

All Roads Transportation Safety (ARTS) Hot Spot Program

ODOT Region 1 Final 300% Results Meeting
June 10, 2015

Agenda

- Introductions
- Purpose of the Meeting
 - Review Process and Present Final 300% List
- Review of Hot Spot Process
- Final 300% List and Report
- Next Steps
- Lessons Learned



What Steps Have Been Taken Since Our Last Meeting?

- The proposed projects and prioritized lists were updated based on feedback received at the Kick-Off Meeting
- Region 1 staff met with local agencies to further discuss proposed project details
- Hot Spot Appeal Proposals were reviewed
- Comments were provided to DKS and the 300% list was revised





Review of Hot Spot Process



All Roads Transportation Safety

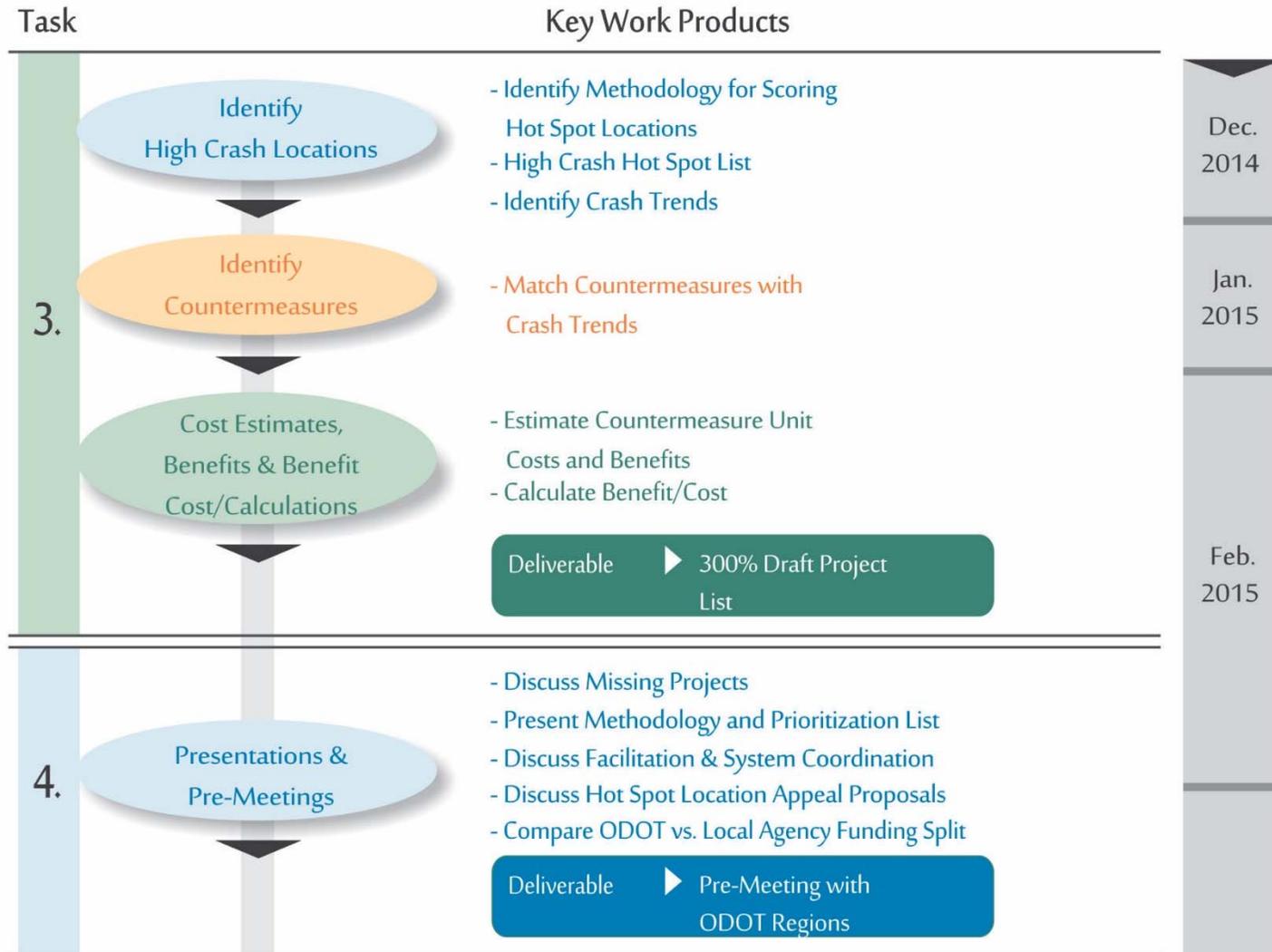
ARTS Program Goals

- Select the best projects to reduce the most fatalities and serious injuries
- Address safety on all roads
- Data-driven and blind to jurisdiction



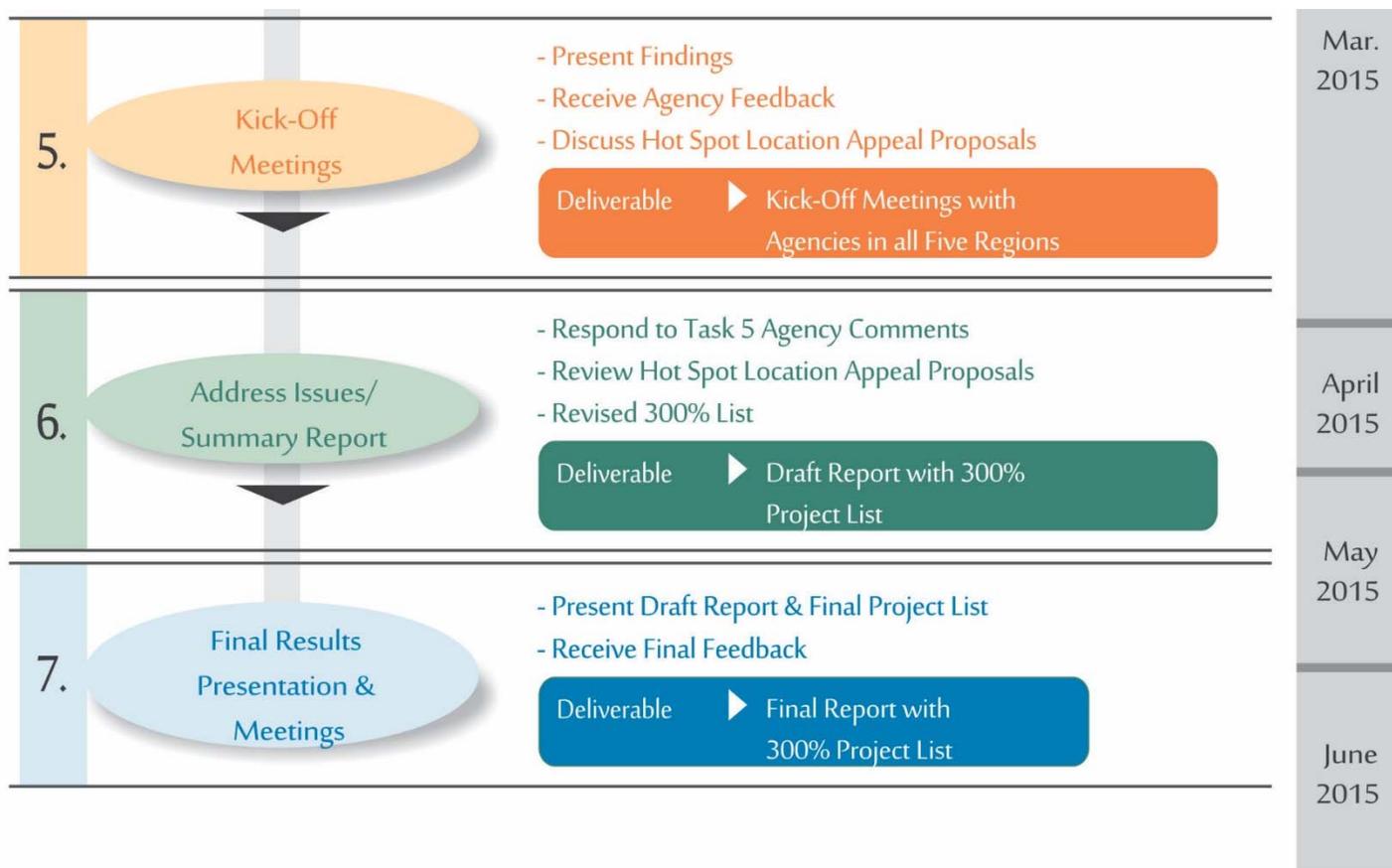
All Roads Transportation Safety

ARTS Process and Timeline



All Roads Transportation Safety

ARTS Process and Timeline



ODOT Crash Data

- ARTS Hot Spot analysis based on ODOT Collision Records
- 5 Years of crash Data (2009 – 2013)
- ODOT data unbiased and consistent
- No additional collision data considered for hot spot analysis

Crash ID	Crash Year	Street Number	Nearest Intersecting Street Number	Collision Type	Crash Severity	Weather Condition	Road Surface Condition	Light Condition
1355116	2009	810	5209	3	5	2	2	1
1399940	2010	810	5209	9	5	1	4	2
1374464	2010	810	933	1	4	1	1	1
1403260	2011	810	5185	3	4	1	1	2
1421960	2011	810	5185	3	5	1	1	1
1309863	2008	810	5209	6	5	6	3	1
1231845	2007	810	933	3	5	1	1	1
1233602	2007	810	933	3	5	1	1	1



All Roads Transportation Safety

Hot Spot Identification

- Only considered locations with at least one Fatal or Injury A crash
- Used 250' radius in urban setting and 500' radius in Rural setting
- Created initial ranking based on Equivalent Property Damage Only (EPDO)

Severity Scoring Assumptions

- 100 points for Fatal or Injury A
- 10 points for Injury B or Injury C
- 1 point for Property Damage Only



Countermeasures

- Used ODOT's Approved Crash Reduction Factor List
- Countermeasures split into 4 categories:
 - Hot Spot
 - Intersection Systemic
 - Bike/Pedestrian Systemic
 - Roadway Departure Systemic

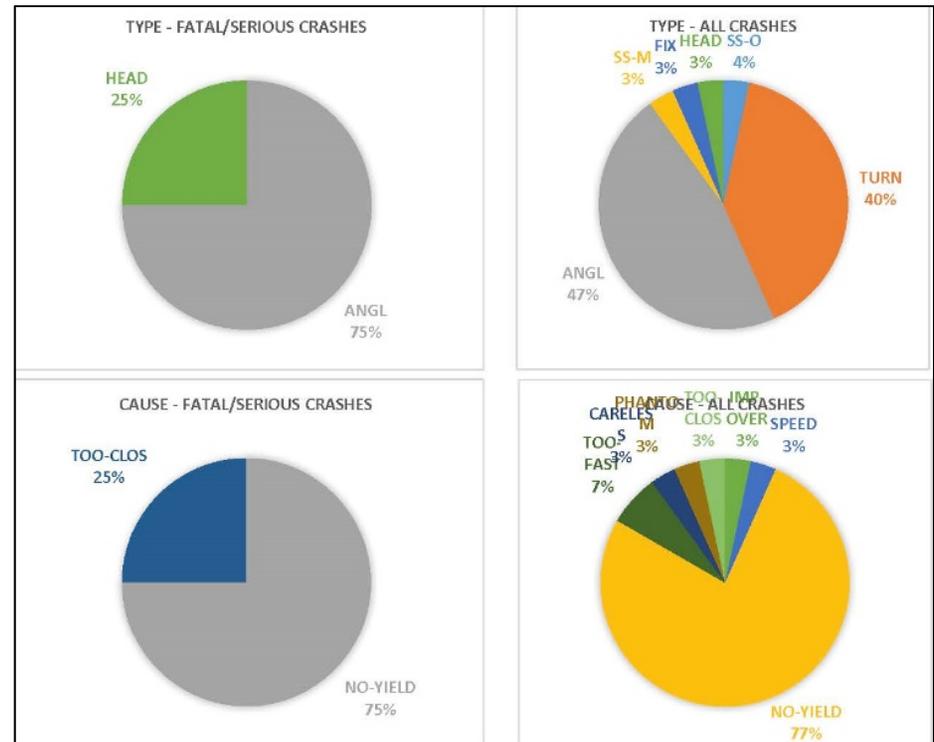


Systemic or Hotspot	Consider for Hotspot	Countermeasure Number	Countermeasure	Crash Type	Injury, PDO or All	Service Life (Yea)	Existing Intersection Traffic Control	Urban or Rural	CRF %
Hotspot	NA	H1	Median U-Turn Intersection Treatment	All	All Injury	20	Signal or Non Signal	Either	30
Hotspot	NA	H4	Right Turn Lane on Single Major Road Approaches: Signalized Intersection (3- or 4-leg)	All	All	20	Signal	Either	4
	NA	H5	Right Turn Lane on Both Major Road Approaches: Signalized Intersection (3- or 4-leg)	All	All	20	Signal	Either	8
Hotspot	NA	H6	Channelized Right Turn Lane with Raised Median	All	All	20	Signal or Non Signal	Either	35
Hotspot	NA	H11	Left Turn Lane on Single Major Road Approach: Urban, Signalized Intersection (3-leg)	All	All	20	Signal	Urban	7
	NA	H12	Left Turn Lane on Both Major Road Approaches: Urban, Signalized Intersection (4-leg)	All	All	20	Signal	Urban	19



Countermeasure Identification

- Evaluated crash trends at each location to determine appropriate countermeasures



Cost Estimates

- Develop standard cost for each countermeasure, including:
 - 100% Markup for Design, Contingency and Temporary Traffic Control
 - Additional markup for HAZMAT mitigation depending on countermeasure
- Adjusted cost based on specific location characteristics that are not included in standards cost estimate

ID	Name	Unit	Traffic Cost	Civil Cost	Markup	R/W	HAZMAT	Total
H1	Median U-Turn Intersection Treatment	EA		\$ 275,000	\$ 181,500	\$ 20,000	\$ 82,500	\$ 559,000.00
H2	Right turn lane for single major road approach, unsignalized	EA	\$ 2,000	\$ 87,000	\$ 58,740	\$ 17,186	\$ 26,100	\$ 192,000.00
H3	Right turn lane for both major road approach, unsignalized	INT (2 approaches)	\$ 4,000	\$ 174,000	\$ 117,480	\$ 34,373	\$ 52,200	\$ 383,000.00
H4	Right turn lane on single major road approach, signalized	EA	\$ 84,000	\$ 81,000	\$ 108,900	\$ 23,008	\$ 24,300	\$ 322,000.00
H5	Right turn lane on both major road approach, signalized	INT (2 approaches)	\$ 168,000	\$ 162,000	\$ 217,800	\$ 46,015	\$ 48,600	\$ 643,000.00
H6	Channelized right turn lane w/raised median	EA	\$ 104,000	\$ 436,000	\$ 356,400	\$ 53,325	\$ 130,800	\$ 1,081,000.00
H7	Left turn lane on single major road approach, urban, unsignalized	EA	\$ 2,000	\$ 321,000	\$ 213,180	\$ 117,740	\$ 96,300	\$ 751,000.00
H8	Left turn lane on both major road approach, urban, unsignalized	INT (2 approaches)	\$ 4,000	\$ 642,000	\$ 426,360	\$ 235,480	\$ 192,600	\$ 1,501,000.00
H9	Left turn lane on single major road approach, rural, unsignalized	EA	\$ 2,000	\$ 410,000	\$ 271,920	\$ 89,816	\$ 123,000	\$ 897,000.00
H10	Left turn lane on both major road approach, rural, unsignalized	INT (2 approaches)	\$ 4,000	\$ 667,000	\$ 442,860	\$ 179,632	\$ 200,100	\$ 1,494,000.00
H11	Left turn lane on single major road approach, urban, signalized	EA	\$ 150,000	\$ 321,000	\$ 310,860	\$ 117,740	\$ 96,300	\$ 996,000.00



Benefit/Cost Ranking

- Utilized ODOT's Benefit/Cost Calculation Spreadsheet (see ARTS website)
- Projects Ranked Based on Benefit/Cost Ratio
- Combined Benefit/Cost Ratio when Multiple Countermeasures Proposed

	OREGON DEPARTMENT OF TRANSPORTATION HIGHWAY SAFETY PROJECTS BENEFIT/COST ANALYSIS WORKSHEET						
Project Name:	<input type="text"/>	Region:	<input type="text"/>	Date:	<input type="text"/>		
<i>Project on Local Agency Facility</i>							
Route Number:	<input type="text"/>	Street Name:	<input type="text"/>	MP Range or Cross Street:	<input type="text"/>		
<i>Project on State Highway</i>							
Route Number:	<input type="text"/>	Hwy Name:	<input type="text"/>	MP From:	<input type="text"/>	To:	<input type="text"/>
Road Character:	<input type="text" value="URBAN"/>	Facility Type:	<input type="text" value="OTHER STATE HIGHWAY"/>				
County:	<input type="text" value="BAKER"/>	City:	<input type="text"/>	Crash Data From:	<input type="text"/>	To:	<input type="text"/>



All Roads Transportation Safety



Final 300% List and Report



All Roads Transportation Safety

Hot Spot Appeal Applications

- All Location Appeal proposals were reviewed and added to the 300% list
- If you have any questions about a Location Appeal, please coordinate with Region 1 staff



Final 300% List

- Please review proposed projects
- Last chance for additional comments to get incorporated (all comments by June 17th)
- Reminder: Local match of 7.78% is required



Final 300% List: Example

Location ID	Jurisdiction	Location Description	Cost	Benefit	B/C Ratio	Countermeasures
13	City of Portland	SE Division St @ SE 112th Ave	\$411,000	\$7,805,000	19.0	I2 - Improve Signal Hardware: Lenses, Reflectorized Back plates, Size, and Number H34 - Provide a Raised Median, Urban Multi-Lane Road

Local Match Calculation:
 $\$411,000 * 7.78\% = \$32,000$



Final Report

- Hard copies are available or you can request a digital version



All Roads Transportation Safety



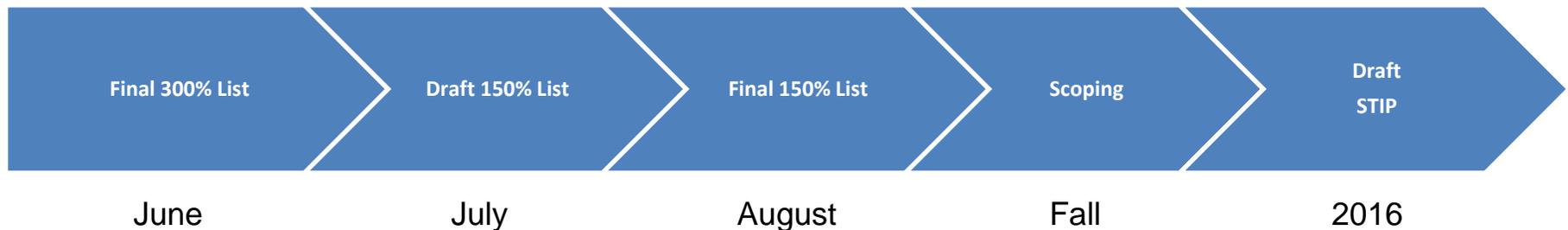
Next Steps and Lessons Learned



All Roads Transportation Safety

Next Steps: Overview

- Final Report and 300% Project List (June)
- Final 150% List
- Scoping this fall
 - Need to confirm support for local match
- Final 100% Projects included in draft STIP in 2016



Next Steps: 150% List

How will the draft 150% list be established?

1. Additional meetings with Local agencies
2. Gather additional data
 - Crash diagrams
 - Counts (*if available*)
 - Development Review / Planning Reports
 - Police Reports
3. Site visits as needed
4. Re-prioritize list based on B/C with new and re-applied CRF's



Next Steps: Scoping

- Region staff will be coordinating project scoping of the final 150% project list
- Scoping will include local agency involvement where applicable
- Conduct safety assessments to confirm countermeasure(s) and develop final B/C



All Roads Transportation Safety

Scoping

- Local match will be re-evaluated based on revised cost estimate
- Local agencies will have the final decision whether to include projects on the 100% list under their jurisdiction

Item	Quantity	Cost/Unit	Total Cost
Reflectorized Back Plates	27	\$250	\$6,750
Enforcement Assisted Lights for Red Light Running	12	\$350	\$4,200
Modify Protective-Permissive Phasing to FYA at Neff/Purcell	2	\$1,100	\$2,200
Structural Analysis of Signal Poles	2	\$700	\$1,400
Pedestrian Countdown Timers	8	\$600	\$4,800
Accessible Pedestrian Pushbutton	8	\$750	\$6,000
Pedestrian Pushbutton Control Unit	1	\$2,500	\$2,500
Subtotal:			\$28,000
Contingency (10%):			\$2,800
10% Construction Engineering (CE):			\$2,800
10% Mobilization:			\$2,800
10% Temporary Protection and Direction of Traffic (TP & DT):			\$2,800
30% Design and Delivery Cost (PE):			\$8,400
Total:			\$47,600
Original Estimate Provided in HSIP Report:			\$65,000
Difference:			-\$17,400



All Roads Transportation Safety

Lessons Learned/Agency Feedback

- The final report incorporates some of the feedback/lessons learned through this process
 - Hot Spot Identification
 - HSM Predictive Method
 - Countermeasure List
 - Benefit Calculations
- Any additional thoughts?



Questions?

- Additional information on ARTS website:

<http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/Pages/ARTS.aspx>



All Roads Transportation Safety