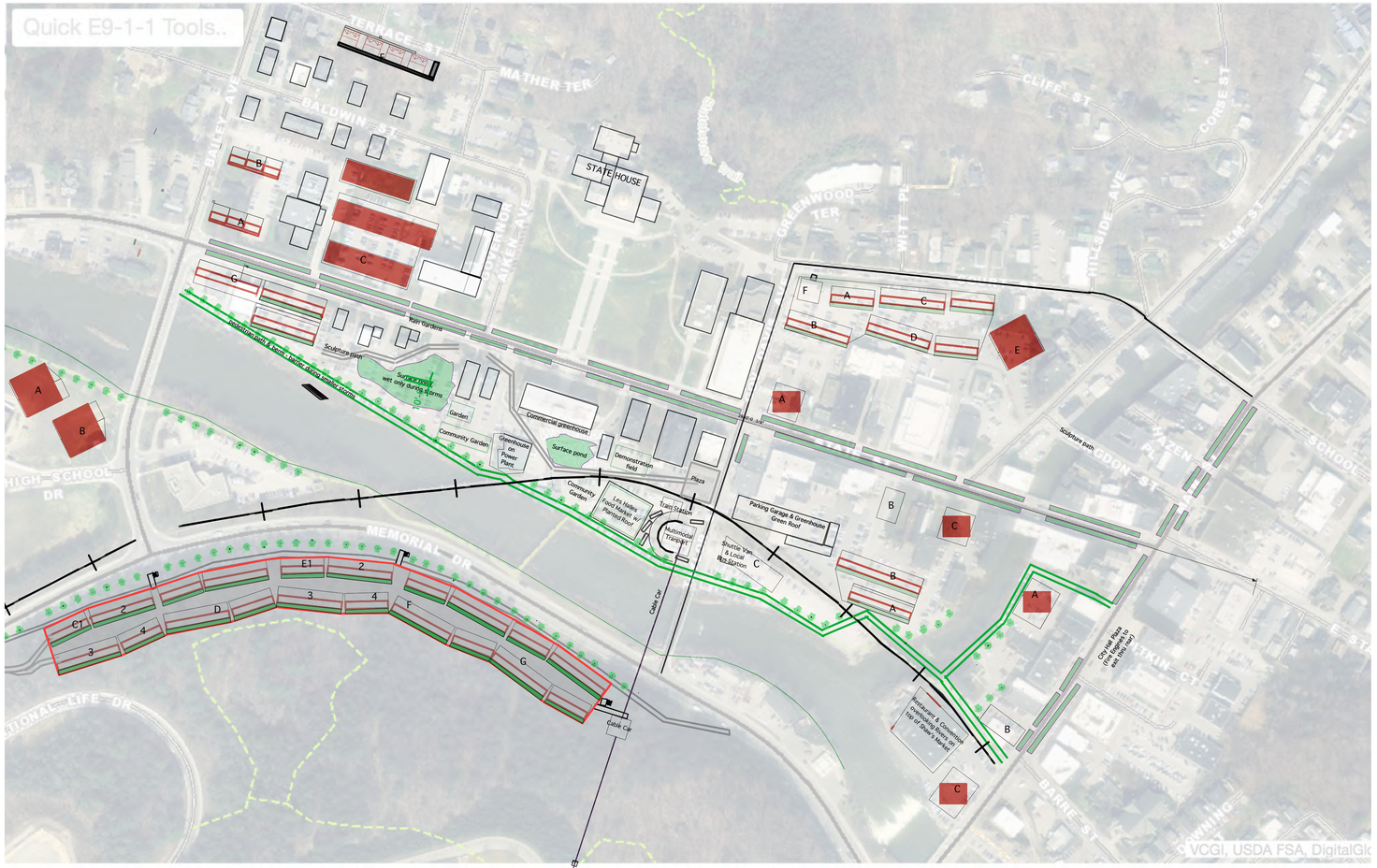
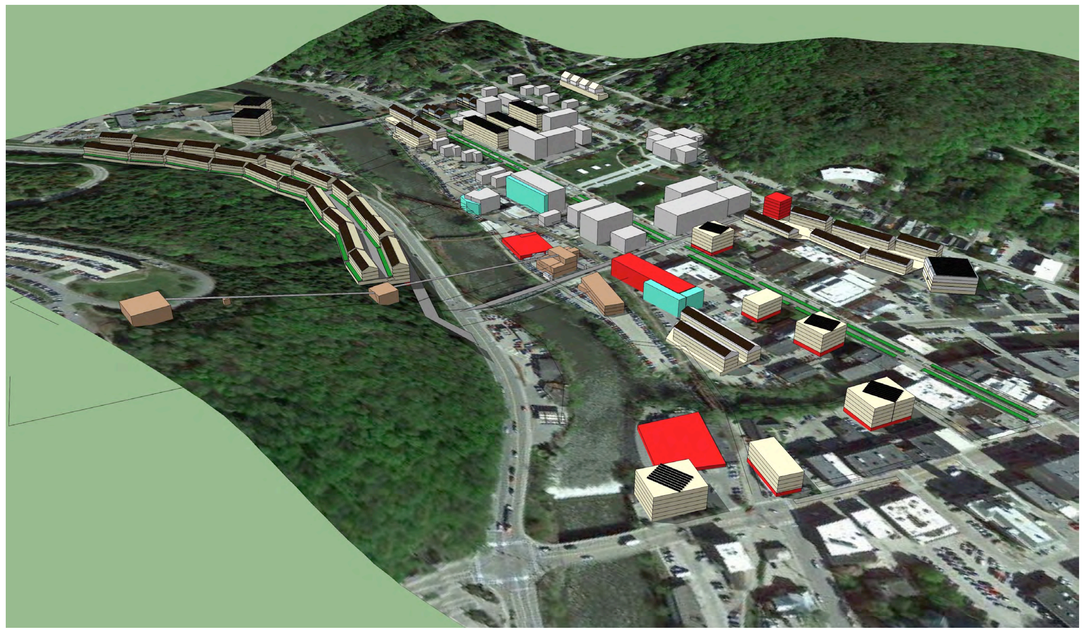
80227 - Montpelier Design Competition – Major Issues Statement

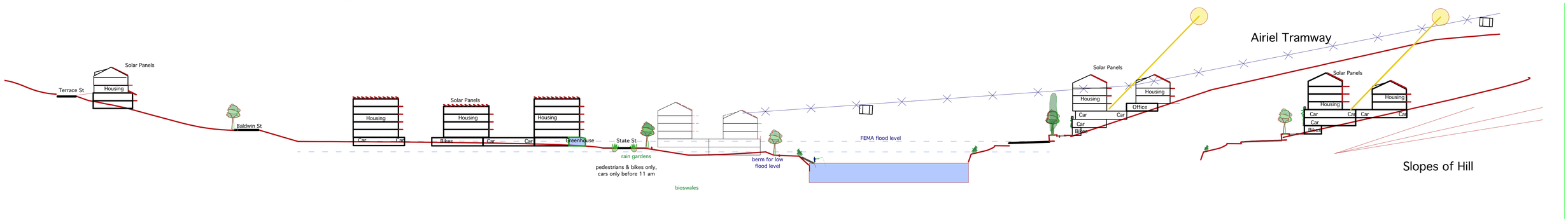
1. Community Involvement. –No ideas imposed top down will be successful. Our first actions would be to solicit the significant community input required for a successful solution.
2. Transportation. – Parking spaces will be required as long as few alternatives to cars exist. We propose a process of creating pedestrian friendly streets while building an integrated public transportation system, including rail, aerial tramway, parking garage shuttle services and local connections. As the public sees benefits, new housing can infill some of the parking, decreasing the need for cars and increasing the tax base. Continued support will further reduce car use and related health impacts, allowing more housing, better air quality, and an expanded pedestrian friendly environment. Regional and state support will significantly increase Montpelier's ability to achieve this vision. Our four step proposal is included on our sheets.
3. Center City traffic. – We still need Post Office, emergency vehicles access, services for the mobility impaired, product delivery & pickups and recycling/composting pickups to offices and retail facilities, even if we eliminate garbage. Perhaps relatively small service vehicles can be used before or after a specified time, to limit interference with pedestrian use.
4. River Walk. – We have created a 50 foot wide public park along the river edge, doubling as sacrificial space for flood water management.
5. We are NCARB certified, licensed Architects, splitting certification and experience in net-zero energy buildings for both new construction and renovations. We have a wider perspective on regenerative design including the principles of the International Living Future Institute and the Living Community Challenge, addressing toxic materials, net positive water & waste, health & happiness, social equity, urban agriculture, education and beauty. We also propose incorporating the principles of biodiversity and the natural systems that can reverse Climate Change, not just adapt to it.
6. Infill Housing. The ground floor of housing will be devoted to stores and restaurants or artist lofts and greenhouses on south sides. These spaces will be made with waterproof materials and have a smaller upper floor for storage, allowing items to be moved upstairs during floods and rooms to be cleaned and quickly be operational after a flood.
7. To respond to Montpelier's mix of different scales our building massing will reflect the sizes of buildings around them. While we must use elevators, when seeking net zero, we design to decrease their use as much as possible. Walk ups will also create a more humane scale with identifiable addresses.
8. Water Resources. – Impermeable services prevent water infiltration and disrupt the small water cycle. In time all surfaces should be changed to permeable types. All new and renovated flat roofs should be greened thus reducing storm water volumes. Wastewater will be processed and cleaned in greenhouses for growing plants. This will also reduce flooding problems.
9. Urban agriculture. - We propose to integrate agriculture into the urban fabric, along the lines of nineteenth century Paris. The sides of the power plant and of parking garages will have a layer of greenhouses for commercial food production during all seasons and as a visual screen.
10. Sewage Treatment. – A sustainable society cannot treat sewage as waste. We propose to implement the ideas of John Todd and the ILFI to treat human waste as the resource it is.



KEEPING TO SCALE - FORM PARKING LOTS TO PARK WITH NEW NET ZERO HOUSING FOR ALL



Housing Commercial Transportation Greenhouses



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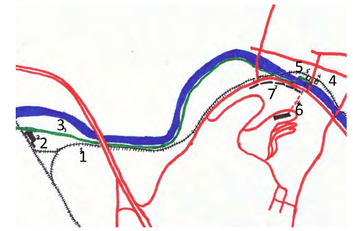
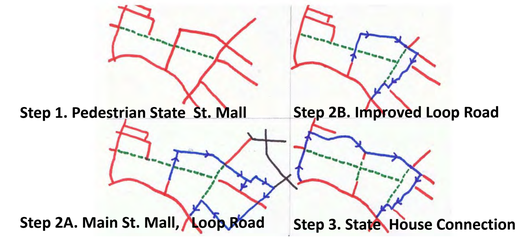
#80227 Expand Transportation Options

Regional Transportation Plan



1) Refurbished Montpelier/Barre Train Line
2) Parking Garage & Bike Storage at Train Station.
3) Existing Bike Path.
4) To-Be-built Bus station- Local Bus Routes.
5) New Multi-Modal Transit Center.
6) Montpelier-National Life Aerial Tramway.
7) Parking Garages with Housing Units and Arial Tram Stop.

Car-Free City Center



Step 1. Create a pedestrian mall along State Street. Parking lots can be accessed from Bailey Avenue, Taylor Street or Court Street.
Step 2A. Extend the pedestrian mall to Main St. Institute a one-way loop using existing roads. This routes traffic around the school, (or uses Cedar street), and adapts Hubbard which has some less than ideal sections, but the roads exist.
Step 2B. Improve the loop by creating a new road through the parking lots behind City Hall to connect School Street with Barre Street. This is problematic around the Church on Barre, and requires removing or going through the parking garage on East State, but provides an improved route and rear access to businesses east of Main. This does use parking lots that might otherwise support infill housing.
Step 3. To provide a nearly car free city center, create a ring-road connection behind the State House between Court Street and the parking lots between Baldwin and Terrace St. While there are challenges, contours below Terrace Street are only six to eight feet above the floor level at the back of the State House. Of course the roadway must be sufficiently separated from the State House to not damage the building structure. If a car free city center is sufficiently appealing, "can we achieve this?" becomes "how can we achieve this?" and a solution would be found.

Markets and Lifestyle

Inspirations for Pedestrian Malls on State and Main Street.

Guides, Standards & Process

We provide Vision and Expertise. This is Your town and Your Future. Your participation in the decisions is crucial.

Food and Urban Gardens

Net Zero (Net Positive) Energy

New Building Stock- To be built to Passive House Standards to minimize energy input requirements. Calculations indicate our proposed housing stock will be net energy positive by about 27%, thus complying with the Living Building Challenge, or Living Community Challenge, Energy Petal.

Housing UnitsA	1207	
Unit Size	560 – 1,260SF	750 SF Ave.
Housing	902,117 SF	
Com. Spaces	91,380 SF	
Parking Spaces	1,535	
Bicycle Spaces	512	
Solar Panels	9,549	172,413 SF
Solar Output	3,056 KW	
Solar Energy	4,015,584 kWhs @15% CF	
Solar Capacity	1,147,310 SF Hsg	+27%

Existing Building Stock – Will require Deep Energy Retrofits, without reducing historic character, to achieve net zero, (net positive) energy.
Embodied Energy – Material energy values, along with durability and toxicity will be important factors.
Other Renewable Energy Sources – Montpelier uses a significant amount of biomass. It appears that wind energy is not viable in the Montpelier region. Hydropower off the river would be excellent if feasible, but the river was too low to provide much power when I saw it. A hydro battery would be possible by pumping water uphill to a holding system during plentiful supply, and generating power in low periods. This is however, a net loss process, so its value is limited. With sufficient holding capacity, diverting water during flooding could theoretically reduce that danger, but I doubt its feasibility.

Manage Storm Water

Design: US and European Examples

*Images from Dreiseitl

Manage Storm Water

Landscaping : to include extensive use of green infrastructure techniques such as:

- bio-retention,
- rain gardens,
- green roofs,
- permeable pavements,
- porous asphalt or concrete,
- bio-swales, and
- surface ponds.

River edge areas to be planted with erosion control species as recommended by the Buffer Handbook Plant List by the US EPA and the Maine Department of Environmental Protection, or similar source.

Surface Permeability: