

The Oaks Net Zero Neighborhood

Q&A from Priority Depositor Questions

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PROJECT TIMELINE & GENERAL DESCRIPTION

Q: Projected timeline of the project?

A: We are working through the steps with the Architects and County. Our goal is to break ground before the end of 2017, but that is an estimate. For the Phase 1 project, we shared three-month windows as timeframes, so October-December is the window for construction start. We are looking at about a 14 month construction period, with residents moving into their homes winter of 2018/spring 2019.

Q: Will we receive updates on time frame?

A: Yes, those communications will come from Rose Villa.

Q: Since I was unable to attend the other meetings, I would like to hear a description of the homes, such as setting, views, how it feels inside, etc.

A: The basic makeup for each building is a triplex design with two units on the ground level and one unit on the second floor (accessed by a private stairway and residential elevator). The neighborhood will be made up of four tri-plex buildings which face a central garden courtyard.

The 4 buildings currently on the site will be removed. There are 2 heritage Oregon white oaks on the property that we are working to preserve. That's

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why the upper floorplans are named “Canopy”. You will be up in the canopy of the trees.

The ground level floorplans are called “Meadow” and “Savannah”. All floorplans have 2 beds and 2 baths. Green Hammer and Rose Villa are focusing on energy efficiency, along with health and livability. We utilize a systematic approach to vetting the building materials for the project. We’re looking to be price competitive with all of the other projects in development at Rose Villa, so we’re trying to find options within a price range that would work for us while doing the best we can to eliminate toxins in the building materials.

The Canopy and Savannah units have vaulted ceilings in the living, kitchen, and dining spaces, with flat ceilings in the bedrooms and bathrooms. In the two-story portion of the tri-plexes, the Canopy units are stacked above the Savannah units. The Savannah units have 9 ft. flat ceilings. All units will have some lowered ceiling areas to accommodate routing of the mechanical systems. The floor system between units is rather thick to allow for the sound attenuation details we’re including. In addition to the typical flooring underlayment and insulated floor cavity, the system will include a 1 ½-inch layer of gypsum concrete “floating” on an additional sound mat. The ceiling drywall will be suspended from resilient channel to further reduce impact sound. We’re receiving sound engineering consulting to best understand how we can mostly attenuate impact sound transfer.

On average, the homes will have a 20% floor to window ratio, excluding the bathrooms since those are interior to the space. You will have a fair amount of light in the home and we’re sensitive to bring those windows as high as we can in the space to flood more light to the interior.

WINDOWS AND DOORS

Q: Do the units include skylights?

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A: There are not any skylights in the design, primarily due to the net zero energy goals. The roof will be highly insulated to nearly R-100 to reduce the heating and cooling loads while increasing comfort. Adding skylights would hurt the energy-balance of the building - one skylight could take the entire system down by about 20%.

Windows are highly-efficient triple pane with tilt-turn operation. Instead of a double hung window or crank window, you will have a handle that turns to allow the window to swing sideways like a door or tilt inward from the top.

Q: What about screens and security of the windows?

A: Screens are on the outside of the operable windows. Not all windows will be operable, but there will be operable windows in every room.

Tilt turn windows are much stronger, even at the tilt-in phase. If someone tried to break in to a double hung window it would be much easier (although still not very easy) than to break these triple pane windows in tilt mode, which is particularly nice from a security standpoint.

The doors will be different too. They will use a spin lock that engages 5 points that hook into your door to lock it shut. There are 3 gaskets that make the seal air tight. To lock it you will spin the key or spin the lock.

Q: While traveling, I experienced these doors and if you turned the latch with the lever handle, it would also unlock the deadbolt at the same time. So, that if you were in panic mode, you were out quickly. I got that for our home. Will these doors have the same thing?

A: The team is still researching various door hardware options, and will provide updates through the process. The main entry doors will most likely have a separate handle and turn-style lock to allow keyed access. This lock does require turning the lock to unlock the 5-point lock. The windows have a single lever that both acts as the handle and controls the 5-point lock. The

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door to the back patio on each unit will most likely be a “window door” which is the size of a door, but controlled like a window. When a window door is shut and locked, you are unable to get in from the outside due to the 5 point lock system. From the inside, you will simply turn the handle to open it, without needing to unlock it first. The plan for these doors may change, but if it stays in the design it could resolve that concern of a quick exit point (though the second-floor decks are above grade).

Q: Will there be a screen door on the window/patio door?

A: A screen door will be available as an upgrade option.

Q: The in-swinging windows will take up space internally, impacting where furniture will go. How big are they?

A: Tilt-turn windows were developed in Europe, and are most often used in the tilt-in mode for ventilation. The turn-in function is primarily for cleaning. The tilt-in shouldn't affect furniture layout too much and is superior from a security standpoint as discussed above.

Q: Is the tilt top-to-bottom?

A: The hinge is at the bottom and the top of the windows tilts inward. It's a relatively new concept here in the US and is becoming more common in energy efficient buildings. The “window-doors” can also tilt. We can make it so that they don't, but we recommend you have it so the whole thing can tilt and provide a lot of ventilation.

Q: Is there an example of these doors at Ankeny Row?

A: Yes. The window operation may be viewed in the video:

http://www.rosevilla.org/new_neighborhoods/the-oaksnet-zero-neighborhood.html

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VENTILATION SYSTEMS

Q: Is the air infiltration (leakage from the exterior) down to about 0?

A: The project will include a robust air-barrier system which will be checked for leaks using a blower-door during construction. According to testing done in Oregon in 2016, the air-tightness of a standard “up-to-code” home was about 10 - 12 air changes per hour when pressurized to 50 pascals. These buildings are designed to have about 1 air change per hour at the same testing pressure. The buildings may end up even tighter, but 1 ACH is the target to achieve before we start to close the buildings up with insulation and drywall. Once drywall and insulation are added, we sometimes end up a little tighter.

Q: What type of mechanical ducting will there be?

A: The advanced heat recovery ventilation systems (HRV) will have small ducts to continuously supply fresh air to the bedrooms and living rooms while exhausting air from bathrooms and kitchens. Heating and cooling are managed with ductless heat pumps.

If the power were to go out, you'd be in a great position in general because you have the PV system that would keep a trickle charge duplex plug in the wall. But if the power were to go out and the ventilation systems shut down, you would be fine in there for weeks, it might just get a little smelly and humid so you would want to open windows.

Q: Will there be a kitchen exhaust fan?

A: Yes, in addition for the continuous exhaust from the HRV, each kitchen will have a recirculating range hood with a charcoal filter. The kitchens will also have a ventilation boost control, which elevates the HRV ventilation rate for a set amount of time. Your heat recovery ventilation is going to be exhausting to the outside, and then your kitchen range hood is primarily filtering particulates. Odors are primarily managed through the heat recovery ventilation system that's always on, and when you're cooking we recommend

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you boost the system and that will evacuate the building that much faster. The HRV is not as fast at clearing kitchen odor as a standard high-powered kitchen hood, but it does a more thorough job over time and combined with the recirculating hood they work more quickly and are much more energy efficient. Opening windows can help too of course.

Q: I live in a modern high-rise which has no outside fan; it just circulates through a filter which does not filter out smoke if someone were to be cooking. This has become an issue in my home. Will it be similar in these homes?

A: The Heat Recovery Ventilation (HRV) units we will be using exhaust air directly to the outside and bring in fresh air directly from the outside. There is no cross-contamination between units since there is no re-circulation of air. The two airstreams exchange heat within the HRV, but are kept separate from one another. As discussed above, cooking smoke and odors are handled by boosting the HRV system, using the recirculating hood, and/or opening a window. The recirculating range-hoods are fully within each separate unit. We're also very mindful of the ventilation pathways and where we place each smoke alarm.

Q: You mentioned filters on the outside and on the inside, are these specialized filters?

A: All filter changes will be handled by Building Operations personnel. The HRV and heat-pump units each have their own brand-specific filters. The HRVs will be in an exterior-accessed mechanical closet, accessed and changed regularly by Building Operations. Building Operations will also coordinate a visit several times each year to change the heat-pump filters (less than 10 minutes).

HEATING AND COOLING

Q: If the internal air is 69 degrees, and I want it to be 74. How do we adjust it?

A: Heating and cooling set points are easily adjusted using the heat-pump controller in your unit.

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In highly efficient homes, many people find that they are comfortable at a lower heating set-point temperature. Comfort is impacted more by what's called "radiant mean temperature" than air temperature. Radiant mean temperature is driven by the temperatures of all of the surfaces surrounding you (a clear example is standing near an old sliding glass door in the winter). The more insulation you have, the warmer the interior surface is. We're working to design our building so that on the coldest day of the year, none of the interior surfaces are below 64 degrees, including the inside of your windows. So, you might normally like 74 degrees, but after being in these units you may discover you really like 72 degrees. Rose Villa will provide opportunities to become familiar with the heating and cooling in these homes as we get closer to occupancy.

Q: We're people that like a lot of fresh air, so our windows are open a lot more often than not. Does that impact the efficiency of the system, and how does what I do in my unit affect the other residents in my triplex?

A: Opening windows can be a great way to reduce your energy use and increase comfort, especially when used to heat or cool your space naturally. Leaving windows open while also using your mechanical heating/cooling system on a particularly hot or cold day can have a strong energy impact depending on the temperature outside. While windows are the primary source of fresh air for most homes, these units will also have a continuous supply of fresh air to the living spaces via the heat-recovery ventilation system.

The overall energy impact depends on your habits and what you collectively feel is a community impact. We are looking into installing an energy monitoring system that provide feedback on your energy use. Depending on how that system displays, it may be that you're not meeting the net zero energy goal for the community because you're heating the outdoors with the windows open.

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WATER HEATERS

Q: What about hot water heaters?

A: They will be what we call a district hot water heating system, with one hot water system per building, shared by three units. A shared system may at first seem to be a negative, but these systems will have huge capacity and are incredibly efficient. They utilize a trans-critical co2 heat pump with an outdoor air-to-water exchanger and an indoor tank. The units use co2 refrigerant instead of typical refrigerants which are known to leak over time, and have high global warming potential. These units operate at a higher temperature and compression ratio than a typical water heater.

Q: How many water heaters per home?

A: Each triplex will have one water heating system.

Q: When you talk about maxing out the water heater system with everything on, how do you regulate pressure so that your shower doesn't drop 20 degrees?

A: The system will include a pressure tank to maintain a consistent water pressure.

Q: Is there a related county code?

A: There is a state minimum of about 35 psi, maximum is about 95 psi.

APPLIANCES

Q: What type of stoves will these homes have?

A: Induction cooktops will be used in order to save energy and provide a quality user experience. Induction cooktops allow fast and precise cooking, and are used by many professional chefs. I recommend anyone who has never used or is skeptical of induction cooktops to go out and try one.

Q: Are people with pacemakers supposed to avoid those cooktops?

A: A cursory review provides no concrete evidence they should be completely avoided, we will continue to research this question as the project moves

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forward. Please consult your Physician for more information on any concerns with your specific pacemaker.

Q: What happens in our units if the electricity goes out? What will work and what will not? Will the solar power be enough?

A: This is one of those issues we're still sorting through because that's really a bigger question for Rose Villa across the campus. Potentially, when the power is out everywhere else you would still have at least one plug trickle charge, powered by the PV panels. That may be enough to do some induction cooking, although it hasn't been tested yet. Ultimately, you would be the only residences with any power other than the South Main building which has essential services on generator backup. In the worst-case scenario, you would only have that trickle charge during the day time while the sun is out.

Another advantage of the high-insulation levels and air-tightness of these buildings, is that the interior temperature is much more stable than most buildings in an outage. Let's say the power goes out at the coldest time of the year, and it's out for a week. If you don't have the windows open the entire time, the building would only drift to about 58 degrees. All of the other buildings on campus would be in the 30 degree range.

Q: Will there be fireplaces available?

A: The ethanol fuel fireplaces which are most used in this type of dwelling will not be offered as an option for The Oaks Net Zero neighborhood.

Q: What type of washer and dryer will these homes have?

A: The washer and dryer will be stacked front loader appliances which will have the option to be side-by-side. The dryer is a condensing dryer because conventional dryers use a tremendous amount of energy and require a vent line which punctures the building envelope and reduces efficiency. Modern condensing dryers have become very efficient at drying in shorter amounts of time than previous models. Drying times will vary and will still be longer than what you may be used to with a conventional vented dryer.

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SITE DESIGN

Q: What's the solar potential energy?

A: On the project campus right now we have approximately 6 kilowatts on a per unit basis to get you to the annual zero energy.

Q: Will we be able to feel drafts near the floor?

A: No. One of the fantastic features about these home designs is that they do not feel drafty.

Q: Will these homes have yards?

A: Yes, each of the ground-level homes will have a fenced side or back, or side & back yards depending on the location in the neighborhood. The upper floor units will have two covered exterior decks (accessed from the living room and master bedroom) along with a ground-floor covered entry patio. All units will share the large common courtyard in the center of the neighborhood.

Q: Will there be parking?

A: Yes, there will be a combination of carport and on street parking.

Q: Will there be storage available?

A: Yes, there will be individual, lockable storage closets in the carports for people who reside in the Savannah and Meadow homes. The Canopy homes' storage is located within the floorplan, next to the entry stairs.

Q: How deep are the bottoms of the structural footings?

A: Footing depths are 18 inches below grade. There are 18 inches of grade change across site, so they could be up to 3 ft in some areas. There are elevators that go up to the canopy units which require a specific footing depth, likely 8 inches or more. We are still researching elevators to make sure we select the right product for this project, so more information of the footings is to come.