

Solving the Affordable Housing Conundrum

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Among the seemingly intractable problems faced by our society, the scarcity of affordable housing ranks right up there. High property values and inflated construction costs in our more densely populated urban areas are making our larger cities livable only for the upwardly mobile and highly educated professional elite. Dare to suggest that density be increased in neighborhoods currently comprised of single family residences (60% of Seattle for example) and you will be skewered and roasted over a BBQ on a warm summer night – your political future no more promising than charcoal. This leaves most of our larger cities stuck in the “subsidy” paradigm where only developer mandates, tax credits or direct taxpayer subsidies can be used to create new affordable housing. None of these remedies even make a dent in the problem and the cost is huge.

Visit what I’ll call the “Rural-Burbs” and another set of dynamics prevail. Preserving the rural character of communities such as Black Diamond, Washington where I live is paramount to our community. Fluvanna County Virginia, located between urban Richmond and Charlottesville, is another good Rural-Burb example. It has as its vision “being the most livable community” in the country. Yet faced with development pressures driven by its urban area neighbors, concerns over losing the county’s rural character predominate. Implicit in all of this is preservation of land resources which can be fundamentally inconsistent with affordable housing. Fluvanna County too faces the same dilemma of a lack of affordable housing.

So what has all of this to do with water and sewer infrastructure? A lot actually - at least in the Rural-Burbs. Zoning and master planning for water and sewer infrastructure typically result in defining those areas to be served by central water and sewer infrastructure and those areas where the responsibility is left to builders/homeowners to provide for their own water and sewer infrastructure – be it well or septic.

What is a common characteristic of many Rural-Burb communities that end up being “economically poor” compared to the more affluent neighborhoods? If you guessed those areas that “don’t perc”, you got it right. Nanjemoy in southern Charles County Maryland and Jerusalem in Charles City County Virginia are classic cases of poor Rural-Burb communities that “don’t perc”. Ironically, targeting growth in Nanjemoy and Charles City County are highly desirable but not now possible given current water and sewer infrastructure constraints. Extending central sewer is just not feasible, septic doesn’t work and advanced onsite treatment systems located at each home are not affordable or sustainable.

In Fluvanna County the contrasts are not quite so stark as noted above, but in areas designated by Fluvanna County zoning as “Rural Preservation”, development is still possible at densities of 1 home to 2 acres. How do you provide affordable housing when it takes two acres of land that typically doesn’t perc to make it happen? Fluvanna

County is just as stymied as Seattle. At 1 home to 2 acres on septic, we also end up with development sprawl, randomly situated based only on soil characteristics, that does little to preserve the rural character we all desire. So what is the answer? Decentralized water and sewer infrastructure, managed by private utilities where public utilities fail to serve, offers perhaps the most hopeful of answers to our affordable housing conundrum.

To illustrate, let's take an example in southern New Jersey. Gloucester County has been compelled by the state to provide affordable housing. It hasn't happened yet largely due to the lack of water and sewer infrastructure the county is willing to provide. Additional discharge to the Delaware River is not possible given current nutrient discharge limits in the river. So what is the answer?

Following is a preliminary site plan for a master planned community zoned for up to 2,500 residential units on 600 acres, totally surrounded by farmland. A sizable piece of the development is reserved for affordable housing. At planned development densities, affordable housing can truly be affordable. Wastewater treatment to advanced wastewater reclamation and reuse standards for wetlands remediation, toilet reuse and groundwater recharge offer a truly unique economic solution.

*Master Planned Community, Gloucester County New Jersey
Wastewater Reclamation and Reuse*



Charles City County southeast of Richmond Virginia offers another good example of how decentralized water and sewer infrastructure is supporting affordable housing. Because of very dense soils with shrink/swell clay in many areas, conventional septic systems were creating a health risk. Providing advanced treatment with home onsite systems is just not affordable – installation costs of \$20,000 to \$25,000 are too high and even if grant subsidized, the ongoing operating costs are simply not affordable to low income residents. As a result, there are a surprising number of residences in Charles City County still without indoor plumbing. Further development is off the table.

A promising solution in Charles City County is the clustering of residences into several decentralized community sewer systems. Quality sewer service to these residences is now being provided by the county at an affordable cost. Anish Jantrania participated in the development of this project while working at the Virginia Department of Health. The following picture shows before and after affordable housing now made possible by decentralized sewer. The house on the left did not have indoor plumbing and was replaced by the house on the right that now has indoor plumbing. A grinder pump (shown in the front) and small diameter pressure sewer collects and transports wastewater from this and several other homes in the community to a decentralized treatment plant. Highly treated effluent from the plant is then dispersed through a subsurface drip system located in the wooded area just behind this house.

Decentralized wastewater infrastructure allows homeowners in Charles City County, Virginia to move into newly build affordable housing with indoor plumbing.



For more affluent Rural-Burbs such as Fluvanna County, providing decentralized water and sewer service may be even more important to balancing the desire for land preservation with development density. Current zoning ordinances in the county promote clustering as an important land preservation strategy. Decentralized water and sewer infrastructure not only supports these land preservation goals but also provides the ability to meet advanced treatment standards needed to protect the environment and do so with a professional and sustainable management infrastructure (see previous paper “Private Utilities – Filling the Void”).

The following site plan illustrates a currently approved subdivision in Fluvanna County using clustering and decentralized sewer. A total of 37 lots are placed on 92 acres with 75% green space permanently preserved. Water and sewer infrastructure development costs and ongoing operating costs are less than that for either central sewer or the use of advanced home onsite systems.

*Rivanna Crossing Subdivision, Fluvanna County Virginia
Cluster Development with Decentralized Sewer Infrastructure
Designed, Built and Managed by NCS Wastewater Solutions - Private Utility*



So how does this type of development help us add to the inventory of affordable housing in the \$150,000 to \$175,000 per home price range? As clustering ordinances in the county are currently written, they do not in the purest sense. With clustering, the above subdivision development costs per lot are certainly less than otherwise but homes are still priced closer to \$300,000.

To provide additional affordable housing, what if county zoning ordinances were rewritten to provide developers and builders an incentive to add affordable housing to each clustered subdivision development? For example, a development density of 37 lots priced in the \$300,000 per home range is economic and fully recovers the developer's investment in the total land area, while still preserving many acres of green space. What if, say, just 2.5 acres of this green space, already fully paid for, could be devoted to the development of 5 additional lots of affordable housing? With no investment in land required, building affordable housing in the \$150,000 to \$175,000 per home price range may truly be within reach and water and sewer infrastructure are already provided. **No county subsidies are required!**

No doubt, there are other more creative ideas for adding to the inventory of affordable housing balanced with also meeting environmental and land preservation goals. In many areas, clustering with decentralized water and sewer infrastructure offers an important tool to achieving these goals.

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NCS Wastewater Solutions, a Division of Northwest Cascade Inc., Puyallup Washington designs, builds and operates decentralized water and wastewater infrastructure for commercial and residential developments across the country. For additional information, please visit our website at www.ncswastewater.com.