Executive Summary

Cully Community Power: A Recommendation for the Living Cully Ecodistrict

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Purpose

The purpose of this project is to collaborate with the leaders of Living Cully to explore the possibilities for community renewable energy projects. Living Cully is the ecodistrict project for the Cully Neighborhood, created in 2010 as a collaboration among the four community organizations: Verde, Hacienda Community Development Corporation (CDC), The Native American Youth and Family Center (NAYA), and Habitat for Humanity Portland/Metro East. Living Cully envisions an ecodistrict as a place where environmental investments at the neighborhood-scale help to prevent the displacement of low income people and communities of color. The ecodistrict model can be an anti-displacement strategy by addressing disparities in wealth, income, health and natural resources in historically marginalized communities.

The Cully Community Power project is relevant for our Spring term course, Making the Smart Grid Work in the Real World, because we are exploring renewable energy technologies, community energy models, and new opportunities such as energy imbalance markets. Creating opportunities for renewable energy in the Cully community can support the Living Cully vision and help the Cully neighborhood as a whole become more livable and resilient.

Analysis

We developed five energy projects that could potentially be incorporated into current Living Cully partner projects. Our goal with each of these projects is to help achieve one or more of Living Cully’s five working goals:

- Build wealth for people of color and low-income people;
- Improve environmental & human health;
- Increase the capacity of Living Cully partners;
- Proactively work against displacement; and
- Create opportunities for youth.

In order to evaluate the five Cully energy projects, we developed a set of criteria. The criteria provide a way to qualitatively and consistently weigh the relative costs and benefits of each proposal. The method is based on a standard set of criteria, and our analysis of how the project could be implemented in the given context.
Table 1: Project Evaluation Criteria

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<thead>
<tr>
<th>Project Benefits</th>
<th>Project Costs and Barriers</th>
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<tr>
<td>Local jobs</td>
<td>Capital cost</td>
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<tr>
<td>Improved livability (aesthetics, recreation)</td>
<td>Ongoing maintenance cost</td>
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<td>Youth opportunity</td>
<td>Community acceptance barriers</td>
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<tr>
<td>Promotes neighborhood collaboration</td>
<td>Utility acceptance barriers</td>
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<tr>
<td>Reduces basic living costs for residents</td>
<td>City acceptance barriers</td>
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<tr>
<td>Energy benefit</td>
<td></td>
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<tr>
<td>Health/Environmental benefits</td>
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<td>Education/training benefit</td>
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<tr>
<td>Feasible in the near term</td>
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<tr>
<td>Leverages Living Cully project goal</td>
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<tr>
<td>Leverages Living Cully partner goal</td>
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<tr>
<td>Can be adapted/scaled to other projects</td>
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Projects

The projects outlined below are not listed in any rank order. Our ultimate goal is to provide a scoping document of some of the available options, as there are multiple feasible projects that Living Cully could pursue.

Cully Park Microgrid Demonstration

Cully Park is a 25-acre reclaimed brownfield that will include sports fields, community gardens, and natural gathering places for the community. It also happens to be an attractive location for both solar and wind. The site has above
average wind resources and excellent solar exposure, and given the 2-ft. soil depth because of the landfill cap, it will probably not have tall vegetation to obstruct solar or wind in the future. We propose a microgrid demonstration project for the park that would include micro wind turbines, solar panels, and battery storage. The goal would be to locate the microgrid components in a way that minimizes their visual impact and maximizes the green and natural aesthetic of the park, in line with the community’s vision. The system could power park lighting, security webcams, wireless routers, and a number of other features. It would also include all-weather LCD information and educational displays to inform park users about the innovative energy features.

Cully Plaza Solar Array

Cully Plaza (previously known as the Sugar Shack) is a highly visible piece of property in the heart of the Cully Neighborhood, currently being purchased by Living Cully. This site presents an excellent opportunity for a rooftop solar array and could in the future support a larger community energy project. Solar panels could be included in initial building renovations following the sale of the property to Living Cully, or could be added after the fact on the 26,000 square feet of roof space. The array would generate approximately 175,000 -220,000 kWh annually, or roughly half the expected electricity consumption of the building. An investment of this type would remain a permanent community asset and would allow Living Cully to take advantage of net metering benefits with Pacific Power and thus reduce the energy bill for Cully Plaza tenants. In conjunction with the solar panel installation, Cully Plaza could provide space for a renewable energy job skills training program, have classroom activities inside the building, and keep the roof accessible for hands-on learning. The Plaza building poses an excellent opportunity to capitalize on the high visibility location, and could include educational signage about their solar energy array and promote the green energy components of Living Cully. This project could also serve as a pilot for future, larger solar array PV projects in the Cully neighborhood.
Clara Vista District Heating and Thermal Storage

Hacienda CDC is currently in the process of redeveloping the Villa de Clara Vista apartment complex, and we believe this presents an opportunity to incorporate a district heating and thermal storage system that would benefit Hacienda, future residents, other Living Cully partners, and the grid. Hacienda CDC owns multiple housing complexes at the intersection of NE Cully Blvd and Killingsworth, and this campus also houses a community center. Hacienda is halfway through building a new office building at this location as well; it is conveniently located across the street from the soon-to-be Cully Plaza. A centralized 25,000 gallon water tank could provide water and space heating to the Clara Vista redevelopment and other nearby Living Cully buildings, essentially creating a microgrid district energy heating system. The water tank could also be grid-connected and heated with a 1 MW combined heat pump and electric resistor system. This set-up would create energy storage by heating water during off-peak hours for use during higher peak times. It could also be a grid asset that would create revenue through the newly established California-ISO Energy Imbalance Market. This proposal would lower utility costs for residents and building users, potentially lower construction costs for Hacienda, and create a grid asset that would create an additional revenue stream.

Helensview Heights Solar PV
Helensview Heights is a residential subdivision at NE 64th and Killingsworth in Cully. Habitat for Humanity Portland/Metro East recently acquired 22 lots at Helensview and plans to begin building new homes for low-income people there this summer. As many as 12 of the 22 homes slated for construction, will enjoy excellent solar access, making them candidates for rooftop solar photovoltaic (PV) systems. There are not significant technical or logistical obstacles to adding PV to the new homes, and Habitat has expressed interest in including PV capacity in the design and construction by meeting Energy Trust of Oregon’s “Solar Ready for Newly Built Homes” standards. The team presumes this might also help establish the practice of considering solar on future Habitat construction sites in Portland and elsewhere.

To take the next step and actually put PV systems into service at Helensview, Habitat could pursue several options. Habitat could simply install the systems during construction and sell them to the future owners as part of the house. Alternately, an established third party provider (like Solar City or Sun Run) could be recruited. The team recommends, however, that Living Cully give serious consideration to establishing a solar provider in a community-based organization. This might help create opportunities for members of the community to own renewable energy equipment at Helensview and additional sites in the neighborhood.

Total incentives available under such a scheme would vary by project structure, but standard industry estimates indicate 80-90% of the retail cost of PV systems can be met with incentives. Developing a vehicle such as a community established solar provider would keep funds within the community and thus address several Living Cully goals.

**Solar Training within NAYA’s Weatherization 2.0**

The Cully Solar Training Project would work in tandem with NAYA’s already established Weatherization 2.0, in order to increase community inclusion and benefits from green development. The focus of the solar training project would be to: provide green jobs in the community; aid community economic growth and diversification of the job market; foster green energy in the community; provide professional skills for long-term employment; create a healthier community with
green energy solutions; adhere to the Portland Climate Action Plan goals; and promote equity in the job market. All of these objectives fit within the goals of Living Cully. Moreover, trained solar installers could also work on any of the other projects proposed in this Cully Sustainable Community Green Paper. Not only would this solar training provide training for skilled jobs in a growing industry within the Cully community, but it would initiate a knowledge platform for green industry in Cully and the greater region. Ultimately, investing in green jobs shows a commitment to healthy communities; reducing carbon emissions; a healthy and innovative economy; and commitment to future generations.

**Conclusions**

Each of the five projects summarized here and designated in the diagram on the next page could contribute to the working goals of Living Cully through investment in community power programs. However, the regulatory, financial, and policy landscapes surrounding community energy are changing quickly, and other opportunities such as community solar gardens could emerge in Oregon, opening up new possibilities.