

# Catalyzing Sustainability Impact

## *A City-Led Process to Invest in High Impact Practices*

The Urban Sustainability Directors Network (USDN) connects local government practitioners to accelerate urban sustainability in U.S. and Canadian communities, leading the way to a sustainable, low-carbon future. Local governments develop, adopt, and share practices that create equitable and prosperous communities and a healthy environment.

USDN is the primary network through which local government sustainability and climate practitioners access mission-critical resources, and is frequently sought as a trusted thought partner. USDN enables groups of cities and counties to project a collective voice to partners and key stakeholders. By bringing members and partners together, USDN is able to broaden, inform, and synthesize perspectives on crucial issues and catalyze new partnerships.

### High Impact Practices (HIPs)

USDN member communities led a process in 2017-18 to identify High Impact Practices (HIPs) to help USDN and its partners increase impact through more strategic investments.

High Impact Practices are:

- Practices with high aggregate impact potential across U.S. and Canadian cities (not a “must do” list for, nor necessarily even applicable to, every individual community).
- Practices where cities are ready to make on-the-ground change in the next three years. Some may represent cutting edge advanced practices; others may represent established best practices with potential to scale much more widely.
- Practices with high GHG reduction potential (members’ starting priority), each with potential to create other important benefits (e.g., resilience, equity, job creation).

### Selecting GHG Reduction HIPs

To determine the final list of High Impact Practices, the Committee reviewed estimates of GHG reduction impact potential along with input from USDN peers about their progress and interests across an array of GHG reduction practices. The Committee sought to:

- Advance progress in each critical pillar of deep decarbonization (see below),
- Prioritize practices where high impact potential and high member interest converge, and
- Ensure that ~all USDN members are interested in at least some of the identified HIPs, while keeping the list to a practical size.

The Committee’s deliberations resulted in 14 practices. (See following page and Appendix A.)

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USDN will prioritize cultivating support for member action in the following areas:

Transportation

1. Major Public Transit Investments
2. Major Bike and Ped Investments
3. Community Electric Vehicles Adoption
4. Autonomous Vehicles Planning

Energy Supply

5. Renewable Energy Procurement for Government Operations
6. Utility-Scale Renewable Energy
7. Community Installation of Renewable Electricity
8. State/Federal Advocacy on Energy Supply and Efficiency

Building Energy Use

9. Electrification of Building Energy Systems
10. Energy Benchmarking for Large Buildings
11. Energy Upgrades at Trigger Events for Large Buildings
12. Zero Net Energy in Private New Buildings

Consumption and Waste Reduction

13. Organic Waste Management
14. Construction Waste Management

Each High Impact Practice has a high aggregate impact potential across U.S. and Canadian cities, but they do not represent a “must do” list for every community. Nonetheless, many USDN members have expressed a desire to work towards on-the-ground change during the next three years related to each of these practices.

Based on our analysis, 98% of members are ready to pursue at least one of these HIPs. Members will not be required to adopt these practices.

## **Next Steps**

Going forward, USDN will convene members and partners to explore (1) how priorities such as equity, resilience, and other benefits can best be enhanced through member work on the identified HIPs and (2) strategies through which our collaboration in USDN and with partners can help many communities to advance implementation of these practices.

USDN will prioritize HIPs in new peer learning and collaboration programming, along with other strategic investments. In early 2019, USDN will begin launching new initiatives with partners to help members advance implementation of HIPs.

In support of these goals, USDN seeks partners with expertise, enthusiasm, and capacity to collaborate with and support members in advancing impact through all of the practices listed herein. USDN is happy to share partner resources and collaboration opportunities with members. USDN leverages data about member interests to connect appropriate members and partners to support win-win collaborations.

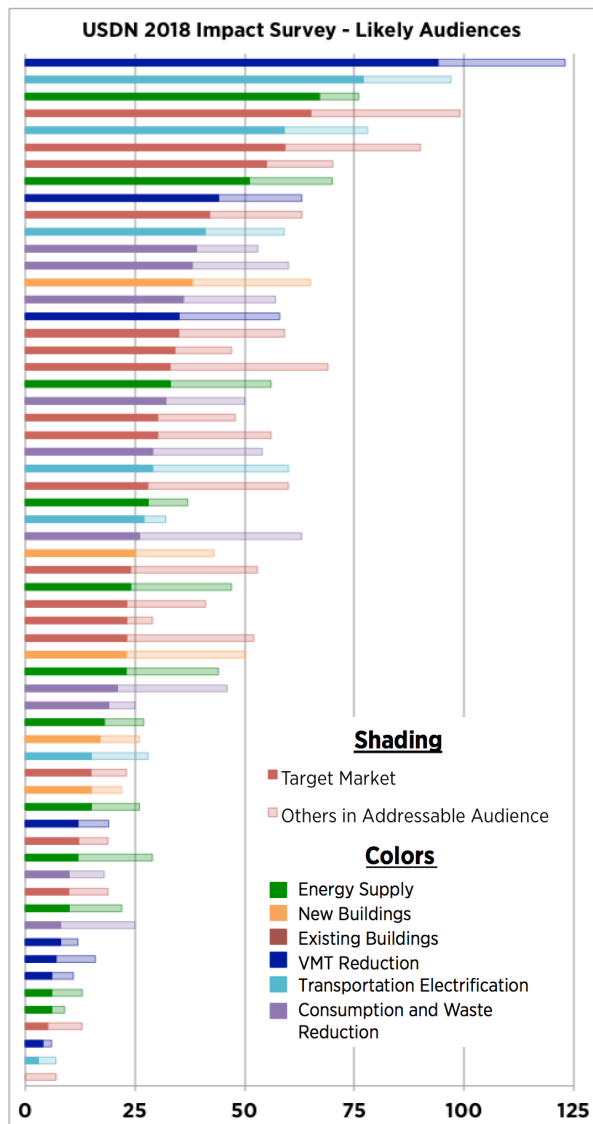
## Leveraging Collective Work to Date

The process of identifying HIPs began with research, supported by City Scale, which explored the findings of leading city climate action plans as well as published of decarbonization opportunities. This research clearly demonstrated that to achieve deep carbon reductions, cities need to make significant GHG reduction progress in each of the following areas:

- Energy Supply Transformation
- Energy Demand in Existing Buildings
- Energy Demand in New Buildings
- VMT Reduction
- Electrification of Transportation
- Waste and Consumption

Note that this analysis excludes some significant sources of GHG emissions with less direct applicability to local governments (e.g., dairy methane, deforestation).

This research identified 61 practices that have been frequently identified as having high potential to reduce GHG emissions in USDN communities. (See Appendix B for a list of practices.)



## A Data-Driven Process

USDN members identified specific practices within each of these areas where strong interest in taking action among cities converges with high GHG reduction potential.

### Strong Interest in Taking Action

More than 150 cities and counties responded to a March 2018 survey designed to help USDN understand member opportunities and interests in pursuing these practices. Members provided information about their legal authority, degree of implementation to date, and interest in working on each of the 61 practices during the next three years.

This data reveals how many and which members see themselves in the “target market” for each practice: *Communities with legal authority that are interested in adopting the practice and are already in the planning or implementation process.*

(See illustration of Target Market data at left.)

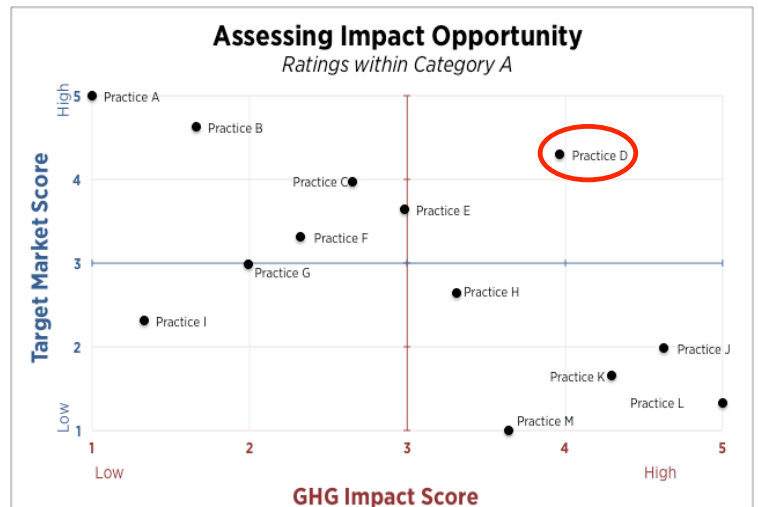
## Considering GHG Impact Potential

The Committee then combined this data with estimates of the GHG reduction potential of each practice, based on an analysis of existing data sources conducted by City Scale.

(See illustration of Analysis Chart at right.)

The quantitative assessment included two phases:

1. A meta-analysis of recent published studies was conducted to determine the magnitude of GHG-reduction potential in various sectors, as well as a review of recent local climate action plans that quantify potential reductions using similar sectors. (See Appendix C for a full listing of resources.) Together, this review led to a focus on the sectors with the largest GHG potential for urban areas to address: energy supply, buildings, transportation systems, vehicle fuels, and solid waste.
2. A customized estimate of the potential impact of practices within these sectors was produced, with the candidate practices drawn from published reports and guidelines, as well as the experience of HIPs Committee members and USDN staff. In many cases, empirical data on the impact of the candidate practices was limited, and the assessment process involved making assumptions that were discussed by the HIPs Committee.



## Other Findings

- High impact opportunity and high member interest converge in a limited set of practices: *USDN prioritized selecting HIPs that fall into this sweet spot as much as possible.*
- Some practices are clearly preferred over others: *There are many ways to reduce vehicle miles traveled, for example. Many local governments are interested in expanding and improving bicycle and pedestrian facilities, connectivity, convenience, and/or safety. By contrast, very few are currently interested in working on establishing car-free zones or regional road pricing.*
- Aggregate interest in leading by example is high: *Many local governments are ready to purchase green power for their municipal operations or add electric vehicles to their municipal fleets. These practices may not create community-scale impact, but they could help to foster leadership to catalyze bigger impact in the future.*
- Some practices with high impact potential are only possible in certain communities: *Some practices are inherently limited to a small number of communities in a particular context – like states where community choice aggregation is legal or cities that own their electric utilities. These may not have broad relevance but could have deep impact where enabled.*

## APPENDIX A – USDN GHG Reduction High Impact Practices

### Transportation

1. **Major Public Transit Investments** - Make public transit investments that significantly enhance coverage, service quality, frequency, and/or speed (e.g., bond for major transit infrastructure).
2. **Major Bike and Ped Investments** - Expand and improve bicycle and pedestrian facilities, connectivity, convenience, and/or safety in a manner that significantly increases the % of trips taken by walking or biking.
3. **Community Electric Vehicles Adoption** - Require and encourage EV adoption through local codes, infrastructure planning, and promotion.
4. **Autonomous Vehicles Planning** - Establish strategy and/or policy to avoid negative GHG impacts and achieve positive GHG impacts of autonomous vehicles.

### Energy Supply

5. **Renewable Energy Procurement for Government Operations** - Power government operations from renewable energy via on-site installation or off-site procurement.
6. **Utility-Scale Renewable Energy** - Engage local utility or community choice program (as applicable) to increase renewable energy offerings to all community members.
7. **Community Installation of Renewable Electricity** - Establish local incentives (e.g., solar rebates) and/or a bulk purchasing program (e.g., Solarize, community solar program) for on-site renewable energy at a scale catalyzing major new local investment.
8. **State/Federal Advocacy on Energy Supply and Efficiency** - Engage in state public utility commission (or equivalent agency) proceedings to advocate for significant renewable energy (e.g., via state RPS, net metering tariffs) and building energy efficiency standards and funding.

### Building Energy Use

9. **Electrification of Building Energy Systems** - Develop a local strategy and enact programs to drive replacement of fossil fuel-fired space and water heating systems with high efficiency electric heat pump and similar technologies in new and existing buildings.
10. **Energy Benchmarking for Large Buildings** - Require large commercial and multi-family buildings to benchmark and report their energy performance.
11. **Energy Upgrades at Trigger Events for Large Buildings** - Require large commercial and/or multifamily buildings to perform energy upgrades achieving an average of ~15%+ energy savings by a certain date or at certain trigger events (e.g., time of sale, change of occupancy).
12. **Zero Net Energy in Private New Buildings** - Adopt policies or programs to cause new buildings in the community to achieve near-zero net energy/fossil fuel-free performance.

### Consumption and Waste Reduction

13. **Organic Waste Management** - Implement organics (food waste, yard waste) collection in commercial, single-family, and multi-family properties, including food waste collection in high-volume locations.
14. **Construction Waste Management** - Require recycling of construction and demolition waste.

## APPENDIX B – Descriptions of All Practices Originally Considered

### Energy Supply

- 1) Purchase renewable energy equivalent to ~100% of municipal operations energy use.
- 2) Install solar panels on ~all viable municipal facilities.
- 3) Require or otherwise direct municipally owned utility (e.g, via local renewable portfolio standard) to source ~50%+ of power from renewable energy sources by ~2030.
- 4) Require a privately owned utility (e.g., via franchise agreement) to source ~50%+ of electricity for the community from renewable energy sources.
- 5) Enact a community choice energy program delivering ~50%+ renewable energy to customers throughout the community.
- 6) Establish a community-shared renewable energy program (e.g., community solar) at a scale engaging ~5%+ of community members.
- 7) Engage in state public utility commission (or equivalent agency) proceedings to advocate for significant renewable energy requirements (e.g., via state RPS, net-metering tariffs).
- 8) Establish local incentives (e.g., solar rebates) and/or a bulk purchasing program (e.g., Solarize) for on-site renewable energy at a scale catalyzing major new local investment.
- 9) Establish a group renewable energy procurement effort by high-use customers.
- 10) Adopt a local requirement (through building code or similar) for solar-ready or on-site solar where viable in new construction.
- 11) Establish requirements or a voluntary program to support on-site energy storage (e.g., batteries).
- 12) Pursue municipalization of energy utility.
- 13) Invest in local waste-to-energy heat recovery, and/or clean district energy plants.

### Energy Demand in Existing Buildings

- 1) Upgrade major existing municipal facilities to achieve ~zero net energy performance through energy efficiency upgrades and on-site renewable energy.
- 2) Implement a strategic energy management program for all major municipal operations.
- 3) Convert ~90%+ of street lights and traffic signals to LED technology.
- 4) Require large commercial buildings to benchmark and report their energy performance.
- 5) Require large multifamily buildings to benchmark and report their energy performance.
- 6) Require large commercial buildings to conduct audits and/or retro-commissioning.
- 7) Require large multifamily buildings to conduct audits and/or retro-commissioning.
- 8) Require large commercial and/or multifamily buildings to perform energy upgrades achieving an average of ~15%+ energy savings by a certain date or at certain trigger events (e.g., time of sale, change of occupancy).
- 9) Create voluntary large commercial and multifamily energy upgrade program(s) (e.g., offering incentives, tech assistance) that achieve deep energy savings (~25%+) in ~20%+ of large buildings.
- 10) Create voluntary large commercial and multifamily energy upgrade program(s) (e.g., offering incentives, tech assistance) that achieve lighter energy savings (~10%) in ~50%+ of large buildings.
- 11) Require homes to obtain a home energy score (analogous to benchmarking) by a certain date or at a certain trigger event (e.g., time of sale, major renovation).

- 12) Create voluntary home energy upgrade program(s) that will achieve deep energy savings (~25%+) in ~20%+ of homes.
- 13) Create voluntary home energy upgrade program(s) that will achieve lighter energy savings (~10%) in ~40%+ of homes.
- 14) Require homes to perform energy upgrades achieving an average of ~15%+ energy savings by a certain date or at certain trigger events (e.g., time of sale).
- 15) Establish PACE or other convenient financing options for multifamily, commercial, and residential retrofits.
- 16) Develop a local strategy and enact programs to drive thermal decarbonization/electrification (e.g., replacement of fossil fuel-fired furnaces, boilers, and domestic hot water systems with electric heat pump technologies or other renewable options) of existing buildings over time.
- 17) Develop a building staff training program for large privately-owned commercial and multifamily buildings and/or require building staff be trained in energy efficiency best practices.
- 18) Engage in state public utility commission (or equivalent agency) proceedings to advocate for major new energy efficiency funding, programs, or standards (e.g., building electrification).

### **Energy Demand in New Buildings**

- 1) Require major new municipal buildings to achieve ~zero net energy/carbon performance.
- 2) Require new private development of certain size/building type in the community to achieve ~zero net energy/carbon performance.
- 3) Require ~all new construction and major renovation to use high efficiency electric/fossil fuel-free technologies for heating, cooling, and hot water.
- 4) Enact market incentives (e.g., zoning or financial) that achieve ~25%+ better energy performance than existing local code in new building space.
- 5) Increase enforcement of energy code requirements to achieve ~100% compliance for new construction and substantial renovations.

### **VMT Reduction**

- 1) Make public transit investments that significantly enhance coverage, service quality, frequency, and/or speed (e.g., bond for major transit infrastructure).
- 2) Expand and improve bicycle and pedestrian facilities, connectivity, convenience, and/or safety in a manner that significantly increases the % of trips taken by walking or biking.
- 3) Enact car-free zones or cordon pricing in core areas.
- 4) Enact higher parking prices in core locations and/or eliminate parking requirements in dense areas of the community.
- 5) Establish regional road pricing (e.g., toll roads, dynamic pricing, congestion pricing).
- 6) Establish policies to optimize urban freight movement (e.g., time of delivery, location consolidation).
- 7) Regulate private ride-hailing services such as Uber and Lyft (e.g., collecting revenue from, vehicle efficiency standards).
- 8) Establish strategy and/or policy to improve GHG impacts of autonomous vehicles.

### **Transportation Electrification**

- 1) Require ~50%+ of all new municipal fleet vehicles be EVs.
- 2) Establish a transition plan to convert transit bus fleets to ~100% electric.
- 3) Partner with major local commercial fleet operators to transition to EVs.
- 4) Create voluntary program(s) capable of significantly accelerating community EV adoption (e.g., via incentives, technical assistance).
- 5) Restrict non-EVs from certain areas of the city and/or traffic lanes.
- 6) Require EV charging infrastructure in new construction and major renovation and/or integrate charging requirements in zoning codes.
- 7) Significantly expand EV charging infrastructure in publicly accessible locations.

### **Waste and Consumption**

- 1) Promote consumption of low-carbon food choices.
- 2) Promote consumption-reduction approaches such as sharing and re-use.
- 3) Invest in waste management infrastructure capable of separating ~all organics from the waste stream.
- 4) Implement food waste-reduction and collection programs that capture ~80%+ of organics from all high-volume locations (e.g., restaurants).
- 5) Implement curbside organics (food waste, yard waste) collection for single-family residential properties.
- 6) Implement organics (food waste) collection for multi-family residential properties.
- 7) Require recycling of a significant percentage of construction and demolition waste.
- 8) Require that structures that meet certain requirements (e.g., age, size, condition) be deconstructed rather than demolished.
- 9) Significantly improve methane recapture at landfills.
- 10) Require significant municipal operations and community events to achieve ~zero waste.



## **APPENDIX C – Resources for Quantitative GHG Impact Assessment and Candidate High Impact Practices**

### **Published Studies:**

- “Advancing Climate Ambition: How City-Scale Actions Can Contribute to Global Climate Goals,” Stockholm Environmental Institute (2014)
- “Carbon-Free City Handbook.” Rocky Mountain Institute (2017)
- *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, Paul Hawken et al. (2017)
- “Estimating the National Carbon Abatement Potential of City Policies: A Data - Driven Approach.” National Renewable Energy Laboratory (2016)
- “Focused Acceleration: A strategic approach to climate action in cities to 2030,” McKinsey for C40 (2017)
- “Framework for Long-Term Deep Carbon Reduction Planning.” Developed for the Carbon Neutral Cities Alliance by the Innovation Network for Communities (2015).
- “Intersecting Residential and Transportation CO2 Emissions: Metropolitan Climate Change Programs in the Age of Trump,” Landis, John D., David Hsu, and Erick Guerra. *Journal of Planning Education and Research* (2017)
- “Pathways to 100: An Energy Supply Transformation Primer for U.S. Cities.” Meister Consultants Group (2017)

### **Local Government Climate Plans:**

- “Climate Commitment,” City of Boulder, CO (2016)
- “2020 Climate Action Plan,” City of Fort Collins, CO (2016)
- “Roadmap to 80x50,” New York City, NY (2016)
- “Climate Action Strategy,” City and County of San Francisco, CA (2013)
- “Climate of Opportunity,” District of Columbia (2011)