ENERGY IN HARTFORD

“Future Cities” Panel

AIMEE CHAMBERS, AICP
DIRECTOR OF PLANNING
CITY OF HARTFORD
Zoning. Planning.
Zoning.
2016.
**Energy**
Cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces dependence on fossil fuels, and cuts energy costs for consumers.

**Food**
Nutritious food that is locally grown or non-carbon-intensive, and is readily available across all neighborhoods, leading to improved health and greater resiliency for area families.

**Green Space**
Private and accessible public landscapes filled with trees and meadows that together mitigate the effect of high heat days and flooding, provide ecosystem services, and clean our air.

**Transportation**
A multi-modal, interconnected transportation network with complete streets, safe biking and walking options, and fewer vehicle-related emissions, which improves air quality and cuts asthma rates.

**Waste**
Eradication of the worst trash and blight, and public engagement that increases recycling and reuse rates - which in turn slashes disposal costs, related emissions, and environmental degradation.

**Water**
More efficient use of potable water, better protection against floods and droughts, and waterways made cleaner through green infrastructure that reduces and cleans stormwater runoff.
Energy.

Cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces fossil fuel dependence, and cuts energy costs for all.
• Provides height bonuses for downtown/TOD buildings if:
  • Renewable energy meets 25% of building need or
  • Cogeneration is used

• Allows:
  • Building-mounted solar/wind everywhere
  • Freestanding, large-scale wind along highways
  • Solar parking canopies in most lots
• Requires EV charging stations for 35+ car lots
• Eliminates parking minimums
• Prohibits new trees from shading solar collectors.
Hartford, Connecticut, is getting rid of mandatory parking minimums citywide, the second major American city to do so in the past 12 months, following Buffalo.

The revised zoning code no longer requires builders to include car parking in new construction. The Hartford Planning & Zoning Commission voted for the changes unanimously last night, enacting them into law.

The Hartford legislation goes farther than Buffalo's in some ways, with fewer loopholes. (In Buffalo, the City Council can still decide to require parking through a review process for projects larger than 5,000 square feet.) But because parking mandates for car dealerships are Connecticut state law, those minimums remain in the Hartford code. Other special uses, like stadiums, will be subject to case-by-case review.

Hartford has struggled with the problem of “parking craters” for decades and new regulations eliminating minimum parking requirements could make redevelopment more attractive. The topic of parking craters was discussed at an October symposium in Hartford.

By Kenneth R. Gosselin • Contact Reporter
Property Line

DECEMBER 20, 2017, 8:00 AM | HARTFORD

The city will no longer require developers and businesses across the city to provide a minimum number of parking spaces, a dramatic move intended to make Hartford more “walkable” and spur development.

“We want to send the message that Hartford is a town focused on people and bicyclists and is not a town that is just focused on housing cars that sit idle for 90 percent of the day,” said Sara C. Bronin, chair of Hartford's planning and zoning commission.
### BICYCLE PARKING

<table>
<thead>
<tr>
<th>Use</th>
<th>Minimum Long-Term Bicycle Spaces</th>
<th>Minimum Short-Term Bicycle Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Unit Dwellings, 2-Unit Dwellings 3-Unit Dwellings</td>
<td>No minimum requirement</td>
<td>No minimum requirement</td>
</tr>
<tr>
<td>Bed &amp; Breakfast, Hotel/Apartment Hotel</td>
<td>1 per every 60 sleeping rooms</td>
<td>1 per every 30 sleeping rooms, with 4 minimum</td>
</tr>
<tr>
<td>All Other Residential Uses</td>
<td>1 per every 30 dwelling units, rooming units, or beds, as applicable</td>
<td>1 per every 15 dwelling units, rooming units, or beds, as applicable, with 4 minimum</td>
</tr>
<tr>
<td>Assembly Use &amp; Stadium/Arena</td>
<td>1 per every 500 seats</td>
<td>1 per every 50 seats</td>
</tr>
<tr>
<td>Higher Education Facility</td>
<td>1 per every 15,000 square feet of building area</td>
<td>1 per every 5,000 square feet of building area</td>
</tr>
<tr>
<td>Transit Station</td>
<td>30 spaces within a .125-mile radius</td>
<td>100 spaces</td>
</tr>
<tr>
<td>All Other Civic &amp; Institutional Uses</td>
<td>1 per 15 employees</td>
<td>1 per every 10,000 square feet, with 10 minimum</td>
</tr>
<tr>
<td>Parks &amp; Urban Farms</td>
<td>1 per every 15,000 square feet, with 15 minimum</td>
<td>1 per every 15,000 square feet, with 15 minimum</td>
</tr>
<tr>
<td>Retail &amp; Service Uses</td>
<td>No minimum requirement</td>
<td>1 per every 3,000 square feet</td>
</tr>
<tr>
<td>Office/Employment Uses</td>
<td>1 per 15 employees</td>
<td>1 per every 10,000 square feet</td>
</tr>
<tr>
<td>Commercial parking lots and garages</td>
<td>1 per every 30 automobile parking spaces</td>
<td>1 per every 15 automobile parking spaces</td>
</tr>
</tbody>
</table>
It was unanimous.
In one night.
New Zoning Code Enables A More Modern Hartford

Hartford’s progressive new zoning code de-emphasizes parking and traditional zoning by uses.

By TONI GOLD

JANUARY 24, 2016, 5:00 AM

City’s new zoning regs create a 'high opportunity' for development

GREGORY SEAY
The city of Hartford since the start of this year has been using a revised template to assess and approve zoning and land-use applications, a format that could hasten development citywide, city officials, developers and land-use professionals say.

Among the biggest changes is the city's reworking of its parking-space requirements for all new development downtown and
stormwater impact fees
eliminating parking
urban agriculture
solar zoning
smart growth
renewable energy
waterway buffers
transit oriented development
composting facilities
tree canopy
EV charging
vision zero
native plants
bike lanes
complete streets
green infrastructure
Planning.
2018.
Together, we aim to advance the city’s economy, improve public health and quality of life, and promote social equity while becoming a global leader in environmental stewardship.
OUR MISSION

Together, we aim to advance the city’s economy, improve public health and quality of life, and promote social equity while becoming a global leader in environmental stewardship.

JOIN US!
Energy
Cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces dependence on fossil fuels, and cuts energy costs for consumers.

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Nutritious food that is locally grown or non-carbon-intensive, and is readily available across all neighborhoods, leading to improved health and greater resiliency for area families.

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Water
More efficient use of potable water, better protection against floods and droughts, and waterways made cleaner through green infrastructure that reduces and cleans stormwater runoff.
In this action area, our overall vision is cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces fossil fuel dependence, and cuts energy costs for all.

Over the last few decades, Hartford has transitioned from coal to hydroelectric power to natural gas today. Hartford must explore additional sources of energy to accomplish its sustainability goals.

On the public side, some of the city’s municipal buildings are inefficient, requiring upgrades to reduce costs to taxpayers. On the private side, Hartford energy consumers have electricity rates that are among the highest in the country.

Hartford already has made strides to improve its energy sources and energy conservation. It has municipal facilities that use clean and renewable energy, has created a public-private microgrid and an energy improvement district, and participates in a program that brings solar to low-income homeowners. Many of these initiatives have been done in partnership with Eversource, our energy utility company.

More can be done. Making energy cleaner, cheaper, and more reliable can improve quality of life for Hartford residents of all income levels and can ensure that Hartford’s businesses can be competitive over the long term.
WHAT WE’VE DONE, TOGETHER

1st PUBLIC-PRIVATE MICROGRID IN CT

Connected in 2017 a 800 KW fuel cell microgrid powering a Parkville school, store, and more when the grid fails.

ZONING FOR CLEAN ENERGY

Adopted in 2016 award-winning zoning incentives for renewable energy and requirements for EV charging stations.

GREENING THE LANDFILL

Built 1 MW of solar on the landfill in 2014, powering City facilities in the North Meadows.

HISTORIC GUIDELINES FOR SOLAR


SOLSMART GOLD DESIGNATION

Earned highest recognition in 2016 from US DOE for having zoning and other policies that promote solar accessibility.

SOLAR FOR ALL USERS

Partnered with CT Green Bank on “Solar for All” and discounted bulk solar “SolarizeCT” for our residents in 2017.
GOAL 1: Improve Energy Efficiency of Public Properties

Energy efficiency means wasting less energy by making physical or behavioral changes. To make a building more energy efficient, you might first conduct an audit to see where you are losing energy. You might benchmark your building against similar buildings, to see how you measure up. And then you might retrofit it with insulation, storm windows, or a new roof (maybe a “cool” roof) to keep the cold and heat out.

Hartford’s municipal buildings and infrastructure must become more energy efficient, so that taxpayer money can be put toward more productive use. The City is already making a strong effort to audit, benchmark, and retrofit Hartford’s municipal and school buildings in partnership with Eversource, energy service companies, the Board of Education, and the Department of Public Works.

Over time, these efforts will pay dividends. City staff is in the process of measuring payoffs and assessing which public buildings qualify for EPA’s ENERGY STAR designation, which would indicate that they meet energy efficiency standards relative to other buildings of similar type across the country.

Below are an array of strategies to continue making our public facilities energy efficient.

<table>
<thead>
<tr>
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<th>STRATEGY</th>
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<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Collect and Analyze ENERGY STAR Data for Enrolled Public Buildings</td>
<td>Inventory/Assess</td>
<td>Measure energy consumption reductions over time for benchmarking and retrofit efforts.</td>
</tr>
<tr>
<td>b</td>
<td>Enroll More Public Buildings in ENERGY STAR Program</td>
<td>Inventory/Assess</td>
<td>Measure energy consumption reductions over time for benchmarking and retrofit efforts.</td>
</tr>
<tr>
<td>c</td>
<td>Join US DOE’s Better Buildings Program</td>
<td>Partnership/Advocacy</td>
<td>Receive technical assistance, peer-to-peer knowledge sharing, and national recognition for improving building energy use.</td>
</tr>
<tr>
<td>d</td>
<td>Upgrade and Install New Technology in Public Buildings</td>
<td>Physical Change</td>
<td>Reduce energy use and costs, saving taxpayers money.</td>
</tr>
<tr>
<td>e</td>
<td>Conduct a “Challenge” Among School Users</td>
<td>Program/Plan</td>
<td>Encourage energy savings through behavioral change, saving taxpayers money.</td>
</tr>
<tr>
<td>f</td>
<td>Replace Streetlights with Color-Appropriate High-Efficiency LEDs</td>
<td>Physical Change</td>
<td>Reduce energy use and costs related to streetlights, saving taxpayers money.</td>
</tr>
<tr>
<td>g</td>
<td>Encourage Other Governments to Improve Building Efficiency</td>
<td>Partnership/Advocacy</td>
<td>Reduce energy use and costs, saving taxpayers money.</td>
</tr>
</tbody>
</table>
Goal 1

• Benchmarking
  • Energy dashboard developed to include data from 3 utilities (Eversource, MDC, CNG)
  • WeGoWise allows users to analyze buildings
• Streetlights
  • $5 million grant to upgrade to LEDs
• Schools
  • Efforts include a $34,000 project in Parkville to allow the City to receive $100,000 in incentives
GOAL 2: Improve Energy Efficiency of Private Properties

We discussed energy efficiency for public properties on the previous page. Making private properties—our homes and businesses—more energy efficient can reduce our energy costs, which are among the highest in the United States.

Energy costs are imposing economic hardship on many Hartford families. As Operation Fuel has reported, for struggling households, “home energy costs threaten not only the ability... to retain access to energy services, but also threaten access to housing, food, medical care and other necessities of life.” In Hartford, the average energy burden (energy bill as a percent of income) for households at the 50% federal poverty level is a whopping 33%, and the average per-household home energy affordability gap is $1,922 per year. The federal Low-Income Home Energy Assistance Program covers only 21% of the state’s total home energy affordability gap.

There are programs that can help. Many Hartford families income-qualify for a free home energy audit. For commercial property owners, the CT Green Bank has a number of programs to finance energy efficiency with favorable payback periods.

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<tbody>
<tr>
<td>a</td>
<td>Advocate for More Energy Efficient Statewide Building Code</td>
<td>Partnership/ Advocacy</td>
<td>Reduce energy use and costs for all buildings through more rigorous statewide standard for energy in buildings.</td>
</tr>
<tr>
<td>b</td>
<td>Conduct a &quot;Challenge&quot; Among Private Commercial Building Owners</td>
<td>Program/Plan</td>
<td>Encourage energy savings through infrastructure improvements and behavioral change.</td>
</tr>
<tr>
<td>c</td>
<td>Encourage Residents to Sign Up for EnergizeCT Energy Audits</td>
<td>Program/Plan</td>
<td>Make residential properties more energy efficient and more comfortable.</td>
</tr>
<tr>
<td>d</td>
<td>Enroll Commercial Property Owners in Green Bank Programs</td>
<td>Education/Outreach</td>
<td>Educate commercial property owners in all neighborhoods on how CT Green Bank programs (such as C-PACE) can reduce energy and save money.</td>
</tr>
<tr>
<td>e</td>
<td>Encourage Energy Performance Reporting for Buildings</td>
<td>Education/Outreach</td>
<td>Ensure that owners and potential buyers make informed decisions based on energy performance of a building.</td>
</tr>
</tbody>
</table>
Energy Improvement District

• A municipal entity created pursuant to Conn. Gen. Stat. § 32-80a(c)
• Powers: enter into contracts, buy/lease energy facilities, increase energy efficiency, and make it easier and cheaper to do business in Hartford
• 9 voting members, 5 non-voting members (inc. Eversource)
Energy Improvement District

• Policy foci:
  • Community solar (e.g., SB 336 last session)
  • Net metering
  • Energy efficiency regulations for multifamily units
• RFI 2018
• RFP 2019
If we have to use energy, it is better if that energy comes from renewable sources like the sun and wind than fossil fuel sources. Using renewable energy instead of fossil fuels can help reduce harmful emissions in the air and reduce the amount of greenhouse gases affecting our climate.

Through government incentives, technological innovation, and the free market, renewable energy—and particularly solar energy—is becoming more readily available. Hartford must do its part in promoting policies and programs that facilitate access to renewable energy. Already, the City has developed several solar projects and brought discounted solar programs to residents.

Hartford has also been able to take advantage of state policies promoting renewable energy. Specifically, it has benefitted from the CO₂ auction proceeds of the state’s Regional Greenhouse Gas Initiative (RGGI), which established a cap and trade system that raises money for states. Those proceeds are disbursed to Hartford through the Connecticut Energy Efficiency Fund and the Connecticut Green Bank, to finance specific projects and to promote renewable energy development.

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<tbody>
<tr>
<td>b</td>
<td>Reduce Permitting Costs for Private Renewable Energy Projects</td>
<td>Incentive</td>
<td>Reduce financial barriers to private use of renewable energy, particularly solar.</td>
</tr>
<tr>
<td>c</td>
<td>Enroll as a City in SolarizeCT Campaign</td>
<td>Program/Plan</td>
<td>Encourage homeowners to sign up within 18-week window for discounted bulk solar.</td>
</tr>
<tr>
<td>d</td>
<td>Encourage Homeowner Enrollment in Solar for All Campaign</td>
<td>Program/Plan</td>
<td>Encourage homeowners to sign up within 18-month window for low-cost solar leasing.</td>
</tr>
<tr>
<td>e</td>
<td>Advocate for Shared Solar for All</td>
<td>Partnership/Advocacy</td>
<td>To change state law so Hartford families can share solar when they cannot have their own solar because of income, rental status, or property characteristics.</td>
</tr>
</tbody>
</table>

Hartford has a 1 MW solar array on top of its now-capped landfill in the North Meadows, which saves taxpayers money while repurposing an environmental liability.
Goal 3

- Solarize CT Campaign
  - CTEC Solar chosen vendor
- Solar for All Program
  - CT Green Bank program
  - 24 panels installed since October
  - 5 Hartford residents employed
- Zoning Code reforms
- Historic Preservation Guidelines
GOAL 4: Encourage Clean Energy Vehicles

Most cars emit toxic fumes that cause not only climate change, but also asthma and other respiratory diseases. Replacing conventional cars with clean energy vehicles (or bicycles) would mean cleaner air, with fewer pollutants, for us all to breathe. These vehicles also require less maintenance, which saves on costs over the long run.

Clean energy vehicles include, for the purposes of this Climate Action Plan: fully electric vehicles, hydrogen-fueled vehicles, and hybrid cars which are partially electric. Consumers are buying these types of vehicles in greater quantities, thanks to government incentives and innovations in the market.

We can help speed the rates of adoption by increasing the number of EV charging and hydrogen fueling stations, which creates infrastructure that lets owners of the vehicles know they will have a place to charge. We can also change our policies to facilitate or incentivize clean energy vehicles.

The public sector also has a role to play in replacing conventional vehicles in fleets with clean energy vehicles. Lower-emissions diesel vehicles might be an alternative where clean energy vehicles are not available.

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<tbody>
<tr>
<td>a</td>
<td>Provide Reduced Cost Parking for EV, Hydrogen, and Hybrid Vehicles</td>
<td>Policy/Code</td>
<td>Encourage use of clean energy vehicles, improving air quality, where fossil fuel vehicles would otherwise be used.</td>
</tr>
<tr>
<td>b</td>
<td>Increase the Number of EV Charging and Hydrogen Fueling Stations</td>
<td>Physical Change</td>
<td>Provide more reliable infrastructure for clean energy vehicles to speed rate of adoption.</td>
</tr>
<tr>
<td>c</td>
<td>Assess Environmental Impact of City Fleet Vehicles</td>
<td>Inventory/Assess</td>
<td>Draft a schedule for appropriate, cost-sensitive replacement of current fleet.</td>
</tr>
<tr>
<td>d</td>
<td>Replace Passenger Vehicles in City Fleet with Clean Energy Vehicles</td>
<td>Physical Change</td>
<td>Reduce the City's transportation-related emissions, resulting in cleaner air, in accordance with assessment.</td>
</tr>
<tr>
<td>e</td>
<td>Encourage Conversion of School Buses to Clean Energy or Diesel Retrofit</td>
<td>Physical Change</td>
<td>Reduce the school system's transportation-related emissions, resulting in cleaner air.</td>
</tr>
</tbody>
</table>

The electric vehicle charging station at the headquarters of the Department of Public Works.
GOAL 5: Increase Energy Resiliency

Resiliency means being able to recover quickly when problems arise. In the case of energy, we want to be sure everyone in Hartford can rebound when a power outage occurs. Resiliency is important not only for businesses who need to keep running during a storm, but also for residents who need electricity to meet basic needs. Hospitals and grocery stores are the kinds of critical care facilities that need resiliency most.

How can we ensure a more resilient city when it comes to energy? The primary way is making sure that Hartford has access to a diverse array of local energy generating sources that stay on even when everyone else’s power doesn’t. A microgrid developed by City Hall, which opened in 2017, will help make sure this happens for the Parkville neighborhood. Using a clean-burning fuel cell, the microgrid will supply power to the Parkville Elementary School, Dwight Branch Library, Parkville Senior Center, Charter Oak Health Center, a gas station and a grocery store.

The City is also exploring innovative ways of permitting, building, and financing new resiliency projects, including forming an energy improvement district and advocating for making local generation of energy easier.

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</thead>
<tbody>
<tr>
<td>a</td>
<td>Promote Construction of More Microgrids, Separate from the Primary Grid</td>
<td>Physical Change</td>
<td>Strengthen resiliency of neighborhoods during grid outages.</td>
</tr>
<tr>
<td>b</td>
<td>Utilize Energy Improvement District to Explore Resiliency Projects</td>
<td>Program/Plan</td>
<td>Explore how public energy district can enhance resiliency through new projects.</td>
</tr>
<tr>
<td>c</td>
<td>Advocate for Changes in Net Metering Cap for Cities</td>
<td>Education/Outreach</td>
<td>Enable the City to expand solar on the landfill and other renewable energy projects, saving taxpayer costs and diversifying local energy generation.</td>
</tr>
</tbody>
</table>

Officials cut the ribbon for a 800 kW fuel cell microgrid in the Parkville neighborhood, which will power public buildings as well as a gas station and grocery store during a grid outage.
Goal 5

• Parkville Microgrid
  • Opened in March 2017
  • Serves school, library, gas station, grocery store, & senior center
**Context**
- City of Hartford looking for a resilient power solution to serve critical community facilities that could act as a refuge for residents during emergencies or bad weather

**Results**
- City of Hartford project consists of 800 kW baseload power with 640 kW of grid islanding capability to provide a community MicroGrid.

**Customer Value**
- Constellation and Bloom Energy were able to provide a PPA to the City of Hartford that had significant cost savings, avoided upfront capital for passive backup equipment, and met sustainability objectives through Bloom’s energy solution
It was unanimous.
In one night.*
THANK YOU!