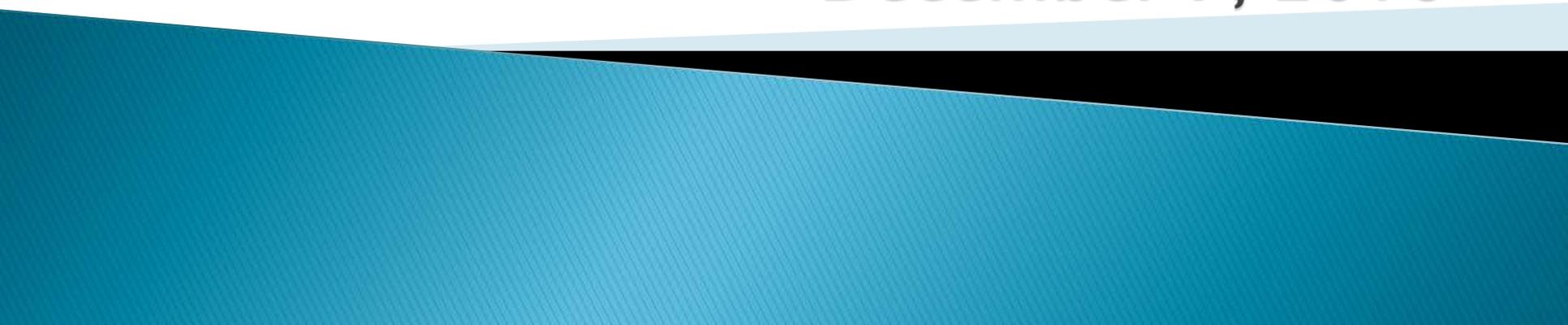


Boulder County Railroad Quiet(er) Zone Project

December 7, 2016



What are Quiet Zones?

Quiet Zones are locations that a railroad crosses a road, where FRA approved enhancements have been constructed that allow a conductor to not sound their train horn.

All quiet zones must have:

1. Minimum length of $\frac{1}{2}$ mile between crossings
2. Active Grade Crossing Warning Devices (flashing lights, bells, etc.)
3. Compliant Warning Signs



W10-1



W10-1a

What are Quiet Zones? (Supplemental Safety Measures)

Four-Quadrant Gate System:



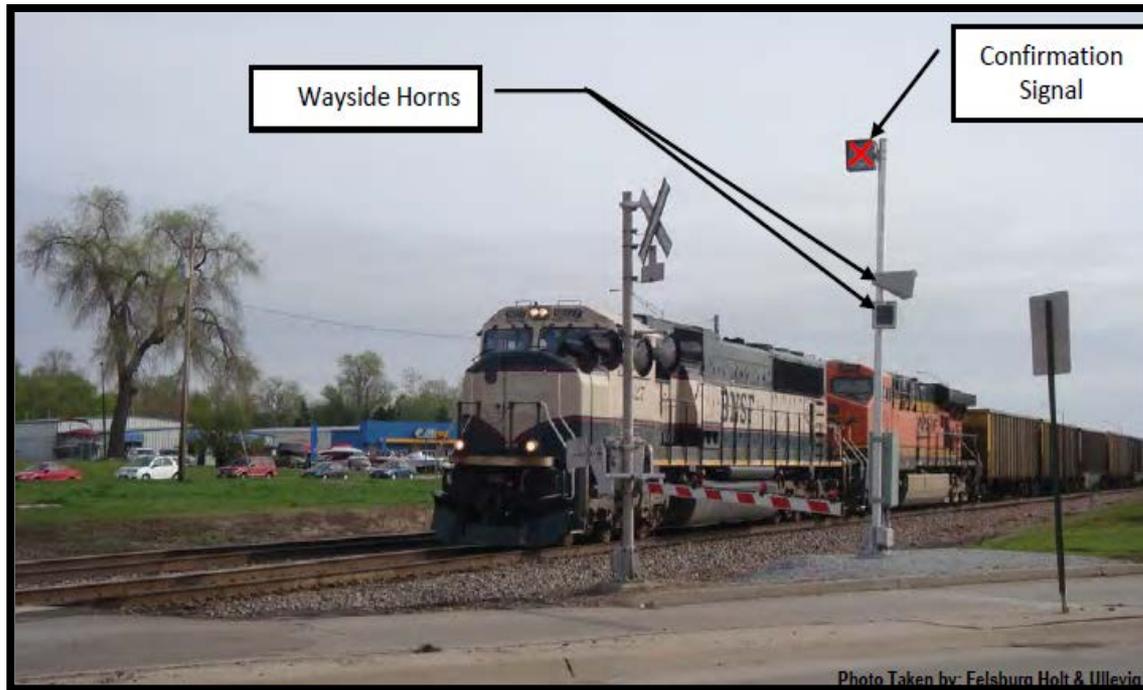
What are Quiet Zones? (Supplemental Safety Measures)

Gates with Channelization Devices or Raised Medians:



What are Quiet Zones? (Supplemental Safety Measures)

Wayside Horns:



1. Requires ongoing maintenance
2. Of the two installed in Colorado, one has major technical issues
3. Software issues leading to poor communication between technologies
4. More suitable for areas with commercial and industrial land uses (it is still loud)
5. FRA can withdraw the quiet zone status if the horn does not work properly

Quiet Zone Rule:

- Established in 2005 by the Federal Rail Administration (FRA)
- Last updated in 2006
- Rule was in response to a nationwide study
- Allowed FRA to establish rules for Quiet Zones



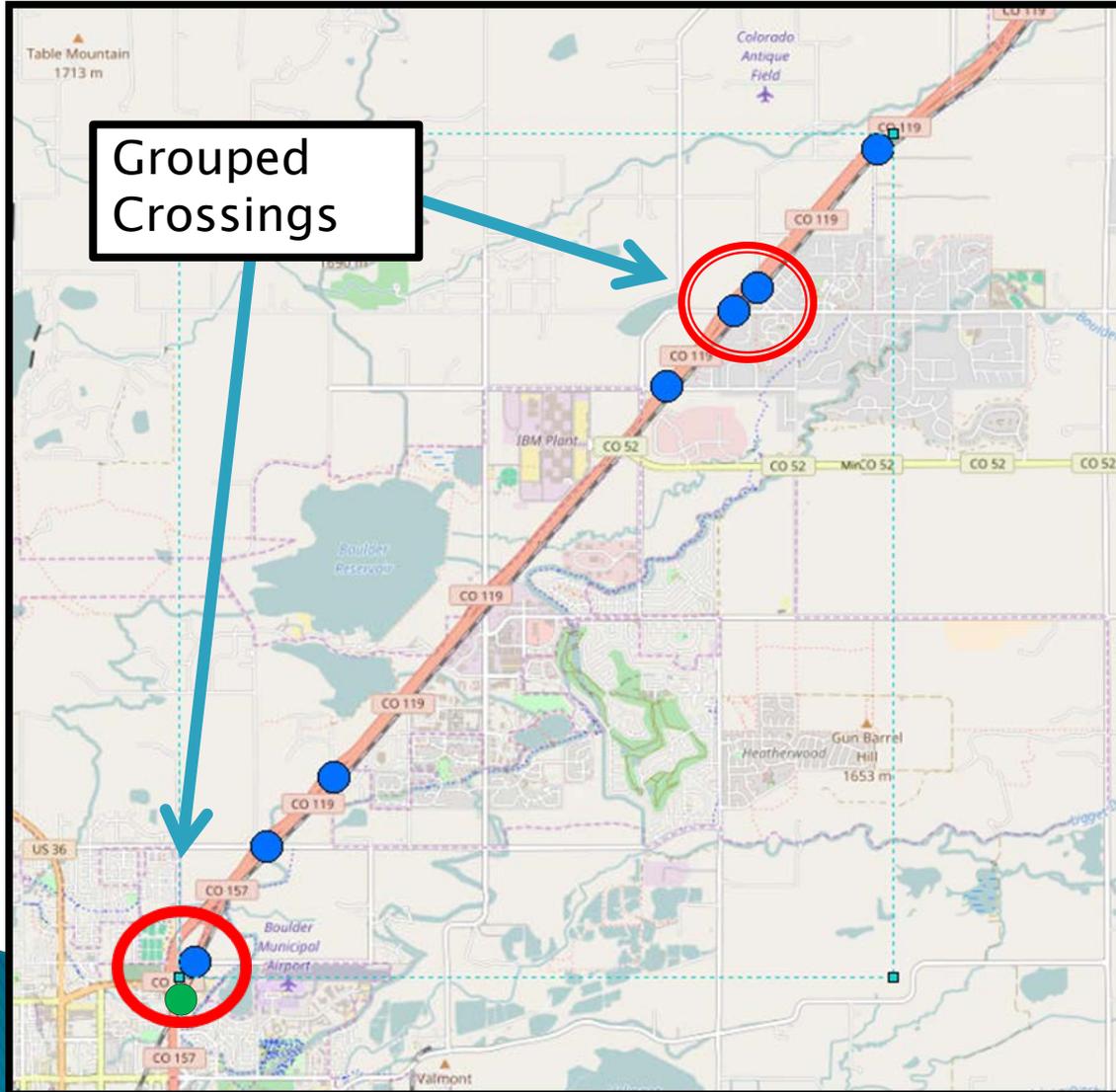


Where Does the Money Come From?

Denver Regional Council of Government (DRCOG) allocated one time funding in the fall of 2016

Funding is earmarked for this project and cannot be used for other purposes

Crossings in Unincorporated Boulder County

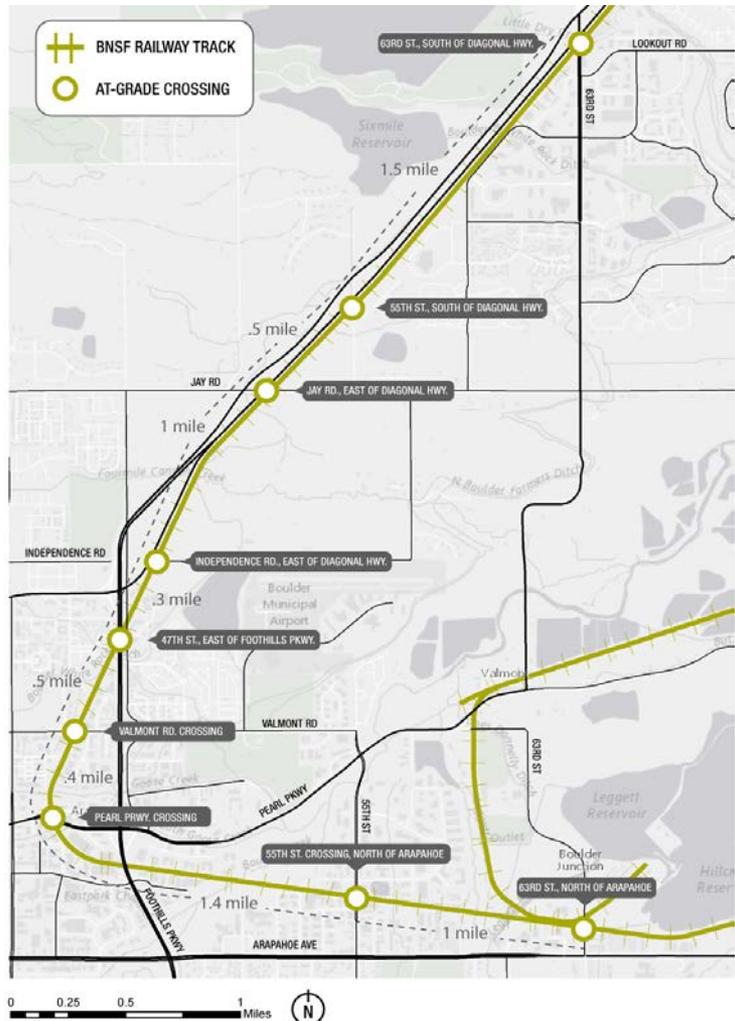


- 83rd St.
- 2nd St./Main St.
- Niwot Rd.
- Monarch Rd.
- N. 55th
- Jay Rd.
- Independence Rd.

Other Municipal Efforts: City of Boulder

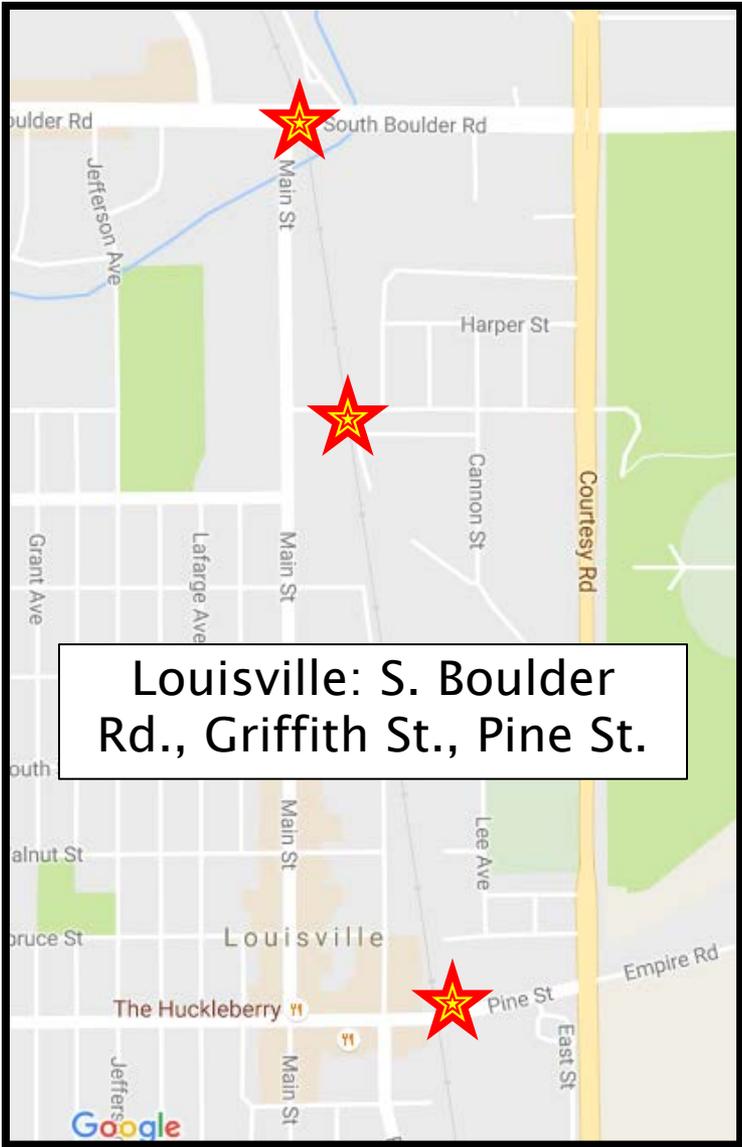
- 63rd Street (Gunbarrel)
- 47th Street
- Valmont Road
- Pearl Parkway

- 55th Street
- 63rd Street (Near Naropa)



Other Municipal Efforts: Louisville & Lafayette

- Baseline Road
- South Boulder Road
- Griffith Street
- Pine Street



Boulder County Available Funding:

	2016	2017	2018	2019	Total
Federal	\$0	\$135,000	\$1,253,000	\$0	\$1,388,000
State	\$0	\$0	\$0	\$0	\$0
Local	\$20,000	\$34,000	\$313,000	\$0	\$367,000
Total	\$20,000	\$170,000	\$1,566,000	\$0	\$1,756,000

The Cost to Construct Quiet Zones Typically ranges from \$200,000 to \$550,000 apiece.

Boulder County does not have adequate funding to improve all crossings in our jurisdiction.

Boulder County Approach to Analysis

Use mapping software to determine number of residences currently impacted by train horn noise

Quantify the noise reduction for each residential parcel under various implementation scenarios

Select implementation scenario with maximized benefit to the public



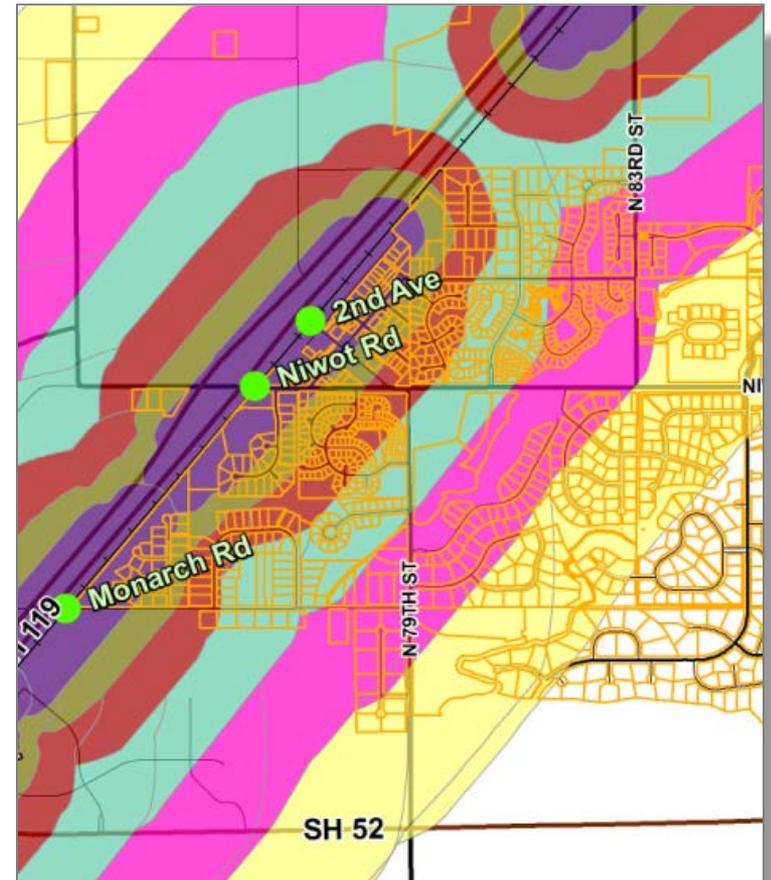
Sound clouds

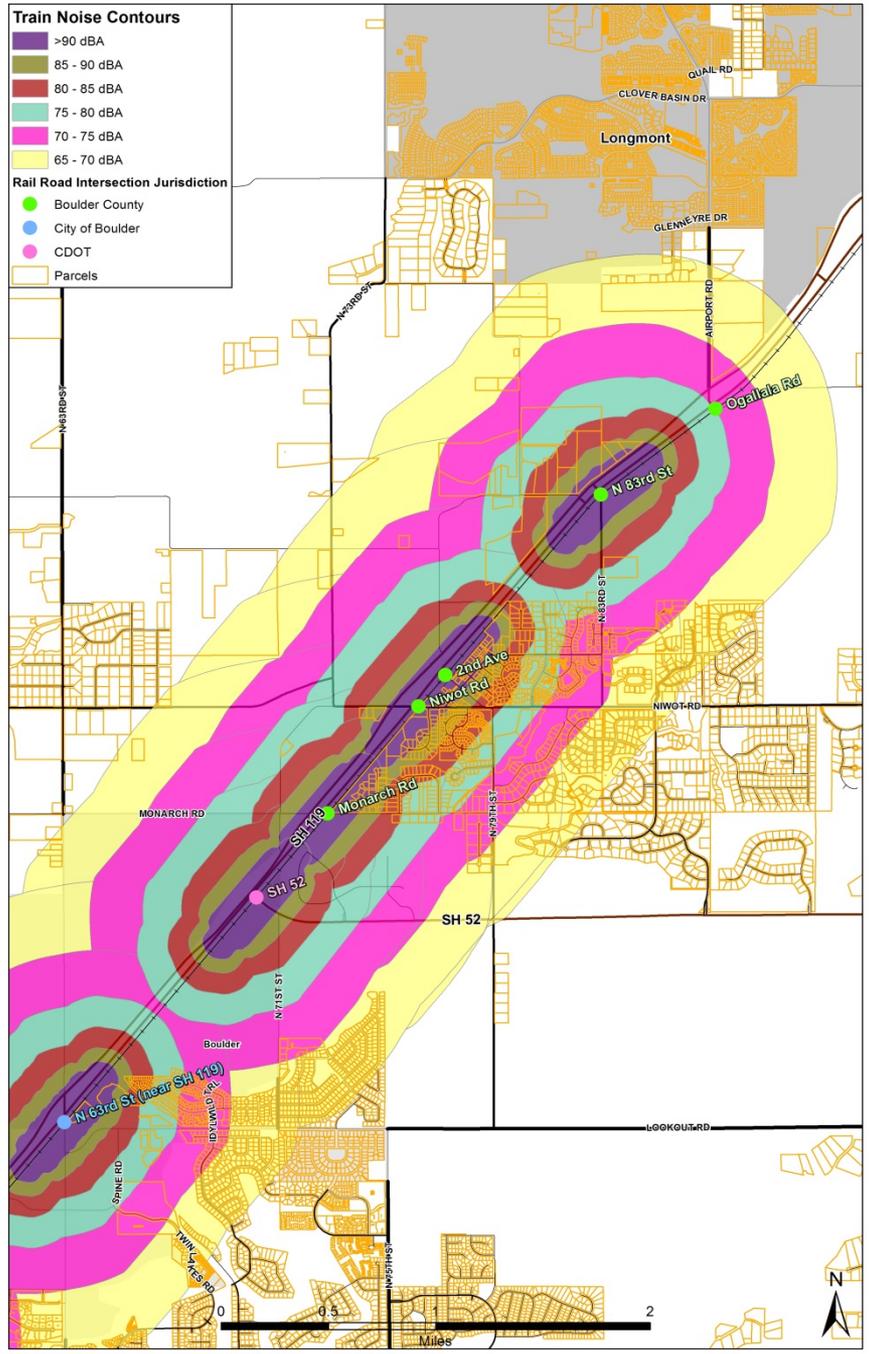
Sound clouds estimate decibels of sound emanating from the train horn

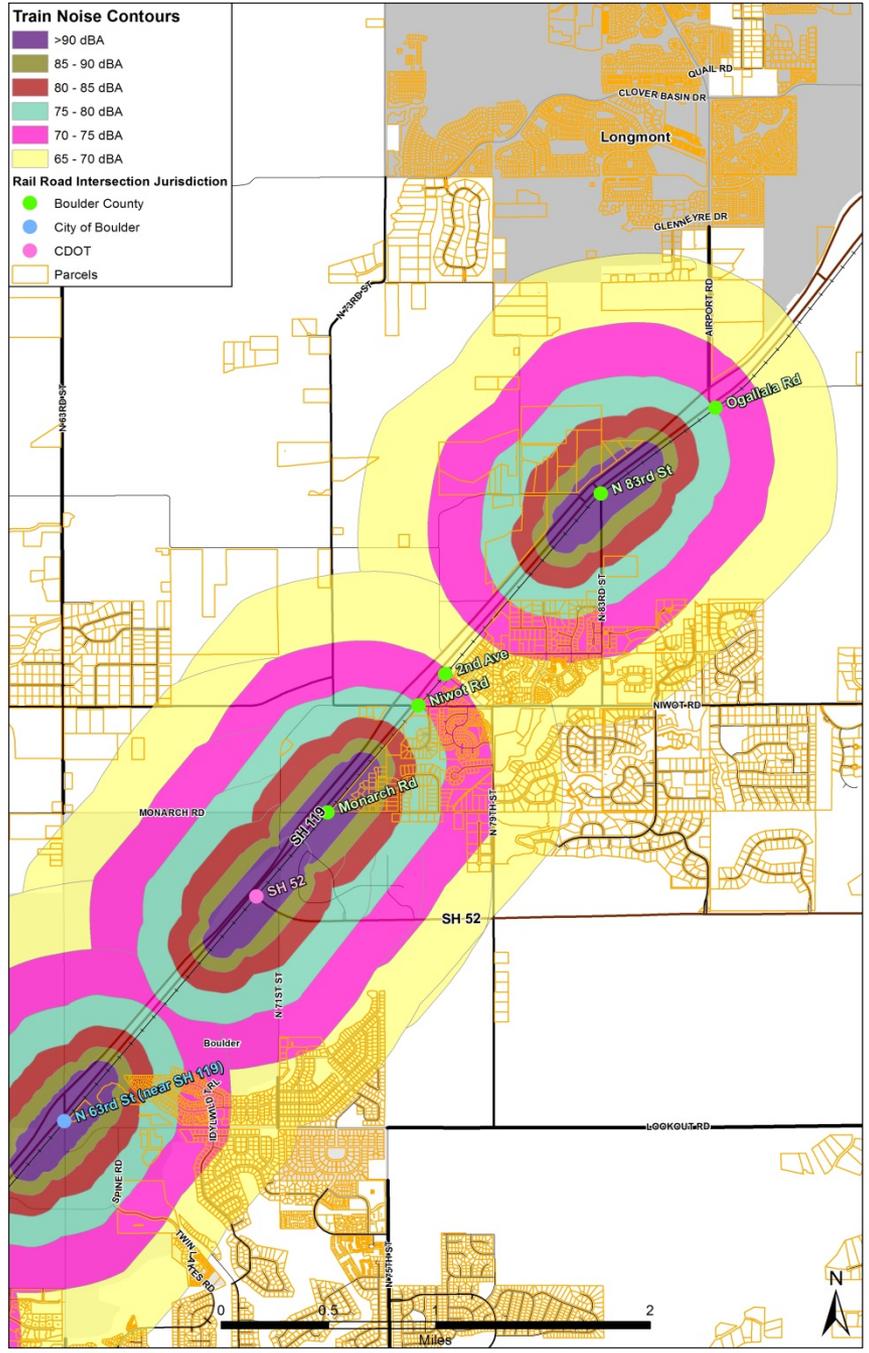
Categories: 65–70dBs, 70–75dBs, 75–80dBs, 80–85dBs, 85–90dBs and >90dBs

Parcels used: residential, residential land, apartments, bed and breakfast, manufactured home, mixed use

Apartments and mobile home parks quantified as one parcel

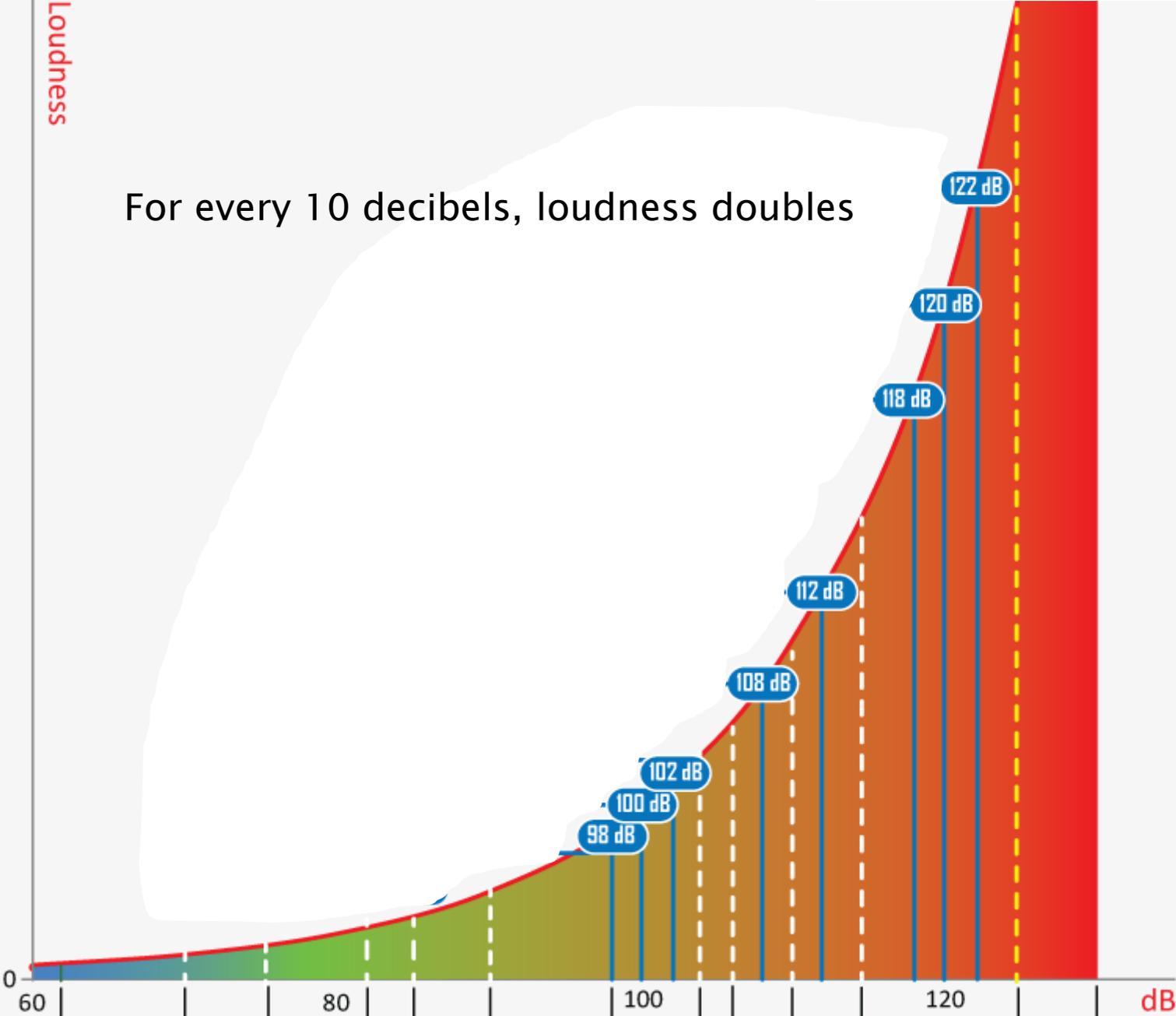






Loudness

For every 10 decibels, loudness doubles



How loud is it?

<https://www.youtube.com/watch?v=LL-ZpVkiu4Y>



Quiet Zone Scenarios

Quiet Zones Implemented	65 - 70 dB	70 - 75 dB	75 - 80 dB	80 - 85 dB	85 - 90 dB	>90 dB
Niwot & 2 nd	502	54	(361)	(143)	(85)	(62)
Niwot & 2nd plus Monarch	367	(96)	(414)	(167)	(99)	(77)
Niwot & 2nd plus 83rd	276	(89)	(392)	(146)	(90)	(62)
55 th	401	(470)	(287)	(49)	(10)	(20)
Jay	12	(11)	1	(5)	-	(1)
Independence	100	(74)	(64)	-	-	-
(City of Boulder) 47th	(396)	726	(677)	(101)	(151)	(111)
Independence plus 47 th	(1,169)	(1,094)	(1,195)	(362)	(200)	(111)

Costs

Quiet Zones Implemented	4-quadrant gates	Gates/ Channelization	Gates/ Medians
Niwot & 2 nd	\$962,000	\$602,000	\$626,000
Monarch	\$482,000	\$206,000	-
83rd	\$482,000	-	-
55 th	\$482,000	\$206,000	\$230,000
Jay	\$520,000	-	-
Independence	\$566,000	\$206,000	\$266,000

Schedule

- ▶ Winter 2016/2017
 - Select crossings for design
 - Contracting with CDOT for funding
 - ▶ Spring 2017
 - Begin design
 - Second public meeting to present crossing treatments
 - Coordination with BNSF, PUC, CDOT, City of Boulder
 - ▶ Winter 2017/2018
 - Begin construction (may depend upon other agencies)
 - ▶ Fall 2018
 - Project completion
 - Funding reimbursements

 - ▶ City of Boulder
 - Mid 2017–2018, selection and design of crossings
 - 2018–2019 construction
 - Public Meeting: Thursday Dec. 15th, 5–7pm Boulder Chamber
- 

What else should we be thinking about?



Thank you!

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