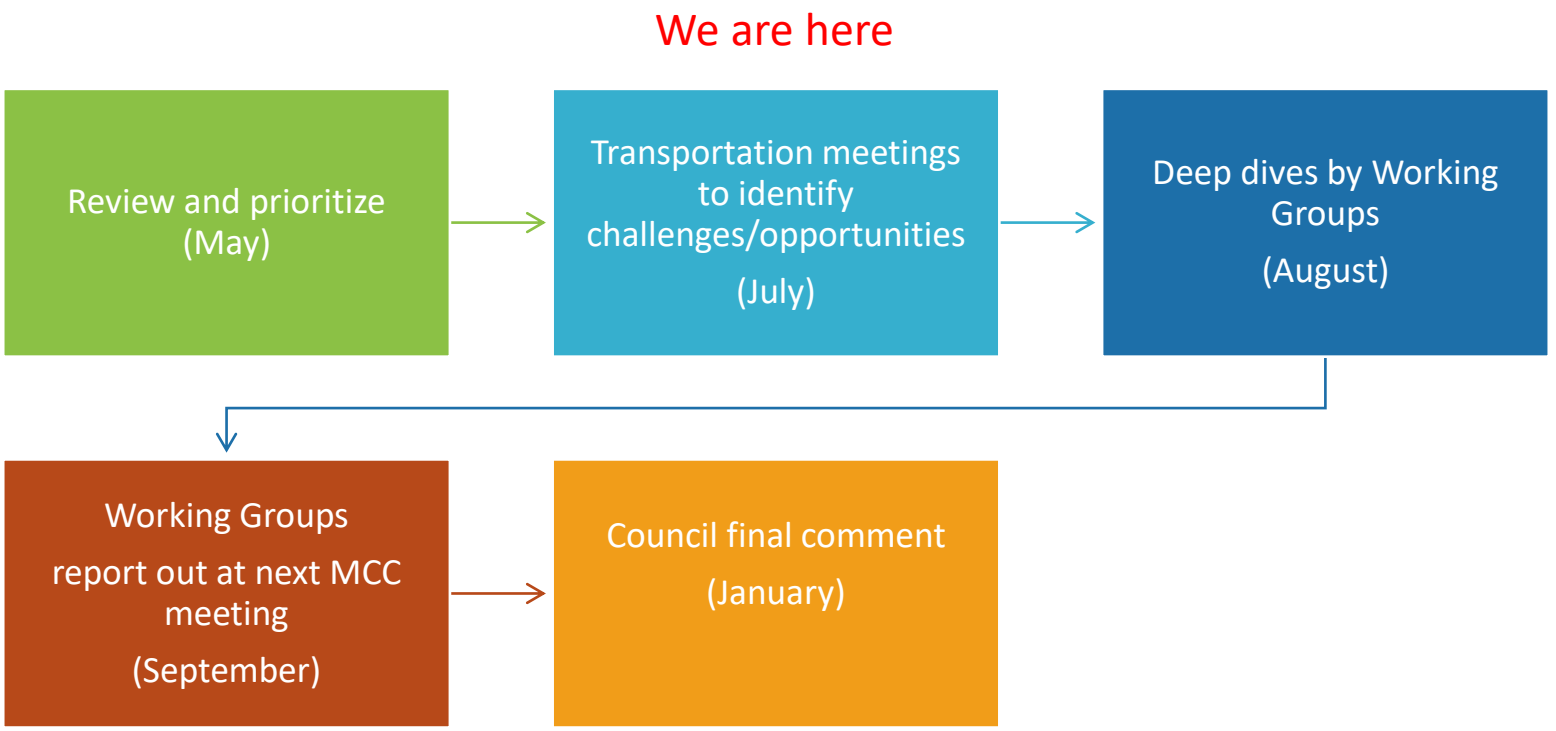
CITY OF KNOXVILLE

Mayor's Climate Council Transportation Meeting

July 14, 2020

Meeting Flow



Baseline Surveys

Surveys were used to

- Develop a better understanding of local priorities
- Identify critical working group members
- Develop early feedback on potential blind spots in strategies

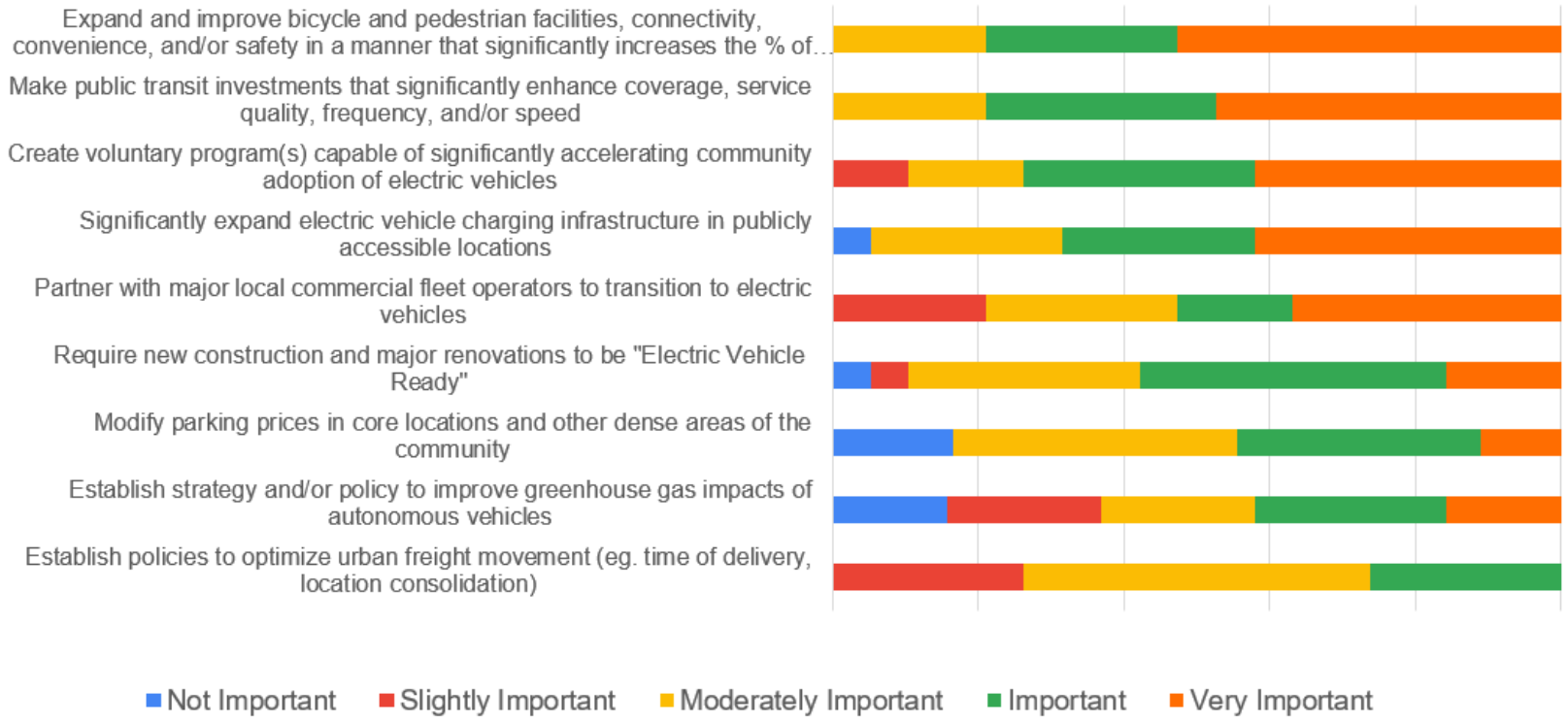
Surveys results are NOT

- A final ranking
- A commitment to specific phrasing
- A substitute for in-depth discussion

Baseline Rankings

Strategies
Expand and improve bicycle and pedestrian facilities, connectivity, convenience, and/or safety in a manner that significantly increases the % of trips taken by walking or biking
Make public transit investments that significantly enhance coverage, service quality, frequency, and/or speed
Create voluntary program(s) capable of significantly accelerating community adoption of electric vehicles
Significantly expand electric vehicle charging infrastructure in publicly accessible locations
Partner with major local commercial fleet operators to transition to electric vehicles
Require new construction and major renovations to be "Electric Vehicle Ready"
Establish strategy and/or policy to improve greenhouse gas impacts of autonomous vehicles
Modify parking prices in core locations and other dense areas of the community
Establish policies to optimize urban freight movement (eg. time of delivery, location consolidation)

Ranking Insights



- Consensus among top 2
- Only slight variance in overall top 4 between two groups
- Only 4 strategies received “Not Important” votes
- No unique write-in strategies, but recommendations to be more open minded on fuel sources

Thank you!

Transportation Working Group

Melissa Allen-Dumas, Oak Ridge National Lab
Nicholas Bradshaw, City of Knoxville
Chris Cherry, University of Tennessee
Caroline Cooley, Bike Walk Knoxville
Karen Estes, Knox CAC - Transit
David Greene, University of Tennessee
Jon Livengood, City of Knoxville
Kent Minault, Sierra Club Harvey Broome Group
Jonathan Overly, East Tennessee Clean Fuels Coalition
Melissa Roberson, Knoxville Area Transit
Virginia Salazar Buda, East Tennessee Clean Fuels Coalition
Jeff Welch, Knoxville Regional Transportation Planning Organization
Belinda Woodiel-Brill, Knoxville Area Transit
Ellen Zavisca, Knoxville Regional Transportation Planning Organization

Equity Working Group

Kendra Berry, Great Schools Partnership
Claudia Caballero, Centro Hispano de East Tennessee
Terrence Carter, Knoxville Area Urban League
Misty Goodwin, Knoxville-Knox County Community Action Committee (CAC)
Rick Held, Community Voices
JD Jackson, Socially Equal Energy Efficient Development (SEEED)
Stanley Johnson, Socially Equal Energy Efficient Development (SEEED)
Dave Ndiaye, University of Tennessee
Albert Nelson, Knoxville-Knox County Community Action Committee (CAC)
Janea Peterson, Knoxville Area Urban League
June Rosten, AFL-CIO
Calvin Skinner, NAACP

…and the Energy and Waste members who have been working with sustainability staff!

Equity Working Group

Erin Rose, Three^3

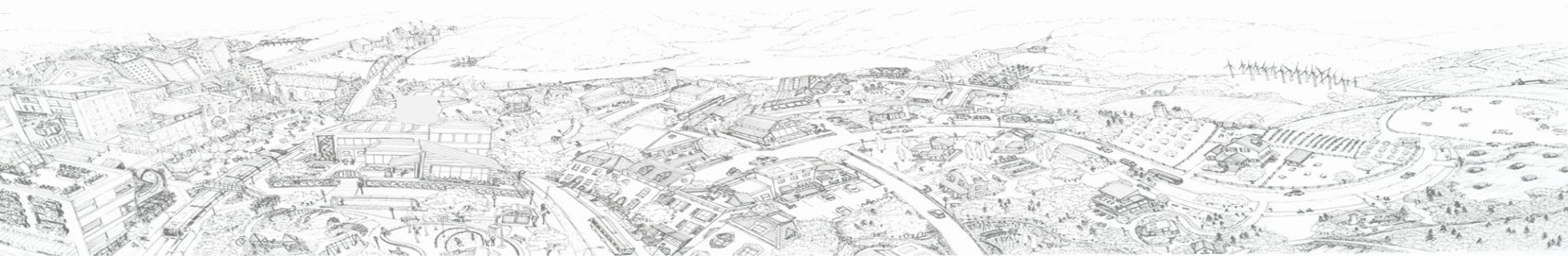
Meaningfully Integrating Equity into Climate Action

Equity in Process and Benefits

- Designing solutions
- Participation + Decision-making
- Implementation
- Monitoring + Evaluation
- Outcomes (measurable and subjective)

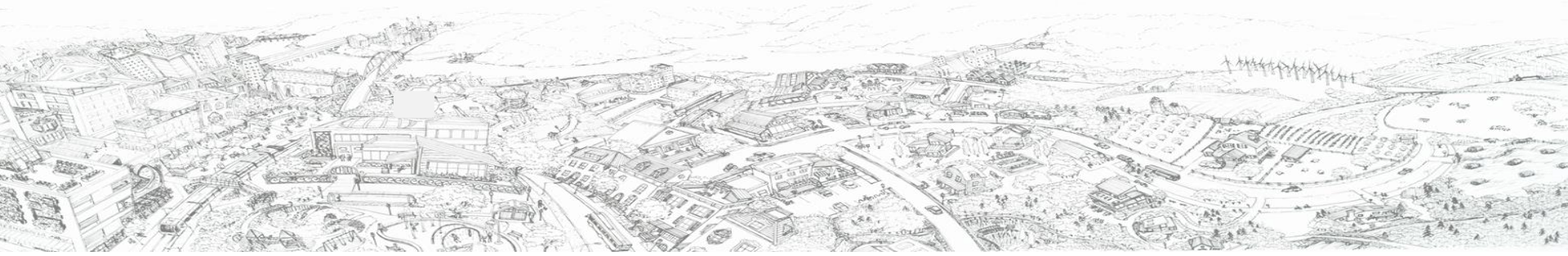
Informing Action

- Through EWG engagement of frontline communities
- Sharing collected information in advance of technical subcommittees
- Feedback on proposed climate strategies and their anticipated impacts on affected communities and groups
- Proposing indicators for monitoring and evaluation; signals for tracking burden + benefits over time



Considering the Multiple Dimensions of Equity

- Social + Cultural Justice
- Economic + Distributive Justice
- Environmental Justice
- Parity in Participation
- Legal Protections and Provisions



The Multiple Elements of Equity

Social + Cultural Justice

- Standard of living; Quality of life
- Physical, mental, emotional + developmental health + wellbeing
- Psychosocial stress; financial stress
- Environmental stress from racism
- Racial, health + educational disparities
- Childhood outcomes
- Collective efficacy; social cohesion
- Educational opportunities + attainment
- Community assets + needs
- Perception of community as desirable place to live

Economic + Distributive Justice

- Just allocation of resources
- Employment opportunities
- Workers' rights
- Economic opportunities
- Infrastructure investments
- Access to Innovations
- Inclusion of black/minority-owned businesses and banks
- Land + property value impacts; dispossession + displacement
- Housing, energy and food security
- Poverty + income inequalities
- Remedy for harm

Environmental Justice

- Climate resilience
- Adaptive capacity
- Healthy + clean environments where people live, learn, work + play

Parity in Participation

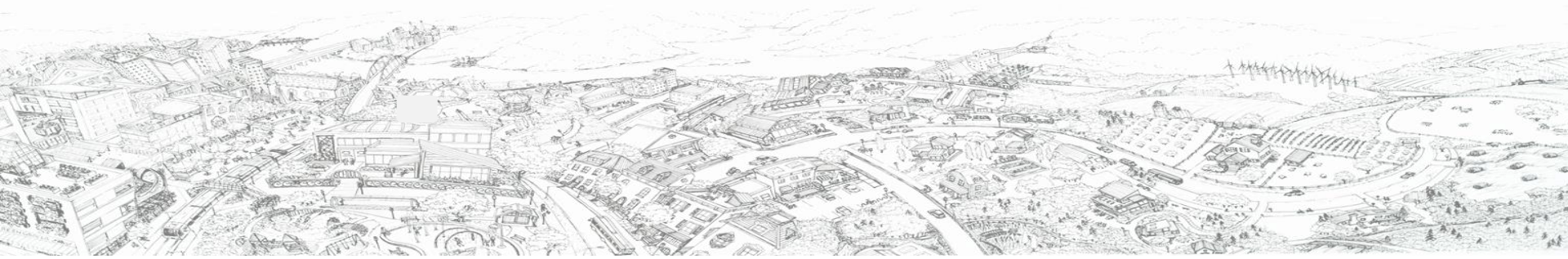
- Agency in life decisions
- Power in decision-making
- Designing solutions
- Capacity-building + empowerment
- Civic engagement
- Social + political participation
- Just transition to a low-carbon economy
- Citizen research + monitoring

Legal Protections + Provisions

- Human rights
- Protections from harm
- Resources for social provisions

EWG Next Steps

- Refine definition of equity within the context of climate planning and action
- Establish goals + equity principles for guiding our work
- Selection of frameworks and equity ‘lenses’ for identifying and considering ‘frontline’ communities; both spatially and temporally
- Engage with communities and groups to better understand lived experiences and importance of targeted sectors (e.g., transportation)
- Develop screening questions for proposed climate action strategies
- Agree upon evaluation criteria + scoring approach for judging proposed climate strategies




Questions?


Panel
Presentations

CITY OF KNOXVILLE

Mayor's Climate Council

Alternative Fuels

Kent Minault
Sierra Club

David Greene
UTK

Jonathan Overly
East TN Clean Fuels Coalition

CITY OF KNOXVILLE

Mayor's Climate Council

Panel: Alternative Fuels

Kent Minault

Sierra Club

Charge Up LA!

Plug in and save with electric vehicle programs, charging stations & rebates.

As impacts from COVID-19 continue to evolve, LADWP prioritizes the health and safety of our customers and employees. We urge all customers and contractors to exercise caution and follow guidance from local, state, and federal health emergency response agencies to protect themselves and their employees.

We value your participation in the Charge Up LA! Program and appreciate your interest in advancing electric transportation in LA. Please be aware that the program is not suspended, but we expect application and rebate processing time to be significantly extended as a result of the COVID-19 pandemic. We are working diligently to process applications and are prioritizing payments.

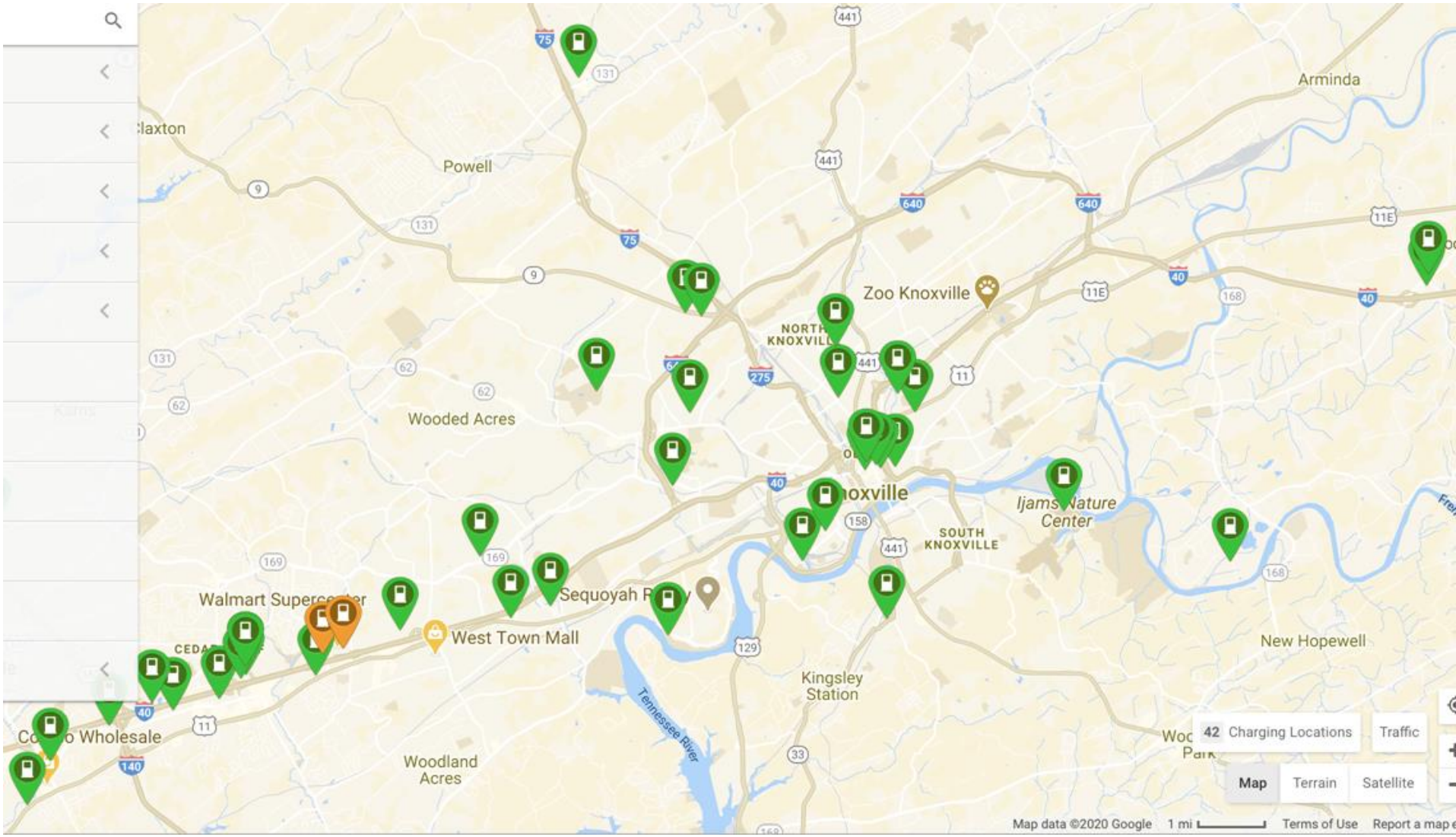
We appreciate your understanding and patience during these uncertain times. Together we'll get through this crisis. If you have questions about any of our Charge Up LA! Programs, please email pluginla@ladwp.com or call (866) 484-0433.

LADWP now offers a rebate up to $1,500 through the Used EV Rebate Program for used electric vehicles (EVs) purchased on or after September 1, 2019!

Eligibility

You do not need to be an LADWP account holder to apply for the rebate, but your permanent residence must receive electric service from LADWP.


CITY OF LOS ANGELES
EV
ELECTRIC
VEHICLE
CHARGING
STATION
8CRV252


Arminda
Powell
Zoo Knoxville
Wooded Acres
Ijams Nature Center
SOUTH KNOXVILLE
Walmart Supercenter
West Town Mall
Sequoyah
New Hopewell
Kingsley Station
Tennessee River
Woodland Acres
42 Charging Locations
Traffic
Map
Terrain
Satellite
Map data ©2020 Google
1 mi
Terms of Use
Report a map

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Mayor's Climate Council

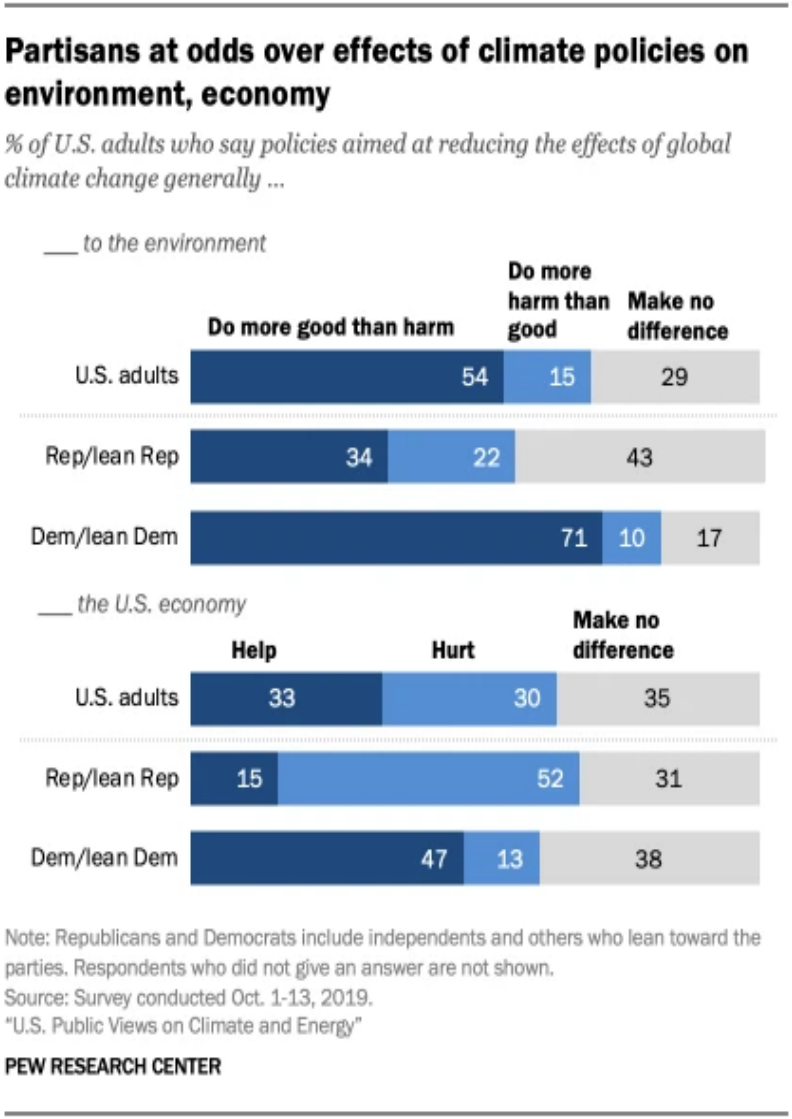
Panel: Alternative Fuels

David Greene

UTK

First, STEP 1.

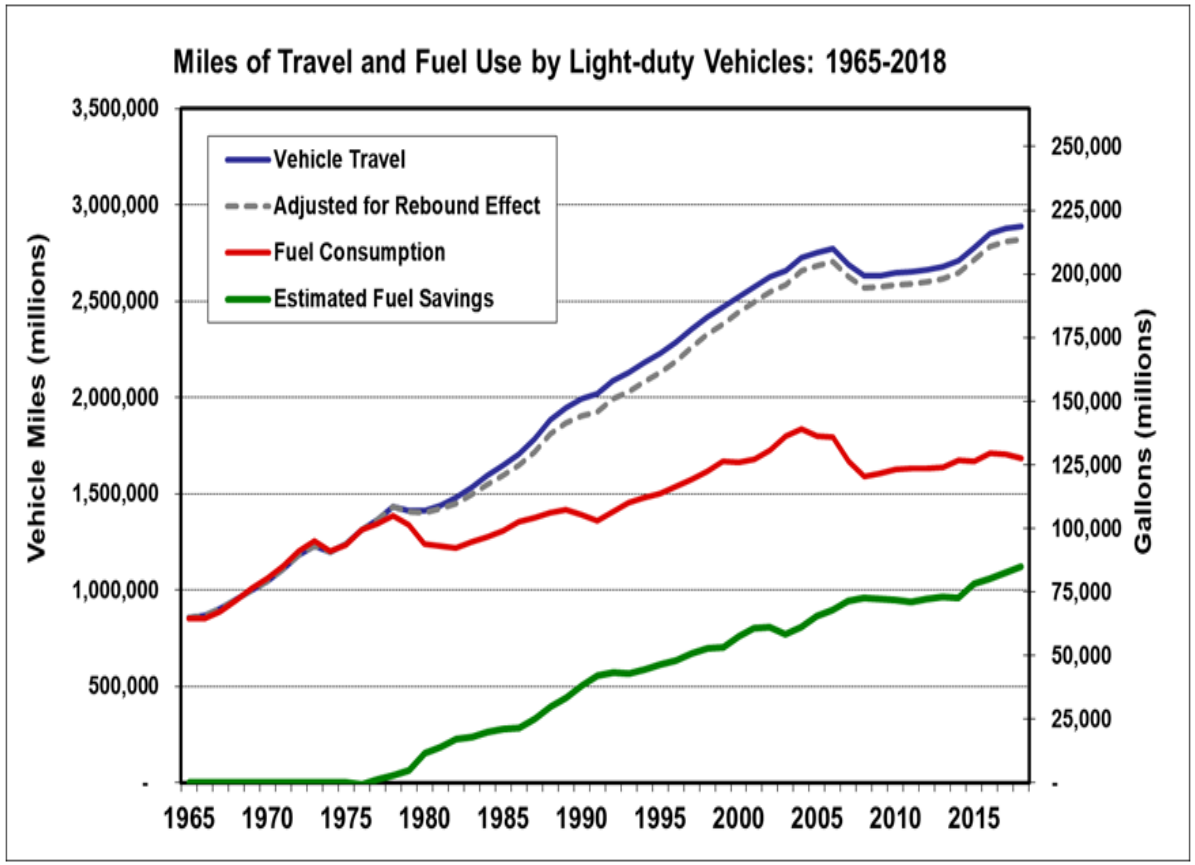
Build public consensus.



David L. Greene, Sr. Fellow, Howard H. Baker, Jr. Center
Research Prof., Civil and Environmental Engineering
The University of Tennessee, Knoxville

"The single most important area of action is efficiency improvement in all sectors."
Global Energy Assessment, *Toward a Sustainable Future.*

"Two Trillion Gallons: Savings from fuel economy improvements to US light-duty vehicles, 1975-2018",
Energy Policy, 2020.



The single biggest opportunity for car and light truck ghg reduction today is the Hybrid. Average reduction: -33%. Average payback period: 3.7 years. Market share 2.3%.
(ornl: www.fueleconomy.gov, $2.50/gal.)

Vehicle Comparison

Hybrid	Non-hybrid ⓘ
2020 Honda CR-V Hybrid LX AWD	2020 Honda CR-V AWD LX
	
2.0 L, 4 cyl, Automatic (variable gear ratios), Regular	1.5 L, 4 cyl, Automatic (variable gear ratios), Turbo, Regular
Combined MPG	
38	29
MSRP ⓘ	
$ 27,750	$ 26,550

The hybrid vehicle's MSRP is **$1,200 more.**

Fuel Cost Savings with Hybrid

Weekly	Monthly	Yearly
$5.88	$25.50	$306

Payback Period ⓘ

3.9 years

Vehicle Comparison

Hybrid	Non-hybrid ⓘ
2020 Toyota Highlander Hybrid XLE AWD	2020 Toyota Highlander AWD XLE
	
2.5 L, 4 cyl, Automatic (AV-S6), Regular	3.5 L, 6 cyl, Automatic (S8), Regular
Combined MPG	
35	23
MSRP ⓘ	
$ 42,600	$ 41,200

The hybrid vehicle's MSRP is **$1,400 more.**

Fuel Cost Savings with Hybrid

Weekly	Monthly	Yearly
$10.75	$46.58	$559

Payback Period ⓘ

2.5 years

CITY OF KNOXVILLE

Mayor's Climate Council

Panel: Alternative Fuels

Jonathan Overly

East TN Clean Fuels Coalition

Technical Working Group – Transportation

>> Fleets and the Public

Goal – *"Provide high-level, cross-sector leadership to chart a path to reduce Knoxville Community emissions 80% by 2050."*

Audience – Fleets of all sizes in the community, as well as individual drivers

Suggested Approach – Develop robust approach to advancing plug-in electric vehicle (PEV) adoption and use, but don't leave out the other vehicle technologies and alternative fuels that could *have significant impacts toward GHG reductions in the next 5-10 years*

Like fleets, consumers consider payback or ROI in their decision. Need to show a variety of fuel or technology options… not just one.

Technical Working Group – Transportation

>> Fleets and the Public

- ✓ *Multiple fuels can help provide GHG reductions and ROI in the ramp-up years to having more widely available LD and HD models of PEVs.*
- ✓ *Numbers in table below comes from comparing each fuel/tech. to gas/diesel as well as the other options.*

Fuel/Technology	Current GHG Savings	Renew-able?	Vehicle CapEx	Station CapEx	Fuel Cost Savings Opportunity	Ease of Access, fuel	Ease of Switch	Cost of Switch	Mainten-ance Costs	Value of GHG reductions
	(%)		(1 = inexp., 5 = expen.)	(1 = inexp., 5 = expen.)	(1 = least savings, 5 = most savings)	(1 = easiest, 5 = hardest)	(1 = easiest, 5 = hardest)	(1 = easiest, 5 = hardest)	(1 = inexp., 5 = expen.)	(1 = inexp., 5 = expen.)
Gasoline	---	---	---	---	---	---	---	---	---	---
CNG	12%	No	4	4	3	3	3-5 *	3-5 *	3	4
RNG	**40 - 70%**	**100%**	**4**	**4**	**3**	**3**	**3-5 ***	**3-5 ***	**3**	**3**
E85 ethanol	**40%**	**80%**	**0**	**2-3**	**1**	**3**	**2**	**3**	**2**	**2**
Electric - LD	**50%**	***Depends***	**2**	**1**	**4**	**1**	**2**	**2**	**1**	**2**
Electric - MD, HD	50%	*Depends*	5	2	3	1	3	2-3	1	4
Hybrids, more FE	**30%**	**No**	**2-3**	---	**3**	**1**	**1**	**2**	**2**	**2**
Propane autogas	0 - 15%	No	3	2	5	1	3	2	1	4
Diesel	---	---	---	---	---	---	---	---	---	---
B20 biodiesel	**15%**	**20%**	**0**	**1**	**1**	**2**	**1**	**2**	**1**	**2**
B100 biodiesel	**75%**	**100%**	**3**	**1**	**1**	**2**	**3**	**3**	**3**	**2**
Renew. diesel	70%	100%	0	0	-2	0	1	1	-1	5
LNG		No	5	5	1	5	5	5	4	4

Technical Working Group – Transportation

>> Fleets and the Public

<u>To repeat</u> – A single fuel/technology focus will *exclude many potential Actors for Change in the community* (fleets and individuals).
<u>Trans. Working Group should convene and discuss specific examples of various fleet and individual vehicles to assess options</u>.

- ✓ For fleets, must evaluate from their perspective to maintain operations
- ✓ Knoxville has a public CNG station and discussions are underway to further investigate how to offer **RNG** to fleets and through the station
- ✓ Funding could become available to help establish more public E85 and B20 stations in Knoxville (state funds)
- ✓ LD PEVs are closing in on mass adoption, however MD and HD fleet vehicles are commonly 2-3 times the cost of their diesel counterparts
- ✓ ETCF has partnerships with many PEV, CNG/RNG, biofuel entities
- ✓ ETCF manages Tennessee-centric annual funding program that could help many fleets in Knoxville “make the switch”

CITY OF KNOXVILLE

Mayor's Climate Council

Transit & Transportation Demand Management

Chris Cherry
UTK

Jeff Welch
Knoxville Regional TPO

Belinda Woodiel-Brill
KAT

CITY OF KNOXVILLE

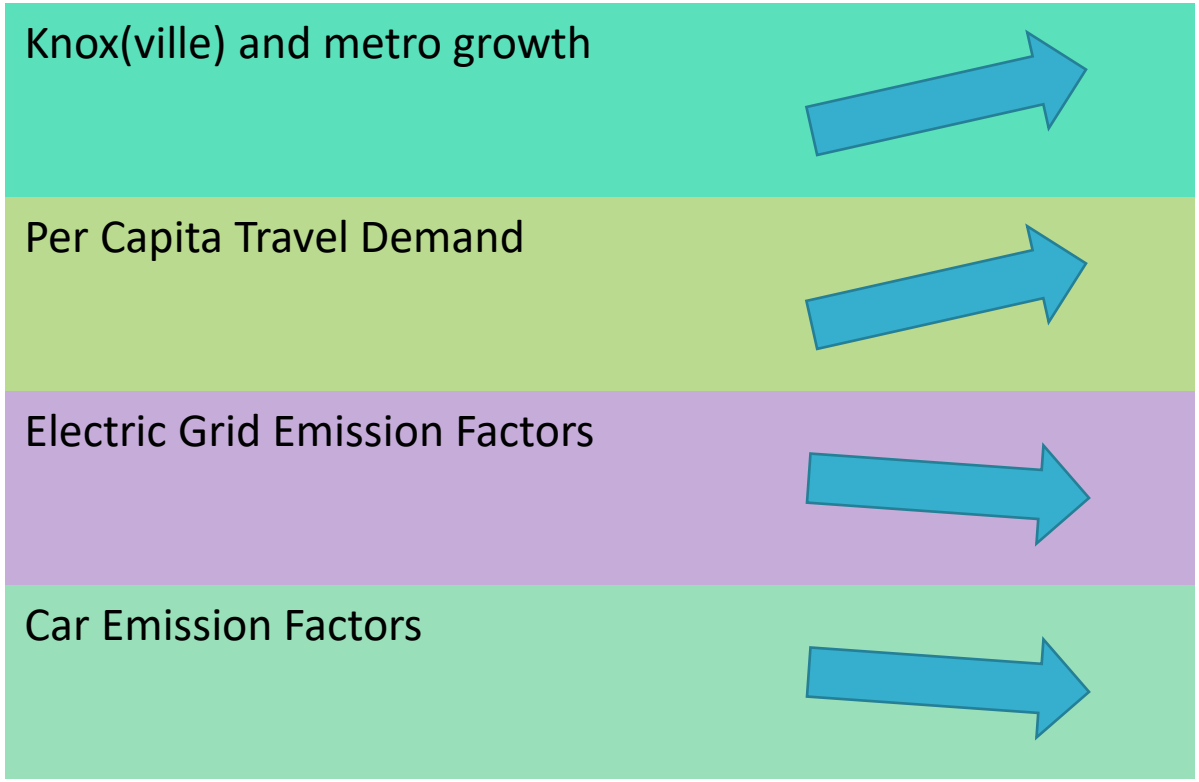
Mayor's Climate Council

Panel: Transit & Transportation Demand Management

Chris Cherry

UTK

Meeting GHG Reduction Goals Will Require Massive (not marginal) Reductions in Transportation Emissions (from today)



Chris Cherry: Professor in Civil Engineering (Transportation) at UTK. cherry@utk.edu

A (Sustainable) Sustainable Transport Model

Avoid **Shift** **Improve**

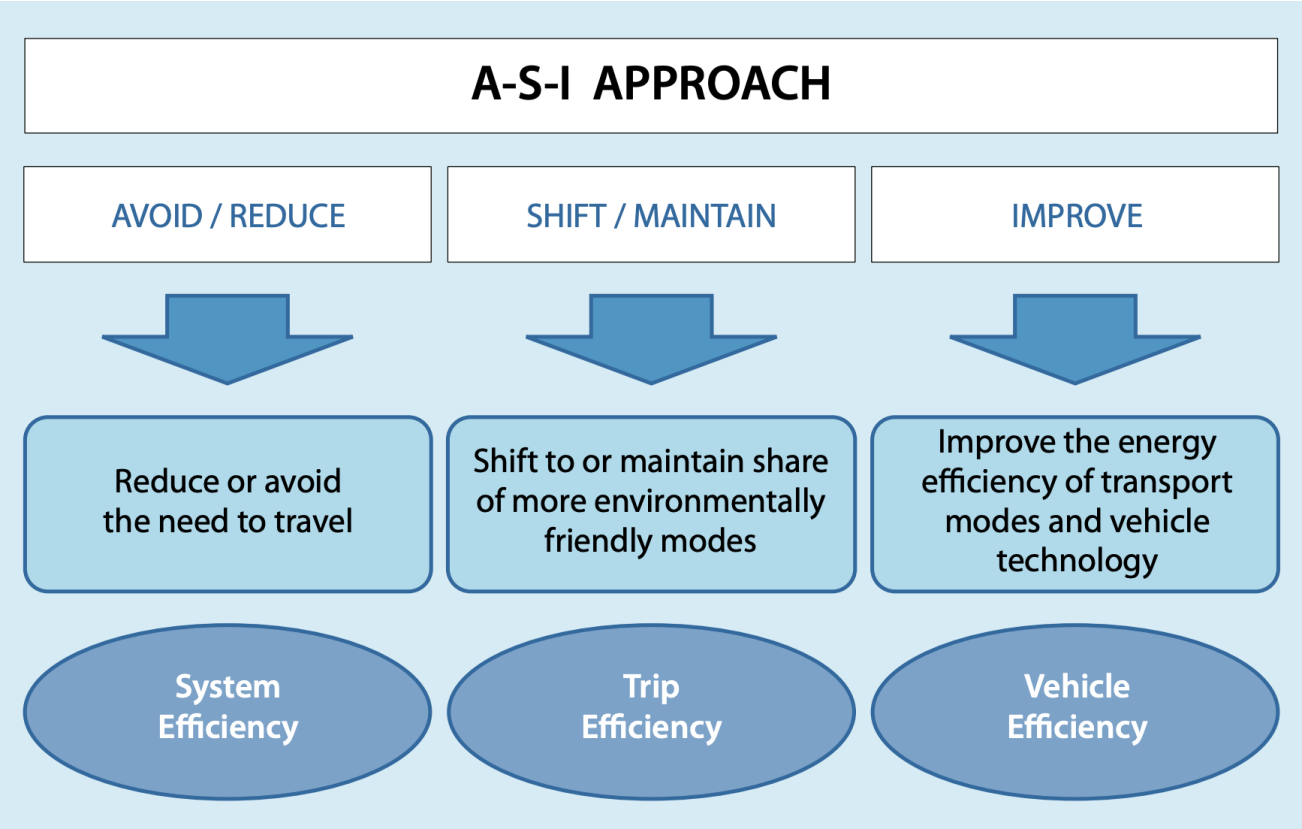


Image source: GIZ

Figure 2. Central estimates of life-cycle GHG emissions of urban transport modes per pkm

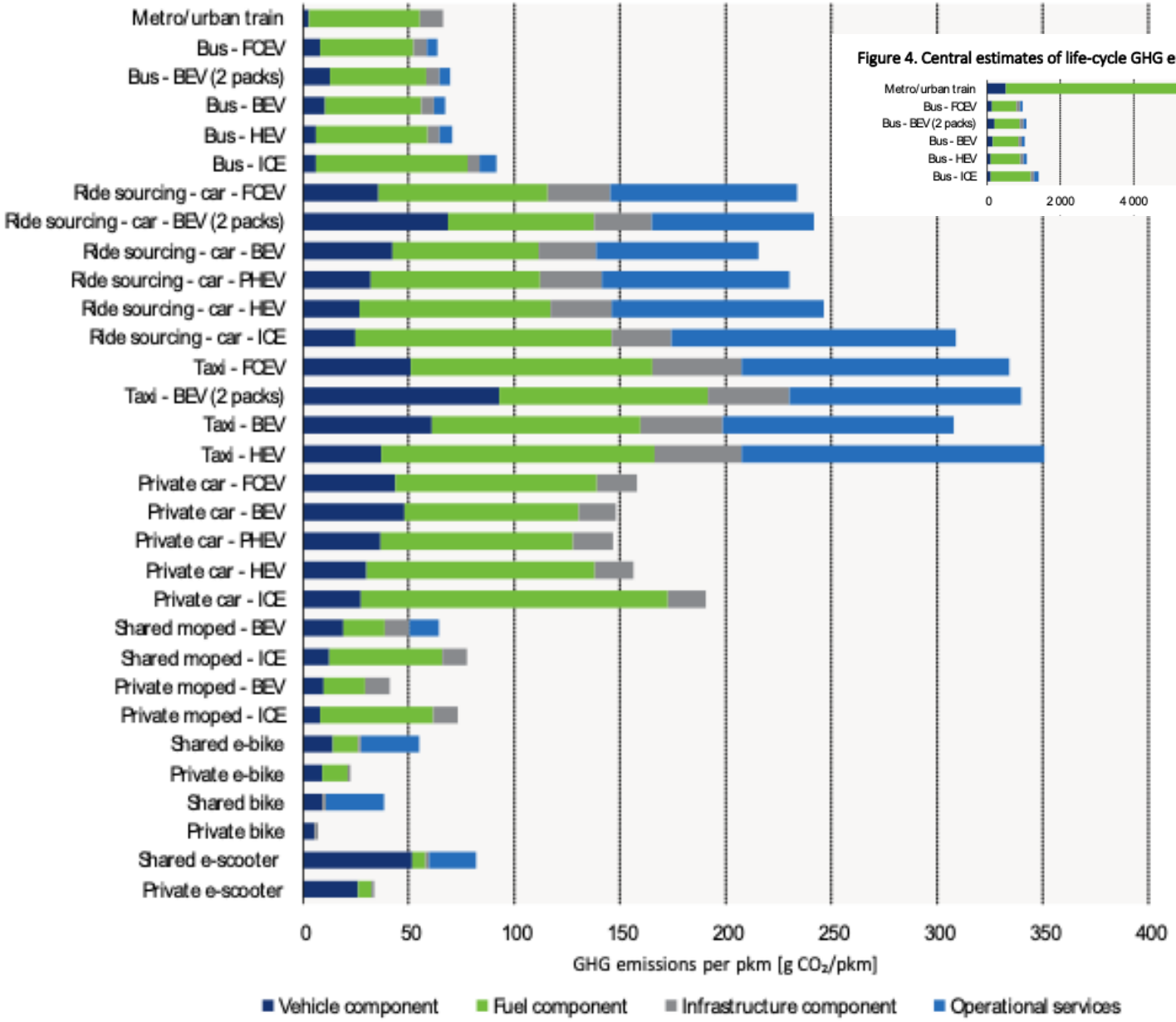
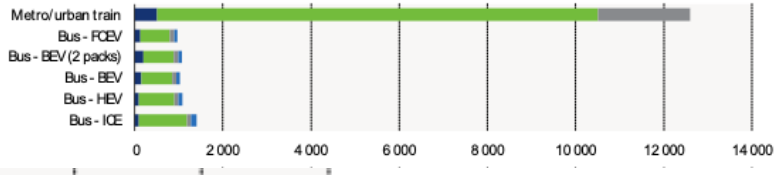


Figure 4. Central estimates of life-cycle GHG emissions of urban transport modes per vkm



Source: OECD International Transport Forum. Life Cycle Impacts of Personal Transport Modes (preliminary)

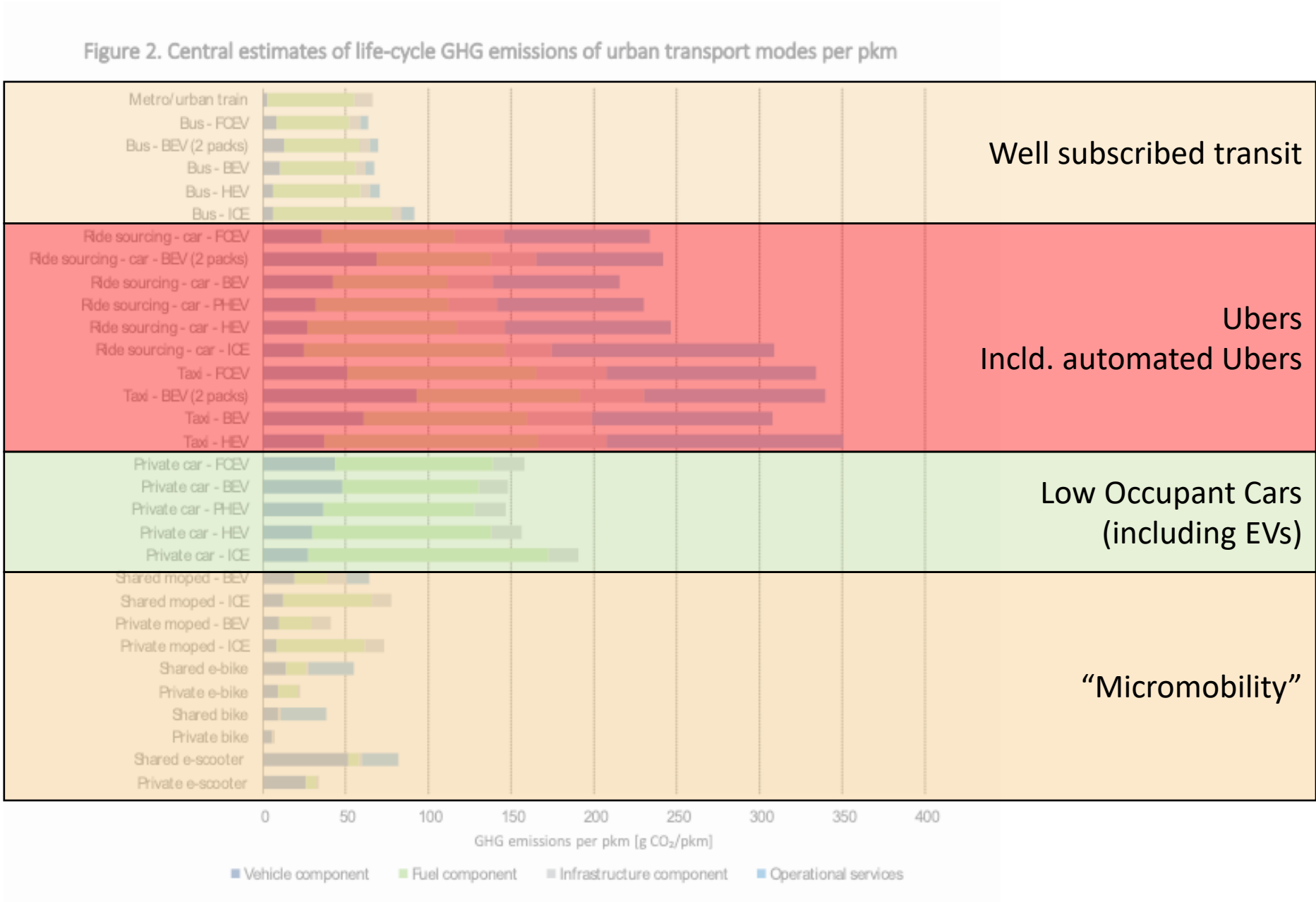


Figure 2. Central estimates of life-cycle GHG emissions of urban transport modes per pkm
Metro/urban train
Bus - FCEV
Bus - BEV (2 packs)
Bus - BEV
Bus - HEV
Bus - ICE
Ride sourcing - car - FCEV
Ride sourcing - car - BEV (2 packs)
Ride sourcing - car - BEV
Ride sourcing - car - PHEV
Ride sourcing - car - HEV
Ride sourcing - car - ICE
Taxi - FCEV
Taxi - BEV (2 packs)
Taxi - BEV
Taxi - HEV
Private car - FCEV
Private car - BEV
Private car - PHEV
Private car - HEV
Private car - ICE
Shared moped - BEV
Shared moped - ICE
Private moped - BEV
Private moped - ICE
Shared e-bike
Private e-bike
Shared bike
Private bike
Shared e-scooter
Private e-scooter
0
50
100
150
200
250
300
350
400
GHG emissions per pkm [g CO2/pkm]
Vehicle component
Fuel component
Infrastructure component
Operational services
Well subscribed transit
Ubers
Incld. automated Ubers
Low Occupant Cars
(including EVs)
“Micromobility”

Contemporary (Knox Co) Example

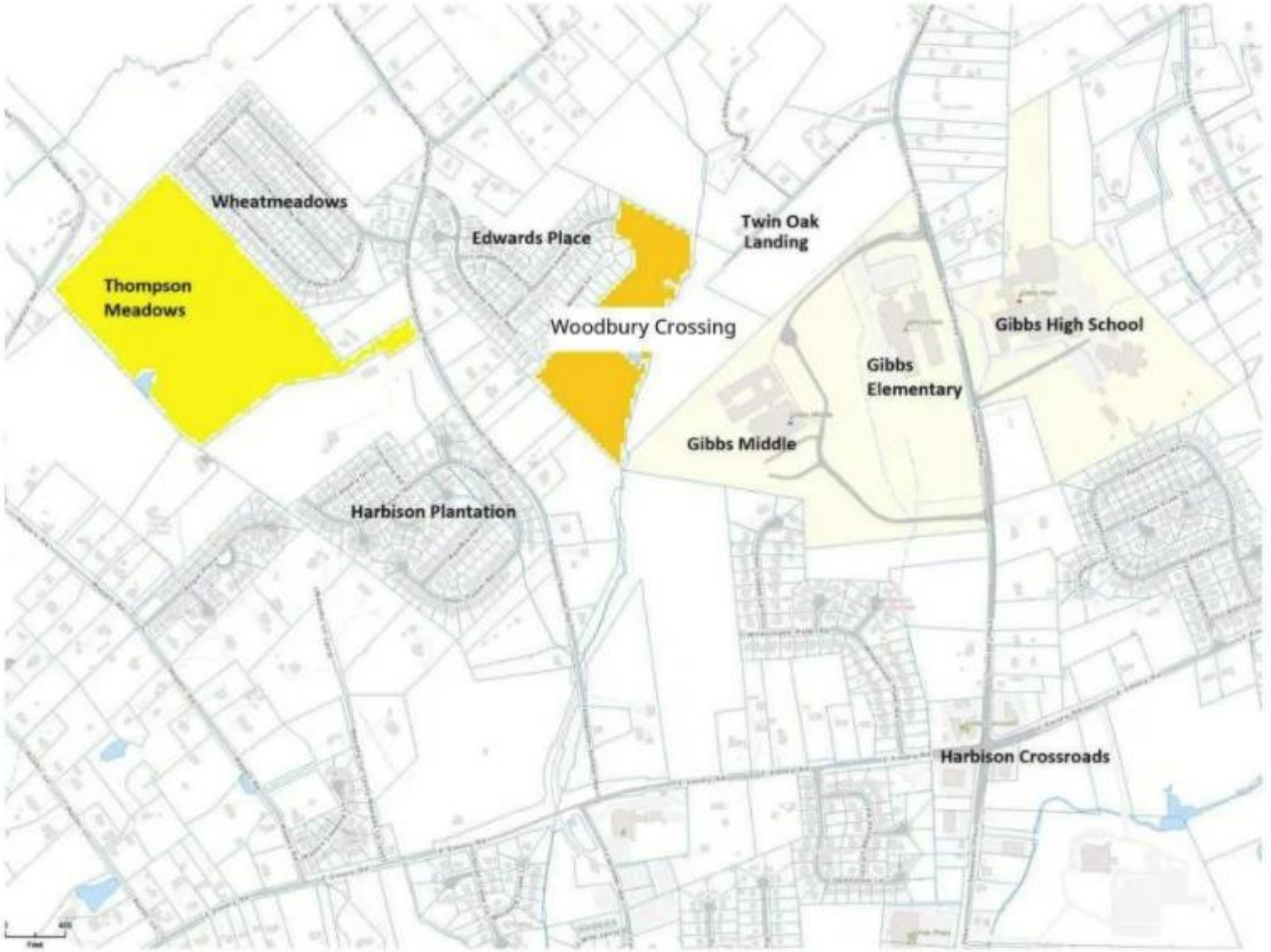


Image Source: The Compass

CITY OF KNOXVILLE

Mayor's Climate Council

Panel: Transit & Transportation Demand Management

Jeff Welch

Knoxville Regional TPO

The Landuse Transportation Connection

- Historically Separated Landuses (Zoning)
  - Limited Connectivity to Development
  - Lack of Mode Choices
  - Increased Vehicle Miles Traveled

City of Knoxville New Zoning Code

- Provides Mixed Use Opportunities
  - Along our Major Corridors
  - Mixed Use Nodes
  - Incentivizes Off Street Parking Reduction

Lack of Transportation Infrastructure

- Development without Sidewalks
  - Roads and Streets
  - Residential and Commercial
  - Sidewalks not Required in the County

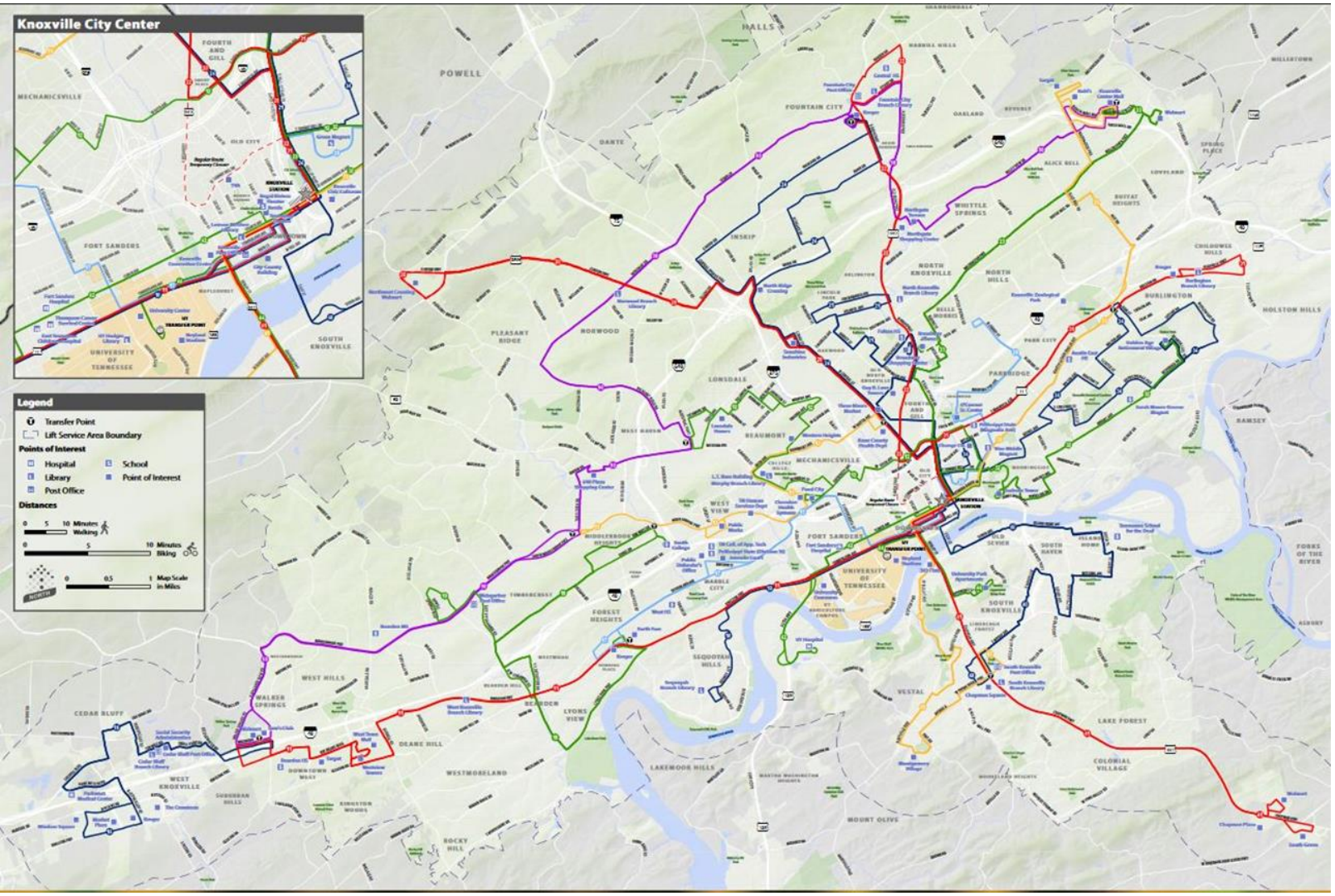
CITY OF KNOXVILLE

Mayor's Climate Council

Panel: Transit & Transportation Demand Management

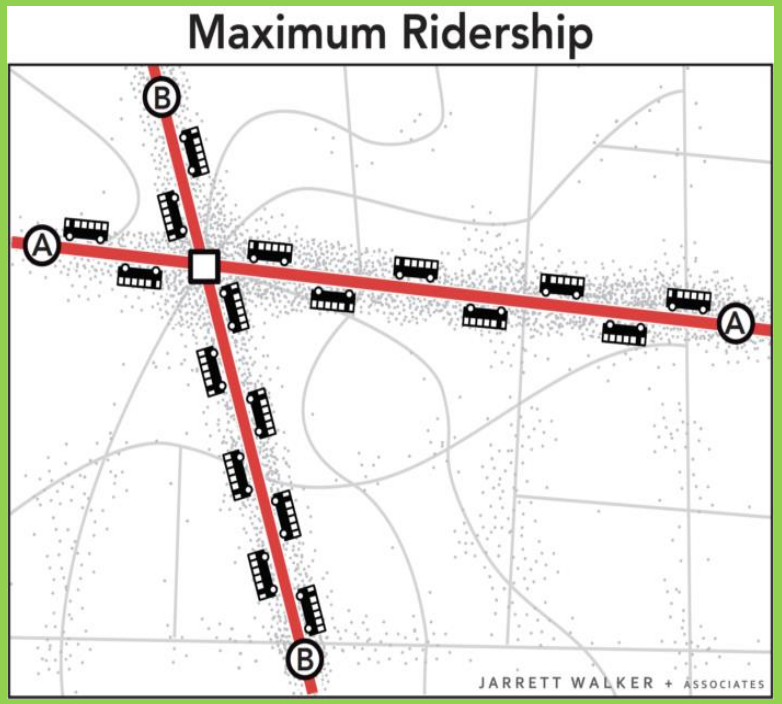
Belinda Woodiel-Brill

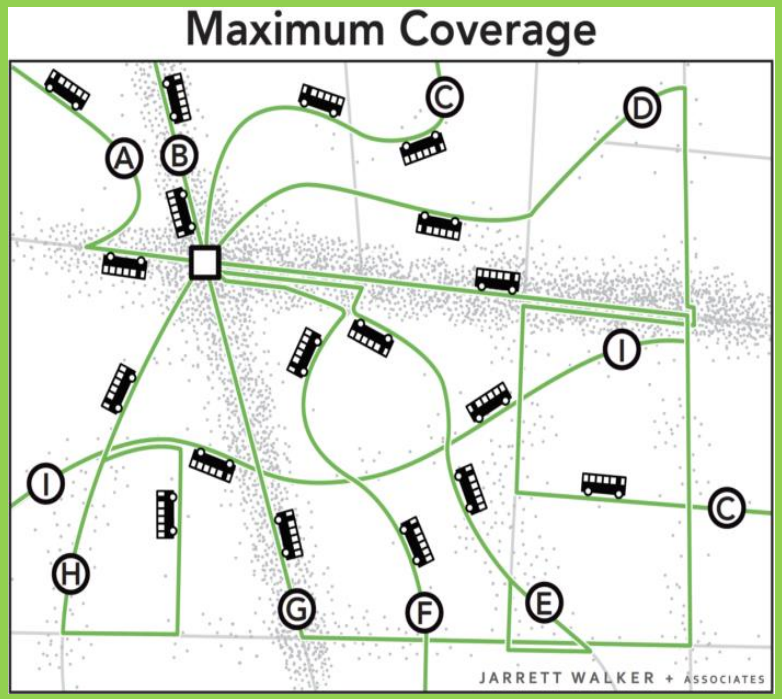
KAT



kat
KNOXVILLE
AREA TRANSIT

Balancing Frequency versus Coverage Area

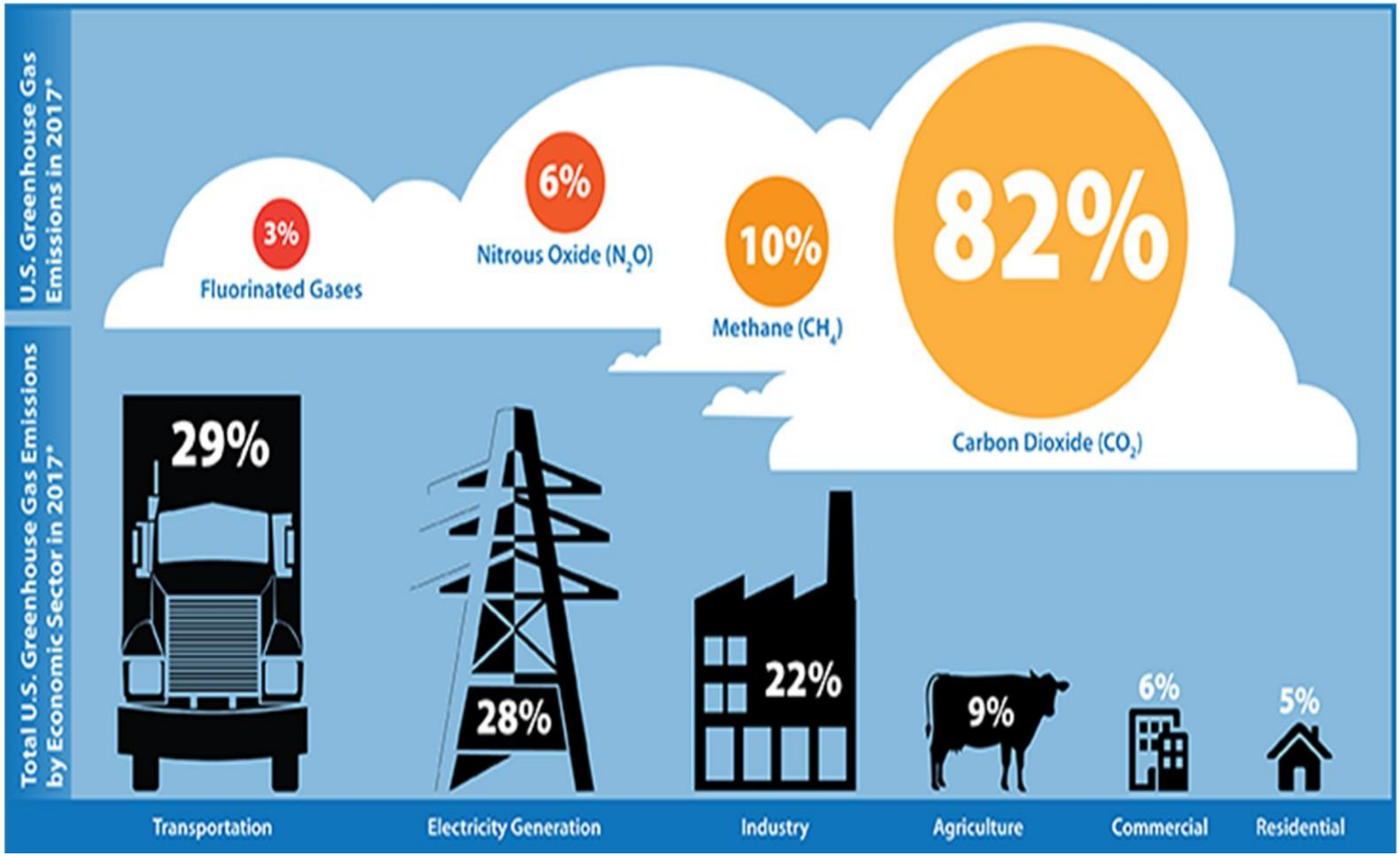




Source: *Human Transit* by Jarrett Walker

Why transit is important

Transportation is now the largest contributor to U.S. greenhouse gas emissions. - EPA



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Mayor's Climate Council

Bicycle/Pedestrian Transportation

Ellen Zavisca
Knoxville Regional TPO

Caroline Cooley
Bike Walk Knoxville

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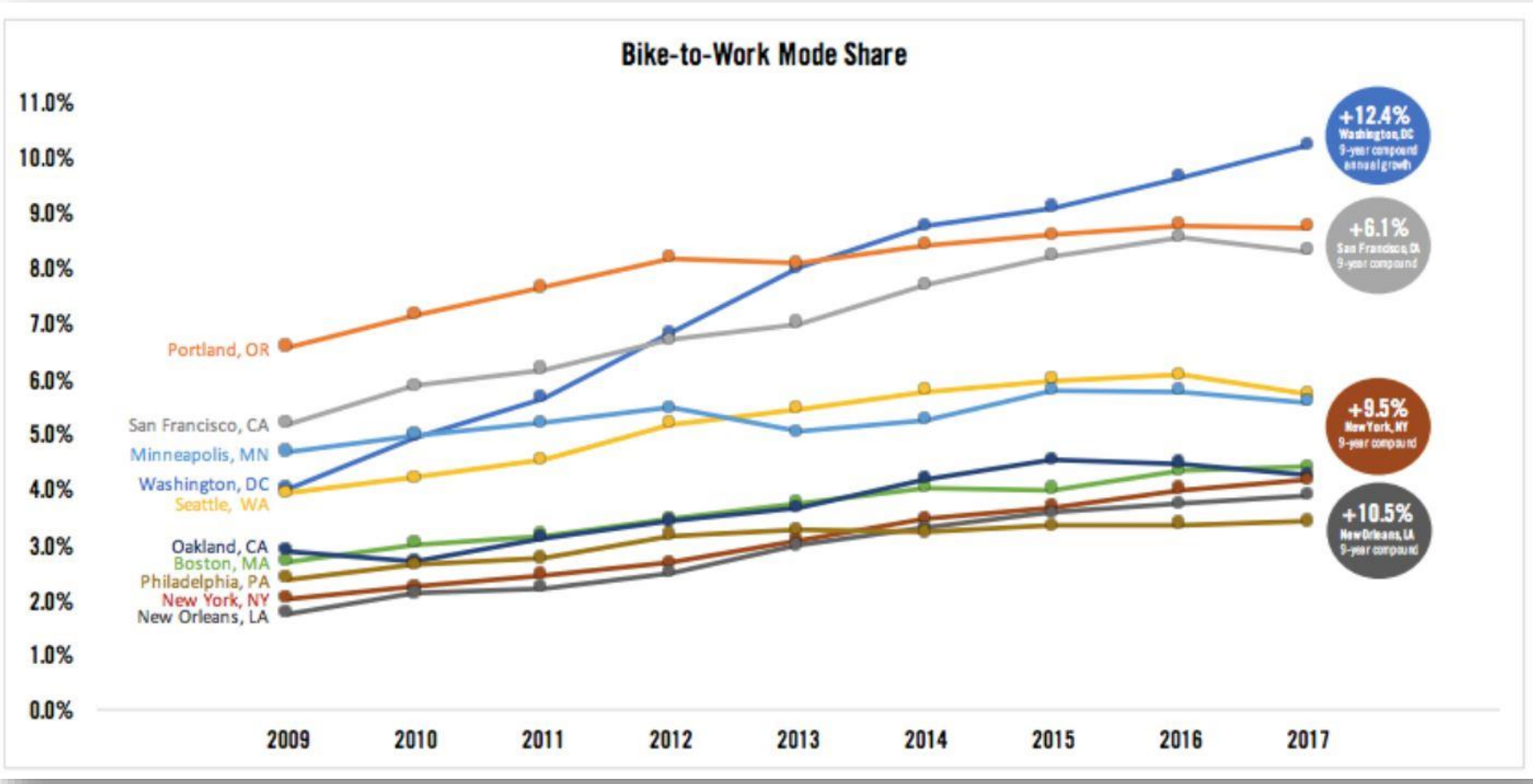
Mayor's Climate Council

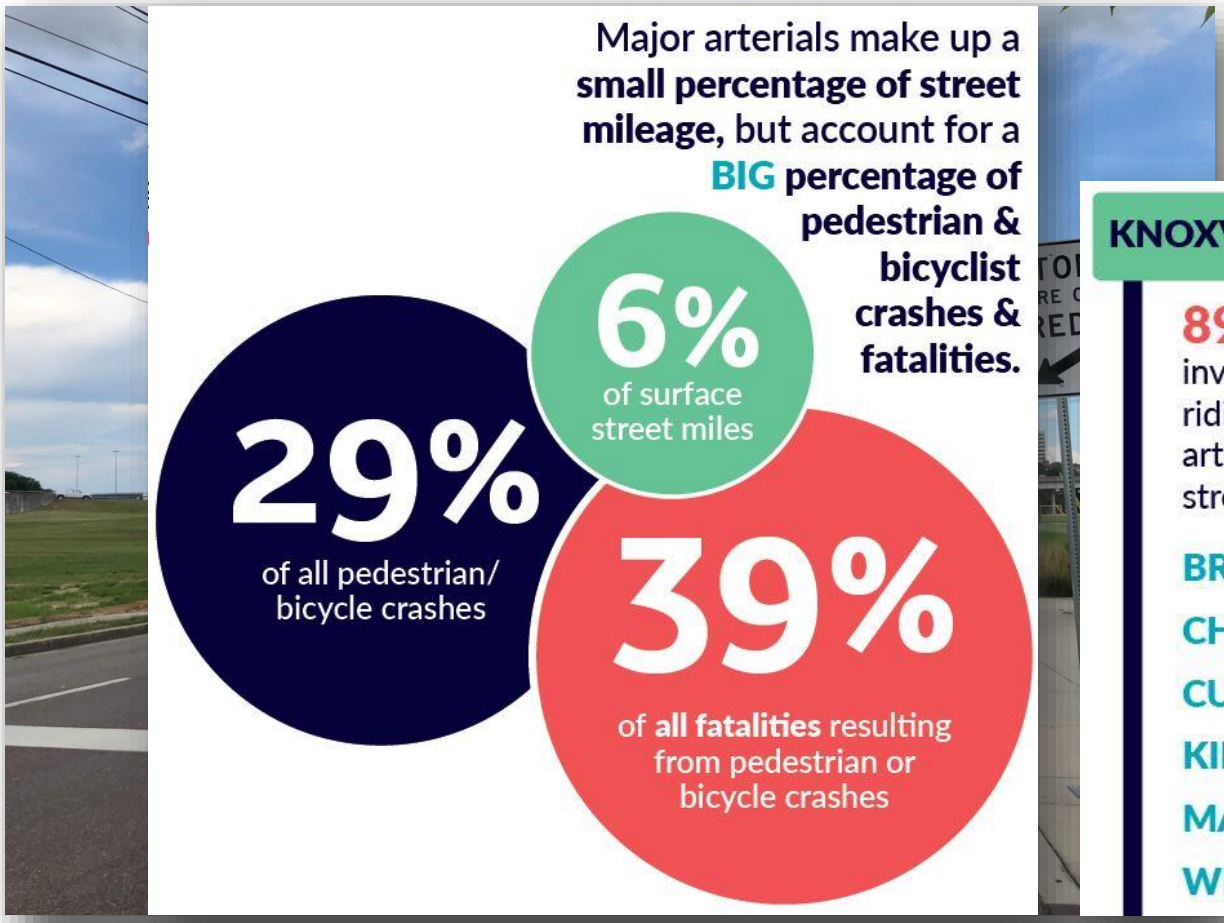
Panel: Bicycle / Pedestrian Transportation

Ellen Zavisca

Knoxville Regional TPO


Bike-to-Work Mode Share
11.0%
10.0%
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
2009
2010
2011
2012
2013
2014
2015
2016
2017
Portland, OR
San Francisco, CA
Minneapolis, MN
Washington, DC
Seattle, WA
Oakland, CA
Boston, MA
Philadelphia, PA
New York, NY
New Orleans, LA
+12.4%
Washington, DC
9-year compound annual growth
+6.1%
San Francisco, CA
9-year compound
+9.5%
New York, NY
9-year compound
+10.5%
New Orleans, LA
9-year compound


Tulane Ave



Major arterials make up a **small percentage of street mileage,** but account for a **BIG percentage of pedestrian & bicyclist crashes & fatalities.**

6% of surface street miles

29% of all pedestrian/ bicycle crashes

39% of **all fatalities** resulting from pedestrian or bicycle crashes

KNOXVILLE MAJOR ARTERIALS

89% of the crashes that involved people walking or riding bicycles on major arterials occurred on six streets:

- BROADWAY
- CHAPMAN HIGHWAY
- CUMBERLAND AVENUE
- KINGSTON PIKE
- MAGNOLIA AVENUE
- WESTERN AVENUE

CITY OF KNOXVILLE

Mayor's Climate Council

Panel: Bicycle / Pedestrian Transportation

Caroline Cooley

Bike Walk Knoxville

Are Walking and Biking More Dangerous than Driving?

- Every day, nearly 100 people die violently on roadways in the United States, and more than 6500 are injured.
- Motor vehicle crashes are the leading cause of death for Americans aged between 16 and 24 years and the second leading cause for children aged 4 to 15 years.

It is **11x more likely** for a pedestrian or bicyclist to be killed in a traffic crash compared to a motorist

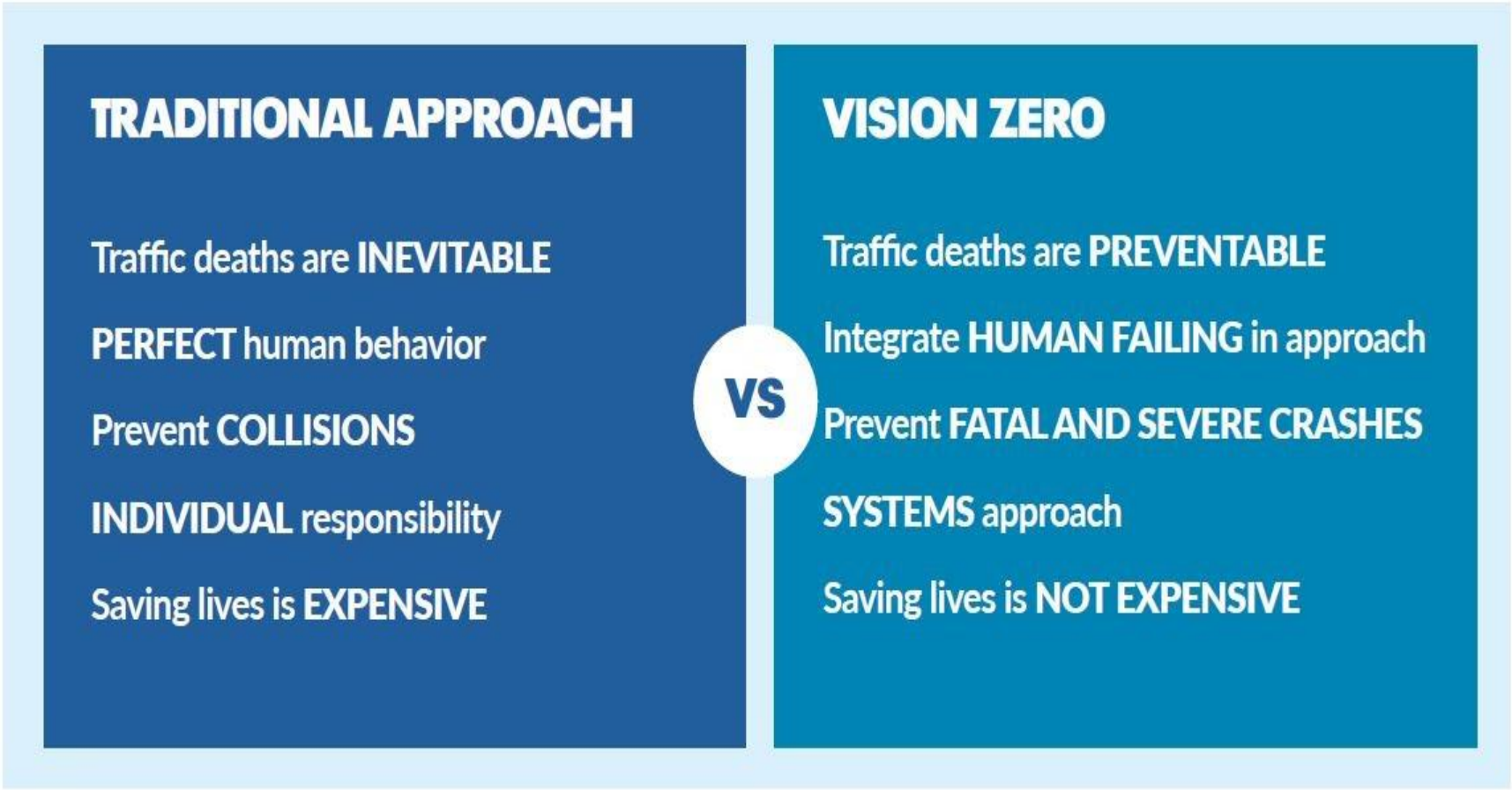
4 out of **1,000**
car-only traffic crashes
result in death

47 out of **1,000**
traffic crashes involving a person walking or riding a bicycle
result in death

BIKE WALK KNOXVILLE

What is Vision Zero?

Goal: Zero Traffic Deaths and Serious Injuries



BIKE WALK KNOXVILLE

How Do We Achieve Vision Zero?

- Political Commitment
  - Mayoral Leadership
  - All government departments
- Task Force
  - Government department staff
  - Community stakeholders
- Action Plan
  - Data Driven Approach
- Equity and Engagement
  - Community Involvement
- Road Design and Speed
  - Prioritize people not cars

Example Strategies:

Lower speed limits on arterials to maximum 35 mph; allow 20 mph in neighborhoods

Identify high crash injury/death locations; prioritize improvements

5-lane cross-sections prohibition policy

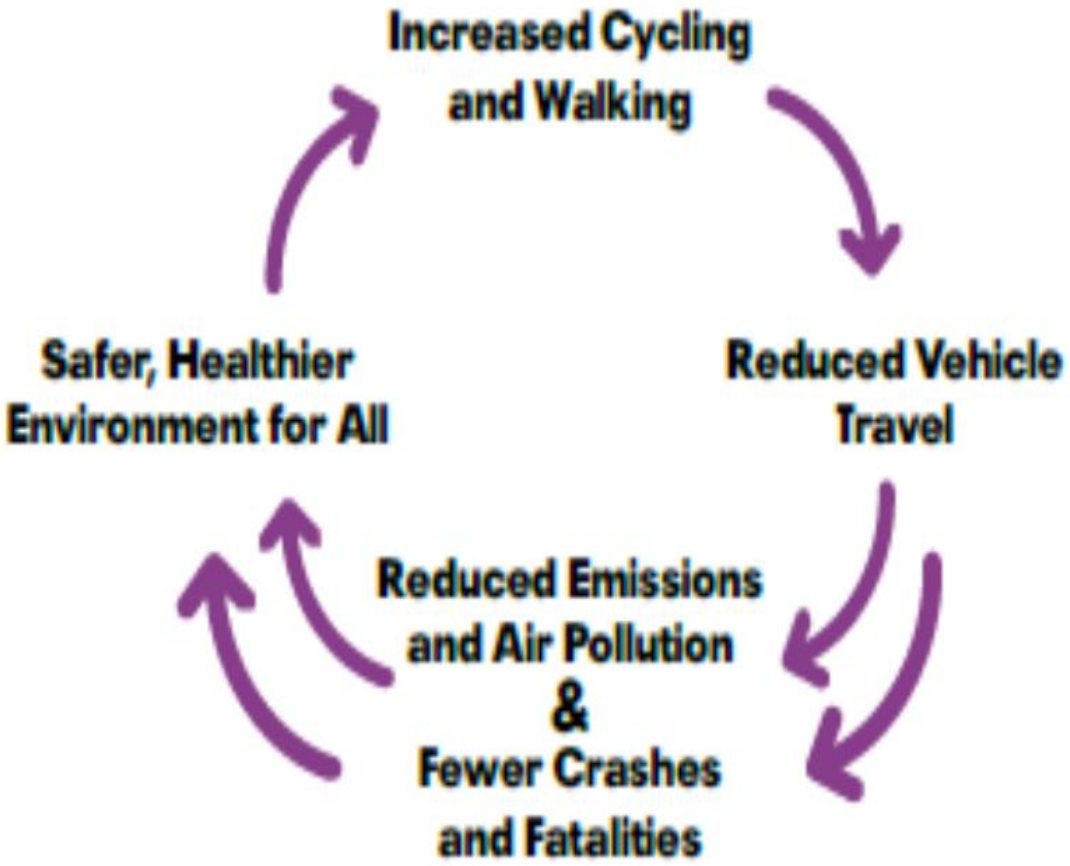
Analyze/identify/improve high risk pedestrian signals and intersections

Educate and engage community volunteers re: Vision Zero neighborhood benefits

Address barriers for walking/biking to school

BIKE WALK KNOXVILLE

Vision Zero Strategies = Fewer Greenhouse Gas Emissions



BIKE WALK KNOXVILLE


Questions?


Facilitated
Discussion

Facilitated Discussion Ground Rules

- Be respectful
- Discussion will be limited to to GHG mitigation strategies for transportation – other topics will be pinned to the “Parking Lot”
- We are primarily looking to identify points of leverage for each strategy

General Reactions

- What stands out to you about the results?
- Based on what you've heard today (or since the last meeting), has your viewpoint changed?
- Is there anything that's missing from this list the group should be considering (i.e., are there new strategies?)

Strategies
Expand and improve bicycle and pedestrian facilities, connectivity, convenience, and/or safety in a manner that significantly increases the % of trips taken by walking or biking
Make public transit investments that significantly enhance coverage, service quality, frequency, and/or speed
Create voluntary program(s) capable of significantly accelerating community adoption of electric vehicles
Significantly expand electric vehicle charging infrastructure in publicly accessible locations
Partner with major local commercial fleet operators to transition to electric vehicles
Require new construction and major renovations to be "Electric Vehicle Ready"
Establish strategy and/or policy to improve greenhouse gas impacts of autonomous vehicles
Modify parking prices in core locations and other dense areas of the community
Establish policies to optimize urban freight movement (eg. time of delivery, location consolidation)

Challenges/ Barriers

- What resources challenges do we need to consider?
- Where does the investment need to come from?
- What time parameters should be considered? How should short, medium, and long-term be defined?
- Who are the critical stakeholders?

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Opportunities

- Are there specific strategies for which the City currently seems well positioned?
- Are there specific strategies for which private sector leadership and resources are better suited? Are there people on the council who can take a leadership role?
- What are the points of leverage for each opportunity (existing infrastructure, market awareness, community buy-in)?

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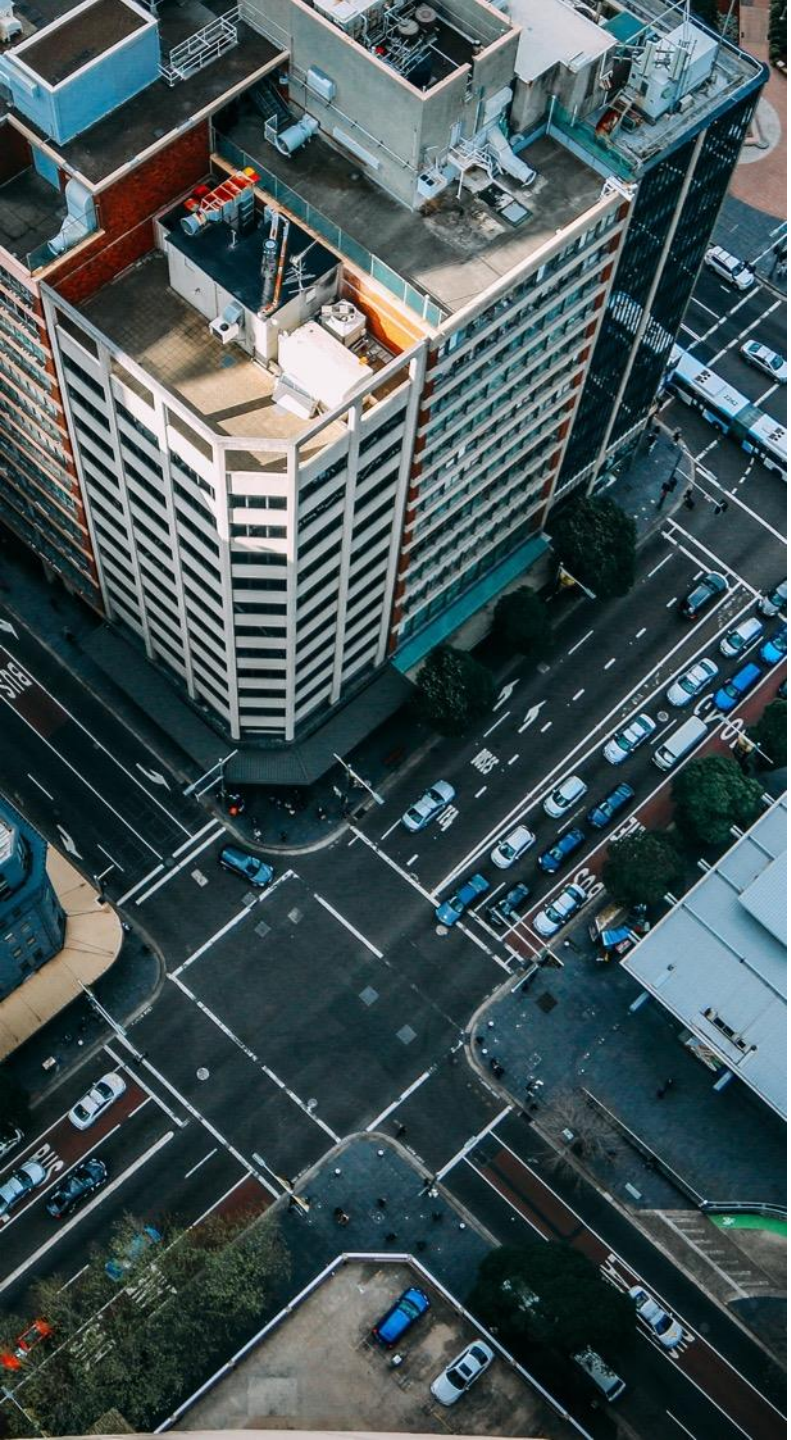
Wrap Up & Next Steps



Action Items

Transportation Working Group Meeting is August 11 - 1:00-3:00 ET

*MCC members are encouraged to attend, but their participation is not required

Customer Satisfaction Survey

Thank you!

Brian Blackmon

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