

Guidance for Comprehensive Transportation Review (CTR)

2019 Edition



Introduction



Guidance for Comprehensive Transportation Review

Version 1.0 – June 201

DDOT Released new CTR Guidelines in June 2019

- 2019 WDCSITE Project of the Year Award Recipient!
- Guides traffic consultants on CTR requirements and documents DDOT philosophy on review of development, everything needed for a CTR and site design in one location
- First in the Nation! Parking ratio based on land use and distance to transit is now primary metric. Good proxy for traffic and turns project into a "form based" design review – incentivizes good development
- Greater focus on site design + public realm design + Vision Zero
- Significantly revamped TDM programming tied to parking ratio, distance to transit, and transportation network impacts
- Continues shift away from LOS and traffic impacts. TIA now a smaller component of larger CTR study, can be waived in more situations



Evolution of CTRs in the District

Pre-2012: Traditional Traffic Impact Study (TIS)

- Propose a development, do a traffic study, directly mitigate roadway LOS impacts
- Introduced concept of TDM and non-auto in lieu of roadway mitigation

2012-2018: Multi-Modal CTR Study ("2012 Beta Version")

- Early national leader in using multi-modal person-trips methodology (ultimately adopted by ITE in Trip Gen Handbook)
- Changed from TIS to Comprehensive Transportation Review (CTR)
 - De-emphasized TIA/TIS as "be all, end all" of site review
- New perspective traffic analysis does not drive all decision making (more often ped safety & public space design)
 - Less focus on accommodating driving by suburban commuters, more focus on livability and quality of life for District residents
- Introduced concept that parking is a driver of vehicle trips not just a static zoning requirement
 - Adjust veh trip gen based on reduced or over-supply of parking
 - Right-size residential parking based on ParkRightDC data

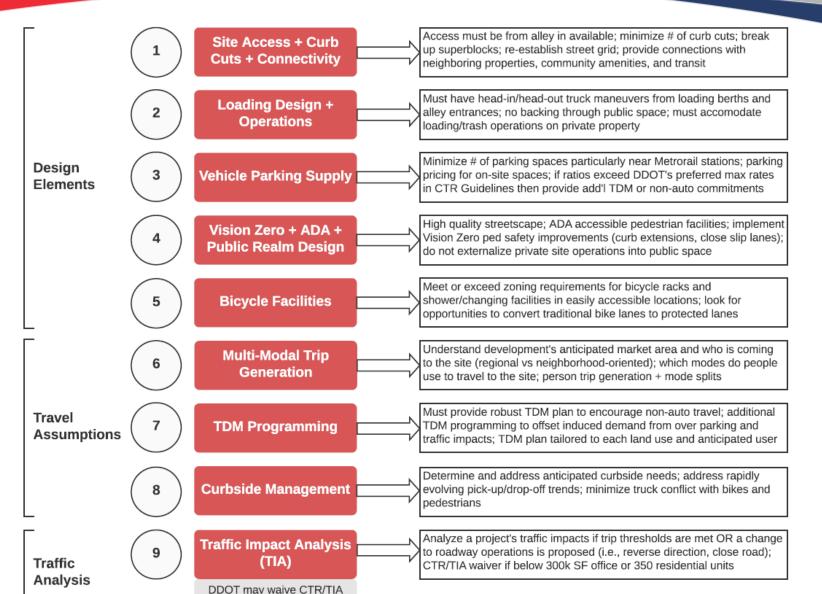
2019+: CTR w/greater focus on Site Design, Parking, TDM ("2019 v1.0")

- Introduces off-street maximum vehicle parking benchmarks by land use and proximity to transit
 - Benchmarks tied to parking demand research and MoveDC & Comp Plan modeshare goals of 75% non-auto H-W trips
 - Goes beyond right-sizing parking based on present demand and attempts to drive modeshift by cutting back on parking more
- Moves toward a "form-based" review which incentivizes high quality project design, transit accessibility, and incorporating DDOT Vision Zero principles
- TIS/TIA now just one component of much broader multi-modal evaluation and only triggered in certain situations.
 Scope the study to the unique needs of the project rather than studying LOS at 20 intersections for the sake of it.



DDOT Site Review Priorities

if satisfied with #1-8 above



Old model is flipped on its head:

- Site Design is first... b/c the most important mitigation begins with the building itself.
- Traffic impacts are last... b/c if you plan for and design auto-oriented development, you'll get high traffic generating auto-oriented development.



Focus on Vehicle Parking and TDM

Why Focus on TDM + Minimizing Parking?

- DC projected population increase of 200,000 by 2035. Roadway system is built out and congested, everybody can't bring a car, growth must rely on non-auto options
- More density less parking allows for more density while generating minimal additional new personal vehicle trips, especially in Metro-accessible areas
- Reduce vehicle trips TDM, minimal parking, priced parking, and proximity to high quality transit all work together to reduce vehicle trips
- Reduce auto dependency parking is permanent site feature and driver of vehicle trips, availability of parking induces more driving and reinforces auto dependency
- Transit supportive little or no parking brings "transit-ready" residents/workforce
- Site design flexibility buildings can be moved around into more optimal locations, and site can provide more green space, trees, and bike racks
- Housing affordability not building parking saves \$\$ that can be passed on to future residents/tenants
- Mitigation and TIAs are also costly more \$\$ can be saved by not conducting TIAs or implementing physical mitigation if meeting DDOT parking & TDM requirements
- Vision Zero no on-site parking means no need for a driveway or curb cut, thus minimizing conflicts w/pedestrians
- Climate change less parking and driving means less exhaust and CO2 per capita





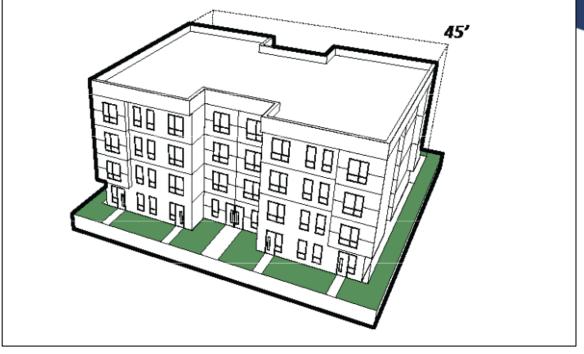
Source: MAPC Perfect Fit Parking



Impact of Parking on Housing

Example from Portland, OR





\$733,000 each
10 townhouses
w/garage for each
has curb cut

\$280,000 each 28 condos no parking no curb cut



DDOT Research Papers, Presentations, and Tools

- 2013: Transitioning from Traditional TIS to Comprehensive Multi-Modal Transportation Review
- **2014:** An Innovative Approach for Establishing Vehicular Trip Caps for New Developments
- **2015:** Estimating Parking Utilization in Multi-Family Residential Buildings in Washington DC Predicting Travel Impacts of New Development in Major Cities: Testing Alternative Trip Gen Models Methodology to Gather Multi-Modal Urban Trip Generation Data
- **2016:** New Zoning Regulations eliminated or reduced parking mins based on location, added maxes w/penalties

Park Right DC - http://parkrightdc.org/

Trips DC - https://tripsdc.org/

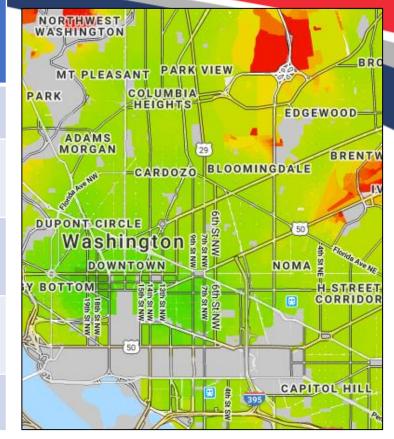
District Mobility - https://districtmobility.org/

- **2017:** Multimodal Trip Generation Model to Assess Travel Impacts of Urban Developments in DC TDM Menu Tool
- **2019:** Guidance for Comprehensive Transportation Review, v 1.0
- **2020:** Comprehensive Transportation Review in DC: A Parking, Design, and TDM-focused Alternative to the TIS



Benchmark Parking Rates for Project Evaluation

Land Use	< ¼ mile of Metrorail	< ½ mile of Metrorail OR < ¼ mile of Priority Bus/Streetcar	<1.0 mile of Metrorail	>1.0 mile of Metrorail
Based on Mode Share Goal:	85% Non-Auto	80% Non-Auto	75% Non-Auto	65% Non-Auto
Residential (spaces/unit)	0.30 or less	0.40 or less	0.50 or less	0.60 or less
	1 per 3.3 units	1 per 2.5 units	1 per 2 units	1 per 1.67 units
Office (spaces/1k GSF)	0.40 or less	0.50 or less	0.65 or less	0.85 or less
	1 per 6.25 employees	1 per 5 employees	1 per 4 employees	1 per 2.85 employees
Hotel (spaces/1k GSF)	0.40 or less	0.45 or less	0.60 or less	0.75 or less
	1 per 6 rooms	1 per 5 rooms	1 per 4 rooms	1 per 3 rooms
Retail (spaces/1k GSF)	1.00 or less	1.25 or less	1.60 or less	2.00 or less



Residential parking rates from ParkRightDC

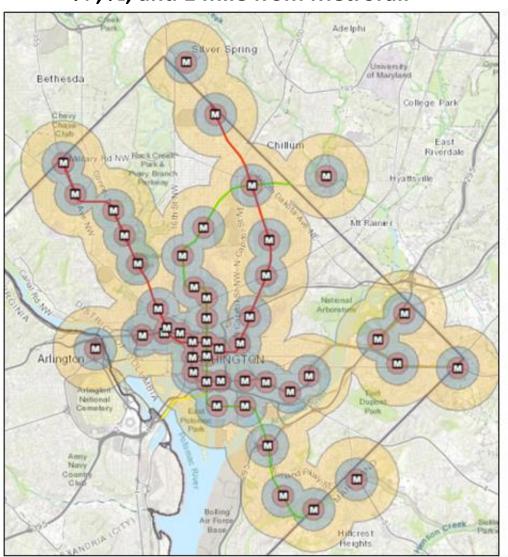
Source: Table 2, Guidance for Comprehensive Transportation Review

- Benchmarks based on MoveDC and Comp Plan non-auto home-work modeshare goal of 75% and ParkRightDC parking demand data collected at 115 residential buildings
- DDOT benchmark rates fit within zoning mins and maxes
- DDOT max parking rates comparable to ZR58 mins in effect until Sept 2016

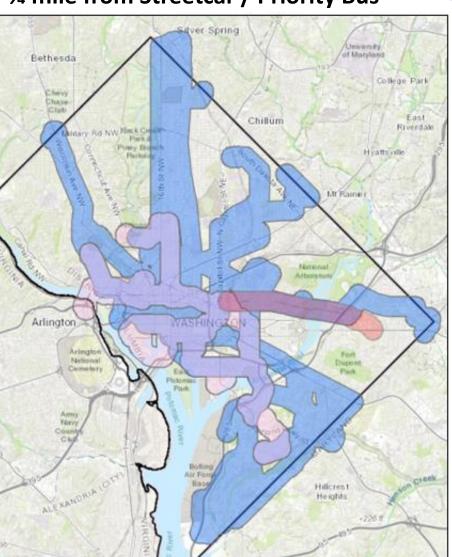


Areas Adjacent to Transit – Reduced Off-Street Parking Expected

1/4, 1/2, and 1 mile from Metrorail



1/4 mile from Streetcar / Priority Bus



Interactive maps can be found here:

Metrorail https://arcg.is/19ajqu

Streetcar/Priority Bus https://arcg.is/1CHTeb



Mitigation Matrix

		TRAFFIC IMPACTS									
		No Impacts (no intersections degrade to unacceptable levels)	Minor Impacts at One Intersection (signal timing or cycle length adjustments only)	Minor Impacts at Multiple Intersections (signal timing or cycle length adjustments only)	Severe Impacts at One or More Intersections (physical roadway improvements beyond signal timing adjustment)						
	At or Below Benchmark	Baseline TDM Plan	Baseline TDM Plan	Enhanced TDM Plan	Enhanced TDM Plan + Direct Mitigation OR Additional TDM OR Monetary Contribution OR Non-Auto Upgrades OR Performance Monitoring TBD						
NG SUPPLY in CTR Guidelines)	Up to 10% Over-Parked	Baseline TDM Plan	Enhanced TDM Plan	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Direct Mitigation OR Additional TDM OR Monetary Contribution OR Non-Auto Upgrades OR Performance Monitoring TBD						
PARKING (see Table 2 in C	Up to 20% Over-Parked	Enhanced TDM Plan	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Direct Mitigation OR Additional TDM OR Monetary Contribution OR Non-Auto Upgrades OR Performance Monitoring TBD						
	Over 20% Over-Parked	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Additional TDM OR Non-Auto Upgrades to be Negotiated	Enhanced TDM Plan + Direct Mitigation OR Additional TDM OR Monetary Contribution OR Non-Auto Upgrades OR Performance Monitoring TBD						

- Developers get consistent mitigation "asks" from DDOT
- Incentivizes lower parking ratios and better TDM programming
- Yellow area = only TDM is required for mitigation



Standardized TDM Plans by Land Use and Impact



Residential TDM Plans

Baseline Plan (Residential)

All PUDs, LTRs, Design Reviews, and other projects where TDM is required by DDOT will start with a Baseline Plan. This Plan is intended for developments that are up to 10% over-parked (per Table 2) AND no intersection impacts were identified in the TIA.

Include all of the following:

- Unbundle the cost of vehicle parking from the lease or purchase agreement for each residential
 unit and charge a minimum rate based on the average market rate within a quarter mile.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement and will develop, distribute, and market various transportation alternatives and options to the residents.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail
 pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool
 information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most
 recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing
 info@godcgo.com.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to
 other carpool matching services sponsored by the Metropolitan Washington Council of
 Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on website, publicize availability, and allow the public to see what commitments have been promised.
- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle space will be provided free of charge to residents. [specify the minimum number provided]
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids bikes.

Enhanced Plan (Residential)

Intended for developments that are up to 20% over-parked (per Table 2) OR minor intersection impacts were identified in the TIA.

Include everything in Baseline Plan plus all of the following:

 Install a Transportation Information Center Display (electronic screen) within the lobby containing information related to local transportation alternatives. At a minimum the display should include

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information about nearby Metrorail stations and schedules, Metrobus stops and schedules, carsharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.

- Will not lease unused residential parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events), unless there is an agreement in place in which no parking is provided at the other property.
- Designate [insert number] parking spaces in the vehicle parking garage for car-sharing services to
 use with right of first refusal. If an agreement has not been reached with a car-sharing service to
 occupy all of the dedicated spaces, the Applicant will provide one (1) [additional] year of
 membership to Capital Bikeshare for each resident after the building has opened.
- Additional short- and long-term bicycle parking spaces above ZR16 requirements. [specify amount]
- Provide a bicycle repair station in each long-term bicycle parking storage room
- Provide one (1) collapsible shopping cart (utility cart) for every 50 residential units, for a total of [insert number] to encourage residents to walk to the grocery shopping and run errands.
- Promote transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.

Menu of additional strategies (Residential)

Intended for developments that are over-parked by more than 20% (per Table 2) OR impacts identified at multiple intersections OR severe intersection impacts were identified in the TIA.

Include everything in Baseline and Enhanced plans plus choose from the following (non-exhaustive) menu based on severity of impacts and parking ratio:

- To encourage teleworking, a business center will be provided on-site and available for free to residents 24 hours per day, 7 days per week. Access to a copier and internet services will be included
- Provide an annual membership to Bikeshare to each resident for [insert number] year(s) after the building opens.
- Provide SmarTrip cards pre-loaded with [insert \$] for all new [residents or employees] for [insert number] year(s) after the building opens.
- Fund and install a 19-dock Capital Bikeshare (CaBi) station with 12 bikes and fund one-year of maintenance and operations costs.
- Fund and install the expansion of the Capital Bikeshare (CaBi) station located at [insert location] by [insert number] docks.
- Will hold a transportation event for residents, employees, and members of the community once
 per year for a total of [insert number] years. Examples include resident social, walking tour of local
 transportation options, goDCgo lobby event, transportation fair, WABA Everyday Bicycling seminar,
 bicycle safety/information class, bicycle repair event, etc.).

- Standardized TDM Plans for Residential, Office, Retail, Hotel/Tourism in Appendix C
- Strategies tailored to users: residents, employees, visitors, customers
- Three Tiers of TDM Plans based on parking and traffic impacts
 - Baseline
 - Enhanced
 - Menu of Add'l Strategies

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Vision Zero Design Strategies



During zoning review and the public space / streetscape design process, DDOT requests the following Vision Zero improvements be made along the site's public street frontage(s):

- Install curb extensions to shorten crossing distances
- Reduce curb radii to modern standards
- Remove slip lanes / channelized turn lanes to slow traffic
- Head-in / head-out loading so truck drivers can see pedestrians
- Minimize # of curb cuts to minimize conflicts between vehicles and pedestrians
- Add treeboxes and street trees to serve as pedestrian buffers
- Convert traditional bike lanes to protected bikeways
- Remove laybys since they cause a jog in sidewalk, encourage faster driving, preclude street trees
- Road diets, narrower lanes, lower design speeds
- Upgrade sidewalks, curb ramps, crosswalks, etc. to ADA





7th St and I St SW - July 2016 vs July 2019

Early Results of 2019 CTR Guidelines

- Prevented creation of 500-1,000 parking spaces in 2017-2019
 - Getting harder to track since almost all new developments are meeting benchmarks
 - More buildings are getting approved with little or no parking
- Turned DDOT's review from exercise in traffic impact analysis to "form-based" design review
 - Reduced number of required TIA/CTRs by about one-third, but an increase in "defensive" TIAs for community and ANC
 - Scope of studies are better tailored to needs of project no need to study 20 intersections for every project
 - Saving significant amount of staff time on scoping and reviewing across multiple divisions
 - Quicker reviews allows staff to work on other agency priorities
 - Greater frequency of DDOT reports submitted on time
- Site design, parking supply, TDM, and mitigation negotiation all resolved earlier process
 - Prevents a lot of back-and-forth w/developer in week leading up to zoning hearing
 - More discussions on ped realm and Vision Zero have resulted in more curb extensions + removal of slip lanes
- Positive feedback from developers
 - Better consistency in mitigation "asks" from DDOT
 - DDOT parking benchmarks gives developer cover with bankers and community who want more off-street parking
- Change in skill sets in employees hired in Site Development group less Synchro, more design



DDOT Site Development Program – Looking Ahead to 2020-21

Annual minor update to CTR Guidelines

- Tweak parking rate methodology (based on modeshare goal for all uses); add 1/8 mile parking category
- Tweaks to TDM plans + CTR/TIA waiver
- More graphics/flowcharts, fix minor typos, more clarification in some sections
- New metrics? Walk/Transit Score as proxy for auto-dependency? VMT as a metric for auto-dependent parts of city?

Start research project

- Collect person trip gen data and parking demand at buildings approved before ZR16 and newer ones with little/no parking
- Understand modeshift at buildings with little or no parking (is shift from personal vehs to transit, walking, or ridehailing?)
- Does vehicle trip generation for new projects need to be broken into person veh trips and ridehailing trips?
- On-street parking demand and occupancy counts too? Occupancy of bike room too?

Continue with improving TDM processes and enforcement

- Long term move toward performance monitoring
- White paper on CTR Guidelines (Aaron Zimmerman, Anna Chamberlin, Ryan Westrom, Jamie Henson)
- Presenting at ITE Annual Meeting 2020 in New Orleans
- Exploration of new policies to capture by-right development
 - Update to transportation sections of ZR16?
 - Citywide impact fees and/or TDM requirements?
- CTR Guidelines being considered as a case study in up-coming ITE Multi-Modal Transportation Impact Assessment (MTIA) publication
- Collaborating with peer cities to develop a similar approach to evaluating development



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district department of transportation

CTR Guidelines can be found at: https://ddot.dc.gov/node/470382

Questions?

EXTRA SLIDES



What is unique about DC that supports the design/parking/TDM model?

Other cities should taken into account the following if considering adopting CTR Guidelines methods:

Proffer System

- Mitigation is negotiable, no impact fees, no APFO; DDOT has flexibility to define what an "impact" is and how to remedy it
- DDOT not required to take roadway mitigation directly from LOS analysis; agency policy not to take roadway capacity increasing improvements but instead require cash in-lieu, non-auto improvements, or additional TDM

Much of DC is Not Auto-Dependent

- DC has excellent transit and is almost entirely urban context mostly infill development
- 88% of new DC households are car-free (Census, Chung GGW Article 9/12/14)
- 78% of new development within ½ mile/walking distance of Metrorail (2014 DC Development Report)

DC is a City + County + State

- DDOT is a DOT for all of those levels of govt so don't have to deal with multiple other DOTs with differing missions
- DDOT issues curb cut permits and controls the public space permitting process

DC is a fast growing city

- A lot of new development and population growth gives opportunities to transform the landscape of the city
- CTR Guidelines do not need to be approved by a planning commission or city council
 - Since the CTR Guidelines are DDOT-PSD policy, there is more ability to experiment and quickly adjust policies

DC has no city-wide TDM ordinance

- Must negotiate a TDM Plan on each project when PSD sees a project (PSD does not review many by-right projects)
- DDOT and DC Office of Planning work in close collaboration on land use + transportation
 - Both support higher density, mixed-use, and reduced on-site parking, especially near transit
- DC has maximum height limit of about 13 stories which acts as a natural cap on site density
- DC has an independent Public Space Committee (PSC) to adjudicate public realm design disputes
- DDOT has agency culture that embraces innovation, experimentation, and disruption



DDOT Approach to Mitigation

Impact Policy

- Must mitigate high parking ratio and intersection capacity impacts (LOS, V/C, queueing).
- Must propose roadway mitigation to demonstrate they could work, but DDOT reserves right to instead request something else of comparable value or considering mode shift impact.
- Signal timing/cycle length adjustments are not implemented in conjunction w/a specific project since signals are in coordinated networks + not clear future traffic will materialize as projected.
 - DDOT updates signal timings on 5 +/- year rotating basis which picks up traffic from new developments and changes in travel patterns.

Hierarchy of Mitigation (in order of DDOT preference):

- (1) Establish optimal site design
- (2) Reduce vehicle parking
- (3) Implement more TDM
- (4) Upgrade ped/bike/transit facilities
- (5) Monetary contribution toward non-auto facilities
- (6) Roadway capacity changes (only if deemed necessary by DDOT)



Performance Monitoring Plans (PMP)

When is a PMP Required?

- Campus Plans (Georgetown, Catholic, American, etc)
- Larger developments (Wharf, McMillan, etc)
- Projects with high SOVs (schools, daycares, etc)

PMPs Include the Following:

- Initial trigger (i.e., % occupancy) and set of initial TDM strategies
- Trip cap or modeshare goal
- Reporting requirements (i.e., frequency, data needs, surveys)
- Sun setting conditions (i.e., number of years)
- Course of action if goals not met

PMP Enforcement if Goals Not Met:

- Meet w/DDOT to determine more effective TDM strategies
- PMP extended for additional years, until goals met
- DDOT could report zoning violation to Office of Zoning and/or Zoning Administrator
- DDOT to recommend denial in future zoning cases or withhold public space permit



Waiver from CTR and/or TIA - Criteria

CTR Required: 100 total peak hour person trips

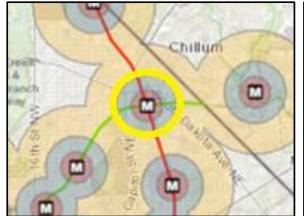
TIA Required: 25 peak hour inbound or outbound vehicle trips

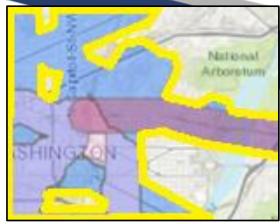
CTR and/or TIA may be waived if all criteria met:

- Within ½ mile of Metrorail station or ¼ mile from Streetcar/Priority Bus
- Parking supply lower than amount for ¼ mile from Metrorail column (Table 2)
- Total parking supply of 100 or fewer spaces
- Implement "Enhanced" tier TDM Plan
- Ensure complete ped network (install missing sidewalks and curb ramps, etc.)
- Curb cuts and loading meet standards (or approved by PSC)
- Meets bike parking and showers/lockers requirements
- Provide 2 EV charging stations

However...

- Will still need to provide a Transportation Statement explaining all agreed to commitments, rationale for waiver, and other basic info about project.
- DDOT may still require analysis of site access, curbside uses, pick-up/drop-off, on-street/off-site parking, etc. depending on specific proposal.
- Developer may still choose to do a "defensive TIA" to address specific concerns raised by the ANC and members of the community.





Land	Use	Less than ¼ Mile from Metrorail	¼ to ½ Mile from Metrorail OR Less than ¼ Mile from Priority Transit**			
Residential	DDOT:	0.30 or less	0.40 or less			
(spaces/unit)	ZR16 Min-Max:		0.17* - 0.67			
Office	DDOT:	0.40 or less	0.50 or less			
(spaces/1,000 GSF)	ZR16 Min-Max:	0.25* - 1.00	0.25* - 1.00			
Hotel	DDOT:	0.40 or less	0.45 or less			
(spaces/1,000 GSF)	ZR16 Min-Max:	0.25* - 1.00	0.25* - 1.00			
Retail ***	DDOT:	1.00 or less	1.25 or less			
(spaces/1,000 GSF)	ZR16 Min-Max:	0.67* - 2.66	0.67* - 2.66			
Other Uses	DDOT:	75% of § 701.5 or less	90% of § 701.5 or less			
	ZR16 Min-Max:	50% - 200% of § 701.5*	50% - 200% of § 701.5*			



Other Noteworthy Changes between Beta and v1.0

- Revamped and reorganized CTR Scoping Form
- Established parameters for TripsDC Tool
 - Based on parking ratio, land use mix, distance from transit
- Creation of Mitigation Fund for developers to make monetary contributions to DDOT
- New Analyses in CTRs
 - Capital Bikeshare demand analysis (see CaBi Tracker website)
 - Parking garage queueing analysis (over 150 spaces + direct access to public street)
 - Street tree inventory w/in 2-3 block radius
- Three-year collision analysis no longer required
 - Crash data was not granular enough to draw conclusions
 - Replaced w/qualitative safety review surrounding site
 - Vision Zero office leading safety studies
- Standardized Synchro/SimTraffic inputs when TIA required
- Provide TMCs in spreadsheet format for HUTRC database



Turning Movement Count																
Import Type: CAR																
BASIC						Do Not E	dit Grov Co	lle		1						
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Topics for Future Research / Exploration

- Relationships between parking, auto-ownership, and trip generation
- Is there a need to split vehicle trip gen into trips by personal vehicles vs ride-hailing vehicles?
- Implications to mode shift, transit ridership, auto ownership, and curbside usage from reduced parking
- Implications to mobility for different lifestyles, stages of life, and geographic and socioeconomic equity from reduced on-site parking
- Explore ways to use VMT or VMT/capita at site level
- Metrics for non-auto modes (beyond connectivity and ADA accessibility)
- Quantify impacts of individual and cumulative TDM strategies
- Respond to rapidly evolving urban freight and curbside challenges
- Measure impacts of micro-mobility and other last-mile travel options
- Differing needs and travel patterns between projects targeting affluent, market rate, and affordable markets
- Explore implementation of development and/or transit impact fees
- Prepare for AVs and ensure they do not encourage SOVs and undermine public transit

(more topics listed in *Guidance for Comprehensive Transportation Review*)



Frequently Asked Questions

Q1 – What can lower density, slower growth, or more auto-oriented cities do?

The first step is understanding and coming to terms with the fact that auto-oriented development is going to lead to traffic congestion. So a good place to start is with less on-site parking and allowing a vehicle trip gen credit for sites with reduced parking (conversely add a veh trip gen penalty for sites with a high amount of parking). For this to work without encouraging the overbuilding of the roadway network, a city must resist widening roads or adding more turn lanes. Instead, use the LOS analysis to determine problem intersections and then require non-auto improvements or cash in-lieu that can be spent on other transportation priorities. Another option is to establish parking caps or targets as part of the sector planning process for transit-oriented areas.

Q2 – How do you evaluate impacts to transit and other modes?

We focus on a "gap analysis" for non-auto modes — whether the sidewalk, bike lane, or bus shelter exists or is missing and whether they are ADA accessible. Any improvements to Metrorail quickly get into the millions of \$\$ which is burden we do not put onto relatively small development projects. Instead, our focus on lower on-site parking supplies + TDM programming will deliver "transit ready" residents and workers to support adjacent Metrobus and Metrorail lines.

Q3 – Won't limiting on-site parking just cause people to switch to ride-hailing which are still auto trips?

From DDOT's data collection efforts over the last 5 years, we expect most of the reduced parking will eliminate empty parking spaces first. Beyond that, from the little research and data available on the topic, our hypothesis is that mode-shift for home-work trips will likely be to non-auto modes where transit is present, but shift to ride-hailing for hotel, tourism, and retail uses. We are monitoring the research as it is released throughout the industry. We are also looking to do a follow-up study in the coming year or two to measure and compare mode-shift at buildings with little parking vs others with significant parking. Regardless of current travel trends, it's a good idea long-term for new buildings to be constructed with minimal or no parking.

Q4 – How do you quantify the impacts of individual and cumulative TDM strategies?

There is not a lot of good data out there right now. We have reviewed two studies published in 2010 by FHWA and CAPCOA that attempted to quantify impacts of specific TDM strategies. What we do know is that TDM implementation combined with quality transit, low parking supplies, and parking priced at market rates all work together to reduce auto-usage and dependency.

