

TriMet 700 MHz Radio System

Overview

Interference Prediction

Implementation Plan

System Description

- P25 Advanced Transit Voice and Data System which combines voice and data communications for transit and para-transit fleets, and light rail (voice).
- Serves 4 Counties (WA, Mult, Clack, Clark, WA)
- Uses 13 of the 25 requested 25 kHz channels for trunked voice radio
- Uses 6 of the 25 kHz channels requested to provide data communications
- Interoperable with public safety throughout region

System Description

- Provides for TriMet's current capacity requirements, as well as for a 150% increase in capacity for its fixed route and para-transit fleets.
- 2057 mobile and portable radios during the initial system implementation, and expansion to 2585 mobile and portables.

System Description

- four repeater sites:
 - Council Crest,
 - Mt. Scott,
 - Pete's Mountain and
 - Polivka Hill

System Description

Channel Distribution by Site									
Vehicle Type	Council Crest (1)	% of Total	Mt. Scott (2)	% of Total	Pete's Mountain (3)	% of Total	Polivka Hill (4)	% of Total	Total # of Vehicles
Fixed Route	294	55.4	180	33.9	51	9.6	6	1.1	531
Light Rail	22	75.9	7	24.1	0	0	0	0	29

The distribution of voice channels among the sites is based on a direct traffic distribution analysis that breaks up the network traffic and assigns it to the different radio sites that are envisioned for servicing the user calls (traffic).

System Description

- The initial system implementation will use P25 Phase I 12.5 kHz FDMA
- Polling data channels will use a proprietary over the air interface.
- Eventual migration to P25 Phase 2 TDMA channels is planned for the voice channels to provide compliance with the FCC's 2017 requirement of one voice path per 6.25 kHz of channel bandwidth.

Interference Prediction

Evaluated all of the available channels assigned to Washington, Multnomah and Clackamas Counties to determine which channels could be used with the least risk of interference to future co-channel and adjacent channel systems in the surrounding Counties

TriMet Channel Number		Channel County	Base Channel #	Base Frequency	Mobile Frequency	Council Crest	Mt. Scott	Petes	Polivka
Channel 1	A	Washington	53-56	769.33125	799.33125	Control Channel 1			
	B			769.34375	799.34375				
Channel 2	A	Multnomah	137-140	769.85625	799.85625		Control Channel 2		
	B			769.86875	799.86875				
Channel 3	A	Clakamas	205-208	770.28125	800.28125			Control Channel 3	
	B			770.29375	800.29375				
Channel 4	A	Washington	829-832	774.18125	804.18125				Control Channel 4
	B			774.19375	804.19375				
Channel 5	A	Washington	173-176	770.08125	800.08125	Voice Channel 1			
	B			770.09375	800.09375			Voice Channel 15	
Channel 6	A	Washington	361-364	771.25625	801.25625	Voice Channel 2			
	B			771.26875	801.26875		Voice Channel 10		
Channel 7	A	Washington	429-432	771.68125	801.68125	Voice Channel 3			
	B			771.69375	801.69375		Voice Channel 11		
Channel 8	A	Washington	489-492	772.05625	802.05625	Voice Channel 4			
	B			772.06875	802.06875		Voice Channel 12		
Channel 9	A	Multnomah	213-216	770.33125	800.33125	Voice Channel 5			
	B			770.34375	800.34375		Voice Channel 13		
Channel 10	A	Multnomah	441-444	771.75625	801.75625	Voice Channel 6			
	B			771.76875	801.76875		Voice Channel 14		
Channel 11	A	Clakamas	353-356	771.20625	801.20625	Voice Channel 7			
	B			771.21875	801.21875			Voice Channel 16	
Channel 12	A	Clakamas	397-400	771.48125	801.48125	Voice Channel 8			
	B			771.49375	801.49375				Voice Channel 17
Channel 13	A	Clakamas	617-620	772.85625	802.85625	Voice Channel 9			
	B			772.86875	802.86875				Packet Data 5
Channel 14	A	Washington	549-552	772.43125	802.43125	Packet Data 1			
	B			772.44375	802.44375		Packet Data 3		
Channel 15	A	Washington	677-680	773.23125	803.23125	Packet Data 2			
	B			773.24375	803.24375			Packet Data 4	
Channel 16	A	Washington	945-948	774.90625	804.90625		Polling 3		
	B			774.91875	804.91875				
Channel 17	A	Clakamas	325-328	771.03125	801.03125	Polling 1			
	B			771.04375	801.04375				
Channel 18	A	Multnomah	537-540	772.35625	802.35625	Polling 2			
	B			772.36875	802.36875				
Channel 19	A	Multnomah	797-802	773.98125	803.98125		Polling 4a	Polling 4b	Polling 4c
	B			773.99375	803.99375				

Interference Prediction

Checked against City of Portland and Linn/Benton County applications:

- No City of Portland co/adjacent channel hits.
- Six Linn/Benton adjacent-channel hits; interference extremely unlikely due to distance and terrain.

Implementation Plan

The high level schedule for implementation below and in the submitted Extended Implementation Plan document.

System Design	June 2010-February 2011
System Installation	April 2011-November 2011
Acceptance Testing	February 2012-November 2012

TriMet UHF Give-Backs

- TriMet will return at least 10 UHF channel pairs upon full implementation of the 700 MHz system

Funding Approved

Certification of the approval of funding for this project by TriMet's governing body is provided in the license application documentation

Questions?

Thank you and the rest of the Committee for all of the work that has gone into the development of the Region 35 700 MHz plan. We look forward to working with the Committee as we move forward with the implementation of our new system.