

SR 99 Incident Response After-Action Plan

Background

On June 10, 2014 at 1:52 PM, a pickup truck and a passenger car collided on southbound SR 99 (E Marginal Way S), just south of S Spokane St. The SDOT Traffic Management Center (TMC) operator monitoring the Seattle Fire Department 911 feed noted that SFD had dispatched a number of units to the location and began to follow the incident. Once located, SDOT began using Twitter to alert the public (which is followed by West Seattle Blog, KIRO 7, KING 5, KOMO 4, and many other news and traffic outlets), sent an email to those who have signed up for traveler alerts and contacted other interested public agencies including King County Metro and Washington State DOT (WSDOT). At 2:05 PM, SDOT made contact with SPD dispatch (using our protocol at the time). SDOT was informed that southbound SR 99 was going to be shut down at the Battery Street Tunnel. There was not enough information at the time for SPD to provide an estimate of the expected duration of the closure.

SDOT utilized Intelligent Transportation System (ITS) infrastructure like CCTV cameras and electronic message signs to monitor the incident itself, as well as the backups and alternate routes around the city to provide real-time information (travel times, incident related information) to the public. All appropriate electronic message signs were populated with messages informing the public of the SR99 Tunnel/Viaduct closure giving them some time to look for alternate routes. Smart corridors (15th Ave NW, Aurora Ave N, etc.), equipped with traffic responsive capabilities (where signal timing is adjusted automatically based on the volume of vehicles) were monitored and performed well in balancing both the heavy southbound traffic in addition to the heavy northbound traffic which is part of the normal evening commute. The incident concluded at approximately 7:25 PM, with the roadway reopening to its full capacity.

This incident was highly disruptive to the city and demonstrated how delicate the roadway network really is. It was a transformative event that highlighted communications procedural deficiencies that required improvement to better serve the traveling public during such incidents. While understanding that such an incident on a major arterial or freeway will most likely result in significant congestion and travel time delay on the surrounding network, improvements can be made to result in:

- More timely response
- Better communications between SPD and SDOT to address potential traffic impacts

- Better communications with the public regarding the expected duration and impact of the incident
- Communication on alternative routes and modes
- Establishing general traffic detours, while ensuring the safety and security of the incident site
- Better coordination with outside agency partners especially WSDOT and Metro
- Improved traffic management using signal timing plans developed to handle diverted traffic

What Went Well:

- The traffic signal systems equipped with traffic-responsive timing capabilities properly functioned, changing their timing plans to best cope with the traffic demand
- TMC staff posted messages on Dynamic Message Signs throughout the City, warning of the incident
- TMC staff posted Twitter messages and frequent updates, with the best information available from the incident commander in the field

Identified Improvements:

- Improved communications channel between SPD incident commanders in the field and SDOT TMC staff to understand the potential duration of the road closure or lane blockages
- Refined protocol for coordination between SPD incident commanders in the field and SDOT TMC staff in identifying, setting up and operating detours
- Clear communication SOPs across SDOT need to be documented and distributed for both SDOT and SPD staff awareness and application
- Off-hours SOPs for the SDOT TMC for use by SDOT and SPD, while also reinforcing the importance of establishing a 24X7 staffed presence at the SDOT TMC

Actions for Improved Incident Response:

- Complete - Identify critical corridors where coordination is needed
- Complete - Establish internal SDOT processes for notification and managing the incident
- Complete - Operationalize notification protocols between SDOT and SPD
- Ongoing - Expand hours that TMC is operational
- November - Expand TMC to accommodate SPD and other department/agency representatives where appropriate
- November - Determine if additional timing plans can be implemented on key corridors to accommodate incident traffic
- Consistently conduct after-action incident debriefs for Mayor incident

- Develop metrics to monitor performance

SDOT and SPD Early Actions:

SDOT and SPD initiated discussions on actions to improve incident response. Early discussions highlighted:

- The need for 24X7 TMC coverage. SPD operates 24X7 and their processes are uniform at all times; SDOT needs 24/7 coverage for consistent, reliable communication and coordination with SPD
- A map to clarify the corridors where incidents impact traffic. (Attached)
- A consistent procedure for SPD and SDOT after hours maintenance dispatch to use to determine when to initiate contact with the TMC. The current version of the map includes the TMC notification protocols

SPD advocated for a generalized coordination approach applying best practices in emergency management. Every day SPD 9-1-1 staff coordinates with a wide variety of City department operating centers, law enforcement and fire dispatch centers as well as state and federal counterparts. SPD and SDOT reached out to the Office of Emergency Management (OEM). OEM was very supportive of expanding the incident coordination effort to include their department as well as SFD, SCL and SPU.

The closure of SR 99 in August provided an opportunity for SDOT and SPD to test the concept of embedding an SPD Traffic Sergeant in the TMC. Using the tools in the TMC, SPD could identify locations where Traffic Enforcement officers could be deployed to ease congestion. It was very successful and provided both departments experience with how a joint approach to traffic could improve the outcome.

INNOVATIVE APPROACH TO TRAFFIC MANAGEMENT

Planned Closure of SR 99 - August 22-27



An SPD Traffic Sergeant joined WSDOT and SDOT staff in the Traffic Management Center (TMC) which greatly improved SPD communication between SDOT and WSDOT in real time. The presence of the SPD Sergeant in the TMC provided him with an overall picture of the traffic situation and allowed SDOT and WSDOT engineers to communicate with SPD officers in the field in real time.

- Piloted SPD presence in the TMC during the August SR 99 planned closure

Ongoing Improvements:

SDOT and SPD reached out to the Office of Emergency Management (OEM) and the other operations departments within the City, SFD, SCL and SPU. An interdepartmental incident coordination group was formed and is meeting monthly to improve incident coordination and communication.

SDOT has several internal operating units within the department; the TMC, Street Maintenance, Urban Forestry, Traffic Operations (signs and signals) and Roadway Structures. SDOT is developing improved Incident Management SOPs for the TMC and SDOT as a whole.

The interdepartmental incident coordination group identified several tasks to improve incident coordination and response:

- Establish threshold incidents that trigger coordination
- Identify what information needs to be shared
- Determine who needs to be notified for a particular type of incident
- Establish who has responsibility for communications with operations groups
- Establish who has responsibility for communications with the public and elected officials

SDOT and OEM have taken the lead in collecting and compiling this information and reviewing it with the group. It has been combined into a matrix that will be disseminated to staff involved in incident response and communication. The current working draft of the matrix is attached.

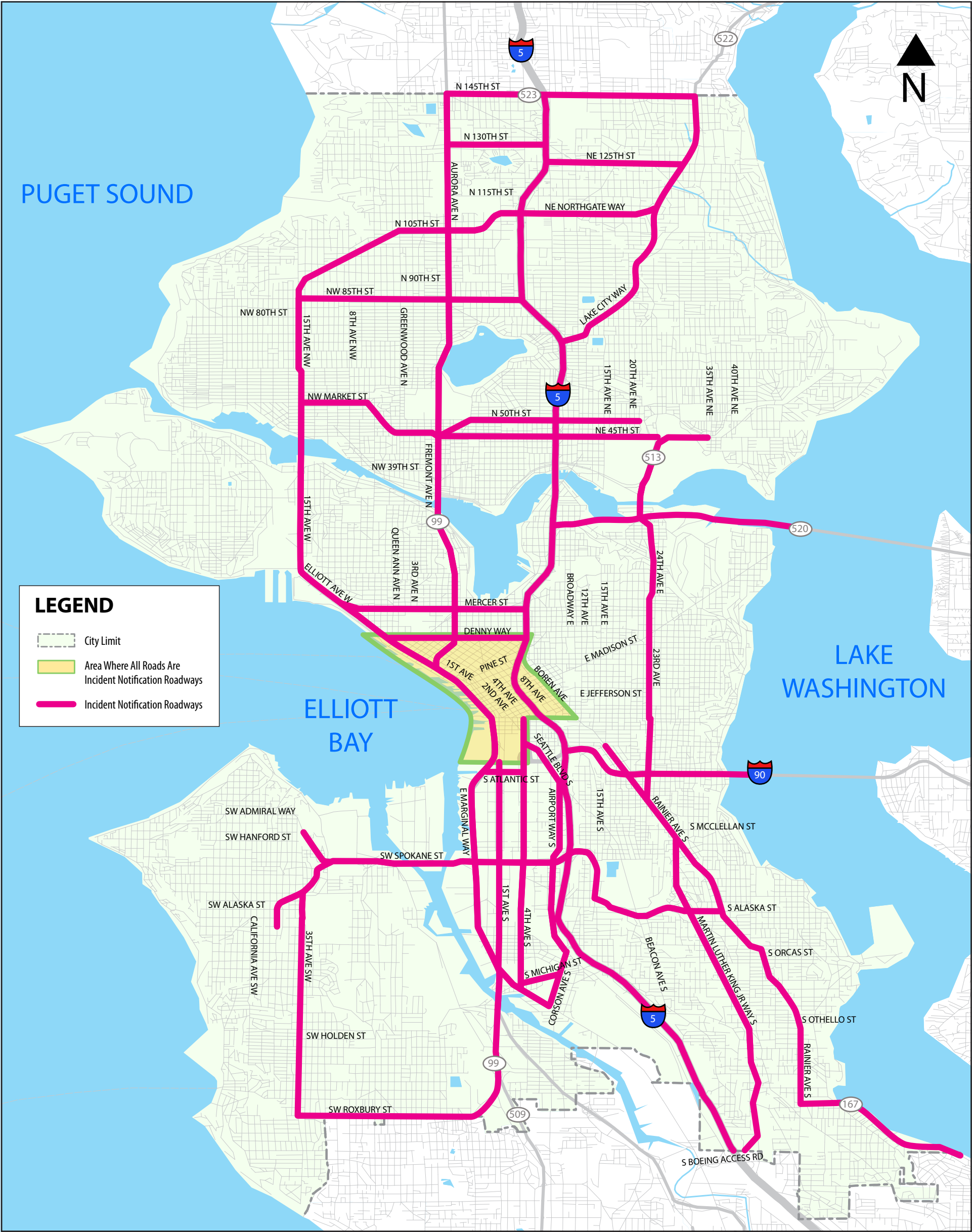
Moving Forward:

The TMC is the hub where all of the City's traffic control systems are managed and monitored by a team of SDOT engineers. Located on the 37th floor of the Seattle Municipal tower, the TMC team utilizes signal timing, dynamic message signing and travel time calculating devices and simulations to manage traffic impacts. This team also actively disseminates information to the traveling public via Twitter, electronic message signs and the media (via PIO group notification).

The weekday operating hours of the TMC were extended in January 2014 by 2 hours per day from 6 AM to 7 PM to manage the peak hour impacts more effectively. The TMC does not routinely staff beyond these hours or on weekends except through prior arrangement to manage planned, large events.

There is a four-phase plan to increase TMC response capacity and hours that is now in budget review. A summary of the plan is shown below. The full details are provided in an Attachment.

Phase	Concept	Schedule	Key Elements	Outcomes
1	Improve under current staff and budget levels	Sept 2014-Nov 2014	<ul style="list-style-type: none"> Improved SPD/WSDOT/Metro coordination Strengthen SOPs Increase off-hours capabilities Increased special event and pre-planned closure planning and multi-agency coordination Establish performance measures 	<p>Better response to incidents and pre-planned special events and closures</p> <p>Improved off-hours notification and response</p> <p>Performance measurement to guide future efforts</p>
2	Increase TMC staffing coverage to 16 hrs/day on weekdays and 8 hrs/days on weekends	Nov 2014	<ul style="list-style-type: none"> Additional staffing Leverage new TMC technologies Continued SOP development 	Expansion of hours when high level of TMC response is available
3	Increase TMC staffing coverage to 24X7	Nov 2014-June 2015	<ul style="list-style-type: none"> Additional staffing Complete SOP development 	High level of TMC response at all times
4	Integrate TMC staff and space with other SDOT functions	4 th Qtr. 2015	<ul style="list-style-type: none"> Plan to consolidate value-added functions and staff in a 24X7 TMC Ongoing SOP improvements 	Plan for moving forward, coordinated with other SDOT space and functional needs



INCIDENT LEVEL	BLOCKAGE CRITERIA		CHARLES ST. ACTION	
	# Lanes	Estimated Duration (if unsure, call)	DURING TMC HOURS (Weekdays 6am — 7pm)	ALL OTHER TIMES (Evenings, Nights & Weekends)
4	Any	Under 15 minutes	Monitor, Notify if Conditions Worsen	No Action
3	ANY Incident impacting a travel lane	OVER 15 MINUTES	ON-HOURS NOTIFICATION “TREE” 1. TMC : (206) 684-5117 If no response, leave message then 2. Trevor Partap [REDACTED] If no response, leave message then 3. Adiam Emery [REDACTED]	OFF-HOURS NOTIFICATION “TREE” 1. Trevor Partap [REDACTED] If no response, leave message then 2. Adiam Emery [REDACTED]
2	ONE DIRECTION FULL CLOSURE			
1	BOTH DIRECTIONS FULL CLOSURE			

Transportation Operations Center Implementation Plan

September 2014

Objective

Convert the SDOT Traffic Management Center (TMC) into a 24/7 capable Operations Center with a centralized dispatch to deploy crews and inspectors that will allow SDOT to actively manage daily peaks in traffic activity, large scale traffic incidents, construction and special events as well as push out public information so that travelers can make well-informed decisions about routes and modal options. The Operations Center should support and manage the following Departmental functions

- TMC
- Dispatch
- Construction Coordination
- Customer Inquiry and Call Center
- Emergency Operations

Current Traffic Management Center Operations and Staffing

The TMC is the hub where all of the City's traffic control systems are managed and monitored by a team of SDOT engineers. Located on the 37th floor of the Seattle Municipal tower, the TMC team utilizes signal timing, dynamic message signing, and travel time calculating devices and simulations to manage traffic impacts. This team also actively disseminates information to the traveling public via Twitter, electronic message signs, and the media (via PIO group notification).

The weekday operating hours of the TMC were extended in January 2014 by 2 hours per day from 6 am to 7 pm to manage the peak hour impacts more effectively. The TMC does not routinely staff beyond these hours or on weekends except through prior arrangement to manage planned, large events.

Current Staffing:

- **Operators** (2.0 CE Senior, 1.0 CE Assistant): Responsible for effectively and efficiently managing incidents, disseminating information, coordinate incident responses, and monitoring the arterial network.
- **ITS Support** (3.0 IT professionals): Responsible to install, setup and maintain all ITS central operating software, administer traffic network supporting ITS field devices and IT related infrastructure, manage servers and other IT related task to support the TMC active traffic management.
- **Supervisor** (1.0 CE Supervisor): Oversees the day-to-day operations of the TMC and provides incident oversight and direction.
- **Signal Timing Engineer** (1.0 CE Senior): Responsible for developing traffic signal timing plans related to special events, mitigation effort, manage smart corridors, and also managing traffic signal timing along alternate routes that take traffic away from an incident elsewhere on the network.

2014-15 Plan to Convert TMC to 24/7 Capable Transportation Operations Center

The following actions will be taken to improve the transportation system's resiliency and SDOT's responsiveness to incidents by implementing a series of improvements to be phased in over the next 6 months, as well as performance measures to track the impact of these improvements.

PHASE 1: INCREASE TMC HOURS OF OPERATION AND CAPACITY FOR CERTAIN EVENTS

IMPLEMENTATION DATE: SEPTEMBER 2014- NOVEMBER 2014

	Desired Outcome	Deliverable	Tasks	Partners
1	Increase capacity by improved planning for major closures	Produce regular activation plan commensurate to the scope of each planned impact	<ul style="list-style-type: none"> Identify Special Events and major closures Set up regular look-ahead meetings to review up-coming events and closures and recommend level of TMC activation [see Attachment A as an example] 	Lead: Adiam Support: BdP Special Events Committee CPRS
2	Improve Coordination with other agencies	Update inter-agency Standard Operating Procedures to respond to events	<ul style="list-style-type: none"> Work with SPD/Metro/WSDOT, to ensure appropriate coordination based on scope of events (e.g., SR 99 deployment with SPD coordination with TMC) 	Lead: Adiam Support: BdP Trevor MP
3	Improve and implement response and communication protocols	Develop internal SOP to communicate and respond to events and incidents	<ul style="list-style-type: none"> Streamline process for dispatch and information sharing with TMC Strengthen SOP for response to different kinds of impacts Develop communication SOP and protocols for incidents—both type of incident and severity 	Lead: BdP Support: Adiam Liz Rick Trevor Marilyn
4	Leverage funding opportunities to support increased TMC capacity	Produce staffing plan with budget	<ul style="list-style-type: none"> Utilize existing resources to staff weekend special events Remote monitoring of the TMC Project specific resources to manage signal timing and DMS in the field 	Lead: Adiam Support: BdP Trevor
5	Develop performance measures	Produce dashboard to report out on benefits of increased TMC capacity	<ul style="list-style-type: none"> Use existing TMC model to establish baseline Identify measures to evaluate improvements and benefits 	Lead BdP Support Adiam Trevor Terry

PHASE 2: TMC PLUS--EXPAND CAPACITY AND HOURS OF TMC

IMPLEMENTATION DATE: NOVEMBER 2014

	Desired Outcome	Deliverable	Tasks	Partners
1	Improve TMC technical capacity	Complete video wall upgrade and develop costs for supporting increased capacity	<ul style="list-style-type: none"> Manage construction of video wall Identify any additional resources needed to support increased capacity 	Lead: Adiam Support: FAS Rodney Trevor
2	Expand TMC Staffing Capacity to 16 hours M-F, 8 hours Weekend	Produce Staffing Plan and budget for supporting increased capacity	Staffing: <ul style="list-style-type: none"> Reclassify CES Assist to CES Assoc Weekday: Change shift of 2 CES Associates (6AM – 2PM, 2PM – 10PM) Weekend: 1 CES Assoc to work Sat, Sun Notify HR, Union of change Develop Budget: <ul style="list-style-type: none"> Determine level of service for Supervisor/Manager, signal timing, and ITS system engineer support to be put on-call and overtime 	Lead: Adiam Support: BdP Trevor Dale

PHASE 3: TRANSITION PLAN FOR TMC INTO 24/7 CAPABLE TRANSPORTATION OPERATIONS CENTER

IMPLEMENTATION DATE: SEPTEMBER 2014-- FEBRUARY 2015

	Desired Outcome	Deliverable	Tasks	Partners
1	Complete Size, Type, Location Report to co-locate SDOT operational functions in one center	Complete Operational Plan for TOC	Consultant to perform following tasks <ul style="list-style-type: none"> Identify industry best practices Interview operational divisions Identify functions and staffing levels needed Identify potential labor issues Identify size and location Identify scope, budget and resources Develop operational and implementation plan including milestones and progress tracking 	Lead BdP Support Adiam Trevor Liz Rick Eich Rodney
2	Identify Budget Needs, Priorities and Opportunities	Produce Staffing Plan and budget for supporting increased capacity	<ul style="list-style-type: none"> Identify cost savings and efficiencies for staffing plan Work with OPI/OED to revise Special Events fee schedule, when closures require resources beyond general fund 	Lead BdP Support Adiam Trevor Chris R.

				OPI Special Events/OED
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PHASE 4: 24/7-CAPABLE TRANSPORTATION OPERATIONS CENTER IMPLEMENTATION

IMPLEMENTATION DATE: 3RD QUARTER 2015

SOME SCHEDULE DEPENDENCIES: 23RD FLOOR COUNTER MOVE, INCLUDING TRAFFIC COUNTER FUNCTIONS HAPPENING ELSEWHERE

	Desired Outcome	Deliverable	Tasks	Partners
1	Integrate operational functions into unified Transportation Operations Center	Identify location for Operations Center and move essential staff and equipment	Develop budget and schedule for other related moves (eg) SMT 23 Street Use counter re-set and relocation of Traffic counters	Lead BdP Support Adiam Trevor Liz Rich Eich Rodney

Attachment A—Sample TMC Activation Plan

Date	Event	Signal Timing	DMS Messaging	Off Hour TMC Staffing	Off Hour Const. and Permit Coord
8/29 – 9/1	PAX Expo at				
8/30 – 9/1	Bumbershoot-	X	X		
9/1	NFL Kickoff Run				X
9/4	NFL Concert	X	X	X	
9/4	Seahawks Game	X	X	X	
9/5 – 9/6	Southbound I-5 Fully Closed Friday night under the convention Center				
9/6	WA Huskies vs Eastern WA		X		

Incident Coordination and Notification Protocols

Type of Incident	Lead Agency (typical)	Staff responsible for communicating with internal/external operational staff	Staff responsible for communicating with public, elected officials	Type of information to communicate										Departments/Agencies to be Notified							
				Type of incident	Fatalities involved	Closures req'd	Approximate timeframe	Critical facilities impacted	Risk to human health/safety	Vulnerable populations impacted	Number of customers impacted	Services affected	Shelter required	OEM	SCL	SDOT	SFD	SPD	SPU	KC Metro	WSDOT
Serious injury/Fatality collision	SPD	Lead agency dispatch		x	x	x	x	x						x		x		Lead		x	
Hostage situation, lockdown resulting from armed suspect	SPD	Lead agency dispatch		x		x								x		x				x	
Bridge structural damage	SPD/SDOT	Lead agency dispatch		x		x	x									x				x	
Landslide	SPU	Lead agency dispatch		x	x	x		x						x		x			Lead	x	
Bridge not operating	SDOT	Lead agency dispatch		x		x	x									Lead				x	
Haz Mat incidents w/major release	SFD	Lead agency dispatch		x		x	x		x	x			x	x		x	Lead			x	
Flooding	SPU	Lead agency dispatch		x	x	x								x		x			Lead	x	
Water main break	SPU	Lead agency dispatch		x		x	x	x		x	x					x			Lead	x	
Multiple alarm fire	SFD	Lead agency dispatch		x	x	x								x		x	Lead			x	
Vehicle tanker fire	SFD	Lead agency dispatch		x	x	x		x						x		x	Lead			x	
Multiple casualty incident	SFD	Lead agency dispatch		x	x	x	x		x					x		x	Lead			x	
Fire hose across a street	SFD	Lead agency dispatch		x		x	x									x	Lead			x	
Natural gas leak	SFD	Lead agency dispatch		x	x	x	x	x	x	x				x		x		Lead		x	
Power outage affecting multiple traffic signals	SCL	Lead agency dispatch		x			x								Lead	x				x	
Downed power lines	SCL	Lead agency dispatch		x	x	x	x								Lead	x				x	
Unscheduled line work	SCL	Lead agency dispatch		x		x	x								Lead	x				x	
Street closures for planned events involving large crowds	SPD	Lead agency dispatch		x		x	x							x		x		Lead		x	
Planned freeway/major arterial closures	SDOT	SDOT TMC		x		x	x							x		Lead				x	