

An aerial photograph of the Nashville skyline, featuring several prominent skyscrapers and a bridge over the river. The text is overlaid on the left side of the image.

Mayor Cooper's
**SUSTAINABILITY
ADVISORY COMMITTEE
REPORT** on Metropolitan
Government of Nashville and
Davidson County's Climate Change
Mitigation Action Plan

2021

Contents

ACKNOWLEDGEMENTS	3
INTRODUCTION	4
COMMITTEE PROCESS	5
COMMITTEE OBJECTIVES	6
RECOMMENDED TARGETS	7
CO-BENEFITS	7
FORKS IN THE ROAD/LOCK-IN EFFECTS	9
LEADERSHIP INITIATIVES	9
STAFFING	10
POTENTIAL FUNDING AND FINANCING OPTIONS	11
ENVIRONMENTAL EQUITY	13
LAND USE	14
CITY'S CURRENT CARBON FOOTPRINT	15
KEY MITIGATION STRATEGIES	16
<u>EXHIBIT I: SUBCOMMITTEE RECOMMENDATIONS – NARRATIVES</u>	<u>20</u>
<u>EXHIBIT II: SUBCOMMITTEE RECOMMENDATIONS – SPREADSHEET</u>	<u>28</u>
<u>EXHIBIT III: YOUTH COUNCIL VISION STATEMENT</u>	<u>29</u>
<u>EXHIBIT IV: POTENTIAL FUNDING AND FINANCING OPTIONS FOR SUSTAINABILITY ADVISORY COMMITTEE'S CLIMATE MITIGATION ACTION PLAN RECOMMENDATIONS.....</u>	<u>30</u>
<u>APPENDIX I: MAYOR COOPER'S SUSTAINABILITY ADVISORY COMMITTEE</u>	<u>35</u>
<u>APPENDIX II: COMMITTEE MEMBERS AND AFFILIATIONS</u>	<u>35</u>
<u>APPENDIX III: COMMITTEE PUBLIC MEETING SCHEDULE</u>	<u>37</u>



ACKNOWLEDGEMENTS

Dear Readers,

This report was developed in less than a year by Nashville Mayor John Cooper’s Sustainability Advisory Committee—a group of incredibly dedicated community leaders and sustainability experts who, through their hard work and commitment, continually demonstrate the ways in which the City can lead in addressing climate change. The subcommittee co-chairs played a critical leadership role in developing the recommendations, and we particularly want to thank them for their unfailing efforts:

- > Anne Davis and Tiffany Wilmot, co-chairs of the Energy Subcommittee;
- > Bob Freeman and Amanda Garcia, co-chairs of the Green Buildings Subcommittee;
- > Erin Hafkenschiel and Mary Vavra, co-chairs of the Mobility Subcommittee;
- > Mekayle Houghton and Jenny Park, co-chairs of the Natural Resources Subcommittee; and
- > Todd Lawrence and John Sherman, co-chairs of the Waste Reduction Subcommittee.

The report would not have been possible without the help of several other people.

Mary Beth Ikard and Mike Jameson, who lead the mayor’s sustainability initiatives, provided invaluable guidance and support for the Committee’s work. Laurel Creech and her General Services Department Sustainability Team, including Michelle Hamman, always had answers to the Committee’s questions and responded quickly and cheerfully—and, in carefully reviewing our work, greatly improved it (but are in no way responsible for the ultimate content of the report, which is solely attributable to the Committee members).

Jonathan Gilligan and Michael Vandenberg, professors at Vanderbilt University and two of the nation’s leading experts on climate change, served as advisers to the Committee and provided vital input and perspective.

Environmental Law Institute Research Associate Akielly Hu’s dedication and attention to detail, as well as her exemplary research and drafting skills, made this report possible. Leigh Shoup and Ashley Majewski provided valuable support to the Committee throughout the process.

We are privileged to co-chair this Committee and thank Mayor Cooper for his interest and commitment to reducing our City’s carbon footprint while ensuring that Nashville remains prosperous.

Linda Breggin and Eric Kopstain
Co-Chairs, Mayor Cooper’s Sustainability Advisory Committee



Mayor Cooper's Sustainability Advisory Committee Report on the Metropolitan Government of Nashville and Davidson County's Climate Change Mitigation Action Plan

INTRODUCTION

There is overwhelming scientific consensus that human activities are driving climate change, with many studies attributing both incremental change and extreme weather events to anthropogenic climate change.¹ These include extreme heat, natural disasters, sea level rise, species extinction, biodiversity loss, ocean acidification, food insecurity, water shortages and reduced economic growth.² The Paris Agreement set a goal of limiting global average temperature rise to no more than 2°C above preindustrial levels.³ In order to reach the 2°C target, the United States, as well as other developed countries, must reduce their greenhouse gas emissions by at least 80% from 1990 levels by 2050.⁴ Because cities make up over half of the world's population and consume more than two-thirds of the world's energy,⁵ they play a critical role in both climate change mitigation, as well as climate adaptation—responding to the negative impacts of climate change. Consequently, cities around the world have adopted the 2°C target as they strive to address climate change.⁶

Committee resources, including Nashville's 2017 greenhouse gas inventory, member names and affiliations, and public meeting documents, can be found at [Nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx](https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx)

Each city faces its own mitigation and adaptation challenges. It is estimated that between 2025 and 2035, the Metropolitan Government of Nashville and Davidson County (referred to herein as Nashville, Metro or the City) will face myriad climate risks, including an increased number of intense storms and tornadoes and more frequent flooding and extreme heat days per year.⁷ Nashville also will be adversely affected by the economic and social disruptions arising from climate change elsewhere in the United States and around the globe.⁸

Like other cities, Nashville's energy use, transportation and other human activities produce significant greenhouse gas emissions that contribute to climate change. According to Nashville's 2017 greenhouse gas inventory, emissions from Metro government operations totaled roughly 560,000 metric tons—buildings and facilities accounted for the

¹ U.S. Global Change Research Program (USGCRP) Fourth National Climate Assessment: Volume II, 25–26 (2018).

² See, Intergovernmental Panel on Climate Change, Global Warming of 1.5°C: Headline Statements from the Summary for Policymakers (2019), https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Hheadline-statements.pdf.

³ Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16–1104 (Agreement aims for “holding the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above preindustrial levels).

⁴ James H. Williams et al., Pathways to Deep Decarbonization in the United States U.S. 2050 Vol. 1 Technical Report (rev. with technical supplement 2015), <https://usddpp.org/downloads/2014-technical-report.pdf>; Michael P. Vandenbergh, Jim Rossi and Ian Faucher, The Gap-Filling Role of Private Environmental Governance, 38 Va. Env'tl. Law Journal 1 (2020).

⁵ *Why join us*, Global Covenant of Mayors for Climate and Energy, <https://www.globalcovenantofmayors.org/why-join-us/> (last accessed Oct. 21, 2020).

⁶ *Declaration, We Are Still In*, <https://www.wearestillin.com/we-are-still-declaration> (last visited Oct. 26, 2020); *States United for Climate Action*, U.S. Climate Alliance, <https://www.usclimatealliance.org/> (last visited Oct. 26, 2020).

⁷ *Nashville, Temperate: Climate Adaptation Planning Tool*, <https://temperate.io/>

⁸ Tamma A. Carleton and Solomon M. Hsiang, *Social and economic impacts of climate*, 353 *Science* (2016), <https://science.sciencemag.org/content/353/6304/aad9837>; James Bruggers, *Why tens of thousands of US climate refugees could end up in Kentucky and Indiana*, *Courier Journal* (June 1, 2017) <https://www.courier-journal.com/story/tech/science/watchdog-earth/2017/06/01/tens-thousands-us-climate-refugees-could-end-up-kentucky-and-indiana/359814001/> (Nashville population estimated to increase by over 50,000 due to sea level rise migration).



largest portion. Community emissions totaled roughly 11.4 million metric tons—almost half from transportation and the other half from energy use in commercial, residential and industrial buildings.⁹

It is against this challenging backdrop that Nashville has a critical opportunity to address climate change. This report outlines a range of recommendations and actions for Nashville to reduce its contributions to climate change and at the same time ensure a healthy, prosperous and resilient future. Climate mitigation actions will not only allow Nashville to contribute to reducing the negative impacts of climate change, but also have a range of other benefits that include fostering economic development and job creation, improved health, economic inclusion, environmental equity and enhanced air quality.

Recognizing both the challenges and opportunities, Nashville Mayor John Cooper announced in February 2020 the establishment of a standing Sustainability Advisory Committee, comprising close to 50 community members with a wide range of experience, and charged it with providing advice on a range of sustainability issues.¹⁰ Several months earlier in December 2019, the mayor announced that his administration had rejoined the Global Covenant of Mayors for Climate and Energy.¹¹ GCoM is a voluntary alliance of more than 10,000 cities and local governments that have made voluntary commitments to reduce their carbon footprints, which could, in aggregate, “account for 2.3 billion tons of CO₂e annual emissions reduction, matching yearly passenger road emissions from the U.S., China, France, Mexico, Russia and Argentina combined.”¹² Participating cities are required to develop a citywide climate action plan within three years that includes, but is not limited to, a citywide greenhouse gas emissions target and the emissions reduction actions needed to meet the target.¹³ Given the importance and timeline of the climate action plan, the Committee determined that the mitigation component of the plan should be its first area of focus.¹⁴

Although GCoM requires participants to submit progress reports every two years, plan updates may be provided when there are significant changes.¹⁵ In keeping with this dynamic approach, the Committee emphasizes that this report lays out its current recommendations, but its mitigation plan advice may be updated in order to reflect changing circumstances and new information.

COMMITTEE PROCESS

The Committee divided into subcommittees based on the components of the climate action plan: energy, buildings, mobility, waste, and natural resources—each with co-chairs.¹⁶ Each subcommittee developed a set of recommendations that includes strategies, actions, sub-actions and benefits statements, as well as capital cost and operational cost range estimates. Exhibit I includes the consolidated recommendations of the subcommittees. Each subcommittee was assigned Metro agency staff who served as valuable advisory resources but did not ultimately approve the recommended actions selected by the subcommittee. **The recommendations are wholly attributable**

⁹ See, *Sustainability Advisory Committee*, Metro Government of Nashville & Davidson County, Tennessee, <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx> (last visited Oct. 21, 2020).

¹⁰ See, Appendix I. See also, *Sustainability Advisory Committee*, Metro Government of Nashville & Davidson County, Tennessee, <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee>.

¹¹ See, *City Dashboard: Nashville, TN*, Global Covenant of Mayors for Climate and Energy, <https://www.globalcovenantofmayors.org/cities/nashville-tn/> (last visited Oct. 14, 2020).

¹² *Mayor Cooper Announces Multiple Initiatives to Combat Climate Change and Promote Sustainability, Signs Global Covenant of Mayors*, Metro Government of Nashville & Davidson County, Tennessee (Dec. 5, 2019), <https://www.nashville.gov/News-Media/News-Article/ID/9133/Mayor-Cooper-Announces-Multiple-Initiatives-to-Combat-Climate-Change-and-Promote-Sustainability-Signs-Global-Covenant-of-Mayors.aspx>.

¹³ *Who We Are: This Is a Powerful and Historic Response to Climate Change*, Global Covenant of Mayors for Climate and Energy, <https://www.globalcovenantofmayors.org/about> (last visited Oct. 14, 2020).

¹⁴ See, Global Covenant of Mayors for Climate and Energy, A Definition of Compliance for Cities that Use CDP or ICLEI’s Carbon Climate Registry for Reporting (2018), <https://www.globalcovenantofmayors.org/wp-content/uploads/2018/05/GCoM-Definition-of-Compliance-2018.pdf>.

¹⁵ Two members of the Committee worked independently with the mayor’s staff to develop an adaptation plan in tandem with the Committee’s development of recommendations on mitigation.

¹⁶ Global Covenant of Mayors for Climate and Energy, Global Covenant of Mayors Common Reporting Framework 36 (Version 6.1, Sept. 13, 2018), https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.

¹⁷ See, *Sustainability Advisory Committee*, Metro Government of Nashville & Davidson County, Tennessee, <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx> (last visited Oct. 14, 2020).



to the volunteers serving on the Committee. Recordings and materials from the full Committee meetings are available on Metro’s website.¹⁷

The Committee also obtained input from the Mayor’s Youth Council, a group of local high school student leaders who worked with the subcommittee co-chairs, conducted a survey of Nashville youth, participated in Committee meetings, and authored a vision statement imagining a “healthy, safe and equitable Nashville” (see Exhibit III, “Youth Council Vision Statement”). Moving forward, Nashville should continue to engage its youth, as they are the City’s long-term environmental stewards and the generation most affected by climate change in the near future.

Several factors affected the Committee’s ability to involve the public in the development of its recommendations, including the timeframe for submission of the climate action plan and a global pandemic that limited in-person meetings and affected the number and timing of hours that volunteer Committee members had available. Fortunately, the rich work already produced from other initiatives, upon which the Committee relied, was developed with substantial community input.¹⁸ In addition, the climate action plan developed by the mayor’s staff and Metro department staff, which will take into account the Committee’s recommendations, will be available for public comment. Nevertheless, moving forward the Committee will work to ensure meaningful community involvement, particularly from low-income communities and communities of color.

COMMITTEE OBJECTIVES

The Committee’s key objectives were to:

- > Identify the highest potential mitigation actions based on local, national and international best practices; specific expertise of Committee members; and prior Nashville initiatives.
- > Provide a detailed list of additional mitigation actions, including low-cost actions, which can be included in the City’s climate action plan.
- > Explore and make recommendations on crosscutting challenges, including financing mitigation actions, ensuring environmental equity, and identifying potential leadership initiatives.
- > Develop an interactive tool to visualize and compare different possible scenarios for achieving the City’s mitigation targets. (Note: This tool is expected to be useful both for policy analysis within Metro Government and for communicating with the public about the trade-offs and constraints the City faces in meeting its targets and will be accompanied by full documentation about its assumptions and methods in order to be fully transparent to Metro staff and to the public.)

The Committee recommends a Metro government and community-wide target of *80% reduction in annual greenhouse gas emissions from 2014 levels by 2050*, in order to meet the 2°C goal adopted by the majority of nations and many of Nashville’s peer cities.

¹⁷ Meetings were held on Feb. 20, June 25, July 30 and Aug. 17. Presentations, agendas and recordings are listed at

<https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx>.

¹⁸ The NashvilleNext Plan engaged thousands of residents through surveys, community conversations, and youth engagement led by a community engagement committee. Similarly, Plan to Play conducted online and phone surveys, held community meetings in regionally diverse locations, and interviewed stakeholders and partner agencies such as local nonprofits and environmental groups. The Solid Waste Master Plan initiative held workshops with a Solid Waste Task Force consisting of local stakeholders, as well as public meetings and an online survey. See, *The NashvilleNext Plan*, Metro Government of Nashville & Davidson County, Tennessee,

<https://www.nashville.gov/Government/NashvilleNext/The-NashvilleNext-Plan.aspx> (last visited Oct. 14, 2020); Megan Barry et al., Plan to Play: The Nashville Parks and Greenways Master Plan, Metro Parks Nashville (March 2017),

<https://www.nashville.gov/Portals/0/SiteContent/Parks/docs/PlanToPlay/2017-04-12%20Parks%20MP%20Book.pdf>; Metro Government of Nashville & Davidson County, Solid Waste Master Plan: Achieving Zero Waste (August 2019),

<https://www.nashville.gov/Portals/0/SiteContent/pw/docs/recycle/MasterPlan/SWMP%20Complete.pdf>.



RECOMMENDED TARGETS

The Committee recommends both a Metro government and community-wide target of **80% reduction in annual greenhouse gas emissions from 2014 levels by 2050**. These targets align with international targets adopted by the vast majority of nations and honor the City’s commitment as one of 290 cities that pledged to meet those targets as part of the We Are Still In initiative.¹⁹ In addition, the targets are consistent with peer cities, such as Indianapolis, and cities that are leaders on climate mitigation, such as Seattle.

CO-BENEFITS

Climate change mitigation actions will not only reduce the City’s carbon footprint, but also create numerous, important co-benefits. Examples of co-benefits include:

- > Improved public health.
- > Economic inclusion.
- > Job creation.
- > Environmental equity.

Not surprisingly, nonclimate co-benefits are a key motivator for cities that adopt climate change mitigation actions, and stakeholders and decision-makers are more likely to support such measures when the full picture of the benefits is presented.²⁰ Although the Committee was not able to fully assess or quantify the co-benefits of the actions recommended, efforts to do so should proceed—particularly for the actions with the largest mitigation potential.²¹

The climate change mitigation actions will forward numerous, important co-benefits, including improved public health, economic development and environmental equity.

Health Benefits

If implemented, the Committee’s recommendations to increase renewable energy generated from the grid could lead to considerable health benefits. One 2016 study estimated that increasing solar energy in the U.S. by 27% by 2050 could present air quality and health benefits valued at \$77–\$298 billion.²² Another study found that clean energy standards that reduce carbon emissions by 14% by 2030 in 17 states in the Northeast U.S. could lead to average health co-benefits of \$148 per ton of carbon dioxide equivalent due to reduced particulate matter and ground level ozone.²³ The Committee’s recommendations to reduce conventional vehicle use and encourage multimodal transportation also have potential health benefits. A 2012 study suggests that eliminating vehicle round trips of ≤ 5 miles in 11 metropolitan areas in the upper Midwestern United States would reduce pollution and result in net health benefits of \$4.94 billion per year.²⁴ And, the City of Minneapolis estimated savings of \$1.0–\$3.7 million due to improved health metrics associated with achieving their climate action plan’s vehicle miles traveled reduction goal.

¹⁹ See, *Declaration, We Are Still In*, <https://www.wearestillin.com/we-are-still-declaration> (last visited Oct. 14, 2020).

²⁰ See, *CDP et al., The Co-benefits of Climate Action: Accelerating City-level Ambition 7* (August 2020), <https://www.cdp.net/en/research/global-reports/co-benefits-climate-action>.

²¹ Examples of tools used to identify co-benefits include the Urban Action Impacts Framework and the C40 Inclusive Planning Toolbox. See, Samy Porteron et al., *Climate Action Impacts Framework*, C40 Cities Climate Leadership Group & Ramboll (2020), https://c40-production-images.s3.amazonaws.com/other_uploads/images/1605_C40_UCAIF_report_V3.original.pdf?1518203136; Mehrnaz Ghojeh, et al., *Inclusive Planning Executive Guide*, C40 Cities Leadership Group (October 2019), https://cdn.locomotive.works/sites/5ab410c8a2f42204838f797e/content_entry5ab410fb74c4833febe6c81a/5d9357e4b8f2fb0080030eb5/files/Inclusive_Planning_Executive_Guidance.pdf?1578405931.

²² Ryan H. Wisser et al., *On the Path to Sunshot: The Environmental and Public Health Benefits of Achieving High Penetrations of Solar Energy in the United States*. U.S. Dep. Energy, 472–486 (May 2016), <https://eta-publications.lbl.gov/sites/default/files/65628.pdf>.

²³ Tammy M. Thompson et al., *Air quality co-benefits of subnational carbon policies*, 66:10 J. Air & Waste Mgmt Ass’n 988 (May 24, 2016).

²⁴ Maggie L. Grabow et al., *Air Quality and Exercise-Related Health Benefits from Reduced Car Travel in the Midwestern United States*, 120:1 *Env’tl. Health Perspectives* 68 (January 2012).

²⁵ Similarly, the Committee’s recommendations to increase bicycling also could lead to health benefits amounting to as much as five times the cost of investments.²⁶ In sum, the value of the health benefits associated with climate change mitigation actions can be staggering.

Economic Development

A recent report by David Gardiner & Associates concludes that the relative availability of renewable energy can influence where businesses decide to locate, as more and more companies prioritize greenhouse gas emissions reductions from their own operations.²⁷ Close to half of Fortune 500 companies have set carbon reduction targets, and more than 200 companies have joined the RE100 initiative and committed to procuring 100% renewable energy. Utilities’ carbon reduction goals are also increasingly important to small and medium-sized businesses due to the growth in Fortune 500 supply chain decarbonization commitments.²⁸ While progress has been made to achieve a 60% carbon-free generation mix across the Tennessee Valley Authority’s portfolio, the Nashville Carbon Competitiveness report concludes that TVA lags behind the utilities supplying Nashville’s competitor cities in terms of the current percentage of renewable energy and the carbon reduction commitments beyond 2030, and this may put Nashville at a competitive disadvantage for new business relocations and jobs.²⁹ By committing to more ambitious carbon reductions and increasing the City’s renewable energy capacity, Nashville will become more attractive to companies with greenhouse gas reduction commitments that are looking to expand, relocate or site new facilities. Other mitigation actions that may foster economic development include improved energy efficiency for buildings, which can increase property values and lead to job creation in housing renovation and retrofit industries.³⁰

Equity

The Committee’s recommendations to assist low-income households with weatherization, including improved insulation, could not only reduce the City’s carbon footprint, but also address the disproportionate energy burden on these households and improve public health. A 2016 study found that increasing insulation standards to International Energy Conservation Code 2012 levels in all single-family U.S. homes would lead to annual reductions of 80 million tons of CO₂ from fossil fuel-fired electricity generating units. Co-benefits from energy savings, lives saved, and the social cost of carbon were valued at an average of \$49 per ton of CO₂ reduced.³¹ For the state of Tennessee, the annual co-benefits were estimated at \$410 million.³² Continuing to regularly update the codes ensures that these equity and health benefits are realized.

²⁵ *Minneapolis Climate Action Plan: Public Health and Environmental Justice*, City of Minneapolis, Minn.,

<http://www2.minneapolismn.gov/www/groups/public/@citycoordinator/documents/webcontent/wcmslp-101116.pdf> (last visited Oct. 14, 2020).

²⁶ Andy Gouldson et al., *The Economic and Social Benefits of Low-Carbon Cities: A Systematic Review of the Evidence*, Coalition for Urban Transitions (2018), https://newclimateeconomy.report/workingpapers/wp-content/uploads/sites/5/2018/06/CUT2018_CCCEP_final_rev060718.pdf.

²⁷ See, David Gardiner & Associates, *Nashville Carbon Competitiveness* (September 2020), <https://www.dgardiner.com/draft-nashville-carbon-competitiveness/>; Bruggers, *The TVA’s slower pace toward renewable energy weakens Nashville’s future, report finds*, *Tennessean*, (Oct. 13 2020), <https://www.tennessean.com/story/news/local/2020/10/14/tvas-slower-pace-toward-renewable-energy-weakens-nashvilles-future-report-finds/5979242002/>.

²⁸ *Id.* at 8.

²⁹ *Id.* at 5.

³⁰ See, Graham Floater et al., *Co-benefits of urban climate action: A framework for cities*, *Economies of Green Cities Programme* et al. (September 2016), http://eprints.lse.ac.uk/68876/1/Cobenefits_Of_Urban_Climate_Action.pdf.

³¹ John Levy et al., *Carbon Reductions and Health Co-benefits from US Energy Efficiency Measures*, 11:3 *Envtl. Res. Letters* 034017 (2016), <https://iopscience.iop.org/article/10.1088/1748-9326/11/3/034017/meta>.

³² John Levy et al., *Carbon Reductions and Health Co-benefits from US Energy Efficiency Measures: Supplementary Methods*, IOP Science, https://iopscience.iop.org/1748-9326/11/3/034017/media/erl034017_suppdata.pdf (last visited Oct. 14, 2020).

FORKS IN THE ROAD/LOCK-IN EFFECTS

Cities often focus on the “low hanging fruit”—mitigation measures that are low-cost and politically palatable. Nevertheless, it is critical that Nashville avoid making decisions in the near term that can ultimately preclude it from achieving its long-range targets, because it is much easier and cheaper to build new facilities and infrastructure with clean technology than to use dirty technology and then replace or retrofit it later. Vanderbilt professors Michael Vandenbergh and Jonathan Gilligan identify “three essential choices or forks in the road” that typically result in 60% to 70% greenhouse gas reductions and make most cities’ mitigation goals attainable.³³ These “big rocks” require careful short- and long-term attention:

- > Decarbonization of the electrical grid.
- > Electrification of motor vehicles, including government and commercial fleets and privately owned vehicles in the community.
- > Electrification of buildings.

The Committee’s recommendations address these critical areas and identify key decision points, such as purchasing new diesel bus fleets or failing to update energy building codes every three years, that will seriously impede Nashville’s ability to reach its targets and therefore should be avoided.

LEADERSHIP INITIATIVES

The challenge of reducing a city’s carbon footprint is significant and demands leadership from and partnership across the public and private sectors. The mayor has the authority to call on the business, philanthropic, university and nonprofit communities to support implementation of the climate action plan. Leadership initiatives in cities around the country play a significant role in reducing the burden on city staff and municipal agency budgets in implementing their climate action plans.

The City’s role could range from simply meeting with leaders from each sector to request their general support of the climate action plan to more proactive approaches such as requesting specific mitigation or project pledges.

Businesses

Mayors of large and small cities have called on businesses (and in some cases, universities and/or nonprofits) to help implement their climate action plans.³⁴ In some cities, businesses are asked to make pledges to reduce their carbon footprints and report on their progress; in other cities, businesses have taken responsibility for implementation projects, such as installing solar panels on schools.³⁵ Mayors also may focus on a particular carbon source, such as large buildings, and challenge their owners to reduce energy use.³⁶

The **three essential choices** or “forks in the road” that typically result in municipalities achieving greenhouse gas reduction goals include:

- Decarbonization of the electrical grid.
- Electrification of motor vehicle fleets.
- Electrification of buildings.

³³ See, Michael P. Vandenbergh and Jonathan M. Gilligan, *Forks in the Road*, Vanderbilt Law Research Paper No. 20-15, Duke Environmental Law & Policy Forum, forthcoming, <https://ssrn.com/abstract=3543639>.

³⁴ See, e.g., *Purpose*, Boston Green Ribbon Commission, <https://www.greenribboncommission.org/story/purpose/> (last visited Oct. 14, 2020); City of Evanston, City of Evanston Climate Action Plan: Implementation, Accountability and Partnerships 31 (November 2018), <https://www.cityofevanston.org/home/showdocument?id=45170#page=31>; *The Climate Group Launches Forward Chicago*, The Climate Group (Feb. 24, 2009), <https://www.theclimategroup.org/what-we-do/news-and-blogs/The-Climate-Group-launches-Forward-Chicago>.

³⁵ See, e.g., *Carbon Challenge*, NYC Office of Sustainability, <https://www1.nyc.gov/site/sustainability/our-programs/carbon-challenge.page> (last visited Oct. 14, 2020); *The Climate Group Launches Forward Chicago*, The Climate Group (Feb. 24, 2009), <https://www.theclimategroup.org/what-we-do/news-and-blogs/The-Climate-Group-launches-Forward-Chicago>.

³⁶ See, e.g., *City Saves Energy, Money and Cuts Carbon Emissions with RePowerPVD & Other Municipal Programs*, City of Providence, R.I. (2018), <https://www.providenceri.gov/city-saves-energy-money-cuts-carbon-emissions-repowerpvd-municipal-programs/>.



Philanthropies

Mayors are working with locally based philanthropies that support climate action plans to provide philanthropy-seeded funds that assist climate projects in diverse communities³⁷ and the development of sophisticated tools used by municipal staff, such as models for estimating emissions reductions.³⁸ Local philanthropies also have funded staff positions in city governments dedicated to expanding opportunities for residents in low-income communities and addressing climate resiliency

Nonprofit Leadership Initiatives

In some cities, in addition to participating in multistakeholder initiatives,³⁹ nonprofits sponsor independent efforts such as networks of local organizations to initiate climate action plan projects.⁴⁰ Nonprofits also support the work of municipal governments through programs such as roundtable discussions with elected mayors and their staff to share best practices and strategies.⁴¹

Regional Leadership Initiatives

Some U.S. mayors are collaborating with their fellow mayors on climate mitigation efforts.⁴² Regional options for Nashville could include new initiatives or further support for current collaborations among mayors in the TVA service area through the Southeast Sustainability Directors Network to identify ways to work with TVA to provide more renewable energy—a necessity if Nashville is to reach its targets.

Employee Challenges

Mayors are challenging municipal employees and departments to lead by example on climate change mitigation. These initiatives take a variety of approaches, including sponsoring competitions among teams of employees from neighboring cities⁴³ or giving municipal agencies sustainability awards or funding for innovative projects.⁴⁴

STAFFING

To implement its climate action plan and reach its greenhouse gas emissions targets, Nashville will need to augment its talented—but very limited—sustainability staff. Hundreds of cities in the Southeast and across the country have established organizational models that include dedicated offices of sustainability, in addition to sustainability staff in other departments. These include:

- > Louisville Office of Sustainability—three full-time equivalents and 16 additional FTE in other offices and departments.
- > Charlotte Office of Sustainability—two FTE and more than nine additional FTE in other offices and departments.

³⁷ See, e.g., Sarah Lemagie, *New Charitable Fund to Support Local Action on Climate Change: Minneapolis Climate Action and Racial Equity Fund starts accepting grant applications today*, Minneapolis Foundation (April 18, 2019), <https://www.minneapolisfoundation.org/new-charitable-fund-to-support-local-action-on-climate-change/>.

³⁸ See, e.g., *Philanthropy in Action through Regional Climate Planning*, San Diego Foundation (July 10, 2017), <https://www.sdfoundation.org/news-events/sdf-news/philanthropy-action-regional-climate-planning/>.

³⁹ See, e.g., *Purpose*, Boston Green Ribbon Commission <https://www.greenribboncommission.org/story/purpose/> (last visited Oct. 14, 2020); *The Climate Group Launches Forward Chicago*, The Climate Group (Feb. 24, 2009), <https://www.theclimategroup.org/what-we-do/news-and-blogs/The-Climate-Group-launches-Forward-Chicago>.

⁴⁰ See, e.g., *Berkeley Climate Action Coalition*, Ecology Center, <https://ecologycenter.org/climatecoalition/> (last visited Oct. 14, 2020).

⁴¹ *Municipal Local Government Partnerships*, Cleo Institute, <https://cleoinstitute.org/municipal-locals-government-partnerships/> (last visited Oct. 14, 2020).

⁴² *Mayors' Commission on Climate Change, Achieving Carbon Zero in Sacramento and West Sacramento by 2045* (June 2020), <https://www.lgc.org/wordpress/wp-content/uploads/2020/06/Mayors-Commission-on-Climate-Change-Final-Report.pdf>.

⁴³ See, e.g., *Rochester city employees compete in Commute SMART Challenge*, Fosters.com (May 2, 2017), <https://www.fosters.com/news/20170502/rochester-city-employees-compete-in-commute-smart-challenge>; Denise Blaha, *Keene and Portsmouth Employees Compete in a Municipal Carbon 'Throwdown'*, New Hampshire Municipal Association (2009), <https://www.nhmunipal.org/town-city-article/keene-and-portsmouth-employees-compete-municipal-carbon-%E2%80%98throwdown%E2%80%99>.

⁴⁴ See, e.g., *Mayor Gray Announces Winners of 2nd Annual Sustainable DC Innovation Challenge Grants*, D.C. Government: Department of Energy and Environment (Feb. 12, 2014), <https://doee.dc.gov/release/mayor-gray-announces-winners-2nd-annual-sustainable-dc-innovation-challenge-grants>; see also, *Obama Administration Announces 2016 Greenhouse Gas Targets and Sustainability Plans; Highlights Federal Leadership on Climate Action*, The White House (Nov. 23, 2015), <https://obamawhitehouse.archives.gov/the-press-office/2015/11/23/obama-administration-announces-2016-greenhouse-gas-targets-and>.



- > Austin Office of Sustainability—12 FTE and seven additional FTE in other offices and departments.

In comparison, the Nashville Mayor’s Office has approximately 1.5 FTE dedicated to sustainability, allocated between the director of sustainability and resilience (1.0 FTE) and the director of legislative affairs (approximately 0.5 FTE). The Division of Sustainability in the Department of General Services houses four FTE dedicated to sustainability; however, staff members in General Services are limited in their ability to work on efforts outside of Metro. Across all other Metro departments, five employees work on sustainability for a percentage of their time.

Nashville has the opportunity to join its peer cities and step up its investment in implementation of the climate action plan—and serve as a leader on sustainability in the Southeast region. The Committee recognizes current funding constraints, but staff that specialize in sustainability play a critical role in the long-term future of Nashville, and sufficient staffing to achieve Nashville’s targets will pay off in myriad ways, including increases in livability, health benefits and economic development. Furthermore, philanthropic, or other forms, of support could be pursued to support additional positions. It also is common for organizations to reinvest some portion of quantified savings generated by the efforts of its sustainability staff as means to grow the team and further its impact.⁴⁵

Exhibit IV includes an outline of potential financing and funding options that could support the Sustainability Advisory Committee’s recommended climate change mitigation actions.

FUNDING AND FINANCING STRATEGIES

Several of the key mitigation strategies recommended by the Committee do not require large expenditures, such as working with the private sector, Nashville Electric Service and TVA to decarbonize the grid. In addition, a full cost picture is encouraged since, in many cases, the social and environmental benefits of the recommended actions, including improved public health, will partially or fully offset the financial costs.

However, the Committee recognizes the significant financial cost associated with some of its recommendations and advises the mayor to establish a task force to identify feasible green finance and other innovative funding mechanisms to support the City’s climate action plan. Financing options to explore may include:

Green Municipal Bonds

Green bonds can be used to finance a range of local government infrastructure projects—some of which include common climate action plan mitigation measures, such as efficiency upgrades to government buildings and residential units, as well as electrifying transit systems. Green bonds can be issued as general obligation bonds—reliant on the City’s “full faith and credit”—or as revenue bonds, which are tied at least in part to specific fees, such as water and sewage fees.⁴⁶ In some cases, green bonds may be certified and issued in accordance with the Green Bond Principles, which require tracking and reporting on their “green” impact.⁴⁷

⁴⁵ See, e.g., Keven Kirsch, *Cost Savings Being Reinvested in Sustainability Initiatives*, UGA Today (Dec. 8, 2014), <https://news.uga.edu/cost-savings-being-reinvested-in-sustainability-initiatives/>.

⁴⁶ Nashville has previous experience with green bonds. See, *Official Statement: Series 2017 Bonds*, Metro Government of Nashville & Davidson County, Tennessee (Oct. 26, 2017), [https://www.nashville.gov/Portals/0/SiteContent/Finance/docs/Treasury/Debt%20Continuing%20Disclosure%20Docs/Water%20and%20Sewer%20Revenue%20Bonds,%20Series%202017A%20\(Green%20Bonds\),%20and%20Water%20and%20Sewer%20Revenue%20Bonds,%20Series%202017B.pdf](https://www.nashville.gov/Portals/0/SiteContent/Finance/docs/Treasury/Debt%20Continuing%20Disclosure%20Docs/Water%20and%20Sewer%20Revenue%20Bonds,%20Series%202017A%20(Green%20Bonds),%20and%20Water%20and%20Sewer%20Revenue%20Bonds,%20Series%202017B.pdf).

⁴⁷ *Green Bond Principles*, International Capital Market Association, <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/> (last visited Oct. 14, 2020).

Energy Savings Performance Contracts

Figure GF-1. ESCO-Agency Finance Flow



Source: USDOE, Office of Energy Efficiency and Renewable Energy

Municipalities can establish energy savings performance contracts with energy services companies to finance and install projects designed to improve energy efficiency of buildings and reduce maintenance costs—usually over a 10- to 20-year period. These contracts typically guarantee energy savings and use the savings from the energy efficiency projects to pay the ESCO and offset capitalization, operation and maintenance and monitoring expenses (Figure GF-1). For example, contracts could be used to retrofit municipal buildings. Although there are considerable cost concerns with ESCOs (see Exhibit IV, Table 1), they can be a viable option in certain circumstances—for example, when internal

staffing expertise is lacking and the ability to finance capital investments in energy cost saving measures is limited.

Utility Investments

Utilities around the country are increasingly playing a role in the development of electric vehicle charging infrastructure,⁴⁸ including funding to support municipal electric bus fleets. In some cases, utilities are also supporting the upfront purchase costs of electric buses or offering special rate structures for municipal electric buses.⁴⁹ In turn, utilities may benefit from the increased electric power sales. Utilities also are showing a commitment to low- and moderate-income communities by offering on-bill financing programs such as those offered by Eetility,⁵⁰ which helps utilities “identify and upgrade energy burdened homes,” providing another option for financing energy equity actions.

Philanthropic Initiatives

As investors and grant-makers, philanthropies, especially private foundations, and family offices, can play a role in financing climate action plan development and implementation, as discussed in the Leadership Initiatives section. For example, some portion of the \$1.1 billion plus of assets held by Middle Tennessee foundations could be invested in local climate change mitigation efforts. Local green bonds could be part of foundations’ fixed income portfolios.

Local funders also could look to equity investments in local businesses and social entrepreneurs that are offering creative solutions for addressing climate change. They also could consider accepting concessionary (below market) returns for investments that have clear greenhouse gas reducing potential but are not yet market competitive. This type of “catalytic capital,” a term coined by the John D. and Catherine T. MacArthur Foundation, can be critical in helping build and scale creative private sector ideas.

As grant-makers, Middle Tennessee foundations can support the climate action plan through a variety of grants including those that build the capacity of nonprofits to educate and advocate for the plan. The task force could assess whether Middle Tennessee foundations have the funds and interest in making such investments.

Finally, foundations also can make program-related investments in pursuit of their own charitable missions rather than to generate income. Often offered as below-market loans, guarantees or equity investments, PRIs can be made in nonprofit organizations or for-profit businesses. They carry no financial risk, as they are not investments from the corpus intended to make risk-adjusted market returns, but rather come from foundations’ grant-making budgets and count toward the IRS-mandated 5% of assets that must be paid out each year.

⁴⁸ Alexandra B. Klass, *Public Utilities and Transportation Electrification*, 104 Iowa L. Rev. 545 (2019), <https://ilr.law.uiowa.edu/print/volume-104-issue-2/public-utilities-and-transportation-electrification/>.

⁴⁹ Matt Casale and Brendan Mahoney, *Paying for Electric Buses: Financing Tools for Cities and Agencies to Ditch Diesel*, U.S. PIRG Education Fund (Fall 2018), <https://uspig.org/sites/pirg/files/reports/National%20-%20Paying%20for%20Electric%20Buses.pdf>.

⁵⁰ *What we do*, Eetility Company, <https://www.eetility.com/what-we-do> (last accessed Nov. 18, 2020).



In addition to green bonds, fee-for-service arrangements, utility investments and philanthropic initiatives, the task force could explore the finance mechanisms and specific grant opportunities summarized in Exhibit IV.

ENVIRONMENTAL EQUITY

Nashville, like many cities, has a challenging history around equity that includes, and certainly is not limited to, [residential redlining](#), interstate highway construction through historically Black neighborhoods, and disproportionate siting of landfills and other harmful industrial uses in specific quadrants of the City.

The Committee recommends establishing an environmental equity task force, which would:

- Establish routinized, replicable processes for early, continuous and meaningful involvement from all residents in the implementation of the climate action plan.
- Develop and utilize screening tools to evaluate whether climate change mitigation strategies and actions support equity goals.
- Identify long-term capacity building and outreach efforts.
- Explore and develop a green jobs initiative that includes a job training component.

To this day, communities of color are disproportionately impacted by a wide variety of social inequities that exacerbate environmental and climate inequities. Communities of color experience much higher rates of asthma, hypertension, diabetes and obesity. For example, Black children are hospitalized for asthma attacks at twice the rate of white children.⁵¹ Furthermore, the cost of heating and cooling, or energy burden, is a significant hardship for low-income households and contributes to poor health outcomes, which makes improving energy efficiency for low-income and minority households an opportunity to address both greenhouse gas emissions and social justice. Furthermore, the COVID-19 pandemic has laid bare the myriad health and environmental disparities experienced by communities of color.⁵² A respiratory virus such as COVID-19 disproportionately affects people of color due to limited access to health care and underlying health conditions that can be caused by inequities, such as the siting of polluting industries in communities of color. A recent Harvard study links higher death rates from COVID-19 to neighborhoods with higher air pollution levels.⁵³ In addition, communities of color may disproportionately hold lower-income,

essential jobs that require them to work in person, putting them and their families more at risk. In Nashville, nearly 40% of all COVID-19-related deaths are Black people, even though Black people make up only 26% of the City's population.⁵⁴

The Committee recommends that the mayor establish an environmental equity task force. The task force could be a subgroup of the Mayor's Sustainability Advisory Committee but should have a membership that is geographically, socioeconomically and racially diverse. The task force could take into account the need for procedural equity (those most impacted by climate change are meaningfully engaged in decision-making), distributional equity (fair and just distribution of funding and resources), and structural equity (addressing and reforming the governance structures in Nashville that have led to and perpetuated environmental, economic and social inequities).

⁵¹ *Health Equity: Healthy Places, Health Disparities*, Tennessee Department of Health, <https://www.tn.gov/health/cedep/environmental/healthy-places/healthy-places/health-equity/he/health-disparities.html#asthma> (last visited Oct. 14, 2020).

⁵² Monica Web Hooper, PhD, et al., *COVID-19 and Racial/Ethnic Disparities*, JAMA Network (May 11, 2020), <https://jamanetwork.com/journals/jama/fullarticle/2766098>; <https://pubmed.ncbi.nlm.nih.gov/32306369/>.

⁵³ *Air pollution linked with higher COVID-19 death rates*, Harvard T.H. Chan School of Public Health (May 5, 2020), <https://www.hsph.harvard.edu/news/hsph-in-the-news/air-pollution-linked-with-higher-covid-19-death-rates/>.

⁵⁴ *Davidson County COVID-19 Dashboard*, Metro Government of Nashville & Davidson County, Tennessee, <https://nashville.maps.arcgis.com/apps/MapSeries/index.html?appid=30dd8aa876164e05ad6c0a1726fc77a4> (last visited Oct. 14, 2020).

As discussed, several factors limited the Committee’s public involvement efforts, including the time frame for submission of the climate action plan and a pandemic that limited in-person meetings and affected the hours that Committee members had available. However, several subcommittees did develop initial environmental and climate equity recommendations based on best practices from other cities, which the task force could augment and refine as needed.⁵⁵ In addition, the task force could consider the following:

- > Establish routinized, replicable processes for ensuring early, continuous and meaningful involvement from all residents, especially vulnerable populations, in the development and implementation of the climate action plan.
- > Develop an equity screening tool, similar to Cleveland’s Racial Equity Tool, which provides a set of questions that help users rate the extent to which specific climate actions advance equity, or California’s CalEnviroScreen, a data-based mapping tool that identifies communities disproportionately burdened by, and vulnerable to, multiple sources of pollution.
- > Identify long-term capacity-building and outreach efforts with low-income communities and communities of color.
- > Explore and develop a green jobs initiative that includes job training to work in a diverse sector that includes energy conservation technicians, solar power project developers and landscape technicians.

LAND USE

Land use policies are critically important to reducing greenhouse gas emissions. Smart and compact development serves to protect open space for parks, farmland and trees—all of which act as carbon sinks.⁵⁶ Furthermore, transit-oriented, pedestrian-friendly development can shift commute mode share away from single occupancy vehicles and toward more sustainable transportation options. Finally, building smaller homes can reduce average household energy consumption.

Unfortunately, existing state laws impede Nashville’s ability to pursue compact development, including a ban on impact fees⁵⁷ and inclusionary zoning mandates.⁵⁸ In addition, by-right development is the norm and makes development in the City’s remaining specific plan districts⁵⁹ more expensive and time consuming for developers, thereby incentivizing shortsighted greenfield and suburban development.

The Subcommittee’s recommendations include specific actions to remove barriers, create incentives and address regulatory gaps to achieve more sustainable land use practices. Possible actions include, but are not limited to:

- > Encourage development in the urban core by increasing allowable density and streamlining permitting processes.
- > Codify the Green and Complete Streets executive order that provides for streets that are designed and operated to be used safely by all—including drivers, pedestrians, bikers and transit riders.⁶⁰
- > Petition the state legislature for an exemption from the ban on impact fees to place Nashville on equal footing with the majority of Tennessee counties that are permitted to impose exactions.
- > Update the landscape code to require canopy preservation, align tree-density goals for specified land-uses and increase tree preservation requirements.⁶¹

⁵⁵ For example, the task force could consider incorporating innovative models such as energy democracy and the “pay as you save” or PAYS model. See, *Energy Democracy*, Center for Social Inclusion, <https://www.centerforsocialinclusion.org/our-work/our-programs/energy-democracy/> (last visited Oct. 14, 2020); PAYS® for Energy Efficiency, Clean Energy Works, <https://www.cleanenergyworks.org/about-pays-for-ee/#:~:text=The%20customer%20pays%20nothing%20upfront.immediate%20and%20sustained%20cash%20flow> (last visited Oct. 14, 2020); *Inclusive Financing for Efficiency Upgrades*, Clean Energy Works, <https://drive.google.com/file/d/0BzYyDNPW3cwwOFBzc3NyTTF2MEE/view> (last visited Oct. 14, 2020).

⁵⁶ David J. Nowak et al., *Carbon Sequestration by Urban Trees Valued in the Billions of Dollars Annually*, 179 J. Env’t Pollution 229 (2013), https://www.fs.fed.us/nrs/pubs/jrnl/2013/nrs_2013_nowak_001.pdf.

⁵⁷ Tenn. Code Ann. § 67-4-2913 (2006).

⁵⁸ Tenn. Code Ann. § 17-40-780 (2016).

⁵⁹ Tenn. Code Ann. § 17-40-105 (2016).

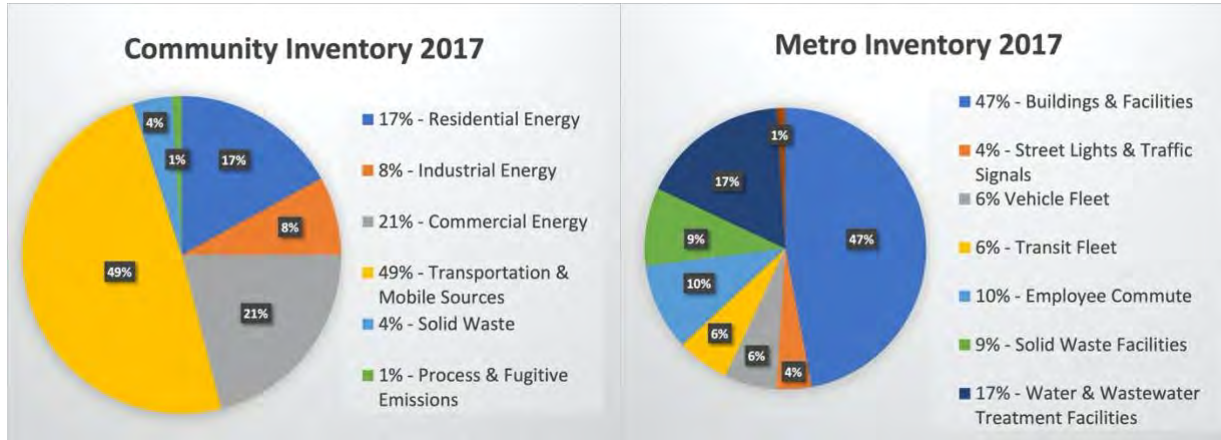
⁶⁰ See, e.g., *Complete Streets Program*, City of Tulsa, <https://www.cityoftulsa.org/government/departments/streets-and-stormwater/streets/complete-streets-program/> (last visited Oct. 14, 2020).

⁶¹ Nashville, Tenn., Municipal Code § 17.24 (2020).

- > Utilize tax increment financing (which uses anticipated future tax revenues to pay for new development) to implement transit-oriented development that reduces the need for driving and its attendant energy consumption.⁶²

NASHVILLE'S CURRENT CARBON FOOTPRINT

The overarching factors and considerations outlined above provide the contextual foundation for examining Nashville's current footprint and identifying actions the City can take to reduce it. The Metro Department of General Services recently updated the greenhouse gas inventory for both government operations and community-wide emissions.



In 2017, greenhouse gas emissions from Metro government operations totaled roughly 560,000 metric tons of CO₂ equivalent and, as the figure above illustrates, buildings and facilities are the greatest source, followed by water and wastewater treatment, employee commuting and solid waste facilities. Specifically, electricity accounts for 49% of Metro energy use but 66% of emissions.⁶³ As a result, reducing the emissions-intensity of electricity by adopting a greater share of clean energy sources is paramount, because it would reduce the footprint of some of the largest energy sources, such as buildings and water and wastewater treatment facilities. In addition, electrifying buildings—including their heating and cooling systems—would reduce the footprint of municipal buildings. Reducing electricity consumption through energy efficiency and waste reduction also is a key approach to reducing Nashville's carbon footprint.

Community emissions totaled roughly 11.4 million metric tons, and almost half are from transportation (mostly private cars and trucks), with combined energy use in commercial, residential and industrial buildings accounting for most of the other half.⁶⁴ Thus, the greatest opportunities to reduce emissions from the community consist of replacing gasoline and diesel vehicles with electric ones and reducing the total vehicle miles traveled, followed by reducing emissions from buildings by adopting clean sources of electricity, moving toward electrification and improving energy efficiency.

⁶² Tenn. Code Ann. § 13-20-706 (2020).

⁶³ See, *Sustainability Advisory Committee*, Metro Government of Nashville & Davidson County, Tennessee, <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx> (last visited Oct. 21, 2020).

⁶⁴ See, *Sustainability Advisory Committee*, Metro Government of Nashville & Davidson County, Tennessee, <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx> (last visited Oct. 21, 2020).

KEY MITIGATION STRATEGIES

Key mitigation strategies include:

- Decarbonization of the electrical grid.
- Electrification of government and community motor vehicle fleets.
- Electrification of buildings.
- Decreased vehicle miles traveled by passenger vehicles.
- Improved energy efficiency in all types of buildings and facilities.
- Reduced disposal of food waste in landfills and increased diversion of paper and cardboard recyclables.

Based on the subcommittees' recommendations, as well as a 2019 analysis by CEA Consulting⁶⁵ and independent analysis by Associate Professor Jonathan Gilligan⁶⁶ of Vanderbilt University and his team, the Committee has identified the strategies that provide the largest mitigation potential consistent with the “forks in the road” approach described earlier.⁶⁷ Coordination among the three major initiatives (decarbonizing the electrical grid, electrifying vehicles and electrifying buildings) is important because progress in each of these initiatives will amplify the impact of others: decarbonizing the grid will increase the benefits of electrifying vehicles and buildings and vice versa.

Decarbonization of the electrical grid

To reach its targets, the City needs to dramatically accelerate the adoption of renewable energy through a multifaceted approach. Actions could include:

- > Install on-site, behind-the-meter solar that offers cost savings to meet Metro and community goals. In the future, select cost-effective solutions such as behind-the-meter local solar first. However, when these options are exhausted, consider using TVA/NES programs. Encourage quasi-Metro agencies, such as the Metropolitan Nashville Public Schools, the Airport Authority and Metropolitan Development and Housing Agency to do the same.
- > Set a community-wide goal of 100% carbon-free electricity by a date certain (e.g., 2041), similar to BL-1600 ordinance for Metro government.
- > Encourage NES to offer retail net-metering to all customers (commercial, industrial, residential), whereby they receive credit on their bills for energy they generate and add to the grid—and set interim goals such as 20% solar deployment by 2035.
- > Encourage NES to negotiate with TVA to increase the 5% renewables cap through modifying/exiting the existing contract and ensure that any new agreement between TVA and NES/Metro accounts for the City's climate goals.
- > Work with NES to encourage its 100 largest customers to install behind-the-meter solar.
- > Encourage NES to fund a large-scale solar array to serve the community's energy needs similar to Knoxville's 502MW solar commitment.⁶⁸
- > Streamline the process for commercial and residential businesses to install renewable electricity with simpler paperwork and faster approval times.
- > Provide fast-track permitting for development projects that include significant solar generation.

⁶⁵ Climate Wedge Analysis for the City of Nashville 2019 (CEA Consulting).

⁶⁶ See, Jonathan Gilligan, Vanderbilt University, <https://my.vanderbilt.edu/jonathangilligan/> (last visited Oct. 26, 2020).

⁶⁷ See, Michael P. Vandenberg and Jonathan M. Gilligan, *Forks in the Road*, Vanderbilt Law Research Paper No. 20-15, Duke Environmental Law & Policy Forum, forthcoming, <https://ssrn.com/abstract=3543639>.

⁶⁸ *KUB Commits to 20 Percent Solar by 2023 Using TVA's Green Invest Program*, City of Knoxville https://knoxvilletn.gov/news/2020/kub_commits_to_20percent_solar_by_2023 (last visited Nov. 20, 2020)); Green Invest Partnership with TVA, Knoxville Utilities Board, <https://www.kub.org/about/environment/kubs-green-invest/green-invest-partnership-with-tva/> (last visited Jan. 9, 2021).

Electrification of government and community motor vehicle fleets

The City should encourage the adoption of electric vehicles by Metro government (including WeGo and Metro Nashville Public School buses) and within the community for personal and business transportation. Potential actions include:

- > Provide and maintain critical infrastructure, including charging stations, to support electric vehicles—and explore a partnership with NES to support such efforts.
- > Coordinate with Metro Codes to add “EV-capable” or “EV-ready” requirements for new single-family homes and multifamily dwellings.
- > Work with major employers to identify locations for priority parking with electric vehicle charging infrastructure and programs to promote use among employees.
- > Work with car dealerships to ensure electric vehicles are available along with education on electric vehicle features and test drive opportunities.
- > Work with Drive Electric TN and other key partners such as NES, TVA and the state of Tennessee to promote electric vehicles to citizens through education, outreach and “ride and drive” events.
- > Develop a robust local EV “owners’ group” or club to assist with promoting electric vehicles.

Electrification of buildings

The City should incentivize and require, as necessary, measures to forward electrification of new and existing buildings, including replacement of gas appliances with electric appliances. Measures could include:

- > Update Metro Nashville codes to 2018 International Energy Conservation Code standards and support code compliance as well as enforcement—and require frequent code updates until the code requires net zero commercial and residential buildings in 2030.
- > Conduct audits to identify low-performing **Metro buildings** and facilities, and prioritize them for efficiency retrofits, including full electrification.
- > Establish carbon targets for **new residential** buildings, and fees for not meeting them, in order to drive electrification without mandating technology (e.g., would obviate need for natural gas ban). Require transparency and disclosure regarding the home energy ratings of existing **residential** buildings.
- > Establish and support through voluntary programs (gradually moving to mandatory programs) performance benchmarks for energy efficiency in existing **commercial and industrial buildings, universities, schools and hospitals**—and once mandatory benchmarking has been achieved, establish carbon targets for existing commercial and industrial buildings.

Reduction of vehicle miles traveled by passenger vehicles

The City should pursue efforts to make multimodal transportation safe, easy and attractive; invest in its transportation infrastructure; and develop transportation demand management policies and programs—through actions that could include:

- > Work with the Metro Council to enact a Transportation Demand Management program to reform parking policies and work with businesses to develop incentives for employees to commute in ways that reduce traffic congestion and pollution.
- > Establish dedicated funding for public transit, as several of Nashville’s peer cities have done.
- > Work with Metro Council to pass a charter amendment to establish a Metro Department of Transportation to coordinate with WeGo and the Metro Planning Department on facilitating multimodal travel.
- > Complete the 91-mile priority bike network by investing \$8 million per year for five years and complete the 23-mile CityCentral Greenway to help reduce drive-alone trips and provide mobility options.
- > Develop a Vision Zero plan for pedestrian and bicycle safety so residents feel, and are, safer and more comfortable with alternatives to driving, including establishing Safe Routes to School.



Increased energy efficiency in Metro, residential, commercial and industrial buildings and facilities

The City should pursue initiatives focused on increasing the energy efficiency of all types of buildings in Nashville, including:

- > Work with NES to encourage the 100 largest customers to conduct energy efficiency audits and implement the recommendations.
- > Work with NES to provide commercial and residential customers with user-friendly information and options for improving energy efficiency.
- > Improve coordination in managing Metro buildings and facilities across trades (mechanical, electrical, plumbing) and across Metro agencies.
- > Provide equitable access to energy-efficiency improvements, green energy and green jobs in low-income and otherwise disadvantaged communities.
- > Explore the use of energy savings performance contracts with energy services companies to finance and install energy efficiency projects, including retrofits, as discussed above.

Reduced food waste disposal in landfills and increased diversion of paper and cardboard recyclables

In order to reduce the City's carbon footprint and help achieve its zero waste goal, the following actions should be taken:

- > Establish a Solid Waste Authority and create a separate funding stream for waste management to boost accountability for achieving Metro's Solid Waste Master Plan: Achieving Zero Waste.⁶⁹
- > Implement Save-As-You-Throw policies for residents and businesses, which would require users to pay for the amounts of trash they send to landfills.
- > Support a Metro Council ordinance that mandates a Construction and Demolition Recycling Deposit System.
- > Support siting of a C&D transfer and recycling facility in Davidson County.
- > Phase in a food waste ban that prohibits food scraps from trash collection—starting with large generators, then medium to small producers and, finally, residents (once curbside collection is established).
- > Enforce current bans for yard waste, electronics and cardboard.

Outreach and Education

The Committee emphasizes that **Nashville's climate action plan** will only succeed if the public understands and supports its goals and recommendations. Developing a comprehensive and inclusive outreach and education strategy to reach local stakeholders, the general public, and the **City's** younger population will be essential. The strategy should reflect best practices⁷⁰ from cities around the country and should focus on the climate action **plan's content** as well as the myriad co-benefits of taking action, which include fostering public health and economic development and inclusion. The strategy should also provide robust opportunities for public involvement in the **plan's** implementation.

⁶⁹ CDM Smith, Metropolitan Nashville and Davidson County Solid Waste Master Plan: Achieving Zero Waste (2019), <https://www.nashville.gov/Portals/0/SiteContent/pw/docs/recycle/MasterPlan/SWMP%20Complete.pdf>.

⁷⁰ *Communications, outreach and advocacy*, C40 Cities, <https://resourcecentre.c40.org/climate-action-planning-framework/communications-outreach-and-advocacy> (last visited Nov. 20, 2020).



Exhibit I includes the full list of subcommittee recommendations, organized by:



Climate and Energy



Green Buildings



Mobility



Waste Reduction



Natural Resources

Additional Subcommittee Mitigation Action Recommendations

Exhibit I includes a consolidated list of the Climate and Energy, Green Buildings, Mobility, Waste Reduction and Natural Resources Subcommittees' recommendations. The subcommittees identified strategies, actions, subactions, case statements and capital and operational cost range estimates for their recommended actions. It is intended that these recommendations, developed over the course of six months of research, meetings and consultations with Metro staff experts and others, will provide a valuable resource moving forward as the City periodically updates and implements its climate action plan.



Exhibit I: Subcommittee Recommendations – Narratives

CLIMATE AND ENERGY SUBCOMMITTEE RECOMMENDATIONS

Vision Statement

Transitioning to a clean economy through green jobs and training, renewable power and energy efficiency will save resources, improve the health and well-being of our community, and ensure Nashville is a green, equitable place to live for all people. The Climate and Energy Subcommittee believes it is necessary to act boldly and quickly in order to meet Nashville’s climate goals and renewable portfolio standard.

Targets

Achieve 80% reduction in community-wide greenhouse gas emissions and 80% reduction in Metro greenhouse gas emissions by 2050.

Policy Focus and Priority Actions

The Climate and Energy Subcommittee’s key recommendations are summarized below. Each goal has been broken down and detailed step-by-step in the list of the Climate and Energy Subcommittee’s recommendations.

Increase renewables

Nashville should deploy behind-the-meter solar on Metro buildings wherever possible, and should encourage quasi-Metro agencies, such as the school board, Airport Authority, and Metro Development and Housing Agency, to do the same.

Although the Nashville Electric Service has substantial independent authority pursuant to the Metropolitan Government of Nashville and Davidson County Charter, the City should work to encourage NES to:

- > Negotiate with Tennessee Valley Authority to increase the 5% renewables cap through modifying or exiting its existing contract, and any new agreement between TVA, NES and Metro should account for the City’s climate goals.
- > Adopt a policy to offer retail net metering to all customers and set interim goals such as 20% solar deployment by 2035.
- > Encourage its 100 largest customers to report energy use, improve efficiency and increase renewables.
- > Encourage NES to fund a large-scale solar array to serve the community’s energy needs similar to Knoxville’s 502MW solar commitment.
- > Set a community-wide goal of 100% carbon-free electricity by a date certain (e.g., 2041), similar to BL-1600 ordinance for Metro government.

Increase energy efficiency

- > Develop a strategy with NES to price nonrenewables to make increased consumption more expensive.
- > Encourage NES to provide a digital self-service web portal for customers to view their detailed energy usage, compare usage against neighbors, participate in an energy challenge, track behavior changes and provide energy alerts.
- > Work with NES to develop an energy efficiency campaign for the community that will result in lower emissions.

Equity

- > Develop a green jobs training program that serves disadvantaged communities, focusing on solar installation and energy efficiency measures, thereby reducing emissions.
- > Encourage NES to use a portion of the 3.1% credit from the TVA long-term contract (if that contract is not renegotiated) to provide energy efficiency improvements and education for low-income households.



- > Encourage passage of the Round-Up Ordinance (RS 2018-1508) which provides for NES customer bills to be rounded up to the nearest dollar amount, with funds collected used to promote energy efficiency for low-income residents.
- > Utilize the Equal Business Opportunity Law (BL2018-1419) that enhances workforce development training and education for underserved communities.
- > Develop a plan with the community to sustainably rebuild areas impacted by the 2020 tornado.

Leadership Initiatives

The City could organize a meeting with businesses and universities to ask for specific commitments to renewable power, leading to a permanent sustainability roundtable.

Lock-in Effects to Avoid

Achieving Nashville’s goals and accomplishing these recommendations will require a true hand-in-hand partnership with NES, or a restructuring of Nashville’s relationship with NES and how it obtains its electricity, in order to achieve the Climate and Energy Subcommittee’s goal of decarbonization. The importance of NES’s willingness to aggressively move forward and pursue renewable energy cannot be overstated. Because NES is the sole distributor of power to Nashville, Nashville must rely on NES to partner with it to push TVA to provide access to enough renewable power to meet our community goals and renewable portfolio standard obligations. These goals cannot be met solely with behind-the-meter solar.

Indeed, Nashville may have already passed a fork in the road that puts the City at a great disadvantage because of the long-term contract NES just entered into with TVA. If this contract is not renegotiated, or ruled illegal in ongoing litigation between environmental groups and TVA, it is difficult to see how Nashville can achieve its climate goals, at least not until NES and TVA commit to substantially increasing renewable energy. Therefore, the mayor should work with Metro Council to use every tool at their disposal to pressure NES and TVA to move more quickly toward renewables and to renegotiate their contract, including (1) holding public hearings about our energy supply, (2) appointing an entirely new board for NES that will hold it accountable for Nashville’s climate goals, (3) coordinating with other large purchasers of power from TVA (such as other mayors and large industrial and commercial users) to convince TVA to move more quickly to adopt renewables, and (4) possibly considering how and whether Nashville can restructure its relationship with NES to give it more flexibility in utilizing renewable energy.

GREEN BUILDINGS SUBCOMMITTEE RECOMMENDATIONS

Vision Statement

A future in which the electricity serving Nashville’s built environment is renewable and carbon-free, the City’s buildings are efficient and its neighborhoods resilient, and Nashville has leveraged this vitally important transition to benefit racially and socioeconomically marginalized communities to achieve a green, livable future for all.

Targets

Reduce greenhouse gas emissions 80% by 2050 from the community and Metro building sector.

Policy Focus and Priority Actions

Decarbonize the Tennessee Valley Authority grid by 2035

To achieve this goal, the most important step is decarbonizing Nashville’s electric grid by 2035. The City needs the partnership of the Nashville Electric Service and TVA to get there, and the Green Buildings Subcommittee proposes a range of short-term actions, including:

- > Amend the Metro charter to provide for more oversight and accountability of NES.
- > Appoint NES board members with experience in sustainability.



-
- > Renegotiate NES's power supply contract with TVA to enhance the community's access to energy efficiency and affordable renewable power.

Improve efficiency in new commercial buildings through the adoption of green permitting standards and performance-based codes

- > Immediately update the Metro Nashville Building Codes to 2018 International Energy Conservation Code standards.
- > Update the energy code every three years until we achieve net zero for new buildings in 2030.
- > Invest in additional Metro Department of Codes and Building Safety staff and training to keep up with the City's rapid growth.

Establish mandatory energy benchmarking and reporting programs for commercial buildings

- > Drive innovation that results in energy-efficient commercial buildings and development of building sector carbon targets.
- > Establish a similar suite of measures focused on transparency, codes and building performance for the residential sector.

Equity

To address the disproportionate energy burden borne by low-income families, the Green Building Subcommittee recommends efforts to:

- > Expand NES's participation in TVA's Home Energy Uplift program, which provides weatherization and energy efficiency retrofits for low-income households.
- > Expand Building Futures, a TVA partnership with the Urban League, which provides training and certification for minority contractors.

Leadership Initiatives

The City could establish a voluntary benchmarking program, and/or convene an industry roundtable group to share best practices on energy management and accountability for commercial and institutional buildings.

Lock-in Effects to Avoid

The Green Building Subcommittee's recommendations include several crucial "forks in the road" that will place the City firmly on the path to meeting Nashville's carbon targets and preventing lock-in effects that threaten to stymie collective efforts. First, NES must use its leverage as TVA's second-largest distribution customer to accelerate decarbonization of the TVA grid by 2035. Beginning immediately, the mayor should use his appointment power to appoint electric power board members with backgrounds in sustainability and the power sector. In addition, the mayor should work with the Metro Council to develop and recommend a charter amendment to the voters that will give the mayor and Metro more oversight authority over NES. These structural changes will help ensure that NES, a municipal utility, takes into account the carbon goals of the City when negotiating and advocating with TVA regarding providing access to low-cost renewable power and energy efficiency and otherwise making decisions regarding Nashville's distribution grid.

Second, the mayor should encourage the Metro Council to adopt the 2018 energy code with no exceptions or carve-outs. The insulation tables must be updated to ensure that new buildings achieve high levels of energy efficiency. The mayor also should support enactment of Metro Council legislation committing the City to review and update the energy code every three years until Nashville achieves net zero for new buildings in 2030.

Finally, in order to improve the efficiency of the City's existing building stock, the mayor should move quickly to develop a voluntary energy-benchmarking program for commercial buildings owned and operated by leading institutions in the community. Building on the success of that voluntary effort, within the next three years Metro Council could adopt mandatory benchmarking programs for existing commercial buildings. These benchmarking programs are essential first steps toward requiring existing buildings to meet energy performance standards. Such



standards will be essential to the eventual decarbonization of the building sector, including electrification/phase out of natural gas.

MOBILITY SUBCOMMITTEE RECOMMENDATIONS

Vision Statement

The vision for mobility in Nashville in 2050 is to significantly reduce the overall vehicle miles traveled and the greenhouse gas emissions from the transportation sector by reducing the City's drive-alone rate and shifting remaining car trips to electric vehicles. To reach this goal, the mayor should support Metro Council adoption of incremental mode-share targets, which increase over time and include carve-outs for specific sustainable commute modes (e.g., walking, biking and transit).

The Mobility Subcommittee commends the Mayor's Office on its recently released \$1.5 billion transportation plan that outlines the steps and milestones to implement an advanced transportation plan. The plan includes financial strategies and a path to dedicated funding to achieve Nashville's long-term transportation, economic development, equity and sustainability goals. It also recognizes the importance of land use planning and the need for more affordable housing. The plan is a critical first step toward achieving the City's goals, but more is needed.

Targets

- > Reduce the City's drive-alone rate from 79% to 70% by 2025, 54% by 2035 and 40% by 2050.
- > Increase the City's electric vehicle adoption rate from 3% to 10% by 2025, 20% by 2035 and up to 40% by 2050. All remaining vehicles in 2050 should be electric.

Targets should be updated at least every five years and strong land use planning and coordination with surrounding counties will be critical to reaching these goals.

Policy Focus and Priority Actions

Make multimodal transportation safe, easy and attractive, including the use of shared urban mobility devices

- > Establish a Metro Department of Transportation that coordinates multimodal transportation initiatives to make alternatives to driving alone easy, safe and appealing.
- > Identify and secure dedicated funding by 2024. Commit General Fund dollars to transit, sidewalks, bikeways and traffic calming (including \$34 million to WeGo) to help reduce drive-alone trips.
- > Complete 50% of the 71 miles of the Priority Sidewalk Network by 2025. Prioritize transit-dependent populations and complete new sidewalks in areas that need them most.

Develop comprehensive and mandatory Transportation Demand Management policies and programs

- > Work with Metro Council to pass Transportation Demand Management legislation. Ensure it is on par with peer cities and requires major developers to reduce drive-alone trips.

Invest in green vehicles and transportation infrastructure

- > Transition Metro vehicle, transit and school bus fleet to electric or other low-emissions technologies. Provide and maintain critical infrastructure to support EVs.
- > Guided by NashvilleNext, invest in multimodal development in the core, centers and transit corridors in ways that meet the needs of residents by providing affordable housing, access to jobs, education, etc. while reducing sprawl.
- > Complete the 91-mile priority bike network by investing \$8 million per year for five years and complete the 23-mile City Central Greenway to help reduce drive-alone trips and provide mobility options.



Equity

As Nashville improves its transportation infrastructure, the City needs to be more equitable in the distribution of improvements across the City whether it is sidewalks, bikeways or new transit infrastructure. Metro also should create an equity-screening tool that helps prioritize infrastructure investments and ensures more equitable distribution of infrastructure and services. Existing modal masterplans also should be screened for equity.

Leadership Initiatives

The City could establish a Metro Affordable Housing and Transportation Task Force to develop policies that lead to more transit-oriented, compact development and more affordable, transit-accessible housing.

Lock-in Effects to Avoid

The need for a dedicated funding source for public transportation is critical to making progress. **Nashville is one of only three cities among the top 50 in population that lack a dedicated funding source for public transportation.** Each year, WeGo Public Transit must compete for resources with dozens of other priorities. As a result, planning for enhancements to service and infrastructure cannot happen in a reliable manner. While a dedicated funding voter referendum may not be immediately achievable, it will be important for there to be mayoral and council commitments from the general fund for transportation infrastructure, so that the City can continue to make progress toward its goals, including preparations for a future referendum.

Funding and implementing a transit system are key, coupled with strong land use planning. Land use and transportation policies must be updated quickly to avoid infrastructure that does not support a multimodal future (e.g., housing without sidewalks, developments without high-quality bus stops and car-oriented street networks). For more information, please reference the Land Use section of the main report. Other important actions to avoid lock-in effects include restricting the purchase of new fossil-fuel-powered vehicles, and providing and maintaining adequate EV infrastructure. As Nashville improves our transportation infrastructure, we need to be more equitable in the distribution of improvements across our City whether it is sidewalks, bikeways, or new transit infrastructure. The mayor should establish a joint Metro housing and transportation committee. This group would determine ways to increase affordable and workforce housing around transit centers and along transit routes. Metro should also create an equity-screening tool that helps prioritize infrastructure investments and ensures more equitable distribution of infrastructure and services. Existing modal masterplans should also be screened for equity.

In closing, the Mobility Subcommittee would like to thank the local experts and Metro liaisons who helped us develop these recommendations. Our process began with reviewing NashvilleNext and other reports including Metro's modal plans (such as nMotion, WalknBike and Plan To Play) and best practices from over a dozen peer city climate action plans. We estimate that our group and guests have spent more than 300 hours on research, discussing mobility issues, and developing our recommendations. From April to June, we had 14 weekly meetings with roughly 12 to 15 people at each meeting along with special guests.

WASTE REDUCTION SUBCOMMITTEE RECOMMENDATIONS

Vision Statement

Create a long-term Solid Waste Master Plan with the ultimate goal of achieving zero waste to disposal in the future.

Targets

Zero waste (90% diversion or more) by the year 2050.

Policy Focus and Priority Actions

Guided by the Solid Waste Region Board's September 2019 Solid Waste Master Plan, the Waste Reduction Subcommittee proposes some 40 recommendations to reduce our carbon footprint and maximize our resources, some of them by a significant amount. The Waste Reduction Subcommittee prioritized recommendations based on: 1) level of difficulty to achieve and 2) amount of CO₂e mitigated. For the most part, the highest priority



recommendations represent the greatest mitigation potential. The only recommendation that does not—Save-As-You-Throw—just missed receiving the highest priority. It is included as a top priority because of its mitigation potential and importance in the SWMP. Addressing both residential and commercial wastes, the Waste Reduction Subcommittee’s top priorities are:

Establish a Solid Waste Authority

- > Create separate funding stream for waste management to boost accountability for achieving SWMP.

Support Save-As-You-Throw policies

- > Require businesses and residents to pay only on the amount of trash they send to the landfill to encourage more recycling, and ensure lower (or no) costs for recycling and composting.

Address construction and demolition wastes

- > Support a Metro Council ordinance that mandates a C&D recycling deposit system and the siting of a C&D transfer and recycling facility in the county.

Ban food scrap landfilling and enforce current bans

Compostable organic materials are 23% of our waste stream, with two thirds of that being food scraps.

- > Phase in a food waste ban that prohibits food scraps from trash collection—starting with large generators, then medium to small producers and, finally, residents (once curbside collection is established).
- > Enforce current bans for yard waste, electronics and cardboard.

Equity

Some of the Waste Reduction Subcommittee’s recommendations could have a disproportionate impact on low-income individuals and families unless measures to mitigate them are taken. The “Save-As-You-Throw” recommendations are the most direct example. The pricing structure should minimize disproportionate financial impact on low-income communities and avoid incentivizing illegal dumping. Disproportionate impacts of other recommendations also need to be further explored and considered such as the issues of franchises and the recommendations focused on multifamily recycling. The Waste Reduction Subcommittee understands that the SWRB will be addressing these issues over the next few months.

Finally, current perceived or real negative disproportionate impacts incurred by the communities and neighborhoods located near landfills need to be acknowledged. Enactment of the Waste Reduction Subcommittee’s recommendations would reduce Nashville’s contributions to these inequities.

Leadership Initiatives

The City could bring together business leaders to ask how they plan to contribute to the success of the Zero Waste Master Plan, and/or convene stakeholders to explore reigniting future local recycling industries.

Lock-in Effects to Avoid

In addition to not establishing an authority, there are actions that could block or reduce the effectiveness of one or more of the Waste Reduction Subcommittee’s recommendations. The most threatening are laws, rules or contracts that prevent or penalize the reduction or diversion of waste being sent to a landfill or other facilities that would not have a net CO₂e mitigation equal to or greater than the current set of priorities (or its future derivations), such as a waste-to-energy facility.

NATURAL RESOURCES SUBCOMMITTEE RECOMMENDATIONS

Vision Statement

A sustainable city has clean water and clean air, and provides its residents with easy access to open space for physical, spiritual and mental health. Natural resources have the most opportunity for adaptation—as a result, the



Natural Resources Subcommittee’s recommendations greatly affect both mitigation and adaptation. The City’s leadership must make environmental health a priority and not an afterthought. Sustainability requires a vision embraced by the mayor, dedicated funded, and a well-trained, empowered City staff.

The Natural Resources Subcommittee recognizes the immeasurable value of ecosystem services provided by the City’s tree canopy, floodplains, stream channels and open space. This green infrastructure must be protected and expanded as the City grows and storms become more extreme. Restoring the landscape’s natural functions will compensate for all of the impervious-cover by building a spongy landscape that absorbs and cleans rain before it hits the streams. Open floodplains free of obstruction will accommodate streams spilling out of their banks during heavy rains without damage to life or property. By envisioning a city that lives in harmony with the environment, Nashville will eliminate the costs associated with flooding, piping, and cleaning polluted air and water.

The Natural Resources Subcommittee also sees unbounded potential for the City to use its open space to improve residents’ lives. Recent immigrants share their food traditions in community gardens. Farmers continue their profession on publicly owned land. Historic grasslands are restored to sustain the species that have lived here for centuries. Neighbors strengthen community by sharing a walk on the greenway. Nashville’s park network can and should be the backbone of the community, ensuring physical and mental well-being of residents.

As Nashvillians, we’ve inherited a treasure. We have abundant fresh water when water scarcity is the norm. We still have urban ecosystems that support a variety of wildlife, including endangered birds, fish and salamanders. But we must recognize that although the City has inherited an abundance of resources, Nashville’s ecosystems are fragile and stressed by urbanization. Now is the time to acquire land and preserve open space. Now is the time to build a City that protects its water and air. By taking action to conserve and sustainably tend public and private lands, the City will pass forward the great treasure that has been inherited.

Targets

Increase Nashville’s resilience to a changing climate and mitigate heat and flood risks, especially in vulnerable populations.

Policy Focus and Priority Actions

The Natural Resources Subcommittee’s recommendations offer the City key actions with three main objectives:

Restore natural functions of the landscape to improve water quality, save money and improve resiliency

- > Retrofit 10% of Metro’s impervious surfaces that were built before storm water regulations were in place. Specifically, aisles of the parking lots surrounding Nissan Stadium should be “depaved,” storm water swales should be added, and many trees could be planted (this urban forest was in George Hargreaves’ original riverfront master plan and would provide a highly visible example of Nashville’s commitment to clean water, clean air and its urban tree canopy).

Creatively use public land for food production, climate resiliency, flood mitigation, wildlife habitat and recreation

- > Convert 500 acres of traditionally maintained turf to historic grasslands in the next five years. New parkland acquisitions in Bells Bend, Hermitage and Southeast Nashville are ideal candidates.
- > Work with Tennessee Department of Transportation to cap I-40 (convert to a tunnel, so the top of the tunnel can be used for another land use) to restore connectivity to North Nashville and provide much-needed open, green space in downtown.
- > Reimagine Nashville’s downtown flood mitigation strategies on the east bank of the Cumberland River in a multifunctional public open space.

Conserve and sustainably manage public and private lands throughout Davidson County

- > Convene a task force or working group with an expertise in municipal financing to develop the funding mechanisms to implement Plan To Play.



Equity

Nashville's affordable housing crisis is inextricably linked to revitalization in the urban core. As the urban core becomes more livable with trees, pocket parks and green infrastructure, property values displace the historic residents. The City must ensure that a sustainable City of 2050 is also an equitable City that provides stable and affordable housing for families who have made their homes in the urban core. Building a sustainable Nashville provides an opportunity to address the neighborhood destruction caused by interstate construction. Capping Interstate 40 through North Nashville is an important first step.

Leadership Initiatives

The City could convene Nashville residents, environmental leaders, public health experts and urban planners to plan Nashville's next downtown open space.

Lock-in Effects to Avoid

Each budget cycle becomes a fork in the road where Nashville's leaders decide whether to create the sustainable City residents need or appease those who say the investment is not worthy. Each infrastructure project presents a "fork in the road" where the same old path that contributes to less resilience, more carbon emissions and more disparity is chosen over the initially more expensive but sustainable course. Fortunately, Nashville values its open space, and the sale of public land is rare. It should be understood that public parkland should not be privatized. Nor should public land be sold for budgetary reasons. As the importance of accessible open space grows, the City should ensure that Metro Parks be provided a budget commensurate with the work it is required to do.



Exhibit II: Subcommittee Recommendations – Spreadsheet

View [Excel spreadsheet by clicking here](#) or visiting the Mayor’s website: <https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory-Committee.aspx>.







Mayor Cooper's Sustainability Advisory Committee	
Committee Co-chairs: Linda Breggin, Eric Kopstain	
<i>Subcommittee co-chairs are noted below with an asterisk*. Metro staff are noted with an (M) after their name .</i>	
	Energy Anne Davis*, Tiffany Willmot*, Jason Carney, Brad Hall, Dan Jadranko, Geoff MacDonald, David Proffitt, Ryan Stanton, David Wingfield, Laurel Creech (M), Michelle Hamman (M), and Tony Richman (M)
	Green Buildings Bob Freeman*, Amanda Garcia*, David Bailey, Holly Baird, Darek Bell, Ian Prunty, Kim E. Shinn, Erica Weeks, Manuel Zeitlin, Laurel Creech (M), Nancy Whittemore (M)
	Mobility Erin Hafkenschiel*, Mary Vavra*, Michael Connelly, Sue Ballard de Ruiz, Mark Deutschmann, Brian Gant, Gary Gaston, Nora Kern, Steve Bland (M), Elwyn Gonzalez (M), Marty Sewell (M), Miranda Clements (M), Mary Beth Ikard (M)
	Natural Resources Mekayle Houghton*, Jenny Park*, Terry Cook, Dodd Galbreath, Beth Prichard Geer, David Lawrence, Rob Horton, Steve Law, Robert Waits, Tim Netsch (M), Rebecca Dohn (M), Cindy Harrison (M)
	Waste Reduction Todd Lawrence*, John Sherman*, Paul Farley, Andrea George, Sizwe Herring, Katie Poss, Grace Stranch, David ter Kuile, Ed Wansing, Jennifer Harman (M), Tasha Kennard (M), Sharon Smith (M)








Key for Special Considerations	
	Land Use Recommendations for systemic changes that could influence the types and patterns of land use and development, such as those related to planning, zoning and easements. Does not include recommendations related to use of specific parcels or land cover projects (e.g., green infrastructure, trees).
	Education Recommendations that involve initiatives directed at educating the general public about climate change mitigation and Nashville’s climate action plan.
	Environmental Equity Recommendations that seek to forward the fair treatment and meaningful involvement of all Nashvillians and ensure that no single group or community faces disadvantages or is disproportionately affected with respect to the development and implementation of Nashville’s climate action plan.
	Finance Recommendations that address approaches or potential mechanisms for funding actions to implement Nashville’s climate action plan.
	Leadership Recommendations that call on leaders in the business, philanthropic, higher education and nonprofit communities to support implementation of the climate action plan.
	Lock-in Effects Recommendations that should be prioritized, because failure to implement them in the near term could preclude Nashville from achieving its long-range climate change mitigation targets.











This spreadsheet has been designed using resources from Flaticon.com.













Thanks to Holly Baird and Milepost Consulting, SPC, for their work formatting this spreadsheet.

















COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Increase Renewables: Metro and community-wide* target to achieve 80% greenhouse gas emission reduction by 2050	Encourage simple, easy and effective options for commercial business, government and NES to expand renewables quickly.	The recommendations that follow in this tracker must be acted on with urgency. For example, we would like to see a residential application for solar, battery storage or weatherization fast-tracked and approved within 14 days; for a small business, 21 days; for large commercial, 28 days. The application needs to be online, easy and quick. Currently, it is extremely difficult to figure out how one can add solar or batteries with or without NES or TVA approval. Metro Council should pass an ordinance to encourage behind-the-meter solar installations, particularly in residential and small business applications. Incentives should be considered, especially for low-income housing and small business.	Businesses and homeowners across Nashville show great interest in transitioning to clean energy, but the process for adopting renewables should be streamlined to meet this demand.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Install solar arrays at iconic Nashville buildings.	With city cooperation and promotion, identify a handful of iconic buildings for solar demonstration projects—Nashville International Airport, Ryman Auditorium, Schermerhorn Symphony Center, universities/schools, parks, etc.—and combine with the already existing plans for city solar installations as a big PR push to increase awareness.	Installing solar power on iconic buildings in Nashville, such as music venues, the airport, municipal buildings and more, would raise public awareness of clean energy and clearly demonstrate Nashville's commitment to sustainability.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Create programs with TVA and NES for widespread distributed storage that save both NES and customers money.	Offer grants or incentives to purchase solar and batteries up to 5MW annual storage. Customers agree to provide access to stored energy back to NES during peak demand times, to meet demand and lower electricity costs. NES could offer grants and 0% loans to consumers interested in this program and provide up-front capital for those who need it in these crucial times. The program would save money for NES while increasing local power and dependence on the grid.	Incentives for residential and commercial energy storage would increase consumer choice, while simultaneously improving the resiliency of the grid, thus saving money for both consumers and the electrical system as a whole.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Install on-site, behind-the-meter solar that offers cost savings to meet Metro and community goals. In the future, select cost-effective solutions such as behind-the-meter local solar rather than TVA programs. However, when these options are exhausted, consider using TVA/NES programs.	Install as many cost-saving solar arrays locally as possible. When those alternatives have been exhausted, then implement TVA programs.	NES can increase the incentives offered for rooftop solar deployment, which will save money and meet our sustainability goals.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Research feasibility for Metro and community microgrids of renewable energy for resiliency, then initiate pilot program.	Create microgrid with solar for emergency response center or shelter so power can be maintained when grid goes down.	Microgrids can improve the resiliency of the overall power grid, allowing essential services to continue even during emergencies.	Substantial (>\$1M)	Unknown

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Increase Renewables	NES identifies opportunities to offer renewables and increase the 5% cap TVA has imposed, including NES exiting from or modifying the long-term contract with TVA. The goal is to increase the 5% cap to meet the 100% renewable portfolio standard for Metro government and the community* as well as the 80% community-wide emissions reduction goal. Any long-term agreement between Metro, NES and TVA should enable Metro to meet its Climate Goals. * "Tier one renewable source" means one or more of the following types of energy sources: solar energy; wind; methane from the anaerobic decomposition of organic materials in a landfill or wastewater treatment plant; geothermal; ocean, including energy from waves, tides, currents and thermal differences; fuel cells producing electricity from a tier one renewable source under this paragraph; and raw or treated wastewater used as a heat source or sink for a heating or cooling system.	Current contract negotiations should be reexamined quickly.	Nashville should work cooperatively with NES and TVA to create a clear pathway toward increasing renewables in line with the city's goals on emissions reduction and clean energy.	Minimal (less than \$100k)	Unknown
		Increase Renewables	NES adopts a policy to offer retail net metering to all customers (commercial, industrial, residential) and sets interim goals such as 20% solar deployment by 2035.		NES can offer greater consumer choice through the widely successful policy of net metering for rooftop solar and adopting their own clean energy targets.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Metro to work with NES to encourage NES's 100 largest customers to improve efficiency, reduce carbon emissions and implement sustainability and renewable energy goals. Pursue both behind-the-meter solar and TVA programs to maximize savings and benefits to all customers.	By implementing energy efficiency measures and switching to renewables, the customers using the most energy will benefit Metro most. Reducing fossil fuel consumption has economic as well as social and environmental benefits that include improved air quality, lower rates of respiratory disease and reduced emissions.	Working with the largest electricity consumers in the area offers a quick route toward substantial clean energy deployment and energy efficiency savings.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Metro to work with NES to perform as much energy efficiency and renewable energy as possible.	Working together, Metro and NES can implement EE and RE behind the meter to save money.	Metro can continue its leadership role through implementation of energy efficiency and clean energy.	Substantial (>\$1M)	Unknown
		Increase Renewables	NES to purchase large-scale solar array similar to Knoxville Utilities Board's agreement.	Use funds from the 3.1% TVA rebate under the NES contract to build a large-scale solar array to serve the community's energy needs like Knoxville has done pursuant to a TVA agreement (KUB purchased 212MW of off-site solar generation, equal to 8% of their power, through Green Invest).	NES and Metro can partner, as others have done, to establish dedicated clean energy sources for Nashville's electricity generation.	Substantial (>\$1M)	Unknown

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Increase Renewables	Metro adopts ordinance requiring all new buildings in the community to have solar installed on them.	States and cities are adopting policies for new homes and commercial buildings that require them to install solar during construction or, at a minimum, be solar-ready. It also could apply only to buildings of a certain size. Educate/facilitate dialogue among contractors and private owners to increase renewable capacity. KUB paid for this installation with funds from the 3.1% TVA rebate.	Integrating solar into the design of new buildings facilitates a much easier adoption of clean energy for new construction.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Climate urgency	Support and expand the Climate Emergency Ordinance.	Recognizing the climate crisis as an emergency demonstrates Metro leadership and sends an important signal to the community that we are taking sustainability seriously.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Community solar – Improve appeal of Music City Solar to customers.	Revamp terms of existing project to make panels more affordable and able to be sold back to NES if the customer moves out of the NES territory.	The Music City Solar project can be reformed to increase access and user interest, delivering on its original purpose.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Streamline Metro permitting, zoning, inspection, and other processes for solar installations as an incentive to install more solar.	Fast-track permitting for projects that include solar. Create floor area ratio incentive to projects that include solar. Work with NES to develop standard permitting/application process.	Streamlining permitting and other processes involved in installing solar will result in much wider adoption.	Minimal (less than \$100k)	Unknown
		Increase Renewables	Nashville to become a city excelling in solar research and an incubator for energy technology.	Engage with universities and community to perform resource and technical assessments to identify the best type and configuration of clean energy to install in various parts of the city. With resource assessment information available, local contractors and residents will have a useful tool to support the installation of renewable energy sources.	Nashville has the opportunity to become a hub for the future of our energy system through education, research and innovation.	Moderate (\$100k - \$1M)	Unknown
		Increase Renewables	Implement Metro Water's plan to fully use biogas.	MWS continues to implement planned projects to move toward full utilization of biogas production at the city's wastewater treatment plants and displace an equivalent amount of natural gas consumption and eliminate the associated greenhouse gas emissions.	In 2017, the city's water and wastewater operations emitted approximately 17% of Metro's total emissions. Currently, MWS uses 73% of the digester gas it produces.		
		Increase Renewables and Energy Efficiency	Encourage all Metro departments to decrease energy use and increase renewables in the most cost-effective manner possible.	Overview: In 2017, the city's water and wastewater operations emitted approximately 17% of Metro's total emissions. Currently, MWS uses 73% of the digester gas it produces.	Energy efficiency and on-site renewable projects save money, reduce emissions and promote the local growth of solar.		
		Increase Renewables and Energy Efficiency	Adopt LED as the new standard for all roadway lighting by 2021.	Energy-efficient light-emitting diode (LED) fixtures are adopted as the new standard for all public roadway lighting beginning by 2021. If LED technology can not be used, the NES Board and Public Works Traffic & Parking Commission must approve any variances from the standard. In addition, NES works with Metro Public Works toward 100% conversion of streetlights in Urban Services District to LED by X (date TBD) and throughout the entire General Services District by X (date TBD) based on a citywide LED conversion plan to be finalized and adopted by 2021.	In 2017, streetlights and traffic signals emitted over 21 thousand MTCO ₂ e, or 4% of Metro's total emissions. Public Works manages and owns the traffic signals, almost all of which have been converted to LED technology. Streetlights are managed and owned by NES and are still predominantly high-pressure sodium, metal halide, or mercury vapor lights. Other cities have worked with their utilities to structure LED conversion programs that work for both the utility and the city (i.e., shift ownership to the city, develop new rate structures for LEDs, lease to own, etc.).		
		Set Renewable Portfolio Standards for Community-wide Goals	Set a community-wide goal of 100% carbon-free electricity by a date certain (e.g., 2040), similar to BL-1600 ordinance for Metro government.	Many if not most of our peer cities have established clear goals for 100% clean energy—given the TVA mix, "carbon-free" may be more appropriate here. Clearly significant cooperation with TVA would be needed, but this would express the clear intent of Metro about the direction we want to take for our energy system.	Nashville can join its peer cities and respond to rising interest in sustainability by setting a clear goal for clean, carbon-free energy that brings together all relevant actors toward a common, sustainable pathway.	Minimal (less than \$100k)	Unknown

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
	 	Transition Nashville to a Green, Renewable City Through Widespread, Distributed Storage that Saves NES and Customers Money	NES and Metro can work together to focus on climate, the environment, and reducing income inequality by providing a cost-neutral program for weatherization, energy efficiency, solar, and battery storage.	Metro Water Services continues to implement planned projects to move towards <u>full</u> utilization of biogas production at the city's wastewater treatment plants and displace an equivalent amount of natural gas consumption and eliminate the associated greenhouse gas emissions.	Increasing economic incentives for the deployment of solar, energy storage and energy efficiency can produce benefits for the community, NES and Metro.	Moderate (\$100k - \$1M)	Unknown
		Increase Funding for Renewables	Consider ways to increase funding for renewables and energy efficiency through grants, incentives, 0% down financing, establishing a Green Bank, initialing a Green Bond and pursuing PACE financing. Adopt Solarize or similar bulk-installation projects.	Build Financing Stakeholder Group (community local banks, buildings, finance, legal departments, utility experts) to work with Metro and advise on how best to achieve climate action and energy funding.	There are many potential economic incentives that could be pursued to accelerate the uptake of clean energy and efficiency.	Minimal (less than \$100k)	Unknown
		Increase Funding for Renewables	Explore grants and funding from organizations such as Bloomberg's American Cities Initiative to fund renewable energy investments; also look to see if government funds such as COVID-19 funds are available.	Research grants available to cities in the next one to five years.	Available grants or other economic incentives may be available to support Metro's sustainability goals.	Minimal (less than \$100k)	Unknown
		Increase Combined Heat and Power and Geothermal Installations	Metro to work with departments, authorities and institutions to evaluate where CHP and geothermal can be best deployed throughout the community.	Request community input and consult with experts to map prime locations.	Other energy options, including combined heat and power or geothermal, should be studied.	Moderate (\$100k - \$1M)	Unknown
		Allocate Funds for Environmental and Climate Justice and Green Jobs	NES uses a portion of the 3.1% credit from TVA long-term contract for a Metro-sponsored program or a nonprofit to provide energy efficiency improvements and education for single-family, low-income households while improving safety and health, or otherwise uses funds to help Metro meet its climate goals.	Encourage workforce development and green jobs and reduce income inequality. Funds can be split between programs such as: weatherization, solar and battery incentives - 3.1% is approximately \$20M annually. The program could be expanded throughout our city and also include small businesses, who are vital to our city's financial ecosystem. Annual reporting would be required on the impact of the investment.	The financial credit from TVA can be dedicated to creating new green jobs that reduce economic inequality while simultaneously increasing the deployment of energy efficiency and renewables.	Substantial (>\$1M)	Unknown
		Support the Round-Up Ordinance before December 2020	Encourage NES to implement the Round-Up program with or without the ordinance. Support the Round-Up Ordinance (RS 2018-1508) to provide funding for the Home Energy Uplift Program that reduces the energy burden and improves health outcomes for low-income families.	This recommendation is urgent and must be done by December 2020. If the opt-out Round-Up program is not approved in 2020, it is imperative that alternative funding be explored in a timely manner to replace the funding that would have been secured through the program. Rename: (Memphis = Share the Pennies: Small Change, Big Difference); or Pennies for Change: Support Our Neighbors; or Cents for Change: Neighbors Helping Neighbors. Push out FAQ to community and Metro Council: www.energyelectives.com/riu	A small change on utility bills would provide economic and health benefits to low-income families throughout the community.	Moderate (\$100k - \$1M)	Unknown


COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Leverage Federal Stimulus Funds such as the Green New Deal	Connect people of color and low-income residents to renewable energy and energy efficiency opportunities using the Equal Business Opportunity Law (BL2018-1419) for workforce development—training and education will be important to this action.	Combine with weatherization green jobs. Prioritize funding to communities of color and low-income individuals, although the program is open to all.	Green jobs training and education should be particularly targeted at frontline communities to empower people of color and low-income residents.	Moderate (\$100k - \$1M)	Unknown
		Prioritize Climate Equity and Community Planning Actions	Collaborate with the community in developing a plan to rebuild North Nashville and other lower income communities that were devastated by the recent tornado.	Combine emphasis on housing affordability, energy efficiency and weatherization. Search for Black-led organizations for efficient communication and participation.	Post-tornado rebuilding is a unique opportunity to Build Back Better by upgrading the energy efficiency of homes and other buildings.	Substantial (> \$1M)	Unknown
		Reduce Use of Fuels and Resources	Use basic supply and demand theory: Develop a strategy to price electricity, natural gas and other nonrenewables so that increased consumption is more expensive. Cost increases as usage increases. Currently, costs decrease with increased usage.		Changing the pricing structure for the consumption of fossil fuels would provide incentives for reduced energy usage and increased consumption of clean energy.	Minimal (less than \$100k)	Unknown
		Reduce Use of Fuels and Resources	Reduce water use and increase gray water systems usage.	Work with Metro Water Services to create incentives for customers to reduce water usage. Due to the energy-water nexus, saving water equates to saving the energy required to pump and treat that water.	Incentives for water conservation, including recycling and reuse, would also reduce energy consumption.	Moderate (\$100k - \$1M)	Unknown
		Reduce Use of Fuels and Resources	Encourage efficiency through upgrades of HVAC and other electrical equipment.	Incentivize through grants, reduction in taxes or cost-sharing program to encourage efficiency upgrades.	Increase incentives for the adoption of more efficient appliances, HVAC and other building equipment.	Moderate (\$100k - \$1M)	Unknown
		Initiate Financing for Efficiency	Use energy savings account and green municipal bonds.	Money that's saved from implementing sustainability programs (LED light replacement, solar, high-efficiency equipment, etc.) should be saved in an ESA for use in future efficiency programs. Often money that is saved goes back to the general fund and when more efficient equipment is needed there is a lack of funding for upgrades. An ESA would allow money saved from sustainable projects to be reused for other beneficial efficiency needs. Also evaluate options for green municipal bonds.	Create an energy savings account to mobilize funding from reduced energy consumption.	Minimal (less than \$100k)	Unknown
		Incentivize Energy Efficiency Improvements	Incentivize renters and owners to upgrade their buildings.	Financing options program to allow for energy efficiency upgrades; state legislation to authorize a property tax exemption for rental housing owners who upgrade for energy efficiency; city property tax exemption for rental housing that has energy retrofits.	Create new financing options to encourage energy efficiency retrofits of buildings, aligning incentives between building owners and users.	Minimal (less than \$100k)	Unknown
		Develop and Provide an Efficiency Web Portal	Provide digital self-service web portal for customers to view their detailed energy usage, compare usage against neighbors, energy challenge, track behavior changes and energy alerts.	Create beta and allow a diverse population to test it, including sustainability/energy experts and nonexperts – update with suggestions received from testing.	Creating an online household energy dashboard would give greater information and awareness about energy consumption, empowering consumers to make changes.	Minimal (less than \$100k)	Unknown
		Adopt Residential/Commercial Energy Efficiency Policies	Adopt policy similar to Home Energy Score Portland.		Look at successful programs in other cities, such as Portland, to evaluate current home energy usage and provide recommendations for upgrades.	Minimal (less than \$100k)	Unknown



















COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Create Education and Training Campaigns	NES develops an energy efficiency campaign for the community and NES employees with input from Metro experts.	NES develops public education campaign in the form of bill inserts, digital advertising, etc. that focuses on how customers can reduce energy usage. Additionally, NES initiates an internal education program for all NES staff on benefits of solar for NES and our community.	A public education campaign on the benefits of energy efficiency would increase awareness of the significant economic and environmental opportunities available to consumers.	Minimal (less than \$100k)	Unknown
	 	Establish a Nashville Conservation Corps	Metro to work with local nonprofits and environmental leaders to develop a robust green jobs training program that serves disadvantaged communities.	Establish proper training in green industries to allow for a just workforce transition, economic growth, and support of the vision of the Mayor's Sustainability Committee. Secure funding from donors, community sources, federal/state grants. Focus on populations most sensitive to the economic downturn (low income, people of color, small business).	A modern-day Conservation Corps, focused on frontline environmental justice communities, would create new job opportunities while meeting sustainability goals.	Substantial (>\$1M)	Unknown
		Develop a Climate Community Ambassadors Program	Metro to identify local environmental leaders to develop a mentorship program.	Reach out to environmental organizations and create a submittal program online where ambassadors can be recommended. Allow individuals to request a mentor, and connect mentors and mentees.	Creating a Climate Community Ambassadors Program spreads awareness of the city's sustainability commitments through trusted individuals.	Minimal (less than \$100k)	Unknown
		Utilize Public Participation to Call for Robust Climate and Energy Actions from NES	NES meetings available online or on Channel 3.	Add a community committee to involve citizens and businesses in climate-related actions at NES.	The current NES structure can be modified to include more public participation and input on meeting climate goals.	Minimal (less than \$100k)	Unknown
		Facilitate NES and Metro Communications	Develop and schedule ongoing scheduled dialogue between Metro government and NES.	Create a monthly recurring meeting to discuss new business, issues and ideas for the future.	Metro and NES must work hand-in-hand to meet mutual sustainability goals while continuing to provide low-cost power to the community.	Minimal (less than \$100k)	Unknown
		Focus on Tourism –Promoting Energy Efficient Methods for Meetings and Events	Metro will work with the Convention and Visitors Bureau, hotels, event spaces, presenters and attractions to explore ways to reduce emissions related to our hospitality industry.	Encourage CVB and Music City Center to work together to improve energy efficiency, transit and carbon reduction.	Greening the hospitality industry lets Nashville put our best foot forward and communicate our vision for a healthy, sustainable city to visitors from around the world.	Minimal (less than \$100k)	Unknown
		Restore Natural Functions of the Landscape While Benefiting the Health and Well-being of Nashvillians	Develop PSC Metals property into public park for flood mitigation and downtown open space.	Consultants will model the flood mitigation impact of site to determine its capacity to lessen the burden on downstream neighborhoods.	Improve water quality, expand access to open space and improve resiliency.	Substantial (>\$1M)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape While Benefiting the Health and Well-being of Nashvillians	Develop PSC Metals property into public park for flood mitigation and downtown open space.	Land is procured for public park with community input on park design and function.	Improve water quality, expand access to open space and improve resiliency.	Substantial (>\$1M)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Restore Natural Functions of the Landscape While Benefiting the Health and Well-being of Nashvillians	Reconnect the city, severed by interstate construction, through creation of park land.	Metro, in partnership with private sector, will incorporate interstate lid studies and peer city experiences into an actionable plan to increase open space and ecosystem services in Nashville's historically underserved neighborhoods and rectify past damage imposed on these neighborhoods from interstate construction.	Improve water quality, rectify historical environmental injustice, expand access to open space and improve resiliency.	Substantial (>\$1M)	Substantial (>\$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Treat 10% of impervious surfaces with green infrastructure at five Metro properties developed before LID stormwater regulations were in place, with a focus on parking lots. (Early wins – 1. Harris-Hillman School has shovel-ready plans; 2. Nissan Stadium parking lot has a concept plan.)	Improve water quality, save money and improve resiliency.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Evaluate capital projects for green infrastructure potential in consultation with Metro Water, thereby providing a mechanism/policy to increase green infrastructure.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Develop a green infrastructure strategy to mitigate the impact of climate change including increased heat, flooding and violent weather in communities already experiencing economic and health disparities.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Create and implement a short list of GI projects for the next five years.	Improve water quality, save money and improve resiliency.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Distribute the burden of cost from the stormwater fee equitably among big users by adjusting the tiered fee system to include the largest footprints at the highest tier.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Increase green infrastructure on Metro projects to reduce runoff.	Encourage Metro Council to amend the Landscape Ordinance to incentivize conversion of traditional turf to naturalized landscapes.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Plant 500K trees to increase tree canopy and meet transect goals established in the Urban Tree Canopy Master Plan.	Improve water quality, save money and improve resiliency.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Update Metro's Urban Tree Canopy Assessment every five years per Urban Forestry Executive Order.	Improve water quality, save money and improve resiliency.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Establish a best-in-class Urban Forestry Division to plan, plant, care for and protect Nashville's urban forest.	Improve water quality, save money and improve resiliency.	Moderate (\$100k - \$1M)	Substantial (>\$1M)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Strengthen codes, standards and right-of-way treatment for trees.	Develop a ROW planting plan with expedited approval process and establish preapproved zones for ROW plantings.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Strengthen codes, standards and right-of-way treatment for trees.	Codify Green and Complete Streets Policy through an ordinance passed by Metro Council: Tulsa may be model.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Substantial (>\$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Strengthen codes, standards and right-of-way treatment for trees.	Metro Council to update and amend the Landscape Ordinance (MCL 17.24) to require canopy preservation, align tree-density goals for specified land-uses and protect heritage trees.	Improve water quality, save money and improve resiliency.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Strengthen codes, standards and right-of-way treatment for trees.	Add tree maintenance problems to the HUB.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Metro Nashville Public Schools partners with NGOs to meet transect-specific tree-canopy targets on five school properties that could serve as pilot projects for the district as a whole.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Convene a group to develop new financing streams and mechanisms that engage external partners for funding and implementation to support planting and maintenance of the urban tree canopy.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Create system for private developers/owners to install and maintain new street trees.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Create system for labeling, inventorying and marketing street trees as a valuable asset.	Improve water quality, save money and improve resiliency.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Restore Natural Functions of the Landscape to Improve Water Quality, Save Money, and Improve Resiliency	Demonstrate Metro's commitment to preserving and growing our tree canopy.	Establish a Tree Enhancement Program for Metro properties.	Improve water quality, save money and improve resiliency.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Creatively Use Public Land for Food Production, Climate Resiliency, Flood Mitigation, Wildlife Habitat and Recreation	Encourage use of native species and natural landscapes, including local food production.	Pass legislation that allows private income generation from cultivation on park land, taking into account goal of no net loss of park land.	Improve climate resiliency, mitigate flooding and protect wildlife habitat.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Creatively Use Public Land for Food Production, Climate Resiliency, Flood Mitigation, Wildlife Habitat and Recreation	Encourage use of native species and natural landscapes, including local food production.	Require preconstruction assessment of natural resources including water, flora and fauna.	Improve climate resiliency, mitigate flooding and protect wildlife habitat.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Creatively Use Public Land for Food Production, Climate Resiliency, Flood Mitigation, Wildlife Habitat and Recreation	Encourage use of native species and natural landscapes, including local food production.	Promote use of native and food-producing flora on Metro properties and through NGO/neighborhood cost-share programs and educational outreach programs with NGOs and Metro Parks' community centers and/or Metro Nashville Public Schools.	Improve climate resiliency, mitigate flooding and protect wildlife habitat.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Creatively Use Public Land for Food Production, Climate Resiliency, Flood Mitigation, Wildlife Habitat and Recreation	Encourage use of native species and natural landscapes, including local food production.	Convert 450 acres of land from maintained turf-grass to historic southeastern grasslands and nativized riparian corridors in partnership with NGOs.	Improve climate resiliency, mitigate flooding and protect wildlife habitat.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Create dedicated funding streams for conservation.	Establish a dedicated funding source and associated grant-making program within Metro for the Conservation Assistance Fund (minimum funding level needed, to be recommended by Metro staff).	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Create dedicated funding streams for conservation.	Grow the Open Space Fund in order to meet new level-of-service goals established in Plan To Play: 4,500 acres of new public land and privately held, conserved open space; create new open space acquisitions through thoughtful park- and greenway-oriented development (e.g., "Rails to Trails" type strategies); purchase additional green space downtown, bundle into downtown codes revisions, pocket parks with Planning.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Substantial (>\$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Create dedicated funding streams for conservation.	Conduct feasibility study for conservation finance measure for Davidson County, focusing on funding recommendations in Plan To Play. Pittsburgh, Denver and Sarasota County are recent examples of the more than 2,100 measures that have passed since 1988 – full database at landvote.org.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Create dedicated funding streams for conservation.	Implement parking fees at appropriate parks to discourage abuse of the free parking system and generate revenue for park operations. Fees should be structured in such a way to ensure equitable access for park users.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	In order to meet Plan To Play access goals, add more urban parks in high-priority areas (as identified in Plan To Play, section 7.2).	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	Revise the zoning code and TIF open space requirements to increase open space preservation, parks and greenways as part of the residential and commercial development process.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Minimal (less than \$100k)	Minimal (less than \$100k)


COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	Connect the existing greenway network and achieve new Plan To Play level-of-service goals for greenway access.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Substantial (>\$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	Strengthen greenway and park networks to more actively preserve remaining wildlife corridors and accommodate species of concern through natural resource management in parks.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	Provide open space bonus incentives for smaller-footprint housing or requested density increases. "Community Benefits Agreement" work with Planning to embed or make more available to existing neighborhoods.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Encourage creation of new public open space.	Complete pilot "pavement to parks" project converting parking or vacant asphalt area into pocket park.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Strengthen regulations to better protect open spaces and vital natural resources.	Protect steep slopes greater than 15' and prohibit ridgetop development using Forest Hills as a model.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Strengthen regulations to better protect open spaces and vital natural resources.	Identify and protect rural parcels with a high concentration of conservation values (as identified through TNC tool) primarily through donated or purchased conservation easements, and secondarily through parkland acquisitions.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Expand accessibility of public lands to residents.	Implement Charlotte Avenue Rail with Trail project. Underserved area, conservation and creation of public open space, neighborhood connectivity to schools, parks and recreation centers, health department, commercial centers, downtown grocery stores, etc. Extensive preplanning and due diligence have been completed. Funding is needed for public engagement and master planning and design.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Substantial (>\$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Expand accessibility of public lands to residents.	Pilot improvements at three elementary school playgrounds located in areas of high park need. Play areas will be open to the public outside of school hours using joint-use agreements.	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Expand accessibility of public lands to residents.	Encourage stewardship and active use of parks by expanding funding for youth environmental education and outdoor learning programs (coordinate with community centers, focus on populations underrepresented in the outdoors).	Protect and expand green space, increase park access for residents and promote fiscal sustainability.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Conserve and Sustainably Manage Public and Private Lands Throughout Davidson County	Reduce emissions generated by publicly managed lands.	Begin conversion of Metro turf-maintenance equipment to propane- and electric-energy sources.	Emissions mitigation.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Exit NES 20-year long-term contract with TVA unless TVA commits to fully decarbonize grid by 2035.	Unless TVA commits to fully decarbonize its grid by 2035, Metro/NES need to retain the ability to renegotiate the power supply contract at more frequent intervals to ensure TVA is taking steps to decarbonize its grid consistent with Metro's goals.	Substantial (>\$1 million)	












COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Renegotiate NES power supply contract with TVA to reflect Metro's climate and renewable energy goals and commitments.	Unless TVA commits to fully decarbonize its grid by 2035, Metro/NES need to retain the ability to renegotiate the power supply contract at more frequent intervals to ensure TVA is taking steps to decarbonize its grid consistent with Metro's goals.	unknown	unknown
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Improve NES governance transparency (e.g., post agendas in advance of board meetings, livestream board meetings with opportunity for public to address the board at the meeting).	This is a necessary step to ensure that NES, as a public power utility that serves Metro, is responsive to Metro's climate goals.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Educate existing NES board members on Metro's decarbonization goals and TVA's and NES's role in achieving them.	This is a necessary step to ensure that NES, as a public power utility that serves Metro, is responsive to Metro's climate goals.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Appoint members to NES board who have familiarity with sustainability and the electric power sector.	This is a necessary step to ensure that NES, as a public power utility that serves Metro, is responsive to Metro's climate goals.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Decarbonize TVA Grid by 2035	Leverage NES's status as TVA's second-largest distribution utility customer to advance decarbonization of the TVA grid by 2035.	Amend Metro charter to give Metro Council more oversight over NES, allowing Metro to ensure NES works to advance Metro decarbonization goals.	Ensures NES is responsive to Metro's climate and renewable energy priorities.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Strengthen coordination and management of Metro buildings.	Initiate participation in US DOE's Better Buildings Challenge, including baseline and benchmarking.	There is no direct savings but this is a necessary step to create a baseline. It also will identify opportunities for water and energy savings.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Strengthen coordination and management of Metro buildings.	Require/encourage DGS design guidelines to be adopted by all general government and quasi-government agencies.	Establishes consistent sustainability-oriented building design standards throughout Metro government; facilitates energy efficiency and resilience measures.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Strengthen coordination and management of Metro buildings.	Expand Socket, Unplug Nashville as the education campaign for Metro employees around sustainability efforts.	Could further behavior change, sustainable awareness, education and action within Metro staff and the community at large.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Strengthen coordination and management of Metro buildings.	Consolidate Metro departments' mechanical, electrical and plumbing under the management of the Department of General Services.	Establishes streamlined, lean operations that should improve performance as well as an operations and maintenance consistency and avoided costs.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Fund the energy savings revolving fund that Mayor Cooper announced December 2019.	Leverages energy savings to provide an ongoing source of funding for energy efficiency retrofits.	Substantial (>\$1M)	Substantial (>\$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	General Services' managed buildings: Conduct ASHRAE level II audits on at least the bottom 10% of low-performing buildings on an annual basis (requires funding energy savings revolving fund – see above).	Allows Metro to identify and address "lowest hanging fruit" in terms of energy efficiency retrofits consistent with BL2019-1599. No direct savings; however, audits allow Metro to make smart decisions on where and how to reinvest the money from the revolving fund.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	General Services' managed buildings: Implement cost-effective upgrades found in the audits.	Allows Metro to identify and address "lowest hanging fruit" in terms of energy efficiency retrofits consistent with BL2019-1599.	Substantial (>\$1M)	Substantial (>\$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Require all Metro Departments to utilize Ameresco's Energy Management System to improve energy usage tracking and reporting. The data from the EMS will be viewable on public-facing dashboard.	Important for transparency, benchmarking and accountability.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Require all agencies to report energy consumption and GHGs to Metro Council during budgeting season.	Establishes accountability for energy usage and climate goals.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Retrofit lighting to LED in Metro buildings citywide.	Reduces energy bills as well as GHG emissions.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Implement a Metro-wide Demand Response program during the peak hot and cold months (June–August and December–February).	Reduces energy bills as well as GHG emissions.	Substantial (>\$1M)	Minimal (less than \$100k)











COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Reduce Metro facilities' operational hours to increase time the facility is in unoccupied setting. Reduce Metro public facilities' hours/days open.	Reduces energy bills as well as GHG emissions.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Implement work-from-home policy during peak hot and cold temperature days (i.e., over 85 degrees or under 35 degrees).	Reduces energy bills as well as GHG emissions from both buildings and transportation (VMT).	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Encourage "hoteling" office space rather than assigned space for employees, further reducing energy and GHGs in buildings.	Reduces energy bills as well as GHG emissions from both buildings and transportation (VMT).	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of existing Metro buildings.	Densify working space by reducing empty office areas and increase density of utilized areas (note that this is dependent on COVID-19 not being a factor).	Reduces energy bills as well as GHG emissions.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of new Metro buildings.	Construct Metro's first Zero Net Energy building (mid-range/long-range).	The value of this is proof of concept for Metro and as an educational tool for the community.	Substantial (> \$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Metro Buildings	Increase efficiency of new Metro buildings.	Require new Metro facilities to include solar or to be solar-ready and also have EV stations or conduit installed for future EVs.	Will help achieve emissions reduction goals and also puts Metro government in good position for resilience-oriented microgrid or off-grid.	Substantial (> \$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Partner with Green and Healthy Homes Initiative to evaluate Nashville's affordable housing stock and develop an action plan (near-term).	There are no direct savings, but this is a necessary step to create a baseline. It also will identify opportunities.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Work with MDHA to develop an audit and EE program for all existing units, including education and outreach for tenants and training of maintenance staff (mid-range).	Allows for smart energy efficiency planning and upgrades as well as incorporates behavior change principles for O&M and residents.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Request that the MDHA board adopt LEED ordinance or equivalent for new construction and renovations.	Promotes same standard as Metro General Services buildings and helps ensure that new and renovated MDHA construction is energy efficient and lowers energy burden for low-income residents.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Provide bonus points for, or mandate, green building and Energy Star-rated homes that receive funds from the Barnes Fund and the Housing Incentives Pilot Program (near-term).	Incentivizes or requires green building practices when connected to public funds.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Influence award criteria for affordable housing property tax credits and other incentives to include a minimum requirement for Energy Star rated homes (mid-range).	Incentivizes or requires green building practices when connected to tax credits.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Encourage energy efficiency in affordable and workforce housing.	Provide training programs for developers interested in green building practices for new affordable housing (long-range).	Incentivizes green building practices through training, awareness and workforce development.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Residential Buildings	Explore financing mechanisms for retrofits of residential properties.	Explore additional local incentives for energy efficiency and renewables, such as PACE financing (which will require state authorizing legislation), local property tax incentives, etc.) (mid-range).	Incentivizes green building practices through funding mechanisms.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Increase homebuyer awareness of green buildings.	Create an education program for realtors to market benefits of green homes. We should partner with the GNAR and NAR for this.	Encourages market for green building features in new and existing homes.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Increase homebuyer awareness of green buildings.	Work with GNAR to amend Multiple Listing Service to detail green building measures.	Encourages market for green building features in new and existing homes.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Invest in additional FTEs and training in Codes department.	Need more FTEs for codes enforcement because of our city's size and rapid growth.	Minimal (less than \$100k)	Substantial (> \$1M)
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Require individual unit meters in multifamily buildings immediately for new construction and renovations.	Allows for more granular energy usage data to target efficiency retrofit and education needs; also helpful to ensure greater resilience re: extreme heat and cold.	Minimal (less than \$100k)	Minimal (less than \$100k)














COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Adopt 2018 codes with no exceptions, and update codes every three years.	Ensures new building stock will be built to modern efficiency standards; helpful to ensure greater resilience re: extreme heat and cold.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Require net zero new buildings beginning in 2030.	Ensures new building stock will be built to modern efficiency standards; helpful to ensure greater resilience re: extreme heat and cold.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Establish meaningful green permitting program to incentivize higher performance buildings (a range of options are available).	Drives market for energy-efficient housing.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Strengthen building codes/permitting for new construction and renovation.	Add Home Energy Rating System rating to Multiple Listing Service (work with Greater Nashville Realtors Association).	Drives market for energy-efficient housing.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Incentivize improvements to existing buildings.	Incentivize electrification of existing buildings where possible (e.g., gas furnace to heat pump).	Reduces GHG if grid is decarbonized.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Incentivize improvements to existing buildings.	Incentivize energy efficiency measures through TVA or NES programs, PACE financing.	Improves efficiency of existing housing stock.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Incentivize improvements to existing buildings.	Install individual unit meters in multifamily buildings with a phase-in for existing complexes.	Allows for more granular energy usage data to target efficiency retrofit and education needs; also helpful to ensure greater resilience re: extreme heat and cold.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Improve existing low-income and workforce housing.	Work with NES to increase investment in and expand Home Uplift, TVA/NES low-income energy efficiency retrofit program. Advocate for TVA to provide additional funding to Home Uplift in its annual budget and make available unused dollars to over-subscribed local power companies (e.g., NES has roughly 175 customers on Home Uplift waitlist); work with NES to ensure maximum match for TVA budget.	Reduces energy usage and helpful to ensure greater resilience re: extreme heat and cold.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Improve existing low-income and workforce housing.	Support and expand NCAC's Green Jobs Initiative to train low-income or unemployed/underemployed Nashvillians to training and career pathways in the energy-efficiency sector.	Addresses workforce development to support clean energy transition.	Moderate (\$100k - \$1M)	Substantial (>\$1M)
		Improve Energy Efficiency in Residential Buildings	Improve existing low-income and workforce housing.	Work with NES to invest in low-income energy efficiency education/DIY program. Like Empower to complement NES retrofit program.	Addresses energy usage, bill payment and livability issues.	Minimal (less than \$100k)	Substantial (>\$1M)
		Improve Energy Efficiency in Residential Buildings	Improve existing low-income and workforce housing.	Expand budget for existing MDHA HVAC replacement program, contingent on replacement with electric heat pumps at a minimum.	Addresses energy usage, bill payment and livability issues.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
	 	Improve Energy Efficiency in Residential Buildings	Create coherent building electrification options.	Establish carbon targets for new residential building sector and fees for not meeting them, which will drive electrification without mandating technology. Fees fund low-income energy efficiency retrofit program.	Requires new homes to be efficient.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Improve Energy Efficiency in Residential Buildings	Create coherent building electrification options.	For existing housing, establish graduated pricing scale where we impose surcharges for higher energy use intensity in newer and larger homes. For example, for homes smaller than 1000 sf, no surcharge. For homes 1000–2500 sf, but older than 50 years, no surcharge. For larger and newer homes, for up to X kWh/sf, no surcharge. As energy use goes above X kWh/sf, the \$/kWh rate increases. Fees fund improvements in the smaller/older home categories. (Require use of heat pumps in new buildings, or more efficient options, i.e., VRF units.)	Incentivizes energy-efficient measures for existing housing stock.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)









COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Improve Energy Efficiency in Commercial and Institutional Buildings	Work with commercial and institutional building owners to track energy use and accelerate improvements.	Convene an industry roundtable group to share best practices on energy management and accountability for commercial and institutional buildings (see voluntary benchmarking subaction below).	Simple strategy that can drive innovation and behavior change.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Work with commercial and institutional building owners to track energy use and accelerate improvements.	Relaunch workplace challenge program for commercial and institutional buildings, including recognition to incentivize businesses to track and report GHG emissions.	Simple strategy that can drive benchmarking, disclosure and improvement through gamification.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Incentivize improvements to existing buildings.	Consider revising Economic and Community Development incentives to also include incentives for LEED and energy-efficiency, technical assistance to build energy-efficiency standards of LEED, Energy Star or equivalent, and property tax rebates for green certification.	Incentivizes green buildings with higher efficiency documented through third-party certifications with technical and financial assistance.	Substantial (> \$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	Invest in additional FTEs and training in Codes department.	Need more because of our city's size and rapid growth.	Minimal (less than \$100k)	Substantial (> \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	Adopt 2018 codes with no exceptions, and update the code every three years.	Better quality, more efficient housing stock; addresses energy usage, bill payment and livability issues.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	Require net zero new buildings beginning in 2030.	Better quality, more efficient housing stock; addresses energy usage, bill payment and livability issues.	Substantial (> \$1M)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	By 2025, require all gas stations to have fast-charge (400V) stations for electric vehicles (EVs) (Cost should be by kWh, not connected time).	Incentivizes EVs and reduces GHG emissions and conventional air pollution.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	By 2025, require parking for all new buildings to have a certain proportion of EV charging (start at 5% and go up 1% per year), with grid-responsive chargers (cost should be by kWh, not connected time).	Incentivizes EVs and reduces GHG emissions and conventional air pollution.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	Long-term: Consider adopting performance-based code based on carbon target.	Provides flexibility to development community in terms of measures to reduce carbon footprint of buildings.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify new and renovated buildings.	Establish meaningful green permitting program to incentivize higher performance buildings (a range of potential options is available).	Incentivizes green buildings with higher efficiency.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify existing buildings.	Establish voluntary benchmarking program among MUSH market and other corporate leaders in community.	Advisable as prelude to eventual mandatory benchmarking.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify existing buildings.	Require mandatory benchmarking after successes of voluntary program are reported.	You can't manage what you're not measuring.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify existing buildings.	Once mandatory benchmarking is in place, establish performance targets/carbon targets for buildings (New York Local Law 97 is the model).	Incentivizes property owner investments in EE retrofits.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify existing buildings.	Encourage TVA to support and expand Building Futures, energy efficiency training program with Urban League for minority-owned contractors.	Addresses workforce development to support clean energy transition.	Minimal (less than \$100k)	Minimal (less than \$100k)
	 	Improve Energy Efficiency in Commercial and Institutional Buildings	Improve efficiency and electrify existing buildings.	Impose fees for not meeting targets (fees to be used to fund low-income energy efficiency retrofits and/or low-income community solar or low-income behind-the-meter rooftop programs).	Incentivizes property owner investments in EE retrofits.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)












COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Improve Energy Efficiency in Commercial and Institutional Buildings	Create coherent building electrification options.	Establish carbon targets for building sector and fees for not meeting them, which will drive electrification without mandating technology (e.g., would obviate need for natural gas ban).	Incentivizes property owner investments in EE retrofits.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Improve Energy Efficiency in Commercial and Institutional Buildings	Create coherent building electrification options.	Require use of heat pumps in new buildings, or more efficient options (i.e., VRF units).	Reduces reliance on natural gas for heating.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Strengthen Energy Codes and Compliance	Update Metro codes and regulations to increase the sustainability of buildings.	Adopt 2018 codes with no exceptions, and update the code every three years.	Improves the minimum design standard around EE.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Strengthen Energy Codes and Compliance	Update Metro codes and regulations to increase the sustainability of buildings.	Work to require buildings be brought up to code during retrofits (mid-range).	Improves building stock through renovation.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Strengthen Energy Codes and Compliance	Update Metro codes and regulations to increase the sustainability of buildings.	Establish a three-year review cycle to keep or advance Metro Nashville Codes (mid-range).	Applies continuous improvement to our planning process.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Strengthen Energy Codes and Compliance	Update Metro codes and regulations to increase the sustainability of buildings.	Create a Metro Advisory Committee to review codes and make recommendations on local amendments if appropriate (mid-range).	Encourages public participation and buy-in from stakeholders.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Strengthen Energy Codes and Compliance	Strengthen the enforcement of Metro codes.	Reorganize Metro Codes Department to improve organization efficiency (near-term).	Supports efficiency in implementation and enforcement of building codes.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Strengthen Energy Codes and Compliance	Strengthen the enforcement of Metro codes.	Improve enforcement of the IECC Energy Code (mid-range).	Improved enforcement should have the effect of improved EE performance for the community.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Strengthen Energy Codes and Compliance	Support the development of new green buildings.	Revise and expand the Green Permitting Incentive Program. Incentives for green buildings could be reduced permit fees, expedited permits, or priority inspections. Track residential and commercial green permits (mid-range). (Included under "improve EE" above.)	Incentivizes green building practices through permitting process.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Strengthen Energy Codes and Compliance	Support the development of new green buildings.	Consider amending the 2010 Downtown Code to allow exemptions if buildings meet LEED standards or equivalent (mid-range).	No direct savings; however, it incentivizes and benefits green buildings.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Preserve Historic Buildings	Preserve historic structures and landscapes.	Establish a fund and associated grant program to provide capital funds for preservation of historic structures, landscapes and cultural resources.	Reduces unnecessary waste associated with demolition of buildings and preserves Nashville history.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Preserve Historic Buildings	Preserve historic structures and landscapes.	Incentivize adaptive reuse of existing structures through the development-review process.	Reduces unnecessary waste associated with demolition of buildings and preserves Nashville history.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Preserve Historic Buildings	Preserve historic structures and landscapes.	Initiate a grant program and a revolving fund through the Metro Historical Commission that would promote facade easements and allow for the purchase of threatened historic properties.	Reduces unnecessary waste associated with demolition of buildings and preserves Nashville history.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Promote Telecommuting to Address Municipal and Community Emissions	Develop policies within Metro government to encourage or require telecommuting.	In conjunction with work-from-home strategies and appropriate technology solutions, promote telecommuting policies for Metro employees to work remotely.	Reduces emissions from the amount of square footage needed for office space in the built environment and also reduces emissions from commuters.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Promote Telecommuting to Address Municipal and Community Emissions	Encourage telecommuting practices throughout the Nashville business community.	Promote continued teleworking strategies and resources for community businesses.	Reduces emissions from the amount of square footage needed for office space in the built environment and also reduces emissions from commuters.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Reduce and Recycle Construction and Demolition Wastes	Establish C&D waste recycling deposit system (HP14).	Require developers filing for a construction permit to make a financial deposit that can be reclaimed when they provide documentation that they recycled or reused a prescribed amount of the C&D waste generated on-site.	Thanks to Nashville's booming economy, we generate a lot of construction and demolition waste, which is not an insignificant greenhouse gas problem. The deposit system will encourage contractors, developers and construction businesses to consider waste reduction and recycling, as has been done in many communities.	Minimal (less than \$100k)	Minimal (less than \$100k)


COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Reduce and Recycle Construction and Demolition Wastes	Establish Metro ordinance requiring C&D waste recycling containers and public bid recycle mandates (HP8).	Haulers providing trash service to a construction or demolition job site will be required to also provide a designated container for recyclables that is at least half the size of the trash container. Container signage identifying suitable materials must be provided. The above mentioned deposit system offers incentives for those containers to be used. As a second element, public bids should include requirements for recycling and reuse of site-generated materials or offer evaluation points for bidders committing to high levels of reuse and recycling.	This increases recycling and reuse in the construction industries, and diverts those materials from landfills. It is coupled with other ordinances helping to foster the demand for such recycled and reused material.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Reduce and Recycle Construction and Demolition Wastes	Require/reward recycling and reuse of C&D and use of local compost in Metro contracts and jobs.	Align with the C&D waste recycling deposit system ordinance.	This strategy supports the demand for C&D recyclables, the amount of which will be increased due to the C&D waste recycling deposit system.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Reduce and Recycle Construction and Demolition Wastes	Expand sorting capacity of C&D material through a public-private partnership by growing the number of facilities that can process it.	Establish a task force to develop a plan to create additional sorting facilities and assess opportunities for public-private partnerships.	To have a successful C&D recycling and reuse program, additional capacity is needed.	Substantial (>\$1M)	Substantial (>\$1M)
		Reduce and Recycle Construction and Demolition Wastes	Establish a city ordinance that requires recycled content in construction materials (ZW4).	Government construction ordinance and policies.	This promotes diversion from landfilling of material generated on Metro-contracted construction sites.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Reduce and Recycle Construction and Demolition Wastes	Establish a building code ordinance requiring deconstruction, repair, reuse and/or recycling of valuable materials before demolition permits are awarded (ZW5).	Deconstruction/reuse ordinance.	Establishes a building code ordinance requiring deconstruction, repair, reuse and/or recycling of valuable materials before demolition permits are awarded.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Create Solid Waste Authority	Establish Solid Waste Authority.	Planning and Funding Authority and tracking system (HP1).	This is the cornerstone of Davidson County's zero waste plan, and thus is for reducing our greenhouse gases through waste management strategies. The service, oversight, planning, enforcement and funding provided by the Authority is critical to the success of nearly all the strategies.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Establish Franchise Collection	Establish contracted franchise zone collection for residential sector with every-other-week (EOW) trash collection for residential and commercial (HP11, HP15).	Apply to commercial and residential sectors.	Best practices from other communities tell us that contracted franchise zones for collection of waste, recyclables and compost will increase diverted tonnages by providing unified control of collection at greater economies of scale. This strategy eliminates the routing of multiple haulers operating on the same streets, reducing inefficiencies, road wear, noise and emissions.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste	Develop and implement a multiyear public education campaign. This strategy should roll out with the food waste ban and the SAYT collection program (ZW10).	Distribute through public education and social media venues.	Key to achieving higher participation, higher capture rate, and stronger bond to zero waste brands by reaching those not engaged in diversion programs.	Minimal (less than \$100k)	Substantial (>\$1M)
		Enhance Recycling and Compost Food Waste	Create a new job position to promote recycling and reuse within the framework of the Mayor's Office of Economic and Community Development and regional collaboration through the Greater Nashville Regional Council (ZW14).	Utilize the city's economic development tools and levers.	Brings new recycling and reuse industries to Davidson County.	Minimal (less than \$100k)	Minimal (less than \$100k)




COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Enhance Recycling and Compost Food Waste	Develop and implement an ordinance that supports a surplus food capture program based on the research supported by the NRDC study Modeling the Potential to Increase Food Rescue (ZW7).	Expands current volunteer efforts.	Rescues surplus food for consumption rather than disposal.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Offer grants to develop new local reuse and recycling opportunities for inclusion in the Tennessee Materials Marketplace (ZW16).	Strengthen the local and state-wide recycled materials marketplace.	Helps create local demand for recyclables and reusable materials, thereby new and expanded businesses and more jobs.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial and Residential	Enforce MSW mandates and bans (HP4).	Enforce existing bans – commercial (S8) and residential (S9).	Mandates and bans are needed to achieve 75% diversion as they provide the motivation that drives increased participation. Metro already has some bans in place, including yard waste, electronics, cardboard and C&D waste (residents only).	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – All	Support efforts by Metro Parks and Recreation to install or improve paired trash and recycling bins; institute requirements that events renting public spaces must comply with separation and recycling requirements; expand/update the recycling programs in its buildings and events with appropriate education for workers and custodial staff (HP7).	Enhances public space recycling (S20).	Reinforces and makes clear to the public that Metro Nashville is committed to recycling, including in all public spaces.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – All	Establish a Metro Environmentally Preferable Product procurement program for electronics and office supplies; establish a Metro office furniture reuse, surplus disposition and related policies. Give preference to vendors that prioritize waste reduction and recycling (ZW1).	Adopt any necessary city procurement ordinances.	Demonstrates Metro leadership as it walks its talk in its own procurement and reuse policies and practices by buying recycled content, minimizing waste, and supporting reuse of discarded office equipment.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – All	Replace term "waste management" to "resource recovery" and display on vehicles, carts, publications, outreach materials (ZW12).	Part of the rebranding of waste and recycling operations.	Reflects Metro's commitment to Zero Waste principles.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – All	Utilize new color-coding to reduce contamination levels and as a form of zero waste messaging (ZW13).	Part of the rebranding of waste and recycling operations.	Color-coding increases recycling and reduces recycling contamination levels, thus increasing the market value of the recycled materials.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – All	Develop new strategies that lower costs and increase waste reduction, reuse and recycling (ZW17).	Work with local universities to encourage student research projects that study and recommend new waste reduction, reuse and recycling strategies.	Demonstrates the city's desire to partner with higher education, and to stay on the cutting edge of resource recovery technologies.	Minimal (less than \$100k)	Minimal (less than \$100k)









COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Enhance Recycling and Compost Food Waste – All	Require Metro departments to prevent waste, maximize recycling, and maximize energy and water efficiency, and appoint a Net Zero Coordinator for each major department (ZW2).	Require Metro departments to develop an action plan that provides waste reduction, recycling and composting goals, administered through the Mayor's Office of Transportation and Sustainability	Demonstrates that Metro is leading and requiring of itself what it is asking of residents and businesses.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – All	Enter into working agreements with surrounding local governments, universities, school systems, and state/federal facilities to coordinate education and social media messaging in a consistent manner to local citizens (ZW3).	Develop and implement interlocal agreements with adjoining communities to create a regional zero waste education effort in the greater Nashville media market and regional school systems.	Advances greater regional collaboration and helps attain more efficient scale, thus more cost-effective markets and more local business development opportunities.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – All	Develop and implement enforcement procedures and rules to support universal implementation of mandatory recycling and organics collection (ZW8).	Perform frequent route monitoring for participation and contamination.	Demonstrates Metro's commitment to ensuring the recycling industry that it can and will provide quality, contamination-free recyclable materials for their use.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – Commercial	Enforce municipal solid waste mandates and bans (HP4).	Enforce food waste ban – commercial.	Achieving the waste management sector's climate mitigation goals requires mandates and bans. Metro already has some bans in place, including yard waste, electronics, cardboard and C&D waste (residents only). These mandates will help these bans realize their potential by adding stronger enforcement.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Establish recycling test pilots for multifamily buildings.	Implement most successful test pilot multifamily recycling strategies.	Unlike the single-family sector, residents living in multifamily (MF) buildings do not generally have access to convenient recycling programs, nor do they have effective incentives to divert materials from their trash cans. This effort is to ensure all Nashvillians have equal opportunity to recycle and compost.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Require/reward commercial composting of yard waste and food scraps (HP6).	Require landscapers to bring compostables to a composting site.	This requires landscapers to do what is required of other businesses—to compost and recycle.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Require/reward commercial use of compost from yard waste and food scraps (HP6).	Change building codes to require soil amendment using local compost, including establishment of a consistent definition for "compost."	Metro will help create demand for recovered materials compost, while improving the economics of collection and processing of yard waste and food scraps.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Encourage local businesses to support zero waste in their business practices (ZW15).	Develop and implement cooperative agreements with local businesses to create a regional business incentive package to support zero waste initiatives.	This strategy and asset of actions demonstrate that Metro wants to partner with businesses in both helping them achieve zero waste and in creating new local markets for recycled material feedstock and new products.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – Commercial	Develop an industrial park to host companies that reprocess locally generated materials and create local green jobs with living wages (ZW18).	Provide a site for an eco-industrial park to host companies that reprocess locally generated waste materials, and in regional collaboration through the Greater Nashville Regional Council.	Metro understands that to be successful long term, there needs to be a healthy and sustainable recycling industry. This strategy contributes to that goal.	Substantial (>\$1M)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial	Provide the public with diversion opportunities at public events and festivals and enhance zero waste awareness that will translate to better recycling habits at the home and office (ZW6).	Adopt a special events ordinance that requires public special events and festivals that currently require a Metro permit to achieve sustainability standards such as providing recycling and organics collection, regulating vendor food serviceware and collateral, reducing litter, and other means to increase diversion toward making it a Zero Waste event.	Supports the Nashville resident's commitment to recycling and composting, and reinforces Metro's commitment to zero waste.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Enhance Recycling and Compost Food Waste – Commercial	Adopt an Extended Producer Responsibility resolution to capture difficult-to-divert materials (e.g., chemicals, carpet, paint, sharps, etc.). EPR makes producers financially and/or physically responsible for sustainable management of their products in the postconsumer phase (ZW9).	Establish extended producer responsibility ordinances and implementation policies.	This action is intended to ensure that Metro, its citizens, and citizens of other counties where our waste may be landfilled are saddled with financial and environmental costs of managing and disposing of difficult-to-divert wastes.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – Commercial and Residential	Adding new materials to curbside recycling (HP12).	Add glass, residential and commercial (S25 and S26); add textiles, residential and commercial (S27 and S28); ban disposal of textiles, commercial (S37).	HP12: New materials will need to be added to the recycling program and coordinated with bans to encourage diversion of these materials. In particular, the High-Performance goal cannot be met without adding textiles (representing 5–6% of disposal) and glass (representing 4–5%). New materials would be taken to designated collection sites rather than be added to the curbside program to avoid contamination of existing curbside materials.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Commercial and Residential	Increase public education and engagement on recycling and composting.	Education – public, business and schools (P1-HP5).	HP5: Education is an essential element of the plan. A well-designed, targeted education program will inform and encourage increased use of diversion alternatives and waste reduction measures while discouraging disposal. Outreach will be conducted using a range of communication methods, including radio, newspaper, newsletters, web and social media. Partnerships will be needed to provide effective outreach to businesses (e.g., chamber of commerce, Metro business or licensing departments, the Building Permit Division and others) and schools (e.g., Metro Nashville Public Schools, local universities and colleges).	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Enhance Recycling and Compost Food Waste – Residential	Adding new materials to curbside recycling (HP12).	Add diapers to organics program (S35).	HP12: New materials will need to be added to the recycling program and coordinated with bans to encourage diversion of these materials. In particular, the High- Performance goal cannot be met without adding textiles (representing 5–6% of disposal) and glass (representing 4–5%). New materials would be taken to designated collection sites rather than be added to the curbside program to avoid contamination of existing curbside materials.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Residential	Enforcement of MSW mandates and bans (HP4).	Enforce food waste ban – residential (S4).	HP4: Mandates and bans are needed to achieve 75% diversion as they provide the motivation that drives increased participation. Metro already has some bans in place, including yard waste, electronics, cardboard and C&D waste (residents only). The HP4 strategy helps these bans realize their potential by adding stronger enforcement. Appendix F provides additional information on the enforcement components of this strategy. The most important modification associated with this strategy is the introduction of a food scraps landfilling ban as food scraps are the largest single item remaining in the waste stream. The second modification is to make recycling mandatory for all of Davidson County, including residential and commercial sectors. Recycling also should be required at all construction sites with responsibilities, enforcement and escalating penalties specifically stated.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Residential	Enforcement of MSW mandates and bans (HP4).	Fee for single-use bags – residential (S33), commercial (S34).	Mandates and bans are needed to achieve 75% diversion as they provide the motivation that drives increased participation. Metro already has some bans in place, including yard waste, electronics, cardboard and C&D waste (residents only).	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Enhance Recycling and Compost Food Waste – Residential	Establish residential Save-As-You-Throw collection (HP2), ban paper and containers in both residential and commercial sectors, and ban textiles in residential sector; and add new materials to curbside recycling (HP12).	Combination of actions complement one another.	“Save as you throw / Pay as you throw” is the most effective and cost-effective residential recycling and composting strategy. It incentivizes recycling and organics diversion, resulting in a substantial amount of source reduction. Bans are needed to achieve our greenhouse gas reduction goals as they motivate increased participation in recycling and composting. Metro already has some bans in place, including yard waste, electronics, cardboard and C&D waste (residents only).	Substantial (>\$1M)	Substantial (>\$1M)









COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Enhance Recycling and Compost Food Waste – Residential	Improved access to convenience sites (HP9).	Establish minimum requirements for access and services.	Convenience center sites are a vital diversion option for residents in more rural areas, as well as for residents in multifamily buildings that may have more limited access to service. We also need to identify locations for convenience sites to collect specialized materials that cannot be collected curbside (separated glass colors, etc.).	Moderate (\$100k - \$1M)	Substantial (>\$1M)
		Enhance Recycling and Compost Food Waste – Residential	Offer grants to promote establishment of reuse businesses (e.g., mattress recycling, electronics disassembly and fix-it clinics) (ZW11).	Adopt “reduce, reuse and repair” as a priority message, incorporating the best-use hierarchy principles of Zero Waste (ZW11).	Providing small incentives for establishment of new reuse and recycling businesses sends the message that Metro wants to help small businesses, and to support a creative reuse economy.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Establish Save-As-You-Throw Program	Establish commercial Save-As-You-Throw collection (HP3).	Adopt necessary ordinances that allow every-other-week trash collection in commercial sector and an ABC law requiring all businesses that serve liquor to have a recycling program for beverage containers; support and enforce current bans; provide for programs explicitly for small businesses and schools, including recognition programs, grants for bins, space for recycling bins and other initiatives.	The most significant barrier to recycling in the commercial sector is that trash plus recycling costs more than trash alone which hurts the business case for recycling. The SAYT strategy changes the economics and brings the service and incentives in line with those of the residential SAYT program. Recycling and food scraps collection service is provided to all businesses, and the cost is embedded in the trash bill.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Establish Save-As-You-Throw Program	Establish incentive pricing (HP13).	To reduce collection costs, allow residents to opt for every-other-week trash collection with attendant lower costs; and then eventually move to EOW for everybody.	This strategy encourages residents to recycle and compost, and educates them about the costs of disposing of waste.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Establish Save-As-You-Throw Program	Increase significantly MSW and C&D surcharges and/or provide fee reduction incentives for recycled and source-separated organic materials (HP13).	Create incentives (via reduced surcharges) to residential and commercial haulers to ensure clean, separated streams and diversion at transfer stations and disposal sites.	Metro currently applies \$6/ton on MSW and \$2/cubic yard on C&D waste surcharges to landfilled materials, which is low compared to other cities. These types of surcharges and incentive pricing change the economics of diversion and can be enough to change waste generator behavior.	Minimal (less than \$100k)	Minimal (less than \$100k)
	 	Enhance Food Waste Prevention	Increase public education and leadership engagement on food waste prevention.	The mayor could explore a partnership with the state to launch a public awareness campaign on food waste prevention (similar to California’s Food Waste Prevention Week) during which elected officials and city and state agencies endorse food waste prevention measures, including through social media; conduct high-profile events with businesses and nonprofits; utilize educational materials (such as Save The Food), and more.	Leadership, outreach and education are critical to achieving higher food waste prevention and source reduction, cited as the most effective way to prevent and divert wasted food according to the EPA food recovery hierarchy.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Methane Capture	Increase methane capture efficiency at landfills.	Identify and pilot strategies for open and capped landfills to increase the methane capture efficiency. For all future landfills, include methane capture process requirements during procurement RFP when selecting solid waste vendors for the Urban Services District.	Rather than getting released as emissions, methane produced from organic waste in landfills can be captured and used to produce energy, with the eventual goal of keeping organics out of landfills so there isn’t any methane produced in the long term.		
		Empower Nashvillians of All Ages and Abilities to Bike	Improve outreach capacity at Metro Nashville and at community partners to foster a community-centered process for bicycle projects.	Expand outreach staff capacity at Metro Planning and Public Works. Prioritize hiring from within the community to build support for new bike projects in underserved neighborhoods.	Outreach is critical to successful projects that respond to community needs.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Empower Nashvillians of All Ages and Abilities to Bike	Improve outreach capacity at Metro Nashville and at community partners to foster a community-centered process for bicycle projects.	Support and compensate community partners who are engaged in outreach about bicycle riding and infrastructure, particularly those in communities of color and low-income neighborhoods. Develop programs to enhance bike culture in Nashville (e.g., bike clubs, cycling classes, etc.).	Outreach is critical to successful projects that respond to community needs.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Empower Nashvillians of All Ages and Abilities to Bike	Improve bicycle infrastructure.	Complete 50% of 91 miles of low-stress priority bike network by 2023 as recommended in WalkNBike. Prioritize biking infrastructure for disadvantaged communities with a high proportion of transit-dependent residents.	A complete low-stress bicycle network is critical to increasing the number of people who ride bikes and to improve the safety of those already doing so. This is the most important step to increasing bicycle mode share, which is a sustainable, affordable, healthy and equitable transportation mode.	Substantial (>\$1M)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Empower Nashvillians of All Ages and Abilities to Bike	Improve bicycle infrastructure.	Identify eligible streets for "road diets" and coordinate with paving schedule to ensure roads are converted wherever possible.	Road diets are an effective and affordable way to expand the low-stress bicycle network, and are a critical step in increasing the number of people who use bicycles for transportation. The right-sizing of streets also has considerable safety benefits for all road users.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Empower Nashvillians of All Ages and Abilities to Bike	Improve bicycle infrastructure.	Improve intersections for existing bikeways, particularly around interstate on/off ramps and arterial streets, so that all bikeways are protected at all conflict points.	Often our safe, low-stress bikeway network falls apart when crossing major arterial streets and the interstate. The network is only as safe and usable as its weakest spots. Addressing these unsafe intersections is critical to increasing the number of people riding bicycles and increasing their safety.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Empower Nashvillians of All Ages and Abilities to Bike	Bike/scooter parking.	Increase publicly available bike and scooter parking in public spaces.	Providing safe and effective bicycle parking is a critical component in increasing the number of people who ride bicycles for transportation, particularly in the most congested parts of the city.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Empower Nashvillians of All Ages and Abilities to Bike	Bike/scooter parking.	Ensure all MNPS schools have bicycle racks in compliance with Association of Pedestrian and Bicycle Professionals standards.	Secure bicycle racks are an essential need in order to promote and support bicycling to schools. Car trips to schools are a major contributor to congestion, and bicycles can be an important tool for reducing car-trips to schools.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Empower Nashvillians of All Ages and Abilities to Bike	Launch community engagement events.	Promote bicycling culture by hosting multiple Open Streets events each year.	Open Streets Nashville temporarily closes streets to cars to allow people to reimagine their streets as public space, get active and build stronger neighborhoods. Open Streets programs across the world have proven to be an effective way to build the bicycling community and support community outreach.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Make Our Streets Safe for Walking	Walking.	Complete 50% of the 71 miles of the Priority Sidewalk Network by 2025 and 100% by 2030, as recommended in WalkNBike. Prioritize transit-dependent populations and complete new sidewalks in areas that need them most first.	Nashville is missing about 80% of our sidewalk network. Addressing the 71 miles of Priority Sidewalk Network in WalkNBike is a critical first step to making our city safer and easier to walk in.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Make Our Streets Safe for Walking	Walking.	Complete 100% of the sidewalks along the high-capacity transit network. Stress importance of connectivity between transit and pedestrian networks, especially in low-income neighborhoods.	Addresses the first/last mile issues surrounding transit along high-capacity corridors. These streets also are among the most deadly in the city, so improvements will also reduce fatal crashes.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Make Our Streets Safe for Walking	Walking.	Ensure equity and access in the way that residents make requests for sidewalk repairs through Metro's HUB system. Ensure that residents have ample access to make requests, even without access to computers and smartphones. Conduct regular spot-checks to ensure repairs are not focused on wealthier neighborhoods who tend to request more repairs.	Sidewalk repairs require a significant portion of Public Works' sidewalk funding. Ensuring that funding is distributed equitably is incredibly important.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Make Our Streets Safe for Walking and Bicycling	Walking and biking.	Update the priority sidewalk and bikeway networks every five years, to ensure infrastructure projects have the highest impact and align with urgent needs. Ensure that neighborhoods with little existing bicycle/sidewalk infrastructure are part of the discussion on what type of infrastructure would work best for their communities.	It's important to exercise good planning practices and prioritize improvements that will result in the greatest impact.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Develop Vision Zero Program	Set goal for reducing and eliminating severe and fatal crashes.	Reduce roadway fatalities and severe injuries by 50% by 2025, and 100% by 2030.	Pedestrian fatalities have steadily risen over the past 10 years in Nashville. Eliminating traffic crashes is not only morally right, it also is an essential first step to expanding green transportation. Most pedestrian crashes happen on transit routes—until routes are safe to walk along/across it will be impossible to dramatically expand ridership. Similarly, expanding walking and bicycling requires streets that not only feel safe but are safe to use without a car.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Develop Vision Zero Program	Create a Vision Zero Action Plan.	Develop and adopt a Vision Zero Action Plan, including high-injury network, action items for all related Metro departments, and benchmarks and goals around road safety.	A Vision Zero Action Plan is an essential step in the process of making our streets safe. It will not only allow the city to direct resources to fix unsafe streets, but also lead to a proactive approach to road safety, so that we are not simply responding when people are killed on our streets.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Develop Vision Zero Program	Launch education campaign.	Launch a public education campaign for safety awareness among motorists, pedestrians and cyclists.	Ongoing education is an important component to building support for Vision Zero and compliance with traffic laws. Education should follow changes to infrastructure.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Develop Vision Zero Program	Make our streets safer.	Implement infrastructure countermeasures at a minimum of five intersections of the high-injury network per year.	Identifying and then fixing top crash locations should be a first step in improving road safety. Many of these locations are already known, and more will be identified through the creation of a high injury network in the Vision Zero Action Plan.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Develop Vision Zero Program	Make our streets safer.	Develop a quick-build program, so that the city can swiftly respond to emerging high-crash locations using low-cost interventions. Develop robust community engagement as a core part of quick-build pilot projects (both before and during pilots).	Many interventions for the high crash network will be costly and require long bureaucratic processes. An important part of the city's Vision Zero program should be developing a toolkit to immediately address hotspots as they emerge, using tactical urbanism techniques and materials. This also will allow community engagement and feedback on the permanent solution.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Develop Vision Zero Program	Reduce vehicle speeds.	Implement a 25 mph speed limit on local streets in UZO.	Speeding is the leading cause of traffic crashes and greatly increases the severity of crashes. Reducing speed limits in neighborhoods is an affordable first step to slowing vehicle speeds and making streets safer and more comfortable for those using green transportation options.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Develop Vision Zero Program	Reduce vehicle speeds.	Explore the installation of traffic cameras around schools and along the high-crash network. This may include introducing legislation to allow this.	While engineering should be the primary method for reducing vehicle speeds to safe levels, automated enforcement (speed cameras) could be a tool to support speed limits in an unbiased manner.	Substantial (>\$1M)	Substantial (>\$1M)
		Develop Vision Zero Program	Reduce vehicle speeds.	Reduce speed on high-crash urban arterials through engineering modifications and speed limit reductions.	Nashville's urban arterials are the backbone to the transit network, critical connections to businesses and schools, and the most dangerous streets for those on foot. Reducing vehicle speeds on arterials in urban areas to a safe level is a critical step toward making green transportation options viable in Nashville.	Substantial (>\$1M)	Substantial (>\$1M)
		Secure Dedicated Funding for Transit	Identify and secure dedicated funding for transit.	Identify potential ballot measures for dedicated transit funding, in Davidson County and surrounding counties.	Nashville is one of only three cities among the top 50 in population that lack a dedicated funding source for public transportation. Each year, WeGo Public Transit must compete for resources with dozens of other service priorities in Metro Nashville. As a result, planning for enhancements to service and infrastructure cannot happen in a reliable manner.	Substantial (>\$1M)	Substantial (>\$1M)
		Move More People by Investing in WeGo	Expand access to and use of transit.	Implement the Better Bus Program, which includes higher frequency routes in an effort to increase use and access. Provide additional routes to the Frequent Transit Network. Expand service hours on nights and weekends. Prioritize routes serving transit-dependent populations when implementing.	Will significantly increase the numbers of Nashvillians who have access to a frequent transit network, enhancing transit as a mode choice alternative. Will significantly expand job opportunities for lower income individuals and others who cannot afford to drive.	Substantial (>\$1M)	Substantial (>\$1M)
		Bring the nMotion Vision to Life – Access to Transit	Expand access to and use of transit.	Adequately fund WeGo to address service recommendations as outlined in nMotion.	Need funding to increase ridership to help meet mode share goals.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Bring the nMotion Vision to Life – Investing in WeGo	Expand access to and use of transit.	Implement high-capacity corridors to enable Nashville to reach transit mode-share goals.	Will significantly increase the numbers of Nashvillians who have access to a frequent transit network, enhancing transit as a mode choice alternative. Will significantly expand job opportunities for lower income individuals and others who cannot afford to drive.	Substantial (>\$1M)	Substantial (>\$1M)
		Bring the nMotion Vision to Life – Investing in WeGo	Expand access to and use of transit.	Update nMotion at least every five years to ensure transit planning incorporates best practices from peer/aspirational cities and continues to meet the needs of Nashville residents. Ensure planning process seeks out feedback from transit-dependent and low-income communities to address gaps in service.	It's important to exercise good planning practices and prioritize improvements that will result in the greatest impact.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Bring the nMotion Vision to Life – Advanced Fare Collection	Implement advanced fare collection system.	Complete implementation of the mobile payment system and collaborate with other mobility vendors/providers to establish a seamless payment and coordination between modes and allowing users to preference filters for time, cost, etc. (In-progress)	Will simplify fare payment and provide for a seamless and integrated regional system. Will expand opportunities for third-party sponsor participation in transit pass programs. Will support integrated payment systems among modes (transit, parking, bikeshare, etc.).	Substantial (>\$1M)	Moderate (\$100k - \$1M)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Bring the nMotion Vision to Life—Advanced Fare Collection	Implement advanced fare collection system.	Develop a transit-access fare program for low-income residents, seniors, youth and students. Prioritize low-income residents up to 200% of the federal poverty line. Expand existing programs for students, youth and seniors.	Will significantly increase the numbers of Nashvillians who have access to transit. Will significantly expand job opportunities for lower income individuals and others who cannot afford to drive.	Minimal (less than \$100k)	Substantial (>\$1M)
		Bring the nMotion Vision to Life—Improve Bus Service First/Last Mile	Improve bus service.	Fund and launch a first-mile/last-mile pilot with transportation network companies. (Note: WeGo is advancing an agreement with Uber; however, it needs funding to advance.)	Reducing barriers to riding transit includes finding solutions to first-mile/last-mile issues. This pilot could be a beneficial first step.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Bring the nMotion Vision to Life—Improve Bus Service Crosstown Routes	Improve bus service.	Initiate crosstown routes and connect neighborhood centers.	Will reduce travel time for people who travel to non-downtown destinations, and will expand availability of public transportation.	Substantial (>\$1M)	Substantial (>\$1M)
		Bring the nMotion Vision to Life—Improve Bus Routes through Transit Signal Priority	Improve bus service.	Identify additional corridors and funding to implement transit signal priority improvements.	Will improve service reliability by adjusting signal timing to give priority for buses running behind schedule in key corridors.	Substantial (>\$1M)	Minimal (less than \$100k)
		Bring the nMotion Vision to Life—Improve Bus Service for Special Events	Improve bus service.	Eliminate rerouting for special events in downtown. Encourage special event attendees to ride WeGo instead of driving.	By providing a consistent transit routing through downtown Nashville that is not repeatedly disrupted by event detours, bus service will be easier to understand and more reliable.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Bring the nMotion Vision to Life—Expand Access Through Development Review Coordination	Expand access to and use of transit.	All Metro Public Works traffic study scoping meetings should include a staff member of WeGo Public Transit. Large developments should coordinate with WeGo to provide shelters and other infrastructure. WeGo staff should have sign-off authority for all developments within Metro.	By incorporating transit and pedestrian access into the design of significant new development and redevelopment, use of transit will become more attractive, and pedestrian safety will be improved.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Bring the nMotion Vision to Life—Expand Access with Dedicated Lanes	Expand access to and use of transit.	Transit Priority Routes—Implement dedicated lanes through downtown Nashville, along the frequent transit network, and on interstate corridors in conjunction with TDOT.	Transit priority through downtown Nashville will make transit a much more attractive commuting alternative to driving by providing a faster and more reliable trip.	Substantial (>\$1M)	Minimal (less than \$100k)
		Bring the nMotion Vision to Life—EasyRide Program Through Large Employers	Expand access to and use of transit.	Continue to encourage large employers to sign up for EasyRide through Nashville Connector. Develop an outreach program focused on major employers, universities and other major trip generators.	More employees will use transit compared to driving when there is a greater financial incentive to do so.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improving Mobility Through Land Use Policies and Practices—Transit Supportive Development Patterns	Incentivize development patterns that support WeGo and a variety of transportation choices.	Incentivize development patterns that support WeGo and a variety of transportation choices, while reducing sprawl and congestion. Increase transit-supportive densities at transit centers (Tier 1 zones) and along high-capacity transit corridors identified in NashvilleNext.	Developments designed to incorporate public transit access will make transit more attractive to larger numbers of people and will improve pedestrian safety getting to and from bus stops.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improving Mobility Through Land Use Policies and Practices—Task Force	Establish a joint Metro housing and transportation committee.	This group would determine ways to increase affordable and workforce housing around transit centers and along transit routes.	Strong connections among job centers, affordable housing and other community services (schools, shopping, etc.) will greatly expand the range of opportunities accessible to disadvantaged households and expand transit ridership.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Improving Mobility Through Land Use Policies and Practices—Task Force	Establish a joint Metro housing and transportation committee.	In conjunction with the joint committee, Metro should partner in creating an acquisition fund, such as a Regional Equitable Development Initiative Fund, to acquire land for affordable housing and community development near high-capacity transit nodes before the land is too expensive to acquire.	Strong connections among job centers, affordable housing and other community services (schools, shopping, etc.) will greatly expand the range of opportunities accessible to disadvantaged households and expand transit ridership.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Improving Mobility Through Land Use Policies and Practices—Transit Supportive Development Ordinance	Encourage Metro Council to adopt a transit-oriented development ordinance.	Adopt a TOD ordinance in targeted areas and utilize TIFs, as allowed by state law, to incentivize transit-supportive land uses and require an appropriate percentage of affordable housing, etc. Remove parking minimums in TODs and implement a maximum number of parking spaces allowed.	Developments designed to incorporate public transit access will make transit more attractive to larger numbers of people and will improve pedestrian safety getting to and from bus stops.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Improving Mobility Through Land Use Policies and Practices	Utilizing active spatial planning to encourage/require a clustering of activities at transit centers.	Incentivize development around transit centers to support land uses in ways that meet the needs of riders (access to daycare, education, job training, opportunities, etc.). Incentives also should support local and small businesses.	Developments designed to incorporate public transit access will make transit more attractive to larger numbers of people and will improve pedestrian safety getting to and from bus stops.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Access to Shared Urban Mobility Devices	Complete RFP process to select a limited number of electric scooter operators, and finalize regulations for operators.	The RFP process should center Nashville's transportation and equity goals, and seek to find SUMD partners that will help the city meet those goals. RFP should require a low-income fare program. Regulation of operators should similarly focus on working with the companies to achieve our city's mobility goals.	After two years of a pilot electric scooter program, it has become clear that a closer partnership with the city is needed to ensure electric scooters are supporting our city's mobility goals. The RFP process will allow the city to select the operators that are best able to serve Nashville's transportation needs.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Access to Shared Urban Mobility Devices	Develop a long-term, financially sustainable and equitable model to provide micromobility options to Nashvillians (bikes, e-bikes and/or scooters).	The city should explore a long-term model to provide a variety of shared urban mobility devices across the city. This could be a private-public partnership.	This will allow the city to take a more active role in determining how SUMDs are deployed, how they connect to our transit system, and how communities are engaged to ensure equitable access.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Access to Shared Urban Mobility Devices	Analyze SUMD legislation to ensure it fosters or mandates safe, responsible ridership.	As the city develops a closer and more productive relationship with the SUMD operators, Metro Council should analyze existing SUMD legislation to ensure it supports Metro's safety, mobility and sustainability goals.	SUMDs present a unique opportunity for the city to expand popular, green transportation options that have been proven to replace SOV trips. Regulations should support green transportation and prioritize safety, while still protecting sidewalk/greenway users.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Construct New Streets as "Green Streets" that Capture Rainwater	Update Land Development Code and related criteria manuals to include Green Streets policies.	Work with Metro departments to update codes and subdivision regulations to require Green Streets elements.	Green Streets definition: https://www.epa.gov/G3/learn-about-green-streets . Note: Executive Order for Green and Complete Streets.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Expand Greenways	Adopt a no-closure policy for all current and planned greenways. Greenways provide essential low stress, off-street connectivity, and greenway closures adversely impact access and connectivity to places of employment, commercial centers, neighborhoods, recreation, schools and health opportunities.	Convene Metro Parks and Greenways staff, Planning and Public Works staff, facility managers and operators, Metro Council representatives, greenway advocates, and bike and pedestrian advocates to strategize corrective solutions and funding sources to prevent closures at Ascend Amphitheater and First Horizon Park.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Greenways	Require the dedication of a Greenways Conservation Easement and greenway construction on property developed along a planned greenway.	Expand policy beyond waterway developments to require the dedication of a Greenways Conservation Easement and greenway construction on property developed along a planned greenway.	Opportunities for open space conservation and greenway connectivity are rapidly disappearing as development increases throughout the county, particularly in urban areas.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Greenways	Adopt a no-closure policy for all current and planned greenways. Greenways provide essential low stress, off-street connectivity, and greenway closures adversely impact access and connectivity to places of employment, commercial centers, neighborhoods, recreation, schools and health and wellness opportunities.	Adopt no closure policy and require that design of new public and private developments accommodate this policy. Involve Metro Parks and Greenways and Open Space staff throughout the design process of public projects from concept to implementation. Include Metro Parks and Greenways staff in permitting approval processes on public and private projects that include or affect access to a greenway.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Expand Greenways	Develop key connections from the bikeway and sidewalks network to existing and planned greenways.	Develop a policy that requires access easements as private properties are developed to existing and planned greenways. New connections shall comply with greenway rules and design standards.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Minimal (less than \$100k)
	 	Expand Greenways	Complete the construction of the 23-mile City Central Greenway to provide important connectivity, open space conservation, recreation, and health and wellness opportunities.	Develop a dedicated funding source for land acquisition, design and construction of the City Central Greenway.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Substantial (> \$1M)	Moderate (\$100k - \$1M)
		Expand Greenways	Complete the construction of the 23-mile City Central Greenway to provide important connectivity, open space conservation, recreation, and health and wellness opportunities.	The Parks Department and Greenways and Open Space staff will engage stakeholders, design consultants and the Park Board to revise operating hours on the City Central Greenway to allow for after-dark usage.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Expand Greenways	Public input and neighborhood feedback are important to each greenway segment because of the unique natural and built environment that it traverses and connects.	The Parks Department and Greenways and Open Space staff will continue to engage neighborhood stakeholders' input on greenway design through a robust public input process.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Expand Greenways	Develop a Greenway Rail with Trail system policy.	Develop an overlay policy or district for a Greenway Rail with Trail system that will require dedication of a Greenways Conservation Easement on property developed along a railroad identified as a greenway rail-with-trail opportunity.	Greenways are linear parks and off-street multiple-use trails that connect neighborhoods to schools, parks, transportation, shopping and work. Often located along natural landscape features like streams, rivers and ridges, or along built features such as railroad corridors and scenic highways, greenways provide valuable greenspace for conservation, recreation and alternative transportation. Greenways provide all citizens barrier-free access to natural resources and recreational and healthy living opportunities. Greenways are in demand by Nashvillians and visitors, developed through cooperation with the community, built and managed by Metro Parks, and overseen by the Greenways and Open Space Commission which advises the Metro Parks Board, and supported by Greenways for Nashville, a private-sector nonprofit friends' group.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Expand Greenways	Collect greenway trail data.	Identify funding sources to collect greenway trail data including usage, high volume areas, maintenance needs, accidents, etc.	Data will provide critical information on greenway usage and need for investment and maintenance funding (what gets measured, gets managed).	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Metro Planning, Metro Public Works, and WeGo to fully implement the creation of a Metro Department of Transportation.	Pass charter amendment to officially create a Metro Department of Transportation.	A cohesive, coordinated, comprehensive Metro Department of Transportation is needed to deliver a multimodal transportation system.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Metro Planning, Metro Public Works, and WeGo to fully implement the creation of a Metro Department of Transportation.	Locate the Metro DOT, Planning and WeGo administration in the same physical office space to improve collaboration and break down siloes.	Improved collaboration is critical for better delivery of projects and lower costs.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Metro Planning, Metro Public Works, and WeGo to fully implement the creation of a Metro Department of Transportation.	Commit new funding to staff and deliver a full suite of services for a Metro DOT. Publish an MDOT Strategic Plan. Conduct a Peer City Review to better understand DOT staff size and organizational structure.	Many of our peer cities have DOT with 10x more staff than Metro. Adequate staffing is critical for making progress.	Minimal (less than \$100k)	Substantial (>\$1M)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	To support reducing overall Vehicle Miles Traveled in Davidson County, and shift remaining car trips to electric vehicles, Metro Council should adopt incremental mode-share targets which increase over time and include carve-outs for specific sustainable commute modes (e.g., walking, biking and transit). EV adoption should complement mode-share goals, not replace them. (For example, Metro will reduce our county-wide drive-alone rate from 79% to 70% by 2025 to 54% by 2035 and 40% by 2050; simultaneously Metro will increase our EV adoption rate from 3% to 10% by 2025 to 20% by 2035 and no less than 40% by 2050. All remaining vehicles in 2050 must be electric, which should be measured by tag registration.) Targets should be updated at least every five years.	Many of our peer cities have adopted mode share goals.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	Create policies that place multimodal trips on an equal footing with driving.	Automobile use is often prioritized over other modes, such as walking, biking and transit riding. By putting them on equal footing, more people may choose other modes besides automobiles.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	Continue the Transportation Demand Management program to market and expand use of transit, active transportation and ride-share options (EasyRide, vanpool, carpool, etc.).	The TDM program helps to educate elected officials, employees and leaders on the benefits of having mobility options.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	Encourage all companies with a workforce of 100-plus to designate a transportation coordinator responsible for incentivizing use of carpools, vanpools, telecommute.	Employers are major trip generators and they need to take more responsibility for lowering drive-alone trips to their worksites.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	Prioritize "green" transportation choices in traffic-management plans for special events and new development.	By prioritizing other modes besides autos in traffic-management plans, congestion can be reduced.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Improve Metro processes to prioritize a multimodal transportation system over a car-centric system.	Explore pricing publicly owned parking closer to market rates and having efficient enforcement; invest proceeds in local streetscaping/beautification and multimodal projects (bike sharing, sidewalks).	Market-rate parking prices have multiple benefits; they better reflect the true cost of driving and generate much-needed revenue for Metro.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Commit to being data-driven in transportation planning and management of transportation resources and assets.	Update Downtown Mobility Study to better address circulation challenges in the region's jobs center and more comprehensively encourage multiple transportation modes.	A comprehensive study will provide a path forward for downtown mobility.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System	Commit to being data-driven in transportation planning and management of transportation resources and assets.	Develop performance metrics that more appropriately measure and track multimodal mobility, throughput, safety and accessibility rather than prioritizing car trips.	Collecting the right data is critical for delivering a multimodal transportation system. If we only count cars, then our streets will only prioritize cars.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Metro Nashville Public Schools Carbon Reductions	Study the potential of moving the MNPS bus facilities from a central location to the four quadrants.	Conduct a feasibility study to determine ROI and emission reduction by decentralizing the bus facility.	Potentially reduces vehicle miles traveled and air pollution.	Substantial (>\$1M)	Substantial (>\$1M)
		MNPS Carbon Reductions	Consideration of smaller, neighborhood-based schools would lead to greater potential for carbon reductions and improved sense of community.	Revamp MNPS school siting requirements to include input from Metro Planning Dept. Connect greenways to as many schools as possible.	Locating schools in large, distant and cheap tracts of land makes it difficult for students and teachers to arrive by any means other than vehicles. https://www.tn.gov/health/cedep/environmental/healthy-schools/hs/school-siting.html	Minimal (less than \$100k)	Minimal (less than \$100k)
		MNPS Carbon Reductions	Form a district-wide Safe Routes to Schools task force to lead SRTS activities and pass MNPS-wide SRTS policies that improve and promote SRTS.	The SRTS task force should include leadership from Transportation, Curriculum, Community Liaison, and School Health departments. Pass MNPS-wide SRTS policies as follows: (1) Arrival/dismissal policy to favor walking and bicycling. (2) Encourage walking and bicycling. (3) Recommend the MNPS transportation department include walking and bicycling routes and encouraging information along with other communication about transportation options to/from school.	Not just another task force; this group would have the ability to make improvements and, ideally, would be supported by the Mayor's Office.	Minimal (less than \$100k)	Minimal (less than \$100k)
		MNPS Carbon Reductions	Fund MNPS district-wide SRTS position and in-school pedestrian and bicycle safety education program.	MNPS district-wide SRTS position to coordinate with MNPS SRTS task force and oversee improvements and promote SRTS. Provide in-school pedestrian and bicycle safety education program.	A permanent position is critical for making bicycle education a core part of the MNPS curriculum.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		MNPS Carbon Reductions	Consider a no-idling policy, similar to the existing policy for buses, for all vehicles dropping off or picking up students.	Promote no-idling policy and provide signage at schools.	Some of Metro's worst air pollution hot spots are directly adjacent to schools, putting our youngest children at risk. Focused efforts to reduce air pollution close to schools is critical for improving health outcomes.	Minimal (less than \$100k)	Minimal (less than \$100k)
		MNPS Carbon Reductions	Develop a pipeline of SRTS infrastructure projects to increase access to schools and facilitate applications for funds.	Priorities should include: (1) Eliminating short "hazard" bus routes (short routes that are currently being run less than 1 mile because the route is deemed too dangerous for kids to walk). (2) Prioritizing schools that have a high percentage of students within the parental responsibility zone and schools in communities with lower rates of car ownership. (3) Prioritizing projects based on number of students that would benefit. (4) Using tactical urbanism and rapid-build projects to provide intermediate solutions to improve street conditions near schools (traffic calming, walkways, crosswalks, etc.).	Nashville has hundreds of miles of missing sidewalks. Programs to prioritize infrastructure adjacent to schools are critical for improving walking and biking safety as soon as possible.	Substantial (>\$1M)	Substantial (>\$1M)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		MNPS Carbon Reductions	Incentivize carpooling.	Modify school-design guidelines to move drop-offs away from the front/main entrance. Encourage carpooling for pick-ups and drop-offs with incentives such as express carpool lanes.	Prioritizing walking/biking/carpooling infrastructure and disincentives for driving alone are critical to put all modes on an even playing field.	Substantial (>\$1M)	Minimal (less than \$100k)
		MNPS Carbon Reductions	Install air pollution monitors at schools to track impacts of infrastructure and programming.	Install air pollution monitors at schools to track impacts of infrastructure and programming. Prioritize schools with the highest asthma rates.	https://www.ccair.org/clear/stem-program/	Substantial (>\$1M)	Substantial (>\$1M)
		MNPS Carbon Reductions	Authorize a study to analyze converting the MNPS bus fleet from diesel-powered to electric.	The study should consider the cost of diesel fuel versus electrical power, cost of maintaining diesel-powered fleet versus an electrical fleet, life cycle of diesel-powered fleet versus electric fleet, etc. The study also should include an analysis of using natural gas-powered or propane-powered buses as an intermediate step toward electrification of the fleet. Explore green funding options.	If we don't analyze it to know, then decisions could "lock us in" to natural gas-powered as an intermediate step. This study will be critical to weighing the pros and cons.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Transportation Demand Management	Improve Metro policies and processes to require employers and other major trip generators to manage congestion and air pollution.	Work with Metro Council to pass a TDM policy to require TDM planning for businesses moving into urban core, along transit corridors, and eventually the entire county. Include specific actions to promote telecommuting, car sharing, vanpools, carpools, shuttle service, bicycle parking facilities and transit.	Most of Nashville's peer cities have a robust (and mandatory) TDM policy to require employers to develop a TDM plan to reduce their drive-alone trips. Nashville must catch up with our peer cities to help manage our congestion and reduce emissions, while also allowing for continued economic growth.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Transportation Demand Management	Improve Metro policies and processes to require employers and other major trip generators to manage congestion and air pollution.	Work with Metro Council and Metro Planning to establish mode-shift goals specific to neighborhoods (e.g., downtown, midtown, Metro Center) for employers and trip generators to work toward.	Mode shift goals are critical for TDM policies to really move the needle on reducing drive-alone trips. Each neighborhood's congestion situation is different, so neighborhood-specific goals are important for fairness across the city.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Transportation Demand Management	Enact parking policy reforms to more accurately reflect the true cost of driving and to reduce the demand for trips.	Continue to reduce the percentage of downtown employers that pay for employees' parking (currently at 68%) through Nashville Connector's Employer Outreach program.	Free parking is one of the biggest motivators to drive to work and also hides the true cost of driving and parking. Requiring employees to pay for parking, coupled with education and incentives to try other modes, may make a big positive impact in how employees commute.	Minimal (less than \$100k)	Minimal (less than \$100k)
		Transportation Demand Management	Enact parking policy reforms to more accurately reflect the true cost of driving and to reduce the demand for trips.	Conduct an annual market survey to establish the appropriate market rates for on-street parking meters and to amend prices accordingly.	Our existing parking system brings in nominal revenue. Modernizing our parking program will bring in significant new revenue.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		Transportation Demand Management	Enact parking policy reforms to more accurately reflect the true cost of driving and to reduce the demand for trips.	Modernize and improve the efficiency of the existing on-street parking program. Modernizations could include: credit card payments, pay-by-phone options, improved enforcement, etc. These policies must be implemented so as not to disproportionately impact lower-income populations.	Our existing parking system brings in nominal revenue. Modernizing our parking program will bring in significant new revenue.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		Transportation Demand Management	Enact parking policy reforms to more accurately reflect the true cost of driving and to reduce the demand for trips.	Establish business improvement districts along metered streets that receive funding from the parking meters (as well as from businesses along the corridor) for sidewalk and streetscape improvements.	Our existing parking system brings in nominal revenue. Modernizing our parking program will bring in significant new revenue.	Minimal (less than \$100k)	Moderate (\$100k - \$1M)
		Freight/Movement of Goods	Increased coordination of routing, delivery schedules, in downtown and other Tier 1 areas.	Truck routes are needed in downtown and through Nashville. Create regional coordination that ties into the local network. Promote use of smaller delivery vehicles in the downtown and Tier 1 areas. Where needed, improve alley infrastructure to enable better coordination of delivery vehicles.	Freight traffic is a major source of emissions, congestion and air pollution. Since freight travel is most often intercity it tends to be overlooked by city sustainability plans. Reducing emissions from the freight sector is critical for reaching our overall climate goals.	Substantial (>\$1M)	Minimal (less than \$100k)
		Freight/Movement of Goods	Improve/eliminate at-grade crossings.	Prioritize and work to eliminate at-grade rail crossings where trains block major crossings.	Freight traffic is a major source of emissions, congestion and air pollution. Since freight travel is most often intercity it tends to be overlooked by city sustainability plans. Reducing emissions from the freight sector is critical for reaching our overall climate goals.	Substantial (>\$1M)	Substantial (>\$1M)
		Freight/Movement of Goods	EV promotion and idling standards.	Include EV promotion and idling policies for transit and freight.	Freight traffic is a major source of emissions, congestion and air pollution. Since freight travel is most often intercity it tends to be overlooked by city sustainability plans. Reducing emissions from the freight sector is critical for reaching our overall climate goals.	Minimal (less than \$100k)	Minimal (less than \$100k)

COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		Freight/Movement of Goods	Create task force to improve overall movement of goods.	Encourage rail-based freight with distribution centers near hub locations (potentially create a task force needed to coordinate a regional plan with incentives). Encourage and coordinate with barge freight to improve overall movement of goods.	Freight traffic is a major source of emissions, congestion and air pollution. Since freight travel is most often intercity it tends to be overlooked by city sustainability plans. Reducing emissions from the freight sector is critical for reaching our overall climate goals.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Coordinate with Drive Electric TN and its four Opportunity Areas, NES and TVA.	Adoption of EV policies to help guide an increase in use.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Coordinate with the state of Tennessee, TVA, NES and private sector to build out new public DC fast-charging infrastructure.	Invest in infrastructure to increase use.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Coordinate with the state of Tennessee, TVA, NES and private sector to build out new public Level 2 charging infrastructure.	Invest in infrastructure to increase use.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Develop programs and infrastructure that provide electric vehicle charging for individuals with limited income.	Invest in infrastructure to increase use.	Substantial (>\$1M)	Moderate (\$100k - \$1M)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Work with major employers to identify locations for priority parking for electric vehicle charging infrastructure and programs to promote use among employees. EVIP Parking Promotion.	Invest in infrastructure to increase use.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Coordinate with Metro Codes to add "EV-capable" or "EV-ready" requirements for new single-family homes and multifamily dwellings.	Invest in infrastructure to increase use.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Collaborate on developing new electric vehicle infrastructure.	Establish a Metro interdepartmental task force that includes departments with the greatest vehicle fleet needs like Public Works, Water Services, Codes and others to develop policies for fuel-efficient routing and telecommuting. Task Force to create a citywide plan for greening the municipal vehicle fleet and associated infrastructure in 2021. Include an inventory of publicly available electric vehicle charging stations with the electric vehicle supply equipment manufacturer, level of charger (1, 2, or 3), functioning status of EVSE, solar or grid connected, and owners. Develop a phasing plan to transition heavy-duty vehicle fleets such as WeGo buses, ambulances, fire trucks, and delivery vehicles that have unique replacement, funding, maintenance, facilities, workforce training, and staffing issues. Coordinate this process with Drive Electric TN, NES, TVA, and Metro departments.	Adoption of EV plan and policies to help guide an increase in use.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Ensure electric vehicle infrastructure is maintained.	Develop a repair and replacement program and budget maintenance annually.	Repair EV infrastructure to increase use.	Moderate (\$100k - \$1M)	Moderate (\$100k - \$1M)
		"Green" Transportation Vehicles and Infrastructure	Ensure electric vehicle infrastructure is maintained.	Enhance and maintain existing EV charging signage throughout the city.	Provide signage to promote the use of EVs.	Moderate (\$100k - \$1M)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Promote electric vehicle education with consumers.	Develop and promote electric vehicles with leaders, delivery companies, transportation network companies, taxi companies and small vehicle operators to understand and incentivize the incorporation of low-emission vehicles into their fleets. This may include videos about electric vehicles or a local stakeholder summit.	Promote the use of EVs to increase use.	Minimal (less than \$100k)	Minimal (less than \$100k)










COMMITTEE	SPECIAL CONSIDERATIONS	STRATEGY	ACTIONS	SUBACTIONS	CASE STATEMENT / BENEFITS	CAPITAL COST RANGE	OPERATIONAL COST RANGE
		"Green" Transportation Vehicles and Infrastructure	Promote electric vehicle education with consumers.	Develop local networking support for electric vehicle consumers. Conduct ride and drive events that showcase the features of electric vehicles, create a consumer website, launch programs that provide electric vehicle fleet conversion education, support the Nashville Electric Vehicle Owner's club, and support educator training for electric vehicle ambassadors.	Promote the use of EVs to increase use.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Promote electric vehicle education with consumers.	Work with car dealerships to ensure electric vehicles are available on every lot, with education on electric vehicle features and test drives.	Having EVs available will likely increase sales.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Reduce the use of internal combustion engines in the city.	Develop regulations through Metro Council to prohibit ICEing (when an internal combustion engine vehicle parks in a designated space for electric vehicle charging) and empower the Metro Nashville Police Department and Metro Public Works to cite offenders. Consider staffing resources and funding needed to enforce these regulations in Metro departments.	Making it harder for non-EVs can increase the use of EVs.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Reduce the use of internal combustion engines in the city.	Coordinate with Metro General Services and other Metro departments to utilize car rental or ride-hail services that reduce Metro's overall need for purchasing vehicle fleets, reduce maintenance costs, and utilize parking spaces more efficiently.	Reduces Metro's overall need for purchasing vehicle fleets, reduces maintenance costs, and utilizes parking spaces more efficiently.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Support standardizing incentives and policies for electric vehicle expansion.	Work with the state of Tennessee to help create consistent, innovative and supportive policies that support electric vehicle expansion and supply equipment at the state, county, city and utility levels, inclusive of incentives, electricity rates, planning standards, and other policies and programs.	Align policies to support the promotion of EV adoption.	Minimal (less than \$100k)	Minimal (less than \$100k)
		"Green" Transportation Vehicles and Infrastructure	Support standardizing incentives and policies for electric vehicle expansion.	Explore mechanisms to offer EV car sharing in low-income neighborhoods and reduced price or free electric vehicle charging at Metro-owned stations for residents participating in a qualifying benefit program.	Promote programs to support EV adoption with a focus on equity.	Substantial (> \$1M)	Moderate (\$100k - \$1M)

Exhibit III: Youth Council Vision Statement

VISIONS FOR A GREEN FUTURE: HOPEFUL PERSPECTIVES FROM NASHVILLE YOUTH

The hard work of ensuring a healthy, safe and equitable Nashville over the long-term future can feel overwhelming. Politics, budgets and many other factors often get in the way of a sustained, hopeful vision of the future of our climate. With this page, we hope to energize this pragmatic and analytical report with youthful optimism and hope.

Imagine a Nashville whose environment is just as vibrant and thriving as its economy and culture. What does that look like? Our vision is optimistic and imaginative:

Native wildflowers blanket downtown medians. Lush vegetation shades bus stops and rain shelters. All neighborhoods have clean air to breathe and pure water to drink. Safe, separated bike paths wind around our City. Our solar-powered public transportation system facilitates community-building and sustainable ride-sharing. Renewable energy is an essential part of Nashvillians' daily lives. Neighborhood gardens ensure that no Nashvillians go hungry. Trees bring shade and comfort to communities all around the City. Our rivers and streams are clean recreational areas, unharmed by industrial fertilizers and pollution. Students learn about creating sustainable systems in sustainable buildings. We equip our youth with the knowledge and creativity to out-innovate climate catastrophe. Our school cafeterias are healthy and nourishing, stocked with locally grown vegetables. We do not waste any food; clean leftovers feed the most vulnerable of Nashvillians, and the rest makes for fantastic compost. We equitably digitize educational materials, ensuring that every student has the tools to succeed in a green school system. We minimize landfills, expanding our recycling program to bring a second life to what once was trash. Nashville is livable and healthy for everybody; we know that we all share a backyard.

A few examples of policies that can lead to this future include incentives and ordinances for the adoption of greener buildings such as San Francisco's Better Roof Ordinance; climate literacy programs both in classrooms and in programs similar to those surrounding youth voter turnout; and mass media advertising geared toward proper recycling, composting and other individual-level sustainable choices.

Incorporating the visions of young adults from all around Nashville should be central to the approach for climate action. The youthful ingenuity and optimism of Nashville's students and young adults will fuel innovative approaches to stave off the worst impacts of a changing climate, while also building a more just and equitable Nashville in the process.

This page was created with input from students all around Nashville, with leadership from members of the Mayor's Youth Council. Special thanks to Oscar Fox (University School of Nashville), Mayowa Kassim (University School of Nashville), Heba Alali (John Overton High School), and Anisa Yusuf (John Overton High School).



Exhibit IV: Potential Funding and Financing Options for Sustainability Advisory Committee’s Climate Action Plan Recommendations

Several of the key mitigation strategies recommended by the Sustainability Advisory Committee do not require large expenditures, as discussed in the report, and, in many cases, the social and environmental benefits of the recommended actions, including improved public health and economic development, will partially or fully offset the costs. Nevertheless, the Committee recognizes the significant financial cost associated with some of its recommendations and advises the mayor to establish a task force to identify feasible green finance and other innovative funding mechanisms to support the City’s climate action plan.

Tables 1 and 2 identify potential financing and funding options to explore. Note, the Committee has not assessed whether these options are available to the City or whether they make sense to pursue. The tables are simply intended to highlight some mechanisms and grants that other cities have used to support their climate action plans and other sustainability initiatives.

Table 1. Overview of Potential Financing Options

Type	Description	Pros	Cons
Green Bonds	Green bonds are debt instruments like typical bonds. Proceeds <i>must be earmarked for projects that produce positive environmental impact.</i>	<ul style="list-style-type: none"> • Can be used by local authorities—Massachusetts sold the first municipal “green bond” in June of 2013 to help pay for renewable energy, transit systems and water infrastructure, among other things. • This “green” label can be a marketing tool to make bonds appealing to investors, as investors want green bonds in portfolios, and municipal issuers are seeing sales of green bonds “oversubscribed.” 	<ul style="list-style-type: none"> • Certified green bond issuers face additional paperwork to “prove” to bond investors that their money is actually being used to benefit the environment. • Currently existing at a small volume/scale (not widespread domestically). • Independent review of bonds to qualify as green bonds can cost from \$10,000 to \$50,000. • More city staff work involved in labeling projects that qualify as green, tracking the use of proceeds, and reporting that information to investors.



Type	Description	Pros	Cons
Energy Savings Performance Contracts	ESCOs are long-term project developers that integrate design, financing, installation and operation with energy service retrofit projects. Importantly, contracts with ESCOs guarantee energy savings as part of the terms of an energy savings performance contract. ESCOs are considered a “performance-based contracting methodology,” whereby an ESCO’s compensation is directly linked to the actual energy cost savings of a project.	<ul style="list-style-type: none"> • Creates plans to implement energy efficient retrofitting. • Includes measures to maximize energy savings while meeting customer’s specific facility requirements. 	<ul style="list-style-type: none"> • ESCOs require a long-term agreement that can be restricting. • There may be additional costs including audit, and interest rates much higher than tax-exempt bond rates, and duplicative measurement and monitoring of savings. • Often focus on lower cost measures with easy-to-predict savings, not on comprehensive approaches with deeper savings. • ESCOs may receive a higher percentage of the savings at the beginning of the contract term depending on the financing model, which means Metro would not see significant savings for several years.
Property Assessed Clean Energy Model Financing	PACE financing is a mechanism that allows a property owner (commercial or residential) to finance the up-front cost of energy or other eligible property improvements and then pay back the financing over time via a voluntary assessment. Typically, it involves a 10–20 year repayment period. PACE financing is unique in that the assessment is attached to the property, not an individual. PACE is an extension of “land-secured financing districts” within a municipality.	<ul style="list-style-type: none"> • Allows property owners to implement energy improvements without large up-front cash payments. • Longer term financing of a project makes it more cash flow-positive. • Helps municipalities encourage energy efficiency/renewable energy without risking general municipality funds. 	<ul style="list-style-type: none"> • May require state enabling legislation. • Only available to property owners. • Portable items cannot be financed (e.g., lightbulbs, refrigerators). • Costs to local government to staff the assessment paybacks. • Potential mortgage-holder/lender pushback for fear of a mortgage being made subordinate to the unpaid assessment in the case of foreclosure.



Type	Description	Pros	Cons
On-Bill Financing/ Repayment	OBF/OBR allow property owners to pay for an investment in clean energy upgrades through their utility instead of immediately out of pocket. With OBF, the utility incurs the cost of clean energy upgrades; the property owners then repay that cost on their utility bills. An OBR is similar to an OBF, except that the up-front costs come from a third party (in lieu of from the utility company directly).	<ul style="list-style-type: none"> Typically run by utility/natural gas companies, OBF/OBR could be used by state and local governments to capitalize on new on-bill loan funds, and provide credit enhancement for existing funds. Local governments may also be able to use these on-bill programs to finance projects for their own local government facilities. Allows property owner to make green improvements without a large up-front cost. 	<ul style="list-style-type: none"> It may not be easy for a utility to change the billing system to accommodate on-bill repayment. Repayment allocation (who is paid first) is an issue when bills are not paid in full by the customer and typically the gas or electric charge is covered first, so OBRs could increase lender risk—which may necessitate credit enhancement by the municipality as a way to attract more private capital.
Environmental Impact Bonds	EIBs, often called “pay-for-success” bonds, are a cost and performance management tool (rather than a finance tool).	Contracts are tightly written and managed to ensure outcomes are attained.	Often have significant transaction costs for structuring, implementing, and monitoring their performance.

Table 2. Overview of Potential Mobility-Oriented Grant Opportunities

Note: Grant descriptions may include direct quotes or paraphrases of materials on grantors’ websites.

Name	Description or Example Project
USDOT - Build Grant	“The Better Utilizing Investments to Leverage Development, or BUILD Transportation Discretionary Grant program, provides a unique opportunity for the DOT to invest in road, rail, transit and port projects that promise to achieve national objectives. Previously known as Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grants, Congress has dedicated nearly \$7.9 billion for eleven rounds of National Infrastructure Investments to fund projects that have a significant local or regional impact.”
USDOT Congestion Mitigation and Air Quality (CMAQ) Improvement Program	“The CMAQ program provides over \$8.1 billion dollars in funds to State DOTs, MPOs, and transit agencies to invest in projects that reduce emissions from transportation-related sources.” Funded projects aim to reduce traffic congestion and improve air quality, especially in areas of the country that do not attain national air quality standards. Metro uses this grant for the current Transportation Demand Management program.
NEA - Our Town	The National Endowment for the Arts Our Town program supports projects that “integrate arts, culture, and design activities into efforts that strengthen communities by advancing local economic, physical, and/or social outcomes”, aiming to achieve systemic change that strengthens communities. Projects require a partnership between a local government entity and nonprofit organization, and should engage with other sectors including agriculture and food, economic development, education, environment, and others. Metro uses this grant for the Wedgewood Houston Maker District.
USDOT - Eastern Federal Lands Access Program (FLAP)	“The Federal Lands Access Program was established in 23 U.S.C. 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands.”
Heart of the Community Grant (Southwest and PPS)	This grant aims to help communities across the country bring new life to their public spaces. The grant also raises mainstream awareness of placemaking and encourages participation and volunteerism that benefits public spaces in local communities. (\$50,000-\$100,000 for one calendar year. Application in fall.)



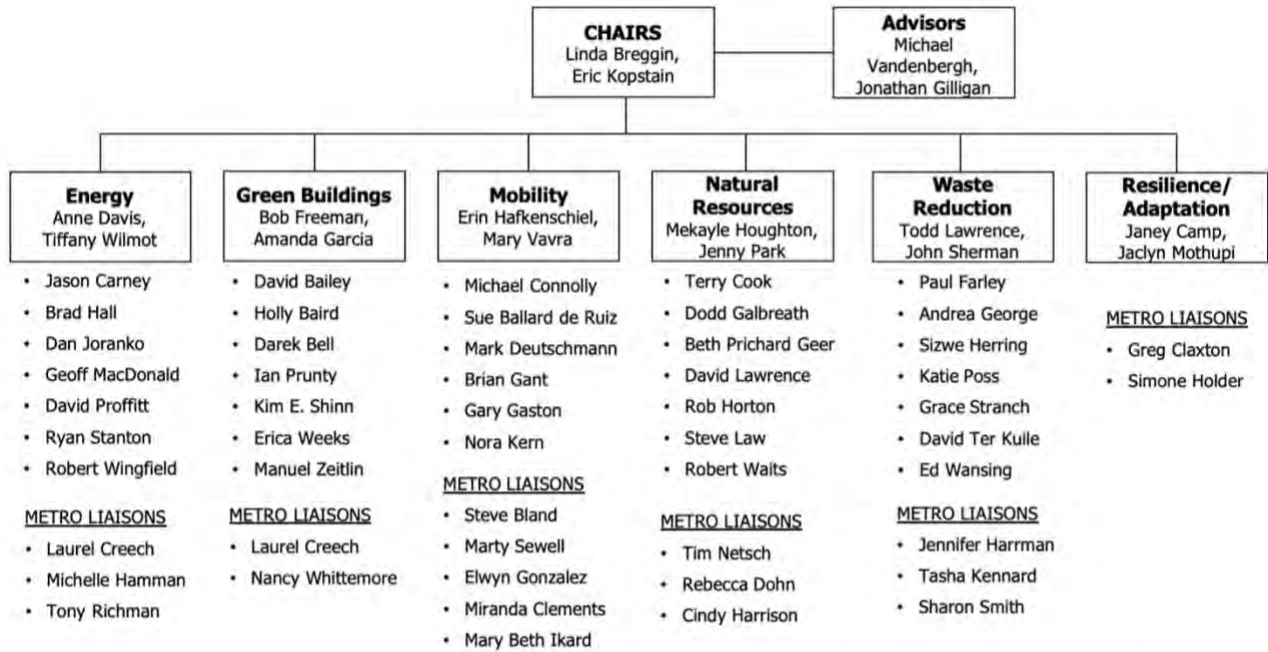
Name	Description or Example Project
FTA/SGA - Transit Oriented Development Technical Assistance	The Federal Transit Administration, in partnership with Smart Growth America, offers technical assistance to communities through the National Public Transportation/Transit-Oriented Development Technical Assistance Initiative to develop tools, guidance and other resources for enhancing transit-oriented development within transit corridors or around a public transportation station, and in economically distressed communities. Any unit or subdivision of state, regional, local or tribal governments with an active federally funded transit capital project is eligible.
FTA - Safety Research and Demonstration (SRD) Program	\$7 million in funds are available through this grant to demonstrate and evaluate innovative technologies and safer designs to improve public transportation safety. FTA will fund demonstration projects in two thematic areas: a) collision avoidance and mitigation and b) transit worker safety protection. Demonstration technologies may include, but not be limited to, advanced braking system, blind spot warning, pedestrian collision warning, 360 surround view, driver alert warning, and lane departure warning.
EPA - Smart Cities Air Challenge	EPA offers up to \$80,000 for “collecting and sharing data from air quality sensors.” Encourages communities to install hundreds of air quality sensors and analyze the resulting data. Through the challenge, EPA will offer two communities up to \$40,000 each to work with their residents to crowdsource air quality data and share it with the public online.
Big Jump Project	This project provides grants for bike/pedestrian technical assistance to improve bicycling infrastructure and improve the “health and vitality of communities.”
FHWA - Advanced Transportation and Congestion Management Technologies Deployment Initiative	This program provides competitive grants for the development of large-scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment. Eligible projects include advanced safety systems, transportation management technologies, and mobility and access technologies, such as dynamic ridesharing and information systems.
EPA National Grants- Diesel Emissions Reduction Act (DERA)	The Diesel Emissions Reduction Act grant program provides support for vehicle and engine replacement to reduce emissions from diesel engines in order to protect human health and improve air quality.
Tennessee DOT - Transportation Alternatives Program	“More than \$317 million in grants has been distributed by the State Department of Transportation to 267 communities across the State of Tennessee to build sidewalks, bike and pedestrian trails and to renovate historic train depots and other transportation related structures. The impact of some of the projects is primarily local. Whether large or small, the projects serve the same purposes—improving access and providing a better quality of life for people in the state of Tennessee.”
Tennessee Highway Safety Office Grant	“The Tennessee Highway Safety Office provides grants to programs designed to reduce the number of fatalities, injuries and related economic losses resulting from traffic crashes on Tennessee’s roadways. Local governments, law enforcement agencies, academic institutions and private non-profits can apply for National Highway Safety Transportation Administration pass-through funding for projects related to various areas of highway safety. Eligible project areas are included in the State of Tennessee’s Highway Safety Performance Plan.”
Tennessee DOT - Multimodal Access Grant	“TDOT’s Multimodal Access Grant is a state-funded program created to support the transportation needs of pedestrians, bicyclists and transit users through infrastructure projects that address existing gaps along state routes. Multimodal facilities play an important role in providing transportation choices for people across Tennessee. As half of all trips in the United States are three miles or less, good walking, biking and transit facilities are essential to the continued growth and success of towns and cities. Multimodal Access Grant projects are state-funded at 95 percent with a 5 percent local match. State match amount will not exceed \$950,000.”



Name	Description or Example Project
FTA - Low or No Emission Vehicle Program	<p>“The Low or No Emission competitive program provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses, as well as acquisition, construction and leasing of required supporting facilities. Under the FAST Act, \$55 million per year is available until fiscal year 2020.”</p>
FTA - Mobility for All Pilot Program Grants	<p>“This funding opportunity seeks to improve mobility options through employing innovative coordination of transportation strategies and building partnerships to enhance mobility and access to vital community services for older adults, individuals with disabilities, and people of low income. As required by federal transit law, funds are awarded competitively to finance innovative capital projects for the transportation disadvantaged that will improve the coordination of non-emergency medical transportation (NEMT) services. Some examples include—employing mobility management strategies, vehicle purchase, IT purchase, and leasing equipment.”</p>



Appendix I: Mayor Cooper’s Sustainability Advisory Committee



*Mary Beth Ikard and Mike Jameson served as Mayor Cooper’s staff liaisons to the full Mayor’s Sustainability Advisory Committee.

Appendix II: Committee Members and Affiliations

Name	Organization	Subcommittee
Linda Breggin	Environmental Law Institute; Vanderbilt Law School; Nashville Food Waste Initiative	Co-chair
Eric Kopstain	Vanderbilt University	Co-chair
David Bailey	Hastings Architecture	Green Buildings
Holly Baird	Milepost Consulting	Green Buildings
Sue Ballard de Ruiz	Tennessee State University	Mobility
Darek Bell	Bell Construction	Green Buildings
Janey Smith Camp	Vanderbilt University	Resilience/Adaptation
Jason Carney	Tennessee Solar Energy	Energy
Michael Connolly	CSX	Mobility
Terry Cook	The Nature Conservancy	Natural Resources
Anne Davis	Attorney	Energy
Mark Deutschmann	Village Real Estate Services, Core Development Services; Urban Land Institute	Mobility
Paul Farley	Waste Management	Waste Reduction



Name	Organization	Subcommittee
Bob Freeman	State Representative; Freeman Webb	Green Buildings
Dodd Galbreath	Lipscomb University	Natural Resources
Brian Gant	SCS Engineers; Chamber of Commerce representative	Mobility
Amanda Garcia	Southern Environmental Law Center	Green Buildings
Gary Gaston	Nashville Civic Design Center	Mobility
Beth Prichard Geer	Office of Al Gore	Natural Resources
Andrea George	Vanderbilt University	Waste Reduction
Erin Hafkenschiel	Vanderbilt University	Mobility
Brad Hall	Office of Al Gore	Energy
Sizwe Herring	Earth Matters	Waste Reduction
Rob Horton	Trap Garden	Natural Resources
Mekayle Houghton	Cumberland River Compact	Natural Resources
Daniel Joranko	Vanderbilt University Divinity School	Energy
Nora Kern	Walk Bike Nashville	Mobility
Steve Law	Tennessee Parks and Greenways Foundation	Natural Resources
David Lawrence	Hines	Natural Resources
Todd Lawrence	Urban Green Lab	Waste Reduction
Geoff MacDonald	Vanderbilt University	Energy
Jaelyn Mothupi	Tennessee Department of Environment and Conservation	Resilience/Adaptation
Jenny Park	The Trust for Public Land	Natural Resources
Katie Poss	Turner Construction Company	Waste Reduction
David Proffitt	Metro Nashville Public Schools	Energy
Ian Prunty	Building Robotics Inc.	Green Buildings
John Sherman	Solid Waste Board	Waste Reduction
Kim Shinn	TLC Engineering Solutions	Green Buildings
Ryan Stanton	Tennessee Department of Environment and Conservation	Energy
Grace Stranch	Sierra Club, Middle Tennessee	Waste Reduction
David ter Kuile	Vanderbilt University	Waste Reduction
Mary Vavra	Transit Now Nashville	Mobility
Robert Waits	Hodgson Douglas	Natural Resources
Ed Wansing	The Compost Company	Waste Reduction
Erica Weeks	Hastings Architecture	Green Buildings
Tiffany Wilmot	Wilmot Inc.	Energy
Robert Wingfield	Fisk University	Energy
Manuel Zeitlin	Manuel Zeitlin Architects	Green Buildings



Appendix III: Committee Public Meeting Schedule

Please access agendas, PowerPoint presentations and/or audio recordings from the full Committee meetings of the Mayor's Sustainability Advisory Committee below and at [Nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory_Committee.aspx](https://www.nashville.gov/Government/Boards-and-Committees/Committee-Information/ID/137/Sustainability-Advisory_Committee.aspx).

February 20, 2020

- [PowerPoint](#)

June 25, 2020

- [PowerPoint](#)

July 30, 2020

- [Agenda](#)
- [Audio Recording](#)

August 17, 2020

- [Agenda](#)
- [PowerPoint](#)
- [Audio Recording](#)

