

Charleston Vertical Farm Project Minutes of March 22nd, 2010 Faculty Meeting

In attendance:

Gene Eidson, Clemson University Institute of Applied Ecology
Elizabeth Busch, Clemson University Restoration Institute
Ahmad Khalilian, Clemson University Biosystems Engineering
Mark Arena, Clemson University Cooperative Extension
David Pearson, Clemson University Planning & Landscape Architecture
George Askew, Clemson University Experiment Station
Brad Putman, Clemson University Civil Engineering
Calvin Sawyer, Clemson University Biosystems Engineering
Dawn White, Clemson University Institute of Applied Ecology
Brian Sheehan, City of Charleston

Review of Work Plan and Task & Deliverables Deadlines

Discussion opened by G. Eidson about looking at deliverables and making reasonable due date. The work plan was accepted by the EPA with no revisions. The 'kick off' meeting will be held on April 20th on campus with EPA representatives in attendance. We would like all faculty members to participate as much as possible by phoning or attending via video conference if physical attendance is not possible.

The second deliverable is an outline of what we're going to include in study. The final Design Feasibility Study Outline was due April 1st, and Eidson suggests a new date between end of May and mid-June. We will transfer a lot of information via email. **DAWN to set up an online site or tool that facilitates communication among team members and has a document depository** (*Dawn has created a wikispaces site and will send out an invite link to all project members*). We will need to have at least one or two additional project meetings before April 20th. **DAWN will send out poll to team members to select final due date for the outline – end of May or mid June.** (*Upon review of the timetable, we will have to have outline completed and sent to EPA by Wednesday, June 15*)

Development of the Design Feasibility Study Outline

Project objectives and tasks – what is required to develop this outline. A memorandum of understanding is to be developed with City of Charleston. Repurposing of the building seems critical. Cal S. asks if we start with seeing what buildings are available or do we draw up a list of minimum requirements? Develop the outline with the idea of repurposing. Who will we work with in Charleston regarding buildings list. Brian S. has started pre-screening buildings and has a candidate list. The city also has a green committee looking at the project and they have a good handle on makeup of group that needs to be brought together. We can meet Charleston historic requirements by including group members who have the relevant knowledge.

For the work plan, each faculty member should put ideas together and send to DAWN, who will compile all the input. Brad P. asked if we are looking at entire building site or just building relating to the Vertical Farm concept. Brian S. notes the project will be integrated into the bigger picture. **In the city's sustainability action plan (BRIAN WILL SEND THIS OUT) the concept is for sustainability education as a one-stop shop for the long-term.** They envision Clemson

University, College of Charleston and The Citadel having a lab environment, testing vertical farming and new techniques in urban environmentalism, carbon reduction plan – bringing these and more, under one roof. They envision a ‘vertical incubator’ – 1 stop shop – green technologies and an investment group. The city is searching to find a building that can be repurposed and is big enough to house the farm and some of the other components. Bring together multi-party program and project that is a hub for sustainability. The Coastal Conservation League is developing a local distribution center for local produce, and it there is interest to co-host and develop hub nearby.

Discussion over reasonable dates to collect topics by that should go in feasibility study outline. Must include as many elements of research as possible as what we’re doing now on campus and at other locations. Bring all components into this project. Eidson tells Elizabeth B. there is interest in having Nick Rigas of the Restoration Institute engaged for solar and wind energy components. Daniel H. notes the strategic benefits of a Charleston site from architect standpoint. Eidson asks how can we engage the CAC (Charleston Architectural Center)? Daniel H. replied there is a study now on urban farm, and they can put focus area on Charleston with students. Have grad students there to do comprehensive curriculum. Good way to engage with CAC.

Eidson asked Mark A. about commercial side of things – growing and plants selection – Mark has expertise in working with commercial growers – need to look at this as commercial venture. This is more commercial than urban garden, and Mark A. can help us look at commercial end. Ahmad K. asks if we are going to design the system, and Eidson replies that we are doing feasibility study to determine if a vertical farm can be developed and will provide a preliminary design. We will look at several buildings and the feasibility of moving such a project forward and how we will work closely with City of Charleston. Eidson says we want to showcase technologies. Eidson refers to the design competition in Dallas, ideas are limitless, but we have to figure out what designs will fit into Charleston.

Eidson asks for a date to have materials submitted by faculty members for the outline? Team members should begin sending in ideas over the next week to Dawn, and we will collect, compile and send back out for review among the team. This would be the first step for getting ready for the meeting on the 20th, but would like to get more done before April 20th. Identify a broad scope of what we need to do. Eidson asked Brian S. if we can have an idea of which buildings in Charleston are being considered? This information would be kept confidential. **Brian S. states he will put a list of addresses together – 3 now, a few others to consider. Brian S. will send list to DAWN – DAWN to send contact information to BRIAN S.** On the 20th, if we can show EPA a short list of buildings that are being considered, that would be beneficial. **DAWN to send out a form to all faculty members of what information we need to begin compiling outline** (*form is included in email with these minutes*).

Design Charrettes in Charleston

We are required to hold 2 public design charrettes in Charleston. We all need to attend if possible. We could offer video conferencing in the charrettes, but we want more a more ‘hands on’ environment – although video conferencing would allow others to watch the process. If we hold both in the summer, will have different audiences than if we did one in the fall. We will gear towards holding one in late summer and one in the fall. **We will handle organization of the charrettes in-house, DAWN to assist in organization.** Need input from Daniel H. and David P. how we should develop the team effort for the charrettes. How long will the charrettes last? Recommend at least half a day. Typically we break out during the initial charrette into smaller

groups and then reconvene. Can go on better part of 6 hours. Daniel H. asks what deliverable is for charrettes? We can be very focused on idea gathering in the first charrette, which can set the stage for the second session. One session can be geared towards the site and the next towards the commercial aspect. Need to identify the most strategic deliverables and develop charrettes around those.

Brian S. says green committee meets in the AM of 2nd Tuesday of each month and then in the afternoon, the sustainability advisory committee meets – he recommends we could fit first charrette in between those meetings to cover more ground.

Replacement Faculty for Dr. Farahani

Eidson notes that we have to replace Dr. Farahani's open spot. Wants all to be thinking about who replacement could be. We should consider someone from Charleston REC, should be a natural fit for them to be part of. Then we'd have architecture center and Charleston REC represented.

George A. recommends Richard Hassell of Coastal REC. Eidson will contact him asap and see if he wants to join. Eidson notes there is not a lot of money, but the opportunity to move forward is very attractive. We will do everything we can to fit budget to project. George A. recommends involving Debbie Dahlhouse, the communications director from PSA, so that she may utilize the news and media staff to market and publicize the project. Also to include Your Day radio program, so that Bob Schuster may set up some interviews and sessions on the project.

Eidson notes that we will need an economic analysis of project. Cal S. notes bringing in CofC and Citadel with on economics. Eidson agrees we will have to bring them in, but we have no funding to provide to them. George A. recommends Wilder Ferreira a budget specialist in extension may be able to help out with economics, does many budgets in extension.

Eidson asks all members to refer to the slide “Decisions Related to Vertical Farm” to think over and take into account ideas and issues.

Eidson asks Brian S. if there will be a 'green infrastructure block' at the site? Brian S. notes they don't have that in mind currently, but the city is launching a home energy makeover project to chairs of over 100 neighborhood associations who may want to be city's flagship green project. There is one neighborhood in particular on the peninsula where there are available properties and many construction projects. Brian S. states there are lots of opportunity sites – also near where CCL is establishing the distribution center for local produce – that area feels like an emerging green zone.

Ahmad K. asks about funding for carrying project out. Eidson says once study is done, CU and the city will move forward to find funding. This is just feasibility and conceptual study right now. Brad P. asks about outcome of study, will we select and do design plan for? The goal now is just to pick a building that serves best opportunity. The project will get a lot of attention, the grant is thru DC, not local EPA division – this will generate a large amount of attention. Final product is a powerpoint presentation, review of charrettes, and interviews with the Clemson stamp all over it. The project would be on EPA web site focused on sustainability. Cal S. asks have we gotten any guidance from EPA about positioning, is EPA looking for Charleston specific project or something they can use anywhere else. Eidson notes if you can do this project in Charleston can do anywhere. All components will be made available as a road map as how to move forward for other areas. There will be design elements that are transferable on a smaller scale to land or homeowners and

this project can be magnified on a broader scale. Daniel H. notes it is cultural too, but specific and scalable.

Initially, the final product was due in November – now it will be after 1st of the year. We can discuss with the EPA representatives on April 20th, but should maybe shoot for spring of 2012. George A. recommends putting together a creative inquiry team and get funding from CU with ultimate product being a marketing tool for finding funding. Applied economics would be important. **Daniel H. will check with CAC in Charleston to have some students on the ground in fall doing something.** Mark A. notes relevance to larger metropolitan studies – the transportation of vegetables – ties into larger scale economic reinforcement. **Eidson recommends in order to set the stage, we should ask Jeff Allen help us revisit population dynamics.**

Eidson says that all issues should be brought to the table on this project it is an open slate. Be creative. What can we do to make best possible feasibility study to help us move forward.

Brian S. notes that Lowcounty Local First – which has a focus on local agriculture – and finding aspiring entrepreneurs who want to work on farms – are good partners.

Daniel H. notes this is a big move from community design, asset-based design strategies that look at sustainability, economics, the environment – all of this added in will draw attention to the project.

Brian S. mentions a Duke MBA program that develops business plans, can we do same with economics here? Can we engage students or team from a local university to do plan with implementation along with business plan, can we include here? **Eidson says yes – maybe the Spiro Institute would be interested?** George A. thinks so as well. Good business plan is key. And if we could keep elements within Clemson, would be all the better.

Closing

Eidson thanks all members for attending. He will be sending a variety of articles on vertical farming to get an idea of what others are doing – not much being done in this area. We will be breaking ground.

IMPORTANT DATES:

- *By Monday, April 11th* – project members submit back form with ideas and provide topics related to their areas of expertise for inclusion in the Design Feasibility Analysis Outline
- *April 13, 14 or 15* – schedule team meeting to discuss outline before April 20th EPA meeting
- *Wednesday, April 20th* – meeting on campus with EPA representatives
- *May* – 2 team meetings to discuss internal draft of Design Feasibility Analysis Outline
- *No later than Wednesday, June 15th* – submit final Design Feasibility Analysis Outline to EPA
- *Late Summer / Early Fall* – 2 public design charrettes in Charleston
- *Early Spring 2012* – Final Design Feasibility Study Document & PPT

TASKS:

ALL FACULTY MEMBERS:

- For the work plan, each faculty member should put ideas together on form provided and send to DAWN by Monday, April 11th
- Eidson asks all members to refer to the slide “Decisions Related to Vertical Farm” to think over and take into account ideas and issues.

EIDSON

- George A. recommends Richard Hassell of Coastal REC to fill Dr. Farahani’s open spot. Eidson will contact him asap and see if he wants to join.
- Contact Spiro Institute re: business plan?
- Contact Jeff Allen for population dynamics?

BRIAN S.

- Brian S. states he will put a list of addresses together – 3 now, a few others to consider. Brian S. will send list to DAWN
- Brian send out city’s sustainability action plan

DANIEL H.

Daniel H. will check with CAC in Charleston to have students ‘on the ground’ in fall

DAWN

- DAWN to set up an online site or tool that facilitates communication among team members and has a document depository. *(a link to the wikispaces site ‘charlesonvf’ will be provided)*
- DAWN will poll all team members for availability to meet before April 20th EPA meeting and to meet twice in May on progressing Outline draft
- DAWN to send out a form to all faculty members of what information we need to begin compiling outline. *(included in email with these meeting minutes)*
- Handling organization of Charleston charrettes

Charleston Vertical Farm Team Meeting with EPA Representatives

April 20, 2011

Location: Barre Hall (campus)

EPA Participants: Suganthi Simon Pamela Swingle

Clemson Participants: Gene Eidson Jason Hallstrom Dawn White
Ahmad Khalilian Daniel Harding Brad Putman
David Pearson Elizabeth Colbert-Busch (video polycom)

City of Charleston: Brian Sheehan (video polycom)

Introductory Remarks:

- Eidson opens meeting at 10:30am.
- Suganthi Simon is project manager from EPA. Provides an overview of project history, ranked as one of top proposals.
- Introductions by team members follow.

Agenda Items and Discussion:

- Eidson – talks about agenda and overall goals. Team will identify missing pieces today during discussion. Eidson asks Brian Sheehan to give quick overview on city's position on moving project forward.
- Brian - framework through which to view effort. World class sustainability project. Focus on infrastructure pieces – bringing down greenhouse gas emissions. Five things have to do really well - 1.) New investment focusing on clean tech (NM has clean tech fund) 2.) New industries in clean tech, and provide lab environments. 3.) Application of this tech, 4.) City of Charleston is lab for new solutions / technology for lowering greenhouse gas reductions, and 5.) Strong partnerships with those who understand climate action plan. VF is one of first demonstration projects that bring all 5 elements together. Partnership / deployment / use city buildings - important initiative for Charleston. As for political climate? Mayor is supportive – his leadership is well recognized. Charleston has very robust infrastructure – green committee – citizen led network. Stakeholders – citizens, city council. Energy efficiency partnership. Well- positioned to be a leader in sustainability/ clean tech. Possible VF locations? Brian – doing due diligence on properties – have short list of properties for candidates on peninsula. Need community type meetings to look at short list – are we missing anything. Public engagement process will start with site selection.
- Eidson – we will have a working meeting in Charleston to talk about mechanics of moving forward. Key is we want to be very strategic with charettes. Will be very focused and specific. Need working meeting to lay out concepts, ground rules. Identifying locations – Eidson asked EPA how do we best communicate potential sites with you? Have slides to identify? Mtg in next couple of weeks – can we disclose locations or map?
- Suganthi – interested in creating playbook for other cities, how do you identify buildings, etc. How do you take undervalued property and create value. As we go, if we can create as a team, a sketch of how to do for other cities. 2nd thing – budget, Brownfields (www.epa.gov/brownfields) is interested in farming, have some funds.

- Eidson – how do we get into evaluation of properties? How do we merge our talents. Pam – is any property considered Brownfield? Brian – can find out. Eidson – concept we discussed is food bank program, can we co-locate adjacent or close proximity. Can we blend projects. Environmental justice aspect. Charleston vision of creating footprint of sustainability, and many more projects would fit in. More of a national model. White house / USDA initiatives – food shed model says Suganthi. Elizabeth – want to determine which buildings – does EPA need to approve? No, if you find potential under Brownfields category – want to bring to EPA to see if qualify for funding. Not here to approve. Ahmad – what is Brownfields? 2 phases of assessment – underutilized proper that maybe was industrial before – needs phase 1 assessment for contamination.
- Very involved with community engagement – like to repurpose rather than tear down. Eidson – using technology to encourage urban gardening concept. Pull in approach of sustainability center. Brownfield site may have added value. Pam – funding cycle would come later, can talk to BF about cycle / assessments. Pam – Repower American’s Land – using formerly contaminated property. Have mapped all EPA BF sites on Google Earth – see what renewable energy potential is. Link follows:
www.epa.gov/renewableenergy/land.
- Press release discussion – approval from all parties – issue as joint. Press coming out in Charleston paper this Sunday about Aiken project. **Is April 28 date for release ok?** Timely follow up to press coming out now. **Eidson – will get draft release to Charleston (Barbara Vaughn), will need quote from Mayor or appropriate party. Shooting for end of May for team meeting in Charleston.**
- 1st charette in July. Eidson – asks Dan about concept. Dan – 1st charette will be steering charette which sets the stage and parameters for productive consensus charette. Info that would add to integrity of process. Making sure we create incubator to allow that to occur. Will take strategic conversation with Charleston and whole team. Decide how to administer/ moderate charette. Want outside party to moderate – facilitate. Are considering another faculty member to be nonpartisan – landscape architecture dept – to be central person. **Mary Beth McCubbin has tremendous experience and Dan feels comfortable with her taking a lead role. Peter – way we advertise, need to be very clear with focus of project. Looking at 1 month after 2nd charette to have all results summarized to EPA. Eidson – is EPA comfortable if we submit all final in FEB 2012,** falls in line with earlier discuss with Eric Ruder of IEC. Want to make sure we have time for thoughtful completion. **Get corrections back, and resend in March – all finalized in April 2012.** EPA – says that is fine. Pam will talk with Eric Ruder (IEC) this week. **If we need to bring Eric in on charettes, we need to know early on to make video arrangements.** He would not be engaged –just watching.
- Suganthi – list of bldgs, is that part of public process? Or city making decision? Eidson – we come up with list and build into team mtg / charette process so people understand why we are going that route. Eidson to Brian, how do you bring public into decision-making process? Brian – announce short list properties at 1st charette – public can let us know if we’re missing something, otherwise we will pursue short list and pick by 2nd charette and show ideas for property. **Criteria at 1st charette is decision process – then 2nd charette will have property(ies) identified and start to show what VF will look like at that location.** Eidson – comments? **Brad – set of criteria with decision**

matrix to analyze. How much input should public have on selection? **Dan – first steering charette could be decisions of each site. Good way to start project. At first ‘steering meeting’ can look at each site, maybe can identify political / communication points.** Dan – greater outcome is blurred authorship, community ownership. Peter – ask Brian about zoning issues? Work prior to meeting? Interest in properties, speculation – zoning variance, legal issues? Anything to slow down the process? Eidson – will be covered in team meeting, pull in all contacts from city. Team meeting - make sure green committee, zoning – all included. Once we get short list, we detail and do portfolio on each property. Peter - election year is 2012. Brian – is a feel good story, no problem unless tricky property – don’t see a problem. Don’t see as political hot button. Eidson – emphasize have to be judicious and careful, all coordinating so there is no surprise on the team.

- Eidson – issue of is it cheaper to repurpose or build? Need to be aware that will come up in cost benefit analysis. What if we make determination that we cannot repurpose. Suganthi – part of project, conceptual theory based, have not found other VF designed & built. Analysis and what community has to do. Hoping it will be repurpose, need to be aware of potential outcomes of project. Elizabeth – will design determine how much it will cost to build and do we have real estate economist we can engage? **Eidson – have identified credentials of economist we need and some candidates, we would bring in as a team member.** Dan – good point, real estate economist, bldg cost climate, do think it is critical for cost analysis – re: future develop, etc – someone who knows Charleston really well. Eidson to Brian, do you anticipate based on preliminary building list that these sites are isolated or within zones you have been talking about focusing on? Brian - just north of Crosstown over bridge – is a lot of development activity – lot of vacant and available – feels like an emerging area. Other areas, not a lot of properties.
- Eidson – in outline, what is our role in taking back to community? When we finish our work, what’s our role in getting this to public at large, so next process can go forward? Where do we stop? Suganthi – in terms of contract, stops with final deliverable – hoping we can leverage into 2nd phase. In terms of communication piece, 2nd charette have to be clear about expectations. Keeping public engaged. Carry momentum to go after private or federal funds. Dan – tie into ‘feel good’ process to community – images or pictures, what will this look like. **Great project to fold into aspect of program of graduate students – and let them come up with designs in December, could generate another element to add or go back to community.** Presentation of ideas and end that way – segway into leverage of what could happen next. Dan could throw that out there to see viability. Eidson – focus on final product to EPA, and how introduce back to public. Want to maintain momentum. Suganthi – don’t want public to think we engaged in theoretical, but don’t want them to over-expect. Peter – visionary / romantic idea, given a slow news day – could spin into something bigger. Offering process not product – need to be clear about that. Conceptual and feasibility here - not the vertical farm itself. Dan – notion of potential design studio can be storefront of charette, reality is study, ideas are what are promised. Peter – admires architecture plans and models – **could become a creative inquiry with models for display? Dan – absolutely.** Eidson – remember funding for studio. Aiken needed 30K plus. Dan – this type of studio is going on, they are looking for something – profile of this project can fit into, can use to keep it going. Could be carrier of the idea without setting up for letdown. Extends community engagement. Dan – can talk about monies, but don’t know for sure. Suganthi – AIA would support? Dan – yes, would

definitely take back and deal with state, Charleston. Architecture for Humanity chapter – invested groups that can help the studio. Studio will exist with or without funding. Could be positive fit. Eidson – important, we do not want the conceptual plan and feasibility study to end up on shelf. Also want to create energy on campus – re: greenhouse pilot program on Jordan Hall. Opportunity for engagement on campus and in Charleston – believe we can find the funding, all need to think about it. Engage carefully CofC, Citadel, Trident Tech (engineering tech / culinary) – collaborative effort we are sharing. Discussion on ‘playbook’ for other cities – put concepts down as appendix to study.

Eidson – would create web site for project to engage, be transparent – use press and filming at charette. Peter – would like to do series of interviews of lessons learned with leaders thru process, and becomes part of the record. Eidson – build studio into programming – in Aiken project had studio and that engaged to next level and helped fund the project. Clearly a public / private enterprise in moving forward. Know of philanthropists that we can engage in Charleston. Communication – keep engaged with what we’re doing. Partnerships – all have brought up ideas – how do we get all professional societies engaged? So they also help?

- Precision agriculture bring into – issues to deal with – work at CU and other land grant groups where they are focused on optimizing, how do we transfer the tech. Herbicides, pesticides, safety. Will be organic? **Ensure it is healthy addition to community.** Could see those kind of issues come up, especially in Charleston – how all is set up on how it breathes, lives, performs with landscape. Critical to consider VF as organic as possible, Charleston is prolific site to do this in. Eidson – community will engage us in every issue. Parallel issues on campus, pilot to address issues on campus. Eidson – show that is comprehensive. Suganthi – name VF, is not catchy and does not resonate? Charleston has smart city concept – sprout city – what would engage the creative mind or stay with VF? Intelligent Farm? Eidson – name of project, stay with VF? Or something Charleston related? Will convince that it will be a farm. **Could be part of charette process – developing a name for project?** Intelligent Urban Farm – need ‘urban’ in there.
- Eidson – community plan? Suganthi – think we have covered and will come up in next meeting. Concerned about local level of communication. Will have people interested in feel good stories, can showcase partnership, positive with EPA. Local effort, and EPA working at local level. Eidson – when EPA was present at charette, Craig was a participant, it was welcomed. Key structure in charette with small groups. Peter – Aiken charette allowed enough time for small side conversations, Craig sat with folks and discussed, helped build sense of rapport. Was there because he was interested. Suganthi – when did charette occur? During the week, AM – lunch – afternoon. Brian – needs to step out – any other questions for city? **Suganthi – any public participation requirements for meetings in Charleston? EPA will need to be aware of.** Brian is Charleston contact, and will always forward info onto city communication dept (Barbara Vaughn).

LUNCH BREAK

- Suganthi – what are broad concepts of selection criteria for bldg? Eidson – multi-levels fixed / mobile greenhouses / moveable planting beds & trays. Incorporate mini tidal wetland as a treatment wetland. Can we bring in aquaculture? Upper level - hydroponics, aeroponics, next level down or in proximity – aquaculture if we can incorporate. **What requirements do we have to meet from animal / human rights component.** Fish are

obvious concept – we have expertise on looped aqua / agric culture. Composting level. How do we recycle and reuse water. Solar panels and wind power to produce energy. If we co-locate with food bank, how do they engage with VF? Need refrigeration – have to plan on handling waste also. Harvest rainwater on another bldg – or put green roof on part of farm and harvest water and bring into system. Energy and water are clear issues to address. Green houses with energy incorporated – and moveable growing beds. Part will be experimenting how much has to be fully indoors in climate and 3 season basis? Winter crops. Part is enclosed – part open. Suganthi – parking deck? Still thinking of. Limitation is very limited space if have parking deck. Could make face of garage harvestable herbs – option. These are the components we want, depends on location. Key decision makers will visit Aiken next week – can we incorporate green infrastructure with VF and energy and food bank – all in one complex – sustainability hub. Research / education / engagement – focused on tech and demonstration projects. Urban gardener? Demonstration plots. Teaching courses – access to local schools. How can you do all this in one sustainable footprint? Person on green committee looking at variety of buildings, some in downtown area – will see with footprint city provides. Suganthi – talked about condition of buildings? Brad – structural stability is important. Eidson – looking at park garage that was closed, was underutilized. Suganthi – any historical designation? Probably not. Intelligent Brick concept – monitor bldg structure. How does EPA feel if they want to do all in one area – is that positive? Pam – think it's positive, but part of study, what does community want? As much as you can interlink – that's leverage. Eidson – highly linked project. Gaillard auditorium area – is underutilized garage except for events – have not ruled that location out. Would be quite limited in footprint. Suganthi – long term vision for expansion – realistic public interface, co-locating is good, public can visit. Ahmad – would be tourist attraction. Eidson – when we introduce, will have people coming continuously – probably cannot do high level of traffic. Will not be viable operation. Once we see short list, and have next meeting – city will disclose any and all issues. We will understand constraints. Suganthi – have we given them ideas of what looking for? Eidson – they know we want meaningful project, a community project, true effort. Want to know it is having a difference, environmental justice. Mayor has same interest – sustainability hub – urban redevelopment. Site areas need redevelopment. But what buildings exist? Do you use parts? Or need entire bldg? Pam – from BF prospective, want to link up if has BF components. Suganthi – cost to build and then have we talked about maintenance operation costs? Eidson – have not gotten that far. Accessibility is critical, ability to move produce and equipment. Downtown is crowded. Parking garage originally looked at was doable. **Pam – date for 'steering meeting' yet? Eidson – will give when have – late May, very early June.** Suganthi – will city help with finding host places for charettes? Eidson – yes. Variety of locations to do at. Week of June 6 is conflict for EPA. Eidson – who takes calls on press releases? Pam – thru public affairs office, will be assigned a person and they and come to them. Eidson – city goes thru mayor's office (Barbara Vaughn). At CU it goes thru PI which is Eidson.

- **Eidson – what do we need to do related to IEC? Suganti – monthly reports, just a summary of meetings, if we have team calls. Does not have to be in-depth. Look at deliverables with each phase and where we are with.** First workplan done, next is charettes and outline. **Eidson – make communication with Eric Ruder. Pam is managing contract with Eric, can call her with questions. Suganthi – you keep track of expenditures. Eidson – we have agreement that we will only do limited # of**

invoices. Want to make sure, does Eidson have to contact for every expense? Suganthi – coverage and action items included.

- Eidson – David Pearson is knowledgeable on charettes. Any questions he has? David – not at this point, proper planning for charette that they are structured, not hard to do. Dan has been involved too. Eidson - concept of public involvement is not well defined. Suganthi – involve everybody vs. targeted – surrounding communities. **Key stakeholders from community / civic leaders / Charleston has a process for communication with citizens. If they are meeting their requirements, then we are covered. Pam – Charleston committee have requirements covered.** Pam – can't turn away at the door, but does not have to be broadcast. Suganthi – concern that certain folks are engaged. Eidson – Charleston has done, made determination of how to engage and are initiating. David – if engage civic leaders they will organize their network. Suganthi – is area being considered concentrated or fall across multiple neighborhoods? Eidson – multiple neighborhoods, lower socioeconomic areas and looking for urban redevelopment – adjacent mixed-use area. Suganthi – older demographics? Eidson – is a mix, have current EPA project for energy, doing work to insulate buildings. **Pam – energy, SC have strong energy office? Yes. Pam – thinking about these areas, should bring someone in from there. Eidson – are working with biofuels, could bring them in.** Talk about algae to field – aquaculture might be a fit, related. Pam – have strong biofuel people in region. Eidson – will be building pilot biofuels plant at N. Charleston.
- Suganthi – if had retail food bank, would be part or adjacent? City said co-locate, most likely adjacent. Suganthi – possible to have retail part of bldg? Eidson – possible. Suganthi – way to combine city business interest. Eidson – want to incorporate business incubator within.
- Eidson – For David, landscape issues related to Charleston? David – interesting part is potential to be part of revitalization. Student engagement is a priority. **Suganthi – March / April funding cycle, be thinking about components and subsequent phases.**
- Suganthi – other dates, May 25th will be in SC for mtg. **First week of June – Suganthi is available. Remainder of June, Suganthi is available via video conf. Eidson – week of May 30th? Try for then.** Will coordinate. **Suganthi – will reach out to BF, what would they define as a BF project? We will produce notes for today's meeting. And send to Eric Ruder.**

Eidson closes meeting at 2:45pm.

DATES NOTED:

- *Looking at 1 month after 2nd charette to have all results summarized to EPA.*
- *Eidson – we submit all final in FEB 2012. Get corrections back, and resend in March – all finalized in April 2012.*
- *Suganthi – March / April funding cycle, be thinking about components and subsequent phases*
- *First week of June – Suganthi is available. Remainder of June, Suganthi is available via video conf.*

TASKS NOTED:

- Eidson – will get **draft release** to Charleston (Barbara Vaughn), will need quote from Mayor or appropriate party.
- If we need to bring **Eric (with EPA) in on charettes**, we need to know early on to make video arrangements.
- Criteria at **1st charette** is decision process – then **2nd charette** will have property(ies) identified and start to show what VF will look like at that location.
- First steering charette could be decisions of each site. Good way to start project. At **first 'steering meeting'** can look at each site, maybe can identify political / communication points.
- Have identified credentials of **economist** we need and some candidates, we would bring in as a team member.
- Great project to fold into aspect of program of **graduate students** – and let them come up with **designs** in December, could generate another element to add or go back to community.
- Would create **web site** for project to engage, be transparent – use **press and filming at charette**.
- Could be part of charette process – **developing a name for project?**
- Any **public participation meetings in Charleston** - EPA will need to be aware of.
- Eidson – make communication with Eric Ruder. Pam is managing contract with Eric, can call her with questions.
- Eidson – are working with **biofuels (experts)**, could bring them in.
- Suganthi – will reach out to **Brownfields**, what would they define as a BF project?

Charleston Vertical Farm Feasibility Study – Project Meeting

June 2, 2011, 10:00AM – 2:00PM

Location: Clemson University Restoration Institute, N. Charleston

City of Charleston:	Brian Sheehan Mill Reeves	Carolee Williams Stephen Risse	Jason Kronsberg James Meadors	Christopher Morgan
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Clemson University:	Gene Eidson Jason Hallstrom Ahmad Khalilian Omar Hague	Cal Sawyer Alex Probst David Pearson David Pastre	Dawn Anticole White Brad Putman Nick Regas	Mark Arena Elizabeth Busch
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EPA Region IV:	Pam Swingle	Suganthi Simon (videoconference)
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MEETING INTRODUCTION:

- Eidson opens meeting. Welcome and introductions done. Suganthi gives summary of project background. Discussion about 'rooftop' vs. vertical farming. Watch CCN video – add link. Talk about actual VF concept - minimizing exposure to contaminants.

KEY COMPONENTS OF OUTLINE:

- Eidson invites City members to join WikiSpaces project site. DAWN will send out access to site. Discussion of flowchart handout.

LOCATION:

- What are constraints? What scale is needed? Open discussion – zoning would not be impediment, can work with rules. Could make amendments if needed, city council would be supportive in this case. Would like to have 3 sites to take to charrettes – to do SWOT analysis. Have to understand scaling. How does city envision 3-story VF? How used? How fit into programs. Add ownership bullet under Location / Building. How long would you need property for? Might determine which properties you get. Discussion of sustainability hub by Brian Sheehan. City wants to locate together for hub – where you go to find out about sustainability.

ECONOMICS:

- Add 'workforce' bullet. From EPA perspective – how do you look at in terms of economic analysis. Workforce development piece. Things EPA can bring to table when site is determined. What can be pulled together as community? If any city money is involved will have to have well defined city benefit cost structure before we can get into serious constructs. Other participants would be welcome in city project. Concern of community effect – local growers? Local farms? Mark Arena states local growers

would feel positive because of educational benefit and will attract media. Enough of a market. Are we displacing workers? Who manages this project? Who owns it? CU has research interest, would provide direction, access.

ENERGY:

- Nick Regas – need energy analysis, different technologies can be used. Feasibility – solar, maybe geothermal, wind even in urban environments. From economic standpoint, want industrial type of rate out of utilities – incentive to use less during peak hours. Energy storage. What are alternative sources?

WATER:

- Items featured on slide discussed.

CROPS:

- Worry about introducing contaminants to city. Mark Arena – environment will dictate type of crops grown. How to control inside areas is a challenge. Have talked about doing a crop survey among the community areas, local markets. Survey is in motion, will have results in next few weeks. Organic designation is expensive – newer term is “naturally grown”. Fields to Family, Country First, Hunger Ends Now – discussion about various nonprofit programs providing produce.

LUNCH BREAK

FUNDING:

- Is project developed on a pilot scale and then we work with a consortium to drive partnership? Makes sense for city to be leaser or sub-lease of property – then do look for long term lease that is affordable (than acquisition) – are there grants to help with that? How does EPA envision funding? Can we form subset of team to find out what grant opportunities are out there? Start cataloging types of organizations that might provide grants. What type of homework needs to be done before July charrette? Elizabeth, Brian & Eidson will explore philanthropic options. Start cataloging who we are contacting for EPA so we can cross-check. Clemson’s role? We play a role in how you bring the project together, provide our expertise - but would be community driven project.

LEGAL:

- Concern is not to do any harm. Keep community in mind. Minimize potential of hazards. Develop legal mechanisms to allow us to work together. What documentation needs to be in place as we move forward. Ownership issues.

SECURITY:

- Being careful not to cross-contaminate areas. Security is big issue if you follow true concept – hermetically sealed. Is this an eco-tourism component?

MARKETING / EDUCATION:

- Who is the community we are trying to engage? Is important to identify who we invite. If identify stakeholders, get them in early in the process. Reuters wants to sit in the back and listen in, so does Channel 4. Is marketing potential. State Port Authority doing complex project and having public sessions currently.

OUTLINE WRAP UP:

- Wrap up 11 topic areas. Did we leave anything out? Develop communications strategy for stakeholders before charrette. Want to create teams of comparable expertise. Suganthi would be interested in helping out with over next month. Do we need to come up with different name for project?

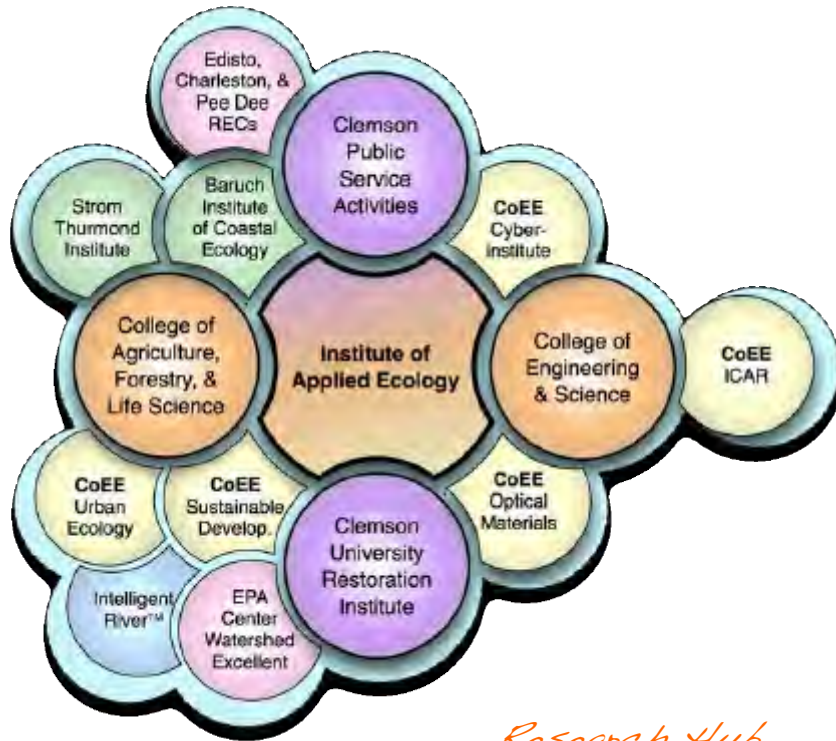
BUILDING NOTES:

1. 85 QUEEN – close to restaurants, parking structure
 2. 311 Huger – 40,000 sq foot warehouse, very little to site beyond bldg. Good location.
 3. 578 Meeting – 20,000 sq feet of space, 1-story structure, loading dock, Regis Milk (was a dairy). Around corner from Huger warehouse. Want to lease for 5 years then sell.
 4. 647 Meeting – Old Trolley Barn is historic. Building to right of Trolley Barn may be able to be torn down or refurbished. City does not have use for, envision community use. (all sites are near a number of schools) DOT right of way behind it. 15,000 sq ft
 5. 701 East Bay St – Cigar Factory, several hundred thousand sq ft, may be limited in refurbishment for historic reasons re: exterior, some renovations. Maybe complicated with cigar factory for access. Issues with historic re: interior / exterior. May be leniency if walls are kept intact.
- We could request access to buildings. What type of buildings should we consider? Go after buildings we have access to only? How do you catalogue buildings and make a decision? Think initially that option for 311 Huger is out. What will provide most benefit in study? Discussion on Reed Brothers building. Recommendation to look at Stoney Field stadium, 1962 concrete structure. Reminder that goal is to repurpose a structure. What is most important topic and what is our timing in looking at? Want to choose three buildings and develop three teams in charrette to evaluate and exchange pros and cons to audience. Energy and Light are the big drivers for possibility. How do you rank buildings based on goal of project. Develop outline, get city input, assign weightings to design criteria – whittle down internally and take three to charrettes. Use final weightings to rank properties. Do we have three properties within the current portfolio? Research option of taking 'slice' of parking garage. Have to have commitment from owner. May be better to look at government / municipal properties. Cigar Factory not a foreclosure, but lender stopped loaning money for it. Maybe could get a lease on a corner of the bldg.

- Ask Charleston team, based on today's conversations, what other properties around town might be considered. Would rather put charrette off for a month, select properties by criteria and then choose three. Establish criteria first. Option to repurpose is stronger than vacant lot. From 'playbook' perspective, beginning with new construction would be an interesting piece. Can we do one more team meeting to develop a matrix, then select three options. Propose another team meeting in very near term, and then schedule the charrette from that point. Criteria should include minimum space. Agreed to schedule another meeting with CU / EPA / City of Charleston.

CHARRETTE DISCUSSION:

- Hold two charrettes – each day 8am to 5pm (have coffee 8am-9am / reception 4pm-5pm)



Research Hub

Institute of Applied Ecology

**Center of Economic Excellence
in Sustainable Development**

**Center of Economic Excellence
in Urban Ecology**

Charleston Vertical Farm



Team Meeting, June 2, 2011

AGENDA

Brief Introductions	All
Opening Remarks	Gene Eidson
Concept Overview	
Meeting Goals	
Design Study Outline	
Powerpoint Slides of Key Topics	Clemson Team
Building Pre-Selection	Charleston Team
Building Issues	All
Site Issues	All
Charrette Planning	Clemson Team
Logistics	All
Preparation Tasks	All
Invitees	
Charrette Leaders	
Format	
Planning Meeting	
Press	
Open Discussion	All
Adjourn	



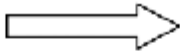
Meeting Goals:

1. Develop working relationship between Clemson, EPA, and City of Charleston to prepare for charrettes
2. Discuss deliverables for project and anticipated schedule
3. Discuss true concept of the Vertical Farm
4. Review and discuss key topics for charrettes among team members
5. Review pre-selection of buildings and criteria to be utilized to meet project scope
6. Develop understanding of charrette process and decisions on invitees, preparation, and conduct of charrettes
7. Finalize design study outline for submittal to EPA
8. Schedule first summer charrette in July and tentative date for second charrette in September

Design Feasibility Study for Innovations in Building

Repurposing through Vertical Farming. Gene W. Eidson, Ph.D., Principal Investigator

Assumptions: Management of urban-based agriculture in the 21st century will require a transformational shift in the farming concepts and methods for acquiring data, storing data, processing data, and utilizing the data to monitor and manage agricultural resources at multiple scales. This leap will require innovations in urban farming and advanced environmental informatics.

Baseline and Program Impediments	OUTPUTS			OUTCOMES		
	ACTIVITIES	OUTPUTS	PARTICIPANTS	SHORT TERM	MEDIUM TERM	LONG TERM
<p>Current Conditions</p> <ol style="list-style-type: none"> 1. South Carolina is losing 35 acres per day of prime farmland, resulting of critical loss of farms "at the edge" which is responsible for 91% of fresh fruits and 78% of produce. 2. Urban agriculture provides an opportunity for increasing fresh, organically grown produce. 3. The development of urban-based farms and Vertical Farms or Tower Farms offer an opportunity for city dwellers to raise a significant amount of fresh fruits and vegetables. 4. Various observational systems are being developed for earth monitoring but most are too costly and power inefficient to provide the robust real-time remote data acquisition system necessary to transform management of agriculture on multiple watershed and landscape-scales. 5. The leap from concept to operational Vertical Farm will require new computer hardware and software for monitoring and management. 6. Adequate funding is a critical issue 	 <ol style="list-style-type: none"> 1. Establish an interdisciplinary research team of ecologists, computer scientists, agricultural engineers, horticulturalists, civil engineers, electrical engineers, green building experts, architects, landscape architects, and market analysts to work with the City of Charleston to develop the conceptual plan and feasibility study for creation of a vertical farm through repurposing a building in downtown Charleston. 2. Prepare a work plan that outlines, describes, and includes the technical approach, resources, timeline, and due dates for deliverables; a detailed cost estimate by task; and a staffing plan. 3. Conduct kick-off conference call with 4. Identify buildings for farm. 5. Conduct two public charrettes or workshops with stakeholders for up to 50 participants. 6. Develop novel hardware and software to enable an energy efficient remote data acquisition system to operate the vertical farm and link into the Intelligent River. 7. Develop funding options. 	<ol style="list-style-type: none"> 1. Feasibility study to support the development, construction, and operation of the Charleston Vertical Farm 2. MoteStack (patent protected) novel hardware and software system that is easily integrated into the Vertical Farm monitoring and management which incorporates extensive power-management and multiple connectivity options 3. Novel middleware applications and long-term database management system that is highly scalable. 4. Visualization technologies that utilize GIS and 3-D photo-documentation with real-time data to produce virtual photo-realistic images of the Vertical Farm and to project future scenarios based on data inputs. 5. Journal articles and presentations on technology. 	<ol style="list-style-type: none"> 1. An interdisciplinary faculty and graduate students that bridge science, agriculture and informatics 2. City of Charleston 3. Key stakeholder groups 4. EPA Region 4 and WA COR 5. Web-based interested parties. 	<ol style="list-style-type: none"> 1. Development of the feasibility study and conceptual design for the Charleston Vertical Farm project that incorporates novel hardware, software, and integrated technologies to monitor and operate the Vertical Farm and link the project to the Clemson COEEs in Sustainable Development and Urban Ecology and the Institute of Applied Ecology. 2. Develop pilot scale connectivity to the Intelligent River® environmental informatics system. 3. Presentation of the Vertical Farm and Intelligent Farm® research through journal articles, conference presentations, and short-term demonstrations. 3. Development of a working group of stakeholders, including City of Charleston, Clemson University, EPA, and local stakeholders to move the concept forward. . 4. Introduction of the Vertical Farm and Intelligent Farm® research to appropriate municipality sectors that would best utilize the technologies. 5. Seek funding partners. 	<ol style="list-style-type: none"> 1. Demonstration of a pilot-scale Vertical Farm that incorporates Intelligent River® real-time remote data acquisition IP to monitor and manage all key sectors of the Vertical Farm; incorporates wind and solar energy to power the farm; and incorporates harvesting of rainwater, composting, recycling, and sustainable agricultural practices. 2. Develop long-term public-private funding agreements and begin to license novel technologies or internally create a knowledge-based business to bring the Vertical Farm concept to the market. 	<ol style="list-style-type: none"> 1. Build a fully functional Vertical Farm. 2. Develop novel sensors to expand the water quality and water chemistry parameters of the farm. 3. Fully incorporate wind and solar energy to power the farm. 4. Enhance Vertical Farm technologies through the incorporation of advanced materials to create recyclable and nonhazardous components that are deployed in the Vertical Farm.

Design Study Outline Topics



1. LOCATION *(All Team Members Assigned)*

- Constraints
- Scaling
- Zoning
- Land Use
- Public perception
- Transportation access
- Local workforce
- Carbon footprint audit
- Brownfields assessment

2. BUILDING *(Dan, Brad & David Assigned)*

- Structural integrity
- Access
- Environmental assessment
- Cost
- Surrounding structures
- Building dimensions
- Amenable for alternative energy approaches
- Growing structures (greenhouses, movable beds, covered areas)
- Scaling
- Property

Design Study Outline Topics



3. ECONOMICS

- Cost – Benefit Analysis
- Community effect
- Sustainability

4. ENERGY *(Brad & Nick Regas Assigned)*

- Energy analysis
- Alternative sources (wind, solar, geothermal, tidal)
- Backup sources
- Energy Storage
- Access to utilities
- Building size
- Lighting
- Seasonal changes in weather
- Tracking use (how much & where, weak / strong links)

Design Study Outline Topics



5. WATER *(Cal, Brad, Ahmad & Eidson Assigned)*

- **MUST HAVE:** Sufficient supply of usable water
- Rainwater harvesting
- Water reuse / recycling
- Irrigation
- Analyze quality (nutrient analysis, contaminant analysis)
- Water budget
- Buffer
- Usage
- Utility access

Design Study Outline Topics



6. CROPS (*Ahmad, Mark & Cal (for Aquaculture) Assigned*)

- Types to grow (harvest time, market for, high value)
- Growth (aeroponics / hydroponics / grafting / vertical growth)
- Pollinators (beehives)
- Beneficial insects (grow ladybugs)
- Aquaculture
- Environmentally friendly pest control
- Composting

Crops as potential candidates for the VF:
Any and all kinds of leafy greens – kales, mesclun mixes, specialty lettuces, mustards, etc...,

Herbs such as cilantro, basil, oregano, etc...,
Tomatoes of different varieties,

Radishes,

Several different types of sprouts,

Strawberries,

and edible flowers.

Other crops will be considered once we understand and determine the environmental conditions of this specific operation

Design Study Outline Topics



7. OPERATIONS *(ALL Team Members Assigned)*

- Maintenance
- Personnel
- Energy costs
- Recycling
- Automation
- Monitoring / Diagnostics

Design Study Outline Topics



8. FUNDING *(Eidson, Brian & Elizabeth Assigned)*

- Public / private partnership

9. LEGAL *(Eidson Assigned with City of Charleston)*

10. SECURITY *(ALL Team Members Assigned)*

Design Study Outline Topics



11. MARKETING / EDUCATION *(ALL Team Members Assigned)*

- Analysis
 - Identify audiences
 - Identify messages
 - Identify methods for communication
- Audiences
 - Surrounding communities
 - Regional educational institutions
 - Partners
 - Prospective Donors
 - Media
- Messages
 - Community benefits of healthy foods, local produce, job creation
 - Education benefits of research
- Methods
 - Project web site
 - E-list (driving traffic back to project web site for updates)
 - Media articles / coverage
 - Local association / chamber communication vehicles
 - Charrettes
- Involvement in Extension Program (utilize expertise & dissemination capabilities of)
 - Horticulture Team - Desmond Layne
 - Natural Resources & Water Team - Tammy Cushing
 - Agronomic Crops Team - John Mueller

Charrette Discussion

Charrette will be led by two Clemson architectural groups - faculty and post-graduate research associates from the Community Research and Design Center and the Charleston Architectural Center.

Each 1 day, from 8 – 5 with morning coffee 8 – 9AM and public reception 4 – 5PM

First Charrette: Steering Charrette

- Introductory video to build think-tank spirit and stimulate creative thinking

- What defines the building and operation of a Vertical Farm

- Divide invitees into teams of experts

- SWOT for each site by individual teams of experts

- Present deliverables from teams

- Evaluate how community feels about pre-selection sites

- Select site to move forward to design phase

Second Charrette: Design Charrette

- Focus on design of the selected site for the Vertical Farm

- Evaluate how the Vertical Farm will integrate into the city



85 Queen St.



311 Huger St.

Pre-Selected Building Sites



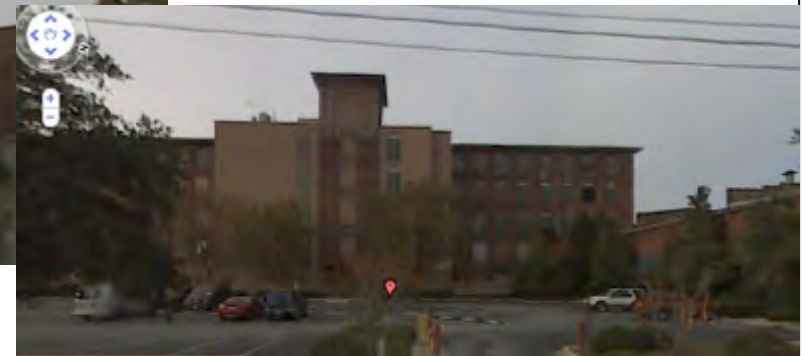
578 Meeting St.

Pre-Selected Building Sites





701 East Bay St.



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Charleston Vertical Farm Team Meeting

Thursday, June 23rd

Location: Clemson Campus / Video Conference to EPA / Teleconference

Attendees:

Clemson	Dawn White Daniel Harding	Gene Eidson	Elizabeth Busch	Brad Putman
Charleston	Brian Sheehan Steve Kirk Carolee Williams	Jason Kronsberg Dennis Dowd Yvonne Fortenberry	Michael Maher Cameron Pollard (<i>on behalf of Barbara Vaughn</i>) Lee Batchelder	Laura Cabiness
EPA	Suganthi Simon	Pam Swingle	Katie Snyder	

Eidson opens meeting. Today's meeting is to discuss the criteria to meet building selection. We will concentrate on minimum criteria for buildings, and see if we can identify any additional buildings. We had 5 buildings introduced initially. We eliminated parking structure and 311 Huger (due to site location, little expansion opportunity). Regis Milk / Trolley Barn / Cigar Factory are left. Goal is to repurpose building.

- **MINIMUM CRITERIA**

What are minimum criteria? Address EPA as to minimum criteria, Suganthi – vacant lot can be possibility. May have additional support if classified as Brownsfield. Michael Maher recommends getting Tom Scholtens with City of Charleston involved (expertise on building codes). Note that parking garages do have better access, especially to roof. May need to retrofit fire stairs to roof, provide elevator access. Is handicap access crucial to rooftop? If operation has staffing, would be required. ADA requirements. Have to think about the likelihood of having visitors / those who would study the vertical farm. Implications of ADA. Would be ideal if we had a 2-story building, good potential for add-ons. We could look at initial project as a pilot building, a lease. Transfer later into a future structure.

Zoning parameters – construed as agricultural or light industrial? How would project fit into zoning matrix of the city. Remember concern for preservation issue. Know OSHA standards, care of workers is addressed. Would be relative to building code also. How high are edges on the roof, etc. Evaluate OSHA requirements for visitors and workers. Question about structure of vertical farm, is a series of floors? And how much would be rooftop scenario? True vertical farm has very limited access, is enclosed, highly regulated in terms of air quality. Not a rooftop garden, consider enclosed building. In regards to bringing building up to code, can building handle green roof – any site we choose will have to have some structural retrofit to handle.

With regard to historic structures, don't mind contrast – sometimes best approach to old building is a new structure associated with it, or that helps bring up to code. Expense can be in trying to retrofit vs. building over or around it, independent of old building. Discussion on construction at circular congregational church, was a good project that brought contrast.

- **BUILDINGS / PROPERTIES TO CONSIDER**

The goal is to have a playbook for how to go about looking at building selection. Each issue has to be answered. Any additional buildings identified by Charleston? Matt Compton recommends Stoney Field as an option, an old football stadium. Has 2 structures, smaller and larger. Could potentially integrate the two. Not funded for any development in near future, would be a few years before funded. Could another possibility be a portion of parking garage near Aquarium? Concern for need for parking spaces, how much space is needed for project? Would need some level of add-on. That whole area of the city, there is a lot of development – difficult area.

Joseph Boyd building? Building may be going away – potential other use for property. Is located on Mt. Pleasant Street across from Parks Dept – next to I-26. Will check into with director of PRC to ask status of building plans. Another option - old library building. But is slated for hotel that is tied up in lawsuit. Plan is that building will be demolished. Cigar Factory – possible to use small portion? Minimum criteria for how long we run the initial vertical farm operation is at least 5-year operational period.

- **UPDATED BUILDING LIST:**

Eliminate trolley barn from list, the school of building arts is using it, have partial lease on part of building, but they want the entire building. Trolley Barn would be difficult, has no flat roof, not in great shape structurally. Would be a difficult retrofit.

1. **578 Meeting – Regis Milk building** is an option
2. **SC State** - Consider a new construction project to partner with, rather look at opportunity to co-locate or collaborate rather than empty lot. SC State getting ready to design and construct **outreach extension facility** in lower part of the city. Will be an outreach facility, community oriented. Is in the area of old bridge neighborhood – America Street. Is an attractive idea, has minority involvement, and SC State is also a land grant university with a focus on agriculture. Could be a Brownfields candidate. Suganthi – one of the sites could be a new construction, less than ideal to end up with 3 vacant sites.
3. **Port Authority** has several warehouses on their property that are underutilized. May be some opportunity to get access. Pam – intriguing if we could find the right person to work with. Jeannie Adame is environmental affairs manager – Elizabeth Busch will contact her.
4. **Clemson University** will be building in Charleston within next five years for School of Architecture.
5. **Stoney Field Stadium**
6. Keep **311 Huger warehouse** on the list
7. **Port City Paper building** on upper King at **1056 King Street**. Is a multi-story building and vacant. Is in good shape, owned by humanities association. Located north of Rivers HS. Was used previously as skating rink, no flat roof, no natural light in building, could be retrofitted.
8. **Joseph Boyd building on 2106 Mt. Pleasant**

Need to flesh out the fact of each of the 8 locations noted above, and whittle down to three. Over next few days all are asked to give comments back on additional buildings and eliminate some on the current list. Next meeting will have to be in Charleston to look at the buildings. Pam from EPA can travel to Charleston to look at buildings. City of Charleston members will get together before next meeting as well. Eidson – looking to city to give us guidance on use of the buildings.

All team members can create account on WikiSpaces to join the Charleston Vertical Farm WikiSpaces project site at: <http://charlestonvf.wikispaces.com/>

Eidson closes meeting.