



Solid Waste Collection: Managing the challenges and optimizing the opportunities

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Providing collection services has always had its challenges. Fuel volatility and customer behavior issues are things we've all gotten used to, but add to that pandemic impacts, Certified Driver License (CDL) driver shortages, supply chain issues and historic levels of inflation and we have a perfect storm of challenges facing municipal and private sector collection systems alike. The City of Avondale, Arizona Public Works Solid Waste Division provides curbside collection to residential customers for garbage, recycling, and large brush and bulk items. Add to that

perfect storm of challenges the rapid growth Avondale has been experiencing in recent years and you know it's time for an operational review of the municipal collection system.

Rapid Growth

The population of Avondale has been steadily increasing over the past decade, expanding the collection needs of the community. According to Census data, in 2021, the population of Avondale was 90,755, a 1.4% increase from the previous year, though from 2019 to 2020 the growth rate was over 6%. Housing permits have also grown exponentially in recent years to keep pace

with population growth, estimated to continue to grow at about 2.5%, which is leveling off from higher rates of housing permit growth.

Like in other communities, as new houses and neighborhoods are built, collection routes become unbalanced. By July 2022, when the City retained NewGen Strategies and Solutions, LLC to assist with a Solid Waste Operations Assessment, the collection zones (days of the week collections are provided) and individual routes (each truck and driver on each route each day) had become unbalanced to a point where some drivers were finishing their days much later than others and some days were taking as much as two hours longer than other days.

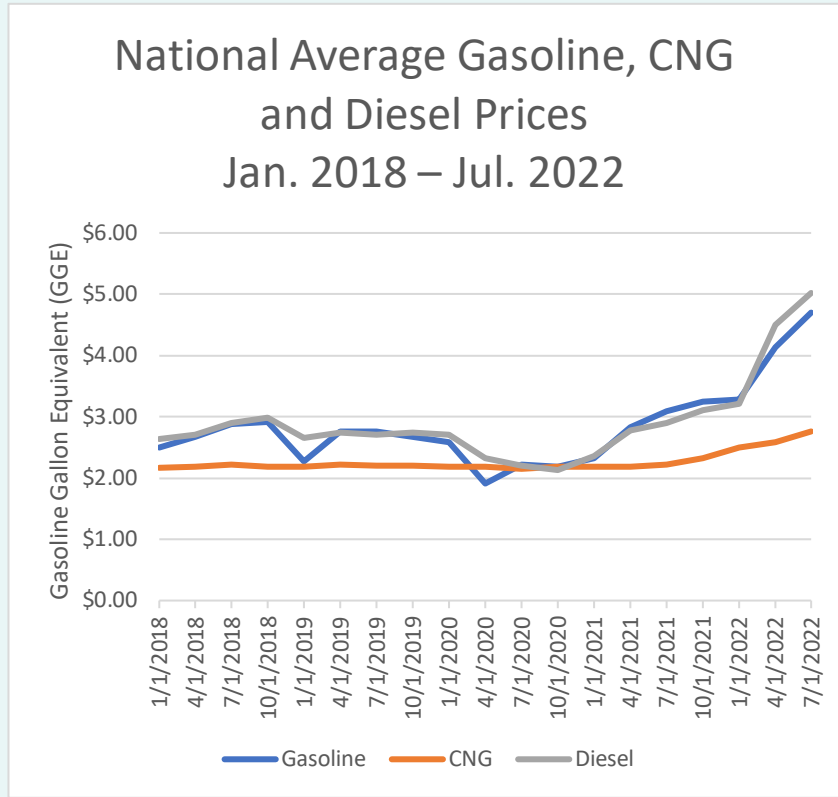
CDL Driver Shortages

Nationally, there is an ongoing CDL driver shortage with extremely high demand for the specialized skills. Municipalities that provide collection services are competing with private haulers as well as several other industries that require CDL drivers. Avondale experiences roughly a 10% to 20% vacancy rate at any given time for CDL drivers. At one point, as many as 15 people had applied for the position but only one showed up for the interview.

Supply Chain and Inflation

Prior to the pandemic, lead time between ordering equipment and receiving equipment was three to six months. Since late 2020, lead time for vehicles has grown to as much as eighteen months or longer, creating a new challenge for vehicle replacement schedules. Parts for vehicles have also seen a slowdown in recent years making it more challenging to keep vehicles in the fleet properly maintained. Compounding the supply chain issues for vehicles and parts is inflation, increasing the cost of the components needed for vehicles.

For Avondale, a city that often experiences temperatures over 100 degrees, a six-year replacement schedule is necessary because vehicle parts, like hoses, wear out more rapidly in the excessive heat. Avondale has experienced an



Average Fuel Prices - Source: <https://afdc.energy.gov/fuels/prices.html>

increase of roughly 15% in the cost for equipment since 2020. The city's price for diesel fuel has also increased 70% since 2020. Even Compressed Natural Gas (CNG), historically less volatile in price than gasoline or diesel, has seen price increases over the past year.

The Operations Assessment

Avondale currently provides once per week garbage collection in carts, conducted Mondays, Tuesdays, and Wednesdays. Recycling collection is also provided once per week in carts and is conducted Thursdays and Fridays. Bulk collection is provided to residents once per month and is conducted Monday through Friday.

The operations assessment in Avondale started with spending a week in the field following routes and interviewing personnel. Route observations documented quantifiable metrics like time, miles, and tons, but also documented less quantifiable issues like customer behavior that have to be observed to fully understand. One key issue that became evident on day one of the

observations is the misuse of the bulk collection service. Avondale's approach to collecting bulk, offered once per month, uses a tractor that loads the bulk items into rear-loaders.

Not only does Avondale have a 30% set-out rate for bulk (higher than typical), but some residents also misuse the bulk service for extra garbage or recyclables that should be in a cart instead.

The operations assessment included modeling the current collection system and alternatives to allow for side-by-side comparisons of route metrics, labor, operations, and capital for garbage, recycling, and bulk collection services. The model also projects in what years additional routes would be needed under each of the six alternatives to accommodate growth.

The operations assessment considered six different alternatives for garbage and recycling collection including rebalancing existing routes and dedicating routes throughout the week rather than splitting the week between services, with a variety of workday

schedules including five days per week eight hours per day, four days per week ten hours per day, and five days per week ten hours per day on a rotating basis where each driver would work four days per week and once per month would have a four-day weekend. For bulk collection, six different alternatives were also evaluated including the same workweek schedules as were considered for garbage and recycling (5/8's, 4/10's, 5/10's) as well as reducing frequency of service to once per quarter.

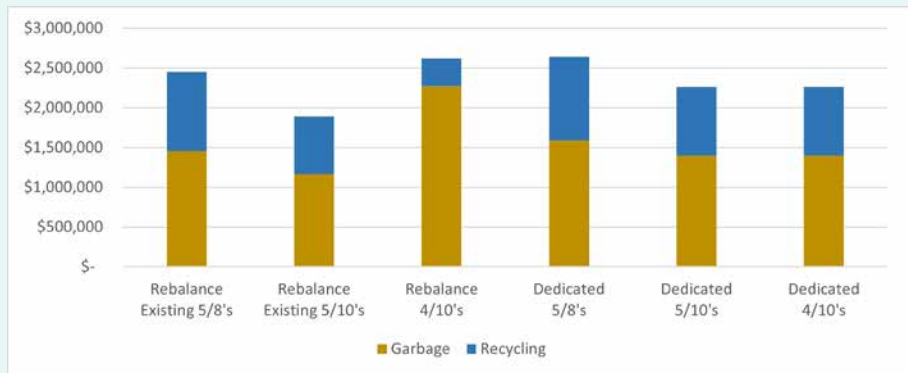
The Opportunities

From an operational standpoint, the most cost-effective approach to collecting garbage and recyclables in Avondale is to rebalance the existing routes and implement a five days per week ten hours per day workweek with a rotating schedule for employees who would work four days per week ten hours per day and once per month would have a four-day weekend. This approach minimizes the need to change collection days for customers and reduces the total number of vehicles and drivers necessary to provide the services, easing the impact of the CDL driver shortage and hiring challenges.

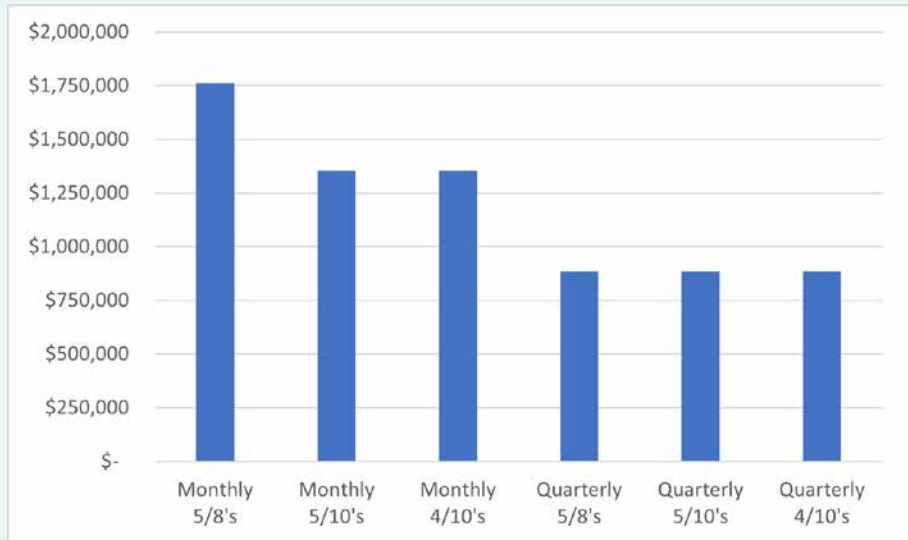
For bulk collection services, moving to quarterly service would save on operating costs and moving to the same workweek schedule of five days per week ten hours per day as garbage and recycling, with a rotating schedule for employees, would provide consistency across the Solid Waste Division. Clarifying and enforcing the rules for bulk collection would also allow for more efficiency and a cleaner appearance on city streets following bulk collection.

What's Next for Avondale

Based on the findings of the operations assessment, the Public Works Solid Waste Division will be recommending the changes to services including moving to a five day ten hours per day rotating schedule for collection employees and enforcing proper set-outs for bulk collection service. This will involve updating the City Manager's Office and then City Council for any additional feedback and questions. Additionally,



Garbage and Recycling Labor, Operating and Capital Costs



Bulk Labor, Operating, and Capital Costs

the City's Sanitation Ordinance will be updated to reflect the changes and update enforcement language. Lastly, Avondale will conduct a one-and-a-half month marketing campaign on all the changes as the City has not

experienced changes to the Solid Waste services in two decades. Stay tuned!

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