ACKNOWLEDGMENTS: Thank you to the Bullitt Foundation, Summit Foundation, Kresge Foundation, and Boeing Foundation for their generous support without which the project would not have been possible. Special thanks to the many individuals and neighborhood partner organizations that contributed to this vision, in particular the Yesler Community Collaborative, the City of Seattle for staff time and data support, the First Hill Improvement Association, Futurewise, Virginia Mason, the Seattle 2030 District, Seattle Urban Farm Co. for local agriculture data, and McLennan Design for rendering and technical support. A full list of partner organizations can be found in the appendix.

All icons from thenounproject.com

Note on figures: All figures are estimates based on the best available data at the time of publication and assumptions which are called out in the text and images. These estimates are intended to illustrate vision and spur action. In-depth analyses and detailed planning are necessary to refine the vision as the process progresses.
INTRODUCTION

THE TIME IS NOW TO MAKE THE FIRST HILL AND CENTRAL DISTRICT NEIGHBORHOODS OF SEATTLE THE MOST ENVIRONMENTALLY REGENERATIVE,SOCIALLY JUST, AND CULTURALLY THRIVING NEIGHBORHOODS IN THE NATION.

This document is the summation of a year’s work to create a vision of a Living Community for the First Hill and Central District neighborhoods (hereafter referred to as the community).

The intent of this document is to:

a. Provide a physical record of the work;
b. Create a resource to guide future decisions for our neighborhood partners and government staff;
c. Inspire other planning teams/neighborhood groups/municipalities to undertake their own Living Community plans and to take action to create more resilient, equitable, and beautiful neighborhoods based on the ideas presented here.

The community is proximate to downtown and is centrally located in the city. It is surrounded by and composed of vibrant neighborhoods.
THE COMMUNITY REPRESENTS ONE OF THE MOST DIVERSE, VIBRANT, DENSELY POPULATED, AND RAPIDLY CHANGING PARTS OF SEATTLE. ONE NEED ONLY WALK DOWN ANY STREET TO SEE THE SCALE AND IMMEDIACY OF THIS CHANGE ON MANY LARGE AND SMALL PARCELS ALIKE.

This document reflects the vision, input, and feedback of many individuals and organizations who dedicated time to the planning process. The most substantial contribution to date of this first round of the stakeholder engagement process is the structure of the vision itself, which emerged in a charrette in June of 2015. The participants of the charrette envisioned a regenerative future of the community around the topic areas of: integrating urban agriculture and food systems into the neighborhood; radically transforming networks within the right-of-way as places that favor people and place making rather than motorized vehicles; using net zero water principles on a micro-watershed scale; guiding and implementing a renewably powered future for the neighborhood; and creating a more healthy, equitable, and livable neighborhood to foster the significant community that already exists in the community.

In addition to establishing a vision for the community, this document also includes a concise set of quantitative analyses and benchmarks meant to support and guide this vision. More detailed information such as physical and resource analyses are included in the various appendices.

Following a quick historical sketch, the vision for the community is illustrated through five vignettes; ideas which emerged during the previously mentioned charrette. The vignettes are followed by preliminary implementation and phasing strategies focused on the block scale and biased towards meaningful action. The final section outlines actionable next steps for the project team, City leadership, and neighborhood partners to advance this vision. Certainly no communities are built in a day, least of all Living Communities. This document represents the first year of work to create a Living Community in First Hill and the Central District, though it is not itself the Living Community or even master plan, it is intended to be an important and useful step along the way.
Boren Avenue reimagined as a place for life.
Streets that are abundant living systems
01. CONTEXT
THERE IS A TENDENCY WHEN VIEWING THE LANDSCAPE TO BELIEVE THAT THINGS HAVE ALWAYS BEEN AS THEY APPEAR NOW.

An old growth forest may be clear-cut and logged in one generation, return as new growth in the next, and appear as a natural, native ecosystem to the next. The short span of a human life compared to the long time span of natural and geological processes contributes to the belief that the natural world is static, when, in reality, it is anything but.

When Europeans first began building settlements in the Puget Sound region, they believed that they were stepping into an idyllic, static, and benevolent landscape, but they were not its first residents. The Native American tribes in the region, such as the Duwamish people, understood the dynamism of the place; they built their traditions, habits, and culture around the constant ebb and flow of the tide, seasonal variation in the weather and migratory patterns of animals, and even understood and adjusted to the long-term cycles of climate change, glaciers, volcanoes, earthquakes, and tsunamis. The Native Americans had a culture that worked much more closely with nature and its rhythms, taking advantage of natural bounties and systems. While recent research has concluded that Native Americans manipulated the landscape much more than was previously thought*, they did so in a way that was more interactive than subjugative.

It did not take long for the newer settlers to bump into the shorter natural cycles of the region. Hillsides that had been logged in the dry season quickly began sliding in long rainy seasons. Settlements built on fill began sinking into tidal flats that refused to be tamed. Rivers flooded, blocking transport routes and ruining crops. Steep hillsides and ravines made transportation and service infrastructure difficult.

Rather than adapt to the needs of place, these latecomers instead decided to adapt the place to their needs. Large-scale geoengineering projects were undertaken to level hills (Denny and First Hill among them), simultaneously displacing the often poor and “undesirable” people who lived on their slopes. Fresh water was collected into reservoirs and piped from the mountains; electric power was generated by harvesting the flow of this water; rivers were dredged and rerouted to formalize property, minimize flooding, and secure navigation routes; and tidal flats were filled in with the detritus of these operations to create more property available for sale and commerce where Seattle’s hills meet the Sound.

The European transformation of the area began in the late 1880s. Early photos offer a disorienting, even breathtaking, perspective. Fresh new homes and the first paved road in the area, Madison Street, sit amidst clearcuts and stumps, surrounded by remaining trees, reminding one of rural development in the Cascade foothills today—except that this is the core neighborhood of the city. A hopeful windmill stands at the edge of the First Hill residential neighborhood, perhaps reflecting Midwest or Dutch heritage, except then as now, there is not enough wind in the area to generate meaningful mechanical or electrical power.

Written records from the period offer a tantalizing glimpse of a frontier under transformation. A huge glacial erratic, located near the present-day intersection of 10th and Madison, was the local make out spot. The 1903 Sanborn maps of the area show scattered development, with an eclectic mix of very small industry, commerce, and housing mixed together. A folding bed factory sat off an alley on 9th Avenue, not far from a suspender- and glove-maker. Four ethnic groups (Chinese, French, German, and Jewish) are specifically called out in association with different uses in the Seattle U. valley, showing that the area has always been a melting pot of cultures coming together. A 50-foot-wide “gulch,” surely what today would be called a “riparian corridor,” intriguingly runs west down the area of current Jefferson Street, hooking south along the alignment of 15th Avenue.

The area did not take long to receive more major institutions and structures, with the strong influence of religious institutions that continues to this day. The first Seattle University building, the Garrand Building, was completed in 1894, built by Immaculate Conception parishioners. The Providence Hospital, now Swedish Cherry Hill, was completed in 1900, and St. James Cathedral and the original Temple de Hirsch were finished in 1907. Within two decades, old growth forest had been replaced by major institutional structures that are still icons of the area today.

As the neighborhood grew in the 20th century, a new presence emerged in the landscape: motor vehicles. Initially an unusual, exciting, innovative convenience, this tool came to dominate the area, as it has in every other city on the planet. An extensive network of streetcars and a culture of walking was replaced with cars, and as the area densified and car ownership grew, cars came to command the landscape.

Human communities stand at the threshold of a major evolution—one that restores humans to their rightful place as its physical centerpiece, and treats nature as a partner and friend. Rather than simply reverting to the preindustrial past, this third wave of human community takes the existing frame of our places and applies what is best in modern civilization (advances in health, knowledge, and beneficial technologies) and unites it with what is needed (deep reintegration of nature, removal of machine dominance, and radical reduction of resource use). The result will be communities that are wild and nurturing, appropriately technological and deeply restorative. We see glimmers of the future in members of the generation that is now coming of age, many of whom prioritize experience over ownership, community over self, and mobility.
over cars. The Bullitt Center embodies a first step for the area toward this future. It is not too late to learn the lessons of this land, to become part of the dynamic processes that will again shape and reshape it, to rebuild a place of abundance for the people who call this home. The vision developed on the subsequent pages is not one of subjugation and dominance, but a start of a new way of living so that we too can become native to this place.

*Sources: Emerald City; Tradition and Change on Seattle’s First Hill; geologywriter.com; pauldorpat.com*
This map locates some of the fascinating historic features identified from the 1903 Sanborn map. It’s interesting to note the large number of neighborhood-scaled systems, open space amenities, and the religious/cultural/economic diversity present in the neighborhood from its very early years prior to current, modern infrastructure.
02. VISION
WHAT DOES GOOD LOOK LIKE?

First Hill and the Central District have always been diverse and dynamic neighborhoods. They are now poised to be the most ecologically restorative, culturally rich, and socially just neighborhoods not just in Seattle, but in the United States.

The vision is supported by a series of five vignettes—Food, Water, Energy, Access/Mobility, and Biophilic Neighborhoods. These vignettes were derived from our analysis of the neighborhood and feedback from our partners. Each of these strategies contains call outs for policy and equity to highlight areas of connection and focus. The idea behind the vignettes is to provide a snapshot of how Living Community strategies can transform aspects of the neighborhood. Each vignette is intimately related to the others, and taken collectively contain holistic ideas to substantially transform the neighborhood.

GOALS

Though the document is organized around a series of vignettes, the goals are derived from the Living Community Challenge (LCC) framework, which is provided on the following page. However, rather than rigidly follow the LCC, this document follows the structure derived from a charrette held in June 2015 with an array of community stakeholders. For a full charrette report, see Appendix D.

While the five vignettes that follow—Food, Access/Mobility, Water, Energy, Biophilic Neighborhood—started as part of a charrette process, they cover all parts of the Living Community Challenge. Beauty, Equity, and Health & Happiness in particular are woven throughout the document, while Materials are touched on only briefly.
## PLACE

<table>
<thead>
<tr>
<th>01. Limits to Growth</th>
<th>Maximize food production within the community’s boundary.</th>
<th>See p. 17 for more details</th>
</tr>
</thead>
<tbody>
<tr>
<td>02. Urban Agriculture</td>
<td>Reintroduce wildness and nature in order to create living systems for all species. Specifically, create two habitat corridors through community, running east/west and north/south.</td>
<td>See p. 43 for more details</td>
</tr>
<tr>
<td>03. Habitat Exchange</td>
<td>Maintain narrative and texture of place by preserving threads of historic fabric—remnants, stories, signs, and virtual.</td>
<td>See p. 08 for more details</td>
</tr>
<tr>
<td>04. Human Powered Living</td>
<td>Transform public right-of-way (ROW) into neighborhood fabric that is biased toward people rather than machines</td>
<td>See p. 23 for more details</td>
</tr>
</tbody>
</table>

## WATER

<table>
<thead>
<tr>
<th>05. Net Positive Water</th>
<th>Reduce potable water use in neighborhood by 60+%.</th>
<th>See p. 30 for more details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collect all potable water from rainwater and treat without the use of chemicals.</td>
<td>See p. 50 for more details</td>
</tr>
<tr>
<td></td>
<td>Use greywater as a resource to nourish yards, gardens, and groundwater.</td>
<td>See p. 50 for more details</td>
</tr>
<tr>
<td></td>
<td>Process all blackwater at the micro-watershed scale.</td>
<td>See p. 50 for more details</td>
</tr>
<tr>
<td></td>
<td>Utilize net positive water concepts to as a tool for resiliency and equity.</td>
<td>See p. 34 for more details</td>
</tr>
</tbody>
</table>

## ENERGY

<table>
<thead>
<tr>
<th>06. Net Positive Energy</th>
<th>Community energy independence, i.e., the neighborhood generates as much energy as it uses. If it is not possible to generate adequate energy within the physical boundary of neighborhood, all power is from renewable sources within the region and owned by community.</th>
<th>See p. 36 for more details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75% energy use reduction in building stock over existing levels.</td>
<td>See p. 49 for more details</td>
</tr>
</tbody>
</table>

## HEALTH & HAPPINESS

<table>
<thead>
<tr>
<th>07. Civilized Environment</th>
<th>Designate 70% of the community outside of buildings—right-of-way, parks, and landscape—as habitat. The neighborhood should be a place of fun activity, which combines walking, play, exercise, and enjoyment of nature and the outdoors.</th>
<th>See p. 40 for more details</th>
</tr>
</thead>
<tbody>
<tr>
<td>08. Healthy Neighborhood Design</td>
<td>Enable all residents to experience wild nature. At least 10% of the community should be wild, and located where people can experience it.</td>
<td>See p. 42 for more details</td>
</tr>
<tr>
<td>09. Biophilic Environment</td>
<td>Create a sonic environment that is restorative, not anxiety-inducing. Limit vehicle noise significantly, especially noise from I-5 and its impacts on Yesler Terrace and west First Hill.</td>
<td>See p. 42 for more details</td>
</tr>
<tr>
<td>10. Resilient Community Connections</td>
<td>Create opportunities for growing and collecting healthy, unprocessed food within the neighborhood.</td>
<td>See p. 18 for more details</td>
</tr>
<tr>
<td></td>
<td>Make the neighborhood physically safe for people. No one should be killed by motor vehicles (Vision Zero).</td>
<td>See p. 25 for more details</td>
</tr>
</tbody>
</table>
### MATERIALS

11. Living Materials Plan
   - Eliminate all unhealthy chemicals and pollutants, including all Red List materials.
   - See p. 56 for more details

12. Embodied Carbon Footprint
   - Support local industry and use materials and technology created within the region.
   - See p. 34 for more details

13. Net Positive Waste
   - Achieve net zero waste by keeping nutrients in the community to build soil health.
   - See p. 31 for more details

### EQUITY

14. Human Scale + Humane Places
   - Make all areas outside of buildings deeply restorative, beautiful places that are accessible to all.
   - See p. 25 for more details

15. Universal Access to Place & Nature
   - Create affordable housing.
   - See p. 56 for more details

16. Universal Access to Community Services
   - Create good-paying jobs in the community.
   - See p. 48 for more details

17. Equitable Investment
   - Leverage decentralized infrastructure to create more resilient water and energy infrastructure.
   - See p. 33 for more details

18. Just Organizations

### BEAUTY

   - Enhance and create beauty in the community through nature interactions, public art and community engagement projects
   - See p. 40 for more details

20. Inspiration + Education
   - Emphasize cultural expression in every act of building.
   - See p. 46 for more details
Integrating substantial food growing and production into the community creates an opportunity to tie together many significant issues and opportunities, such as equity, beauty, rewilding, water management, mobility, and economics. Each of these elements makes an important contribution to the creation of a Living community. Currently, 12.8% of Seattle residents experience hunger. Not only is this not acceptable, but we can do better. This framework is intended to provide a strategy to alleviate hunger in the community and reconnect food production to the lives of community residents and—provide opportunities for community food production and harvest; reduce carbon emissions by limiting the distance that food must travel into the neighborhood and nutrients must travel out; eliminate processed food in favor of real, local, and fresh; create new job opportunities; create a more beautiful environment that is verdant, fruitful, and flowering; and reconnect people back to the soil by providing more opportunities for people to engage with agriculture. Thoughtful rewilding with native plants can also provide forage: camas, berries, mushrooms, etc.

This strategy will involve a significant reworking of institutions and systems that are taken for granted today. Chief among these are the ideas that streets are intended solely for vehicular circulation, parks are intended solely for recreation, food can be bought only in supermarkets, farms are located only far from the city, and food is primarily acquired through economic transactions.
This agriculture framework is intended to show a high-level strategy for including more agriculture into the community.

15% Average Rooftop Cover
20% Average Lot Cover
Indoor Farm

Existing Garden
Identified Agriculture Opportunity Area
Agriculture Streets-15% Coverage Averaged Over Entire ROW
Existing Park - 30% Coverage
Street Trees Replaced with Fruit Trees

FRAMEWORK

First Hill could produce a significant amount of food in the neighborhood. This framework shows some key opportunities that could bring substantial benefits to the neighborhood. Through a combination of agriculture on rooftops, private lots, institutional campuses and in the right of way, this framework could yield approximately

- 660,000 POUNDS OF FRUITS,
- 1,500,000 POUNDS OF VEGETABLES, &
- 530,000 POUNDS OF ANIMAL PRODUCTS PER YEAR,

depending on mix and intensity.

That is enough food to feed 1,800 people for a year, or to provide 40% of the fruits and vegetables of the residential population in the community. The diagram below shows how the strategy could play out on the block scale. On the following pages, a matrix provides a more in-depth look at different types of food production, and brief case studies are provided as examples of innovative food programs and systems from around the world.
**VIGNETTE 1: FOOD PRODUCTION MATRIX**

<table>
<thead>
<tr>
<th>GREEN ROOF</th>
<th>RAISED BED CONTAINER GARDEN</th>
<th>BACTERIA FARM</th>
<th>LIDDED GARDEN/GREENHOUSE</th>
<th>INDOOR FARM</th>
<th>ANIMAL FARM</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Green Roof Image" /></td>
<td><img src="image2" alt="Raised Bed Container Garden" /></td>
<td><img src="image3" alt="Bacteria Farm Image" /></td>
<td><img src="image4" alt="Lidded Garden/Greenhouse" /></td>
<td><img src="image5" alt="Indoor Farm Image" /></td>
<td><img src="image6" alt="Animal Farm Image" /></td>
</tr>
</tbody>
</table>

**DESCRIPTION**

- **Green Roof**: A vegetated roof that protects the structure, adds to land dedicated to food production, and contributes to biophilic opportunities.
- **Raised Bed Container Garden**: Traditional style of food production in containerized beds. Can be placed in areas that are otherwise unfit for food production.
- **Bacteria Farm**: A contained and innovative farming technique able to produce a variety of fuel, food, and accessory products using little, if any, fresh water.
- **Lidded Garden/Greenhouse**: Light-duty, clear-walled/roofed shelters to protect food and heat interior air through greenhouse effect, lengthening growing period and adding additional growing cycles per year.
- **Indoor Farm**: Indoor farms that vary greatly in scale and intensity, ranging from microgreens grown under the kitchen sink to retrofitted warehouses.
- **Animal Farm**: The cultivation of (typically) fowl, bees, and small farm animals within city limits to provide animal products within a concentrated area.

**OUTPUTS**

- **Green Roof**:
  - Outputs - Fruit: 1 ft² => 6 lbs (kiwi, ‘Tri-Star’ strawberries)
  - Vegetables: 1 ft² => 9 lbs (Swiss chard)

- **Raised Bed Container Garden**:
  - Fruit: 1 ft² => 10 lbs (pole apples, ‘Sunshine Blue’ blueberries, ‘Tri-Star’ strawberries, Actinidia arguta hardy kiwi)
  - Vegetables: 1 ft² => 7.5 lbs (Swiss chard, summer squash, turnip)
  - Spirulina: 10-gallon tank => 1 TB every other day

- **Bacteria Farm**:
  - Fruit: 1 ft² => 10 lbs (pole apples, ‘Sunshine Blue’ blueberries, ‘Tri-Star’ strawberries, Actinidia arguta hardy kiwi)
  - Vegetables: 1 ft² => 7.5 lbs (Swiss chard, summer squash, turnip)

- **Lidded Garden/Greenhouse**:
  - Yields vary greatly depending on the type of crop, scale of operation, and technology deployed.

- **Indoor Farm**:
  - Yields vary greatly depending on the type of crop, scale of operation, and technology deployed.
  - 50 pounds per hive per year;
  - Eggs: 180 - 230 eggs per fowl per year.

This matrix shows the various types of agriculture proposed for the community and the relative benefits of each.
BEACON FOOD FOREST

The Beacon Food Forest (BFF) is part community garden, part educational laboratory, and part community gathering place in the Beacon Hill neighborhood of Seattle. On the most basic level, it empowers people to have food security in their lives through community agriculture. The BFF is unique in that the community garden is truly communal—the maintenance and harvest of a portion of the garden is open to all. The 1.75-acre BFF was created when an underused corner of a city park was reclaimed by a group of neighborhood activists interested in permaculture. It is maintained primarily by a dedicated group of volunteers who are motivated by the mission and the opportunity to have their hands in the soil. The BFF acts as a model of a public-private partnership where a not-for-profit organization partners with the city (landowner) to install and manage a food-growing operation.

BROOKLYN GRANGE

The Brooklyn Grange is reportedly the world’s largest rooftop soil farm, and is a model for an economically viable, socially driven, for-profit business. The farm currently has over two acres of rooftop under cultivation from which they cultivate over 50,000 pounds of organically cultivated produce per year. In addition to their work with vegetables, the Brooklyn Grange also keeps hens for eggs and an apiary. The group distributes their food directly to restaurants, and to the public through farm stands and a CSA program. They also operate a non-profit education organization called City Growers that provides consulting and installation services.

SPAIN’S SOLIDARITY FRIDGE

The Solidarity Fridge is located in the Basque town of Galdakao and was the idea of Alvaro Saiz. The idea is both simple and elegant. Saiz convinced the city to purchase and power a standard refrigerator located on a city street in which businesses and individuals place leftover or otherwise unsellable food. The contents are free to any person at any time. A group of volunteers maintains the refrigerator and cleans out any expired food, though food has not yet lasted long enough to require this. The idea is beginning to catch on across Spain with other solidarity refrigerators opening in other towns, such as Murcia, 400 miles to the south. The Solidarity Fridge demonstrates several principles which bear mentioning. 1.) The Town provided infrastructure for the program, but the townspeople themselves manage the stocking and maintenance of the resource. This is a public private partnership at its most basic level. 2.) This Fridge does not require additional food to be produced, rather it makes the existing food system more efficient by eliminating waste and more complicated redistribution schemes. 3.) The system may not completely end hunger, but it does allow for people to supplement their diets immediately in times of temporary need.
VIGNETTE 1: POLICY AND GOVERNANCE

POLICY AND GOVERNANCE BREAKOUT

- Ensure collaboration across city departments and agencies, including OSE, SDOT, SPU, Parks, Neighborhoods and DPD, to prioritize projects with an urban food production component.
- Create an office of municipal food production that facilitates all aspects of food growing within the city and encourages parks to include food production and active farming.
- Integrate policies and incentives that allow and prioritize urban food production into citywide, neighborhood and departmental plans and codes such as the 2016 Comprehensive Plan update, Land Use Code updates and future master plans.
- Put more land into food production by (re) allocating City-owned land and requiring food production on private developments to help the city meet its goal of ensuring that all residents have enough to eat.
- Expand the P-Patch Community Gardening program to allow third-party administration programs and ensure diversity of participation.
- Allow food production within the right-of-way and replace prohibition on fruit- and nut-bearing street trees with harvest facilitation programs such as CITY FRUIT.
There is significant opportunity to meet many of the environmental, equity, and aesthetic goals of the neighborhood by fundamentally rethinking how the right of way functions, while improving its function as a mobility corridor. 34% of the community is publicly owned right-of-way. Given that most of the city’s land area is made up of privately held buildings, the right of way essentially is the city, at least the one which we experience.

Yet most of the right of way is used primarily for motor vehicles, in addition to the large amount of private land that is dedicated to the warehousing of cars. Nationwide, the average car sits vacant for 95% of the day, taking up lots of space that could be used for other things.

This plan proposes to use right-of-way to provide a network of high-quality open space; to right-size the transportation network by reducing the amount of area for large vehicles and increasing allocation for microvehicles and human-powered vehicles; to create a more equitable distribution of habitat/nature/wildness; grow food and provide jobs and economic opportunities; substantially reduce carbon emissions; and eliminate traffic fatalities per the City’s goals under the Vision Zero plan.

* http://www.reinventingparking.org/2013/02/cars-are-parked-95-of-time-lets-check.html

**EQUITY BREAKOUT**

- Traffic fatalities disproportionately impact pedestrians and cyclists, especially vulnerable users and minorities.
- Streets are paid for by all of society but produce disproportionate benefits for vehicle owners and operators.
- On-street parking subsidizes vehicular ownership by reducing or eliminating the cost to store a vehicle.
- Streets are the largest portion of publicly owned land in the city and should be designed to meet the needs of all people, not just car owners/users.

* http://walkinginseattle.org/?p=3549
BOREN AVENUE, A PLACE FOR LIVING SYSTEMS

Current view of Boren Avenue

Opportunities for food production in the right-of-way.

Wide and safe places to walk and play.

Stormwater managed in natural features.

Transit and personal vehicles accommodated in dedicated lanes.
12TH AVENUE BLUE-GREEN STREET

- Tree-lined, serpentine boulevard.
- Constructed Wetland to manage rainwater for drainage shed.
- Separated bicycle path of natural materials.
- Walking path of natural materials.
- Agriculture integrated into the street.

Current view of 12th Avenue
Opportunity/Focus Areas

Parks and Open Space

Agriculture Street

The streets framework is intended to show a high-level strategy for re-making streets to accomplish human and ecosystem services goals.

FRAMEWORK

This framework plan is based on a few street types that could be used to retrofit existing streets and

- PROVIDE 19 ACRES OF OPEN SPACE,
- 25 MILLION GALLONS OF STORMWATER,
- 465,000 POUNDS OF FOOD,
- AND ZERO DEATHS FROM CAR/PEOPLE COLLISION,

all in a network that is beautiful for people and provides habitat for plants and animals.

Car-based mobility no longer works well and is a significant source of anxiety for many people. When in use, cars are an overwhelming force on the public realm—polluting, creating unnatural, stressful levels of noise, and intimidating people through unnatural speeds and size. As population density and car volume increases, so does the number of traffic jams and delays caused by the tool that was meant to bring mobility and freedom. In many parts of Seattle today, it is faster to get from one place to another via bicycle than by car. All of these street types seek to provide an array of mobility options in addition to single-occupancy vehicles in order to create new networks that allow for more freedom of choice and mobility, as well as a more equitable distribution of space.
**STREET TYPES**

Agriculture Street - These streets repurpose excess travel and parking lanes for food production. Opportunities exist to store water for irrigation.

Wild Alley - There are many legacy alleys in the community. New alleys should use similar form with a compacted natural surface and wild vegetation rather than hard surfaces.

Bike/Car/Transit Boulevard - These are the main through streets of the neighborhood that prioritize network connectivity.

Wild Way - These streets prioritize pedestrian connections and a park-like environment that provides habitat corridors and open space.

Blue/Green Street - Blue green streets repurpose excess parking and travel lanes to provide stormwater infiltration and open-space amenities.

Woonerf - Seattle is a leader nationally with this urban people-focused shared street. They could be pushed further with the inclusion of agriculture and less hardscaping.

**STREETS MODEL**

Existing ROW Allocation

- Habitat and Agriculture
- Car Storage and Circulation
- Bike Circulation
- People Circulation

Proposed ROW Allocation
Where there are few constraints, the excess street surface is free to use as plazas, open space, and productive land.

Parking and drop-off areas can be accommodated around businesses, schools, daycares, etc.

Cities around the world provide examples of how water and nature can make streets more beautiful, resilient, and to provide ecosystem services in addition to mobility.
VEHICLE IN THE MIDDLE

Today, mobility options tend to be bunched at extremes—either jump in a two-ton, large-footprint, high-impact vehicle, or walk, bus, or bicycle. The latter options work very well for an array of trips, but often location, nature of trip (i.e., shopping), or distance make these difficult. In addition, Seattle's topography (many hills exceed 500 feet above sea level), makes human-powered mobility a challenge for many—applying a Dutch approach, where the landscape is completely flat, is not totally realistic in the community or Seattle in general. However, a new breed of vehicle—low speed, quiet, human scaled, and lightly motorized—can enable small-footprint mobility that works in tandem with creating a beautiful, human-friendly city.

This new vision of urban mobility works better and has fewer negative externalities. Microvehicles have a net faster point-to-point speed (because their increased number per square foot of right-of-way results in no traffic backups), are less expensive, and are much more conducive to a human-oriented public realm. Money that would be spent on full-size cars can be re-directed to transit and microvehicles. Smaller vehicles mean smaller lanes and shorter lane stacking—resulting in better levels of service. Biking and walking become much safer, because their routes are separated. Such alternatives allow people to unchain themselves from the car and simply get where they need to via an array of mobility tools and options.

Right: There are a variety of types of micro-vehicles that range from prototypes to production models.
POLICY AND GOVERNANCE BREAKOUT

- As part of the 2016 Comprehensive Plan update, highlight the role of the right-of-way in defining the city and allow increased adoption of Green Streets.
- Assess and modify the legal definition of right-of-way, expanding its defined uses to reorient mobility with an emphasis on transit, walking, biking, and the creation of a mobility network for microvehicles.
- Establish an interdepartmental team dedicated to the implementation of a new vision of right-of-way over the long term.
- Create new mobility and right-of-way designs and implement these along with capital improvements, beginning with pilot corridors such as 12th Avenue.
- Encourage interdepartmental collaboration to create wild corridors that connect existing park infrastructure and address gaps in usable open space.
- Develop viable strategies for ongoing right-of-way maintenance that allows private-public partnerships with community groups and private developers.

RIGHTS OF THE VULNERABLE

Reducing the impact of vehicles on the cityscape expands beyond the physical dimension to the legal. The inherent power dynamic between driver and bicyclist or pedestrian is profoundly asymmetric—the driver literally holds their lives in his/her hands. Vehicle drivers simply must take responsibility for harming the unprotected. The judicial and legal system must be reoriented to view driving in the city to be a profound responsibility, with the highest possible bar of safe operation.

The de facto power hierarchy today places the driver at the top. Traffic laws must be substantially strengthened to place those who are most vulnerable in the position of the greatest rights. Killing or injuring a pedestrian or cyclist must have the substantial consequences. Too often, it does not. Similarly, the city government must take greater responsibility for unclean or broken pavement that injures walkers and cyclists—potholes and pavement cracks that have no impact on cars may cause cycle crashes or pedestrian falls.
Water is fundamental to all known life in the universe; it is the primary molecule in our bodies, and it covers the majority of the Earth’s surface. As luck would have it, roughly the same amount of free, purified water falls from the sky onto the community as the amount that is needed for potable use in the community. And yet most of the water consumed in the community fell as snow high up in the Cascade mountains. This water is collected into reservoirs, treated with chemicals, and piped underground for many miles, at times requiring energy consuming pumps to lift the water over hills and out through our taps. When we have used this distantly sourced, chemically treated water for everything from washing our cars to flushing our toilets, it is returned to pipes that carry it (requiring more pumping energy) to a regional wastewater processing facility. At the wastewater processing facility, more energy and chemicals are added to the water to separate the potable water and added nutrients. Near-potable water is then returned to large pipes and pumped far out into the Puget Sound.

The following paragraphs present a vision for micro, neighborhood-based water management within the community. It is a viable and living alternative to the environmentally and economically expensive grey infrastructure systems that are failing most cities across the United States.

In this strategy, neighborhood scaled treatment systems are paired with collection of rainwater on the block scale and a drastic reduction in water consumption. The policy and governance breakout contains ideas on how building codes may be amended to achieve the required efficiency. It is also assumed that building systems in existing buildings will be retrofitted over time through code amendments and incentives. These three things—neighborhood based treatment, block-scaled collection, and efficiency—each developed in more detail in the following, provide the basis for the net positive water model.

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For a full net zero water analysis, click here to be taken to the appendix.

* Since the hospitals are a regional resource, planning for their water needs warrants a regional strategy.
CONSTRUCTED WETLAND AND SPRAY PARK AT BAILEY GATZERT ELEMENTARY SCHOOL

- Robust verdant boulevard and streetcar track
- Reconfigured play field
- Education building with pumping facilities
- Constructed wetland
- Urban agriculture using compost from block-scaled systems
- Vehicular circulation loop
- Spray park

Current view of Bailey Gatzert
The water framework is intended to show a high-level strategy for how to accomplish net positive water on the micro-watershed level.

There are three watersheds in the community. The central watershed, depicted on the left, is the largest watershed in the community, but the ideas and systems presented here are applicable to other watersheds in the community, city, and region. This model relies on a move away from the current model, where all water for every purpose is potable and all wastewater is treated at a centralized plant. This system relies on collecting rainwater (to be treated with filters for drinking and left unfiltered for irrigation); using recycled water for irrigation, toilet flushing, and all other non-potable uses; infiltrating non-harvested rainwater; and treating blackwater at a community-scaled system.

Such a system would:
- **RESTORE NATURAL WATER FLOWS IN THE COMMUNITY AND REGION;**
- **ELIMINATE THE NECESSITY OF CHEMICALS TO TREAT POTABLE AND WASTEWATER;**
- **DRAMATICALLY REDUCE THE ENERGY REQUIRED TO PUMP WATER AROUND THE REGION;**
- **CREATE A MORE BEAUTIFUL NATURAL ENVIRONMENT;**
- **REDUCE INFRASTRUCTURE COSTS AND PROVIDE A WORKING ALTERNATIVE TO FAILING INFRASTRUCTURE;**
- **TURN WASTEWATER TREATMENT INTO A NEIGHBORHOOD ASSET RATHER THAN A LIABILITY;**
- **AND CREATE A BETTER-DISTRIBUTED, MORE RESILIENT SYSTEM.**

Additionally, the principles of net positive water outlined above could significantly ease a significant burden that currently exists for people without houses in the community—the lack of access to clean water and sanitation. More on this strategy is outlined below.
POLICY AND GOVERNANCE BREAKOUT

- Convene an interdepartmental City working group as part of the Climate Preparedness Strategy to assess resilience, implications, demonstration opportunities and implementation strategies for a community-scale net positive water system in the community.
- Develop operating arrangements for utility infrastructure as an integrated part of a community-scale, closed-loop water system.
- Perform a financial analysis with utilities comparing the total cost of regional-scale versus neighborhood- and community-based water management systems.
- Revise code to prohibit potable water from being used for non-potable uses.
- Reimburse private parties for the value of the impacts on regional systems offset by private rainwater collection and sewage treatment systems.
- Support public-private partnerships for small operator administration of community-scale water collection and sewage treatment systems.
- Encourage a demonstration project in the community that partners utility providers with landowners to develop a watershed strategy that treats blackwater through a neighborhood-constructed wetland or other neighborhood-scaled system.
- Support policies for and implementation of rainwater collection and off-grid sanitary facilities for persons without homes.
- Develop state guidelines for decentralized on-site greywater treatment and reuse systems for urban food irrigation.
- Develop testing and monitoring requirements for capture and treatment of rainwater without chemicals for on-site potable water use.
- Accelerate implementation of green stormwater infrastructure through removal of impervious surfaces and use of right-of-way to support low-impact stormwater treatment and rainwater collection and storage.
- Scope the City’s Capital Improvement Program to identify opportunities for integrated water management designs and implementation as part of the City’s commitment to resilience and the restoration of Puget Sound and other waterways

The proposed water model is a synthesis of micro-watershed and block strategies. More information on the block strategy is provided in the implementation section.
EQUITY BREAKOUT: NET POSITIVE WATER AS A VEHICLE FOR RESILIENCE AND EXPANDED HUMAN RIGHTS

Recent events in California and Detroit demonstrate that climate change and failing municipal infrastructure disproportionately impact minorities and people with low-income. These lessons, combined with the burgeoning crisis of the increased number of people experiencing homelessness in Seattle demonstrate that the current water system is not just failing, it is failing most those with the greatest need and fewest choices. Net positive water principles at the community scale offer a more resilient alternative to the centralized water model. At the micro scale, net positive water can offer expanded choice to those in the most need and provide basic sanitary and potable water. While neither of these solutions in themselves will solve poverty or homelessness, they can help to ease the burdens of those with very low incomes or without access to facilities:

- At the most basic level, the net positive water model allows individuals and communities to freely access those resource that come naturally to their site. As technology develops, costs for potable filtration and blackwater processing continue to decrease.
- An interconnected web of decentralized systems is more resilient than a centralized system since it can not be shut off or taken down by a single event.
- Decentralized water infrastructure can act as a neighborhood amenity, providing open space to areas with little access.
- Since the net positive water model does not require the provision or maintenance to hugely expensive municipal infrastructure, services can be extended more easily to increase housing options.
- Rainwater collection and filtration kiosks could provide clean drinking water to anyone who needs access to a water source at that moment.
- Such a system could be combined and run from solar power to create a completely grid-free system. These solar-powered kiosks could also include charging stations for small electronic devices.
- This system does not solve homelessness, but it does recognize the dignity of all people and helps to meet the basic human needs of those who are experiencing homelessness.
- The system would also create a cleaner, safer environment for everybody.
- It also supports the City’s goals for green economy opportunities related to neighborhood watershed management, including creating jobs for local plumbers, inspectors, monitors, research and technology.
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- The system would also create a cleaner, safer environment for everybody.


Protesters in Detroit call for water as a human right.
Image Source: http://diversity.berkeley.edu/detroits-water-crisis-flood-inequality

Even NASA’s gotten into the game. The California drought demonstrates the need for a radical rethink of the national water model for resiliency.

The Earth Auger by Critical Practices is a great example of net positive water solution to extend sanitary systems to those in need without the requirement of gray infrastructure. It is human powered and converts waste to compost.
Guilford County is located in north-central North Carolina. When the school district decided to build their new combined middle and high school, the connection costs to connect to the infrastructure cost to connect to the existing municipal treatment system was prohibitively expensive—four million dollars.

Rather than to bear the cost, the school district chose instead to install a Living Machine® to treat the wastewater from the entire campus. This system not only brought with it the associated economic benefits, it saves over two million gallons/year of water and infiltrates all wastewater back onto the site, recharging the local aquifer. The Guilford County Schools also collect rainwater from their roofs to use for toilet flushing, further reducing their water footprint.

This case study is a great example of a school district taking leadership in infrastructure investment and environmental stewardship. It shows that alternative water systems can work, and they can also aid in the mission of educational institutions of all levels.

**GUILFORD COUNTY SCHOOLS**

**SAN FRANCISCO PUBLIC UTILITIES COMMISSION BUILDING**

The SFPUC building is a 13-story, class-A office space built in one of the densest parts of one of the most densely populated cities in the United States. The building treats and reclaims all of its wastewater on-site for reuse in toilet flushing, showing the viability of such systems at higher densities.

The building uses a constructed tidal wetland system that creates a functional amenity on the site. Plants in the lobby, cafeteria, and on the sidewalk are nourished and irrigated from the effluent of the system.

The SFPUC building shows how these systems can be safely integrated into the public realm, and even cafeteria areas of the building. Though not a neighborhood system per se, it exemplifies an integrated system that is both functional and beautiful.

**DOCKSIDE GREEN CASE STUDY**

Dockside Green is 15-acre brownfield redevelopment site in Victoria, British Columbia that includes 1.3 million square feet of mixed-use development. The project is notable in that it manages all of its blackwater on site with a membrane bioreactor. The bioreactor provides recycled water for all non-potable uses on site, including irrigation, toilet flushing, and water features.

In addition to the blackwater and greywater systems, the project also manages all of its rainwater on site. Rain gardens and permeable pavers are used throughout. These create a natural amenity through exposed drainage routes, allowing water to naturally infiltrate, evaporate, and flow to the Upper Harbor.

Though this water system is neither the newest nor the most cutting edge system, it is a great example of a neighborhood-scaled system that is functional and provides a real amenity to residents and visitors alike.
Currently, as much of 90% of the energy (not including internal combustion vehicles and generators) consumed in Seattle is generated by large-scale hydro-power in the Cascade Mountains. While at first look this figure seems to suggest that the city meets the goals of the Living Community Challenge, the situation is more complex than that. Large-scale hydro requires significant disruption of natural water cycles and ecosystems. In this region, dams are associated with devastating impacts to salmon populations and habitat. Though the operation of hydro does not release carbon into the atmosphere, the power source is only as renewable as the water that supplies it. Significant decreases in snow pack and extreme climatic variation call into question the long-term viability of the current system. Climate concerns aside, it is clear that in the face of an uncertain future this system is not as resilient as once thought. Additionally, the city and region are growing rapidly, and the aging hydro infrastructure—some nearing a century old—with its associated externalities are may not be sufficient to meet demand future demand.

A far more resilient strategy with fewer externalities is a transition to widely distributed generation grid powered by on-site renewables—primarily wind and solar with geothermal used to decrease heating and cooling loads. Seattle is fortunate to have a low-carbon utility that can provide the basis for a transition to a renewably powered, more resilient future.

This strategy of distributed renewable generation must be combined with efficiency upgrades to existing structures and code improvements to require super-efficient construction for all new buildings. In the north east corner of the community is the BULLITT CENTER, a shining example of the described strategy on the building scale. These two ideas, distributed generation and radical efficiency, are the basis of the net zero energy strategy for the neighborhood.

For a full net zero energy analysis, click here to be taken to the appendix.

** Since the hospitals are a regional resource, planning for their energy needs warrants a regional strategy.
The energy framework plan shows the basic elements and high-level strategies for accomplishing net positive energy in the community.

70% PV coverage on large roofs
30% PV coverage on small roofs
Freeway cap

**FRAMEWORK**

This framework plan shows the basic tenet of an LCC energy model—maximizing rooftop coverage of photovoltaic (PV) panels. This framework assumes a fairly conservative coverage rate—generation potential could be increased with additional rooftop coverage. Using the rooftop collection strategy alone, the majority of energy required in the community could be generated on site. With the inclusion of an I-5 solar cap and utilization of 12% of the ROW area, the energy gap could be zero. This is to say that **FIRST HILL AND THE CENTRAL DISTRICT COULD BECOME NET ZERO ENERGY COMMUNITIES.**

In addition to roof-mounted solar, there are a variety of other strategies that could be used to close the energy gap. Small, efficient, building-mounted wind turbines could add production. Additionally, wall-mounted and PV surface treatments could add generation potential. Finally, a variety of energy renewable technologies, such as sewage heat recovery and piezoelectric generators, could be considered as the technology becomes more competitive.

**EQUITY BREAKOUT**

- Net zero energy provides significant opportunity to reduce or eliminate energy bills, which can significantly aid in affordability for low-income residents.
- This energy model has fewer externalities in terms of heavy transmission lines and distribution stations, which tend to be located in low-income neighborhoods.
- Renewably generated energy does not need to be tied to the grid. This provides opportunity to extend energy service to populations in need without heavy infrastructure investment.
- A distributed energy system is more resilient, which most benefits those who cannot leave the neighborhood in an emergency event.
POLICY AND GOVERNANCE BREAKOUT

- Significantly accelerate codification of feasible energy efficiency technologies, such as heat pumps, triple pane windows, access to daylight, LED lighting, heat recovery ventilators, and increase R values.

- Establish requirements that all new City buildings achieve a minimum Energy Use Intensity of 20, and perform as Net Zero Energy buildings if technically feasible.

- Develop action plan and amend codes for rooftop energy capture in the community as a component of City efforts to achieve carbon neutrality by 2050.

- Seattle City Light should build a net zero energy home retrofit demonstration home, and include a major media and education campaign to inspire local homeowners.

- Support public-private partnerships for increased tree canopy in the community, including in the right-of-way, and meet goals of the City’s Urban Forest Stewardship Plan and Climate Action Plan.

- Collaborate across departments and agencies to support public-private partnerships that allow geothermal systems and renewables in the right-of-way and collective purchase agreements.

- Support on-bill payments with utilities to ensure equitable access and financing that benefits all local residents and businesses.

- Prioritize opportunities for a resilient utility system within the community as a catalytic demonstration of policy goals set out in the Utilities element of the 2016 Comprehensive Plan update.
The Capitol Hill EcoDistrict (CHED) is the neighborhood sustainability planning arm of Capitol Hill Housing (CHH). Working in conjunction with Seattle City Light, the CHED is hosting Washington State’s first community solar array located on affordable housing. In 2014, Seattle City Light (SCL) provided the capital to purchase and install the array on the rooftop of the Holiday Apartments, an affordable housing property owned by CHH. CHED brokered the agreement and garnered support for community buy-in. Individuals were given the opportunity to purchase a share in the system, the energy production of which is deducted from monthly energy bills. Though the system is currently owned by SCL and benefits share holders, ownership and benefit will transfer to CHH in 2020, at which time the system will benefit tenants through reduced energy bills. The system is expected to generate 25,000 kWh/yr, and CHED has plans to expand the system throughout the neighborhood. This public-private partnership is an innovative funding and implementation model to bring widespread, distributed solar generation to a densely populated, renter-dominant neighborhood.

Vauban is an example of reducing energy use in an existing neighborhood by joining building efficiency, renewable energy generation, and people- and transit-focused mobility. Vauban is a mixed-use neighborhood in Freiburg, Germany, where green building is mandated on the site by requiring that all new construction meet a rigorous EUI of 20. The strategy to meet this standard has taken on a variety of forms in the neighborhood, each of which includes high levels of building efficiency, renewable energy generation, and linking to a district combined heat and power system.

In addition to green building practices, the neighborhood has utilized a transportation strategy that reduces motor vehicle use—70 percent of residents are car-free. This was made possible by the development of a robust public transit network, significantly limiting parking, and by flipping the street paradigm to favor human-powered transportation. This strategy allowed for a reduction in transportation energy and has allowed for the street infrastructure to be multifunctional. The transit right-of-way doubles as a stormwater swale, and the residential streets, known as “play-streets,” provide an open-space amenity.

The Hockerton Housing Project (HHP) is a collection of five attached single-family homes located in the rural village of Hockerton, Nottinghamshire, UK. The HHP met their net zero energy goals not through required regulation, but through voluntary self-organizing and resource sharing. Homes in the HHP are individually owned, but the solar resources are collectively owned, maintained, and utilized. This spurs residents to work together to live within the resource means of the community. The HHP was completed 1998, and has evolved over time as a model of low-carbon living, natural sewage treatment, sustainability education, and integration of beauty and community.

While the exact development type differs substantially from the community, the HHP provides an important example of how community-driven energy work can spur broader change. Based on the leadership of the HHP, a group of villagers—including all of the HHP residents—collectively purchased a commercial-grade wind turbine that offsets the energy of 54 Hockerton village homes. This effort exemplifies how a small community can spur larger, town-wide change.
Biophilia is a concept advanced by E. O. Wilson and Stephen Kellert, which describes “the urge to affiliate with other forms of life.” Though the idea originated in biology, it quickly spread into the field of architecture to describe buildings and practices which “…reduce stress, improve cognitive function and creativity, improve our well-being and expedite healing…” In context of communities, biophilia is more than landscaping. It involves restoring connection to the natural world in a myriad of ways—through sky, sunlight, wind, water, habitat, geology, topography, animals. It is experienced through all of our senses—seeing, hearing, feeling, tasting, and smelling. Biophilia includes simple pleasures like views to nature, the sound of water, and the feel of wind on the skin, as well as more complex comprehensions like prospect and refuge, or a nuanced sense of topography and the flow of water.


“14 Patterns of Biophilic Design.” http://www.terrapinbrightgreen.com/reports/14-patterns/#

Here, a twenty-block portion of the community was considered to explore biophilic neighborhood design in more depth. This area has many elements of biophilic design, some of these are explored on the following page. Following that, we explore ways to increase the biophilic experience, particularly through reuse of the right of way. This will enhance the visual connection with nature for residents and visitors, create places of refuge where people can be outdoors but experience a sense of enclosure and safety, increase the attraction and beauty in the neighborhood, give a sense of mystery and discovery with the inclusion of “Wild Ways”, and increase the non-visual connection with nature by creating more habitat for song birds and flowering plants. Additionally, the framework plan brings water back into the neighborhood through blue-green streets, increases the dynamic and diverse light and shadows in the area by increasing the quantity of trees, reconnects and supports the natural systems, provides a more equitable distribution of nature, and avoids the placelessness that is often associated with increased density and change in a growing city.

EQUITY BREAKOUT

• The least wealthy are often the least mobile. Many within the community (and the surrounding city) lack the means to leave their neighborhood and thus to enjoy the benefits of nature. Bringing nature to the city and the community helps to right this balance.

• Nature is beautiful. Distributing nature throughout the city makes the city more beautiful for all people.

• Repurposing the street as a place for people provides a more equitable distribution of resources—streets are for everyone, not just for car owners.

• Nature provides the benefits of quiet and clean air, which are often in critical need in low-income communities.
EXISTING RESOURCES

Tree lined streets are common in the neighborhood. They provide diffused light, seasonal change, the sound of the wind in branches, and habitat for birds. The Pollinator Pathway is designed as a habitat corridor, which brings native insects and birds into the neighborhood. Views to downtown and distant mountains provide a unique sense of place and orientation. The hills also contain the neighborhood and imply a sense of containment and refuge. The Seattle University valley reflects the typical north-south valley/ridge orientation of Puget Sound generally, a physical record of glaciers receding 15,000 years ago. The neighborhood sits on the Puget Sound migratory flyway. Often in September and early October, flocks of birds can be heard calling high overhead. A grove of century-old London Plane trees, planted not long after Madison Street was built, is located in McGilvra Place Park—the world’s first Living Park. This grove represents a new narrative of ancient biota in the neighborhood after the original forest was cleared.

The neighborhood has many existing biophilic elements: the deep connection to place aided by the existing housing stock and cultural and historic resources such as the Congregation Beth Shalom. The detailing of the current temple features intricate geometric patterns; the historic temple annex features rich natural motifs such as shells and leaves which adorn the portals. These historic resources though, are threatened by development pressures in the area. Finally, the neighborhood has a strong adjacency to institutional campuses, which have richly landscaped open space and cultivated land. The net benefit of these existing resources allows the framework plan on the following page to act as a catalyst for the biophilic retrofit of the neighborhood by providing network connection and natural systems as infrastructure, habitat, beauty, and places for human delight.
Above-existing biophilic structure. Left-Proposed biophilic framework plan.

For more information on how a connection with nature could play out on the block scale, click here.
Wild Street Type 1 - Where there is good alley access, there is opportunity to limit vehicular access and create a park-like space.

Where there is no alley access, vehicular access should be maintained in the ROW but minimized to prioritize space for people.

POLICY AND GOVERNANCE BREAKOUT

- Prioritize biophilic Urban Centers and Urban Villages within the community as a catalytic demonstration of policy goals set out in Seattle’s Growth Strategy.
- Integrate biophilic concepts into the Urban Centers and Villages within the community, and well as the Comprehensive Plan Update, the Equity & Environment Initiative, the GSI Implementation Plan, and the Vision Zero Plan.
- Develop policies, codes and incentives that allow and encourage biophilic design in growth areas, including the community.
03. IMPLEMENTATION
Individual blocks are a great scale to implement the vision of this study—they are big enough to take advantage of economies of scale and the benefits of sharing, yet small enough to be specifically tailored to meet local needs on a manageable scale. There are essentially three types of blocks in the community: medium-density blocks that are primarily residential; mixed-use blocks that have active, non-residential ground floors; and institutional blocks that are single-owner and often incorporate the street. In the following, strategies for medium-density residential blocks are developed in detail, while strategies for mixed-use and institutional blocks are mentioned only briefly at this time.

These ideas and drawings are intended to supplement the neighborhood framework drawings earlier in the document. While they provide more information, they are also intended to describe general strategies that could be implemented to achieve Living Community principles in the community, rather than specific strategies that should be implemented completely as drawn across the community.

Right:
The block type diagram shows the common block types in the community on a high level. This illustrates how the community functions from a scale and use perspective.
Medium-density blocks are common throughout the community and throughout the more centrally located parts of the city. They are primarily residential in use, but may include the occasional small office or retail space, usually located on a prominent corner. These blocks generally feature many small, individually owned lots, and are often served by alleys or parking courts. The ownership patterns on medium-density blocks make large-scale redevelopment of such blocks unlikely, although developers occasionally manage to aggregate properties for larger projects.

Common building types on medium-density blocks in the community are large, early 20th-century kit or pattern book houses; small vernacular bungalows; and early 20th-century garden apartment buildings of no more than four stories. In recent years, development pressure has begun to encroach on these blocks and building types, and many bungalows in particular have been replaced by modern townhouse units. On larger parcels, low-rise garden apartments are being replaced by taller buildings with greater unit density. In some cases, garages are also being converted to carriage units. Though this document is style neutral, it is clear that the northwest contemporary style of much of the new construction does not respect the scale, patterns, or styles of the existing community.

While these changes have certainly added density, they have not necessarily added affordable housing options, or considered the livability of the neighborhood. The following diagrams show how these blocks can add density over time while providing more housing options for people of all income levels and meeting the environmental goals of this vision. Every act of building should be scaled to its site and reflect the values of the community so that these medium-density blocks support the character and values of the community.
A goal of a biophilic neighborhood is to make a more livable place by providing frequent and meaningful opportunities for people to engage with natural processes, systems, forms, plants, and animals. This will involve deliberate partnerships between the City and private landowners to envision and maintain a vibrant, verdant, human ecosystem that layers spaces ranging from the intimate private space of the house and yard to the communal space of the street and sidewalk. With the remaking of the ROWs to include more natural systems, there are myriad opportunities to include kinetic and playful artworks that respond and make visual these systems.

1. Gardens provide opportunity for foraging and habitat for pollinators.
2. Native plants in private yards.
3. Planting strips and other parts of right-of-way become spaces for habitat.
4. Streets, alleys, and sidewalks use as much natural material as possible.
5. Fill in all gaps in street trees to provide dense canopy.
6. Infiltrate rainwater through large bioswales, which provide opportunities for interactive water features.

Existing Conditions of Typical Medium Density Block
AGRICULTURE STRATEGY

Living Community Model of Typical Medium Density Block

Urban agriculture should be integrated into the everyday life of every block through planter boxes in front yards and the ROW, planting on terraces and rooftops, and using blank walls for food producing vines; backyards can be cultivated and used for greywater infiltration; and street trees should be replaced with fruit bearing trees as their natural lives come to an end. Such a vision would involved deliberate and carefully managed public private partnerships to manage use of property; maintenance and harvest of crops; and distribution to benefit people who are in need and in farmers markets and CSAs.

1. Container Gardens in ROW and in front yards managed as PPP in conjunction with City
2. Backyard gardens for home use and greywater infiltration
3. Climbing plants on blank walls
4. Rain barrels and cisterns in the street collect water for irrigation
5. Street trees replaced with fruit trees at end of life
Energy efficiency is a combination of building block-scaled solutions. On the block scale, collective purchase agreements can be arranged for PV arrays and window and shell retrofits. The ROW can also be used as an asset for geothermal well fields. Streetlights and other community infrastructure can be powered from small PV panels mounted on the objects to be powered.

There are notable producers and installers of PV panels in the community that should be considered in any such scheme. By utilizing local people and businesses, the net zero energy strategy could produce significant benefits to the local economy.

1. Solar PV Arrays maximized on rooftops, through individual purchases, collective purchase agreements, or through a third-party provider such as SCL or Solar City.
2. Street lighting to be human scaled and powered by individual PV cells.
3. Window retrofits through collective purchase agreements.
4. Existing facades and rooftops retrofitted to meet high-performance energy codes.
5. All new build built to LBC efficiency standards.
6. Neighborhood geothermal systems in ROW.
Water can be collected on the scale of a block/several blocks from rooftops that feed a communal reservoir located in the right-of-way. This system could be maintained by a City/County water treatment division that would eliminate the need for individual homeowners to change filters or monitor water quality. Potable water from the system could be recirculated through existing potable pipes.

Blackwater should be managed on the micro-watershed level at a neighborhood-scaled treatment plant using existing pipes for waste conveyance.

1. Rainwater collected from roofs and piped to series of cisterns located in ROW once individual cisterns are filled
2. Rainwater filtered, moved to pressure tank, and distributed through existing potable pipes
3. Greywater from houses infiltrated in yards, OS, and gardens
4. Blackwater sent to community-scaled system through existing sanitary pipes
5. All rainwater collected in ROW infiltrated or collected for irrigation

Existing Conditions of Typical Medium Density Block
Many of the block-level systems rely on building scale changes, and it is important to understand how these interact.

These diagrams show how a typical single-family building may retrofit over time to support the broader neighborhood vision. Timing and specific solutions will of course vary from building to building.

**BUILDING STRATEGY**

**ENERGY RETROFIT STRATEGY**

1. PV Panels and systems added as financing allows.
2. Insulation added to roof and facade for increased efficiency.
3. Windows replaced with neighborhood collective purchase agreement.
4. Efficient lighting systems added with electrical system upgrade.
5. Efficient appliances added as old ones are replaced.
6. Water and space heating tied to block geothermal system during HVAC upgrades.

**WATER RETROFIT STRATEGY**

1. Rainwater from roof fills building cistern used for irrigation.
2. Building cistern overflows into block cistern.
3. Greywater used for irrigation and infiltration in garden.
4. Potable water from block-scaled system through existing pipes.
5. Blackwater to neighborhood-scaled system via existing wastewater pipes.
6. Cistern water used to irrigate personal/leased garden space.
Mixed-use blocks are common in higher density areas and proximate to commercial corridors. They tend to include a wide range of uses, such as single- and multi-family residential, commercial, retail, institutional, and even light-industrial uses, such as gas stations and mechanics’ shops. Depending on the scale of buildings and the era in which they were built, these blocks could include alleys for parking access and service entrances.

Mixed-use blocks generally include multi-family buildings with commercial on the ground floor, single/double story commercial buildings, a few legacy institutional buildings such as schools or churches, and higher-density multi-family apartment buildings, several of which are of historical significance in the First Hill area. Often these larger buildings integrate some form of parking either in the basement or on an adjacent parking structure. These blocks tend to have larger lots than medium-density blocks given the scale of building. These larger buildings can create a non-people-scaled and oriented environment unless special attention is paid to the rhythm and scale of the façade.

Opportunities abound on mixed-use blocks to create intimately scaled places in nooks between buildings, on rooftops, and even in alleyways. Streets can be incorporated into the building program through sidewalk cafes, outdoor work areas, formal parks and plazas, and herb/vegetable gardens that support restaurants. Existing parking areas can be repurposed as living or working areas, and rooftops should be considered assets for resource collection. Given the population density that mixed-use blocks support, there are also opportunities to layer access and open space systems in a creative fashion to provide people-only connections and hidden, semi-private nooks.
Institutional blocks are defined by single owners that may control a series of contiguous blocks or parcels. In some instances where this situation is the most pronounced, public right-of-ways are incorporated into the institutional uses, creating a campus-like environment. Institutional blocks may incorporate a variety of uses, such as residential, healthcare, commercial, office, and even light industrial, but all of these uses are generally tied to the institution's primary purpose. Institutional blocks happen to be backbone of the community in terms of their location and presence. Seattle University in particular lends a strong, verdant spine to the community, providing much-needed open space and pedestrian connections where there otherwise would be none.

Given the scale of institutional blocks and their prominence in the community, it is vitally important that they contribute to the neighborhood vision and add to the positive sense and experience of place and safety rather than distract from it. In the community, examples of both are common.

Institutions that are large enough to control several whole blocks and streets generally have significantly more resources available to them than individual landowners do. This makes it imperative that large institutions show leadership in all areas of this vision, in particular as networks and systems intersect with their land. Given their power to purchase land and other resources, these institutions can also act as assets to the broader community by providing seed money for community-scaled systems and leadership in community discussions.
This phasing strategy intended to be general and apply equally as well to adding PV to a block, weatherizing, implementing a street redesign, or changing the layout of an open space.

The first year should be used to imagine a grand idea with residents and stakeholders. This does not have to be to a final design or strategy, but should be a “stretch” vision of what could be. At the event, participants could be asked to participate in a design exercise of a scaled model or even a real space.

To maintain momentum, at an associated on-the-ground event, the city, design team, neighborhood group, etc., should make some of the basics of their vision a reality with low-cost materials. If reimagining a street, paint, bollards, planting boxes, street furniture, etc., could be used to change traffic flows and create spaces. Plants could be donated or purchased cheaply.

Certainly this is not a new idea—this approach was pioneered in New York and perfected by the open streets and tactical urbanism movements. To strengthen the change, here in the community it is recommended that the changes be done by an interdepartmental/public working group to also test roles, relationships, and responsibilities.

Following the flurry of creative energy and design, the intervening time is a great time to test the initial design. Is it meeting the original design intent? Does it score positively on the cost benefit analysis? Is there a better design that may more fully meet the community’s needs while also costing less?

Years 2-3 are an opportunity to make sure the design is dialed in before undertaking the expensive and time-consuming proposition of installing permanent infrastructure and systems. If something isn’t working right, change it. If something isn’t looking right, make it better. Hold another neighborhood charrette. Allocate and raise any money necessary for final design and implementation. Begin the contracting process with design firms. The only limit during this time is creativity.

Once the design has been perfected, the benefits are understood, the community has bought in, and the construction documents are completed, it’s time to move curbs, install infrastructure, and implement the vision. This should be coordinated with scheduled routine maintenance such as street replacement, pipe replacement, or major development projects, etc., to minimize cost.

As visions become reality, this is the time to use the now-completed project as a demonstration of network-level changes.
04. NEXT STEPS
Next Steps

As this vision reveals, the principles of the Living Community Challenge provide a framework for the City of Seattle as it implements critical initiatives for social justice, affordability, resilience, and growth, in addition to the endgame sustainability goals of the Living Community Challenge.

Step 01
Continuing the Momentum

We have developed a vision for the community together with landowners and stakeholders, now it is time to solidify that vision with the community by partnering more deeply with Capital Hill Housing and Yesler Community Collaborative (YCC) and by meeting with the Mayor’s office and City council members together with landowners to advocate for a formal masterplan process at First Hill. We also plan to engage with local Community groups in each area to test and refine the vision.

Step 02
Building on the Momentum

Combining with Capitol Hill Ecodistrict and Yesler Community Collaborative, we plan to extend our work from Capitol Hill to the International and Central Districts, geographically expanding our role and becoming a technical and visioning resource for the expanded area.

Step 03
Spreading the Word

We now have significant visioning assets to share with the broader public. We will plant the Living Community seed in the Seattle mind through local media. Engaging the mayor and other leaders in community events such as Unpave Day will help bring public media attention to our efforts.

Step 04
Education

We have started working with the University of Washington, Seattle University, and Seattle Academy to apply our work to their curriculum. For example, the UW Green Futures Lab is using our First Hill work for their design studio this fall. Results from these local education partners will help create motivation and inspiration to implement the vision.

Step 05
Connecting ILFI Affordable Housing Innovation Lab with Affordable Housing Providers in the Community and Region

Over the last year, the Institute has worked with leading affordable housing providers across the US to explore the possibility of using the Living Building principles in affordable housing projects. We have formed an affordable housing alliance, together with Enterprise Community Partners and the Healthy Building Network. Within Cascadia, Housing Hope of Everett is actively pursuing a Living Building housing project. Within First Hill, work with SHA and Plymouth Housing has helped move the dial, with SHA evaluating a Net Zero Energy project in Lake City. The Red List materials specification that we developed with SHA is now being used as the basis for six pilot affordable housing projects in the Puget Sound region. We are just scratching the surface of the potential throughout Cascadia, and would like to work with many more housing providers to bring the findings of the Innovation Lab to the Cascadia region.
05. APPENDIX
## APPENDIX A: FIRST YEAR PROJECT TIMELINE

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APPENDIX B: STAKEHOLDERS AND PARTICIPANTS

• 12th Avenue Stewards
• Beacon Food Forest
• Biomimicry Puget Sound
• Car2Go
• Capitol Hill Housing
• Capitol Hill Ecodistrict
• Cascade Bicycle Club
• Feet First
• First Hill Improvement Association
• Frye Art Museum
• Futurewise
• King County Capital Planning
• King County Courts
• King County Green Tools
• McLennan Design
• Plymouth Housing
• Seattle 2030 District
• Seattle Academy
• Seattle City Light
• Seattle Dept. of Planning and Development
• Seattle Dept. of Parks
• Seattle Dept. of Transportation
• Seattle Dept. of Neighborhoods
• Seattle Housing Authority
• Seattle Office of Sustainability and Environment
• Seattle Public Utilities
• Seattle University Capital Planning
• Seattle University Facilities Management
• Seattle University Faculty (representing several departments)
• Seattle Urban Farm Company
• Squire Park Neighborhood Association
• St. James Cathedral
• Swedish Medical Center
• University of Washington College of Built Environments
• Virginia Mason Medical Center
• Vulcan Development
• Pollinator Pathway
• Yesler Community Collaborative

* One member of this group participated in meetings, broader outreach to the group planned in 2015-2016
APPENDIX C: CHARRETTE REPORT

These notes are a compiled and arranged reflection of an all-day visioning charrette hosted by the International Living Future Institute on First Hill and the surrounding neighborhoods in Seattle.

6/11/15 at the Bullitt Center Discovery Commons Classroom.

WELCOME, AGENDA, INTRODUCTIONS

WHAT'S GREAT ABOUT THE STUDY AREA
- Many amazing elements, not coalesced
  - No single, strong identity
- Many edges
- History
  - Many large churches
- Seattle University is at the heart
- Residents are active and engaged
- Diversity of people (several affirmations)
- Rate of change
  - Seattle has been growing rapidly, diversity often squashed in process.
  - Study area embraces the diversity and is used to change.
- Intellectual center: Town Hall, medical research, elders, Seattle University, schools
- Walkability
  - People can walk within the neighborhood and to surrounding amenities easily
- Availability of public transit
- Access
  - To amenities
  - To other neighborhoods
- Mix of building and housing types
- Hospitals are a wonderful neighbor
  - FHIA has history of working with hospitals to improve things
    - They are research centers
    - Natural history, trees, spring, geography, and topography
    - Small business
    - Strong equity focused neighborhood groups
    - Great diversity in social service offerings: education, arts, youth advocates, neighborhood groups
    - Madison a continuous connector between lake and city (unusual for most cities)

ILFI, LCC, AND STUDY AREA SLIDES
- Slide content not reflected in notes, see attached slides.
- A Living Building doesn’t need to be the only catalyst.
- Opportunity to utilize art, culture and existing services

PROVOCATIVE PLACE SLIDES
- Slide content not reflected in notes, see attached slides.
- National average for diversion rates for hospitals: 20% (recycles waste)
- Virginia Mason: 50%+ diversion rate
- Urban agriculture/applying the pattern language:
  - Who develops?
  - How to prioritize?
  - Need for public/private partnership
- Creative ways to resurface the natural topography (how do we get there?)

BHAG BY TOPIC
- BHAG=Big Hairy Audacious Goal
- Charrette participants wrote comments on sticky notes which were organized into topics.
- Once topic areas emerged and the commenting finished, participants self selected topic groups to explore in more detail on basemaps, see attached.
- The following is not organized sequentially, but topically.

ENERGY
- BHAG Ideas (From Sticky Notes)
  - Covered bus stops with PV
- Or mini accessible roofs for happy hour!
  - Eliminate all combustion engine conveyance
  - Community solar project
  - Energy efficiency model for the city
  - The NZE Green Machine
- Jobs + vision
  - Carbon Neutrality
  - Require all building to use rooftops either to capture energy and water and/or as green space
  - Multi-function community aspects
- E.g. play and exercise equipment that harnesses

- Energy working group ideas and framework
  - Solar on rooftops of institutions
  - District energy and water use
  - Use piezo electrics to harness energy from friction on sidewalks and streets
  - All street lamps are solar powered
  - Glass solar panels in pavement, paths, sidewalks, and roadways
- Report Out
  - Hospitals
  - Thermal energy/waste heat reuse
  - Reuse internally very efficient

- I-5 ROW
  - WashDOT Resistance
  - Harness vehicular generated wind with small turbines
    - Community solar
  - Major Institutions are barriers
  - Create alliance between County, SHA, Seattle City Light, and major institutions
    - Efficiency upgrades and weatherization a priority
  - Use a block by block strategy
  - Could be a festival
    - Update code to require most efficient technology

HABITAT
- BHAG Ideas (From Sticky Notes)
  - Inspiring parks and pocket parks
  - Rewild Madison St
- Transit and nature combo
  - Urban forest
- More trees=better trees
  - More trees
  - Habitat corridors and hubs
- Identify/develop habitat centers connected by green corridors
  - Food for birds and pollinators
  - Ecological habitat for birds and animals
  - Revitalize ecosystem
- Health-Expression
- Water flows, habitat
- Bring it to life for everyone to see/experience
  - Community Lumber
- Grow forest to provide sustainable buildings
  - Restore natural water pathways
  - Daylight the spring and turn it into a park/rain garden
  - Connect to land history
- E.g. stream from 15th and Fir to 7th and Cherry
- Historic drinking fountain there
- There was a ridge between 1st Hill and Beacon Hill
  - Daylight streams and stormwater flows
  - Opening of underground water/springs to connect people more to natural water systems
  - Water feature or pond under freeway
  - Unpave day
  - Neighborhood sewage treatment
  - Recharge the water table
  - Central waste treatment park
  - Normalize composting toilets
- Mimic multiple strata of forest
- Design buildings to slow water flow
- Larger parks and better activities
- Report Out
  - Daylight streams in study area (see attached drawing)
  - Highlight key nodes/intersections of stream with other elements
  - Create public composting toilets
  - At Justice Center and under freeway
  - Habitat grid
    - Along Madison St, 11th Ave, Columbia St, 18th Ave
- Foresting
  - Spaces for people and harvest lumber
  - Bamboo an option
- Wetland treatment
  - Under 15
  - Columbia St + 5th Ave
  - Swedish, Cherry Hill
  - Use old wells for existing activity
- Highlight historic/existing wells
  - Create connection between
  - Connect to Pollinator Pathway

**FOOD**

- BHAG Ideas (From Sticky Notes)
  - Cap the freeway for green space and food
  - Urban forest/local markets for better access to healthy food
  - Yesler Terrace freeway ROW
  - Street trees=food source
  - Sidewalks and streets that grow/expand with trees
  - As “if trees were our gods”
    - Attract and support small businesses to serve residents and visitors and create jobs
    - More local food grown
    - Urban agriculture that grows food specifically for homeless people and families in need
    - Community/non-profit led compost collection and delivery
    - All food eaten in neighborhood grown in neighborhood
    - A place for domestic live stock
  - E.g. a communal goat herd
    - Urban agriculture=local jobs
    - Yesler Audubon center and farm on slope near proposed Yesler hill climb
- Report out

Habitat working group ideas and framework
- Use larger, underutilized spaces
- Plant along corridors, especially along Broadway
- Perennial plants/perennial food
- Emulate forest system
- Bloom year round
  - Feed the pollinators
  - Plant fruit trees and berry bushes
  - Composting facilities throughout study area
- People can bring their own so as to not have to deal with fruit flies (at hospitals and higher traffic areas)
- Return nutrients into system
  - Education centers/kiosk
- Forums to grow own food
- Transfer knowledge from seniors to young people
- Connect to senior centers
  - Justice center, small enterprise for gardening
  - Farmer’s Markets
  - Water
- Will need more rain gardens and cisterns
- Collect from buildings
- Healthy soils hold lots of water
  - Soil health related to community health
- Succession, plan for the next generation

**MOBILITY**
- BHAG Ideas (From Sticky Notes)
  - Utilize special/hidden gathering spaces
- Such as area under freeway
- Other spaces with safety issues
  - Priority Connectors:
    - 12th – Example of complete street
    - Hierarchy of gathering
- Prioritize modes
  - Wayfinding
  - Multi-modal, multi-use, all ages and abilities
  - Mobility priority for people with disabilities
  - Funding for light-rail infrastructure and less busses/cars
  - Bicycle highway
  - Really invest in mobility hierarchy that starts with children and ends with cars
  - Open, wide, natural paths for walking and biking that are well lit at night and address safety issues
  - More funding for light-rail and less funding for single occupancy vehicles
  - Green Streets
    - 50% of street for green and pedestrians only
    - More woonerfs
    - 8-80 design
- Design for all ages and abilities
  - Streets master plan
  - Semi-permeable streets and sidewalks
  - Integrate CO2 sequestration into built environment – sidewalks, streets, facades
  - Preserve and increase green streets and all open areas, including urban agriculture and pollination pathways
  - People have priority in streets
  - Wayfinding signage system that connects communities
- Increased walkability
  - Pedestrian only zones
  - Gathering spaces
  - Dedicated bike/pedestrian walkway
  - Everyone has access to green spaces within 10 minute walk from home
  - Streets for people
  - Cargo bike freeway
  - Convert half of street to other, human-centered uses
  - Tree canopy
  - Energy production

- Stormwater
- Report out
  - Multi-modes
- Prioritize human powered mobility, especially walking
  - Multi-generational
- Health walks, assists with way-finding
- There are topographic challenges
- Safety
  - Multi-use
- Prioritize food growing
- Resource

- Energy
- Stormwater
- Tree canopy
- 12th/Spring water flow
- Madison St
- Important connector
- Need to reimagine
- 12th St at Yesler Way
- Former skid row
- Neighborhood Green Streets
- Leverage existing City plans at Terry, University, and etc.
  - Multi-opportunities
- At diagonals
- Wayfinding, access to downtown
- Found space for recreation
  - Utilize existing and planned green streets
- At Terry Ave, 9th St, 8th St, and University St
  - Look for possibilities at north end of study area
  - Health walks, assists with way-finding
- There are topographic challenges
  - Missing health facilities in older apartments, opportunity to use exterior space
  - Use space under freeways
  - Boren Ave and Broadway need to have a more pedestrian focus

COMMUNITY
- BHAG Ideas (From Sticky Notes)
  - Added Spirit, Art, and Social Justice
  - Intellectual exchange of ideas between community
  - A justice center and schools
- Inspiring, restorative justice over punitive
  - Sustainability a vehicle for equity
  - Civility and inclusive engagement in public discourse
  - Develop a community that is transparent in
decision making
- Information translated for many languages
- Preserve diversity of residents and businesses.
  - Communities of color and affordability.
    - Free yoga/tai chi/mediation + mindfulness in public spaces
    - Synergized waste/resource needs
  - I.e. one person’s waste is another’s resource
    - Spaces that inspire joy
    - Preserve and increase diversity of people, buildings, and institutions
  - More sharing between buildings, people, and uses
  - Be sure to reuse 100 year old beams from housing when taken down
  - Innovative partnerships for better public use
  - Showcase historic heritage
  - Fewer required work hours
  - E.g. 30hr work week
  - Neighborhood, authentic, local retail
  - Educating all members of society in living earth and regenerative concepts and principles
- Community/resident interaction
  - New to the neighborhood? Required diversity and gardening classes.
  - Local services and self contained community
  - Place for children
  - Kids walking and biking safely to school
  - Family friendly public spaces and streets

- Walkable, play, refuge, safety
  - Environment/sustainability education center for children
  - Empathy education in schools
  - Encourage young families to live on First Hill with multi-bedroom apartments, schools, outdoor play spaces for children
  - Economic prosperity for all
  - Link social services/community policing/design of space
  - Ensure affordability

- Inspire community to engage inspirational visioning
  - Restorative justice programs
  - Catholic encyclical on nature
  - Multi-generational housing
  - Affordable housing for college students
  - Safe dark places at night
    - No light pollution
  - Transitional temporary housing
  - Mindfulness in design

- Environmental equity
- Multi-use infrastructure and roofs, etc.
- Beauty
- More regenerative and less mitigation
  - Public art that contributes to energy generation and/or water collection
  - Art everywhere for anybody and everyone
  - Safety
  - Record and implement what beauty means and represents to all ages and cultures
  - Deliberate diversity/equity/inclusion process
- Beacon/center of the city
- A new boulder to hang out with your sweetheart
- Existing church assets and congregations
- Whole neighborhood is a healing hub for mind, body, and spirit
- Market spaces/carts for people of diverse cultures to buy/sell/trade goods/services specific to their cultures
- Create community-market centers (community entrepreneurship)
  - Local honey, local beer, local workshops, maker space
  - Space in parks to reflect on justice and inclusion
  - Places of the spirit
  - Healing gardens at the hospitals accessible to the public
  - Indoor spaces for meeting and communing
  - Outdoors spaces to gather and celebrate
  - Gathering places for cooking and dining together
  - Blend indoor and outdoor space
  - Communal outdoor oven
- See traditional societies
  - Living hospitals
  - Spiritual hub
  - Conscience of Seattle
- Spirituality, intellectual interests, diversity
- Body/mind/spirit
- Hospitals, research, university, churches, multiple perspectives
- Don’t succumb to sameness
- Group Notes
  - Things that are harder to map
- Policies/programs/processes
- Values
- Prosperity
- Beauty
- Compassion
- Mindfulness in design
- Inclusion
  - Multigenerational
  - Multicultural interaction
  - All abilities
- Participation, sharing, giving
- Equity/affordability/social justice
- Spirit
- Heritage/History
- Intellectual inquiry
  - Education
  - Civic discourse
- Respect for nature
- People feel safety in all ways
- Vision for neighborhood
- How are these things physically represented?
  - Things that can be mapped
- Gathering places
- Multi-generational spaces
- Love places
- Art
- Safety/beauty
- Educational centers
- Reflection spaces/interfaith
- Historic heritage
- Report Out
  - Started with values (Beauty, Prosperity, compassion, mindfulness, inclusion, participation/sharing/giving, Equity/social justice, spirit, heritage, history, intellectual inquiry)
  - Design for inclusion and multiculturalism
  - Street that need re-imagining (Madison St, Boren Ave, James St, Area under I5, 12th Ave)
  - Hearts represent new and enhanced education,
  - Add gathering, reflection places with art and nature at these places
- What is the spiritual, cultural reflection place?
- At 12th Ave and King St
  - How do we create identity that will assist with mindfulness?
  - Bringing people together (even if they are pro-peace OR pro-war).
  - Streets “here,” not “through”
  - Speak the language of nature, this is the unifier

**LUNCH**
- Overview of YCC process, goals, and outcomes led by Doris Koo and Ellen Kissman
- ILFI team consolidated all focus group drawings into one drawing

**CONSOLIDATED MAP COMMENTS**
- Opportunity to set district goals based on natural systems
  - Extra-grid systems
  - I.e. don’t follow street grid exactly, but respond to natural systems
  - Extra-grid systems
  - I.e. don’t follow street grid exactly, but respond to natural systems
  - Swales to retain water
  - Quantify opportunities on the streets
  - Use a pre-development water model
  - Larger swath, can you achieve the same water outcomes on heavy use streets (12th, 15th) and get the same outcome of lower impact street?
  - Mithun found that 1 parking spot per block in Portland used for water infiltration is enough to mimic the natural conditions
  - What would it take in this district to mimic pre-development hydrology, like the example above
  - Look at Detroit, 75% of the produce needed for the population of Detroit can be grown in the empty lots
  - 25-30% of the study area is for the right of way
for cars
  • What are the different ways of thinking of cars
    o Look at mobility for size of the city
    o Cars are oppressive
  • Opportunity for co-housing at the neighborhood scale?
  • Employees taking up too many neighborhood parking spaces on the street of First Hill

WHAT IS NEEDED IN STUDY AREA
• Shift in Culture
  o How?
• Develop common language and connect to shared values
• People of color and white people, people who have less wealth and those who have more, all engaged in sustainability equally
• Focus on what is wanted, not implementation
• Let people express values and “gut” desires
• Broaden message/audience
• Engage with new communities that we don’t normally engage with (e.g. NAIOP), and get these conversations in different environments
• Pilot projects to demonstrate potential
• Small scale to get people thinking and seeing it working.
• Realizing the value these amenities and necessities add.
• Provide better options
• People have practical reasons for resisting change
• If we don’t experience anything different, then we won’t get to something different (Cars vs. bikes)
• Recognize and work to solve economic and time pressures
• Cars will cease to be an issue when they are no longer affordable or more practical than other options
• Support City-led neighborhood planning
• Especially through the department of neighborhoods
• Pace Program (People’s Academy for Community Engagement)
• Involve youth
• Bring out and support what already exists
  o E.g. #blacklivesmatter
• Focus on affordability
• Offer environmental education to seniors
• The youth tend to be involved in environmental and climate issues.
• Seniors want to leave a legacy.
• Present a unified front
• Activists with the business community
• City council and the mayor
• Public conversations
  o Why difficult to change:
    • No one culture in study area
    • There are many cultures
    • We all come from different places.
    • Bureaucracy resistant to change
    • E.g. public ROW platted just for transportation and utilities
    • We don’t see our potential because we sit in silos.
    • How do we encourage the city to make meaningful change?
• Avoid Displacement
  o Need strategy to provide and maintain affordable housing
  o Bring people up
• Increase wages
• At least to housing wage - $27/hr
• Increase career options
  o Leverage institutions to create job opportunities
  o Make it so that people do not need cars to get around
  o Develop clear metrics to track displacement
  o E.g. health and well being, affordability
• Track over long periods of time
• How to create change at the City:
  o Focus on grassroots and top at the same time
  o Create better stories
• Backed by data and metrics
• Link to healthy places
• Link to affordability and accessibility
• Link to resiliency
• Demonstrate economic value of propositions
  o Persistence, endurance, and patience
• Multiple timeframes from now to 20+ years
• Residents and institutions are enduring
  o We need to support both incremental and major changes.
  o “Temporary” projects to demonstrate potential and build acceptance
• How to broaden message:
  o Multiple partners
  o Focus on job creation
• First Hill is already an employment center, make it more so
• 35,000 people employed on First Hill
• 5,000 people employed at Virginia Mason alone
• Focus on quality of life improvements
• Developers are the core audience

WHAT ARE PILOTS AND EXAMPLES?
• Two parks in First Hill along University St at 9th Ave and at Boren Ave
• First Hill Park rehab also in the works
• Swedish doing public realm plan at Marion St and Minor Ave
• Opportunity for strategic partnerships
  o E.g. Biomimicry Puget Sound pilots building in study area
• Horiuchi Park
• Woonerf at 12th Ave and James Ct
• Build on themes of climate resilience and
environmental justice
• Base pilots on data and trends that reveal needs not at surface.
  o E.g. Steve Jobs said, “we know what you need, you don’t know what you need yet.”
  o Use data from many partners
  o Find champions from private sector
  o Work towards common solutions
• Don’t do more than 3-5 pilots
  o Too many will distract from one another
  o Figure out what works, then advertise/communicate aggressively
• Do similar charrette for the groups at the Cascadia LBC Collaborative, churches, etc.
  o Have each group represented and have a voice.
  o Add other charrettes to the schedule.
• Healthcare centers as hubs for climate resilience
• Alliance for jobs and Clean Energy

WHAT INSPIRED YOU? WHAT ARE YOU TAKING AWAY FROM TODAY?
How can ILFI work with you and support your work?
• NAME REDACTED: Integrating bike infrastructure with food and water opportunities. We all want a piece of the pie and it seems like we can overlap our agendas. Challenges: how do we get departments to work together on these higher-level goals? Jeff is focused on the south end of Seattle and limiting gentrification. Don’t displace, but communicate.
• NAME REDACTED: It is a new idea to me that this neighborhood is an intellectual hub. I am looking forward to the doable dream, finding the frontier on all of these ideas that we can be acting on (“the bleeding edge”). ILFI’s analysis will help First Hill get there and everyone here has to determine how to support that.
• NAME REDACTED: Collaborating and being aware. Critical of the City because they work in cities. Today was a great reminder that work is getting done. What to do with open space. Suggest that this neighborhood have a master plan, increasing looking around the room to just create our own. Pull us all together towards a common goal.
• NAME REDACTED: The overlay map instructed me. A holistic picture that it’s not just about walking, but access to food and synergies with all these themes.
• NAME REDACTED: Grateful for the energy and diversity in the room. I only see success coming out of this. I will take it upon myself to reach out and message these coming concepts to the developer community. Wants to make this message recognizable to all people.
• NAME REDACTED: Learned a lot about the neighborhood. Diversity is very apparent. What is the essence of the community? Drawing us altogether as one, support this thriving/vibrant community. That is the essence and singular power.
• NAME REDACTED: Take these conversations to your organizations and continue to stay connected.
• NAME REDACTED: Communities of this size need strong partnerships and collaborations...take it to another level. These feel stronger after today. Thank you to everyone who came. Many next steps from here.
• NAME REDACTED: Excited to have more information. Excited to go back to King County and share with my colleagues. They look for answers to not re-create the wheel. How do we apply this to unincorporated areas of King County? Hopes to introduce more people from the city to ILFI.
• NAME REDACTED: Exciting to learn about the work that’s already being done in such a changing area. Echo the idea that a master plan is needed.
• NAME REDACTED: Long term plan for certain areas. Traffic, community uses and glad to hear that Seattle U is involved in the changes. Looking forward to partnering with many of you.
• NAME REDACTED: Struck by Amanda’s intro on the multiple generations. Powerful what’s happened in the last 10 years, a lot of positive things. A different way of thinking about this might not be about the master plan, but the management system of district scaled energy. Bring in different departments to work on different areas.
• NAME REDACTED: I feel lucky to work for an organization that genuinely cares about the neighborhood. Excited to see this move forward and know how I can support it.
• NAME REDACTED: Thank you, this was very successful.
• NAME REDACTED: The goal is to have the neighborhoods re-integrate into the community. SHA has a few main goals (social opportunity, environmental stewardship and displacement), glad to see SHA’s goals carried through.
• NAME REDACTED: feeling very inspired, listening and reflecting as a way of messaging. Listen and allow ideas to percolate from people themselves. Avoid displacement by making every place wonderful. Inspired by pilot projects. Catalyst projects = planting the seed.
• NAME REDACTED: What stops a lot of these ideas are the complexity and expense, very excited about pilots and temporary intervention ideas raised. Key things for ILFI is that we are capturing the vision that was put out and moving it forward in a way that was productive. We will share all this information with you.
• NAME REDACTED: The LCC was launched a year ago. ILFI has had a year to work on these concepts and interact with different communities. Within this context, what is our role? Simplified terms: reimagining the city in radical ways. Apply dreamer and do-er approach to things.

ILFI NEXT STEPS
• Take these innovative ideas and share them in really beautiful ways.
• Coalesce ideas, graphically and visually
• Focus on 3-5 pilots
• Get the message out. We are all very siloed (not just the city). We are this institution that has this international vision towards sustainability (and currently unpeeling the layers of the onion).
• Sept-Oct will launch the vision document for First Hill, may develop something larger scale from there.
Baseline Energy Use: Calculated using data provided by 2030 Districts which applies a standard energy use calculation by building type to all buildings in community.

Baseline Energy Use (Without Hospitals): The community is fortunate to have several very large medical institutions within its boundary. This institutions are however, a regional resource, so the energy calculations assume their energy will be provided regionally as well.

Optimized Energy Use (Without Hospitals): The project team applied Living Building levels of efficiency to the numbers in the baseline calculations. This shows a 75% efficiency gain which can be achieved over time by requiring all new construction to meet strict EUI standards and performing significant energy efficiency upgrades time with major retrofits of existing buildings.

Harvest Potential: The amount of energy that can be harvested using current PV technology installed at a rate consistent with the energy framework.

Harvest Potential with Freeway Cap: Adds in additional PV generation using a freeway cap.

<table>
<thead>
<tr>
<th>SITE CHARACTERISTICS</th>
<th>ENERGY CHARACTERISTICS</th>
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</thead>
<tbody>
<tr>
<td>Roof Area Total (sf)</td>
<td>6,985,910</td>
</tr>
<tr>
<td>Usable area of large roofs (sf): &gt; 10,000 sf (70% coverage)</td>
<td>3,887,505</td>
</tr>
<tr>
<td>Usable area of small roofs (sf): &lt; 10,000 sf (70% coverage)</td>
<td>429,699</td>
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<tr>
<td>Possible freeway cap size (sf)</td>
<td>308,000</td>
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<tr>
<td>Estimated Existing Energy Use (kWh/yr)</td>
<td>556,185,809</td>
</tr>
<tr>
<td>% Reduction of energy use over current baseline</td>
<td>75</td>
</tr>
<tr>
<td>Solar harvest potential (kWh/sf/yr)</td>
<td>15</td>
</tr>
</tbody>
</table>
Projected Water Use: Calculated using Seattle’s 2030 District numbers for individual buildings in the community.

Projected Water Use (Without Hospitals): Removes hospitals from neighborhood calculations since hospitals are regional resources and thus warrant a regional strategy.

Optimized Water Use (Without Hospitals): Assumes a 70% reduction over current levels by limiting potable water usage to potable applications, tightening building codes for new construction, and significant efficiency upgrades for existing buildings undertaken during major retrofits.

Rooftop Collection: The volume of water that it harvestable on an average year from existing rooftops in the community. The amount of rainfall was estimated using data from 2005-2015 from NOAA.

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<th>SITE CHARACTERISTICS</th>
<th>WATER CHARACTERISTICS</th>
</tr>
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<tr>
<td>Roof Area Total (sf)</td>
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<td>Average annual rainfall (ft)</td>
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<td>Estimated Water Use (gallons/yr)</td>
<td>760,102,087</td>
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<td>% Reduction of water use over current baseline</td>
<td>70</td>
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APPENDIX E: PHYSICAL ANALYSIS

Base Map/Figure Ground - This image shows the basic development patterns in the community. On the most fundamental level, it shows how buildings transition from very large, downtown-scaled building on the western edge of the community to very small single family homes on the eastern edge. It also shows the variation in block pattern that transitions from larger super blocks to a more fine-grained structure on the same pattern. Finally, this image shows how little vacant land there is in the community, which suggests that opportunities are primarily in redevelopment of existing developments or in the right-of-way.
Parks and Open Space - Our analysis showed that there are few open space opportunities in the community outside of the large tracts of institutional land. Of the publicly provided open space opportunities, Freeway park and the new park at Yesler Terrace are the most significant parks, however freeway park is in need of significant rehabilitation and the Yesler Terrace park is currently under construction. This image does however illustrate how much of the community is covered by institutional land. The large tract in the middle of the community in particular—Seattle University—provides many open space, natural, and agricultural opportunities that are publicly accessible.

Zoning Diagram - This diagram consolidates the many zoning districts in the community into common land use colors for legibility. It clearly shows the many disparate zones ranging from office in the east to pockets of single-family residential on the west. Between these, there is significant tracts of land dedicated to institutional uses. The commercial corridors along Pike/Pine, Madison, and 12th Avenue is also apparent.

A closer reading of this diagram shows the large portion of single-family neighborhoods in the eastern side of the community that are zoned for multi-family, suggesting a likely significant change in the density and fabric of those neighborhoods.
Slope - This slope diagram illustrates less steep areas in green tones and more steep areas in orange and yellow tones. It shows the ridge lines around First Hill near I-5, the relatively level areas along 12th Avenue, and the ridge that leads into the Central district along 15th Avenue.

Topography - In this diagram higher areas are illustrated in darker blue and lower areas are illustrated in lighter blue. It shows the hill tops in the east and west of the community and the lower lying areas in between. This image also shows that the topography generally falls from north to south, with the lowest lying areas in the south near Bailey Gatzert.
Watersheds - Based on the topography and slope analyses, there are two primary watersheds in the community. Water in the central watershed flows from north to south between roughly Boren Avenue and 17th. The western watershed flows towards downtown and I-5.

Street Types - There were 4 primary street types identified in the community—the I-5 Freeway, Local Arterials, Local Streets, and Alleys. This analysis shows the influence of I-5 and the significant network of local arterial streets that cut through the community. It also reveals the substantial network of alley ways and local streets. These overlapping and interconnected local and regional street systems provide opportunity to rethink street use and characteristics and enhance connectivity within the neighborhood for people and habitat without significantly diminishing intra-neighborhood systems.
Bike and Transit Network - This diagram consolidates transit lines, transit stop density, and bicycle network information onto a single image. The red tone are 1/4 mile radii from transit stops laid over one another, which illustrates the relative transit density in any given location. What this shows is that all pieces of the community are accessible to transit within 1/4 mile, but not all areas are served equally. Specifically, areas in the central and eastern sides of the community have lower transit density than Yesler Terrace, First Hill, or the northern areas.

The bike network shows the framework of an interconnected system, with gaps more in quality of infrastructure than in system planning.

Environmental Resources - This drawing identifies PV arrays, rain gardens, green roofs, and food gardens in the community.
Art Resources - There are a significant number of public art resources in the community, though they tend to be clustered more along the campuses of institutions and less in the residential areas.

Waste Water Infrastructure: Age - A surprising number of pipes in the community were built in the 19th century. Overall, there is a large number of wastewater pipes that are 80+ years old, suggesting that there is significant opportunity to rethink the traditional grey infrastructure as pipes reach the end of their useful lives.
Waste Water Infrastructure: Size - This drawing shows the relative sizes of the wastewater infrastructure in the community. Of particular note is that the largest pipes collect under Bailey Gatzert Elementary before they are pipes south.