ITEM #8

Commuter Connections TDM Impacts Employer Outreach Measurement Process

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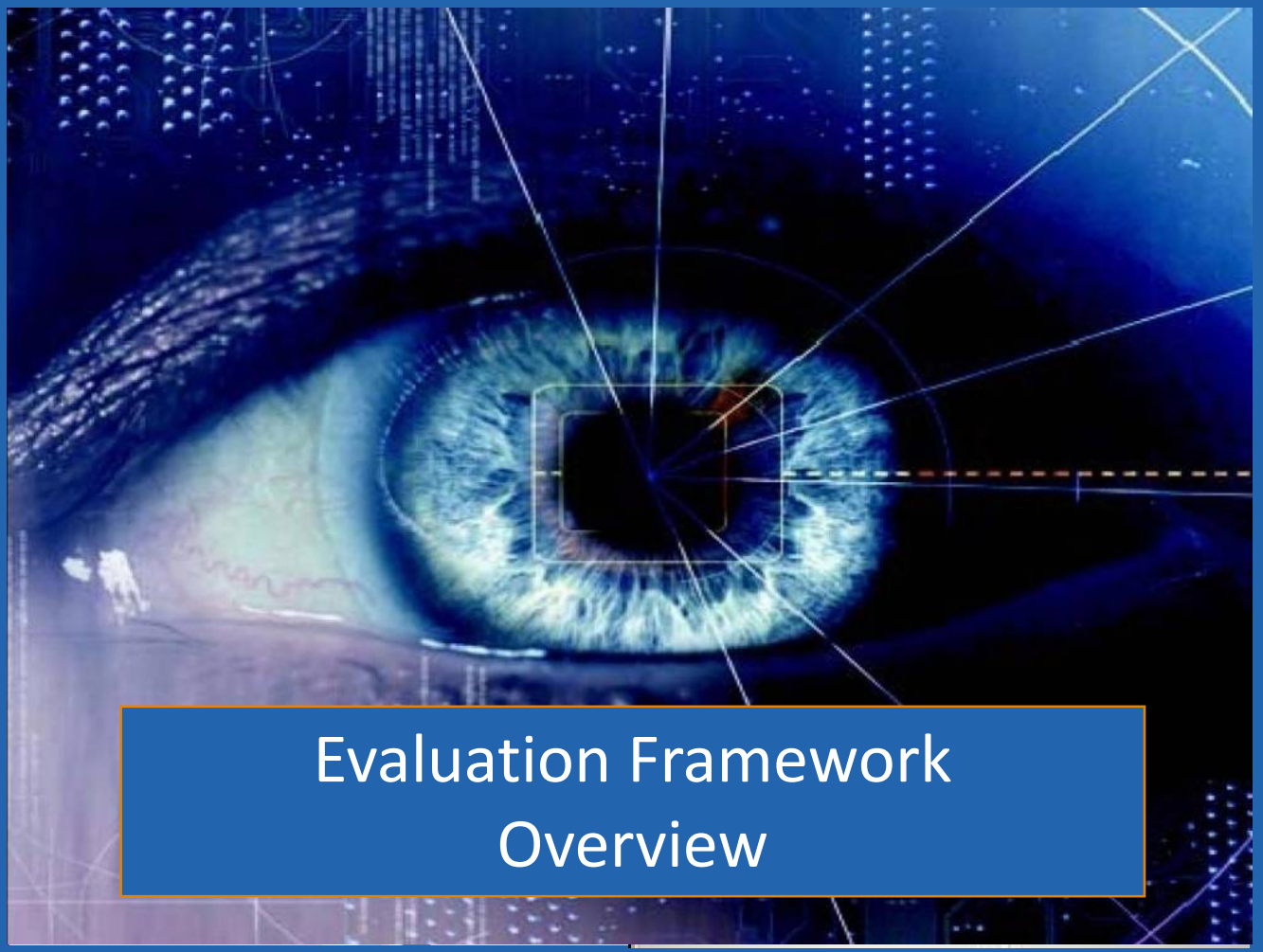

Evaluation Framework
Overview

Commuter Connections TDM Evaluation

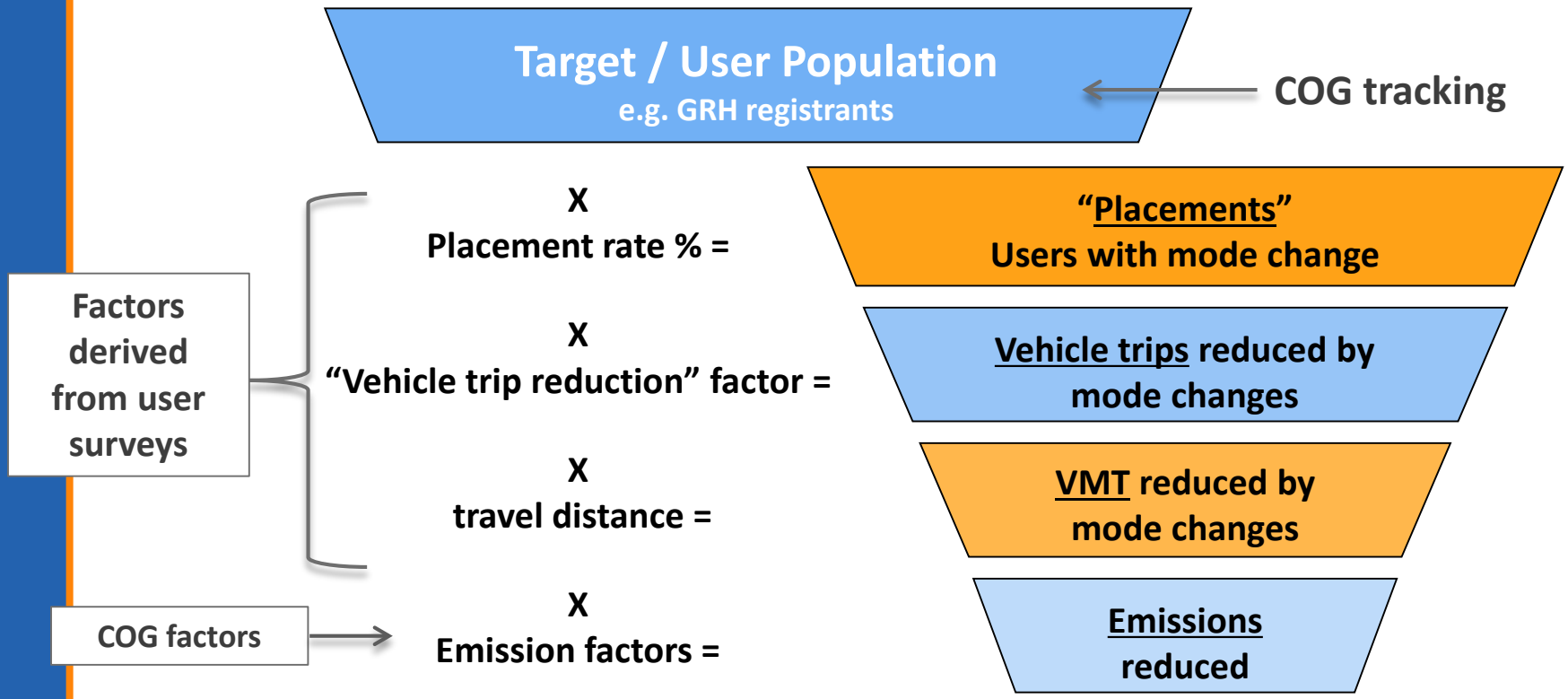
- Triennial impact analysis of Commuter Connections' TDM activities to estimate impacts and communicate program value to funders and regional policy-makers

- Estimate impacts for:
  - Telework
  - Guaranteed Ride Home
  - **Employer Outreach**
  - Mass Marketing
  - Commuter Operations Center

- Impacts:
  - New alternative mode "placements"
  - Vehicle trips reduced
  - VMT reduced
  - Emissions reduced
  - Energy saving
  - Societal cost savings ($ benefits)

Impact Calculation Approach – Impacts of Change

TDM impact calculation approach uses series of "multiplier" factors, derived from user surveys, and applied to a known population of users



Survey Questions to Assess Commute Travel Change

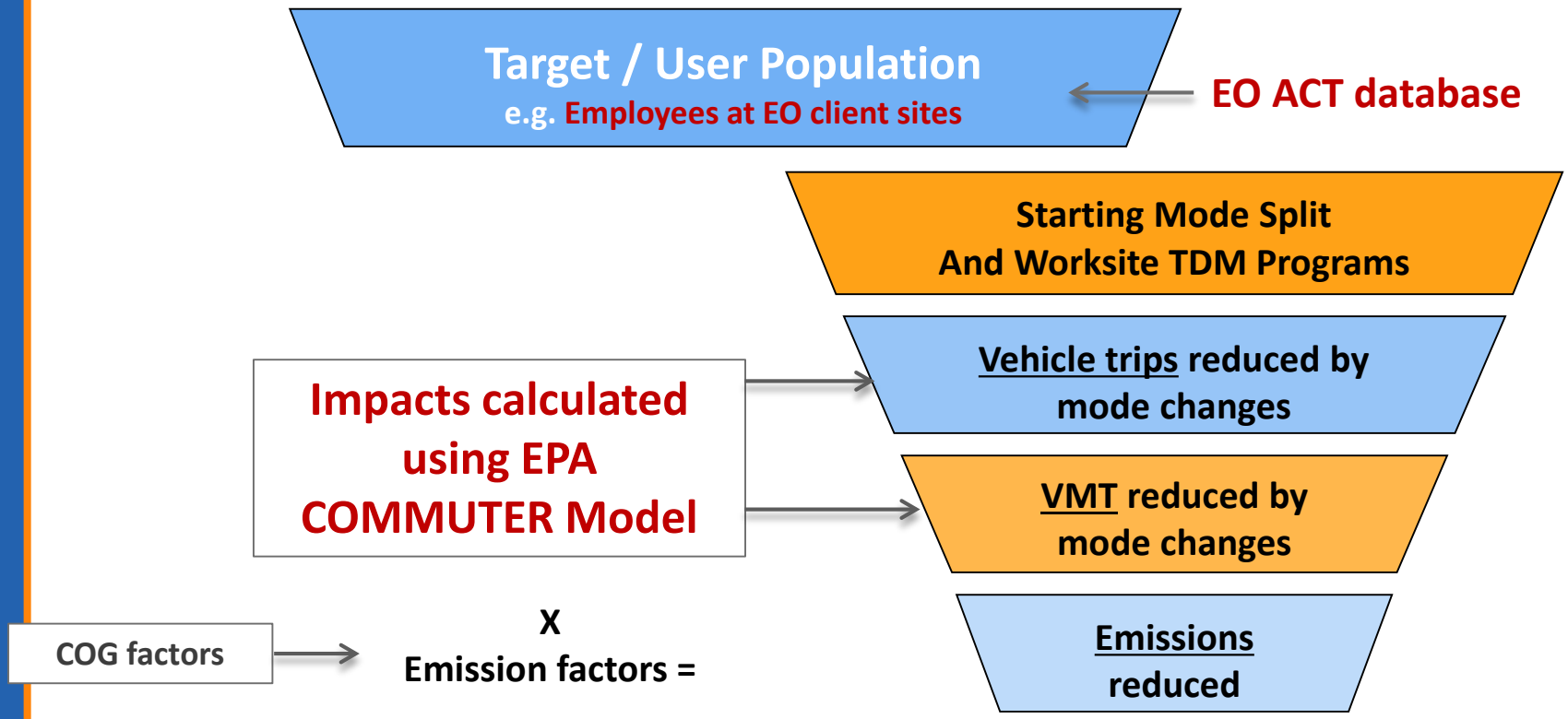
- How do commuters travel now?
- Did they switch to alt modes after receiving service?
- What did they change – mode, frequency, occupancy?
- How did "switchers" travel before the change?

- Was the change a trial or are they still using the new alternative mode (continued change)?
- Did switchers say their change was influenced by the service?

These questions are used to define placement rate % and average trips reduced per switcher (VTR factor)

Impact Calculation Approach – Employer Outreach

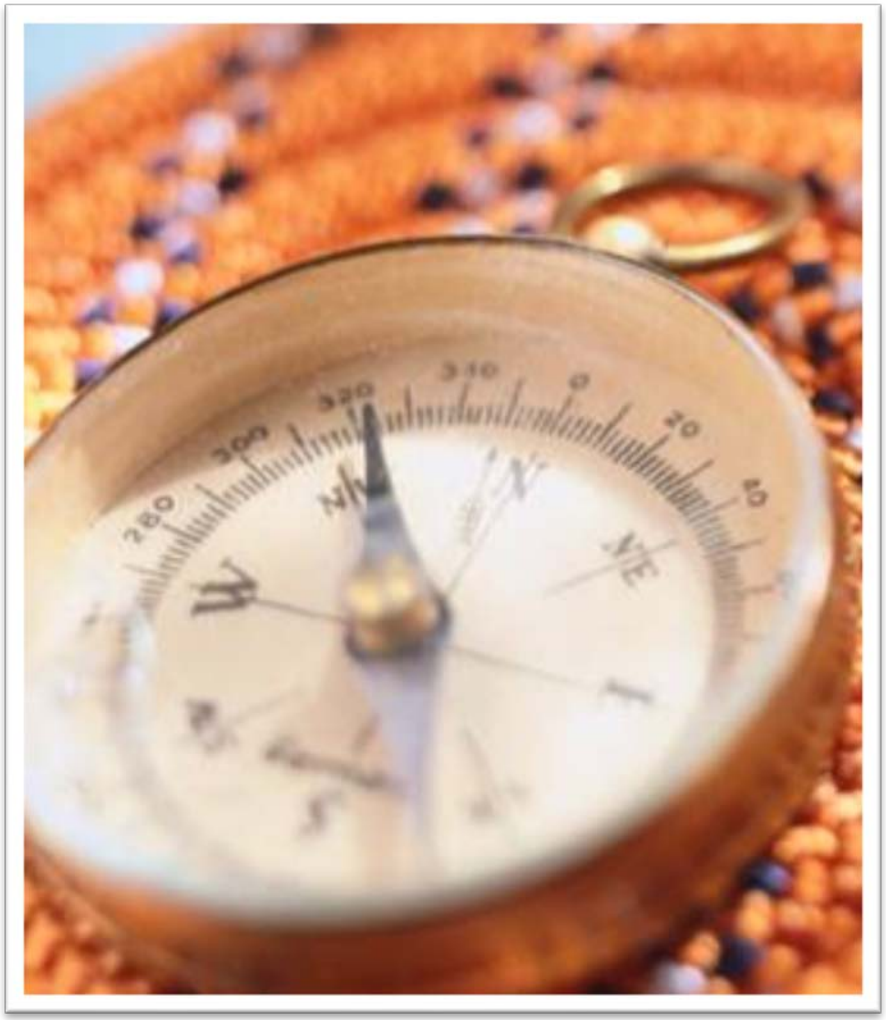
We can't easily survey employees, so we estimate vehicle trips and VMT reduced using a predictive model for the specific services offered by each EO client. This requires an understanding of how individual TDM services influence travel behavior change and the extent of change that are likely for each service.



What Motivates Travel Behavior Change?

Commuters Consider Many Factors in Mode Choice

Key drivers of travel mode choice



Primary

- Travel time
- Cost
- Availability of mode
- Safety

Secondary

- Convenience
- Avoiding stress
- Travel flexibility
- Productive use of time
- Personal comfort
- Status/image
- Impact on environment
- Other personal needs

Primary Factors – Time and Cost

- For most people, these are the top two factors, however some commuters will value time over money or vice versa (i.e. paying for time savings by using a HOT lane)

- Time – how long will the trip take?
  - Door-to-door travel time
  - Access/walking/waiting time
  - Reliability/certainty of time is also part of the decision – will bus or carpool partners arrive on time; are traffic conditions consistent from day to day?

- Cost – what is the cost to commute?
  - Actual out-of-pocket cost
  - Fixed costs (e.g., car ownership)
  - Distributed cost (e.g., monthly parking pass, toll debit account)

Primary Factors – Availability and Safety

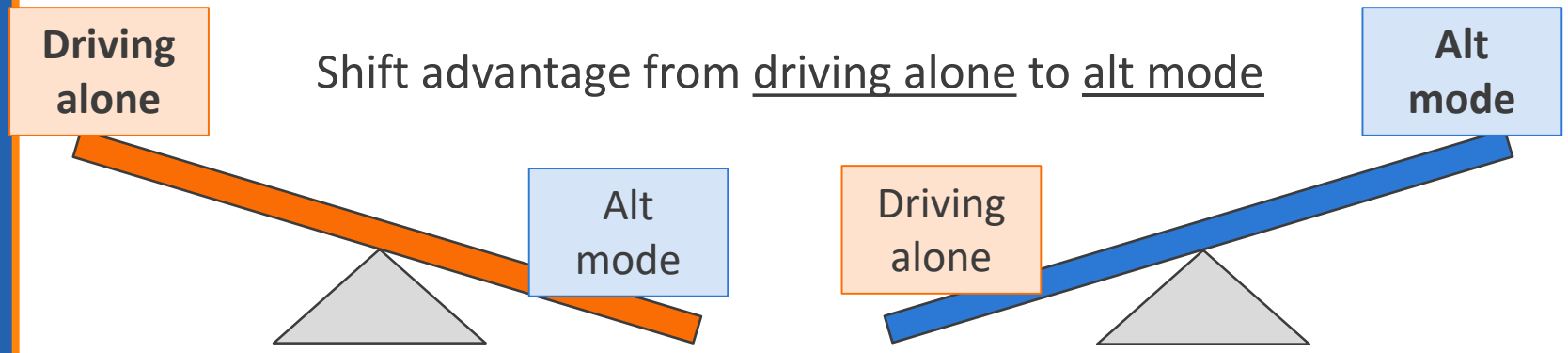
- Availability – is mode available and feasible for commuter to use?
  - Transit/vanpool service exists where and when commuter needs to travel
  - Other travel needs that require personal car (e.g., work travel, childcare, etc.) – alt mode might not be feasible full-time, but perhaps PT
- Safety – does commuter feel safe/secure using the mode?
  - Waiting for bus/train to arrive
  - Riding in vehicle/riding with strangers (e.g., transit, car/vanpool, slug)
  - Travel on busy streets (e.g., bicycling, driving in traffic)
  - Confidence of not being stranded without transportation
- These factors are important because the absence of the factor (e.g., mode not available, perceived as risky) are major barriers to use

Secondary Factors

- For most commuters these are less important that the primary factors, but some will put one or another of these at the top of the list:
  - Convenience (e.g., ease of use)
  - Avoiding stress (e.g., driving in traffic, uncertainty of travel time)
  - Travel flexibility (e.g., stay late, errands en-route, mid-day trips)
  - Productive use of time – leave the driving to someone else
  - Personal comfort (e.g., space, music/quiet, temperature)
  - Status/image/belonging
  - Familiarity/habit
  - Environmental concerns
  - Other personal travel needs or constraints (e.g., health, exercise, mobility barriers, childcare responsibilities, second jobs, no vehicle, no license, etc.)

TDM Strategies Designed to Adjust Mode Advantages

- Each mode has a characteristic "profile" that represents a combination of the mode decision factors
- Assuming a commuter has a personal vehicle, driving alone typically has the advantage on most factors – available, faster, more comfortable, safer, flexible, familiar
- TDM strategies can shift the characteristics of alt modes to:
  - Give an advantage to alt mode (e.g., express bus reduces transit time)
  - Disadvantage driving alone (e.g., parking charge makes DA more costly)
  - Offer a new drive alone alternative (e.g., vanpool, shuttle to train station)
  - Remove a barrier to use of alt mode (e.g., GRH, ridematch, P&R)

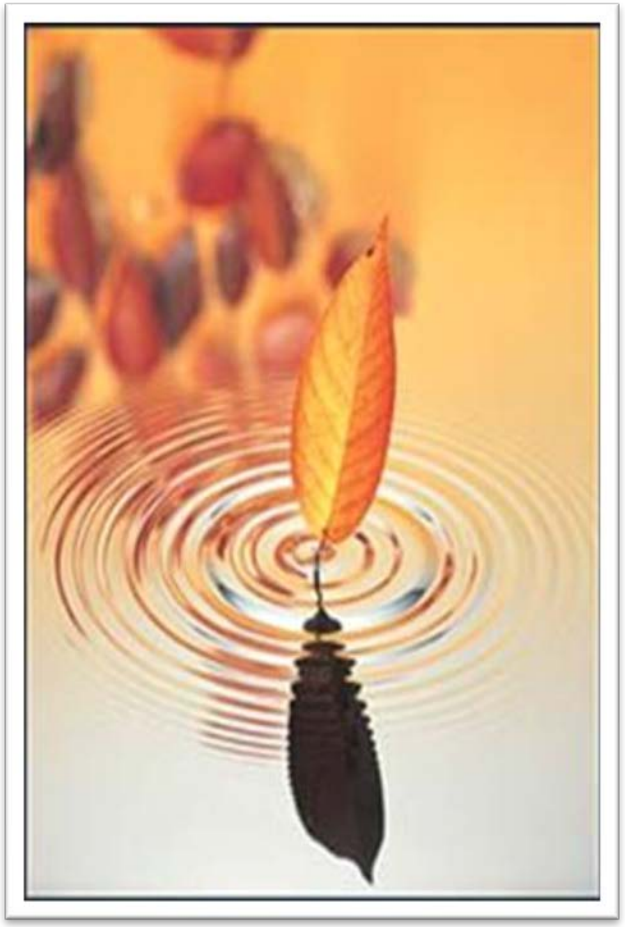


Typical TDM Strategies for Primary Decision Factors

- Time
  - HOV lanes
  - Express bus, Increased transit frequency
- Cost
  - Subsidy, travel allowance
  - Parking charge, CP/VP parking discount
  - Short-term “try it” incentive, prizes/discounts
- Availability
  - Vanpool, slug lines
  - Transit/shuttle
  - Bikeshare
- Safety
  - GRH
  - Subscription bus
  - VP formation meetings
  - Intra-company ridematching
  - Bike buddy

Typical TDM Strategies for Secondary Decision Factors

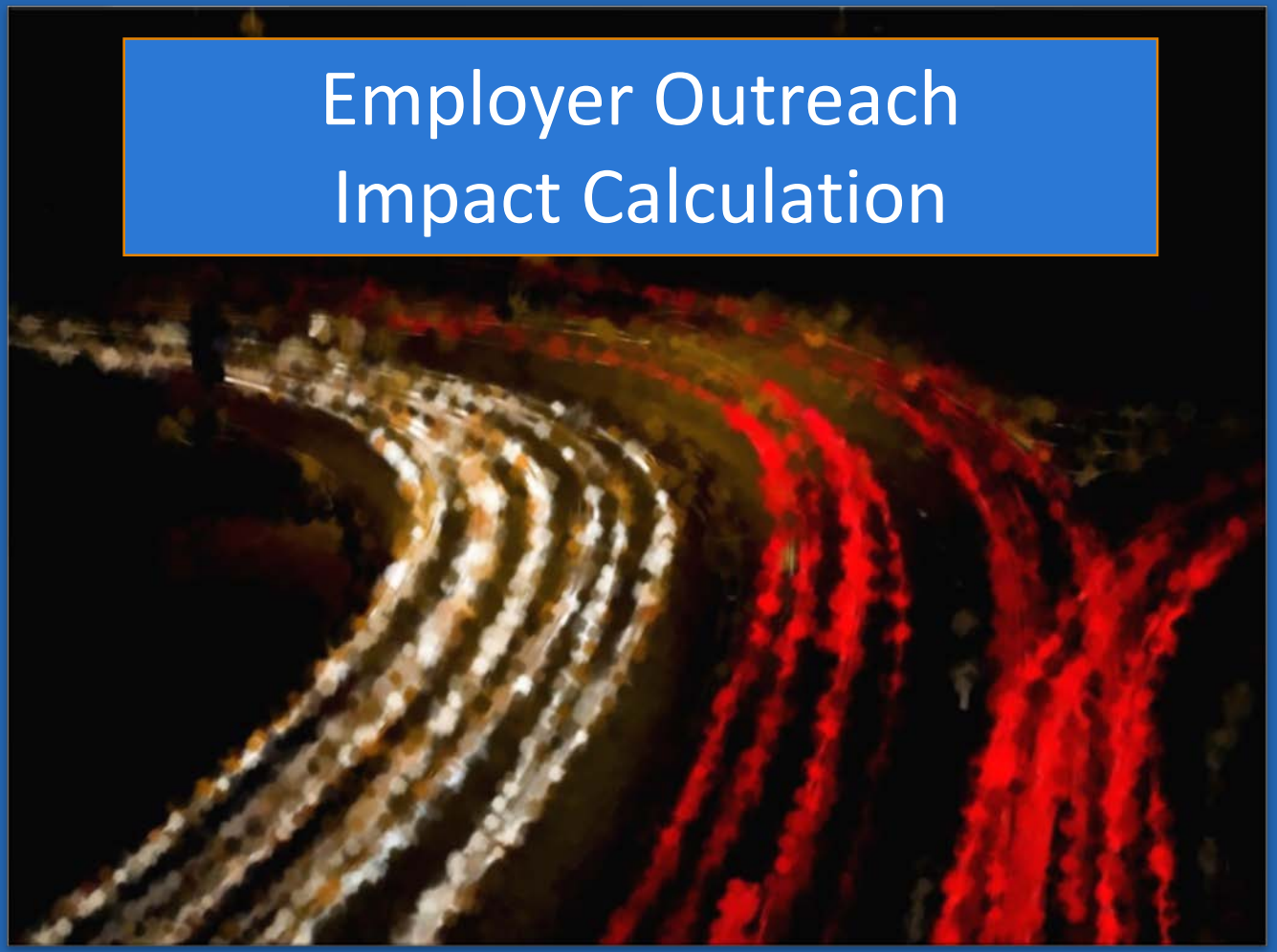
- Convenience
  - On-site transit pass sales
  - Debit account for transit payment
  - Preferential parking
  - P&R lots
- Flexibility
  - Bikeshare, fleet vehicles for mid-day trips
  - Day parking pass
  - Flexible schedule options
- Familiarity – personal trip/route planning
- Comfort – van amenities, transit shelters
- Status/image
  - Commuter Club
  - Recognition
  - Commuter challenge



What Determines the Influence of TDM Strategies?

- Which decision factors are influenced?
  - Primary factors more valuable than secondary – e.g., time/cost strategy typically more influential than one that increases comfort or convenience
- How extensive, substantial is the strategy?
  - Larger value – e.g., $150 incentive more influential than $50
  - Direct benefit – e.g., direct vs pre-tax; subsidy vs prize drawing
  - Complementary services offered – e.g., transit subsidy, shuttle, and GRH
- How widely offered/applicable?
  - All employees vs limited subset – e.g., only senior staff telework
  - Number of modes affected – e.g., travel allowance vs transit subsidy
- Characteristics of the worksite setting?
  - Urban/suburban location; Bus and train options; transit frequency; HOV; sidewalks; bike paths; parking; shops/services nearby
- Characteristics of employees and type of work?
  - Job requirements; shifts vs fixed 9-5 hours; work travel; wages/salaries

Employer Outreach Impact Calculation



Impact Calculation Approach – Employer Outreach

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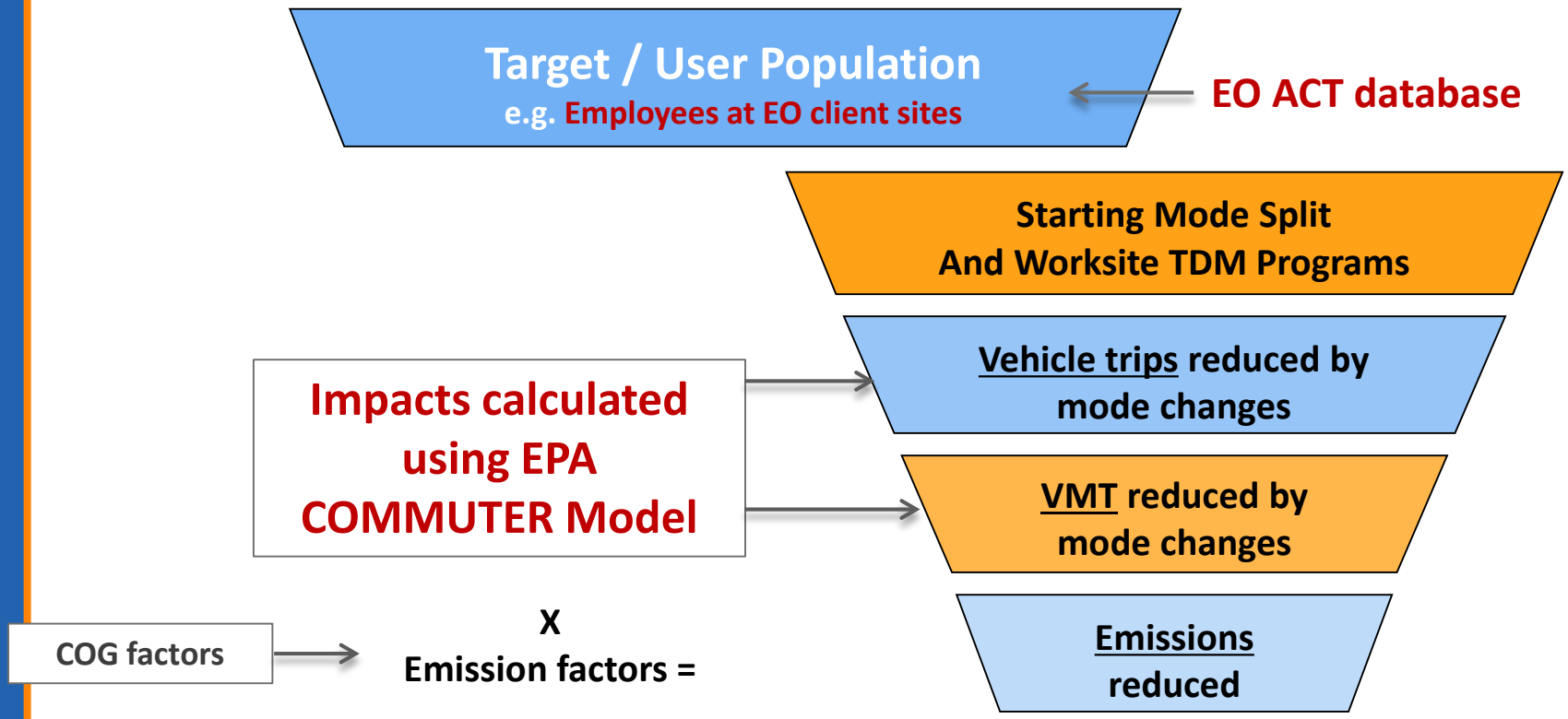
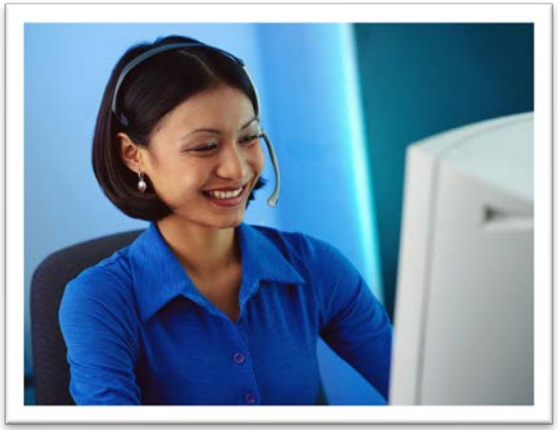


EPA COMMUTER Model – Inputs



Model Inputs

- Number of employees at worksite
- "Office"/"non-office" employer type – proxy for job types, schedules, employee incomes
- Level of transit service (low, moderate, high)
  - Reflects likely influence of transit incentives
  - Also proxy for "urban-ness" – urban settings provide greater SOV disincentives and greater alt mode motivations
- Starting mode split
  - Actual mode split – if employer has conducted baseline survey
  - Average for employer/transit combo if no survey available
- Travel distance for each mode
- Specific package of TDM strategies offered at the worksite

Model Estimates Mode Change for Strategies

- Directly assesses cost strategies – by mode
  - Subsidies/incentives – represented as daily cost saving by mode
  - Pre-tax subsidies calculated as 40% of subsidy value (tax saving)
  - Parking charges – represented as daily cost to SOV
- Directly assesses time strategies – also by mode
  - Transit (in-vehicle or access/wait) – daily minutes
  - CP/VP (e.g., HOV, access time, other strategies)
- Estimates impacts of telework and compressed schedules
  - Actual count of employees using schedules or average %
- Other strategies grouped into mode support packages with larger number of services equaling higher levels of support
  - Carpool/vanpool (e.g., GRH, ridematching, preferential parking)
  - Transit (e.g., GRH, transit info, on-site transit pass sales, flextime)
  - Bike/walk (e.g., storage, showers, bikeshare, bike club, route planning)

EPA COMMUTER Model – Predictive Computer Model

- Starting mode split is an essential input to the model:
  - Model "pivots" from starting mode split
  - Suggests alternative mode attractiveness before services are applied – e.g., low starting transit use suggests low attractiveness of transit service
  - Mode services can draw new users from both drive alone AND other alt modes – e.g., transit subsidy will reduce drive alone %, but also carpool/vanpool/bike/walk %
  - Final mode split will reflect both the starting mode/site conditions and composition and extent of the services applied
- Output estimates:
  - Final mode split at worksite
  - Number of vehicle trips reduced
  - Number of VMT reduced

Typical Model Results – Cost and Time

- Cost strategies:
  - 5%-7% for $40-$60 per month value
  - 15%-20% for $100 or more value
  - Higher impacts for sites with conducive site characteristics – lower income, non-office, high transit access, urban location
- Time strategies:
  - Difficult for employers to influence substantial time saving with worksite strategies; would need 10 minutes or more time saving to register individual impact

Typical Model Results – TW/CWS and Support

- Telework and compressed schedules:
  - Impact related to % of employees using TW/CWS and ave. frequency
  - If 10% of employees TW 1 day/ week, trip reduction would be 2%-3%;
  - Higher participation/frequency would have proportionately larger impact
  - CWS has a similar impact, determined by the % of employees involved and type of CWS – e.g., 4/40, 3/36
  - Eliminate trips from all modes, in proportion to starting mode split
- Mode support packages:
  - Important complement to cost, time, availability strategies
  - Some of these strategies serve valuable functions, but research has shown these strategies have modest impacts when implemented alone
  - Model assigns 1% - 3% additional trip reduction for support services on top of reductions for other services

Summary

- Numerous factors contribute to the effectiveness of TDM programs where effectiveness is measured in terms of vehicle trip reduction
- Worksite setting (e.g., urban-ness, high transit, limited parking), and job/employee characteristics (e.g., regular work hours, lower incomes) can play a substantial role in level of impact
- Type and combination of TDM programs implemented have a significant impact
- Effective programs are likely to include some combination of:
  - New travel options – 3% - 8% trip reduction
  - Telework/CWS – 2% - 10% trip reduction
  - Financial incentives – 5% - 20% trip reduction
  - Incentives and support combined – 15%-25% trip reduction

Summary (continued)

- Second tier of support strategies:
  - GRH
  - Preferential parking
  - Ridematching/trip planning
  - Commute service/option information
  - Bicycle services
  - Flexible work hours
- Second tier strategies are an important part of comprehensive package and contribute to impact, but with modest results when offered without primary influencers (1% - 3%)
- Info/promotion has not been found to be influential alone – but has a valuable role to increase awareness of more persuasive strategies
- Other intangible factors such as the level of employer support and workplace culture also could be helpful – “vigor” test

Questions?

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