

ATTAINABLE DOWNTOWN HOUSING

ENERGY PROGRAM

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FALL '07

ENERGY PROGRAM FOR THE ATTAINABLE HOUSING IN DOWNTOWN

Urban housing in downtown Portland has seen extreme success in the last ten years; to the point that The Pearl district is considered one of the most successful housing markets in the Northwest. Nevertheless, the Portland Housing Implementation Study has reported in 2006 that the housing market in downtown has been unattainable unevenly across household incomes. The current development typology of the River district has also attributed to lack of family residents in the Pearl. The basis of my thesis is to design a housing unit targeted to middle income households in hopes to promote urban living among families.

According to the River District Housing Implementation Strategy 2006 Annual Report, housing development in the river district has been uneven by income and unit production has exceeded the goals for upper middle-income households (120% MFI). While the moderate and middle income (51-120% MFI) have been severely miss represented in the overall redevelopment of Portland's city center. Affordable housing has also played a large role in the overall housing renovation of Downtown, according to the 2002 Greater Housing Report, of the over \$133 million spent in downtown development, over \$44 million has been contributed by Portland Development Commission (PDC) as subsidies for affordable housing projects. The attainable housing scheme is different from the current housing options due to the fact that its design will be driven by the implementation amenities commonly valued by families. The target market for this project, by demographics, for the most part live in single-family-detach houses in suburban areas of Portland. Thus, in order for target clientele to consider abandon the current commodities of their suburban life, the attainable housing unit has to incorporate some of the amenities families appreciate most such as large square footage, and open green spaces. One of the issues to consider in the project is the fact that many families, even the ones who currently live in downtown, opt to purchase homes in suburban areas of Portland once they decide to expand their families. It is reported in the 2006 Greater



Housing Report that the most common reason families leave their downtown residences is because they want to purchase a home and they are unable afford the price of their urban dwelling. Urban dwellers also leave the city center because they perceive their residence to be undersized to expand their family. The new housing development will be designed with sufficient square footage for families to grow and sustainable features that would help alleviate the cost of sustaining a home, therefore costing less than the average suburban house over the course of the years.

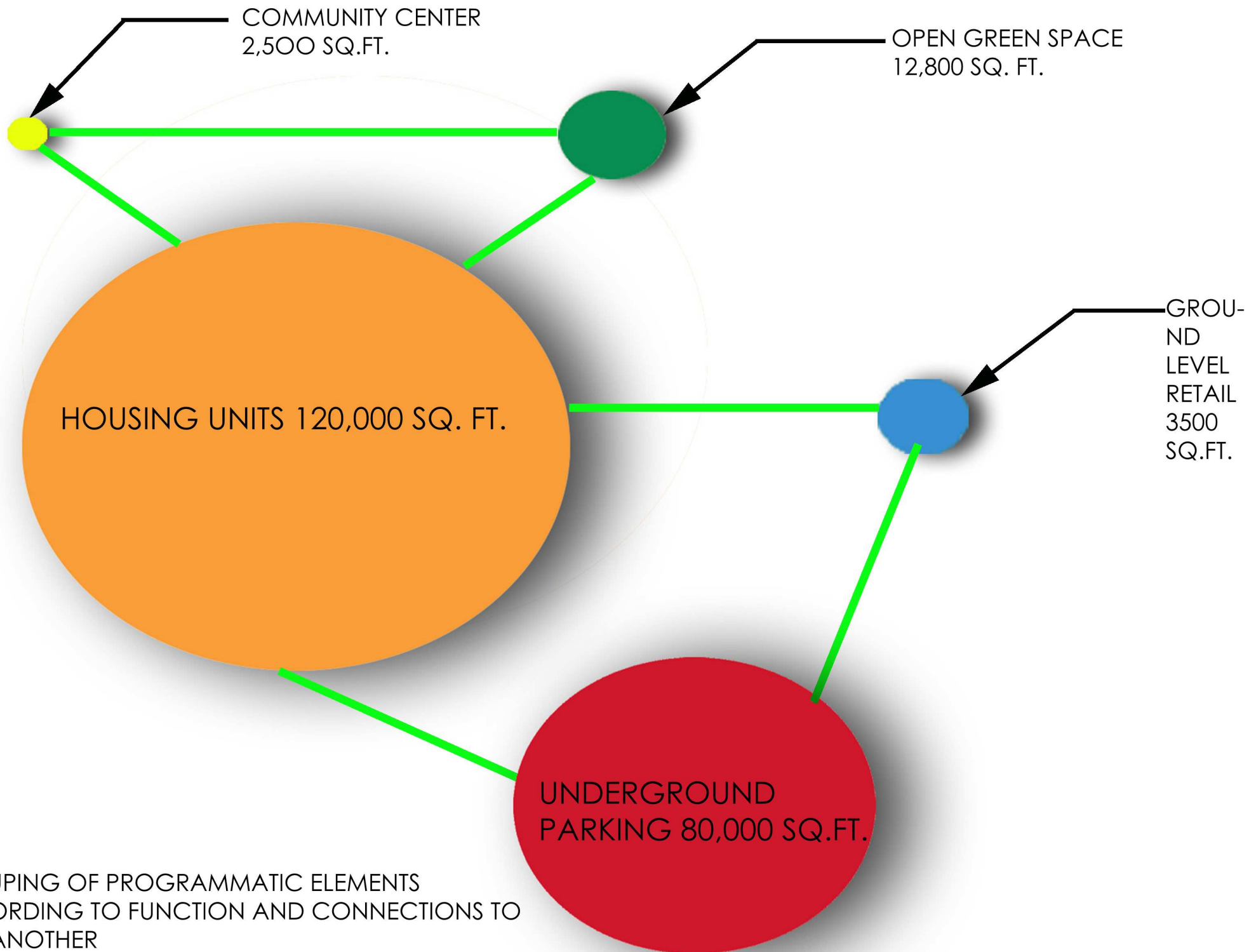
The site for the new development is located in downtown Portland on the corner of 11th Ave. and NW Northrup St. It has ideal unobstructed southern light exposure and northern indirect light. Given the climatic conditions of the Portland, where no extreme heat or cold is commonly experience, passive heating and cooling can be easily achieved in the entire edifice. The housing units can also benefit from thermal heating. At ground level the housing building will feature commercial units, which will help promote urban living and will also add to the overall pedestrian character of the site. In order to avoid overheating the housing units above the retail shops, operable windows and passive cooling will allow residents to control their climatic environments and take advantage of natural light in order to reduce the need for artificial lighting.

The residents of the building can also benefit from a rainwater collector that treats and recycles water for the use of residents in things such as irrigation for the public green spaces. In the reduction of heating, lighting and water consumption, the dwellers of the attainable housing unit will benefit from great deal of savings, while experiencing the vast benefits of urban living.

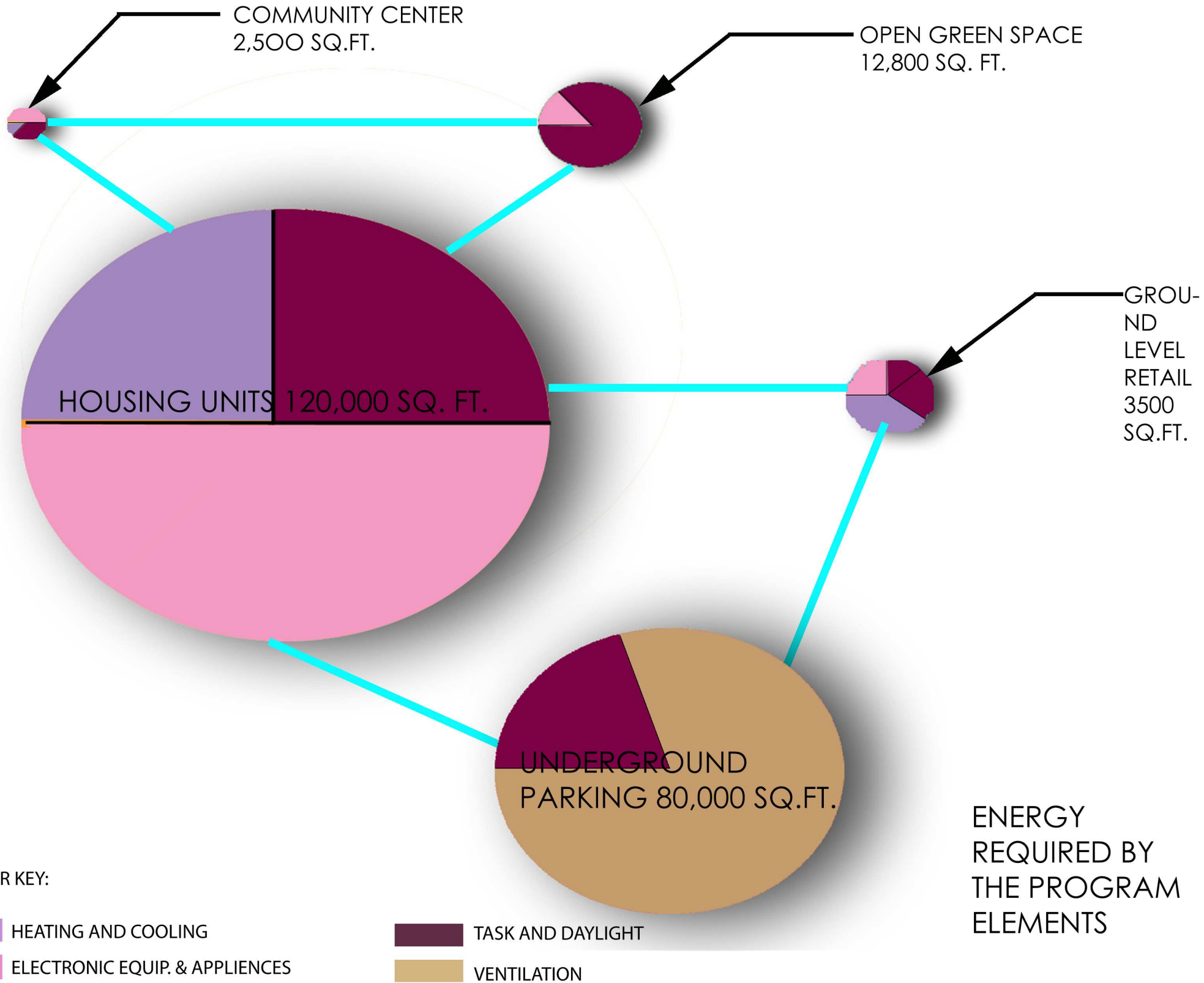
Lastly, with new families moving to downtown, the need for private vehicles as primary means of transportation to work will also decrease. Public transportation is easily accessible within the site boundaries, as well as being able to provide the ability to bike or walk to work.

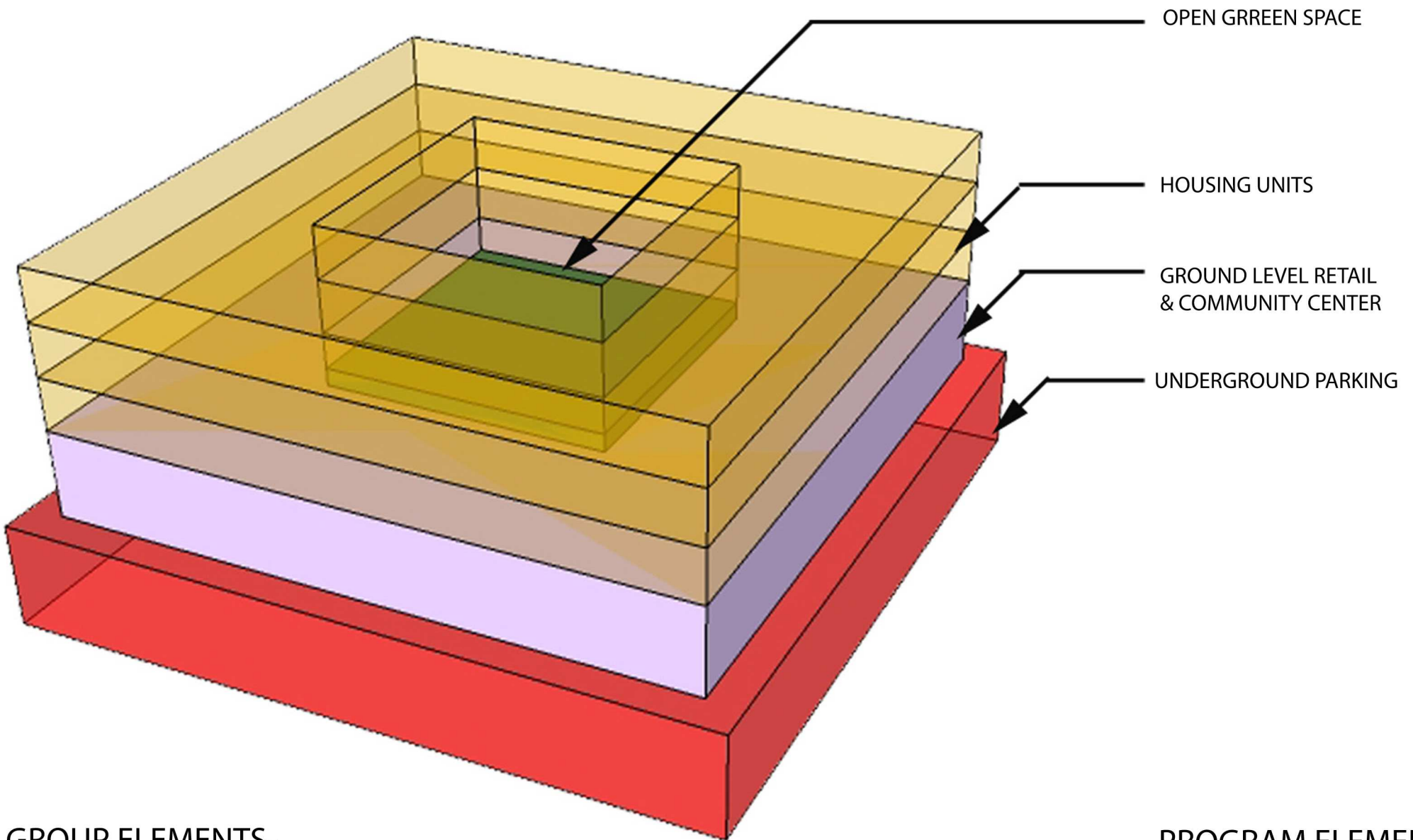
Overall, the new family oriented housing will counterbalance the initial value of the unit by implementing sustainable features that overtime will lower the its initial cost by reducing amount of energy it requires to be functional.





GROUPING OF PROGRAMMATIC ELEMENTS
ACCORDING TO FUNCTION AND CONNECTIONS TO
ONE ANOTHER

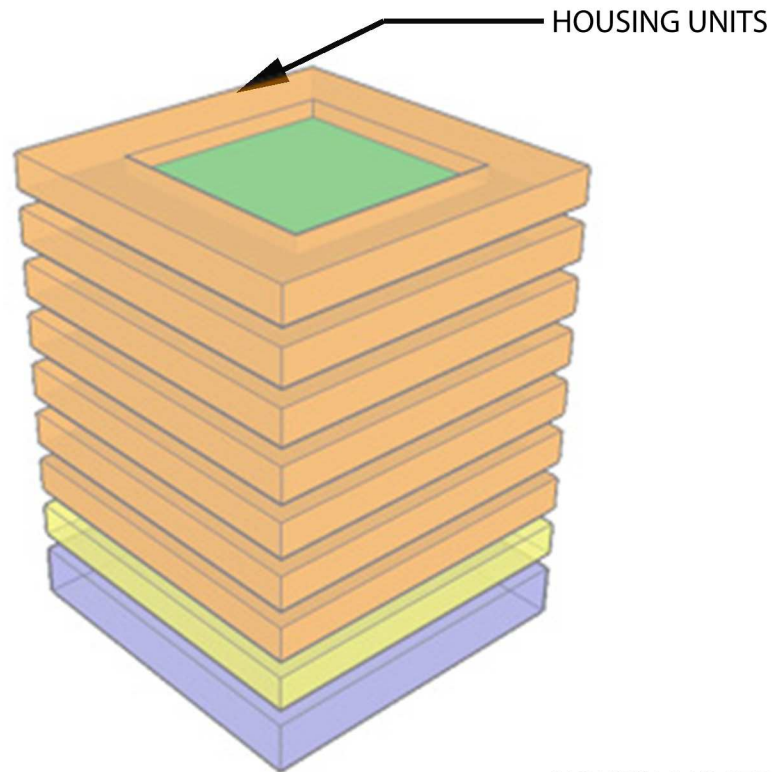




GROUP ELEMENTS-

THE BASIC IDEA BEHIND THIS GROUPING OF ELEMENT IS TO ALLOW THE MOST ENERGY DEMANDING ELEMENT TO BE AT THE BOTTOM IN ORDER FOR ITS HEAT GAIN TO BE TRANSMITTED ONTO THE UNITS ABOVE. IN THE SUMMER THE HEAT WILL BE TRANSMITTED TO THE DWELLINGS ABOVE, BUT NATURAL VENTILATION WILL PREVENT IT FROM OVERHEATING THE HOUSING UNITS.

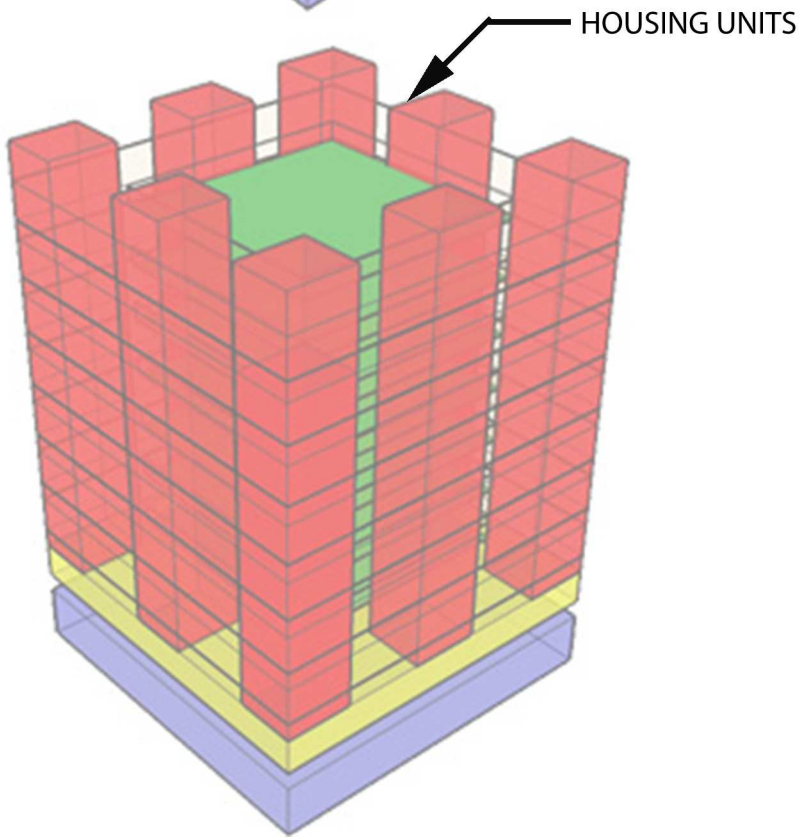
PROGRAM ELEMENT GROUPED ACCORDING TO ENERGY NEEDS



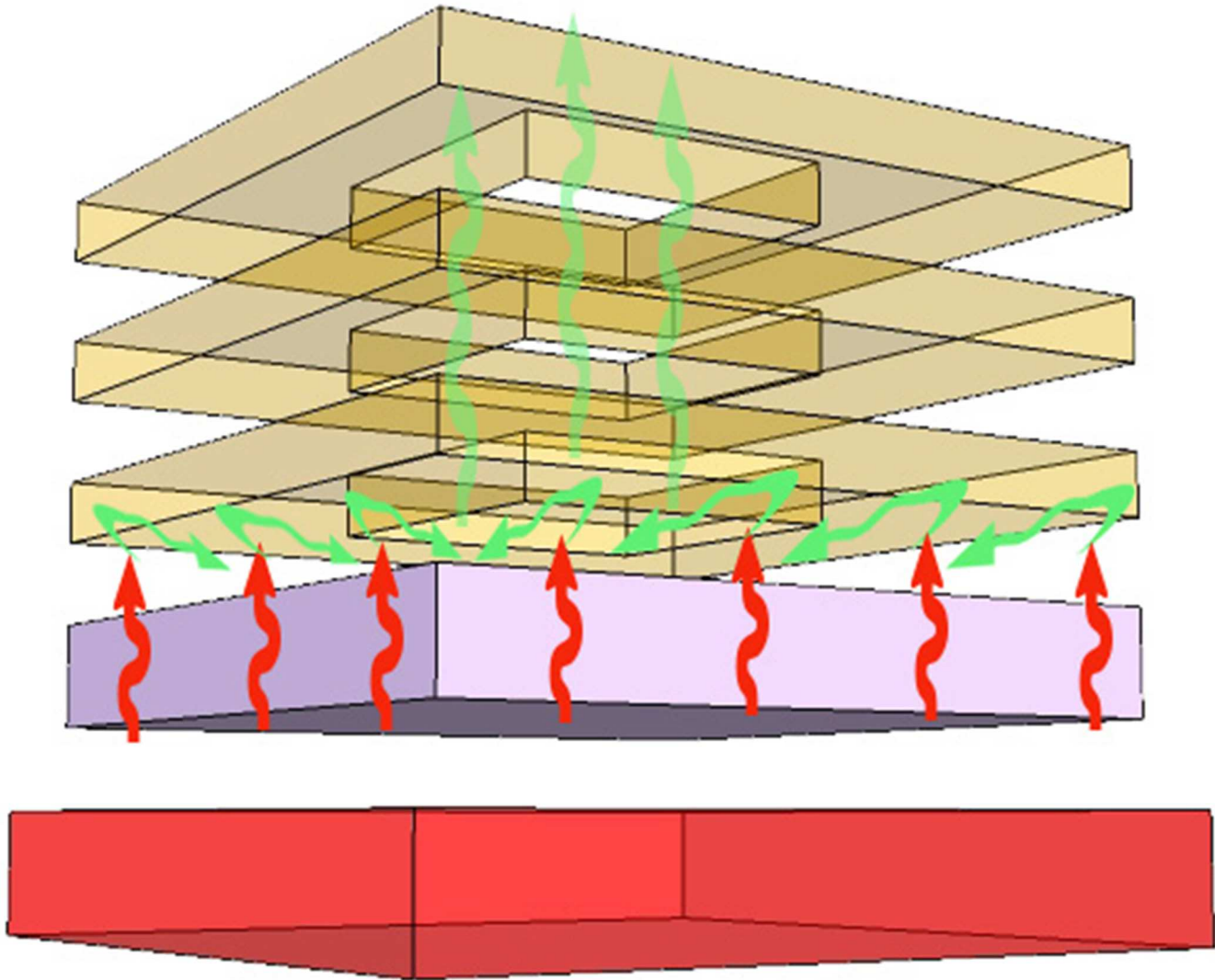
GIVEN THE FACT THAT THE DOWNTOWN ATTAINABLE HOUSING UNIT IS TARGETED TOWARD FAMILIES WITH CHILDREN, THE HOUSING UNITS PROMISE TO HAVE A VERY REGULAR SCHEDULE THROUGHOUT THE YEAR. THE UNIT WILL ENCOUNTER AN ABUNDANCE OF RESIDENTS IN THE MORNING AND EVENINGS AND FAIRLY UNEVENTFUL IN THE AFTERNOONS. HOWEVER, IN THE SUMMER THE PUBLIC SPACES WILL BE IGNATED BY THE SCHOOL CHILDREN WHO ARE IN SUMMER VACATION.

THE GROUPING OF THE HOUSING UNIT ARE MEANT TO BE AS CLOSE TOGHETER AS POSSIBLE TO MINIMIZE HEAT LOST. AS PREVIOUSLY MENTION THE NUMBER OF PEOPLE INHABITING THIS PLACES ARE FORECAST TO BE SIMILAR AS WELL AS THEIR SCHEDULE. THUS, SIMILAR CLIMATIC CONDITION WILL BE EXPERIENCED AMONG THE UNITS, THIS WILL MINIMIZE THERMAL BRIDGING.

ON THE SOUTH SIDE THE HOUSIN UNITS WILL TAKE ADVANTAGE OF THE SOUTHERN EXPOSURE BY ALLOWING AS MUCH NATUAL LIGHT INTO THE DWELLINGS AS POSSIBLE. ON THE NORTH SIDE, INDIRECT NORTHEN LIGHT WILL ALSO BE OPTIMAL, ALTHOUGH, BUFFER ZONES WILL BE INPLEMENTED IN AREAS DIRECTLY NORTH IN ORDER TO PREVENT HEAT LOSS ON THOSE HOUSES.



GROUP SPACES BY THEIR SCHEDULING NEEDS



-PASSIVE COOLING DIAGRAM OF THE DWELLING UNIT WITH HEAT BEING TRANSFERRED FROM THE COMMERCIAL SECTION OF THE BUILDING TO THE HOUSING UNITS ABOVE.

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