

SUMMARY OF NET ZERO TASK FORCE WORKING GROUPS' LIST OF PROPOSED ACTIONS		
Over-arching issues <i>These don't tie to one specific working group, but apply to all</i>		
1	Create / adopt data platform to track progress over time	<i>The discussion of projected savings / generation from different strategies needs to be anchored in data. A data platform should be selected and used to inform and prioritize different initiatives and subsequently be used to track progress and inform mid-course corrections.</i>
<i>a</i>		data gathering: need to gather data granular enough to be valuable. Consumption data is only one aspect. Other relevant data may include things like structural capacity (to support solar) in commercial sector and targeted applications.
<i>b</i>		management - identify who is the keeper and manager of this data (3rd party)
2	Utility engagement	<i>Engage DPU, DOE and utilities to address barriers and create targeted plans related to EE, renewables and storage.</i>
<i>a</i>		expand existing MOU(s) and/or create new ones targeted to specific issues this TF has identified
<i>b</i>		potentially create a retrofit steering committee (a la Chicago's model)
<i>c</i>		Explore municipal aggregation - how to create a successful model - encourage large landlords to do it if they are not (like Alexandria does)
3	Capacity	<i>We need to understand what capacity and resources are needed to implement and manage programs</i>
<i>a</i>		identify city staff needs and estimated resources to support expanding
<i>b</i>		identify 3rd party needs and help identify resources to support them
<i>c</i>		training and education for targeted folks (those doing outreach for example)
		<i>see Chicago (CCAP) lessons learned doc</i>
4	Regional Advocacy	<i>How can the City of Cambridge influence or drive change in the energy supply at the State/regional level and or in the market?</i>
Regulatory and Planning		
1	Regulations drive maximum engagement in energy efficiency and renewables across all sectors	<i>Develop a menu of tools to drive actions (applied differently to different building types and to new/existing property) including: Use ordinances, permitting process (certificate of occupancy, etc) and possibly financial levers to address the desired actions above.</i>
<i>a</i>		• building disclosure (in process)
<i>b</i>		• advocate for new stretch code (in process)
<i>c</i>		• energy audits tied to a required actions
<i>d</i>		• Cx/Retro-Cx (commissioning)
<i>e</i>		• require energy plans (based on PTDM model)
<i>f</i>		• Reporting (require reporting at regular intervals) for specific types of large bldgs
<i>g</i>		• (OPR and POE) owner proj. requirements & post occupancy evaluations for new construction as part of the permitting process
<i>h</i>		• carbon accounting/sequestration strategies in planning (sim to MEPA)
<i>i</i>		• solar readydesign in permitting
<i>j</i>		• Roofs: green / cool where feasible
<i>k</i>		• intervention at transfer of ownership
<i>l</i>		• New Buildings = LEED gold level, energy level specified (not optional) or if stretch code accomplishes the same thing.
<i>m</i>	• Target known issues in existing bldgs like windows, boilers, insulation, programmable thermostats, based on performance target w time horizon to comply and incentives to support it.	

2	Regulations create new areas dedicated for specific clean energy uses	<i>Districts or zones can be defined that are conducive to renewables, storage, micro-grids, district energy, etc and be built in to the expectation for future development</i>
<i>a</i>		<ul style="list-style-type: none"> • Planning areas dedicated where solar can be maximized - parking lots, non roof areas or district energy zones
<i>b</i>		<ul style="list-style-type: none"> • Planning areas dedicated where storage can be utilized
<i>c</i>		<ul style="list-style-type: none"> • Planning areas for microgrids
3	Regulatory tools address tenant controlled design & operations	<i>Tenant controlled renovations, upgrades and operational activities are targeted for reductions. Turnover /permitting opportunities particularly. (Non-regulatory programs also address tenant activity)</i>
<i>a</i>		<ul style="list-style-type: none"> • Adopt (LEED CI-like ?) requirements for tenant occupied space (for fit out) tied to Cert of Occup. Or other (investigate options) standards such as LPD, heat recovery, especially at turnover.
<i>b</i>		<ul style="list-style-type: none"> • Tenant operation guides w/targets
<i>c</i>		<ul style="list-style-type: none"> • targeted tenant upgrades (heat recovery, etc)
4	Leverage funding sources to drive EE and clean energy	<i>Use existing funding sources and create new ones linked to requirements for EE and renewables (similar to Austin GB program).</i>
<i>a</i>		Add new requirements to existing programs (affordable housing trust, other?)
<i>b</i>		Possibly create new fund (Carbon Fund, Clean Air Fund) and attach requirements to it (from City sources or other)
<i>c</i>		Property tax/feebate program
<i>d</i>		New MOU w utility
Finance & Incentives		
1	Energy efficiency is the primary focus of incentives and EE programs are fully engaged.	<i>Incentives prioritize EE and fully engage the market to max-out all EE programs and incentives</i>
<i>a</i>		<ul style="list-style-type: none"> • Develop a way to identify and target properties for EE upgrades as opposed to being passive (Mass Save programs that wait for you to come to them) (in some cases, can owner work w utility to target opportunity for tenants?)
<i>b</i>		<ul style="list-style-type: none"> • Free audits for targeted properties and/or subsidize what utility doesn't cover • subsidize retroCx and continuous (penalty if you don't upgrade within X years?)
<i>c</i>		<ul style="list-style-type: none"> • Subsidize metering/sub metering, (Nest, enOcean - there are technologies that allow for utility workarounds) (possible point to negotiate in a new MOU)
<i>d</i>		<ul style="list-style-type: none"> • Subsidize or finance targeted upgrades (lighting, heat recovery, etc.) in commercial buildings / possibly multifamily (deep energy retrofits)
<i>e</i>		<ul style="list-style-type: none"> • HELOC model for whole-building approach instead of targeted, constrained upgrades that don't necessarily address owner's interests. Solve the problem that the 'target' perceives (boiler/knob and tube wiring)...and wrap into it EE strategies. Need to think about value rather than savings in appealing to people's underlying interests. Owners and occupants want "a better building" not just energy efficiency
<i>f</i>		<ul style="list-style-type: none"> • Point of sale transaction/interventions: buying a house, upgrading a boiler, renting an office - target rich opportunities. Consumers want to know "score" - consumer driven transactional approach vs. legislative might be easier to make happen (CA doing it, boulder renter permit triggers)
<i>g</i>		<ul style="list-style-type: none"> • Develop/expand/revive "cash for clunkers" program, equipment and appliance upgrades and encourage leasing equipment instead of owning (for more frequent upgrades) ("RentAnAC" example)
2	Building owners develop and	<i>Programs (between landlords and tenants), supported by the City, can target specific changes directly</i>

<i>a</i>	provide their own programs to improve tenant / occupancy performance	• Energy "free" leases - you get energy allowance contingent on compliance w upgrades/operational protocols
<i>b</i>		• "Cell phone" approach to energy in multi-tenant bldgs - you get your energy budget, covered in rent and pay for "overages"
<i>c</i>		• Landowners (in labs particularly) can provide "advisory services" to transfer lessons learned and best practices from tenant to tenant (behavior change WG)
<i>d</i>		• Offer finance incentives to tenants - pay back thru rent, like internal PACE financing. Savings can pay for underwriting equip like Aircurity, heat recovery, etc. Results in "whole space" approach and not laundry list. Look at how to encourage other landlords to do this.
3	Zoning and permitting incentives drive new types of development & superior performance	<i>nonfinancial incentives will promote best practices in new projects or major renovations</i>
<i>a</i>		• Permitting or zoning incentives for specific attributes (TBD)
<i>b</i>		• incentives to support steam infrastructure connection and for future district/microgrid solutions, storage and nonbuilding infrastructure development (innovative ideas like NYC linking infrastructure to building where bldgs weren't previously possible - seawall)
<i>c</i>		• fees associated w permitting to support (city) capacity and/or programs
<i>d</i>		• business improvement district model
4	Carbon becomes tangible commodity	<i>Monetization of carbon to drive best practices and EE measures.</i>
<i>a</i>		• carbon fee exploration: Actions needed 1.) study to define possible fee structures/ programs and implementation and 2.) outreach to subject matter experts who have developed or implemented these programs in other places 3.) focus groups with those impacted by the fee. (ideally meeting w groups w some preliminary models/options to discuss)
<i>b</i>		• Create a new entity "Cambridge Renewable Energy Trust" or similar – to (collect and) dispense funds for local EE programs or clean energy projects. The entity could be modeled or inspired by the Affordable Housing Trust in that it will be run by a board entrusted to advance and fund projects which – as with affordable housing – are deemed to be socially desirable for the city.
<i>c</i>	• Community solar projects as an option for investment (model similar to Health Care) - drives actions of other projects like insulating existing bldg. creates Funding stream.	
5	New MOU developed with utilities to target specific actions	<i>Develop MOU to address things not yet addressed under current MOU (possibly lab focused, multi-tenant commercial upgrades etc) In "over arching"</i>
<i>a</i>		• new utility MOU focusing on: x,y,z (TBD) and peak demand incentives
6	Recognition, Competition and awards (rewards) programs drive actions	
<i>a</i>		• Recognition programs and Transparency: expand current programs - awards, rewards and recognition for various competitions and actions.
<i>b</i>		• landlords hold tenant competitions within a property w some reward
<i>c</i>	• Develop partnerships with other channels (local real estate brokers/listings) to incorporate energy focus in public platforms like listing info including EE.	

Energy Sources		
1	All available renewable resources are exploited to the fullest extent	<i>Develop granular understanding of all solar opportunities (with detailed information about structural capacity, wind loads, warranty considerations) and property ownership issues (for non-roof options)</i>
<i>a</i>		Identify solar resources of all kinds (including nonroof) - identify partners for larger installations (partner with DOT MBTA and MWRA, roads, etc). Parking lots, edges of athletic fields, etc Underutilized assets, buffer zones, work w forestry in city (solar masterplan w forestry/landscaping) - hierarchy of decision making for competing interests. shading in parks (city \$)
<i>b</i>		Develop city-owned solar projects (including feasibility study for Lincoln land)
<i>c</i>		Maximize all rooftop opportunities that are mapped (incentives support structural augmentation and other related needs)
<i>d</i>		Solar thermal hot water should be ubiquitous
<i>e</i>		Fuel switchover where possible, to lower carbon fuels.
<i>f</i>		Anaerobic digesters – to take care of both compost AND sewage and reduce nat gas use – reduces load on Deer Island so multiple gains
<i>g</i>		Offshore wind or hydro/tidal technology projects explored - hydro study was completed for City owned watershed system.
<i>h</i>		district energy systems - identify and develop
2		
<i>a</i>	Adequate storage facilities are developed to support maximum build out of renewables	Energy storage strategies are identified at a planning scale - sim to above for finding generation opportunities - (tax breaks for Co's considering big strategies – for incentives and Reg group)
<i>b</i>		Identify partners (MWRA) and negotiate agreements to locate storage on their property.
<i>c</i>		Identify opportunities for thermal storage (needs sizable area)
<i>d</i>		Consider longer term focus on developing electric car infrastructure - creates an entirely new storage potential, improves NSTAR's load factor
3		
<i>a</i>	Cambridge is a test bed for modern micro-grids and modernization	Cambridge will be a test bed for modern micro-grids (Worcester is a pilot) identify specific areas where this is feasible (or will be)
<i>b</i>		Smart metering & submetering (change utility relationship to consumer data). Time use metering/two way metering pilot (pricing favors solar)
<i>c</i>		DPU Grid modernization. Advocate for being early adopter
<i>d</i>		Explore MOU with utility to address specific goals
4		
<i>a</i>	Localized (solar) projects provide opportunities and options for all residents to participate.	<i>For those who can't install solar on site, or who wish to invest in projects, community (or city owned) projects provide an opportunity</i>
<i>b</i>		Community Solar – Next Step Living. Give residents the ability to pay into /pay premium for green power (transparency)
<i>c</i>		SREC II
		"Cambridge carbon fund" create portfolio of investment opp for community projects that are " local" local needs to be defined and may not mean within the city limits of Cambridge per se) (see Kennedy School study)
5		

a	Accelerate the adoption of new technologies to market	Cambridge is a test bed for new technologies – solar roadways, energy storage, floating hydro, new fuels, BIPV, other - coordinate w planned/scheduled things like road repair, etc (21 teams advance a MITs clean energy competition - http://mitsloan.mit.edu/newsroom/2014-clean-energy-prize.php)
Behavior Change		
1	Pervasive communications campaigns + programs blanket the city with messaging	<i>Signage, messaging and installations are visible everywhere through a variety of media. It is impossible to be in Cambridge and miss the messaging or events!</i>
a		Hire PR firm to develop: strong brand with clear, consistent definition and messaging about topic – both Reduction and Renewables (a la “walkability score”). NZ is “cool” and becomes part of the community dialogue (“what’s your EUI?”). One brand (“Cambridge Energy Challenge” - multiple prongs - schools/museum partnerships etc.) Create culture change and social shift. Make it socially unacceptable to be an energy hog as it has become socially (less) acceptable to be a smoker.
b		Powerful video campaign similar to carbon represented by bubbles/balloons as in this old ad: https://www.youtube.com/watch?v=gcMNZuelyNI - to be used in social media, in elevators, etc.
c		Community Visibility Campaign - collaborate w supermarkets, schools, museums, MBTA, communities of faith, etc to partner. Create an "outreach collaborative" (competition for campaign) (partnerships w parks and DPW). Public charging stations (solar structures w signage, interpretation), installations in parks and public areas/infrastructure.
d		Innovation Day (Fair and "open house tour" to see new, emerging, cool tech and functioning operational strategies) Highlight best practices in labs, commercial buildings, universities and other.
2	Everyone knows how to work with the utilities to max rebates and other incentives	<i>Targeted outreach focuses on user groups to facilitate their engagement with utility incentives and any new city programs</i>
a		Energy concierge "social worker": Help people know how to engage utility and how to max out rebates and how to access new financing tools to support supplementary work (roof augmentation, etc) - also, (perhaps in a new MOU to dedicate utility staff to work tightly in collaboration w new City program and do targeted outreach like Boston500 model)
b		Promote new (+ exist) non-utility incentive programs: Taxing (finance/reg group), Japan model - excise tax incentivises choices, carbon tax concept, more you have EE the lower your tax (tied to income?)
c		Condo "how to" guides, resources, tools, outreach
d		Tenant: green lease templates, education and outreach program (vice versa, landlord to tenant)
e		Identify new staff position(s) or 3rd party dedicated to do outreach (City, HEET, CAE)
f		Promote equipment leasing programs instead of ownership (heating and cooling)
3	Cambridge residents & professionals receive education from a comprehensive initiative	Develop an educational initiative for general public in collaboration with major “conduit” partners (Mos, Children’s, Aquarium, Logan) and delivered through high leverage channels (schools, universities, etc). Use existing city platforms (water bills, Scout magazine).
b		Deliver (existing, new) " enrichment " modules for PTA etc are developed (camb science fair). Everyone knows what they can do and how to do it (or how to get help).

c	delivered through partners	Scavenger hunt model, use phone to track/learn about different projects, visiting projects and listening to pre-recorded info
d		Develop support/intervention for professionals to know/do: (IDAP integ desi assist prog, SWAT team tied to A2030) (reg WG) perhaps require credentials. Bring training programs to Cambridge area professionals. (hold 1 or 2 half day workshop on expectations when there are new regulations for owners and professionals) similar to what MTC did for green schools
4		
a	Competitions, challenges and rewards drive residents to max out EE and support renewable	Develop competitions and challenges among affinity groups Develop targeted challenges (perhaps with prizes - cash or 'upgrades' or other). Consider block by block competition, Lab to Lab, school to school, commercial multi-tenant bldgs. Creation of special district (with particular value i.e., Lexington Ave, can provide a way to target group activities (a la "allston green district" which facilitates engagement of landlords). Create "Zero Heros" - Cambridge celebrities.
5		
a	The 'cool' factor of technology is exploited to engage people	Leverage the cool factor of tech to engage people to actively interact and control energy use like w Nest, enOcean. "reset defaults" (you're free to smoke but default is you can't - you're free to waste energy but default is you can't) or build interaction around behavior via social media platforms
6		
a	Building owners and tenants participate in voluntary disclosure of energy use	Encourage voluntary energy disclosure (consumer driven rather than/in addition to legislative) : Monthly energy disclosure or by use - as tool especially on turnover (assessments)
7		
a	Data made public through Building Disclosure Ordinance is leveraged to encourage improvement	Publicize energy use of public buildings in Cambridge (transparency) leading by example will encourage others to follow suit. There is a feedback loop and people can see the impact of their actions (individually, collectively)