The Sound of Transit Operations

Point Of Contact: Lawrence Spurgeon, Supervising Environmental Engineer
spurgeon@pbworld.com

The Honolulu Advertiser article of March 11, reminded me once again how difficult it is to explain the "rocket science" mathematics of acoustics. As a member of the City's project team working on noise analysis, I think it would be beneficial to your readers to understand a few of the basic concepts regarding transit noise.

Noise levels are measured on the A-weighted decibel scale (dBA) according to how sensitive the human ear is to sounds of different frequencies. Sound levels in typical libraries are about 40 dBA. Noise levels in a busy store like Macy's or Sears would be about 60 dBA.

The newspaper article included a table of pass-by noise levels for various technologies. If we adjust the values to 50 mph at 50 feet for each, the two rubber tire technologies are reported as 74 and less than 80 dBA. The three steel wheel values become less than 75, 76 and 77 dBA. These numbers are consistent with the FTA provided values and demonstrate that there is almost no difference between the technologies in the noise generated.

With a modern rail transit system, nearly all of the noise is generated where the wheel contacts the guideway. This is very different from city buses, where most of the noise comes from the engine and exhaust system. If the vehicles are operating on an overhead guideway, a very short barrier of between 2 and 4 feet in height will block the wheel noise generated by rail transit. A rubber-tired guided bus would require an 8 to 12 foot high barrier to mitigate the noise it generates. For people standing on the ground, the noise level would be reduced by 5 dBA or more by these barriers.

The impact calculations quoted in the article from the Alternatives Analysis did not include any noise reduction measures. Discussing noise impacts without considering these mitigation measures is akin to talking about the noise generated by a car without a muffler.

Preliminary results from the ongoing environmental impact statement analysis suggest that with mitigation measures that will be included in the project, all of the noise impacts from rail transit would be reduced to moderate or completely eliminated.