

Decarbonizing Where We Build and How We Move

Realizing inclusive climate action through housing and land use policy and car-free communities

Anna Zetkulic, Carbon Free Transportation

A whole systems approach is needed to bring the transport sector to net zero.

70M EVs and **20%** VKT reduction are needed by 2030 29% from Transportation **US GHG Emissions** X اجہ کے بچا جہ کے

Source: RMI's <u>Scaling US Climate Ambitions to Meet the Science and Arithmetic of 1.5°C Warming</u>



Source: RMI's Our Driving Habits Must Be Part of the Climate Conversation

5 strategies to reduce VKT by 20%



RMI study Our Driving Habits Must Be Part of the Climate Conversation

RMI – Energy. Transformed.

- Where we build <u>housing and</u> <u>services</u> (or <u>land use</u>): 5-20%.
- How we price vehicle use: 5-15%.
- <u>Ending metro highway</u> <u>expansions</u>:1-3%.
- <u>Redesigning streets</u> for bikes, pedestrians and buses: 3-6%
- Providing mobility options and teleworking (or <u>transportation</u> <u>demand management</u>): 4-8%.

Of course, there are many more than 5 ways to cut VKT.

Smart growth	Urban infill development	Missing middle housing	Eliminating barriers to development	Minimum lot sizes	Floor to Area ratios
Compatibility standards	Eliminate minimum parking requirements	Transit-oriented development / transit-supportive communities	Commercial rebalancing	Bringing critical resources like food, healthcare, recreation closer to residential areas	Congestion pricing
Mileage-based user fees	Dynamic parking pricing that reflects demand	Highway infrastructure	Eliminating unnecessary highway expansions	Highway removal (highway capping, conversion t o urban boulevards, land redevelopment)	Street redesign / complete streets
Reallocating street space for non-car users	Accommodating space for EV charging infrastructure	Pedestrianization	Protected lanes for bikes and micro- mobility services	Tree canopy and shading	Transportation Demand Management
City- and employer-driven mobility alternatives	Transit Redesign	Redesigning transit systems to serve the transit-dependent and non-commute trips instead of peak commuter trips	New Mobility	Advancing shared, electric, autonomous mobility	Incorporating universal payment and trip planning systems to bring together publicly and privately owned modes

Urban infill has as much emissions reduction potential as electrifying all new buildings by 2030.

US Household GHG Footprint vs. Income by Zip Code



RMI study Build Mixed-Income Housing in Wealthy Urban Neighborhoods

- Where housing is built can be as impactful to emissions reduction as how it is built and operated.
- For local governments, building housing in <u>low-VMT, medium-</u> <u>income and above neighborhoods</u> can be the most impactful strategy available for emissions reduction – and a key strategy for equity and inclusion.

RMI analyzed three key strategies that spur more housing while reducing emissions in three rapidly growing metros.



UPZONING Building residential density upon parcels that have been formerly zoned for less dense building types.



INFILL & REDELVOPMENT Developing vacant or redeveloping underutilized parcels into buildings.



TRANSIT-ORIENTED DEVELOPMENT Redeveloping parcels near public transit stops, while offering residents access to access to walking, biking, and shared transportation.

Comparing MPOs' growth forecasts against a land use reform scenario has the potential to slash emissions...

Total Metro Region Annual Savings from Strategic Land Use Policy Reform in 2040



- VMT per capita can be reduced 8-13%
- Building energy use per capita can be reduced by as much as 16%
- GHG per capita can be reduced by as much as 14%
- Cumulative incremental land savings can be reduced 52-82%
- Preserved carbon sequestration potential can be reduced by as much as 200K tons of CO2/year
- Residential water consumption per capita can be reduced 10-17%

...and make accelerating EV adoption, expanding active/public transport infrastructure, and other strategies go much further.

DRCOG aims to reduce primary trips taken by SOVs 10% and per capita VMT 10% by 2035. To meet that goal, the region must look at land use.



Denver 2040 Growth Forecast (Business-as-Usual)

> Denver 2040 Growth Forecast (Land Use Reform Scenario)





VMT could be <u>12% lower regionally</u> by 2040.





Under our land use reform scenario, per capita VMT within Denver city limits would be 11% lower than a BAU growth.



Potential for 24,500 housing units on strip-commercial, vacant, or underutilized land







The global movement to convert streets, zones, even entire downtowns on car-free days has exploded and it has staying power.



Montreal's Green Alleys

Green Alleys of Montreal

Vauban – Frieberg, Germany (pop. 5,500)

Fueling biking and busing with one simple fix – no parking



- 20 years old
- 0 parking spots
- Consistently 0 vacant units
- Built with local, very low embodied carbon materials
- Through streets slow traffic to 3 MPH by design
- 85% of residents travel exclusively by bike, bus or light rail in the city

RMI – Energy. Transformed.

Culdesac Tempe – Arizona, USA (Will house 1,000 people)

Maximizing shade and walking by emulating ancient desert cities



- 1st zero car community in the US and in America's urban sprawl capital of Phoenix
- Offers almost free access to city's light rail and other mass transit, as well as scooter-, bike-, EV car- and ride-share
- By excluding garages, each unit is ~US\$36,000 less costly to build than Phoenix's average



Sunfield - Auckland, New Zealand (will house 5,000 homes) Homes and mobility options that serve residents at all incomes and ages



- In planning, car-free net-zero community of mixed-income homes
- Will be 100% powered by on-site solar
- Developers' revenue and space savings, by not laying down as many roads, will fully offset costs of building a new town center, schools, and green corridors
- Absence of parking, driveways and garages also cut purchase costs – Sunfield homes are projected to be ~20% cheaper than AKL's average





Thank You



Angke 1.