Meeting Materials: Steering Committee
Version 3
Last Updated: 3-7-2017

Piers: Multiple Use

Since 1987, there have been 53 approved multiple-use pier projects (per GIS 2013, Ken Kasman, TRPA). These are summarized in Table 1 below.

Table 1: Summary of approved multiple-use piers since 1987

Multiple-Use Piers	Notes
▪ 3 public, 3 commercial, 12 HOA/Multi-Unit	
• 35 were related to single-family dwelling parcels o Average Length = 164 feet o Average Lake Bottom Elevation = 6219.2 feet	• 27 were multiple-use piers shared by two-single-family dwelling (SFD) parcels o 18 of these projects went to the pierhead line o 5 of these projects terminated short of the pierhead line o 4 of these projects extended past the pierhead line o Average length = 144 feet • 8 were multiple-use piers shared by three SFD parcels
• 6 projects were approved for deviations from design standards for pier length (4 were for two SFD parcels and 2 were for three SFD parcels) o Average length of all deviations =18 feet past pierhead line	• For the two SFD parcels, the average pier length deviation was 14 feet

Estimated Potential Pier Length

TRPA evaluated the potential length of Multiple-Use Piers based on the distance from the high water line (HWL) elevation of 6,229' waterward to: (1) elevation 6,219' and (2) the pierhead line (see Table 2 below). Table 2 presents both average and maximum potential pier lengths within each scenic character type using the design standards listed above for length of pier and catwalks. Since the pier length design standards use the shortest distance to either elevation 6,219' or the pierhead line, the "Minimum length of HWL" is also reported. In summary, the median potential pier length across all scenic character types is 183 feet. The median value of the maximum potential pier length across all scenic character types is 260 feet.

Table 2: Estimated Potential Pier Length

Scenic Character Unit	Average length to depth 6219'+ 45ft	Average length to pier head line +75ft	Minimum of the two preceding columns*	Max length to depth 6219'+ 45ft	Maximum length to pier head line +75ft	Minimum of the two preceding columns*
Agate Bay	459	229	229	596	365	365
Al Tahoe	1468	173	173	1507	183	183
Bijou	986	191	191	1691	334	334
Brockway	180	214	180	378	351	351
Carnelian Bay	159	174	159	208	240	208
Cave Rock	279	300	279	539	459	459
Cedar Flat	171	170	170	270	205	205
Crystal Bay	190	194	190	388	313	313
Dollar Point	117	159	117	142	172	142
Eagle Rock	193	216	193	388	396	388
Ebright	187	186	186	283	237	237
Edgewood	220	221	220	317	261	261
Flick Point	223	173	173	431	228	228
Jameson Beach	645	225	225	645	225	225
Lake Forest	319	242	242	637	367	367
Lincoln Park	221	231	221	332	340	332
McKinney Bay	169	182	169	487	246	246
Meek Bay	171	181	171	330	278	278
Rubicon Bay	240	195	195	588	363	363
Rubicon Point	245	181	181	460	195	195
Skunk Harbor	100	203	100	153	218	153
Tahoe City	457	391	391	1365	647	647
Tahoe Keys	800	142	142	979	168	168
Tahoe School	194	271	194	260	290	260
Taylor Creek	312	119	119	313	147	147
Truckee Marsh	1040	73	73	1073	77	77
Ward Creek	357	292	292	905	489	489
Zephyr Cove	180	216	180	308	353	308
median	**222**	**194**	**183**	**409**	**270**	**260**

* Consistent with the preliminary design standards, this is the shortest distance to either elevation 6,219’ or the pierhead line, whichever is less.

Visual Mass

Current and Proposed Mitigation Requirements

TRPA currently requires no net increase in visual mass. For shoreline projects which propose an increase in visual mass, one of the following methods of scenic mitigation is required:

1) Each square foot of additional visible mass shall be mitigated on a 1:1 basis in shoreline travel units in attainment with scenic thresholds and on a 1:1.5 basis in shoreline travel units not in attainment with scenic thresholds. Notwithstanding the foregoing, each square foot of visible mass from an additional boat lift shall be mitigated on a 1:1.5 basis. Mitigation of visible mass shall occur first in the shorezone of the project area until all feasible mitigation opportunities are exhausted. Mitigation shall then occur in the shoreland portion of the project area as necessary to satisfy all required mitigation.
2) If there are not opportunities for onsite mitigation of visual mass impacts in the shorezone or shoreland of the parcel or project area, applicants may consult with a TRPA shorezone planner and mitigation options will be addressed on a case-by-case basis.

Visual Mass Calculation: Summary of Examples

The following are a series of examples of Visual Mass Calculations. The first four examples are from actual permit applications of varying pier lengths and conditions while the last three examples are for hypothetical piers of 200', 300', and 400' lengths.

Table 3 summarizes the visual mass calculations for each of the seven examples. More detailed information regarding each example is provided in the section below titled "Detailed Examples of Visual Mass Calculations." The following assumptions were made for calculating visual mass based on examples provided:

- Pile spacing = 15 on-center
- Piles are 12" in diameter
- Pier decking elevation is 6,232'
- Catwalk elevation is 6,230'
- Fender piles extend up to 3' above the catwalk deck
- Fender piles are 4" in diameter
- Swim ladder visual mass = 24 square feet

Table 3: Summary of Visual Mass Calculations

Ex. #	Name	Notes	Depth at end of Pier	Pier Length	Visual Mass
1	Tahoe Estates	2 parcels, 2x45' long catwalks. Extends 75' waterward of pierhead line.	6,217.5'	200 ft	472 sf
2	Silviera/Weinberg	2 parcels. Length is close to known MU pier average. Extends 30' waterward of pierhead line.	6,219'	165 ft	297 sf
3	Cedar Point HOA	1 parcel, 18 units. Longest private MU pier. Extends to the pierhead line.	6,221'	420 ft	639 sf
4	Ruvo/Postmistress	5 parcels with 1 owner, 1 catwalk. End of pier is 66 feet landward of pierhead line.	6,219'	397 ft	655 sf
5	200' Sample	1 catwalk	N/A	200 ft	400 sf
6	260' Sample	1 catwalk	N/A	260 ft	475 sf
7	300' Sample	1 catwalk	N/A	300 ft	530 sf
8	400' Sample	1 catwalk	N/A	400 ft	660 sf

Detailed Examples of Visual Mass Calculations

The following are examples of TRPA approved Multiple-Use Pier Projects. It should be noted that pier projects approved before 2001 do not have visual mass calculations. Therefore, the calculations of visual mass are estimated based on project details provided in the application.

Example 1: Tahoe Estates, LLC (200' Pier, Extends to 6,217.5')

This is a pier replacement project. However, for the purposes of calculating visual mass, the proposed replacement pier's entire visual mass is reported below.

Location	Lakeshore Blvd, Washoe County
Parcels	2 parcels & 2 SFDs
Pier Dimensions	200' long and 10' wide, pierhead 31.5' long and 20' wide, two 3' by 45' adjustable catwalks and two boatlifts.
Depth at End of Pier	6,217.5', 75' waterward of pierhead line
Visual Mass	Visual mass calculation includes, deck, catwalk, ramp, and fascia (299 sf), pilings (62 sf) and accessory structures which includes bumpers, pole, bench, and ladder (111 sf) **472 sf** (not including boats and boat lifts)
GB Approval	Jan 2014
File #	ERSP 2012-1268

Example 2: Silviera/Weinberg Pier

Note: This pier is close to the average length of mixed-use piers (164').

Location	Cascade Rd., El Dorado County
Parcels	2 parcels & 2 SFDs
Pier Dimensions	165' long x 6' wide. Pierhead 45' by 13' wide, two boat lifts
Depth at End of Pier	6,219', 30' past pierhead line
Visual Mass	Not required in 2001. Estimated based on pier dimensions and criteria stated in Example 1, not including accessories. (165sf [length]+13sf [width]+80sf [piling] + 24sf [ladder] + 15sf [bumpers] = **297 sf**)
GB Approval	April 2001
File #	200862STD

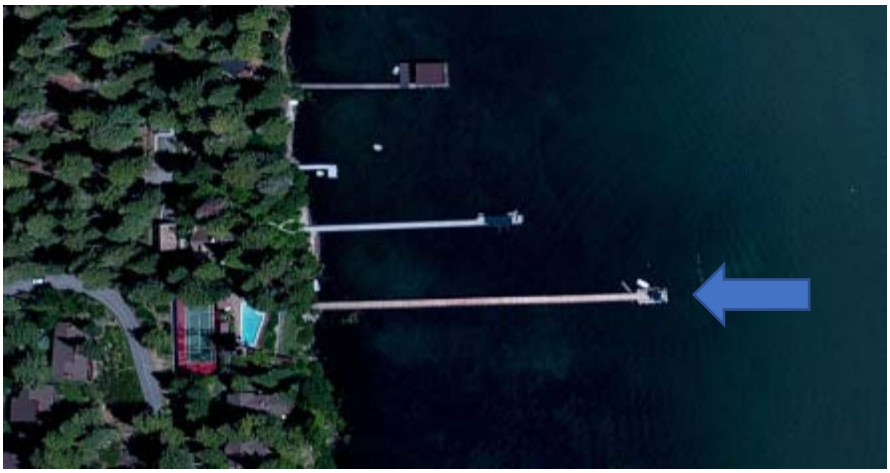
Aerial

Picture

Example 3: Cedar Point HOA

Note: Longest private multiple-use pier (not including marinas).

Location	West Lake Boulevard, Placer County
Parcels	1 parcel, 18 residential units
Pier Dimensions	420' long
Depth at End of Pier	6,221', at pierhead line
Visual Mass	Not required in 1990. Estimated based on pier dimensions and criteria stated in Example 1, not including accessories. (420sf [length]+14sf [width]+170sf [piling] + 24sf [ladder] + 11sf [bumpers] = **639 sf**)
GB Approval	April 1990
File #	19820611STD



Shallow Shelf Area

Example 4: Ruvo/Postmistress

This is a multiple-use pier that includes five parcels under one owner. This is a pier replacement project. However, for the purposes of calculating visual mass, the proposed replacement pier's entire visual mass is reported below.

Location	Glenbrook, Douglas County
Parcels	5 parcels & 5 SFD
Pier Dimensions	397' x 10', one 3' catwalk, 2 boat lifts
Depth at End of Pier	6,219', 66' short of the pierhead line
Visual Mass	Estimated based on pier dimensions and criteria stated in Example 1, not including accessories. (397sf [length]+10sf [width]+30sf [catwalk length] + 3sf [catwalk width] + 150sf [piling] + 24sf [ladder] + 11sf [fender piles] + 30 sf [ramp] = **655 sf**)
GB Approval	February 2012
File #	ERSP2011-0726

Existing Pier without Extension

Below are estimated visual mass calculations for a range of pier lengths with one 30' long catwalk, ramp, ladder and fender piles. Pierhead width is assumed to be 15' wide. Boats, boat lifts, and other accessories are not considered in the calculations.

Example 5: 200' Sample	**Calculations**	**Total**
Side Elevation		
Pier Length + Catwalk + Adjustable Ramp	200'+ 30' + 30'	260 sf
Pilings (assumes 12" diameter piling every 15 ft)	1' x 5' x 16	80 sf
Fender piles	5 x 4" x 7'	11 sf
Swim ladder		24 sf
Pierhead Elevation		
Width of Pierhead	15'	15 sf
Pilings (assumes 12" diameter piling)	1' x 5' x 2	10 sf
TOTAL		**400 sf of visual mass**

Example 6: 260' Sample		
Side Elevation		
Pier Length + Catwalk + Adjustable Ramp	260 + 30' + 30'	320 sf
Pilings (assumes 12" diameter piling every 15 ft)	1' x 5' x 19	95 sf
Fender piles	5 x 4" x 7'	11 sf
Swim ladder		24 sf
Pierhead Elevation		
Width of Pierhead	15'	15 sf
Pilings (assumes 12" diameter piling)	1' x 5' x 2	10 sf
TOTAL		**475 sf of visual mass**

Example 7: 300' Sample		
Side Elevation		
Pier Length + Catwalk + Adjustable Ramp	300+ 30' + 30'	360 sf
Pilings (assumes 12" diameter piling every 15 ft)	1' x 5' x 22	110 sf
Fender piles	5 x 4" x 7'	11 sf
Swim ladder		24 sf
Pierhead Elevation		
Width of Pierhead	15'	15 sf
Pilings (assumes 12" diameter piling)	1' x 5' x 2	10 sf
TOTAL		**530 sf of visual mass**

Example 8: 400’ Sample		
Side Elevation		
Pier Length + Catwalk + Adjustable Ramp	400+ 30’ + 30’	460 sf
Pilings (assumes 12” diameter piling every 15 ft)	1’ x 5’ x 28	140 sf
Fender piles	5 x 4” x 7’	11 sf
Swim ladder		24 sf
Pierhead Elevation		
Width of Pierhead	15’	15 sf
Pilings (assumes 12” diameter piling)	1’ x 5’ x 2	10 sf
TOTAL		**660 sf of visual mass**