

**Notes from 3-11 Roof Top Agriculture  
Technical Advisory Group  
*GreenTech Initiative*  
*Boston Redevelopment Authority***

**Green Building Synergies:**

- Develop structural guidelines (New construction / Existing buildings)
- Key opportunities: HVAC heat/CO<sub>2</sub> rejection; compressor heat rejection (refrigeration systems)
- Safety/Accessibility/Conveyance all challenges
- Fire Protection necessary? If so, what are best practices?
- Given these concerns, might it be smart to develop “roof top agriculture ready” standards similar to well established “solar ready” standards
- Vertical Farming – integrate growing into building envelope
  1. What is the average growing yield/square footage
  2. H<sub>2</sub>O needs

Rainwater Capture and use → might require state policy challenges with regard to rainwater use and treatment for agriculture

**Policies: Regulation/Building/People/Funding**

- Explore the development of rooftop agriculture zoning
  1. Similar to wind zoning process
  2. Create an additional Boston LEED point for urban agriculture (similar to modern grid, historical preservation, etc.)
- Identify co-benefits from stormwater, insulation, etc. to help make the economic case (e.g. similar to green roofs)
- Explore how rooftop agriculture fits within or Arrow St. green roof study framework (e.g. what types of building, safety issues, etc. are already being answered), and the extent to which the study would need to be expanded
- Create an education campaign (e.g. co-ops/existing building owners)
- Study food desert locations
  1. Consider rooftop ag. zoning overlay pilot in food desert locations
  2. Create empowerment zone model for food deserts to attract funding
- Answer basic questions
  1. Is Animal agricultural included?
  2. Is rooftop agriculture necessarily organic?
  3. Local species only?
- Neighbors/farm conflict → Explore farming access rights (similar to solar access rights)
- Conduct a policy survey of farming incentives; explore the intersection of farming incentives with rooftop agriculture – if rooftop farms can’t get the same incentives

and rights as larger farms, perhaps there would be a way to pilot incentives in partnership with the federal/state governments or aggregate rooftop farms under a single umbrella to achieve scale (e.g. 20 rooftop farms = 5 acre threshold test for a “farm”)

- Identify other existing channels with which there are obvious synergies:
  1. CSA – Synergy Survey - “feed the city” and identify other established channels
  2. OBD – Guide for new restaurants should include rooftop farming and/or local farming resources
- Explore partnerships with Conservation Districts both to identify currently available resources and position rooftop agriculture pilots for stimulus dollars
  1. Contact Suffolk County Conservation District
  2. Contact Regional Conservation District- a non-profit funnel for USDA and recovery money
- Identify business models and conduct an economic assessment – where is the break even point according to crop type, roof size, etc., and what are the financial gaps
- Identify safety and workforce training needs
- Convene a Mayoral Task Force on local agriculture
  1. The Mayor already has a food council that rooftop ag. could be integrated into
- Production/consumption based guidelines
- Would Boston Housing Authority Sites make good locations for Rooftop Ag?
- Develop a residential how-to guidebook (raised beds, etc)
- Identify financial support channels - loans/free compost or seeds/grants/sweat equity for produce?
- Food Purchase Agreements (similar to power purchase agreements)

## **Food:**

- The motive/mission of project dictates which crops are grown:
  - Hunger and equitable food access
    - example crop mix: wide variety of nutritious, high-yield crops
  - Business opportunity
    - example crop mix: high-yield, high-value: salad mixes, herbs, aquaponics
  - Mitigating urban environmental issues
    - example: any vegetation and particularly high biomass, w/ stormwater collection and heavily planted
  - Making productive use of inert space
    - Any rooftop endeavor would achieve this goal
  - Community involvement, cultural expression
    - Could not dictate a crop mix for this, by definition would be self-determined

Each motive/mission would also dictate how the food is grown and distributed

Upon initial consideration, this group agreed that there's no such thing as a best crop mix for rooftop farms; it depends heavily on above list.

Pollinators likely found at all heights for Boston buildings

- Technical growing matters
  - General roof issues related to growing on roofs: extremes in temperature, wind, moisture. Difficulty of transporting materials to roof.
  - Greenhouses could represent a 'best practice' to address some of the extreme climate issues outlined above and to provide season extension in the Northeast. Also protection from pests (seagulls, pigeons). Greenhouses also present their own challenges: for instance, rooftop greenhouse structures would have to withstand high wind conditions
  - Containers such as planters or sub-irrigated bins are problematic gardening media. Very generally: they dry out or the plants get diseased.
  
- Vital to address
  - Rooftop farms can mitigate individual and community food insecurity in Boston ONLY IF there is community ownership, support, and culturally competent mechanisms in place to distribute it. Self-determination around this type of effort as requisite for communities to be nourished
    - Cultural competence of project and what's grown.
    - Ought to encourage community ownership and engage community partners

Next Steps:

Create a "Rooftop Farm Produce Chart", analogous to the seasonal availability charts  
Determine generally: the point at which the costs of heating a greenhouse could not possibly be offset by benefits that the rooftop growing endeavor confer to building operating costs and value of produce

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