APPENDIX C

Noise and Vibration Assessment
TAHA

February 2014

taha
environmental planners

Memorandum

TO: Matt Valerio, Senior Project Manager
Jayna Morgan, Environmental Planner/Project Manager
AECOM

FROM: Sam Silverman, Senior Associate
Terry A. Hayes Associates Inc.

DATE: November 20, 2013

RE: Avalon and Fries Street Segments Closure Project Noise and Vibration Assessment

Terry A. Hayes Associates Inc. (TAHA) is pleased to submit this noise and vibration assessment for the Avalon and Fries Street Segments Closure Project. The purpose of this analysis is to evaluate the potential impacts associated with the proposed project based on the California Environmental Quality Act (CEQA) checklist questions listed in Appendix G of the CEQA Guidelines. Noise and vibration levels have been analyzed related to construction activity and changes to mobile source noise associated with rerouted traffic. Mitigation measures are recommended, where necessary.

Project Description

The Avalon and Fries Street Segments Closure Project include the elements listed below.

- Vacate Fries Avenue and Avalon Boulevard between Water Street and A Street;
- Construct associated street improvements;
- Install chain link fencing;
- Install signage and striping to effectively close access to the vacated portions of Fries Avenue and Avalon Boulevard;
- Install a gate on the north side of the rail line along Fries Avenue over 13 feet from the existing rail track and 26 feet from the new rail track;
- Provide a southerly gate that is anticipated to be used infrequently and/or for emergency purposes only;
- Provide primary access to the Port Archives Building from the north gate near A Street;
- Provide additional crossing protection, including signing and striping, crossing arms, and lights, at an existing at-grade crossing at the completed private road into Wallenius Wilhemsen Logistics;
- Construct a cul-de-sac on Avalon Boulevard with a minimum radius of 35 feet;
- Remove a large palm tree immediately north of the existing tracks;
- Remove and replace (in kind) a portion of the fencing along the Los Angeles Department of Water and Power (LADWP) property line;

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w e b t a h a . c o m

- Remove and/or relocate two LADWP power poles, one streetlight, and one fire hydrant on Avalon Boulevard;
- Change the Harry Bridges/North Access Road intersection configuration to provide dual left-turn lanes in the westbound direction; and
- Provide dual right-turn lanes southbound at the intersection of Viaduct/North Access Road.

Noise and Vibration Characteristics and Effects

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.

This analysis describes sound levels in terms of Community Noise Equivalent Level (CNEL) and Equivalent Noise Level (L_{eq}). CNEL is an average sound level during a 24-hour period and is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night before 7:00 a.m. and after 10:00 p.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour noise level is always a higher number than the actual 24-hour average. L_{eq} is the average noise level on an energy basis (i.e., acoustic energy of the sound) for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. L_{eq} can be thought of as the level of a continuous noise, which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in terms of dBA.

Noise generally is defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, the nature of work or human activity that is exposed to the noise source.

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., pavement) and 7.5 dBA over soft surfaces (e.g., grass) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction).

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

High levels of vibration may cause physical personal injury or damage to buildings. However, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

In contrast to noise, vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 Vdb RMS or lower, well below the threshold of perception for humans which is around 65 Vdb RMS. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Would the project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standard of other agencies?

Less-Than-Significant Impact with Mitigation. The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) of the Los Angeles Municipal Code (LAMC) indicates that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m., since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment or other place of residence. No person, other than an individual home owner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday or on a federal holiday, or at any time on any Sunday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) of the LAMC also specifies the maximum noise level for powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Sensitive receptors near the project site include the following:

- Banning's Landing Community Center located 550 feet to the south of the activity on Avalon Boulevard and 950 feet to the southeast of the activity on from activity on Fries Avenue;
- Wilmington Recreation Center located 1,250 feet to the north of the activity on Fries Avenue;
- Various residences in San Pedro, the nearest located 1,630 feet to the northwest of the activity on Fries Avenue; and
- Marina with live-aboard yachts located 2,500 feet to the east of the activity on Avalon Boulevard.

Existing noise levels at these locations were recorded on November 12, 2013. Measurements were used to establish existing ambient noise conditions, provide a baseline for evaluating construction impacts, and assess operational impacts. As shown in **Table 1**, daytime existing ambient noise levels were between 53.9 and 57.9 dBA L_{eq}.

TABLE 1: EXISTING NOISE LEVELS

Location	Sound Levels (dBA, L_{eq})
Banning's Landing Community Center	57.9
Wilmington Recreation Center / Residences	53.9
Newmark's Yacht Centre	55.6

SOURCE: Terry A. Hayes Associates Inc., 2013.

Construction Noise

The City of Los Angeles has established significance thresholds in the *CEQA Thresholds Guide*. A significant impact related to construction activity would occur if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use;
- Construction activities lasting more than ten days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use; and/or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

The proposed project would not include nighttime construction activity, but would last for more than ten days in a three-month period. Therefore, a significant impact would occur if construction noise levels exceed existing exterior ambient noise levels by 5 dBA.

Construction activity would temporarily increase ambient noise levels on an intermittent basis. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that may be used during construction are listed in **Table 2**. The table shows noise levels at distances of 50 and 100 feet from the construction noise source. When various activities are aggregated, it is anticipated that roadway construction activity generates a noise level of 82 dBA L_{eq} at 100 feet. This reference noise level was used to estimate noise levels at sensitive receptors by (1) making a distance adjustment to the construction source noise level; and (2) logarithmically adding the adjusted construction noise source level to the existing ambient noise level.

TABLE 2: MAXIMUM NOISE LEVELS OF COMMON CONSTRUCTION MACHINES

	Noise Level (L_{eq}, dBA)	
Noise Source	**50 Feet**	**100 Feet**
Front Loader	80	74
Trucks	89	83
Jackhammers	90	84
Generators	77	71
Back Hoe	84	78
Tractor	88	82
Scraper/Grader	87	81
Paver	87	81

SOURCE: City of Los Angeles, *L.A. CEQA Thresholds Guide*, 2006.

Table 3 presents the estimated incremental increase in noise levels associated with construction activity at sensitive receptor locations. The analysis demonstrates that unmitigated construction noise would potentially exceed the 5-dBA significance threshold at Banning's Landing Community Center. However, weekday activities at the Community Center occur Monday through Thursday and typically do not start until 3:30 or 4:00 p.m. Exposure to construction noise would be short-term (e.g., approximately one hour). The Community Center is available for private events on Saturdays. Despite the short-term exposure duration and the fact that Saturday events are intermittent, the potential exists for construction activity to interfere with activities at the Community Center. Mitigation Measure **NOISE-1** would ensure that construction activities would not interfere with activities at the Community Center (e.g., increase ambient noise levels by more than 5 dBA). Therefore, the proposed project would result in a less-than-significant impact related to construction noise.

TABLE 3: CONSTRUCTION NOISE LEVELS

Sensitive Receptor	Distance (feet)	Existing L_{eq} (dBA)	Projected Construction-Related L_{eq} (dBA)	Incremental Increase
Banning's Landing Community Center	550	57.9	67.7	9.8
Wilmington Recreation Center	1,250	53.9	55.4	1.5
Residences to the North	1,630	53.9	54.8	0.9
Newmark's Yacht Centre	2,500	55.6	57.9	2.3

SOURCE: Terry A. Hayes Associates Inc., 2013.

NOISE-1 The Los Angeles Harbor District shall ensure that the construction contractor coordinates with the site administrator of Banning's Landing Community Center. If construction activity is interfering with a community event, equipment shall be repositioned or shut off, as necessary.

Operational Noise

The operational noise analysis assessed mobile and stationary sources. Based on the *CEQA Thresholds Guide*, a significant impact related to operational activity would occur if:

- Ambient noise levels measured at the property line of the residences or the Banning's Landing Community Center increase by 3 dBA CNEL to or within 70 CNEL for "normally unacceptable" or above 70 dBA CNEL for "clearly unacceptable" categories or any 5-dBA or more increase in noise level. For the Wilmington Recreation Center, an impact would result if the ambient noise level measured at the property line of increases by 3 dBA CNEL to or within 67 CNEL for "normally unacceptable" or above 72 dBA CNEL for "clearly unacceptable" categories or any 5-dBA or more increase in noise level.

Mobile Noise. The proposed project would not generate new vehicle trips but would reroute traffic on the surface street network. The Federal Highway Administration RD-77-108 noise calculation formulas were used to predict mobile source noise levels under existing conditions and in years 2017 and 2035. The results are in **Tables 4** and **5**. The greatest project-related noise increase in 2017 or 2038 would be 0.8 dBA CNEL and would occur along Harry Bridges Boulevard west of Fries Avenue. The roadway noise increase attributed to the proposed project would be less than the 3-dBA CNEL increment at all analyzed segments. Therefore, the proposed project would result in a less-than-significant impact related to project-level mobile noise levels.

The Harry Bridges Boulevard west of Fries Avenue segment would experience a 5.1-dBA CNEL increase in noise levels when comparing year 2038 to existing conditions. The project-related increase would be 0.3 dBA. The majority of increased noise would be related to cumulative growth and the proposed project would not significantly contribute to a cumulatively considerable noise impact.

TABLE 4: ESTIMATED COMMUNITY NOISE EQUIVALENT LEVEL (2017)

Time Period and Roadway Segment	Estimated dBA, CNEL				
	Existing	Future Without Project (2017)	Future With Project (2017)	Project Increase	Cumulative Increase
AM Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	73.5	74.7	75.5	0.8	2.0
Harry Bridges Boulevard east of Avalon Boulevard	71.9	74.2	74.9	0.7	3.0
Fries Avenue north of Harry Bridges Boulevard	62.5	61.3	61.3	0.0	(1.2)
Avalon Boulevard north of Harry Bridges Boulevard	67.3	65.4	65.4	0.0	(1.9)
PM Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	75.6	77.6	77.9	0.3	2.3
Harry Bridges Boulevard east of Avalon Boulevard	72.7	77.0	77.3	0.3	4.6
Fries Avenue north of Harry Bridges Boulevard	63.4	63.0	63.0	0.0	(0.4)
Avalon Boulevard north of Harry Bridges Boulevard	65.9	65.4	65.4	0.0	(0.4)
Midday Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	73.3	75.1	75.5	0.4	2.2
Harry Bridges Boulevard east of Avalon Boulevard	74.3	74.7	75.1	0.4	0.8
Fries Avenue north of Harry Bridges Boulevard	63.4	63.0	63.0	0.0	(0.4)
Avalon Boulevard north of Harry Bridges Boulevard	69.7	68.9	68.9	0.0	(0.8)

SOURCE: Terry A. Hayes Associates Inc., 2013 and *Traffic Study for the Avalon and Fries Street Segments Closure Project*, November, 2013.

TABLE 5: ESTIMATED COMMUNITY NOISE EQUIVALENT LEVEL (2038)

Time Period and Roadway Segment	Estimated dBA, CNEL				
	Existing	Future Without Project (2038)	Future With Project (2038)	Project Increase	Cumulative Increase
AM Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	73.5	78.3	78.6	0.3	5.1
Harry Bridges Boulevard east of Avalon Boulevard	71.9	75.2	75.8	0.6	3.9
Fries Avenue north of Harry Bridges Boulevard	62.5	61.8	61.8	0.0	(0.7)
Avalon Boulevard north of Harry Bridges Boulevard	67.3	68.2	68.2	0.0	0.9
PM Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	75.6	78.6	78.8	0.2	3.2
Harry Bridges Boulevard east of Avalon Boulevard	72.7	73.6	74.0	0.4	1.3
Fries Avenue north of Harry Bridges Boulevard	63.4	63.0	63.0	0.0	(0.4)
Avalon Boulevard north of Harry Bridges Boulevard	65.9	66.0	66.1	0.1	0.2
Midday Peak Hour					
Harry Bridges Boulevard west of Fries Avenue	73.3	77.2	77.4	0.2	4.1
Harry Bridges Boulevard east of Avalon Boulevard	74.3	76.6	77.1	0.5	2.8
Fries Avenue north of Harry Bridges Boulevard	63.4	63.0	63.0	0.0	(0.4)
Avalon Boulevard north of Harry Bridges Boulevard	69.7	71.0	71.1	0.1	1.4

SOURCE: Terry A. Hayes Associates Inc., 2013 and *Traffic Study for the Avalon and Fries Street Segments Closure Project*, November, 2013.

Stationary Noise. The proposed project includes a gate on the north side of the rail line along Fries Avenue that would be located approximately 13 feet from the existing rail track and 26 feet from the new rail track. The location of this gate would not be significantly different from the existing gate location from the perspective of a noise source. The 13-foot difference would not change the existing CNEL at any of the identified sensitive receptors. Therefore, the proposed project would result in a less-than-significant impact related to stationary noise.

Would the project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less-Than-Significant Impact. Construction activities can generate varying degrees of vibration, depending on the construction procedures and the type of construction equipment used. High levels of vibration may cause physical personal injury or damage to buildings. However, vibrations rarely affect human health. The operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. Unless heavy construction activities are conducted extremely close (within a few feet) to the neighboring structures, vibrations from construction activities rarely reach levels that damage structures. Typical vibration levels associated with construction equipment are provided in **Table 6**. Heavy equipment (e.g., a large bulldozer and caisson drilling) generates vibration levels of 0.089 inches per second peak particle velocity (PPV) at a distance of 25 feet.

TABLE 6: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Equipment	PPV at 25 feet (Inches/Second)
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003

SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

According to the Federal Transit Administration (FTA) *Traffic Noise and Vibration Impact Assessment*, the construction vibration damage criterion for buildings that are extremely susceptible to vibration damage is 0.12 inches per second PPV. This is the strictest PPV vibration threshold established by the FTA. The Port Archives Building would be the nearest building to heavy equipment at approximately 30 feet. The typical vibration level from heavy equipment at this distance would be approximately 0.07 PPV. Regardless of the degree of building sensitivity (e.g., historic or reinforced), heavy equipment vibration would not exceed the FTA damage criteria. Therefore, the proposed project would result in a less-than-significant impact related to construction vibration.

The proposed project would not include significant stationary sources of vibration, such as heavy equipment operations. Operational vibration in the project vicinity would generated by vehicular travel on the local roadways. According to the FTA *Transit Noise and Vibration Impact Assessment*, significant vibration impact from rubber tire-fitted vehicles is extremely rare. Vehicle suspension design and rubber tires act as a highly effective barrier to vibration transmission from the vibration-generating carriage and the ground. Therefore, the proposed project would result in a less-than-significant impact related to operational vibration.

Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-Than-Significant Impact. Potential permanent increases in ambient noise levels were assessed above for on-road vehicles and stationary sources. As discussed above, operational noise level would not exceed the significance threshold. Therefore, the proposed project would result in a less-than-significant impact related to substantial permanent increase in ambient noise levels.

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-Than-Significant Impact with Mitigation. Potential temporary increases in ambient noise levels were assessed above for construction activities. As discussed above, construction activity would potentially interfere with events taking place at the Bannings's Landing Community Center. Mitigation Measure **NOISE-1** would ensure that construction activity would not increase ambient noise levels by more than 5 dBA at the Community Center. Therefore, the proposed project would result in a less-than-significant impact related to a temporary increase in noise levels.

For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The nearest public airport to the project site is the Long Beach Airport, located approximately 6.5 miles to the northeast. The proposed project is not located within two miles of a public airport. The proposed project would not expose construction workers to excessive noise levels associated with public airport activities. Therefore, the proposed project would not result in an impact related to exposure to noise generated at public airports.

For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed project is not located within two miles of a private airstrip. The proposed project would not expose construction workers to excessive noise levels associated with any private airstrip activities. Therefore, the proposed project would not result in an impact related to exposure to noise generated at private airports.

NOISE APPENDIX

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Existing	1050	73.5
2017 Base	1361	74.7
2017 Cumulative + Project	1634	75.5
2038 Base	3145	78.3
2038 Cumulative + Project	3364	78.6

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Existing	712	71.9
2017 Base	1221	74.2
2017 Cumulative + Project	1451	74.9
2038 Base	1546	75.2
2038 Cumulative + Project	1778	75.8

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Existing	82	62.5
2017 Base	63	61.3
2017 Cumulative + Project	63	61.3
2038 Base	70	61.8
2038 Cumulative + Project	70	61.8

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Existing	249	67.3
2017 Base	163	65.4
2017 Cumulative + Project	163	65.4
2038 Base	305	68.2
2038 Cumulative + Project	310	68.2

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Existing	1678	75.6
2017 Base	2653	77.6
2017 Cumulative + Project	2858	77.9
2038 Base	3394	78.6
2038 Cumulative + Project	3548	78.8

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Existing	858	72.7
2017 Base	2343	77.0
2017 Cumulative + Project	2526	77.3
2038 Base	1064	73.6
2038 Cumulative + Project	1178	74.0

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Existing	102	63.4
2017 Base	92	63.0
2017 Cumulative + Project	92	63.0
2038 Base	93	63.0
2038 Cumulative + Project	93	63.0

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Existing	179	65.9
2017 Base	161	65.4
2017 Cumulative + Project	161	65.4
2038 Base	183	66.0
2038 Cumulative + Project	190	66.1

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Existing	997	73.3
2017 Base	1499	75.1
2017 Cumulative + Project	1667	75.5
2038 Base	2419	77.2
2038 Cumulative + Project	2548	77.4

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Existing	1256	74.3
2017 Base	1358	74.7
2017 Cumulative + Project	1500	75.1
2038 Base	2128	76.6
2038 Cumulative + Project	2362	77.1

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Existing	102	63.4
2017 Base	92	63.0
2017 Cumulative + Project	92	63.0
2038 Base	93	63.0
2038 Cumulative + Project	93	63.0

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Existing	433	69.7
2017 Base	358	68.9
2017 Cumulative + Project	358	68.9
2038 Base	579	71.0
2038 Cumulative + Project	598	71.1