Equitable Sustainability on the Neighborhood Scale

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INTRODUCTION
The neighborhood is a logical building block with which to implement sustainable and equitable living into daily life. To implement sustainable and equitable living, there must be number of specific desired elements in a neighborhood. With this paper, we would like to consider the application of such a neighborhood that is described below to the Ithaca community. To this purpose, analyzed here are two different neighborhood developments from different areas of the United States that could serve as a model for a new Ithaca neighborhood.

ENVIRONMENTALLY SUSTAINABLE
The actual construction of the project can focus on sustainability by using locally sourced products, recycled or reused products and by limiting waste. Currently, more attention is paid to the energy efficiency of homes as a means of reducing carbon emissions and waste as well as utility cost of homeowners. Many homes and neighborhoods utilize combinations of passive and active solar power, graywater and stormwater use, composting and recycling programs, public transportation and walking as well effective insulation and energy efficient lighting. For all of these measures, it is important and often difficult to maintain a balance between optimum sustainability and affordability.

SENSE OF COMMUNITY
A last important aspect of a neighborhood is a sense of community and an atmosphere. Neighborhoods are ideally a place where people want to live, spend their time and can see to many of their needs including education, work, food and social outlets. For this to happen, neighborhoods need to be filled with community centers, parks, retail centers and an efficient layout for pedestrian usability.

LEED NEIGHBORHOOD DESIGNATION
One metric that can be used to evaluate a neighborhood’s viability is the LEED Neighborhood Designation. It states that a neighborhood "places emphasis on the design and construction elements that bring buildings together into a neighborhood, and relate the neighborhood to its larger region and landscape."(LEED Standards) however, this does not accommodate equitability as a goal. Also, LEED is not the only institution granting designations; it is just one that is at a national scale that has a good reputation. Many local communities are creating their own organizations to fill the same purpose as LEED certifications without much of the bureaucracy.

CASE STUDY - HOLIDAY, CO
Holiday Neighborhood in Boulder, Co is made of 330 homes on 27 acres. 2 acres are dedicated to a city park and there are approximately four more acres in the development of community green space. Its original mission in 1998 was to be a community-oriented housing development that is more than 40% affordable. This initiative was led by the City's Division of Housing as well as Boulder Housing Partners, the Boulder Housing Authority. In 2001, the Sustainable Futures Society (SFS) received a grant from the EPA to "green" the neighborhood and the SFS
joined the City and the architectural firms involved to maintain the affordability of the neighborhood while making it more sustainable.

1 Holiday Neighborhood Plan

Single-family homes and duplexes are in blue, condominiums are in purple, office space and retail space is in red and yellow is mixed use. It is hard to see on this scale, but there is mixed-use area along the northern border of the Holiday neighborhood.

2 Holiday Aerial View
CITY GOALS
The city had several impediments in creating this neighborhood, the overcoming of which provide the building blocks for what makes Holiday such a success and a viable, sustainable community. The impediments were density, mixed-use zoning, set back requirements and parking requirements.
Density was a problem because the area that Holiday is located in is zoned for 10 housing units per acre maximum. However, that maximum would make it impossible to meet the affordability of the neighborhood that is the main goal of the project, especially considering Holiday's proximity to downtown Boulder. Considering this, the city approved a change in zoning to build up to 20 units per acre.
In regards to mixed use, the city was at first reluctant to allow retail spaces in the neighborhood, however this was reconsidered when the issue of additional traffic congestion in downtown Boulder was looked at. Currently, there are 30-40 retail spaces in the neighborhood to be found in designated office/retail or mixed use areas including artists galleries located in the center of the community, restaurants, a bakery, a coffee shop.
City street setback and "bulk" requirements also needed to be addressed to meet the affordability goals of the neighborhood and make effective use of the space. "Bulk" requirements of lots often resulted in too many lots with wasted space and setback requirements took up unnecessary space in small neighborhoods. With the smaller setback requirements, the streets are better defined and small houses are closer to the street.
Parking is often an issue within cities. Boulder usually requires 2 parking unit spaces per housing unit, however to accommodate Holiday's sustainability goals and space limitations, they lowered that requirement to 1.1 spaces per housing unit.
SUSTAINABILITY GOALS
The neighborhood was built with a livable, sustainable use in mind. The homes in the
development were built with the expectation that residents would drive 30% less, pay 50% less
in utility bills and use 40% less water; goals that testimonials from current residents say have
been met. These goals are expected to be met through a variety of energy saving and material re-
use ways.
A large focus was given to energy efficient building systems. All buildings are oriented to
maximize passive solar abilities for heating as well as built with large amounts of insulation and
a carefully Before construction, the SFS institute carefully modeled energy usage in the homes in
an effort to maximize efficiency while still maintaining traditional architectural elements.
Additionally, much of the roof space of the buildings has been given over to photovoltaic cells,
many of which are being re-used in this neighborhood to keep down on initial cost.
State of the art lighting guidelines for all the buildings involve built-in fluorescent lighting
features, occupancy sensors in some areas and light dimmers.
Innovative stormwater management strategies have been implemented across the neighborhood,
for example, a sand filter bed in one corner of the neighborhood’s 2-acre park enables multiple
use of the landscape by capturing and cleansing runoff as well as providing recreational
opportunities when there is no rain.
Due to the neighborhood’s concentration of mixed use, retail and living space as well as
abundance of green space the neighborhood is incredibly walkable. Additionally, the
neighborhood's location on several thoroughfares has ensured that several bus stops are placed
within the neighborhood.
houses and yards are smaller than average, but open space per capita is higher
Homes are on average 2,000 square feet less than the national average
Graywater usage was originally investigated in however, the State of Colorado requires that
graywater to be treated as sewage water so that avenue was abandoned as a means of
sustainability.

EQUITABILITY
Affordable Housing was implemented through several specific methods within the Holiday
Neighborhood and the city in general.
One of the architects, in conjunction with the City Housing authority offered Sweat Equity as a
component of affordability. In this program, the future resident family contributes 200 hours to
the construction of the community in exchange for a lower price on a home. These homes are
deed-restricted, with the financial ability of each household establishing the price. The homes
that were part of this program were priced to allow families earning between 40% and 79% of
the area median income (AMI) to become homeowners.
City of Boulder Division of Housing coordinates several different efforts to keep homes more
affordable by maintaining a listing of all affordably priced homes, helping people to receive
down payment grants to buy homes of their choosing, giving down payment loans that do not
require permanent affordability as well as offering homebuyer training for anyone interested.
Advantages
Denver has a number of advantages over other areas for a variety of reasons, including a
generally very eco and affordability friendly city that decided to make this housing project an
important project as well as making many concessions to the neighborhood planners.
Additionally, Boulder has sun approximately 320 days out of the year making it ideal for solar
panel usage. The city is very bike friendly with approximately 100 miles of linked pathways within city limits. Additionally, thanks to an agreement between the transportation department and the Holiday Neighborhood board, each Holiday resident will get a complimentary bus pass.

OTHER INCENTIVES
The strong community oriented neighborhood is fostered and created through a number of neighborhood initiatives as well as architectural elements. The neighborhood's 2 acre city park is a resource for all of the residents and other local residents as well. There is a farmer's market every week in season within the neighborhood. An important historical aspect of the neighborhood is the re-creation of the historic outdoor cinema that was re-opened as a part of the neighborhood. Lastly, there are numerous artist's studios and gallery spaces available as well as art being an integral part of the architectural design of the common spaces in the neighborhood.

CASE STUDY - GLENWOOD, GA
Glenwood, GA is a neighborhood consisting of 350 residences on 28 acres of land located approximately 2 miles from downtown Atlanta, Ga. The site is an abandoned Brownfield site near the center's core. Construction began in 2003 and the neighborhood is expecting completion in 2009 though most of the neighborhood is already open. In total, the neighborhood is supposed to be valued at $150 million by its completion.
SUSTAINABILITY

The construction of Glenwood heavily emphasized recycling the materials found on-site and construction materials throughout the entire process. 800,000 lbs of on-site granite rubble became the walls located in the central park of the neighborhood. The construction of each home in Glenwood Park saved from use or reused in other aspects of the neighborhood approximately 30 cubic yards of material. This material was mostly reused in erosion control efforts in the parks and green spaces. Over 259,200,000 lbs of concrete, 250,000 lbs of metals and 30,000,000 lbs of woodchips were recycled over the course of the construction. Overall, landfill waste was reduced by 80%.

The design of Glenwood Park as an area also has many aspects that lead to minimal impact on the area. Stormwater runoff is projected to be reduced by 2/3rds over the site's previous use. This is due to the extensive amount of green space, new trees and the central Glenwood Park which serves as a water pond in rainstorms.

The club house and pool that are part of the neighborhood amenities is powered by a geothermal unit that is supposed to supply most of the center's energy.

All homes are built to the EarthCraft Housing metric. EarthCraft is an independent company based in Atlanta, GA that has a rigorous system of criteria for meeting its sustainability goals as well as an inspection system throughout the course of the construction. The EarthCraft criteria focus on reused materials, resource efficient design and construction, and energy efficiency of households based on effective insulation and proper design to improve efficiency of spaces.
COMMUNITY
The neighborhood was built to have a particular atmosphere and usability, closely mimicking a classic "Main Street" structure of mixed use retail and office areas close. Pocket parks and tree lined pedestrian streets move around the buildings. The only parking within the heart of the neighborhood itself is parallel parking near the retail stores though there are extensive parking lots for the residents located near the perimeter of the neighborhood.

TRANSPORTATION
Access to public transportation is high with the neighborhood being 1 mile from 2 different rail ways and directly on active bus route to downtown. The parking around the perimeter and parallel parking in the neighborhood allow thruway access however, low speed limits deter car use and increase pedestrian safety. The streets themselves are narrower in the neighborhood, an action that required the special approval of city officials.

SUMMARIZATION OF CASE STUDIES
SIMILARITIES
There are several aspects that these two different neighborhoods have in common, perhaps the greatest of which is in how they are used. These neighborhoods are made of mixtures: mixed use buildings, combining activity centers, retails and housing; a combination of office, retail, recreational and housing space all within minutes walking; a mixture of traditional automobile accessibility coupled with an emphasis of pedestrian and bike paths.

Additionally, both of these neighborhoods sought to reach a particular vibe with their construction. Glenwood has recreated a Southern, main street town while Holiday combines windowed artist studios with large amounts of art in the common areas to have a creative atmosphere. The last thing they had in common was an effort to reduce the space that the neighborhood would require. Both neighborhoods increased housing density while Holiday also limited parking per household and Glenwood received special permitting to install smaller roads.

DIFFERENCES
Holiday has put a large effort in remaining affordable to people with significantly lower incomes than the median income whereas the least expensive property in Glenwood currently available is a 762 square foot studio priced at $179,000.

Glenwood's efforts to reduce waste during the construction process was considerable, an effort that was not specifically made by Holiday.
TRANSFERABILITY TO CITY OF ITHACA

7 City of Ithaca Aerial View

Looking at these particular case studies brings up the issue of transferability. What has worked in other places in the US often sets a good precedent for what can happen in the future, if similar methods are undertaken. Here, we examine three particular types of sites within the City of Ithaca—Greenfield, Brownfield, and an existing neighborhood—to see if any of the methods used in the case studies are possible in these particular potential development sites.

SOUTHWEST ITHACA

The first type of area we looked at was a Greenfield potential development site. This area, commonly known as Southwest Ithaca, lies behind the Big Box District along South Meadow Street (Route 13). This site encompasses some of the last undeveloped land within the City of Ithaca, and therefore the easiest to build a new neighborhood on.
The area itself consists of over 55 acres of city-owned land, between the flood control canal and the back of several big box developments. It has been the subject of at least one major feasibility study concerning new housing developments, but it was decided that the housing market in Ithaca wouldn't support that many new residences. As we've seen relatively large amounts of development in and around Ithaca in the past few years, this may no longer be true.

Research didn't uncover any official plans, public or private, to change the zoning and create a new neighborhood on the parcels in question. The City of Ithaca created a Committee, which produced the Southwest Vision Statement. This statement said that a sustainable, desirable, and affordable neighborhood should be developed in the district, and outlined ways development should proceed, but did not specify any actual developments or any initiative to begin the process of development. There were also Cornell CRP plans for the small triangle of already developed land directly north of the site, but these obviously weren't implemented.

The site has several advantages that the case studies used in their developments. The biggest advantage is being near the urban core without being directly next to downtown. Both Holiday, CO and Glenwood, GA are at least a mile away from the cores of Boulder and Atlanta, respectively. Southwest Ithaca is closer to downtown Ithaca (a little less than a mile from the Commons), but Ithaca is also significantly smaller than Boulder and Atlanta. The case studies are also both easily integrated into their city's transportation network. They are located by major roadways and have bus service running through them. Southwest Ithaca could easily be integrated with bus services, as there are already several lines running through the area. This provides the maximum amount of access, an important feature in equitable neighborhoods.
Southwest Ithaca is also already surrounded by retail establishments, so creating mixed-use developments within it wouldn't be far-fetched. Additionally, there isn't a cohesive neighborhood in the area at the moment, meaning there would be little opposition to siting businesses in the residential area.

Probably the most important advantage of Southwest Ithaca is that it is city-owned. Both case studies were public-private partnerships. These sorts of developments have proven to be some of the most effective ways of getting sustainable, equitable housing into US cities. The City of Ithaca can decide to contract someone to construct sustainable housing to sell to private citizens, or the City can choose which developer to sell the land to, and put certain requirements on the sale of the land requiring sustainable building practices and the conservation of wildlife.

There are negative aspects to this site, as well. The most glaring hindrance to creating a sustainable neighborhood in Southwest Ithaca is that it is a Greenfield. The area has not been developed in the past, and parts of it are protected greenspace. It's also part of a flood control plain, so additional levees would have to be built to protect the city. This could carry very high costs for the City.

The area also borders a freight rail line. Trains run through both day and night, disturbing a few existing residents of other areas. Creating more affordable housing by the railroad tracks, may be looked down upon.

**South Hill**

Another possible location for a sustainably-minded affordable neighborhood is the factory just by Ithaca College, bordering Route 96B and S Cayuga Street. According to tax records, this factory isn't contributing anything to the coffers of the City of Ithaca. The lot is smaller than
Southwest Ithaca, at around 33 acres, but the factory extends into the Town of Ithaca, where more land is available. The land is owned by Emerson Power Transmissions (EPT), and the factory is available for lease. The site was occupied by Babbage's Basement, a local computer reuse project, until October of 2008. Unfortunately, the site is extremely toxic, as evidenced by tests done by the State and the City, and is contaminating a local elementary school (South Hill Elementary). The site is a Superfund site, meaning a developer willing to clean up the area may get help from the State.

Glenwood, GA was developed on a brown-field site, and Holiday, CO was developed on an underutilized area once used as a drive-in theatre. Both case studies turned an unprofitable piece of land into a valuable asset for their city's tax base. This is an important feature for a city in upstate New York, where budgets are slashed and taxes are necessarily high to cover costs. An additional neighborhood may help the city afford new programs and improvements that it otherwise would have to forgo.

The location is ideal for low-income families. It is very close to downtown and to Ithaca College, both of which provide ample jobs and opportunities for residents. It would also provide low-income students at Ithaca College an affordable place to live off-campus. Providing low-income families with easy pedestrian and bicycle access to several centers of work is key to a successful mixed-income neighborhood.

Mixed use development on the site would be extremely useful for residents of South Hill and Ithaca College students. There are currently few establishments serving South Hill directly, although the Central Business District around the Commons serves South Hill relatively well.

The site has a couple of negative aspects, as well. First off, the contamination is fairly high. Cleaning up the site would be very expensive, and then requiring affordable housing to be located within a new neighborhood would have to involve large subsidies from the City of Ithaca to recoup the lost earnings. The site would have to be rezoned, deconstructed, cleaned up, and then new development would have to be constructed over it. It's simply a very involved, expensive process.

To make matters worse, the land is valued at approximately $2.6 million. The added costs of purchase and cleanup may make the land only profitable with high-end condos, apartments, and large homes. Many developers interested in an affordable neighborhood would probably steer clear of this site.
The final option for transferring the good practices from our case studies to Ithaca is a little different. An existing neighborhood can be designated a 'Green Neighborhood' by the city, similar to a historic designation. Improvements and new buildings in this area would be required to fulfill certain standards above and beyond the building code, to create a greener community and to provide an example for other neighborhoods and developers.

We've highlighted a few blocks near Ithaca's West End, due to the lack of a cohesive feel for the neighborhood, the central park, and the visibility of being around Route 13. There are also a good deal of lower-income and renter-occupied housing in the district.

This is a much cheaper way of implementing a sustainable and equitable neighborhood. No construction is necessary; improvements can be made through mini-grants to residents and from stricter requirements for additions. All of the improvements can be policy-based, if necessary. This saves the City valuable time and money.

It also prevents a housing surplus in the area. Ithaca's West Hill may be developing more quickly than normal, and College town may be booming, but the fact of the matter is that Ithaca's housing market may not be able to sustain 30- or 50- acre development. There simply aren't enough jobs in the local area. It's possible that the only feasible way to fill all of the new developments would be to draw commuters to live in the city, or to cater to a high-income group looking for second homes or condominiums. The neighborhood designation has the elegant solution of generating new sustainable practices without building extra housing.
There are drawbacks to this approach, as well. First and foremost, this designation would invite gentrification. Rent controls and a required percentage of affordable housing are harder to force on an existing neighborhood, and developers may take advantage of such a designation to build higher-end residences. Gentrification is the exact opposite of the goals of this project, so any development that solely attracts gentrification would be a failure.

This approach is also extremely slow. Sustainable aspects would depend on the initiative of the individual land-owners, many of whom have largely unkempt buildings already. Making improvements more difficult may discourage landlords from investing in their properties. Many would let them further deteriorate rather than navigate new regulations.

All three sites and site types have their advantages and disadvantages. Greenfields and Brownfields allow for new developments to enhance and enlarge the city, though Brownfields do so more efficiently by utilizing space that has already been developed. Greenfields, and Southwest Ithaca, allow for cheaper and more innovative construction, as the site isn't contaminated or contained within existing regulations. The factory cleanup site would aid many residents of South Hill in getting a safer, healthier environment in which to live. The existing neighborhood proposal would allow the City to conserve money and effort, and would help revitalize existing blocks into a cohesive neighborhood.

Some of the most important aspects come after choosing a site, however.