BOSTON CLIMATE ACTION PLAN UPDATE

WORKING GROUP MEETING #3: MAY 15, 2019

The following one- and two-pagers provided a summary of key definitions and examples of programs and tools in other cities. These materials were used as a basis for discussion during the third meeting of the CAP Update Working Group.

ZERO NET CARBON STANDARDS

Definition from Working Group Meeting #2

A zero net carbon (ZNC) standard requires that buildings be built to the highest level of insulation quality, equipment efficiency, electrification of heating systems, and renewable energy production. Combined with off-site renewable energy procurement, zero net carbon buildings can effectively obtain all the energy needed for their operations from renewable sources, thus reducing net emissions to zero.

Possible ZNC standards

- ***Zero net carbon onsite*** – requires that any energy directly powering the building come from ***renewable*** sources onsite.
    - Similar to: Net Zero Energy
- ***Zero net carbon offsite*** – in contrast to ZNC onsite, this option allows for the use of energy from off-site renewable sources. Options to offset potential emissions associated with non-renewable energy production (e.g., microgrid or CHP) for the building could include the purchase of renewable energy credits (RECs) or participation in a clean power purchase agreement (PPA).
- ***"Net-zero ready"*** – a net-zero ready building would become zero net carbon when its electricity supply is 100% renewable, via full electrification and energy-efficient design.
    - Similar to: fossil fuel free, all-electric Passive House
- ***"Net-zero convertible"***: highly efficient envelope with some fossil fuels onsite (e.g CHP) that don't preclude switch out.

Other standards

- ***Zero net energy*** - ZNE buildings have very high energy performance, and the total amount of energy used by the building on an annual basis is equal to the amount of renewable energy generated on site.
- ***Passive House:*** Passive House follow building science principles to create ultra-high-performance buildings with very low energy needs. These principles are continuous insulation, airtight envelopes, high-performance windows and doors, balanced heat- and moisture- recovery ventilation and minimal space conditioning systems.

BUILDING PERFORMANCE STANDARDS

A performance standard establishes energy use and/or greenhouse gas emissions targets that a building must achieve within a specified time. This type of standard is generally accompanied by a reporting requirement or third-party inspection/audit to ensure that the building has attained or surpassed the mandated performance level.

Here are some examples of performance standards used around the U.S.:

Set emissions targets for all buildings (with an alternative compliance payment option)

The **NYC *Climate Mobilization Act*** sets greenhouse gas emissions limits for existing buildings over 25,000 square feet. The bill requires that these buildings cut greenhouse gas emissions by 40% by 2030 and fines building owners who do not comply. The bill also establishes a loan program to support building owners who cannot afford the significant energy efficiency improvements. For affordable housing, the law set specific prescriptive requirements to ensure continuous improvement without setting stringent emissions caps. Targets are broken out by building type, with three target years for compliance. Buildings that do not meet their targets must pay a fee per metric ton of CO2e over their target into a fund.

Set energy performance requirements with specific triggers

The ***Time of Sale Energy Efficiency Ordinance of Burlington*, VT** mandates that, at the point of sale, multi-family and other residential rental properties must meet a set of energy efficiency requirements that ensure cost and energy efficiency for renters. Requirements include a specific level of insulation for exterior walls and attics, electric water heaters and windows and doors. An energy inspection is required to ensure the standards have been met The Ordinance applies only to apartments where tenants are responsible for heating costs. The total cost of required improvements is capped at 3% of the sale price or $1,300 per unit. Only measures with a payback of seven years or less are mandated.

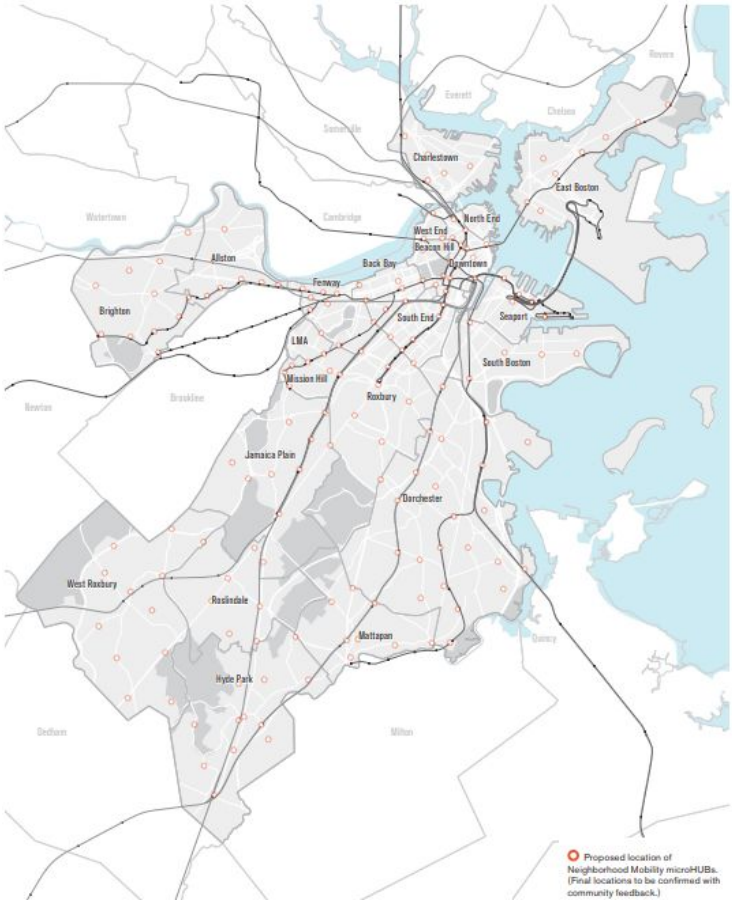
Set energy efficiency standards for rental licenses

The City of Boulder passed the ***SmartRegs Ordinance*** in 2011 to require that all long-term rental housing in Boulder meet a basic energy efficiency standard. Starting in 2019, new applications for rental housing licenses require proof of SmartRegs compliance, i.e. property owners had 8 years to comply. Property owners can comply with the energy efficiency requirements by following either a performance pathway (HERS rating of 120 or lower) or a prescriptive pathway. If a licensed rental property is non-compliant, the rental license is expired and penalties are issued. Historic buildings and affordable housing are covered under compliance exceptions.

By establishing a minimum energy efficiency performance level, SmartRegs compliance results in upgrades to less efficient rental units to meet this standard. Finally, by requiring property owners to upgrade rental properties, tenants have the potential to benefit from lower energy bills

NEIGHBORHOOD MOBILITY MICROHUBS

From Go Boston 2030: Centered around T-stations, bus network nodes, and local destinations such as community centers and small business districts, **Mobility microHUBs** are designed to provide and identify a range of connected travel choices. Using clearly-branded kiosks or nodes with real-time interactive information displays about transit schedules and shared vehicle availability, people can connect quickly between bus and train service, a Bluebikes station, secure bike parking, carshare vehicles, ride-hailing pick-up spots, and electric vehicle charging stations at every microHUB. Placemaking strategies including plazas or parklets, sidewalk amenities, information signs, shelters, and works of art at each of these hubs will make them places that are worth stopping in when you have the time or if you have to wait.



Quote from the Go Boston 2030 Chinatown Roundtable:

"We felt one of the root causes was around inequality in regard to racism. One of our ideas was that currently our transit hubs were in downtown Boston, what if they were rerouted to higher density and lower economic opportunity to increase the flow of business."

San Diego Mobility Hubs

Planned mobility hubs include carshare parking, bikeshare, informational kiosks, transit stops, and EV charging all in a location surrounded by cycling infrastructure, transit-oriented development, mixed use development, and extensive pedestrian facilities. Hubs will be placed along light rail and high volume bus routes and designed to be implemented over a 35 year period at a cost of roughly $13 million each.

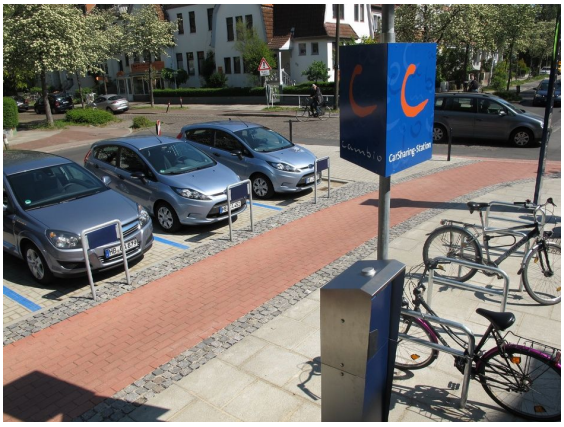
Los Angeles, CA

In Los Angeles, the city has framed co-located multimodal transportation services as “Mobility Hubs.” A kit of parts, including transit access, bicycle amenities, pedestrian connections, and waiting areas can be assembled to provide a mobility hub. Mobility hubs typically link to a transit center or access point. They can include: interactive kiosks, electric assist cargo bikes, repair stations, EV car share, charging stations for personal electric vehicles, pop-up clinics and events, and high-capacity bike racks (double decker, upright, U-racks…).

Hamburg (Germany)

In addition to public transport stops, the passenger will also find bike-sharing and e-car sharing vehicles available for hire. A classic car rental service and the taxi station complete the mobility offer. The meeting point for carpooling offers short-term parking and is equipped with a digital information terminal - the departure times for ride-sharing offers and public transport are shown to the passengers to the minute. Comprehensive mobility advice awaits the customer in the affiliated Mobility Center. Cyclists can park their bike weather-protected and theft-proof in the bicycle parking garage.

Bremen (Germany)



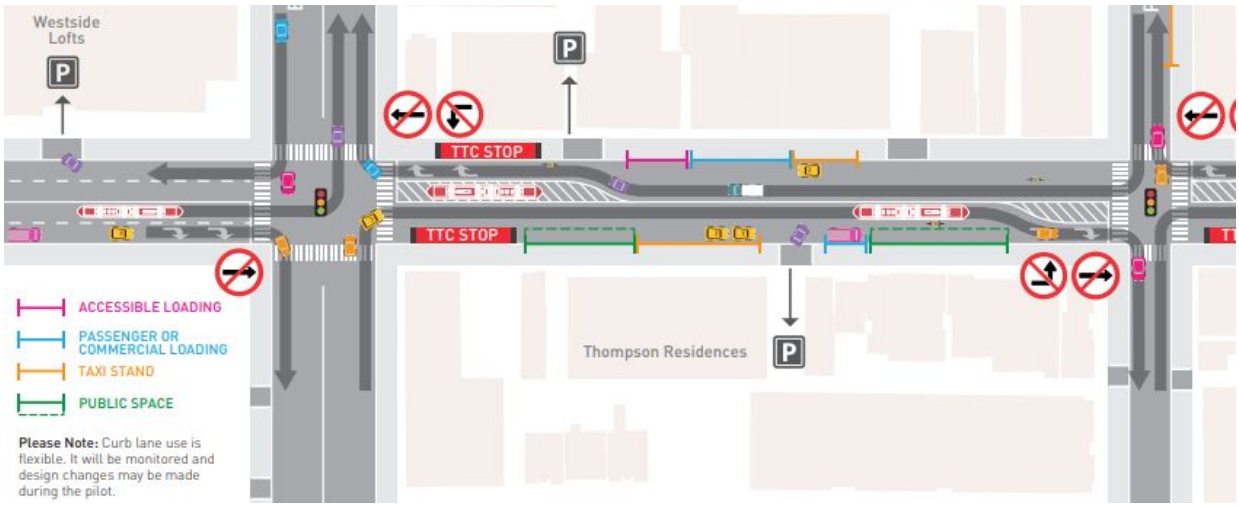
Mobil.Punkt combine multiple modes of transportation together in one physical location, often clustered around a high-frequency public transit stop. Typical components include carshare stations, bike parking, wayfinding elements and universal fare payment via a single smartcard or mobile app. The design is simplistic and mostly centered around carshare stations.

PRIORITIES FOR NON-PARKING CURB USES

Innovative examples from around North America

Prioritizing transit over cars by eliminating through streets for private vehicles

The ***Toronto King Street Pilot*** prioritizes transit over cars by not allowing private vehicles to pass through intersections on King Street, and instead giving that priority to streetcars. King Street is the busiest surface transit route in Toronto; 72,000 riders pass through it on an average weekday. After one year, all-day weekday transit ridership went up by 17%, AM peak period ridership by 33%, and PM peak period ridership by 44%. Note: Local access to parking garages, condominiums, businesses, etc. is maintained.



Converting curb space into travel lanes during peak demand times

The District of Columbia uses signage to convert on-street parking spaces into travel lanes during peak traffic hours. This allows for increased vehicle throughput during peak demand times and utilization of the curb for other purposes all other times.

The topmost sign on the right hand photo reads: TOW AWAY
No standing or parking
7AM-9:30AM
4PM-6:30PM
Monday-Friday

Assigning use of curb based on surrounding land use

Seattle manages curb space as "**flex zones**," signifying that there are many uses for the space, including bus stops, taxi/rideshare hailing areas, delivery zones, parklets, and streateries. Certain uses of the flex zone are prioritized over others based on surrounding land use and desired functions. Each function serves a purpose based on the demands for the curb. This often results in curb space being utilized for something other than the storage of private vehicles.

Table 2: **City of Seattle Flex-use zone functions**

Function	Definition	Examples of Uses
Mobility	Moves people and goods	• Sidewalks • Bus or streetcar lanes • Bicycle infrastructure • General purpose travel lanes (passenger and freight) • Right- or left-turn only lanes
Access for People	People arrive at their destination, or transfer between different ways of getting around	• Bus or rail stops • Bicycle parking or bike share docks • Curb bulbs • Passenger loading zones • Short-term parking • Taxi stations
Access for Commerce	Goods and services reach their customers and their markets	• Commercial vehicle loading zone (incl postal and parcel delivery) • Truck loading zone
Activation	Offers vibrant social spaces	• Food trucks • Parklets and streeteries • Public art • Street festivals
Greening	Enhances aesthetics and environment health	• Plantings, including boulevards, street trees and planter boxes • Rain gardens and bio-swales
Storage	Provides storage for vehicles or equipment	• Bus layover • Long-term parking • Reserved spaces (e.g. for police or other government use) • Construction

	Residential	Commercial & Mixed Use	Industrial
1	Support for Modal Plan Priorities	Support for Modal Plan Priorities	Support for Modal Plan Priorities
2	Access for People	Access for Commerce	Access for Commerce
3	Access for Commerce	Access for People	Access for People
4	Greening	Activation	Storage
5	Storage	Greening	Activation
6	Activation	Storage	Greening

Converting streets into pedestrian zones

Boston created "Downtown Crossing" as we know it today in 1978 by blocking off a portion of the area to vehicular traffic, creating a pedestrian-only shopping area.