



# Memorandum

**To:** Bill Swalling, Waters' Edge  
**From:** Judy Dorsey, Shelby Sommer  
**CC:** Layne Kottmeier, Cindy McGrath  
**Date:** August 26, 2015  
**Re:** Executive Summary of Waters' Edge Sustainability Analysis

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This memorandum provides a summary of the findings and recommendations from Brendle Group's identification and analysis of sustainability-related opportunities for the proposed Waters' Edge development. Our initial efforts focused on completing a baseline assessment of planned sustainability measures, including qualitative review plus quantitative analysis of baseline conditions when possible. Next, we helped identify opportunities to further integrate sustainability concepts into the neighborhood, and opportunities to enhance alignment with other City of Fort Collins and service provider objectives. The following findings emerged from our review of the preliminary site plans and conceptual neighborhood programming:

- LEED ND certification is not realistic due to its proposed location on prime agricultural land; however, it remains a useful framework for informing the design of future phases.
- The proposed neighborhood concept goes above and beyond most typical developments in terms of addressing and achieving City of Fort Collins policy goals in addition to code requirements.
- Numerous triple bottom line elements and sustainability concepts are already considered and planned –the greatest opportunities for enhancements appear to be in the environmental and economic arenas. Our findings and recommendations to further these concepts are summarized on the following pages.

# Summary of Sustainability Opportunities and Analysis

## ENERGY

Total energy costs for the western side of the neighborhood (Phase 1) are estimated at \$425,000 annually; estimated energy costs for the eastern portion (Phase 2) are estimated at \$582,000 annually. Investments into energy efficiency can help save future residents money on their utility bills, and will support the City of Fort Collins' carbon reduction efforts. Furthermore, incorporation of renewable energy sources, such as rooftop or land-mounted solar photovoltaic (PV) systems, can help stabilize energy costs, and can also support the City's climate action goals.

The major energy-related sustainability elements to consider incorporating into the neighborhood planning and building design include the following:

- **Emphasize Building Efficiency** – We recommend that all new buildings (residential and commercial) should at a minimum, be built to ENERGY STAR specifications to maximize building performance and reduce operating costs. An ENERGY STAR home is estimated to cost approximately \$2,400 more in construction costs than typical new construction (built to 2012 International Building Code levels); estimated utility savings are approximately \$300 per year per unit on average, representing an approximate 30 percent reduction in utility savings overall. A more ambitious option would be to target net zero energy construction, wherein residential savings could be as much as \$900 per year.
- **Generate Renewable Energy** – The City of Fort Collins is actively looking to increase the amount of solar energy generated in the community with a rough target of approximately 60 Megawatts installed within the next 5 years through a combination of individual, community, and utility-scale projects. We recommend using a mix of rooftop and land-mounted solutions to provide market differentiation and to broaden community opportunities for solar participation beyond the boundaries of the Waters' Edge neighborhood.

## WATER

The Net Zero Water Planning Toolkit (recently launched for building-scale applications) is a helpful resource in developing an estimated water footprint of the site, identifying potential water quantity and quality targets, and exploring different pathways to achieve those targets. Assuming that irrigation accounts for half of residential water use at Waters' Edge, the estimated baseline annual water footprint for Phase 1 is 46.1 million gallons. Water-related elements to consider going forward include the following:

- **Use Only as Much Water as is Available** – Approximately 43 million gallons of precipitation falls on the Phase 1 site area during an average precipitation year, making that a realistic but achievable goal for overall water use given the water footprint of 46 million gallons. While this water cannot be captured and used directly, we recommend that this value represent an upper limit on the total amount of water consumed for all neighborhood activities. A slightly more aggressive water quantity target would be 140 gallons per capita per day (or roughly 36.5 million gallons) to align with the City of Fort Collins' 2009 Water Conservation Plan's 2020 goal, as well as aligning the footprint with annual precipitation during drought years or in the face of future climate change.
- **Reduce Water Quality Impacts to Previous Site Conditions** – The City of Fort Collins' already requires development to plan for and reduce water quality impacts based on the amount of

runoff generated. We recommend that a more aggressive design goal be used to drive water quality planning – one that aims to reduce water quality impacts to previous site conditions (e.g., undeveloped or agricultural). Preliminary plans for constructed wetlands and extended detention will help support this goal; other effective methods include disconnecting impervious areas (i.e., directing downspouts onto landscape areas rather than pavement), integrating pervious pavement areas, and integrating rain gardens into smaller runoff areas (in combination with larger detention areas).

## WASTE

The City of Fort Collins' 2013 Road to Zero Waste Plan establishes a goal for 90 percent waste diversion by 2025. The estimated baseline waste footprint for Waters' Edge is approximately 700 tons per year for Phase 1 residents. To help support the Road to Zero Waste Plan goals, we recommend consideration of the following waste opportunities:

- **Continue to Explore Neighborhood Composting Program Options** – Preliminary planning for a neighborhood composting program at Waters' Edge is already underway by Gallegos Sanitation; however, pending revisions to state regulations for composting facilities add uncertainty to this concept in the near-term. We recommend that a neighborhood or curbside composting program continue to be explored as those regulations are clarified, and as discussions continue with the waste service provider. Another service to explore if future neighborhood composting regulations are limiting is the use of Gallegos Sanitation's Yard Waste program, which allows all organic (non-animal) material. Since the program runs spring through fall, it may not be a year-round solution to reduce organic waste sent to the landfill.
- **Provide Expanded Waste Options for Future Occupants** – Since the planned neighborhood will have a large population of senior residents, we recommend making it very easy for those residents to make the "right" waste-related decisions. Not only would this include providing waste and recycling services for residents (as required by the City), but also providing areas for community collection of hard-to-recycle and hazardous materials since many of the existing facilities for these items (including the City's periodic household hazardous waste events) are a long distance from the neighborhood. Furthermore, neighborhood bulk purchasing programs, and separate glass and cardboard recycling facilities could also enhance the neighborhood's potential to achieve the City's Zero Waste Plan goals.

## CLIMATE

As outlined in its Climate Action Plan Framework, the City of Fort Collins aims to reduce community GHG emissions 30 percent below 2005 levels by 2020, 80 percent by 2030, and 100 percent by 2050 (carbon neutrality). The baseline annual carbon footprint for Waters' Edge (Phases 1 and 2) is estimated at 15,700 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub> or "carbon"). It is important to note that the development of the Waters' Edge neighborhood will actually increase overall community carbon emissions, but there are some timely opportunities for Waters' Edge to play a role in piloting strategies identified in the Climate Action Plan Framework, as well as incorporating projects and features that could help reduce existing community emissions.

The most significant contributions that Waters' Edge can make in terms of limiting (or mitigating) the carbons emissions it generates are through investing in high-efficiency buildings, obtaining energy from renewable sources, and designing a pedestrian and bicycle-friendly mixed-use environment that will help minimize vehicle miles traveled (VMT). A mix of shops and services at Waters' Edge may also lead

to reductions in VMT from nearby neighborhoods if those residents replaced some of their longer trips to shops and services with shorter ones to Waters' Edge.

We find it is very realistic for Waters' Edge to achieve a 30 percent or more reduction in carbon emissions as compared to a typical neighborhood development if measures such as high efficiency construction, renewable energy generation, alternative and fuel efficient vehicles, mixed-use development, and local food production are fully incorporated and implemented. To further support the City's climate goals and drive near-term implementation, we recommend the following:

- **Embrace Electric Vehicles and Equipment** – The City of Fort Collins' Climate Action Plan Framework calls for the accelerated adoption of fuel efficient and electric vehicles and equipment. As such, new neighborhoods should be designed to provide electric vehicle charging opportunities for both residents and visitors in public and private spaces. Given the Waters' Edge neighborhood's senior demographics, we think it presents unique opportunities to introduce new vehicle concepts such as Neighborhood Electric Vehicles (NEVs) that will help reduce trips in regular vehicles, which will in turn reduce vehicle-related emissions. Similarly, under a commonly managed sustainable landscaping/irrigation district (described below), the neighborhood would have unique opportunities to embrace commercial-scale electric landscape maintenance equipment.
- **Continue to Explore a Sustainable Landscaping/Irrigation District Concept** – Preliminary planning is underway for a centrally managed landscape and irrigation service provided via a special district. We find this to be an opportunity for the City of Fort Collins to pilot non-potable water delivery within the City limits without being a service provider. Since Brendle Group does not have insight into the financial pro-forma of the development or potential special district, we cannot recommend whether or not this is the only financing option. However, the concept is intriguing and would likely add structure, longevity, and financial tools beyond what could be expected from a typical homeowners' association.

## Conclusion

We find Water's Edge uniquely positioned to support the Fort Collins community in myriad ways that enhance individual, neighborhood, and community sustainability as follows:

- Adding inventory through a mix of housing types in a tight housing market;
- Expanding housing options for the region's growing senior population;
- Providing opportunities to pilot sustainability concepts in a new neighborhood environment that can be monitored and studied over time;
- Raising the bar for new greenfield development projects to maximize remaining land available for development.