The slide features a white background with two large, light blue curved shapes on the left and right sides. The text is centered in a bold, dark blue font.

City of Madison Climate Goals

[ALERT](#) [TOP STORY](#)

CLEAN ENERGY | NO. 64 OUT OF 100

Report: Madison not on track to meet climate goals; study blames lax building standards

Chris Hubbuch | Wisconsin State Journal | Oct 10, 2020

SALE! Subscribe for \$1/mo.



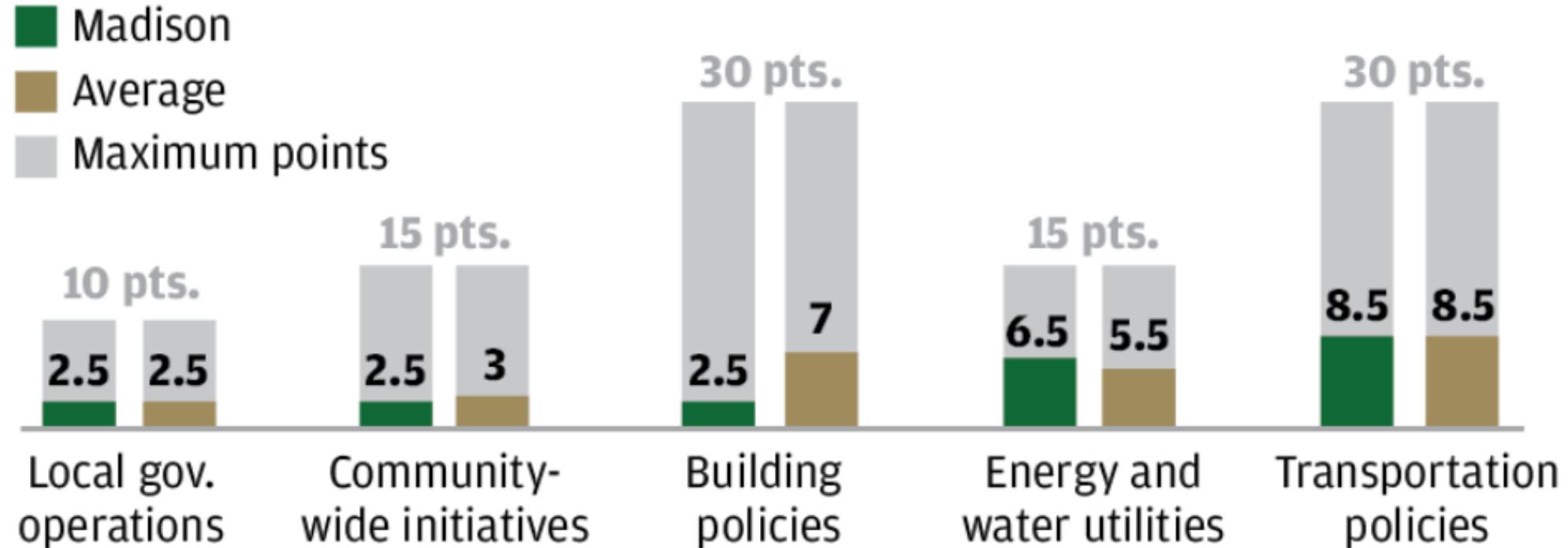
Sundara Inn & Spa
GIFT CARD

Sundara Inn & Spa
WISCONSIN DELLS

BONUS GIFT CARD OFFER

Madison's clean energy scorecard

Despite ambitious greenhouse gas reduction goals, Madison scored 22.5 out of 100 points in a study by the American Council for an Energy-Efficient Economy, ranking in the bottom half of large U.S. cities.



SOURCE: American Council for an Energy-Efficient Economy

State Journal

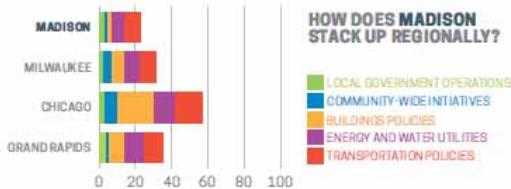
RANK
64 / 100

2020 CITY CLEAN ENERGY SCORECARD

Madison

OVERALL SCORE
22.5 / 100

Madison did not have an exemplary performance in any one category but had its best achievements in the energy and water utilities category. Its score was due to several factors, including Madison Gas and Electric's low-income and multifamily energy efficiency program offerings. Madison has room for improvement across all categories, particularly in building policies. The state of Wisconsin prevents Madison from taking some actions to increase energy efficiency and renewable energy use in private buildings, but the city can further explore using voluntary programs and incentives. Madison also has significant room for improvement in the local government operations, community-wide initiatives, and transportation policies categories.



LOCAL GOVERNMENT OPERATIONS

2.5
2.5
10

LOCAL GOVERNMENT OPERATIONS (2.5 OF 10 POINTS)

Madison has greenhouse gas (GHG) emissions reduction and clean energy goals for local government operations. Based on past years of emissions data, ACEEE projects the city will not achieve its local government operations goal of carbon neutrality by 2030. Madison benchmarks the energy use of all municipal buildings and allows teleworking, which helps reduce emissions related to employee commutes. Madison can further integrate clean energy into procurement and construction strategies and consider developing a comprehensive building energy retrofit strategy.

COMMUNITY-WIDE INITIATIVES

2.5
3
15

COMMUNITY-WIDE INITIATIVES (2.5 OF 15 POINTS)

Madison's GHG emissions reduction, energy reduction, and renewable energy goals set the vision for a clean energy future. Based on past years of emissions data, ACEEE projects Madison will not achieve its GHG emissions reduction goal of 80% below 2010 levels by 2050. Madison supported the creation of community solar gardens within the city. To inspire future clean energy efforts, Madison can take an equity-driven approach to clean energy planning and adopt policies and programs to mitigate the urban heat island effect.

BUILDINGS POLICIES

2.5
7
30

BUILDINGS POLICIES (2.5 OF 30 POINTS)

Wisconsin requires all jurisdictions to comply with the Wisconsin Uniform Dwelling Code and Wisconsin Commercial Building Code for residential and commercial buildings, respectively. The codes are not stringent when compared to building energy codes in effect in other cities. Madison has not yet advocated for more stringent state energy codes. Wisconsin prohibits jurisdictions from adopting policies that require building owners to take energy-saving actions. The Green Power Program helps grow the renewable energy workforce. Madison can do more to reduce GHG emissions in its building sectors by using voluntary programs and incentives to spur clean energy investment and further developing an equitable clean energy workforce.

ENERGY AND WATER UTILITIES

6.5
5.5
15

ENERGY AND WATER UTILITIES (6.5 OF 15 POINTS)

Compared to other utilities, Madison Gas and Electric (MGE) shows low savings as a percentage of sales for both electric and natural gas efficiency programs. MGE, in partnership with Focus on Energy, offers multiple low-income programs and multifamily energy efficiency programs. The city has an agreement with MGE to work together to achieve shared energy goals, including promoting energy efficiency. Madison is working together with MGE to develop a large-scale solar facility to service city operations. Madison can work to increase the energy and water efficiency of water services and wastewater treatment plants.

TRANSPORTATION POLICIES

8.5
8.5
30

TRANSPORTATION POLICIES (8.5 OF 30 POINTS)

Madison aims to increase bus and bicycle mode share to 20% each by 2020. The city's transit-oriented development overlay district encourages location efficiency; the overlay district has no minimum parking requirements. While the Sustainability Plan includes sustainable transportation provisions, Madison has not yet adopted goals to reduce vehicle miles traveled/GHG emissions from transportation. Adopting and tracking progress toward these goals would help lay the groundwork for transportation action. Relative to other city systems, Madison's transit system is moderately funded and accessible. Madison can further promote sustainable transportation within the city by encouraging or requiring the creation of affordable housing units in transit-served areas and subsidizing efficient transportation options for low-income residents.

MEDIAN SCORE
MAXIMUM POINTS POSSIBLE

When they were collecting data (spring), our sustainability director wasn't able to provide all of the data requests (Covid19 and elections)

They used the 2011 Sustainability report as a base, instead of the 2018 100% Renewable report.

Even if able to provide information, some of the rating we can not control due to current Wisconsin Building codes (and the inability to enforce stricter codes)

Two Major Ways Transportation Affects Climate Goals

1. Internal measures
2. External measures (decreasing VMT)

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TRANSPORTATION

1. Internal Measures

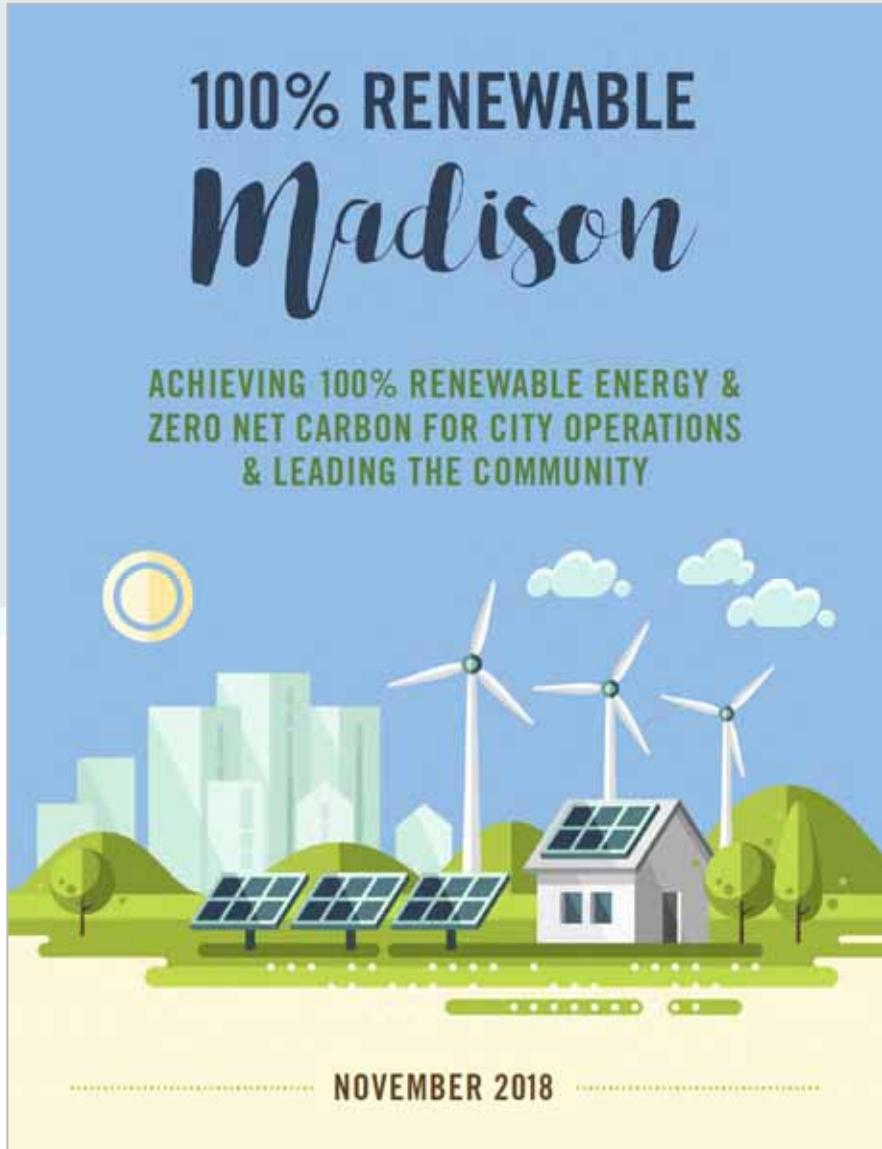


TABLE 2-4. SCENARIO 3: 100% RENEWABLE ENERGY AND ZERO NET CARBON BY 2030

MEASURE TYPE	ACTION
Efficiency (Demand)	Lighting Retrofits
	HVAC Retrofits
	HVAC Controls Retrofits
	HVAC RCx
	Plug Load Management Strategies
	Building Envelope Improvements
	Street Lighting Upgrades
Renewable Generation (Supply)	Water Distribution Optimization Strategies
	Behind-the-Meter Solar: Phase 1
	Behind-the-Meter Solar: Phase 2
	Utility Scale Solar (MGE RER or Alliant)
	Utility Fuel Mix (MGE and Alliant)
Transportation (Demand)	Green Fleet Measures
	100% Electric Buses
	Passenger Car EV Procurement
	Light Duty EV Procurement
	Landfill CNG Fueling
	Mid Duty EV Procurement
	Heavy Duty CNG Procurement
Investments	RECs
	Carbon Offsets

Source: HGA

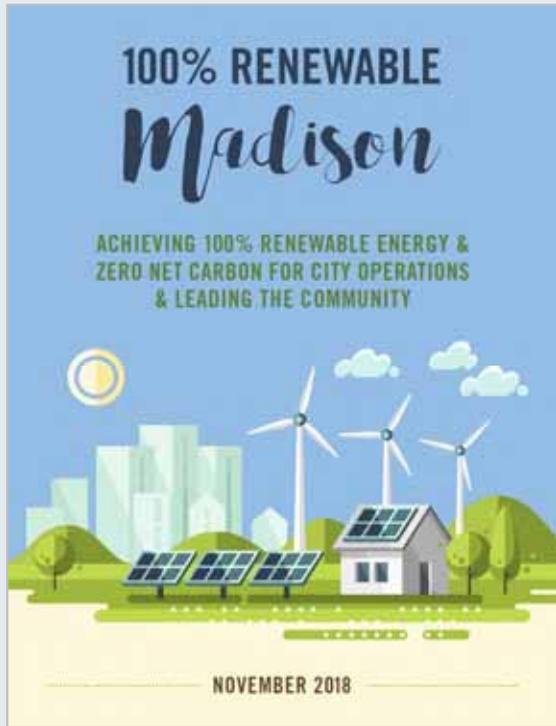
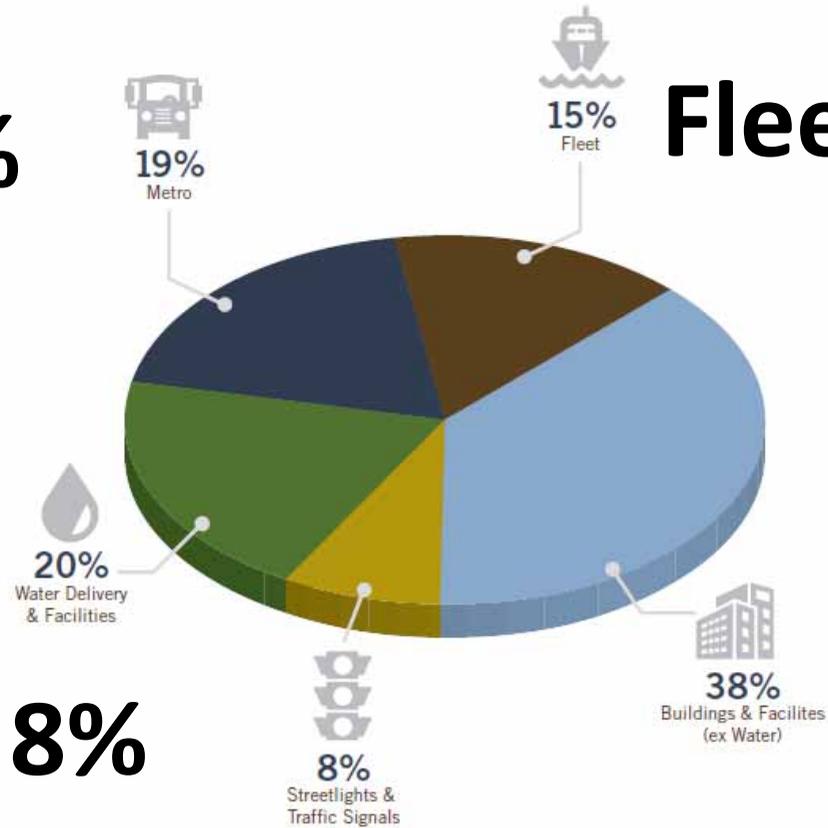


FIGURE A-2. BASELINE CARBON EMISSIONS FOR CITY OPERATIONS BY CATEGORY*

Metro 19%

Fleet 15%

Signals and Lights 8%



***Excludes landfill, city employee commute, and City-owned housing emissions. Source: HGA based on ICLEI*

Figure A-3 illustrates baseline carbon emissions for municipal operations by fuel type in 2018, the baseline year for the report, including electricity (57%), diesel (29%), natural gas (9%) and gasoline (5%).

LED Streetlight replacement has been advanced in the 2021-2023 budget. All streetlights will have LED fixtures by 2023.

- Convert all 6,000 city maintained non-LED streetlight fixtures to LED
- \$3.1 million project (2021: \$850K, 2022: 750K, 20203: \$1.5M)
- Estimated to save \$390,000 in electricity cost alone annually
- Additional savings in maintenance cost



City Celebrates Major Solar Installation Milestone, Mayor Doubles GreenPower program

Led primarily by Facilities

Thursday, October 15, 2020 - 2:55pm

MADISON, WI – The City’s GreenPower trainees will be busy for at least the next few years installing solar panels on City buildings at a ‘rapid pace,’ according City of Madison Mayor Satya Rhodes-Conway. At 9 a.m., Oct. 15, 2020, Mayor Satya Rhodes-Conway celebrated the City reaching its 1 Megawatt goal at Metro Transit, the latest and largest solar installation in City history. Rhodes-Conway spoke during a press conference about the project and what it means for the GreenPower Program expanding moving forward.

“Today we achieve our first goal, that we set for ourselves as a City related to solar energy,” Rhodes-Conway said. “In 2014, we adopted a budget to achieve the Madison Megawatt, which aimed to install one megawatt of solar energy on city facilities by 2020, and today we reach that goal.”

The solar panel installation on Metro Transit, located at 1101 East Washington Avenue in Madison, pushed the City past its one megawatt goal. The City now has 2.5 percent of its building electric use provided by solar power. The solar production offsets roughly 950 metric tons of carbon dioxide emissions per year, which is equivalent to the emissions of an average passenger vehicle driving 2.3 million miles. Twenty-six City buildings have solar installations, and there are more to come.

“We are going to dramatically ramp up the speed at which we install solar on our rooftops,” Mayor Satya Rhodes-Conway said. “My proposed budget and capital improvement plan, will achieve our next one megawatt of solar in

Links

[Watch the press conference](#)

[Solar Power of Metro Project in Real Time](#)



SCENARIO 3
**100% Renewable
Energy and Zero
Net Carbon by 2030**

All Scenario 1 & 2 Measures

Efficiency (Demand)

HVAC Retrofits
Plug Load Management Strategies
Building Envelope Improvements

Renewable Generation (Supply)

Behind-the-Meter Solar (Phase 2)

Transportation

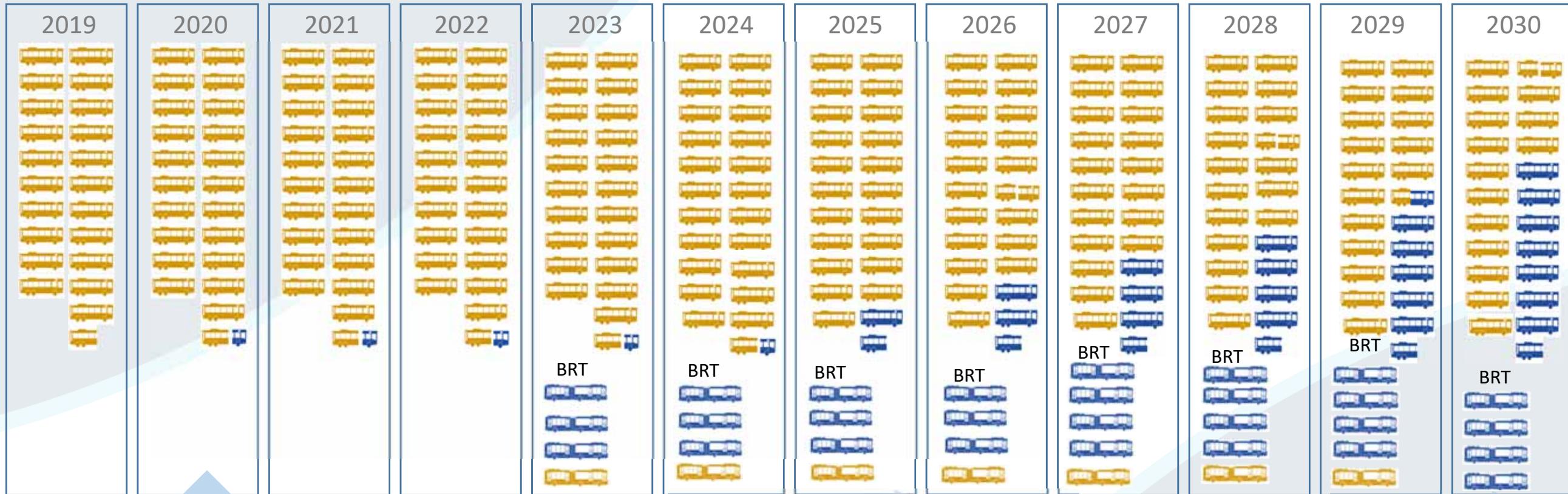
100% Electric Buses
Mid-Duty EV Procurement
Heavy Duty CNG Procurement

Policy

RECs and Carbon Offsets

- 55% carbon reduction with 25% self-generated renewable energy
- 45% RECs and carbon offsets
- \$95M investment over 13 years; IRR 17%
- Cost savings to city of \$78M by 2030
- Reduce total carbon emissions by 426,000 tons by 2030
- Societal co-benefits range from \$21M - \$162M by 2030

Bus Replacement Schedule Dictates Fleet Conversion



EW retrofitted to allow electric buses in building, with capacity to charge 3 buses

+10 electric buses/year
Assumes charging capacity is provided

+15 electric buses/year



= 10 electric buses ~\$0.7M/ea



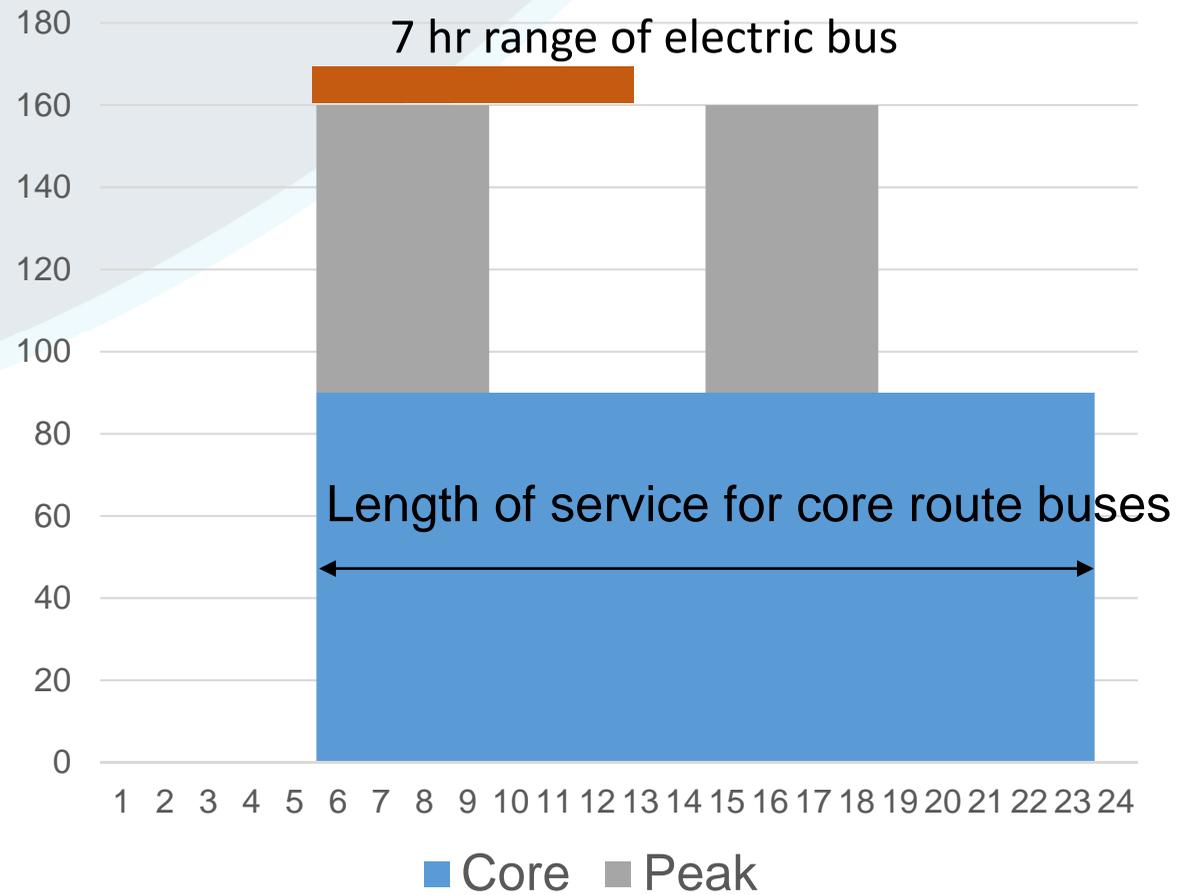
= 10 diesel buses ~\$0.5M/ea



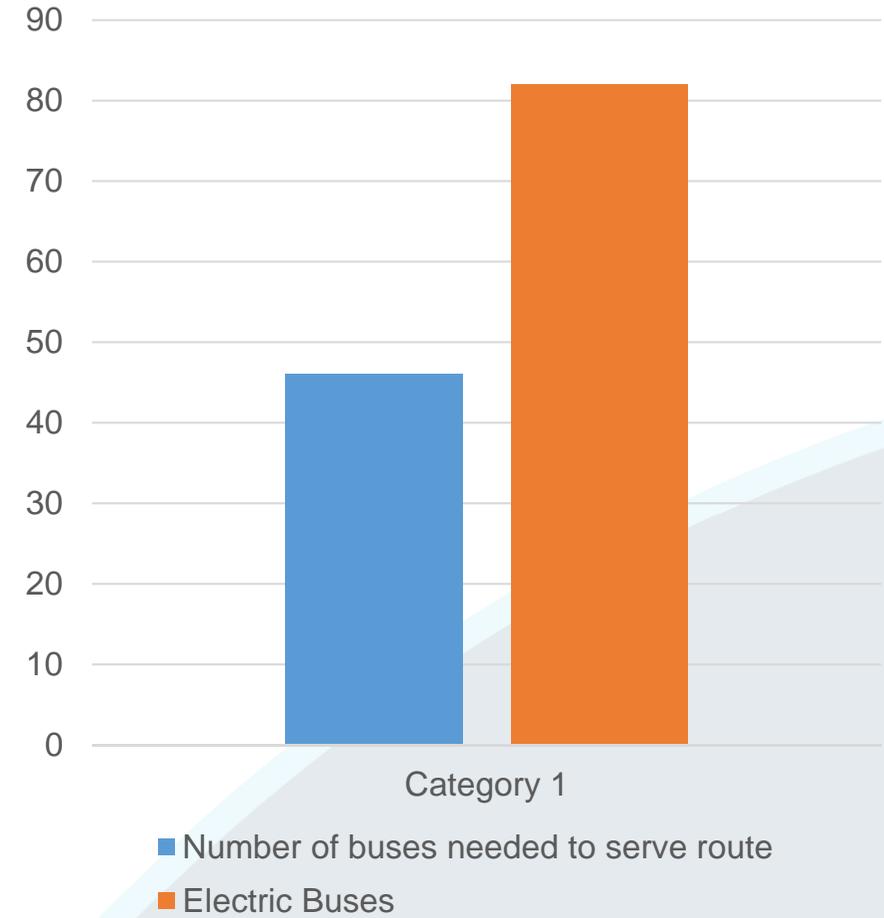
= 10 electric articulated buses ~\$1.2M/ea

Challenges

Buses in Operation



Moscow Routes 73, 76, 80



Moscow experience suggests that more electric buses may be needed to serve same routes

Other efforts

- Parking vehicle electric procurement
- Electric cargo bike pilot project (summer 2020)

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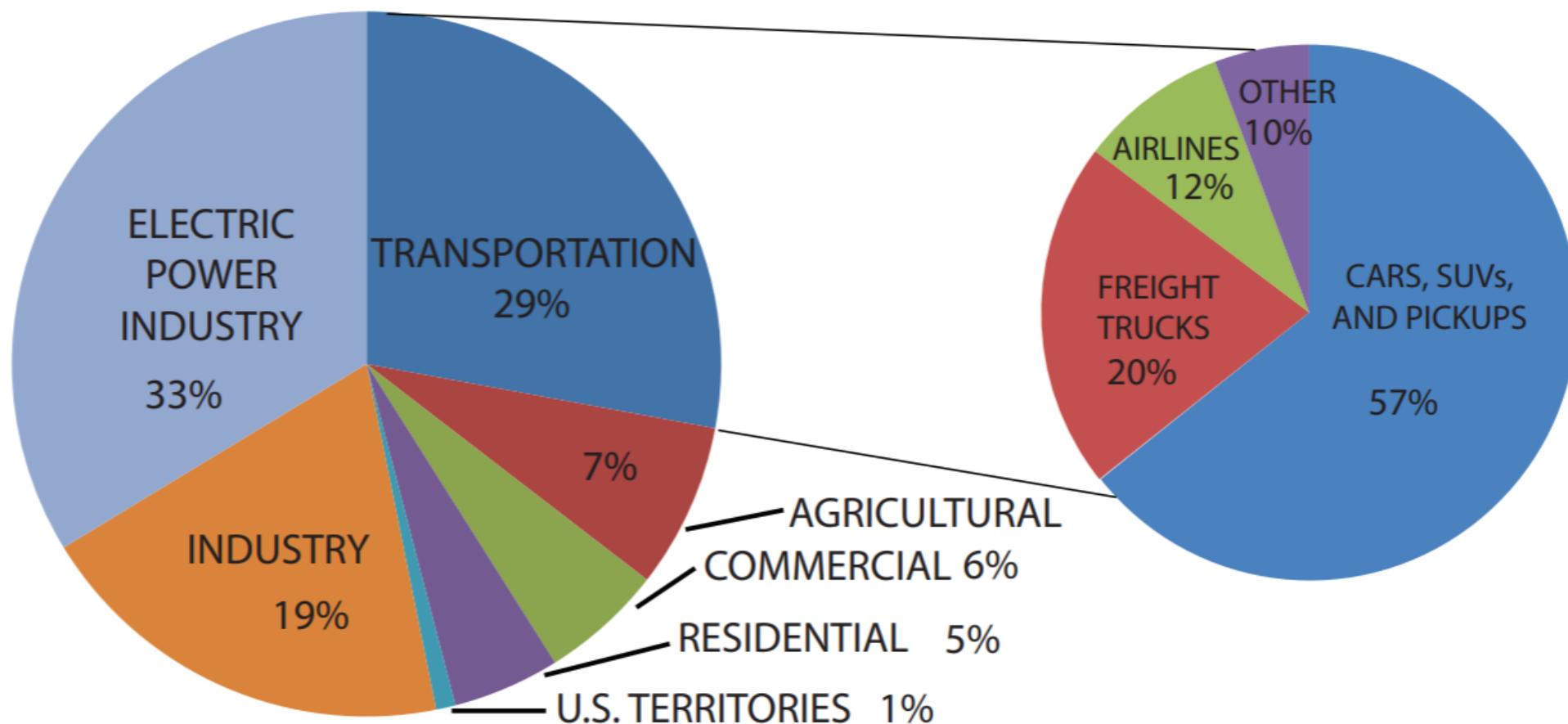
TRANSPORTATION

Changing Travel Mode to Non-polluting

FIGURE 1

Transportation Accounts For 29% of U.S. Greenhouse Gas Emissions.

Source:
U.S. Environmental Protection Agency, *Inventory of Greenhouse Gas Emissions and Sinks: 1990-2007*, April 2009.



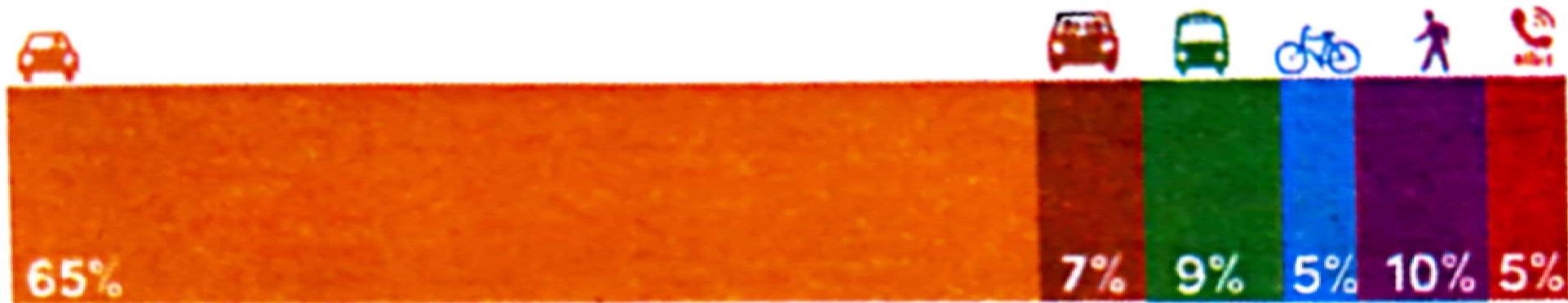
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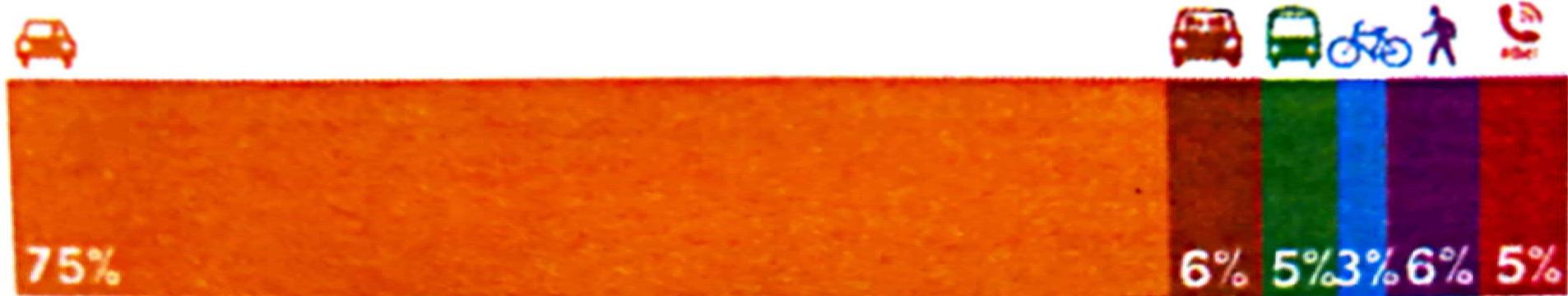
TRANSPORTATION

Complete Streets – Active Transportation

Mode of Transportation to Work (2018)



Madison



Dane County

Madison Rankings

Transit

1. New York City, New York – 56.5%
2. Jersey City, New Jersey – 47.6%
3. Washington, D.C. – 37.4%
4. Boston, Massachusetts – 33.7%
5. San Francisco, California – 33.1%
6. Cambridge, Massachusetts – 28.6%
7. Chicago, Illinois – 27.6%
8. Newark, New Jersey – 26.7%
9. Arlington, Virginia – 26.4%
10. Yonkers, New York – 26.4%
11. Philadelphia, Pennsylvania – 26.2%
12. Alexandria, Virginia – 21.7%
13. Berkeley, California – 21.6%
14. Oakland, California – 20.3%
15. Seattle, Washington – 20.1%
16. Daly City, California – 19.8%
17. Baltimore, Maryland – 18.6%
18. Pittsburgh, Pennsylvania – 17.0%
19. Hartford, Connecticut – 16.6%
20. Stamford, Connecticut – 14.1%
21. Richmond, California – 14.0%
22. Edison, New Jersey – 13.4%
23. New Haven, Connecticut – 13.3%
24. Minneapolis, Minnesota – 13.1%
25. Portland, Oregon – 12.1%
26. Paterson, New Jersey – 11.9%
27. Bellevue, Washington – 11.8%
28. Buffalo, New York – 11.7%
29. Miami, Florida – 11.4%
30. Elizabeth, New Jersey – 11.3%
31. Ann Arbor, Michigan – 11.2%
32. East Los Angeles, California – 10.9%
33. Bridgeport, Connecticut – 10.8%
34. Cleveland, Ohio – 10.5%
35. Los Angeles, California – 10.6%
36. Concord, California – 10.0%
37. Atlanta, Georgia – 9.8%
38. Naperville, Illinois – 9.7%
39. St. Louis, Missouri – 9.4%
40. **Madison, Wisconsin – 9.3%**

40th

Bike

1. Davis, California 23.2%
2. Berkeley, California 9.7%
3. Boulder, Colorado 8.9%
4. Somerville, Massachusetts 7.4%
5. Cambridge, Massachusetts 7.4%
6. Palo Alto, California 7.3%
7. Portland, Oregon 7.2%
8. Eugene, Oregon 6.8%
9. Fort Collins, Colorado 6.2%
10. Santa Barbara, California 6.1%
11. Missoula, Montana 6.1%
12. Bloomington, Indiana 5.5%
13. **Madison, Wisconsin 5.3%**
14. Flagstaff, Arizona 5.2%
15. Ann Arbor, Michigan 5.0%
16. Chico, California 4.7%
17. Minneapolis, Minnesota 4.6%
18. Iowa City, Iowa 4.6%
19. Gainesville, Florida 4.4%
20. San Francisco, California 4.4%
21. Bellingham, Washington 4.2%
22. Mountain View, California 4.1%
23. Washington, D.C. 3.9%
24. Seattle, Washington 3.7%
25. College Station, Texas 3.7%
26. Tempe, Arizona 3.7%
27. Oakland, California 3.7%

13th

Walk

1. Cambridge, Massachusetts 25.76%
2. Ann Arbor, Michigan 16.52%
3. Berkeley, California 15.99%
4. New Haven, Connecticut 14.0%
5. Columbia, South Carolina 13.78%
6. Provo, Utah 13.39%
7. Boston, Massachusetts 13.36%
8. Providence, Rhode Island 12.56%
9. Washington, D.C. 12.27%
10. **Madison, Wisconsin 10.99%**
11. New York City, New York 10.72%
12. Syracuse, New York 10.31%
13. Pittsburgh, Pennsylvania 10.02%
14. San Francisco, California 9.82%
15. Wichita Falls, Texas 9.29%
16. Philadelphia, Pennsylvania 9.22%
17. Jersey City, New Jersey 8.17%
18. Newark, New Jersey 8.03%
19. Seattle, Washington 7.72%
20. Allentown, Pennsylvania 7.55%
21. Baltimore, Maryland 7.28%
22. Worcester, Massachusetts 7.11%
23. Norfolk, Virginia 7.05%
24. Minneapolis, Minnesota 6.85%
25. Honolulu, Hawaii 6.8%
26. Erie, Pennsylvania 6.7%
27. Rochester, New York 6.65%
28. Eugene, Oregon 6.43%
29. Paterson, New Jersey 5.97%
30. Hartford, Connecticut 5.89%
31. Chicago, Illinois 5.8%
32. Arlington, Virginia 5.77%
33. Cincinnati, Ohio 5.61%

10th

Key DOT efforts that shift mode and reduce VMT

- **Bus Rapid Transit**
- **Increased Transit Usage (network redesign)**
- **TDM Ordinance**
- **Complete Streets – Active Transportation**
- **Shared Streets – Active Transportation**
- **Transit Oriented Design Overlay (future)**

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Bus Rapid Transit and Transit Network Design

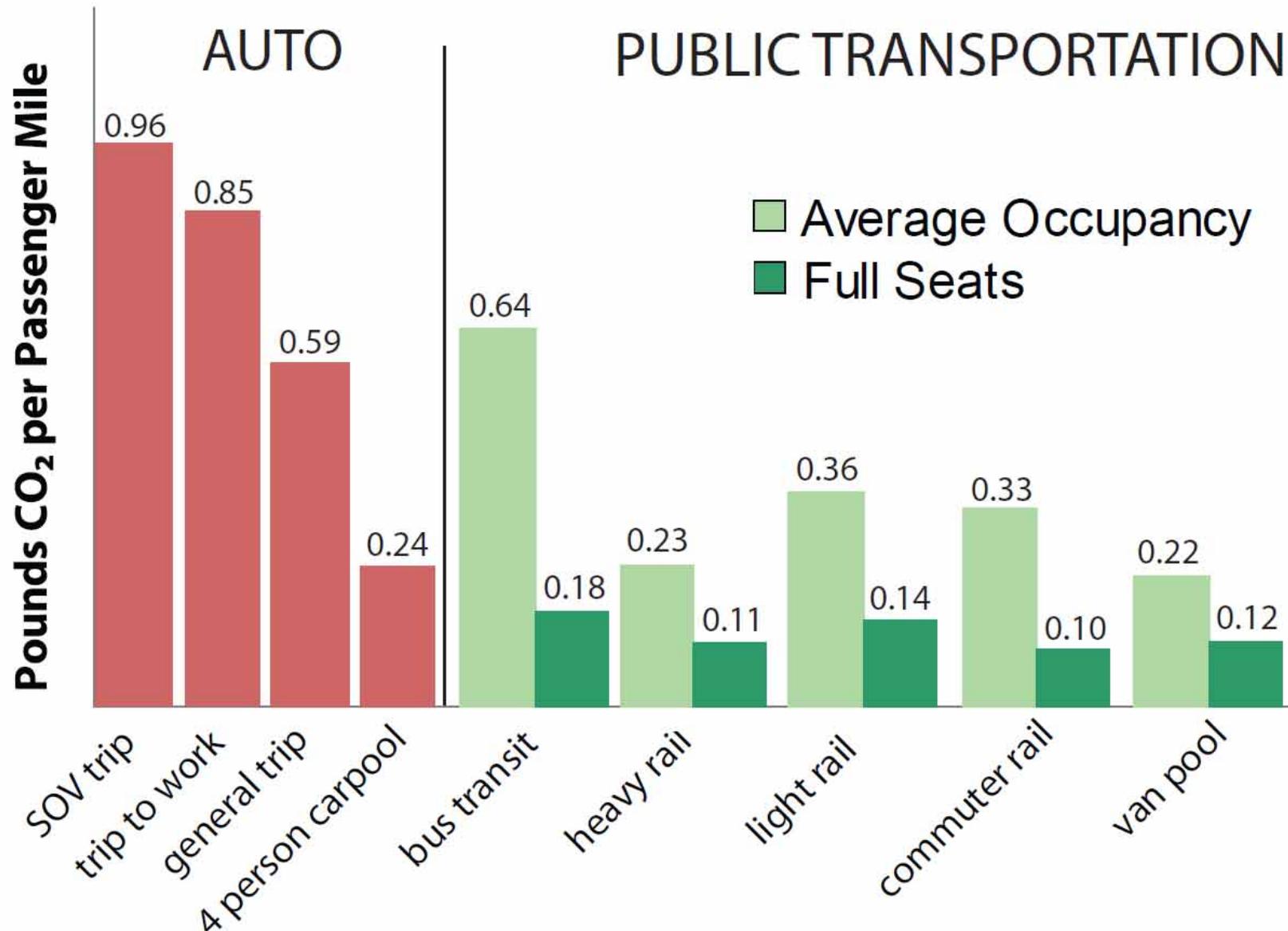


FIGURE 3
Estimated CO₂ Emissions per Passenger Mile for Average and Full Occupancy

Sources:
See Appendix II for data sources and methodology.

Notes: The average number of passengers for private auto trips is 1.14 for work trips and 1.63 for general trips.

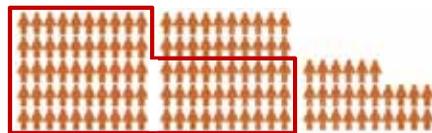
Sustainable Infrastructure

Moving people, not just cars



Less required in
public
infrastructure
investment

126 People move through this roadway during each light cycle. **80 in transit.**



235 People on a road with transit-only lanes move through this roadway during each light cycle. **204 in transit.**

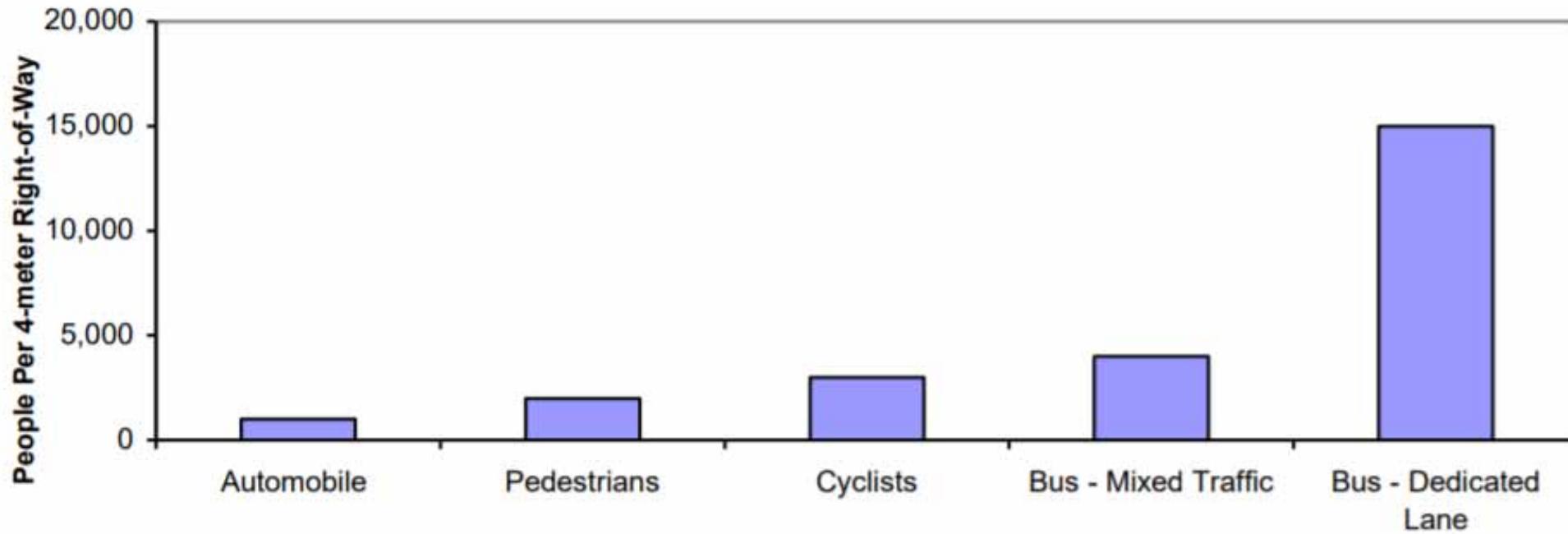


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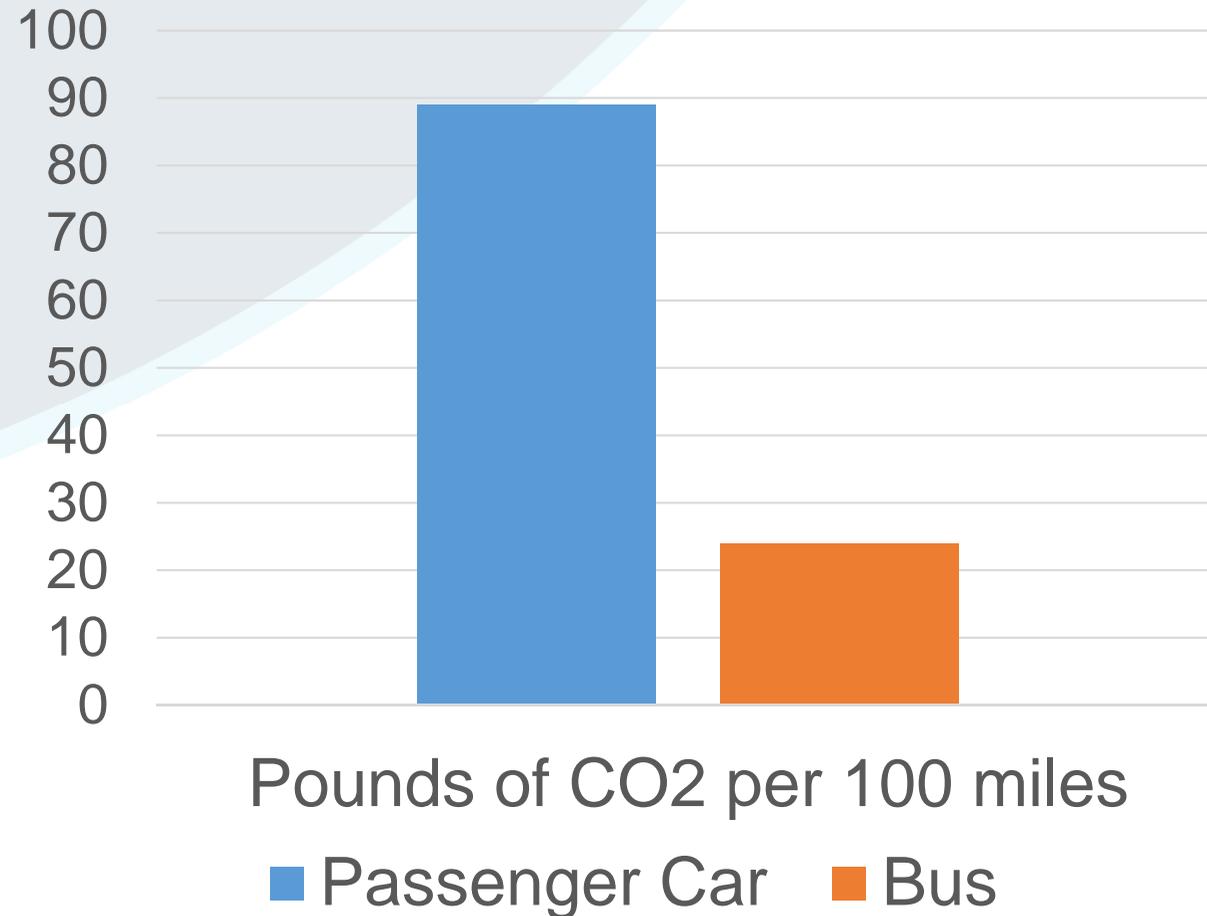
TRANSPORTATION

Figure 7 Maximum Passengers Per Hour on Lane By Urban Mode



The number of passengers carried by 4 meters of urban road right-of-way varies by mode, travel speed and load factor (passengers per vehicle). Automobiles are generally least space-efficient: an urban street lane can typically accommodate up to 800 vehicles with about 1,000 passengers per hour.

Metro reducing emissions from the private sector



10,000 new riders per workday reduces CO2 emissions by 6,000 tons/year

40 pass/bus, 3 mile average trip, weekdays only

This reduction would represent 1/3 of Metro's emissions

Source: CGGC, based on mpg figures from (Barnitt, 2008) and CO₂ per gallon of fuel from (EPA, 2009).

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TDM effect on VMT

Arlington Co Virginia

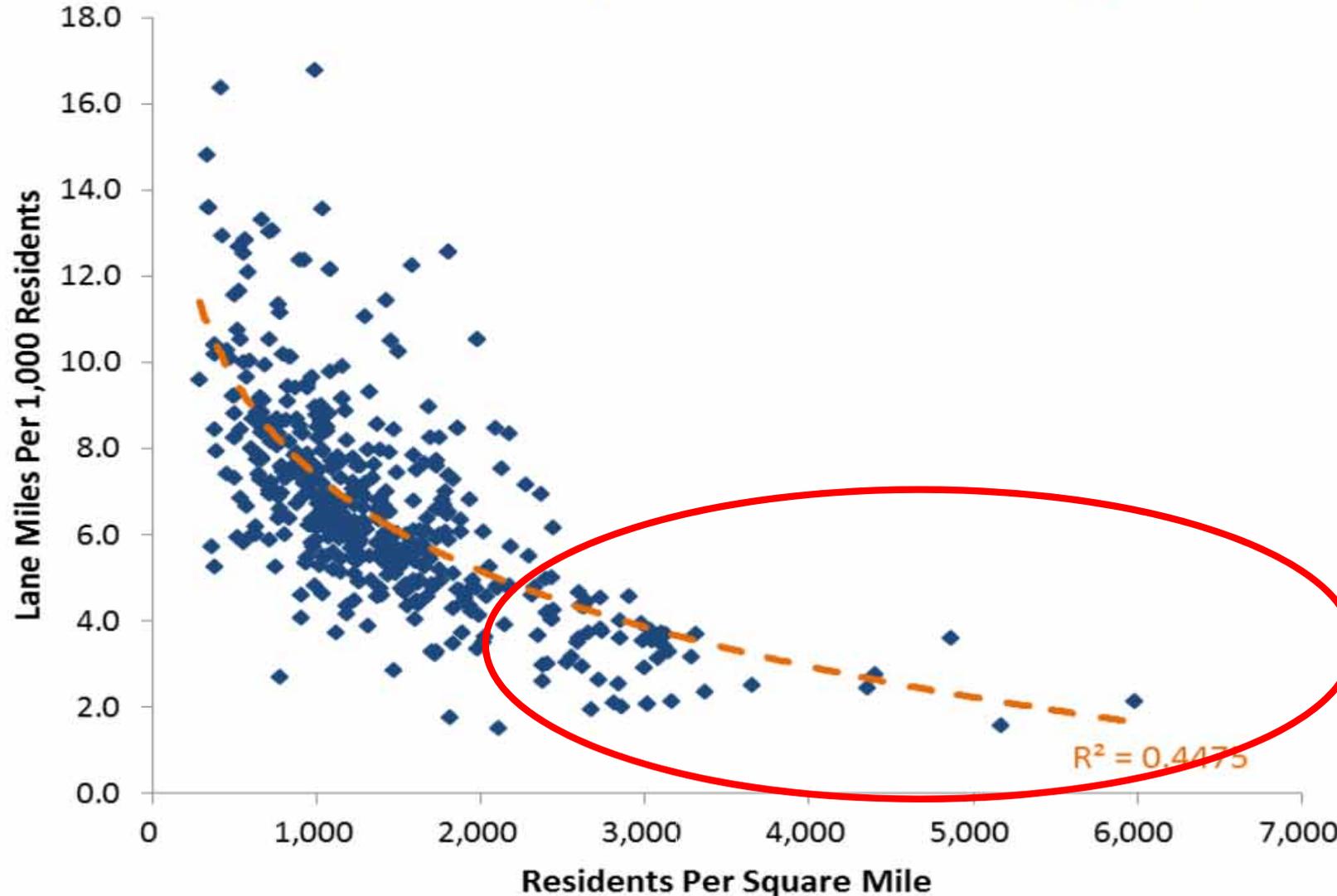
The percentage of Arlington residents driving alone to work has dropped from 63% in 2001 to 53% in 2013.

The percentage of Arlington workers driving alone, including those coming in from other jurisdictions, has dropped from 59% in 2001 to 54% in 2013.

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Sustainable Land Use

Figure 7 Urban Density Versus Roadway Supply (FHWA 2012, Table HM72)



Per capita roadway supply declines with density (Each dot represents a U.S. urban region.)

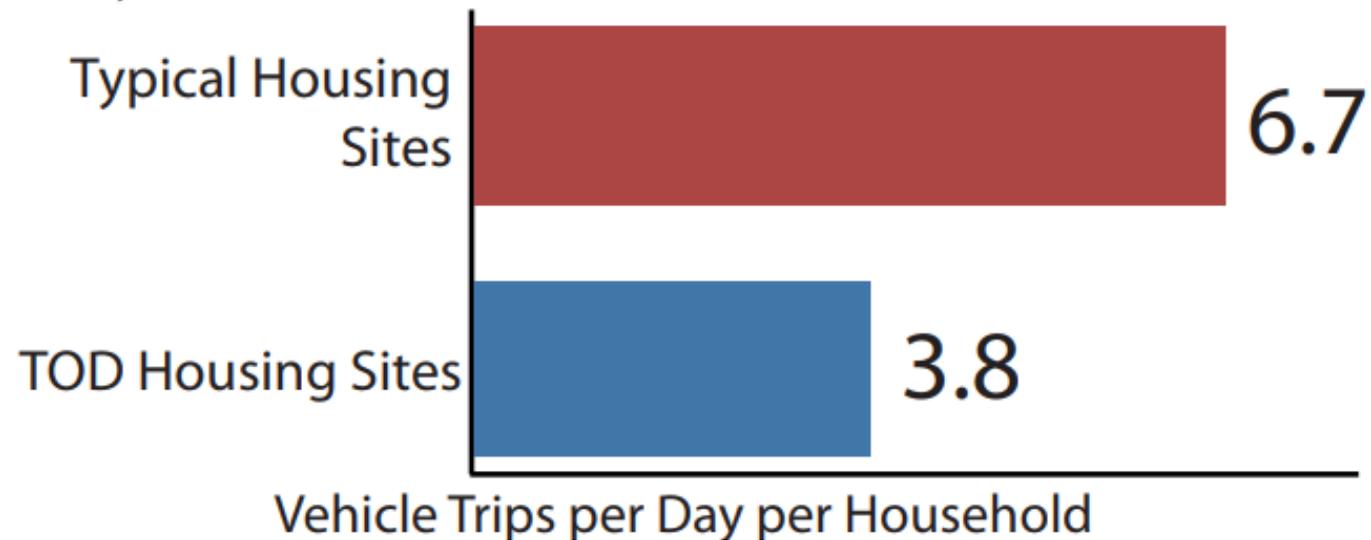
Transit helps:

- Increase density which:
- Reduces land consumption

Density and Trips

FIGURE 5 Vehicle Trips per Day of Transit Oriented Development (TOD) Housing Sites versus Typical Housing Sites

Source: *TCRP 128: Effects of TOD on Housing, Parking and Travel, 2008.*



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