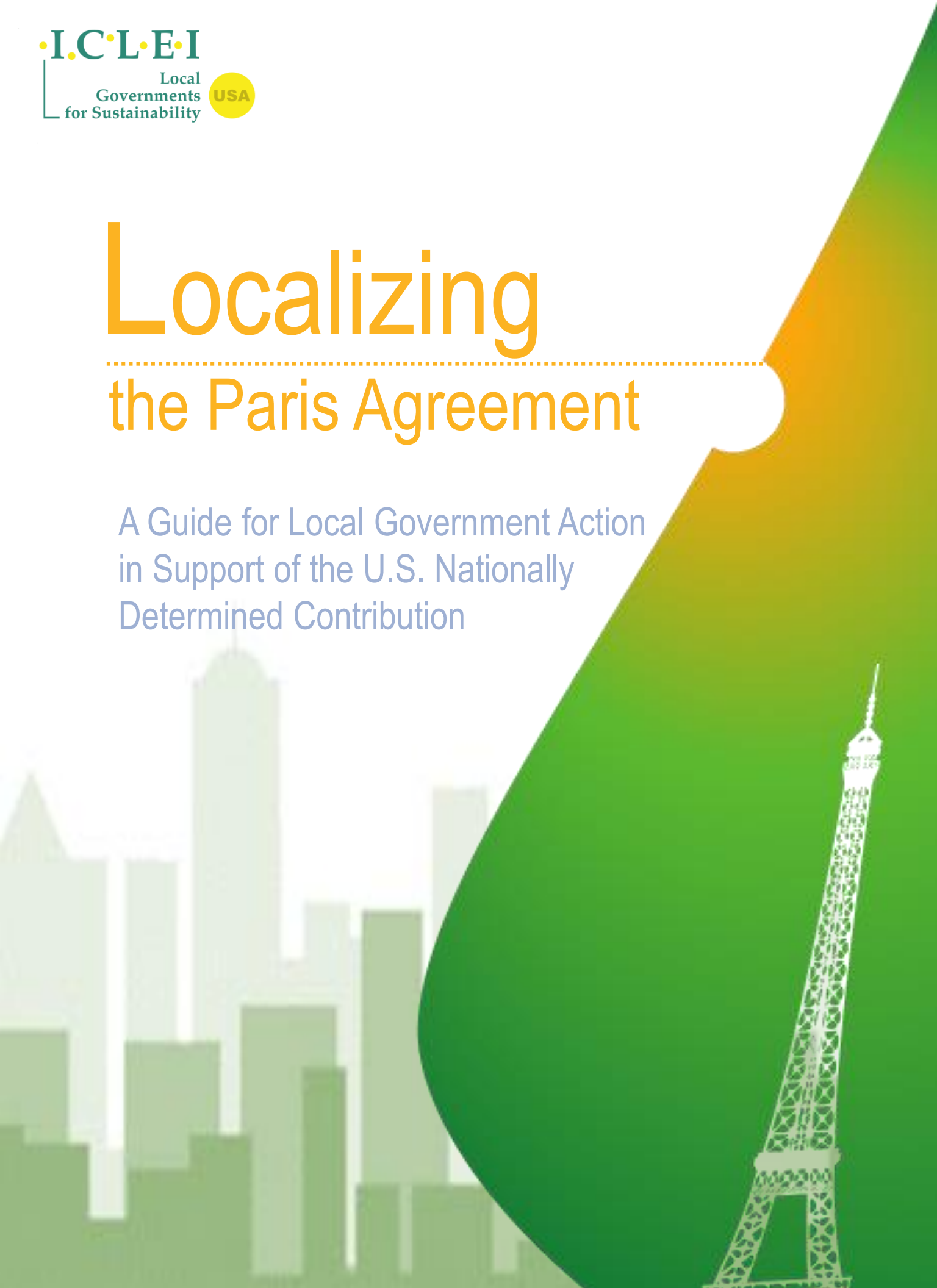
ICLEI Local Governments for Sustainability USA

Localizing the Paris Agreement

A Guide for Local Government Action in Support of the U.S. Nationally Determined Contribution



Localizing the Paris Agreement

About this Guide

In December 2015, after years of negotiations, 197 countries made a commitment to work together to address climate change. The Paris Climate Agreement came into force on November 4, 2016, and is seen as a turning point for global climate policy and the ability for international cooperation to safeguard the planet. Despite this unprecedented international unity to tackle a global threat, in June 2017, the White House announced that the United States would withdraw from the accord.

Although the federal government also has walked away from domestic climate action by eliminating the U.S. State Department's Special Envoy for Climate Change position and by choosing to disband NOAA's advisory committee on climate change, the outpouring of support for Paris by thousands of mayors, county officials, and city council members — through campaigns such as We Are Still In, Global Covenant of Mayors for Climate & Energy, and U.S. Climate Mayors — shows that local governments have not.

This guide is intended to help local governments go beyond pledges and move toward action on implementing the Paris Agreement. Focusing solely on the national policies that can uphold the U.S. Paris Commitment (or lamenting the lack thereof) fails to capture some of the most promising actions that can achieve demonstrable emissions reductions. Those will happen locally.

1536 Wynkoop St #901
Denver, CO 80202
T: +1 (510) 844-0699
F: +1 (510) 844-0698
E: iclei-usa@iclei.org

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Contents

What does the Paris Agreement ask of signatories?

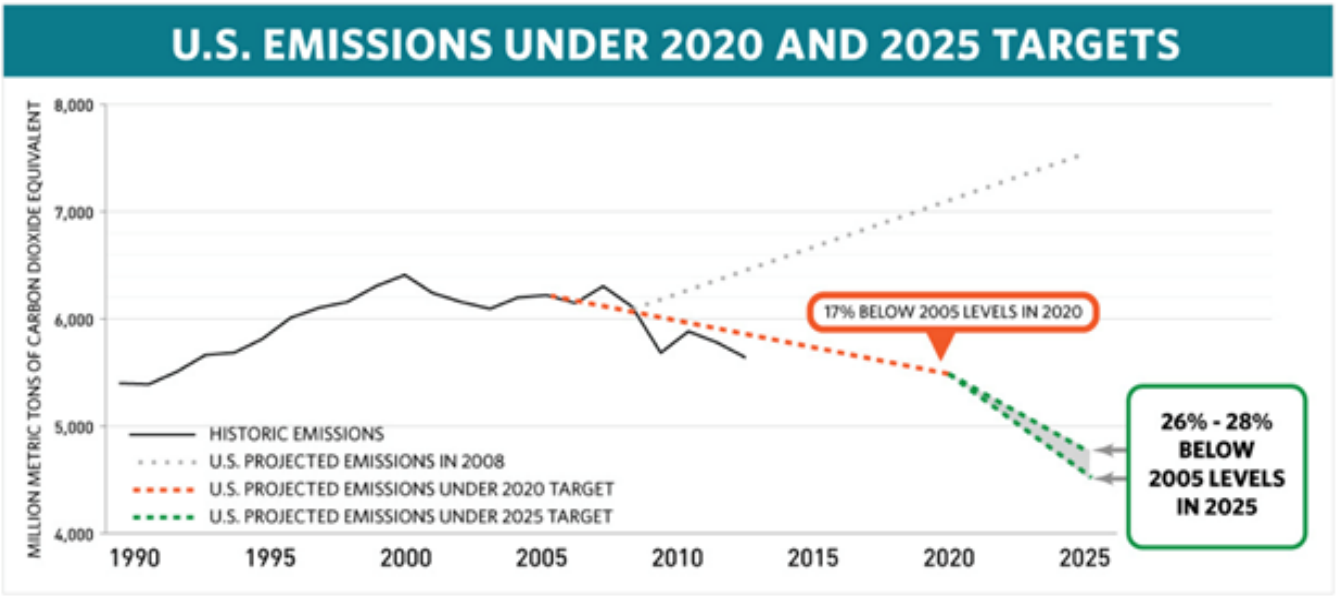
Under the Paris Climate Agreement, each country to ratify the agreement put forth its goal for emissions reductions, referred to as the country's Intended Nationally Determined Contribution (INDC). Going forward, each signatory is expected to turn intention into action and submit its Nationally Determined Contributions, or NDC. The NDC acts as a emissions reduction goal, with the intent that the goal will become more ambitious over time. It is up to each country to develop its own plan for how to achieve the goal laid out in its NDC. For example, the U.S. INDC is accompanied by a menu of quantified reduction measures that will help the nation achieve its goal, including for building efficiency codes and appliance standards, fuel economy standards for automobiles, refrigerant restrictions and renewable energy targets (see Box 1).

One of the strengths of the Paris Climate Agreement is that, although countries are the primary parties to the agreement, efforts were made for civil society and local government voices to be heard. To this end, ICLEI serves as as the focal point for the Local Governments and Municipal Authorities (LGMA) Constituency to the United Nations Framework Convention on Climate Change (UNFCCC). In this role, ICLEI has advocated for over 25 years that cities, towns, and counties have the power to produce greenhouse gas (GHG) reductions nearest to emissions sources while acting as the first responders to the impacts of extreme weather events exacerbated by increased atmospheric CO2 levels.

What does the U.S. NDC call for?

In the U.S. NDC, submitted to the UNFCCC in March 2015, the federal government laid out its goal to achieve an economy-wide target of reducing its greenhouse gas emissions 26% below 2005 levels by 2025 — with a reach goal of reducing emissions by 28%. This target covers all greenhouse gases included in the 2014 Inventory of United States Greenhouse Gas Emissions and Sinks, along with all IPCC sectors, and would put the country on a path to achieve a 17% reduction by 2020.

Figure 1: U.S. GHG emissions projections for NDC target (Source: U.S. NDC)



What actions did the United States put forth to cut emissions?

Here's a look at several of the proposed measures to support the national NDC:

Buildings and appliances: The Department of Energy has set energy conservation standards for over 60 appliances and other types of equipment, covering 90% of residential and 60% of commercial energy use, and has established building code standards for commercial and residential buildings.

Power sector: Electricity generation accounts for 31% of U.S. greenhouse gas emissions, mostly produced with natural gas and coal. The Obama-era Clean Power Plan was established under the Clean Air Act and set a goal to cut 32% of power-sector emissions below 2005 levels by 2030, giving states the freedom to choose their own strategy. The Plan's future is uncertain.

Fuel economy: According to the U.S.'s most recent GHG inventory, transportation accounts for about 27% of U.S. emissions (see Figure 2) — although it's important to note that for the period October 2015 through September 2016, transportation emissions exceeded electric power sector emissions for the first time since the 1970s. The federal government sets corporate average fuel economy, or CAFE, standards, which require automakers to meet an average miles-per-gallon standard. The U.S. adopted new standards for light-duty vehicles produced between 2012 and 2025, and for heavy duty vehicles for 2014-2018.

Short-lived climate pollutants: Under the Obama Administration, the EPA pushed for ways to reduce emissions of methane, nitrous oxide, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride (the "fluorinated gases" in Figure 2). Although these gases account for a small share of total emissions, they have an outsized impact on the climate, pound for pound, as compared to CO2 in the short term. By rapidly reducing these gases in the short term, significant gains can be made towards meeting the NDC. Refrigerant leakage, as well as methane leakage from natural gas distribution systems, are sources that cities can work to address in order to lower short-lived but potent emissions. The EPA standards to address methane emissions from landfills and the oil and gas sector have been challenged and how these fugitive emissions recovery efforts will fare is uncertain as of this writing.

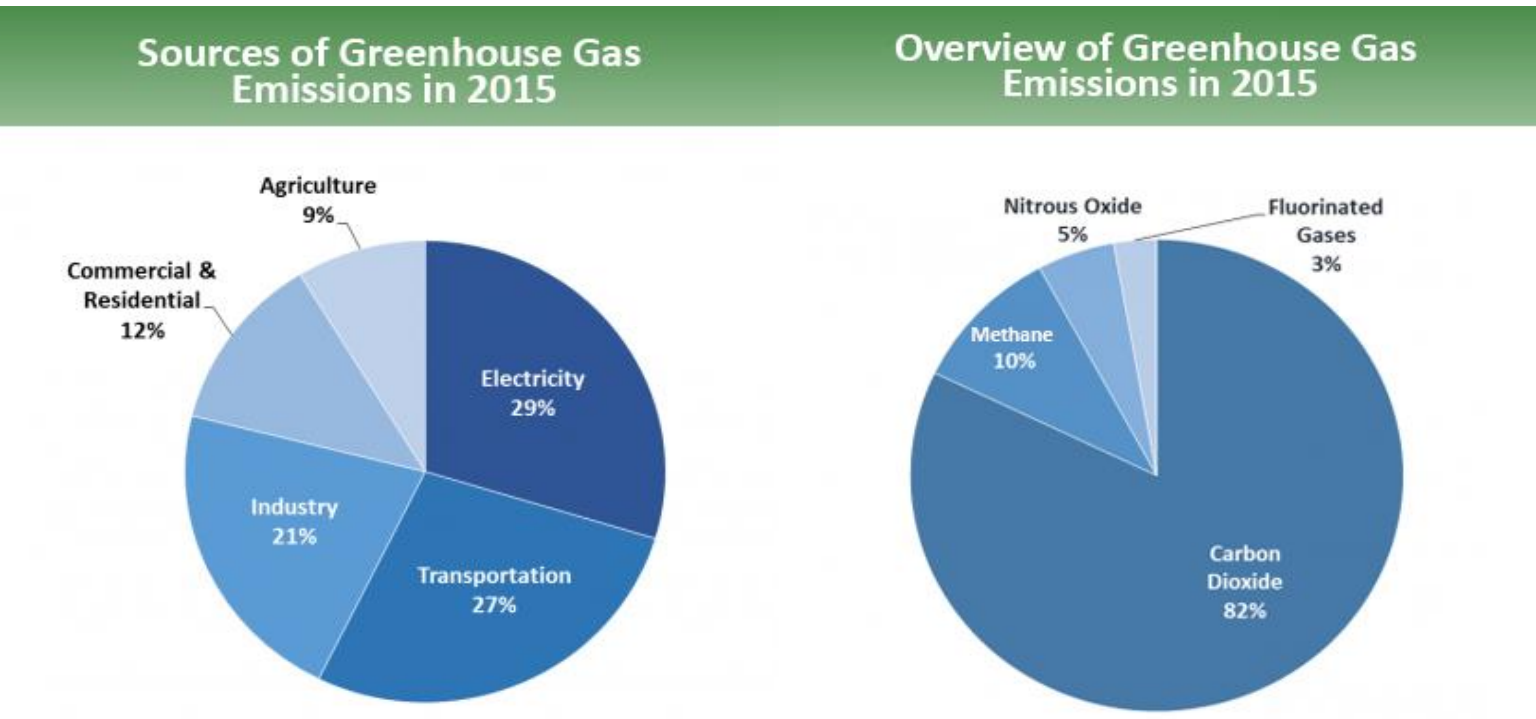


Figure 2

U.S. Environmental Protection Agency (2017). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015

Box 1

National-level measures implemented in support of U.S. NDC.

Sector	Action
Agriculture	AgSTAR program support to biogas recovery systems to reduce methane emissions from livestock waste. USDA Advanced Biofuel Payment Program supporting biofuel producers with payment for finished product.
Appliances	Energy conservation standards for appliances and equipment, covering 90% of commercial, 60% of commercial, and 30% of industrial products, for a savings of 336 MMT CO2e and $67 billion by 2030.
Buildings	Energy conservation standards and building codes for commercial buildings, reducing annual CO2 emissions by 50 MMT below 2005 levels by 2025. Energy conservation standards for residential dwellings, with target to reduce annual CO2 emissions by 34 MMT below 2005 levels by 2025. Energy Efficiency and Conservation Block Grants (EECBG) program, providing $3.2 billion to cities, states, and Indian tribes to develop energy efficiency and conservation projects . Lighting energy efficiency standards passed in 2012 stipulate that light bulbs use about 25%-80% less energy than traditional incandescents. DOE Weatherization Assistance Program, weatherizing about 35,000 homes per year for a savings of 2.25 MMT CO2e.

Source: Greenwald, J. US DOE, 2015; and Second Biennial Report Methodologies for Quantified Policies and Measures.

Box 1, continued

Sector	Action
Electricity	Finalized regulations to cut carbon pollution from new and existing power plants. Standards to address methane emissions from landfills and the oil and gas sector. Onshore renewable energy development programs: updated guidance for developing renewables on public lands, proposed rules for establishing a competitive leasing process, and proposed rules to ease right-of-way applications for solar and wind.
Industry	ENERGY STAR industrial partnerships align corporate energy programs with energy efficiency guidelines. Sustainable materials management program addresses buildings, food management and packaging to reduce lifecycle impacts. Voluntary Aluminum Industry Partnership targets 30-60% reduction in production emissions, with 48% reduction since 1990.
Land use and forestry	Forest Carbon Accounting Framework, accounting for carbon stock changes in soils on federal grasslands and improved estimates of land cover changes. Seven DOE Regional Carbon Sequestration Partnerships work on large-scale CO2 storage oil, gas, coal and geologic formations. NPS Climate Friendly Parks Program measures GHG emissions and implements climate action plans in national park .
Refrigerants	Certain uses of high-GWP HFCs prohibited and approvals for new alternatives adopted. EPA GreenChill Partnership works with retailers on advanced refrigeration, avoiding average 3.5 MMT CO2e annually. EPA Responsible Appliance Disposal Program (RAD) recovered 4% of disposed refrigerant appliances in 2015, avoiding 1.3 MMT CO2e.
Transportation	Adopted fuel economy standards for model year 2012-2025 light-duty vehicles and model year 2014-2018 heavy-duty vehicles. Post-2018 fuel economy standards for heavy-duty vehicles.

The power of local ambition

While the federal government in 2015 declared the NDC as "fair and ambitious" — citing a need to accelerate the annual pace of reduction up to 2.8% per year through 2025 in order to meet the target — several groups have argued that even the 2025 reach goal does not go far enough in order to avoid the worst impacts of climate change or that the proposed commitment does not use key indicators of fairness, as other countries' submissions have done, such as emissions per capita, economic capacity or mitigation potential. Regardless, given current challenges to the Clean Power Plan and the White House's expressed hostility toward the ideals of Paris, the prospect for national action toward fulfilling the NDC looks dim.

Actions by cities, towns, counties, and regional authorities offer a promising opportunity for supporting the intended contributions outlined in the U.S. NDC. For instance, our analysis of city climate action in 2015 showed that, of the 132 cities that reported their climate commitments to public platforms, 52 had reduction targets that are equal to or more ambitious than the national government's (see Box 2). Because cities are home to over half of the world's population and are responsible for 70% of global GHG emissions, the actions local governments take may determine the ultimate outcome of our response to climate change.

Box 2

A sampling of several cities and towns with ambitious, community-wide emissions-reduction targets, as reported through the carbon*n* Climate Registry.

Jurisdiction	Emissions reduction target
Atlanta, GA	20% by 2020 and 80% by 2040, below 2009 levels
Boulder, CO	80% by 2050, below 2017 levels
Broward County, FL	17% by 2020 and 82% by 2050, below 2005 levels
Cincinnati, OH	40% by 2028 and 84% by 2050, below 2006 levels
Hayward, CA	82% by 2050, below 2005 levels
Minneapolis, MN	30% by 2025 and 80% by 2050, below 2006 levels
Olympia, WA	45% by 2035 and 80% by 2050, below 1990 levels
Philadelphia, PA	45% by 2035, below 1990 levels
Portland, OR	40% by 2030 and 80% by 2050, below 1990 levels
Urbana, IL	25% by 2020 and 80% by 2050, below 2007 levels

The relationship between community GHG inventories and the national inventory

A key consideration in terms of how an individual city relates to the U.S. NDC is the coverage of emissions sources within the inventory. The U.S. National Inventory includes every physical source of emissions within the country, including many sources that do not typically occur within a municipal boundary — but also a substantial number that do. These are often left out of inventory work due to a lack of available data, such as product use emissions associated with refrigeration and air conditioning, a comprehensive accounting of land use and land cover change, and industrial processes.

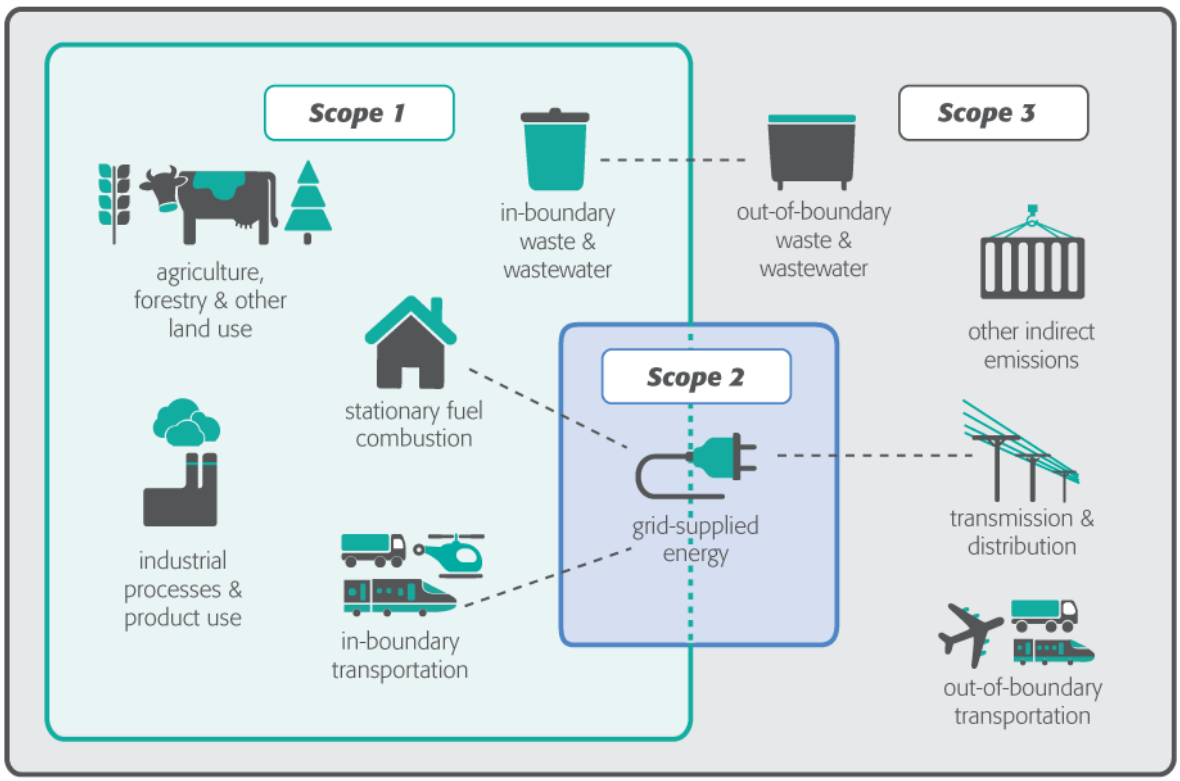
If a city were to express a target in line with the NDC and not account for these omissions, their target would not cover their "fair share" and cities with significant emissions in these areas may need to make deeper reductions in order to fully support the U.S. NDC.

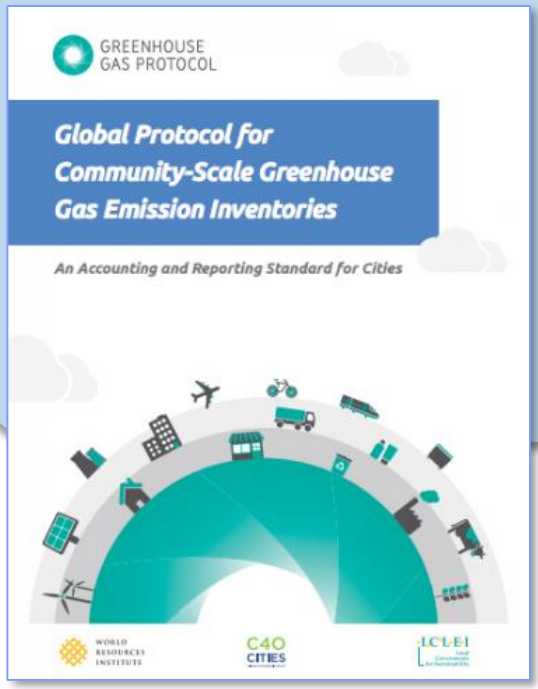
Performing specific corrections for these considerations is not always necessary, either. As mentioned, many cities have already committed to reductions that are more aggressive than the U.S. NDC, which may make up for some of the difference.

Ultimately, implementation of city-scale action plans will require pursuit of all feasible measures, regardless of the specific relationship between local and national targets. Increasingly, cities are considering the impact of activities that occur in their boundaries that cause distant emissions, such as the emissions from the production of food and other goods consumed by the community. While these are difficult to quantify, a comprehensive plan to reduce all emissions should consider the broadest impact that can be achieved with local action while recognizing the benefits of more sustainable consumption choices.

Figure 3

Sources and boundaries of city greenhouse gas emissions, as considered in the GPC (see below). Activities taking place within a city can generate GHG emissions that occur inside as well as outside the city boundary. The scopes framework differentiates emissions occurring physically within the city (Scope 1), from those occurring outside the city (Scope 3) and from the use of grid electricity, heating or cooling, which may cross city boundaries (Scope 2).





The *Global Protocol for Community-Scale Greenhouse Gas Emission Inventories*, or the GPC, offers cities and local governments a robust, transparent and globally-accepted framework to consistently identify, calculate and report on city greenhouse gases. Using the GPC, jurisdictions can credibly develop an emissions baseline, set mitigation goals, create more targeted climate action plans and track progress over time, as well as strengthen opportunities for cities to partner with other levels of government and increase access to local and international climate financing.

Localizing the U.S. Nationally Determined Contribution

While several Intergovernmental Panel on Climate Change (IPCC) sectors may evade direct local-level authority to influence emission, local governments wield significant power over others, such as buildings, transportation, and energy generation. For agriculture and land use, local governments can still influence emissions indirectly. The sectoral breakdown below offers strategies for emissions reductions in line with overarching national goals to support the NDC. For each strategy, one or more specific city or county actions observed by ICLEI are listed, and may be a fit for other jurisdictions.

City Actions by Sector

Energy supply

Traditionally, a city's energy resource mix and supply has been largely out of the hands of municipal authorities. These days, communities increasingly have the ability to use a variety of market mechanisms to procure renewable energy (RE) attributes that help drive demand for utility-scale renewable energy development. However, these developments may not impact the actual carbon intensity of the electricity consumed in the city, depending on how the procurement is specified. Local, distributed generation can reduce the need for imported electricity from the fossil-supplied grid. Much of a city's thermal energy needs are provided through stationary combustion of natural gas, or in some places, fuel oil. To the extent practicable, thermal energy sources should be shifted to renewable sources, such as solar and geothermal, or high-efficiency electric options, such as heat pumps. In this way, the carbon intensity of the entire energy supply will decrease as grid energy does.

Table 1: Energy supply actions

Strategy	Action
Lead by example	Cities and counties own buildings and land, potential sites to host renewable energy projects and power municipal facilities. Begin with a municipal building-wide assessment of solar potential — tools such as Project Sunroof can get you started. Other transformational opportunities to procure RE are emerging, such as cities as wholesale power purchasers. Install solar hot-water heating systems for all public swimming pools, kitchens, and restrooms.
Pursue market development for local distributed generation	Establish innovative financing for energy efficiency and renewables projects: PACE, green bonds, solarize programs, and municipal solar marketplaces.
Augment local production through procurement of clean energy	Declare a 100% Renewable Energy commitment. Enter into contracts with wind producers to meet city energy needs when solar resources to not allow for meeting the target. Explore Community Choice Aggregation (in select states). Streamline the approval and permitting process for building-mounted solar panel systems. Consider leasing roof space from industrial and commercial buildings to generate residential solar energy.

continued

Table 1, continued: Energy supply actions

Strategy	Action
Avoid further lock-in by fossil fuels in new development	Curtail expansion of natural gas infrastructure to new service areas.
Eliminate leakage of high global warming potential methane from local natural gas distribution systems	Map methane leakage and work with utilities and state regulators to prioritize their repair
Maximize energy output where combustion is needed for large thermal loads	Where large thermal loads exist in hospitals, campuses and industry, explore options for cogeneration or tri-generation.
Advocate	Advocate for state renewable energy policies: renewable portfolio standards, net metering, virtual power purchase agreements. See Clean Energy Guide for State Legislatures from the Center for the New Energy Economy at Colorado State University. Work with your investor-owned utility to negotiate a renewable energy friendly municipal franchise agreement and or align community renewable energy goals with the utility's integrated resource planning timeline.

Energy demand

While the quality of the energy supplied to cities is a key determinant of the emissions level, drastic reductions in demand are needed to make it possible for new, clean energy sources to supply 100% of demand. Critical ways municipal authorities can influence demand is through education campaigns and by adopting building energy codes. The U.S. does not have a national energy code or standard, so energy codes are adopted at the state and local levels of government. Programs, such as the Building Energy Accelerator and DOE's Building Energy Codes Program, provide technical know-how to cities to develop codes and facilitate the adoption process.

Table 2: Energy demand actions

Strategy	Action
Lead by example	Energy Performance Contracting is a holistic approach to retrofit municipal buildings for energy and water efficiency while reducing operating costs in a way that does not require up-front capital investment. Enact environmentally preferable procurement of energy-efficient devices, such as electronics. Require that municipally owned new construction meet a transparent building rating requirement, such as LEED Gold or Platinum. Create a tree canopy plan with a percentage goal to increase canopy cover for air quality and shade.
Halt growth in energy demand from new development.	Energy codes are fundamental to achieve building-related carbon reductions. Participate in the model building energy code development processes administered by the ASHRAE and the International Code Council (ICC). Retrain inspectors to ensure proper enforcement. Pursue zero-net energy buildings with progressively tighter building codes and incentives. Design energy conservation at the district and neighborhood scale, using strategies such as district energy systems. Phase out oil heating as early as possible. Require solar generation on new construction. Optimize energy generation potential through proper building placement/orientation using tools, such as NREL's UrbanOPT. Institute a green roof or cool roof requirement or program. Provide incentives such as a square footage or footprint allowance.

continued

Table 2, continued: Energy demand actions

Strategy	Action
Improve real estate market transparency by making energy performance data and related expenses public information.	Pursue mandatory building benchmarking and allow market mechanisms to drive further efficiency improvements. For example, require energy use disclosure at point of sale for all buildings more than 10 years old. Interconnect existing energy data and reporting mechanisms. Require that private development meet a transparent building rating requirement, such as LEED Bronze or Silver.
Pursue energy efficiency as a "first fuel" for meeting energy needs of existing structures.	Engage public utilities commissions to support efficiency programs that benefit local consumers. Provide weatherization and efficiency retrofit programs to low-income housing residents. Upgrade all street lights and traffic lights to LED. Organize a cross-departmental efficiency challenge, or partner with Main Street to run a competition-style Green Business Challenge with an overall 10% energy reduction goal.
Pursue water - energy nexus opportunities. Many cities process and supply drinking water.	Water conservation is a relatively inexpensive and effective way to save energy among other efficiency programs. Actions include greywater reuse, rainwater harvesting, storm water reclamation, and regulation of local waterways. The energy intensity of water supply within a single distribution system varies and is a function of elevation. Evaluate water system operations and switch to efficient pumping technologies.
Advocate	Advocate for state energy efficiency policies and investments: energy decoupling, combined heat and power, appliance standards, and demand response standards are examples. See Clean Energy Guide for State Legislatures from the Center for the New Energy Economy at Colorado State University. Work with your investor-owned utility to negotiate a renewable energy-friendly municipal franchise agreement and/or align community energy efficiency goals with the utility's integrated resource planning timeline.

Industrial processes and product use

While many industrial process emissions occur within cities, it is critical to recognize the limits of local government authority over those emissions. Unlike emissions related to consumption activities, eliminating a source of production emissions from a community does not contribute to the reduction in national emissions if that production simply moves to another, more lenient location. Where possible, engagement to find substitutions for process-related GHGs is a better guarantee for emissions reduction.

Product-use emissions include those related to use of consumer products, such as refrigeration and air conditioning. These emissions fall into the category of “high global warming potential”, short-lived climate pollutants. Very high reductions can be achieved through actions that help prevent the release of these gases, such as appliance buy-back or drop-off programs that ensure the proper disposal of products that contain these pollutants.

Table 3: Industrial sector actions

Strategy	Action
Lead by example	Ensure that all municipal buildings meet or exceed community disposal and substitution requirements for hydrofluorocarbons (HFCs) (see below). Environmental Purchasing Policies to promote the growth of circular economy businesses (see below). Responsible public procurement systems look at purchases both for environmental impacts and lifecycle costs. Explore consumption-based accounting methods to track and measure GHG emissions from products and packaging produced outside but consumed locally.
Target the release of high global warming potential refrigerants throughout the community	Ensure the responsible disposal of air conditioners and refrigerators through an HFC-recovery program. Manage maintenance programs to extend efficient life of HVAC systems. Recognize and encourage local businesses to employ substitutions to HFCs where possible.
Promote Circular Economy principles	Support business innovation to replace traditional "extraction-and-consumption" models with loops that circulate energy, components, and materials through the economy to optimize their potential. Work with utilities to encourage replacement of inefficient outdated equipment before traditional end-of life points are reached, assist in bulk purchasing of replacement technologies and green tech.
Advocate	Support state policies that increase industrial efficiency and address GHG mitigation in this sector.

Agriculture

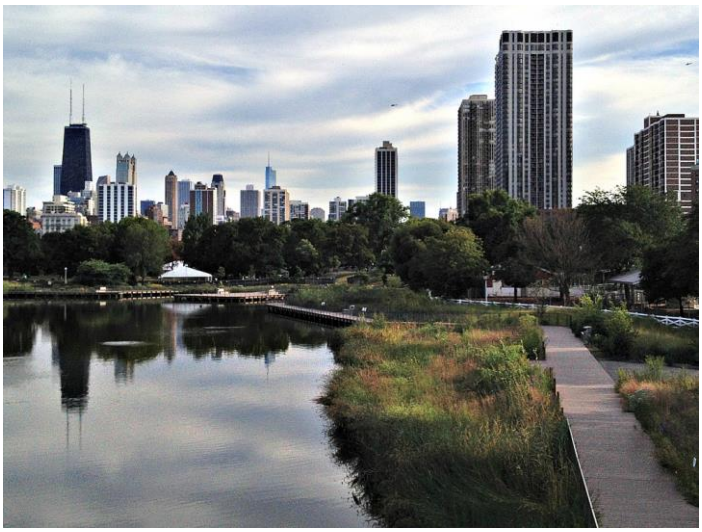
With some exception, nearly all agricultural activities accounted for in the U.S. national inventory occur outside of the geographic boundary of incorporated cities. Emissions in this sector are related to direct emissions from livestock and their waste, as well as soil emissions from fertilizer applications and other management practices.

Addressing agriculture-related emissions is largely a function of demand from consumers, however local governments can have indirect impacts.

Table 4: Agriculture sector actions

Strategy	Action
Lead by example	Promote sustainable food options in municipal catering and procurement that reduce food waste and loss.
Support local-regional food systems	Facilitate development of retail and markets for local production. Utilize city-peer networks such as CITYFOOD to access training and policy guidance on resilient urban food systems.
Support local-regional soil health	Direct high quality organic wastes generated by the community to land application to reduce fossil inputs.
Reduce pressures on land conversion	Preserve high-quality farmland by adopting efficient land-use practices.
Educate consumers on the global impact of food choices	Establish education campaigns locally.
Advocate	Support state policies that promote soil health, land conservation, and sustainable food systems.

Land use change and forestry



Land use change and forestry deals primarily with emissions sources and sinks associated with different land cover. In general, land uses that are consistent from year to year are acting as carbon sinks, storing carbon at different rates, depending on the type of vegetation present and other conditions. Development of land both releases emissions and slows the rate that the land will remove carbon in the future.

The U.S. NDC reduction target leans heavily on this sector, with carbon sinks offsetting 11% of gross U.S. emissions in the latest Greenhouse Gas Inventory — and 88% of sequestration coming from new forest growth.

Table 5: Land use and forestry sector actions

Strategy	Action
Lead by example	Investigate opportunities to deploy carbon sequestration and soil management in municipal parks and open spaces. Adopt environmentally preferable purchasing policies that avoid products or ingredients that contribute to deforestation.
Reduce pressures on land conversion	Preserve working lands and open space from development by adopting efficient land-use practices. Establish zoning to include businesses, housing, and activity centers within walkable distance of each other (i.e. “20-minute neighborhoods”). Replace minimum parking requirements with maximum parking requirements to encourage public transit use and reduced paved space.
Improve the rate that developed lands store carbon	Manage urban forests and other green infrastructure for maximizing carbon storage. Cobenefits can include lowering urban heat-island effects and HVAC loads. Adopt an urban forestry strategy or tree canopy target, such as 40% cover. Prioritize the transformation of vacant lots and dilapidated areas into urban farms or community garden projects.
Advocate	Advocate for state policies that conserve forests, including state policies to address global climate change as its impacts, which include extreme heat and drought exacerbate deforestation through wildfires.

Waste management

The IPCC Waste category includes emissions associated with the treatment or disposal of both solid waste and wastewater. It should be noted that many cities take a methane commitment approach for calculations related to the generation of solid waste in their community. The most effective near-term strategies for reducing methane — a powerful short-lived climate pollutant — are focused on controlling current methane emissions through better controls at sources. However, long-term avoidance of additional methane should be pursued as well.

Table 6: Waste management sector actions

Strategy	Action
Lead by example	Install or improve methane capture systems at landfills and utilize captured gas for energy. Avoid low combustion-efficiency flaring wherever possible. Minimize methane leakage in collection and processing systems. Institute construction debris recycling and reuse diversion policy for municipal construction. Establish a municipal solid waste diversion rate target.
Avoid future difficult-to-capture landfill emissions.	Explore options for digestion of food, yard waste, and wastewater to produce clean-burning fuels and soil-amending byproducts. Introduce or strengthen a disposable bag fee ordinance to encourage reusable shopping bags.
Pursue circular economy market development for materials currently disposed of.	Analyze current waste stream and identify opportunities for utilizing materials as inputs in the local economy, focus on industries with consistent and uniform waste streams. Pursue source-separation wherever possible. Promote sharing economy principles to encourage "owning less and using more" utilizing social media and apps. Open a municipal tool-lending library or regular pop-up repair fairs.
Advocate	Raise the awareness of methane impacts by advocating that methane emissions be accounted for in statewide emissions inventories (several states do not account for CH4).

Transportation

Many cities measure transportation emissions with a focus on what happens within their boundaries, although transportation demand is a function of regional development patterns. Without addressing inter-city traffic, any gains made within a community will be undetectable at the national scale.

Table 7: Transportation sector actions

Strategy	Action
Lead by example	Promote commute-trip reduction programs for municipal employees. Offer government employee transit passes. Deploy municipal fleet efficiency strategies such as car-pooling software, shared mobility across departments, electric vehicles, and automated functions that reduce the need to drive. Create procedures for roadway projects to use more locally-produced and recycled content that save on costs and energy. Light-colored pavement can reduce urban area temperatures, improve road durability, and lower energy bills for surrounding buildings.
Reduce transportation demand	Coordinate land use with neighboring jurisdictions to achieve better jobs/housing balance and reduce the need for daily long-distance commuting. Install pedestrian beacons, devices designed to signal to drivers that pedestrians are crossing streets, to make walking safer.
Prioritize the movement of people and goods over vehicles, such as with a revised plan for designated streets to be multi-purpose public spaces	Adopt transportation system performance measures that evaluate projects on the quantity and quality of transportation service they provide as opposed to the number of vehicles they accommodate. Reconfigure traffic lights regularly to synchronize with shifting traffic patterns, and add volume-count monitoring stations to assist in making informed traffic system improvements. Consider automobile-free zones, such as in city center. This can be achieved for a neighborhood or for a period of time, such as during an Ecomobility Festival.

continued

Table 7, continued: Transportation sector actions

Strategy	Action
Reduce the community's dependence on single-occupancy vehicle ownership	Embrace new options for public and shared transportation to create flexible systems that meet the needs of many traveler types. Provide extended transit service to suburbs. Develop a city-wide bicycle or non-motorized transport plan. Consider creating a staff position for this role. Reduce membership fees for bike share programs for low-income earners while offering pay-with-cash options, and site infrastructure in low-income neighborhoods.
Facilitate de-carbonization of transportation	Build out charging station infrastructure while continuing action on decarbonizing grid energy supply. Several cities use a subscription service as a finance mechanism. Upgrade city vehicle fleet to electric vehicles. Incentivize electric vehicles through free public parking, free access to toll roads, and use of lanes originally reserved for public transport.
Advocate	Work with regional governments and state transportation agencies to develop transportation policies and programs that reduce GHG emissions in the sector. Encourage business community to offer bicycle racks, EV-charging parking spaces, and free or subsidized transit passes for employees. Recognize leadership with awards.

Prioritizing reductions measures

The actions presented in this guide offer examples that local governments have used to achieve reductions in GHG emissions, and are not exhaustive. To achieve deep decarbonization — and fully align with the goals of the Paris Agreement and U.S. NDC — cities and counties will need to adopt a combination of measures as part of a comprehensive climate action plan tailored to their community. One framework for formulating such a plan is laid out in the Five Milestones of Emissions Management.

The Five Milestones have been used to develop sustainability and a climate action plans in dozens of U.S. cities, and provide a stepwise framework that can help municipalities take action to reduce GHG emissions from both their community-wide and municipal operations, safeguard public health, and ensure economic and climate resilience (see Figure 4).

Figure 4: The Five Milestones provide a simple, standardized means of calculating greenhouse gas emissions, of establishing targets to lower emissions, of reducing greenhouse gas emissions and of monitoring, measuring and reporting performance.

Conduct a Baseline Inventory. The foundational step in the process is to conduct a baseline emissions inventory, something that has been done at the national level for the year 2005. (A community may choose to align with the baseline for 2005 or any other year for which robust data is available.) Hundreds of U.S. cities, towns, and counties have used the ClearPath software to capture emissions levels from all municipal operations (e.g., city-owned and/or operated buildings, streetlights, transit systems, wastewater treatment facilities) and from all community-related activities (e.g., residential and commercial buildings, motor vehicles, waste streams, industry). This inventory and forecast provide a benchmark for planning and monitoring progress.

The Paris Agreement call for parties to "Promote environmental integrity, transparency, accuracy, completeness, comparability, consistency and avoid double counting with regard to their NDCs. ICLEI helped to develop the Global Protocol for Community Scale GHG Emissions (GPC), which allows cities and counties to develop an inventory that meets these criteria. ClearPath can provide an inventory in both GPC or U.S. community protocol.

Adopt an emissions reduction target for the forecast year. Establishing an emission reduction target is essential. It both fosters political will and creates a framework that guides the planning and implementation of measures. A jurisdiction may choose to align its community's reduction target with the federal government's: From the 2005 baseline, the U.S. INDC targets a 17% reduction in economy-wide GHG emissions by 2020; 26% to 28% by 2025; and 80% by 2050 consistent with a deep decarbonization pathway beginning in 2020.

Develop a local Climate Action Plan. Local governments develop a Climate Action Plan (CAP) with robust public input from all stakeholders. The plan details the policies and measures that the local government will take to reduce greenhouse gas emissions and achieve its emissions reduction target. Most plans include a timeline, a description of financing mechanisms, an assignment of responsibility to departments and staff, and public awareness and education efforts.

The Paris Agreement calls for climate mitigation "On the basis of equity, sustainable development and efforts to eradicate poverty." Increasingly, local governments are including equity elements in the their CAPs, for example Portland, Emeryville, and New York City.

Further, the agreement calls for an increase in public and private participation in the implementation of the NDC. The Milestone three stakeholder outreach component emphasizes this need and encourages a CAP development process that is inclusive of all facets of the community.

Implement policies and measures. Jurisdiction implement the policies and measures contained in their Climate Action Plans. Typical policies and measures include energy efficiency improvements to municipal buildings and water treatment facilities, streetlight retrofits, public transit improvements, installation of renewable power applications, and methane recovery from waste management. A combination from this guide can be tailored to any locality.

Reporting local climate action

In recent years, there have been many attempts to quantify the level of impact that city actions are having or could have, including in the ICLEI-WWF report Measuring Up. All of these efforts could have benefited from more transparency in what actions cities have taken.

Although well over 300 local governments have taken up the charge of working to meet the INDC, the number reporting their actions and performance on public platforms like the carbon*n* Climate Registry and CDP are far fewer. Without that transparency, the ability to recognize what has been achieved by communities large and small standing together will be harder to demonstrate.

carbon*n* Climate Registry.

Reporting focuses on climate change mitigation as well as adaptation and resilience. Many local governments also monitor co-benefits, covering a diversity of sectors and action areas. For instance, the carbon*n* Climate Registry supports 15 unique initiatives — including the Global Covenant of Mayor for Climate & Energy, One Planet City Challenge, and 100% Renewable Energy Cities and Regions Network — to strengthen local action addressing a relevant target group or theme.

NAZCA Portal.

The carbon*n* Climate Registry is also a prime data partner of the UNFCCC's Non-State Actor Zone for Climate Action (NAZCA) Platform. NAZCA was launched at COP 20 to catalog the NAZCA actions that companies, regions, and investors are taking to address climate change — 12,549 total commitments to date. (If a community reports to carbon*n*, its actions will be recorded in NAZCA as well.)

Solutions Gateway.

Jointly implemented by ICLEI and UN-Habitat, the Solutions Gateway is an online resource platform for local governments to find and share low-emission strategies, plans, and projects. The Solutions Gateway contents are based on proven technologies and practices, distilled into Solutions case studies and Solution Packages which are drafted and peer-reviewed by experts of the respective field.

Climate adaptation and the U.S. NDC

In Lima, at COP20, nations were invited to include an adaptation component in their INDC, or to offer one separately. The U.S. offered a separate document: Submission by the United States of America to the UN Framework Convention on Climate Change, Communication of U.S. Adaptation Priorities, dated May 29, 2015.

The Priorities document acknowledges the realities of the Third U.S. National Climate Assessment — namely that all regions of the country and all its economic sectors are affected by climate change. The Adaptation Priorities document identifies both domestic and international priorities, which includes enhancing international cooperation and assisting vulnerable, developing nations in their efforts to adapt to the impacts of climate change.

U.S. domestic adaptation priorities include the execution of President Obama's 2013 Executive Order 13653 *Preparing the U.S. for the Impacts of Climate Change*, which aimed to ready the nation for climate change impacts. The President rescinded EO 13653 with his 2017 Executive Order to promote energy independence and economic growth.

Key elements of E.O. 13653 include the coordination of federal agencies in preparedness and response; modernization of the federal government's investment in climate resilience at the regional, state, and local levels; and providing data, information, and tools in support of Federal, regional, State, local, tribal, private-sector and nonprofit-sector efforts to prepare for the impacts of climate change.

E.O. 13653 also established The President's Task Force on Climate Preparedness and Resilience, of which the local government component is led by the Resilient Communities for America (RC4A) partners: ICLEI USA, World Wildlife Fund US, the National League of Cities and the U.S. Green Building Council.

The Priorities document references the recommendations for the President's Task Force on Climate Preparedness and Resilience, delivered to President Obama in 2014:

1. Streamline Application Processes

2. Enhance Awareness of Resilience Related Programs

3. Incorporate Climate Preparedness into Existing Programs

4. Enhance Coordination between Federal Agencies

5. Increase Flexibility of Federal Programs and Funding

6. Help Local Governments Replicate Proven Strategies

7. Support Regional Collaboration

8. Meet the Demand for Green Infrastructure

9. Protect and Enhance Municipal Financing Tools

To address the need for data, information and tools, the U.S. Climate Resilience Toolkit was created through an effort led by NOAA with contributions across Federal agencies and offers a comprehensive list of tools that municipalities can filter by topic and functionality.

The Communication of Adaptation Priorities recognizes the need for assessment, planning, and collaboration across various agencies and levels of government. The federal interagency Council on Climate Preparedness and Resilience, mandated by Congress under the Global Change Research Act of 1990 and operating as the U.S. Global Change Research Program, is a 13-agency collaborative whose mission is to empower the nation with global change science.

Climate adaptation is central to ensuring community-wide resilience to any number of economic and environmental shocks. Resilience-building begins with scoping the impacts of climate change to critical sectors, identifying resilience champions and putting together an adaptation team that can prepare a community's vulnerability assessment (See Figure 5). Refer to Box 3 on Page 36 for some key indicators to consider. The Preparing for Climate Change Guidebook details each step for working through development and implementation of a full Climate Preparedness Plan.

Figure 5

Steps to undertaking resilience planning in communities

The Preparing for Climate Change Guidebook was produced by ICLEI in collaboration with Climate Impacts Group and King County, WA, and remains a seminal guiding document on U.S. climate adaptation planning. The milestones here present a framework for local governments to prepare for climate impacts. Chapter numbers refer to relevant sections in the guidebook.

MILESTONE 1: Initiate your climate resiliency effort (Ch. 4-7)
- Scope the climate change impacts to your major sectors (Ch. 4)
- Pass a resolution or administrative order directing your government to prepare for climate change (Ch. 4)
- Build and maintain support to prepare for climate change (Ch. 5)
- Build your climate change preparedness team (Ch. 6)
- Identify your planning areas relevant to climate change impacts (Ch. 7)

MILESTONE 2: Conduct a climate resiliency study (Ch. 8-9)
- Conduct a climate change vulnerability assessment (Ch. 8)
- Conduct a climate change risk assessment (Ch. 9)
- Prioritize planning areas for action (Ch. 9)

MILESTONE 3: Set preparedness goals and develop your plan (Ch. 10)
- Establish a vision and guiding principles for a climate resilient community
- Set your preparedness goals
- Develop, select and prioritize your preparedness actions

MILESTONE 4: Implement your preparedness plan (Ch. 11)
- Ensure that you have the right implementation tools

MILESTONE 5: Measure your progress and update your plan (Ch. 12)
- Develop and track measures of resilience
- Update your plan

Opportunities for resilience planning

Understand Local Impacts

The American Geophysical Union's Thriving Earth Exchange (TEX) program matches communities with earth and space scientists to lay strong, scientifically based foundations for climate action and adaptation planning. ICLEI partnered with TEX for a facilitated workshop with scientists and 12 communities, including ICLEI members Reno and Missoula. In 2017, ICLEI worked with members Antioch, East Lansing, and Savannah as part of the Resilience Dialogues, a public-private collaboration to connect communities with the most appropriate resources. ICLEI acted as a community network lead to help scientists, experts and city staff deliver a set of resiliency questions and connect threats to resources.

Box 3

Adaptation indicators to consider in local resilience and preparedness planning

Weather & climate

- Local high and low temperatures
- Local precipitation levels
- Area tropical cyclone activity
- River flooding
- Drought and streamflow

Precipitation and ecosystem

- Wildfires
- Bird wintering ranges
- Lake ice extent
- Snowfall
- Snow cover and snowpack
- Coastal flooding
- Sea level rise

Human health

- Heat-related illness and deaths
- Heating and cooling degree days
- Lyme disease and West Nile Virus
- Growing season and pollen season

Source: Adapted to local relevance from U.S. EPA Climate Indicators

Inclusionary Stakeholder Engagement

ICLEI USA, the City of Hayward, and Hayward Promise Neighborhood, created the Unite2Green partnership - a program designed to meaningfully engage underserved populations in climate action planning and implementation. Unite2Green trains youth and young adults to become climate leaders and advocates. In a series of workshops and a neighborhood challenge, the Unite2Green Team is helping residents in their neighborhood save money and resources; safeguard their families' health; and protect their community from the effects of climate change.

Conduct a Vulnerability Assessment

A multi-jurisdictional climate adaptation-planning project to advance understanding, collaboration, and shared regional planning approaches for climate preparedness in the cities of San Diego, Oceanside, and Encinitas, California. ICLEI brought together major stakeholders in the region over 18 months to evaluate sea level rise risks and vulnerabilities, with an emphasis on disadvantaged communities. The project built upon resources developed and lessons learned in the Sea Level Rise Adaptation Strategy for San Diego Bay, a widely acclaimed project led by ICLEI that generated greater consensus around regional approaches to resilience around the Bay.

Nexus Opportunities

Combining climate mitigation and adaptation strategies — for example, hardening infrastructure — will increase demand for emissions-intensive cement. On the other hand, development of low-carbon distributed generation energy systems can help build resilience when they are developed in ways that allow them to operate critical community assets during disruptions to the electric grid.

Increase Your Knowledge and Connect

Resilient Cities Congress is the Annual Global Forum on Urban Resilience and Adaptation. Hosted by ICLEI each year in Bonn, Germany, the Resilient Cities Congress is the premier global platform for urban resilience and climate adaptation bringing hundreds of local leaders together to share ways they can make their cities better able to handle shocks. The Congress connects local governments with climate adaptation experts to discover challenges facing urban environments around the globe and forging partnerships for lasting impacts for cities.

Conclusion

The U.S. decision to step away from climate leadership on the global stage is a disappointing outcome, but it is heartening to see the reaction coming from thousands of mayors, council members, county commissioners, business and higher education leaders, declaring together that We Are Still In. For those cities that still struggle politically to make the case for climate action, making the case for the economic benefits of energy reduction, waste diversion and improved community health can often rally support. The capital needed to fund GHG reduction measures can sometimes be a barrier despite often large cost savings over the life of the measure. For this reason, many local governments have found attractive financing through innovative public-private partnerships, particularly with buildings and transportation, and have managed to lower programmatic costs by working in conjunction with peer cities, such as through the Vision Zero Focus Cities platform, City Energy Project, or as a member of the ICLEI network.

Regardless of whether a city or county currently is a leader or learner in terms of climate action, and no matter the combination of strategies in this guide that each is prepared to take on, the momentum of Paris has created a consensus among municipal leadership. Local elected officials and staff realize that emissions-reduction goals are important, that 100% renewable energy at the municipal level is achievable, that low-carbon economies are jobs-generating economies that improve quality of life and health outcomes, that citizens are active partners in implementing climate programs — in short, that ambition is necessary and possible, and they are ready to act.

About ICLEI USA

ICLEI - Local Governments for Sustainability is the leading global network of local governments dedicated to sustainability, resilience, and climate action, with more than 1,500 cities, towns, and counties around the globe. ICLEI provides cutting-edge resources and technical guidance to help local governments, regional authorities and higher-education affiliates reach their goals, and connects leaders to share solutions and accelerate progress. Want help implementing your local-level climate action efforts? Join ICLEI USA and access our full suite of resources and expert technical assistance to create or update your GHG inventory, develop a climate action plan, and implement reduction measures as well as access our climate equity and resiliency tools and programs.

Join the ICLEI delegation to the UNFCCC Conference of the Parties (COP). Local elected officials interested in joining ICLEI's COP delegations to the annual Conference of the Parties may express interest in credentials by emailing Executive Director Angie Fyfe at angie.fyfe@iclei.org.

Participate in the ICLEI World Congress. ICLEI's next triennial global meeting of local governments, climate experts, academics, and UN officials will take place in Montreal in June 2018. Contact us to propose a panel or express an interest as a presenter.

Learn to adapt to risk at the annual Resilient Cities Congress. More than 500 local government leaders and climate adaptation experts attend each year to discuss adaptation challenges facing urban environments. Contact us to propose a panel or express an interest as a presenter.

Tell us your quote, story, statistic, or other message in support of local climate action. ICLEI's network of more than 1,500 global cities, towns, and regions offers the chance for your words and actions to be considered, amplified and replicated. We also work alongside city network allies, such as WWF, National League of Cities, USDN, C40 and others to share your successes far and wide.

The American Resilience Roadtrip

ICLEI Local Governments for Sustainability USA

Ride along with our Resilience Roadtrip. ICLEI USA continues to make efforts to bridge the divide, through our work on the The American Resilience Roadtrip, a year-long, 50-state tour that aims to report on what unites and builds resilience on the ground across the U.S. Be in touch to arrange for us to tell your story. Follow the Roadtrip on Twitter and Instagram.

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ICLEI USA represents you in a global network

We are a country office of ICLEI-Local Governments for Sustainability, the leading global network of more than 1,500 cities, towns, and regions across more than 100 countries that are committed to building a sustainable future.

Through our work, we impact over 25 percent of the global urban population, working in several sustainability arenas: leading methods, protocols, and software tools for local climate action planning, urban sustainability, adaptation, and resilience planning, sustainable public procurement, urban biodiversity management, sustainable transportation (ecomobility), green economies, and healthy, happy communities.

Join ICLEI USA

ICLEI Local Governments for Sustainability

www.ICLEIUSA.org

ICLEI-USA@ICLEI.org

@ICLEI_USA

ICLEI USA

ICLEI USA
1536 Wynkoop St #901
Denver, CO 80202
T: +1 (510) 844-0699
F: +1 (510) 844-0698
E: iclei-usa@iclei.org

ICLEI World Secretariat
Kaiser-Friedrich-Str. 7
53113 Bonn, Germany
T: +49-228 / 97 62 99-00
F: +49-228 / 97 62 99-01
E: iclei@iclei.org