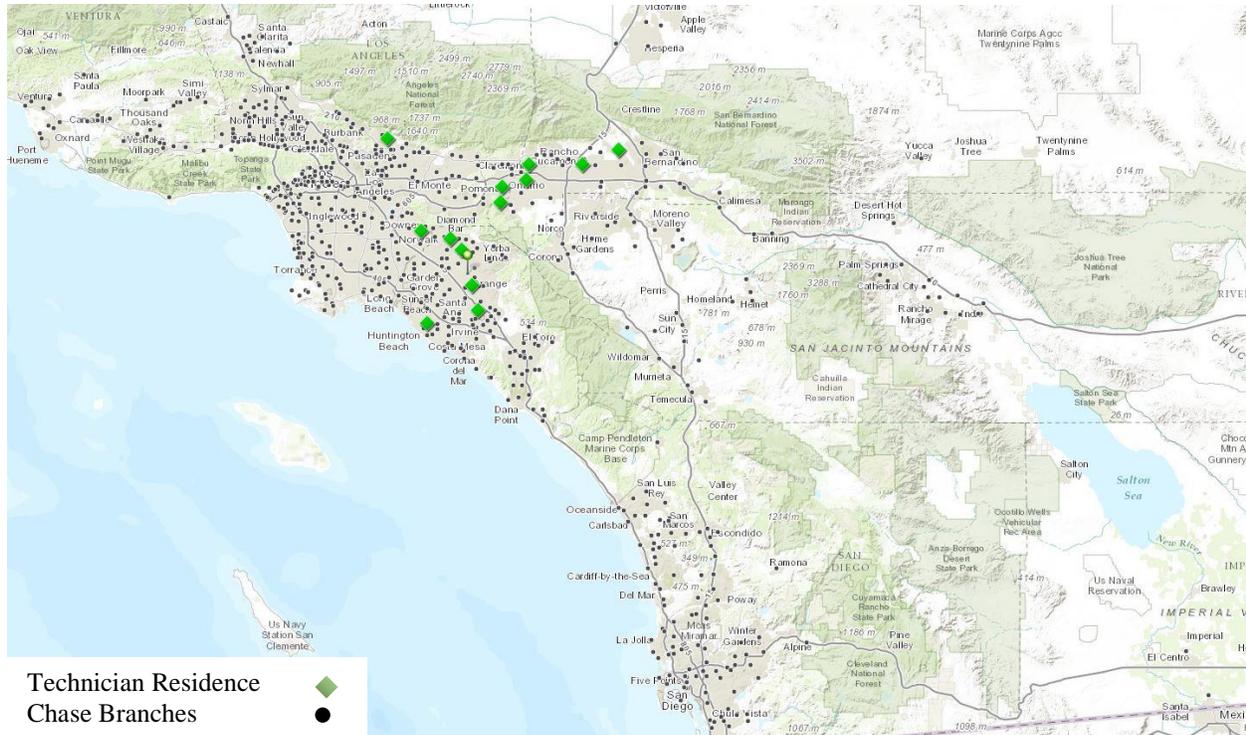
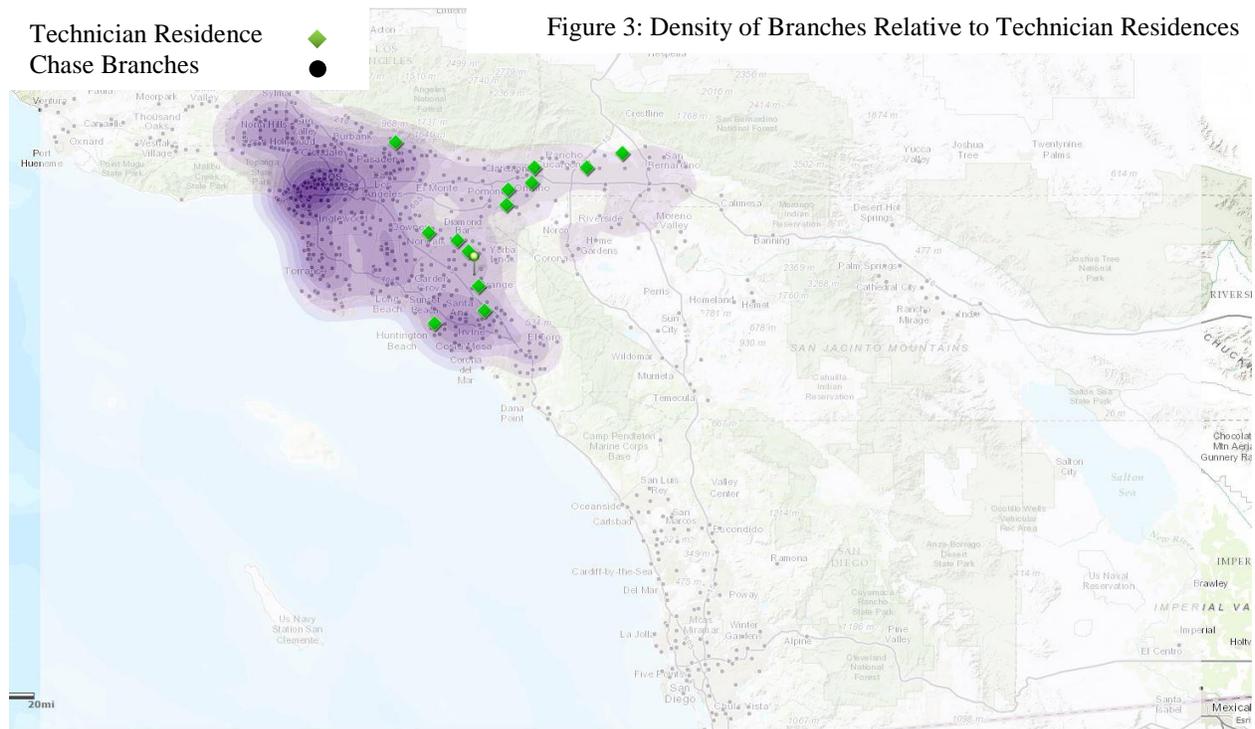


Figure 3 shows the where the concentration of Chase branches are located relative to our technicians residences. West Los Angeles along the Wilshire corridor has the highest concentration and is a good distance from our nearest technician. A high number of branches also are located in the valley along Ventura Blvd.

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It was not until the graph in Figure 3 was put together did we realize how much of a disadvantage we were putting ourselves. This visualization became the catalyst for M3 to rethink our entire dispatch procedures starting with recruiting.

Dispatching from a technicians residence as opposed to coming into the shop every morning and then heading out to a call is supposed to be a more efficient method of quickly getting technicians to their target calls. However, if the technicians are not close in proximity of the call, then much of those efficiencies will be lost.

M3 has a commitment with our customers to be on site within 2-hours for any emergency. Therefore, we relooked at our service technicians' home addresses and plotted a 10-mile radius. The thought is that traffic in southern California is bad but a technician should be able to travel 10-miles in less than 2-hours. Figure 4 shows this coverage area.

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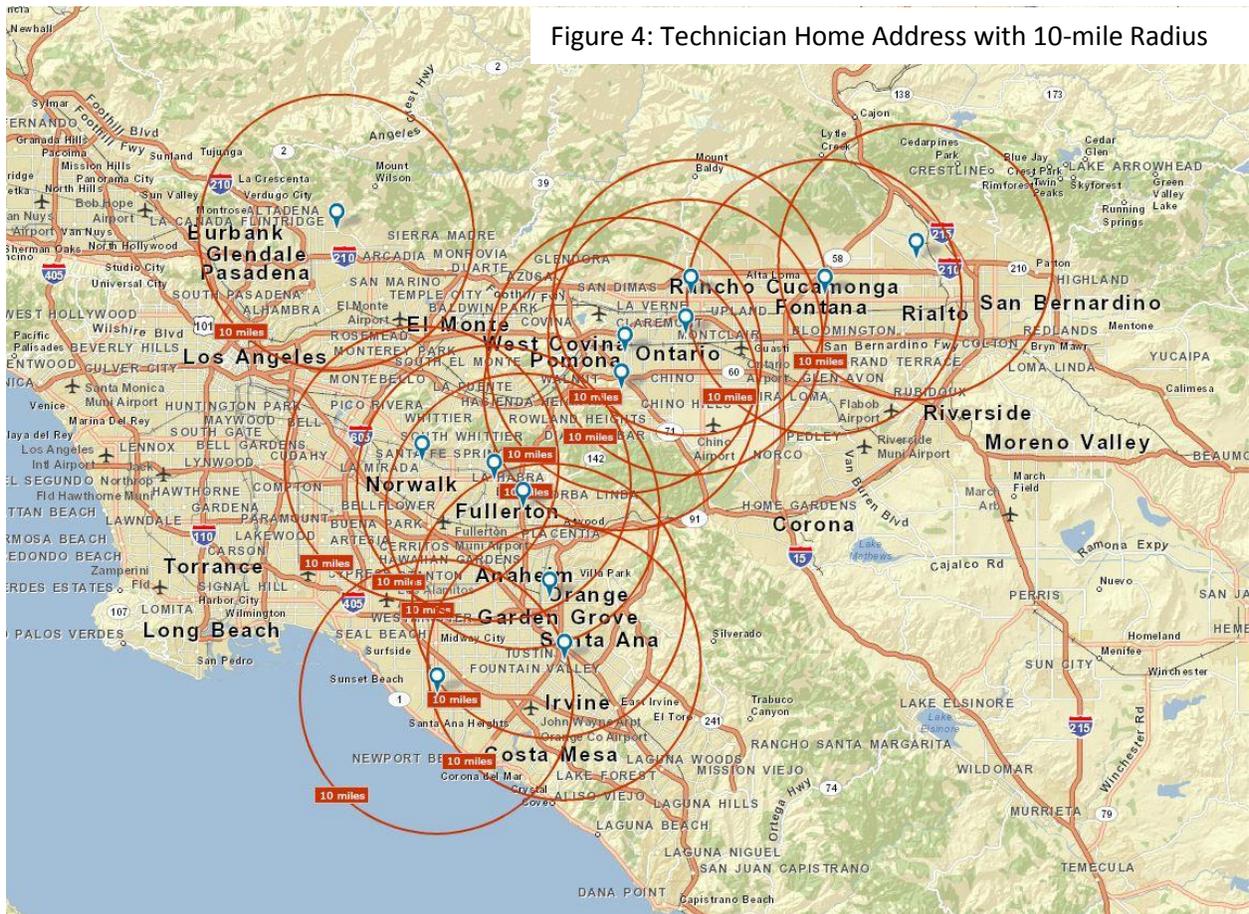
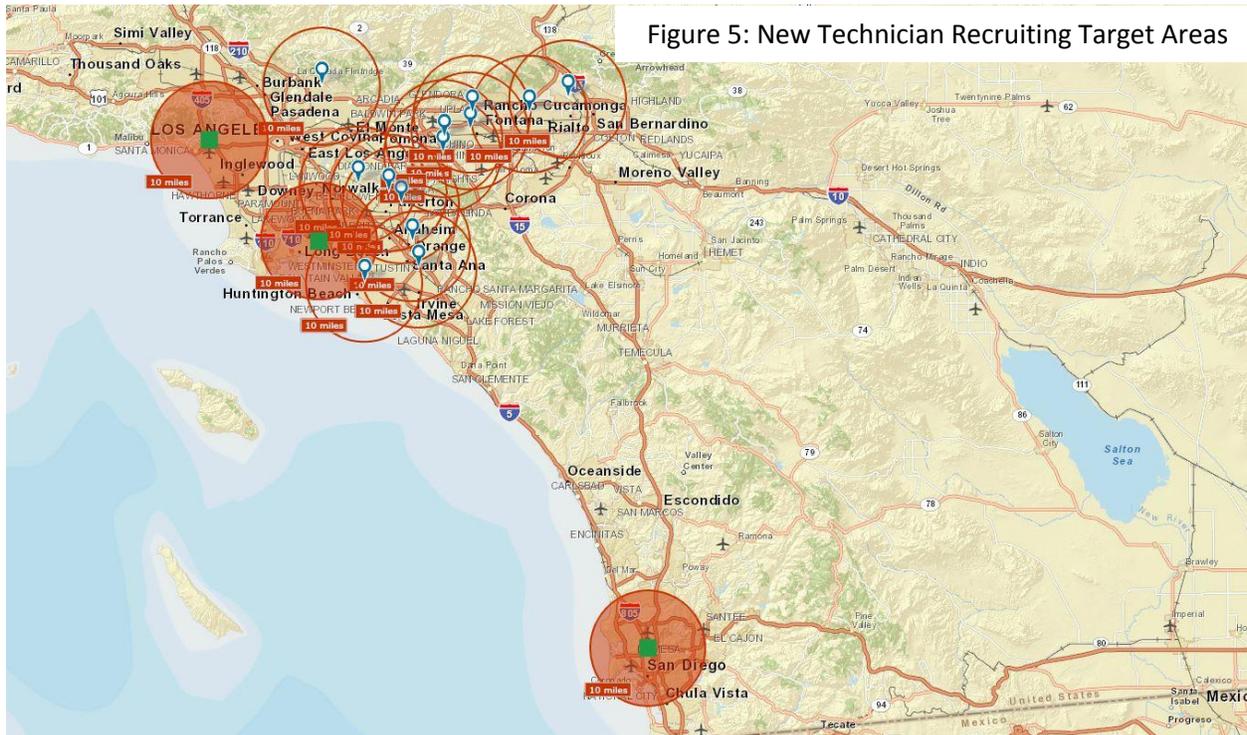


Figure 4 highlights major gaps in our coverage areas. M3 has Orange County and North Inland Empire covered fairly well. East Los Angeles also has some coverage but the highly concentrated areas of west Los Angeles, north Los Angeles (the Valley), and all of San Diego have no coverage at all. No amount of strategic dispatching could overcome the absence of technicians living in close proximity to our customer base.

It became apparent that our recruiting efforts needed to be narrowly focused to the specific areas where we had the highest need and smallest footprint. Figure 5 represents the three priority target areas for our recruiting efforts.

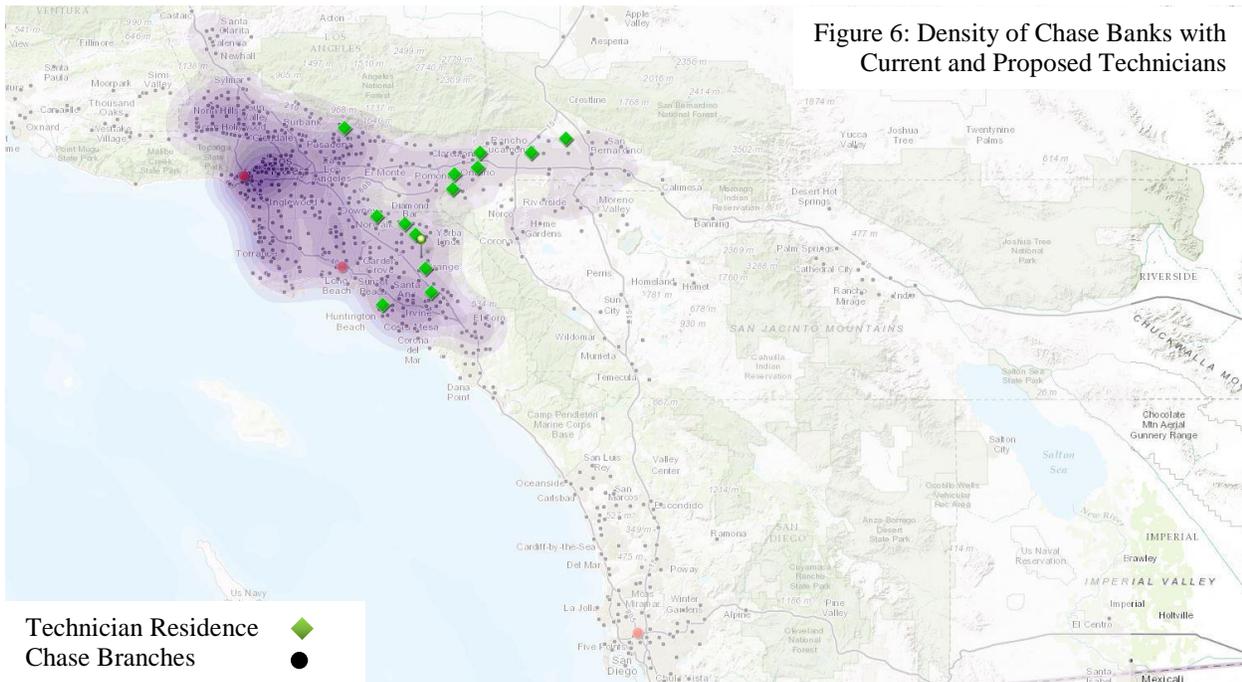
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As shown in Figure 5, M3 can dramatically improve their service response by having a qualified service technician located in closer proximity to M3's customer concentrations.

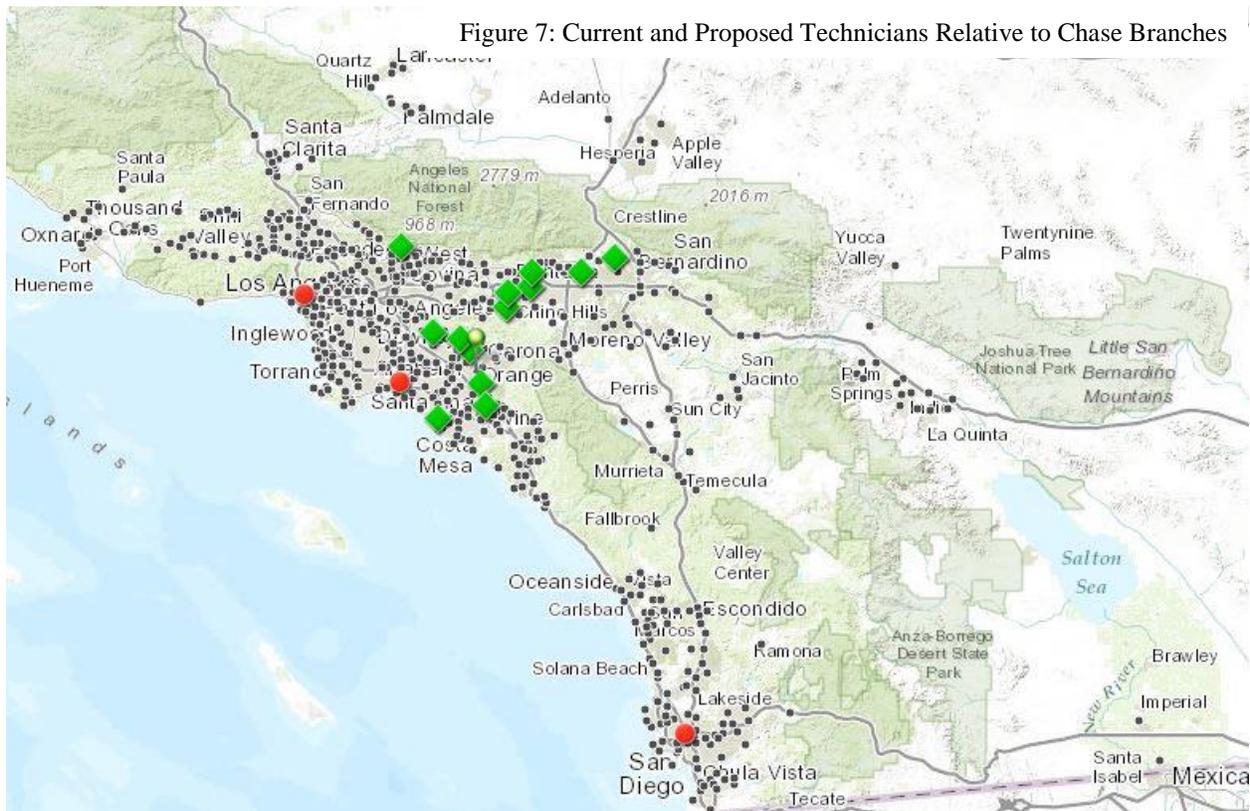
Figure 6 reflects the previous density map of the Chase Banks with the new proposed technicians inserted. The challenge will be in finding technicians in or around the areas identified.

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Finally, Figure 7 shows the location of current technicians and proposed future technicians relative to all 705 southern California branches.

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This project revealed many shortcomings in the location of M3's technicians and the process by which we dispatch. The lowest hanging fruit is to recruit in the areas where our technicians are needed most. This alone will yield better response times and reduce drive times of all service technicians. However, the biggest benefit that is far less quantifiable is the quality of life increase our current technicians will experience by not having to experience the daily grind home from Los Angeles.

While M3 begins its targeted recruiting process, we will also look at incorporating more GIS software to provide greater real-time intelligence and automate decision-making concerning strategic dispatch. We can overcome some of the dispatch challenges with brute force and throw more costly employees at the problem. Now that we know what is possible, we will be going an

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alternative path of working with GIS to be smarter, not working harder, and with a lot less overhead.