

Balancing Safety and Mobility: The Seattle Experience



By: ITE Washington Section
October 2, 2013

Seattle Department of Transportation

American Planning Association
Washington Chapter
Making Good Communities Happen

City with Zero traffic fatality

KEEPING IT SAFE

Engineer, educate, enforce, and evaluate

2012 ACTION AGENDA
Laying the Groundwork

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Support a 100% street improvement program. Our long-term goal is a city with complete bicycle facilities and enhanced sidewalks.

\$2.3 Billion Residential Developments

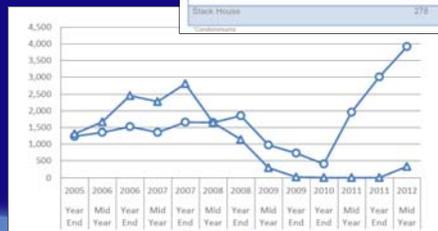


DSA 2013

\$2.3 Billion Residential Developments

Table 1. Largest active residential projects (June 2013)

Name	Units	Cost
1000	524	\$200,000,000
Stadium Phase Phase I	514	\$255,000,000
Integrus Phase I*	335	\$180,000,000
901 Dexter Ave N	284	\$41,000,000
Stack Phase	278	\$33,000,000



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DSA 2013

2013 State of Downtown-DSA

DOWNTOWN EMPLOYMENT



Source: U.S. Bureau of Labor Statistics
**Projection based on changes in the Metro levels

- Seattle's Population 616,500
- Approx 56,000 in downtown
- 38% live and work in downtown
- 196,648 people are employed in downtown (41%)

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DSA 2013

2013 State of Downtown-DSA

LARGEST EMPLOYERS

amazon.com

NORDSTROM

LARGEST PUBLIC COMPANIES HEADQUARTERED DOWNTOWN

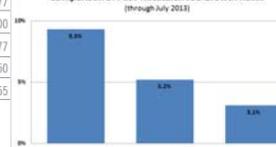
STARBUCKS COFFEE

Expeditors

EMERITUS
Senior Living

COMPANY	2011 REVENUE (IN MILLIONS)
AMAZON.COM INC.	\$48,077
STARBUCKS CORP.	\$11,700
NORDSTROM, INC.	\$10,877
EXPEDITORS INTERNATIONAL OF WASHINGTON	\$6,150
EMERITUS CORP.	\$1,255

Comparison of Post-Recession Job Growth Rates (through July 2013)



Source: Puget Sound Business Journal Book of Lists

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DSA 2013

26 Acre Yesler Terrace

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Seattle Housing Authority

- Office Tower (typical)
- Residential Tower (typical)
- N/S Connector "Vikings Spine of Parks"
 - Connects Harborview to Life Square
 - Incorporates the following:
 - wide street
 - wide walkway
 - surface water management
 - art & landscape
 - seats & benches
 - Touches 3 of 8 districts
- Semi-public open space
- Malaise Community Park
- Seattle Park & Gardens

Continued Interest in Large Developments

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- 5th and Columbia - 43 story tower
- Amazon Rulus 2.0 - 37 story tower
- 9th and Stewart Hedden Hotel - 43 story tower

Traffic Pattern Changes With SR 99 Tunnel

- Full access at tunnel portals to northbound and southbound SR 99 and ramps to downtown city streets.
- Removal of viaduct's Columbia and Seneca ramps.
- Removal of viaduct's Elliott and Western ramps.

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SR 99 – South Portal

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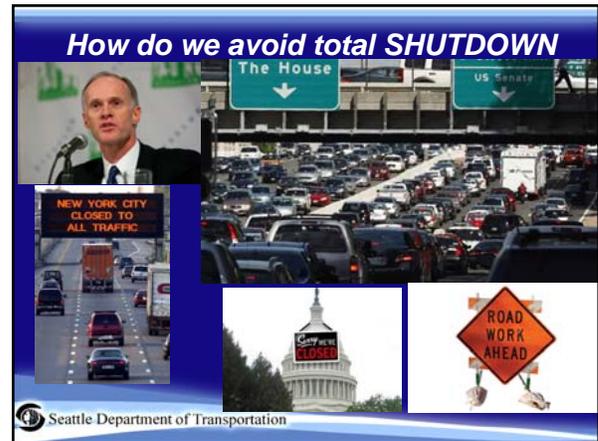
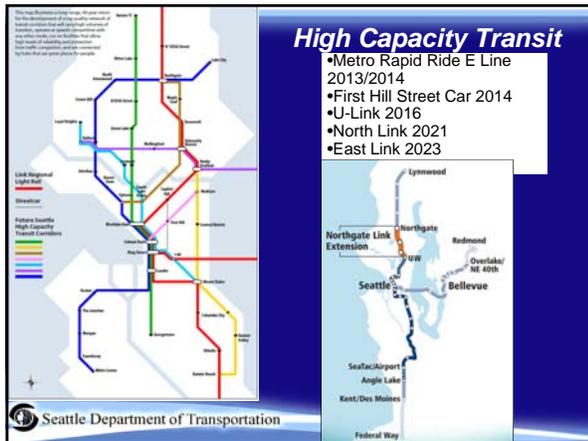
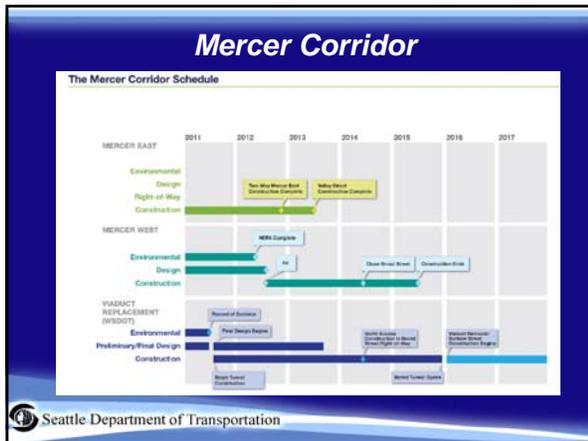
WSDOT

Future Central Waterfront

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Mercer Corridor

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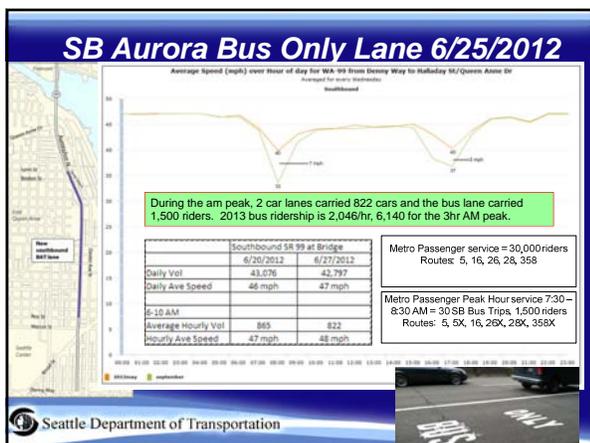
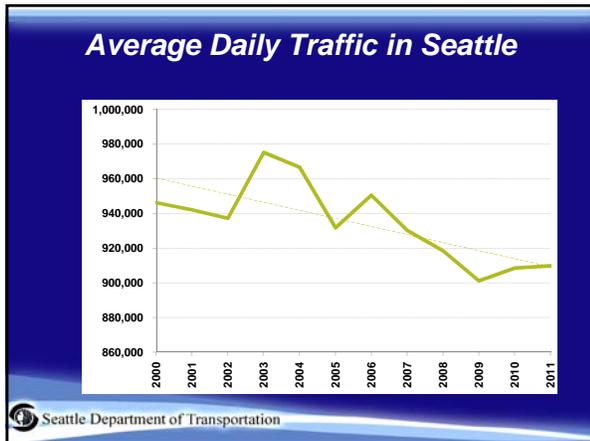
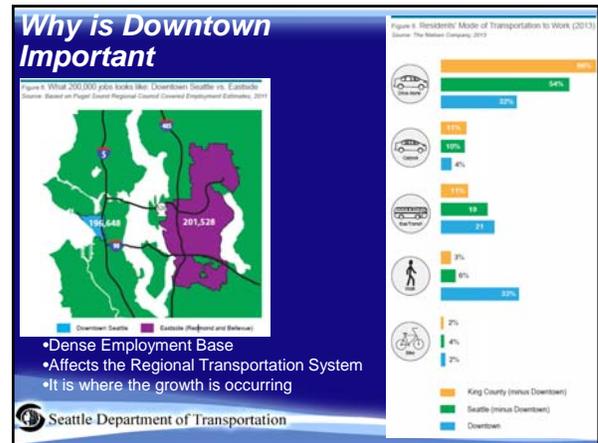
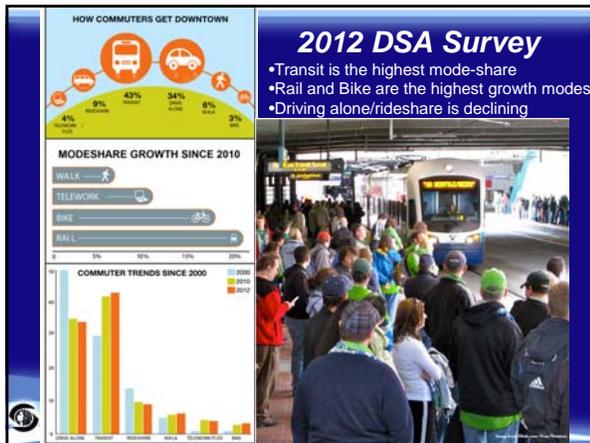
Access Seattle Study

- 27,000+ new SOV drivers = 27,000 new parking spaces = \$750 million in parking development costs = 20 city blocks of 10 story garages
- Traffic would fill 12 lanes at peak hour capacity in each direction

Mode	2002	2000	2020	2020	Net Change
	Mode Split	Employees	Mode Split	Employees	
Drive Alone	43%	105,329	43%	132,379	27,050
Transit	35%	85,733	35%	107,751	22,017
Rideshare	9%	22,046	9%	27,707	5,662
Walk	5%	12,248	5%	15,393	3,145
Bicycle	1%	2,450	1%	3,079	629
Other	7%	17,147	7%	21,550	4,403
Total	100%	244,952	100%	307,859	62,907

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Traffic Operations

- Adaptive Traffic Signals
- Expand Traveler Information
- Downtown Signal Timing
- Expand Parking Guidance System
- Update TMC
- More Traffic Cameras






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Traffic Operations

- TMC operations
- Continuous traffic monitoring
- Quick response to problems
- ITS project improvements
- Real-time traffic information
- Monitor changes to speed and volume
- Special Event Plans





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Balancing Safety/Efficiency




Traffic Fatalities in Seattle 1986 - 2011

Number of Fatalities

Years

*Includes collisions from the freeway
**2011 fatalities through 9/26/2011

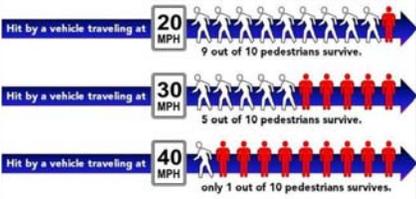
MEASURE	2010 BASELINE	2014 GOAL
Collisions per 100 vehicle miles traveled	68	56
Number of collisions	11,911	+11,000
Number of fatalities	89	+10
Pedestrian collisions per 100,000 residents	87	-25

Safe Routes to School
Speed Enforcement Program
Pedestrian Fatalities decrease by 55% from 2009 to 2010

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Vehicle Speed

- Hit by a vehicle traveling at 20 MPH: 9 out of 10 pedestrians survive.
- Hit by a vehicle traveling at 30 MPH: 5 out of 10 pedestrians survive.
- Hit by a vehicle traveling at 40 MPH: only 1 out of 10 pedestrians survives.



Fatalities on Seattle Streets by Mode

Number of Fatalities

Thru 9/20

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Seattle's Complete Streets Approach

- **Vision:** Streets that are safe, convenient and accessible for everyone
- **Plans:** Bicycle, Pedestrian, Transit, Freight
- **Funding:** Bridging the Gap, state, federal grants
- **Implementation:** Complete Streets checklist
- **Outreach:** Community collaboration
- **Opportunities:** Redesigning city streets



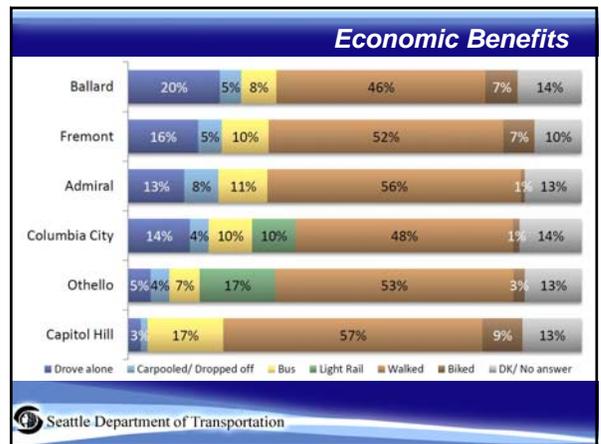
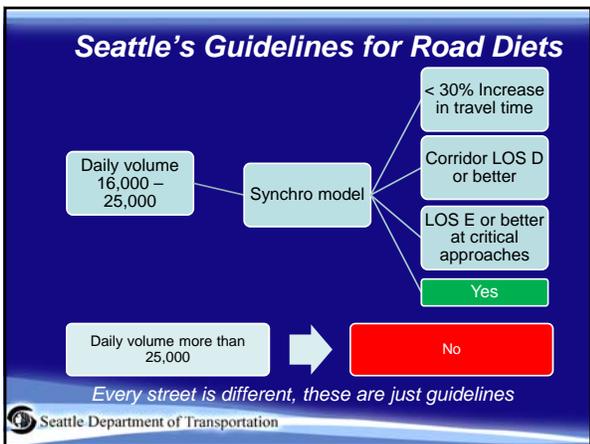
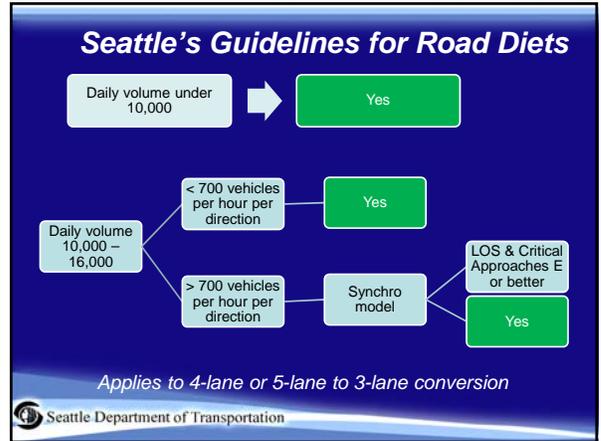

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Standard Road Diets

BEFORE: 4 LANE, 10-12 FT LANE, 10-12 FT LANE, 10-12 FT LANE, 10-12 FT LANE

AFTER: 4 LANE, 10-12 FT LANE

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Why Road Diets? Fewer Collisions

US Federal Highway Administration Proven Safety Measure to reduce all collisions by 29%

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Seattle Road Diet History

- 34 road diets have been installed in Seattle since 1972
- 1972 – 2006: 21 Projects
- 2007 – 2012: 13 Projects

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How are Corridors Identified?

- Complete Streets for capital projects
- Bicycle Master Plan
- Pedestrian Master Plan
- Community requests for neighborhood plan implementation

S Columbian Way

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What Factors are Considered?

Tier 1: Traffic Operations

Before After N 130th St (2010)

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What Factors are Considered?

Tier 2: Safety/Collisions

Before After Nickerson St (2010)

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What Factors are Considered?

Tier 3: Livability

Before After 7th Ave (2010)

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Outreach: Common Concerns

Street	Before Comments	After Comments	Requests to remove
NE 125 th St	394	7	3
Nickerson St	66	8	0




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Case Study: Stone Way N

- 1.2 miles
- ADT – 13,000
- Burke-Gilman Trail Access
- Woodland Park Access
- Within 5 blocks – 8 schools, 2 libraries and 5 parks



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Stone Way N: Marked Crosswalks

- Uncontrolled, marked crosswalks at 4 intersections.
- Crosswalk guidelines changed in 2004.
- Marked crosswalks would be non-compliant with four-lane cross section.



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Stone Way N: 85th Percentile Speed

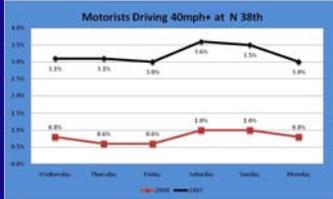
- Speed limit 30
- 85th percentile was 37 mph prior to rechannelization
- Dropped to 36 mph northbound
- Dropped to 34 mph southbound



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Stone Way N: Aggressive Speeders

- 75% reduction in percent driver 10+ mph over the speed limit



Day	2006 (%)	2007 (%)
Wednesday	3.3%	0.8%
Thursday	3.3%	0.6%
Friday	3.0%	0.6%
Saturday	7.6%	1.0%
Sunday	3.5%	0.9%
Monday	3.0%	0.8%

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Stone Way N: Bicycle Volume

- Increased 35%
- Represents almost 15% of the peak hour traffic volume!



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Stone Way N: Motor Vehicle Volume

- ADT declined 6%
- Consistent with citywide trends
- Peak volume dropped 5%
- Off-peak volume increased south of 45th Street

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Stone Way N: Neighborhood Traffic

- Streets mentioned as alternatives to Stone
- Volume decreased
- Traffic did not divert

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Stone Way N: Collisions

- Total declined 14%
- Injury declined 33%
- Angle declined 56%
- Pedestrian collisions declined 80%

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Stone Way N: Conclusions

- Aggressive speeding reduced
- Collisions have declined
- Pedestrian crossings are safer
- Bicycle volume has increased
- Traffic has not diverted to neighborhood streets

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Nickerson St:

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Nickerson Case Study

Improving Safety on Nickerson Street

Average Speed of Vehicles was 42 MPH before 11 MPH

Westbound	Eastbound
DOWN 18%	DOWN 24%

Speeders (Percent driving over the speed limit)

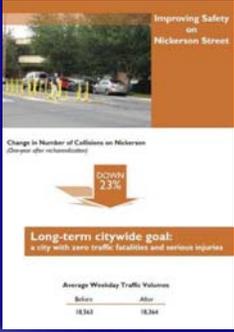
Westbound	Eastbound
DOWN 64%	DOWN 63%

Top End Speeders (Percent driving 10 mph or more over the speed limit)

Westbound	Eastbound
DOWN 92%	DOWN 96%

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Nickerson Case Study

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NE 125th St Case Study

- ADT 16,200
- 4 lanes to 2 lanes with TWLTL and bike lanes
- Business district
- High bus usage
- High percent of injury collisions
- High speeds



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NE 125th Street Case Study




Before After

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NE 125th St Case Study

SPEED			
	BEFORE	AFTER	CHANGE
85th Percentile	40.0	36.9	-8%
Driving Faster Than 30	87%	77%	-11%
Driving Faster Than 35	51.6%	29%	-44%
Driving Faster Than 40	16%	4.9%	-69%



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NE 125th St Case Study

COLLISION RATE			
	Before	After	Change
Collisions per million vehicles	5.83	5.24	-10%
Injury collisions per million vehicles	2.41	1.99	-17%



BICYCLE AND PEDESTRIAN VOLUME			
5-hour Count (7-9AM; 1-2PM; 4-6PM)			
	Before	After	Change
	High Temp 56	High Temp 49	
	Precipitation 0.14"	Precipitation 0.02"	
Bicycles along NE 125 th Street	7	15	+114%
Pedestrians in the crosswalks	330	676	+105%

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Recent Results

Street	ADT Before	ADT Change	Injury Collisions	85 th %	Aggressive Speeding (40+)
Stone Way N	13,900	-6%	-33%	-5%	-75%
Fauntleroy Way SW	17,599	+0.3%	-72%	-1%	-13%
S Columbian Way	12,300	+15%	-19%	-6%	-46%
Nickerson Street	18,500	-1%	-20%	-21%	-93%
NE 125 th Street	13,600	+11%	-8%	-8%	-69%
N 130 th Street	13,298	+0.5%	-75%	-15%	-87%
Ellis Avenue S	9,855	-39%	-24%	-4%	-30%

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A Community of Transportation Professionals
Your source for expertise, knowledge and ideas.

About ITE

An international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs



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Your source for expertise, knowledge and ideas.

ITE: founded in 1930

ITE facilitates application of technology and scientific principles to:

- Research
- Planning
- Functional design
- Implementation
- Operation
- Policy development
- Management

...for any mode of ground transportation



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- Promotes professional development of its members
- Supports and encourages education
- Stimulates research
- Develops public awareness programs
- Serves as a conduit for the exchange of professional information



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- Consultants
- Educators
- Researchers

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700-800 members
Monthly meetings (Sept – June)
Monthly newsletter

ITE International – Annual Meeting & Exhibit
Seattle - Convention Center & Seattle Sheraton
August 10-13, 2014

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Monthly meetings – recent topics

Sept	City of Seattle Roadway Safety Action Plan
Oct	MAP-21 Federal Highway Authorization Bill
Nov	Downtown Bellevue Transportation Plan
Dec	What's New with Trip Generation?
Jan	Neighborhood Greenways
Feb	ITE/IMSAs Joint Conference & Vendor Exhibition
Mar	King County Right Size Parking
Apr	Automated Speed Enforcement
May	Student Night
June	Section Annual Meeting & Conference
Sept	Big Bertha & WSDOT SR 99 Tunnel Project
Oct	I-5 Skagit River Bridge Replacement