# Maximum Mode Shift: A VMT Reduction Study

## TPP Advisory Work Group

METROPOLITAN COUNCIL

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# Study Goal


**Estimate the maximum mode shift possible, given existing land use patterns and travel needs.**

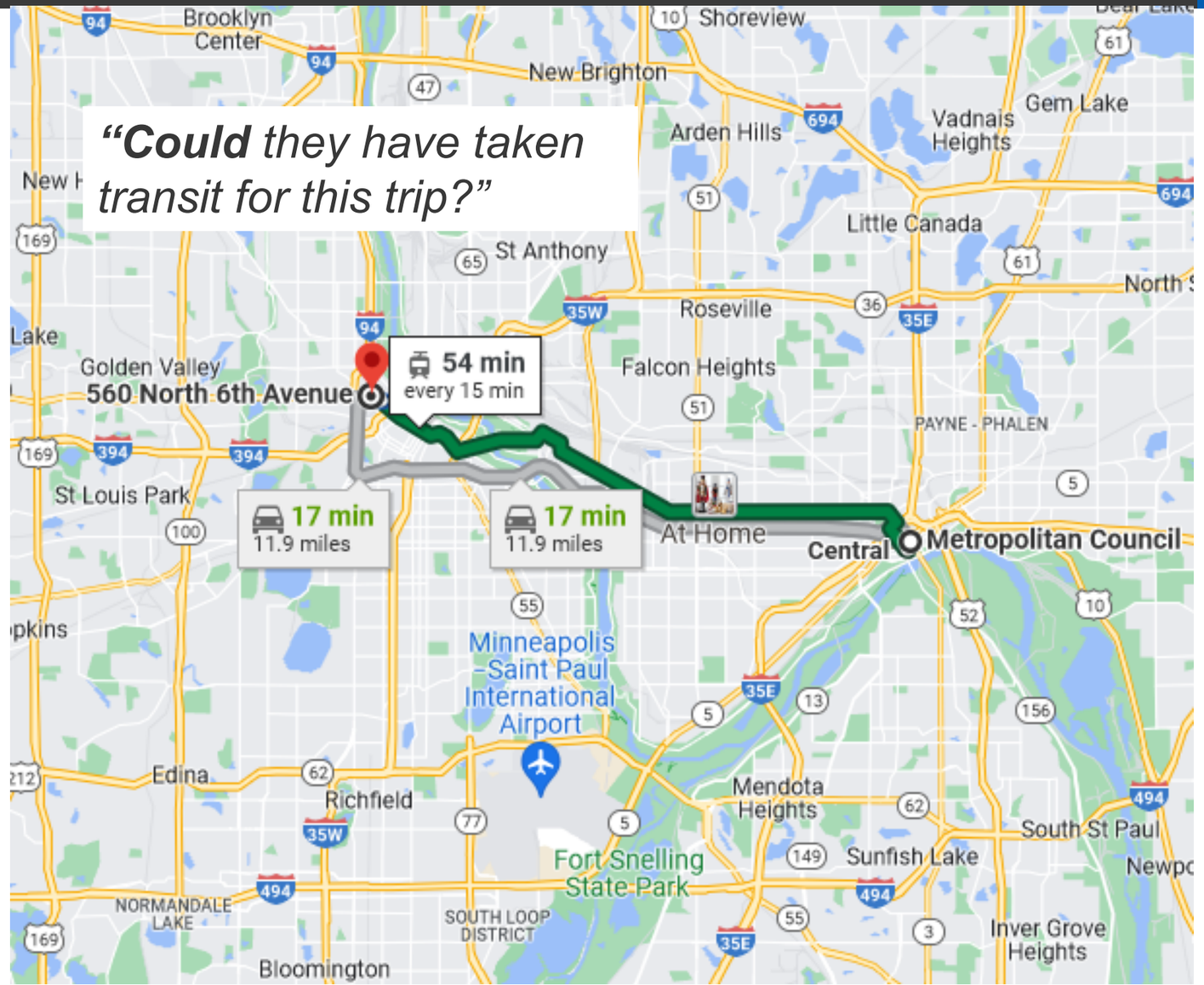
- Help set VMT reduction & mode share targets
- Identify geographies, trip types, demographic groups where mode shift has the greatest potential
- Alternative to forecast models
- Move towards target-based planning

*Project will develop open-source, reproducible tools, allowing the study to be repeated over time.*

# Research Questions (1)

**With land use, transportation system, and travel patterns held constant,**

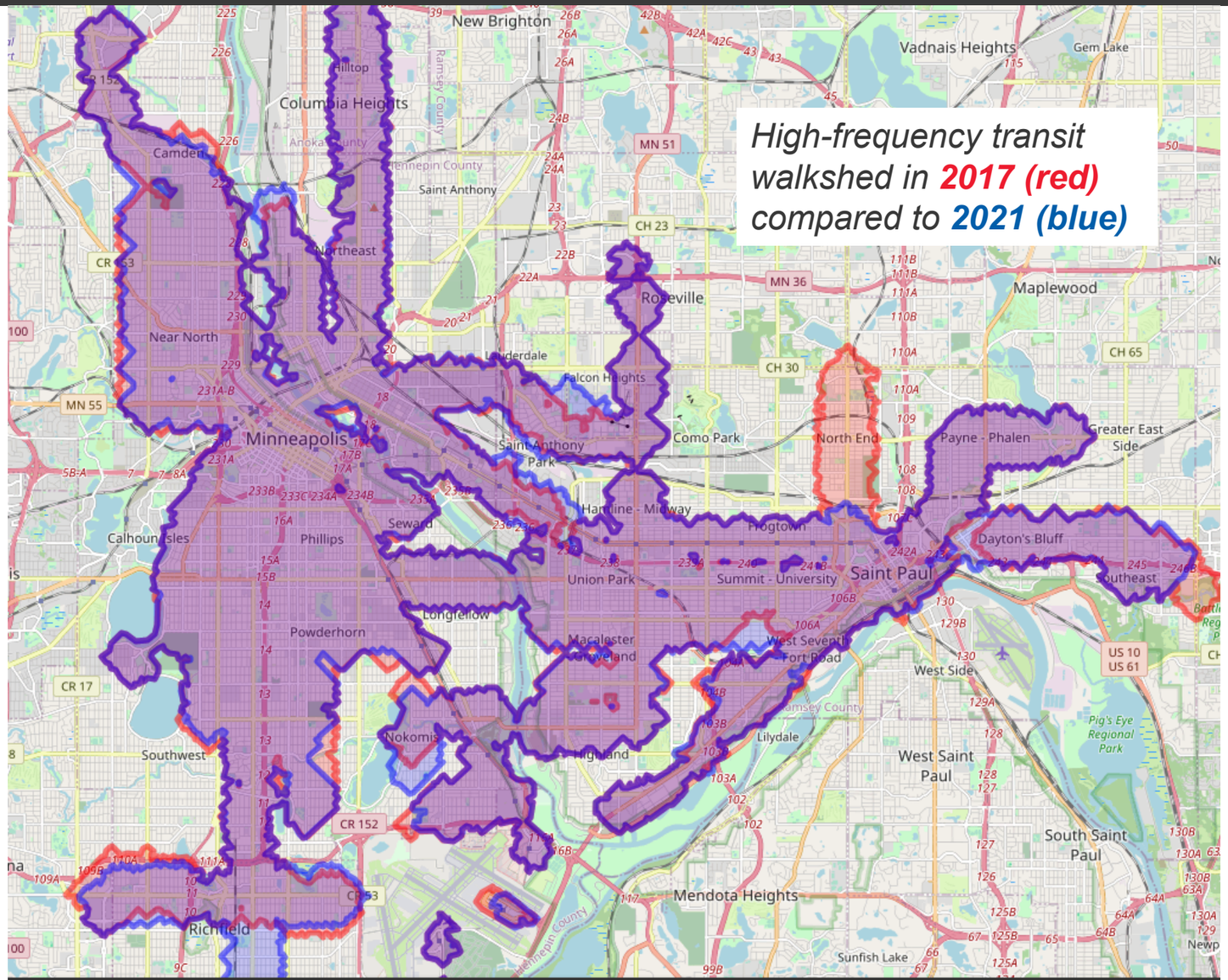
**how much travel can be shifted away from driving towards other, less carbon-intensive modes?**



# Research Questions (2)

To what extent does the **potential for, or cost of**, mode shift vary across:

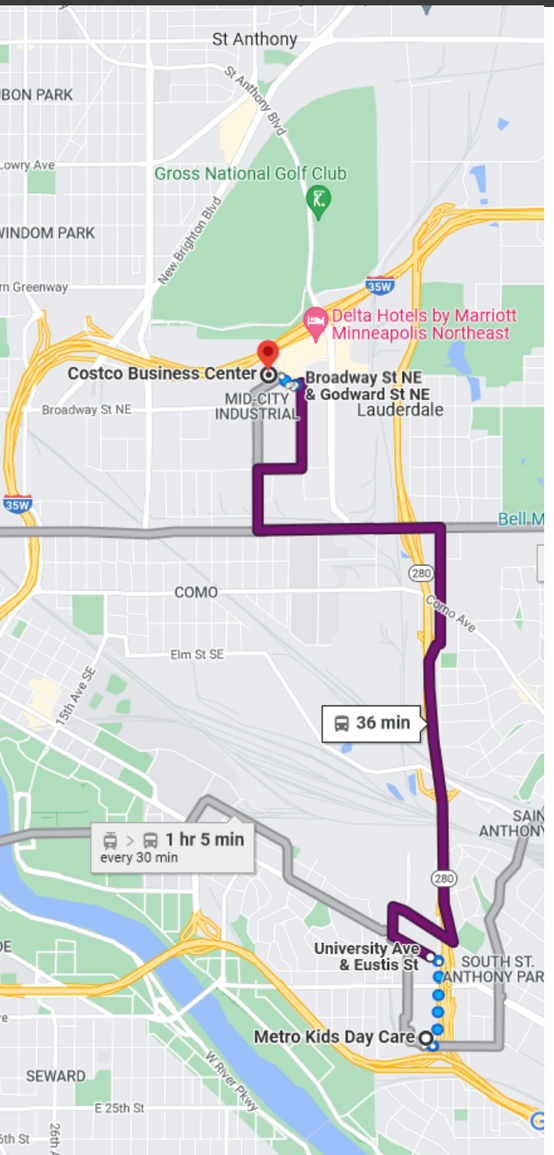
- **geography,** e.g. community type, transit market areas, job and activity centers?
- **demographic** groups including age, gender, income, disability status, and race?
- **trip types,** such as errands or commutes?
- **time** (2018-2019 vs. 2020-2021 TBI; future years as they become available)



# Research Questions (3)

- How much mode shift potential is lost when travel is evaluated in the context of **related (linked) trips?**
- Which communities or households have **enough time in their day** to shift travel from driving to other modes?
- To what degree would **drastic improvements** to the [bike, walk, transit] system increase **mode shift potential**, if they were made today?

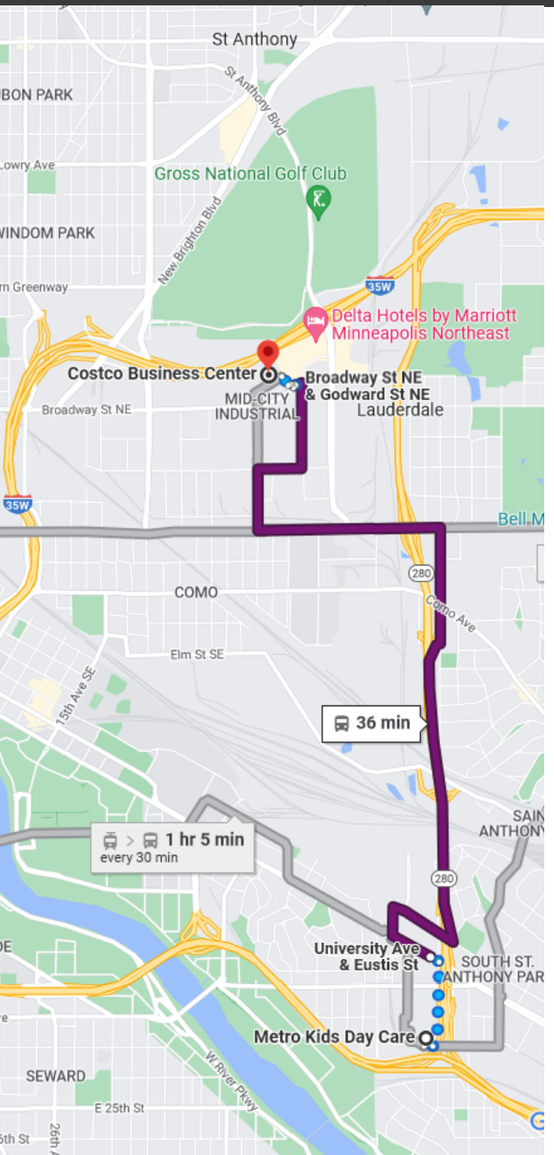
# Project tasks: re-routing trips




## *"Could* she have made this trip by [transit, walk, bike]?"

- **All 500,000 + trips** in the Travel Behavior Inventory (2019, 2021) will be routed *as if* they had been made by transit, walking, biking, or driving.
- Transit trips will rely on the transit system *as it existed at the time*
- Re-routing will consider arrival/departure times for certain trips (e.g., work); but exact details are still being discussed within the project team

# Project tasks: evaluating feasibility (1)




## *"Would* she have been able to make the shift?"

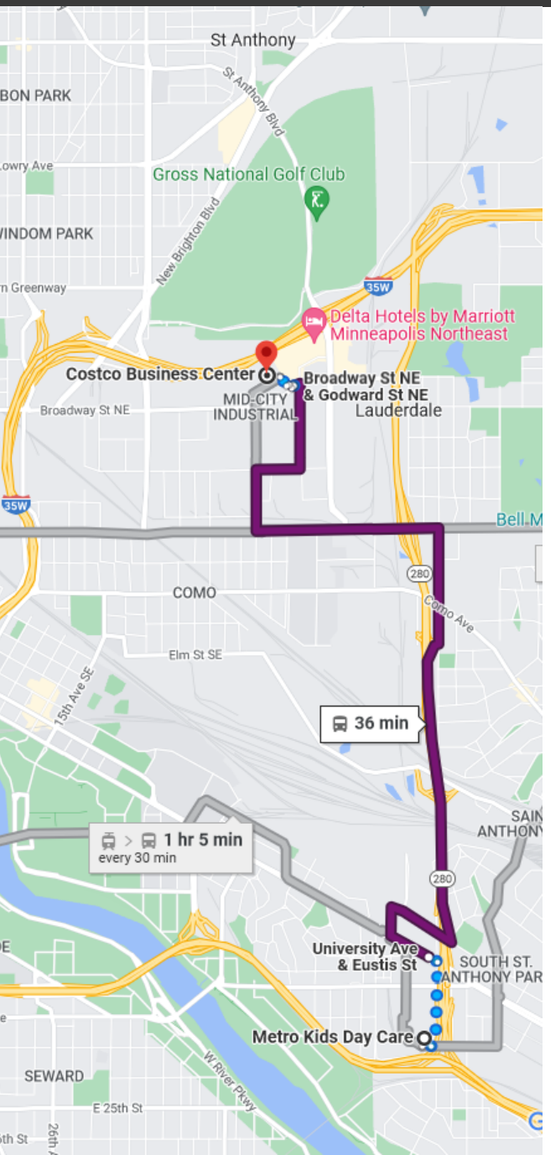
After re-routing trips, we will trim down all *possible* trips to those that were actually *feasible*, given limitations of:

- Time (trade-off between driving and other modes)
- Physical ability (e.g., not counting overly long walk or bike trips)
- Safe infrastructure (e.g, evaluating bike trips by level of traffic stress, walk trips by level of traffic on a road)

Perfect data are not available for all of these considerations: there is no regional sidewalk inventory, and the regional bike network inventory is out-of-date.

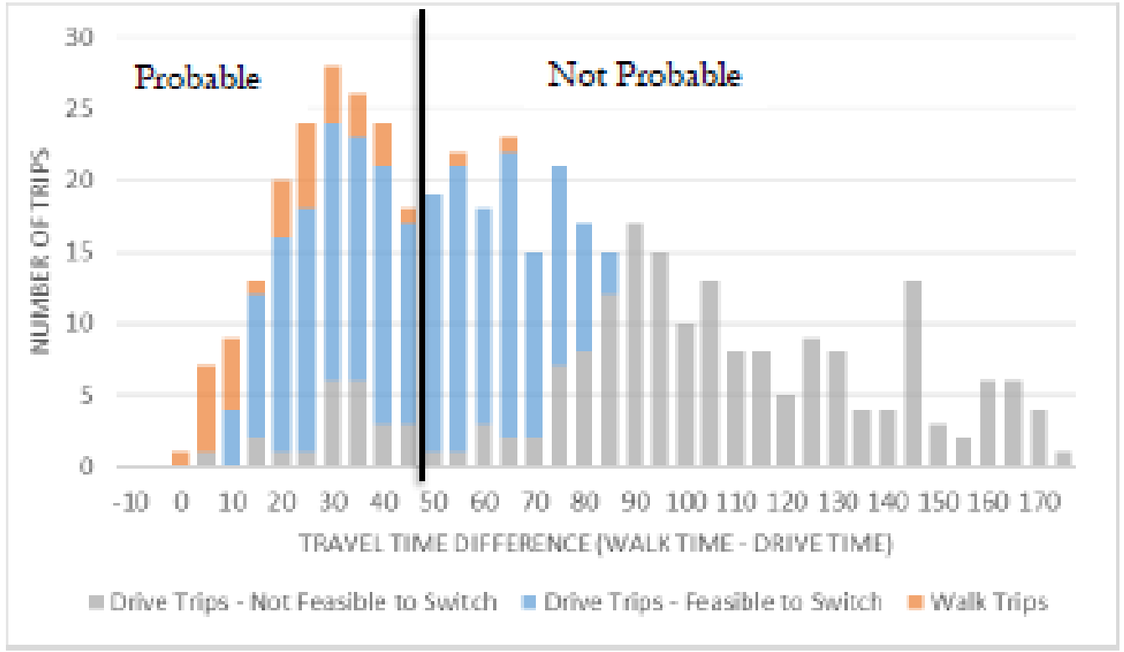
Our estimates of mode shift feasibility will be ***coarse***, ***optimistic***, *and* ***iterative***, laying the foundation for more detailed study, and updating as new data becomes available in future years' studies.

# Project tasks: evaluating feasibility (2)



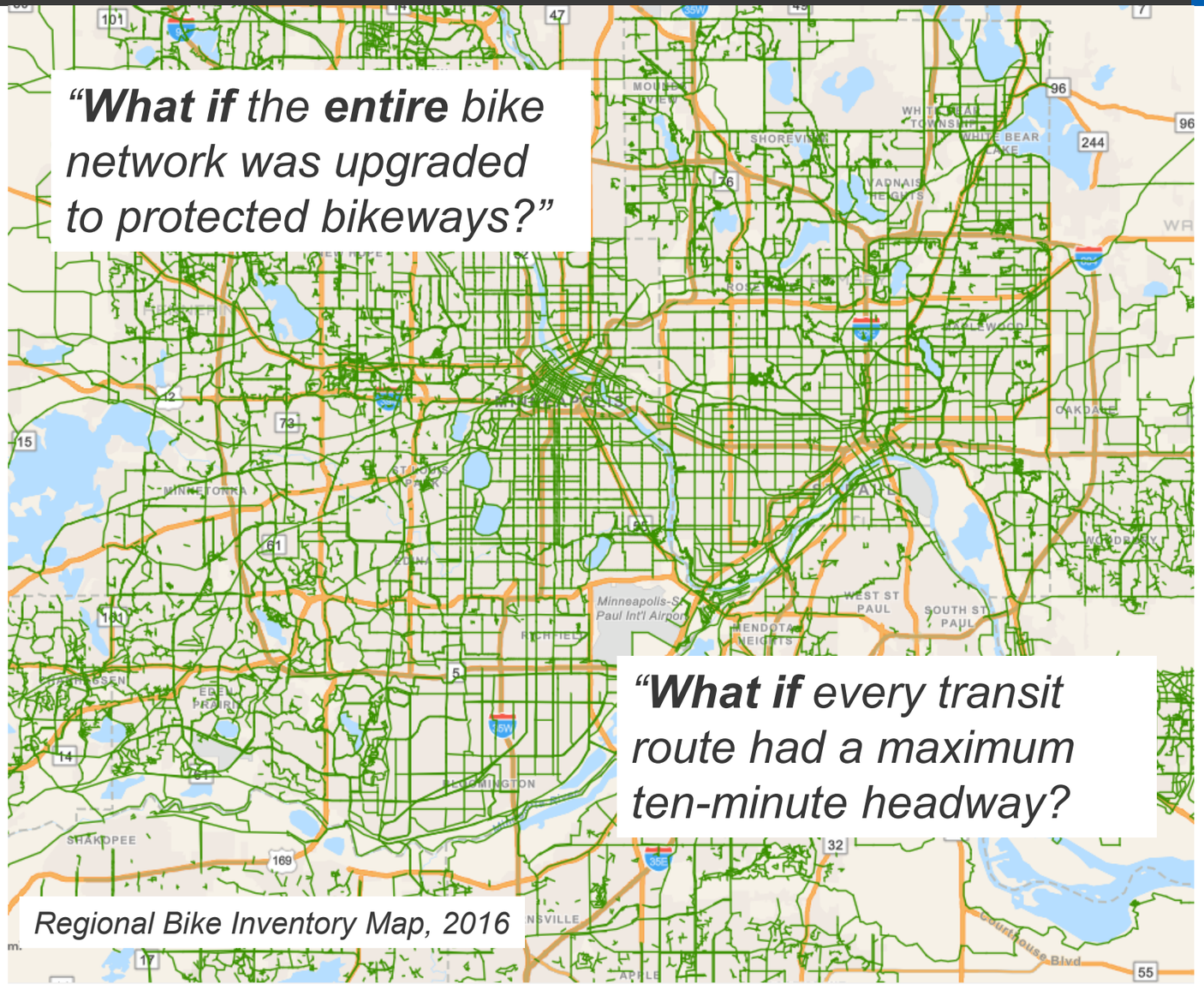

## Using a “5% rule” to determine feasibility

If less than 5% of people are observed doing this in the TBI, it’s probably not a thing people would do



# Project tasks: hypothetical scenarios

- Would **drastic improvements** to the [bike, walk, transit] system increase or decrease mode shift potential, if they were complete today?
- Not a forecast, but exploring some **outer bounds** of the possible
- Region-wide, systematic changes illustrative of big changes, while avoiding cumbersome network coding



# Questions?

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