

Town of Yarmouth

Per M.G.L.: All town and school boards, committees, commissions, and authorities shall post a notice of every meeting at least 48 hours prior to such meeting, excluding Saturdays, Sundays, and legal holidays. Notice shall contain a listing of topics/agenda that the chair reasonably anticipates will be discussed at the meeting.

Notice of Meetings

Name of committee, board, etc:	Drive In Site Utilization Committee (DISUC)
Date of Meeting:	August 27, 2020
Time:	4:00 P.M.
Place:	Former Drive-In Site 669 Route 28, West Yarmouth, MA*

Agenda (Topics to be discussed):

1. **Site Visit & Discussion on Use of the Former Drive-In Site:** Site visit at the former Drive-In Site at 669 Route 28, West Yarmouth, and review and discussion on existing special event operations and future use of the property for special events.
2. **Community Preservation Act (CPA) Application:** Discussion of the Letter to the DISUC from Gary Ellis, Chairman of the Community Preservation Committee (CPA), regarding October 2019 Riverwalk Park & Boardwalk CPA application.
3. **Draft Minutes:** August 4, 2020
4. **Adjournment**

* After conducting the Site Visit, the DISUC may move the meeting to the Yarmouth Town Hall Hearing Room at 1146 Route 28, South Yarmouth, to discuss any of the listed Agenda items in more detail. Please note that the Hearing Room currently has a maximum occupancy of 25 occupants due to COVID-19 restrictions.

Attachments: Meeting materials are attached to this agenda which are available at:
<http://www.yarmouth.ma.us/AgendaCenter>

Posted By (Name):	Kathleen D. Williams
Signature:	<i>Kathleen D. Williams</i>

YARMOUTH TOWN CLERK

'20AUG24PM4:15 REC

Williams, Kathleen

From: Florio, Mary Alice
Sent: Monday, August 24, 2020 9:13 AM
To: Knapik, Daniel; Williams, Kathleen; Greene, Karen; Pedicini, Kyle
Subject: FW: Destruction of quiet neighborhood

FYI – Sent to the Selectmen

From: JAMES DASILVA [mailto:jayjan111@comcast.net]
Sent: Friday, August 21, 2020 11:44 AM
To: Selectmen <Selectmen@yarmouth.ma.us>
Subject: Fwd: Destruction of quiet neighborhood

Attention! This email originates outside of the organization. Do not open attachments or click links unless you are sure this email is from a known sender and you know the content is safe. Call the sender to verify if unsure. Otherwise delete this email.

----- Original Message -----

From: JAMES DASILVA <jayjan111@comcast.net>
To: "selectmen@yarmouth.ma" <selectmen@yarmouth.ma>
Date: 08/21/2020 10:50 AM
Subject: Destruction of quiet neighborhood

Hello, As an abutter to the Yarmouth Drive- In on Niagara Lane, I would like to express my opinion to the board. It has become extremely disruptive at night. I cannot sit on my deck to converse with my guests due to the loud music from the concerts. I can hear it in my house with the A/C on. The horns honking need to STOP! When Mr. Epstein applied for this license, it was for a movie drive in with sound in individuals' cars and occasional concert. It is not that scenario on many an evening! I am so glad liquor license was not granted as someone nicely stated that LIQUOR AND CARS DO NOT MIX! I feel it should go back to being a drive-in movie theater as originally presented, NOT a loud venue nightly with music all day long as the bands are practicing during the day.

Thank you.

Janice DaSilva

24 Niagara Lane

Williams, Kathleen

From: Forest, Mark
Sent: Wednesday, August 19, 2020 11:57 AM
To: Knapik, Daniel; Williams, Kathleen
Subject: Fwd: YARMOUTH DRIVE-IN

Mark R. Forest | Selectman
Town of Yarmouth
Town Hall, 1146 Route 28
South Yarmouth, Ma 02664

Begin forwarded message:

From: John Perry <johndperry14@yahoo.com>
Subject: Fw: YARMOUTH DRIVE-IN
Date: August 19, 2020 at 11:50:04 AM EDT
To: "selectmen@yarmouth.ma.us" <selectmen@yarmouth.ma.us>

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----- Forwarded Message -----

From: John Perry <johndperry14@yahoo.com>
To: selectmen@yarmouth.ma.us <selectmen@yarmouth.ma.us>
Sent: Wednesday, August 19, 2020, 09:23:41 AM EDT
Subject: YARMOUTH DRIVE-IN

Good morning Yarmouth Selectmen (Mike Stone, Mark Forest, Erik Tolley, Tracy Post).

My name is John Perry (I am a retired U.S. Probation Officer) and I reside at 8 Niagara Lane, West Yarmouth. By way of background my wife (Barbara) and I have owned at 8 Niagara since 1981, when the original Drive-In was still in business. Soon thereafter the Drive-In closed. Over the past 39 years we have closely followed the various options that have been proposed for that location. Due to our very close proximity (our backyard has direct access approximately 100 feet to an unencumbered entry to the Drive-In) we realize the importance to us that a safe, clean, and noise free environment be maintained.

Over the years, we had basically spent about 4-5 months in West Yarmouth, as our principle residence was in Andover, MA. We sold that home in June of this year and we now are living full time at 8 Niagara Lane. The letter that informed the abutters of the proposed entertainment at the Drive-In was not received by us (due to our

move from Andover) in time to respond with our comments. At first when I heard of the proposal I was not too alarmed, as it appeared the guidelines would not impact us. That has not been the case.

Since the re-opening of the Drive-In we have seen trespassers cutting through our backyard, some trash and bottles on our property. As I have had 2 break-ins over the years at my property, I have significant concerns about the safety of my family and property.

The noise level from the live music and comedians (including the constant horns blowing as a form of audience appreciation) is very significant, and is limiting our time in our backyard, on our deck, and requires that we keep our windows closed at night. (There were no problems with the original proposal of movies with no sound).

To give you an example of just how close we are, my wife informed me this morning that when she was in the bathroom, she had a direct view of the shirtless comedian on the large screens.

I feel it is now time that I express to you my feelings and observations. The question is for those who voted to approve the license for entertainment, come visit me at my home and tell me honestly if you would vote the same. You have an invitation to do so.

As the expression goes "Give an inch and they take a foot".....I can see that is what is happening and the Drive-In will become a full time headache that left unchecked will result in my moving from this residence. I do give credit to those who voted down the alcohol component recently.

Thanks for your attention to this very important matter.

John Perry 978-697-4506

Williams, Kathleen

From: Florio, Mary Alice
Sent: Tuesday, August 18, 2020 2:19 PM
To: Knapik, Daniel
Cc: Williams, Kathleen
Subject: Noise at Drive-In

Hi.

Mary Ellen Doherty (28 Niagara Lane) called today, wondering if the noise from the Drive-In can be put on the agenda for Tuesday's meeting. Otherwise, she and perhaps a few other neighbors may come to the meeting during the Public Comment portion to make statements about it. (She mentioned how she did talk to Kathy Williams already.)

MaryAlice Florio
Executive Assistant to Town Administrator
Town of Yarmouth
1146 Route 28
South Yarmouth, MA 02664
508-398-2231
mflorio@yarmouth.ma.us



Williams, Kathleen

From: Maryellen Doherty <maryedoherty@gmail.com>
Sent: Monday, August 17, 2020 2:27 PM
To: Dew Crew; Williams, Kathleen; Selectmen
Subject: Yarmouth Drive-In Noise

Attention! This email originates outside of the organization. Do not open attachments or click links unless you are sure this email is from a known sender and you know the content is safe. Call the sender to verify if unsure. Otherwise delete this email.

Dear Selectpeople,

We are writing to voice a very serious concern about noise generated by the live music at the Old Yarmouth Drive-In. A movie was shown Friday night 8/14 which was unobtrusive . On Saturday 8/15 , a live band performed and the noise level was completely unacceptable .

This music is clearly “amplified” which is in violation of condition #1 in the License Agreement which states “Sound will be transmitted to vehicles’ FM radios via a transmitter for all types of entertainment with no amplification of sound via outside speakers or public address systems.”

Concern in the abutting neighborhoods ,which include the Iroquois Blvd , Niagara Lane, Pamet Rd. area and Neptune Lane area, is heating . The noise level has dramatically affected neighborhood quality of life. This letter will be followed this week by a list of concerned citizens.

What is the next step to put and end to this offense to our neighborhood ?

Sincerely,

Maryellen Doherty 28 Niagara Lane
Ed Sikonski 28 Niagara Lane
Raymond Dewey 37 Pamet Rd.
Linda T. Dewey 37 Pamet Rd.

Williams, Kathleen

From: Adam Troy Epstein (IAE G-Suite) <adam@innovationae.com>
Sent: Monday, August 17, 2020 12:56 PM
To: Williams, Kathleen
Cc: Knapik, Daniel; Florio, Mary Alice; Greene, Karen
Subject: Re: Noise at the Drive-In

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Hi Kathy

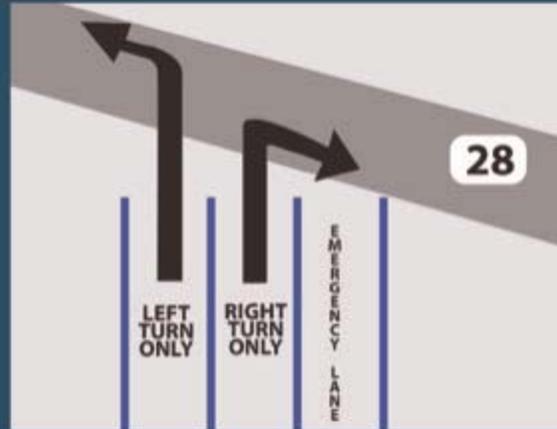
Thank you for bringing it to my attention.

We have these two slides in the rotation on the video walls before and after any show.



THANK YOU FOR COMING!

**BE KIND TO
OUR NEIGHBORS
DON'T HONK
YOUR HORNS!**



**KEEP IT UNDER 5 MPH
EXIT SLOWLY TO KEEP EVERYONE SAFE**

Shhhh.....

**HONKING
MAY BE FUN IN
NEW YORK CITY BUT**

**PLEASE
RESPECT OUR
NEIGHBORS!**

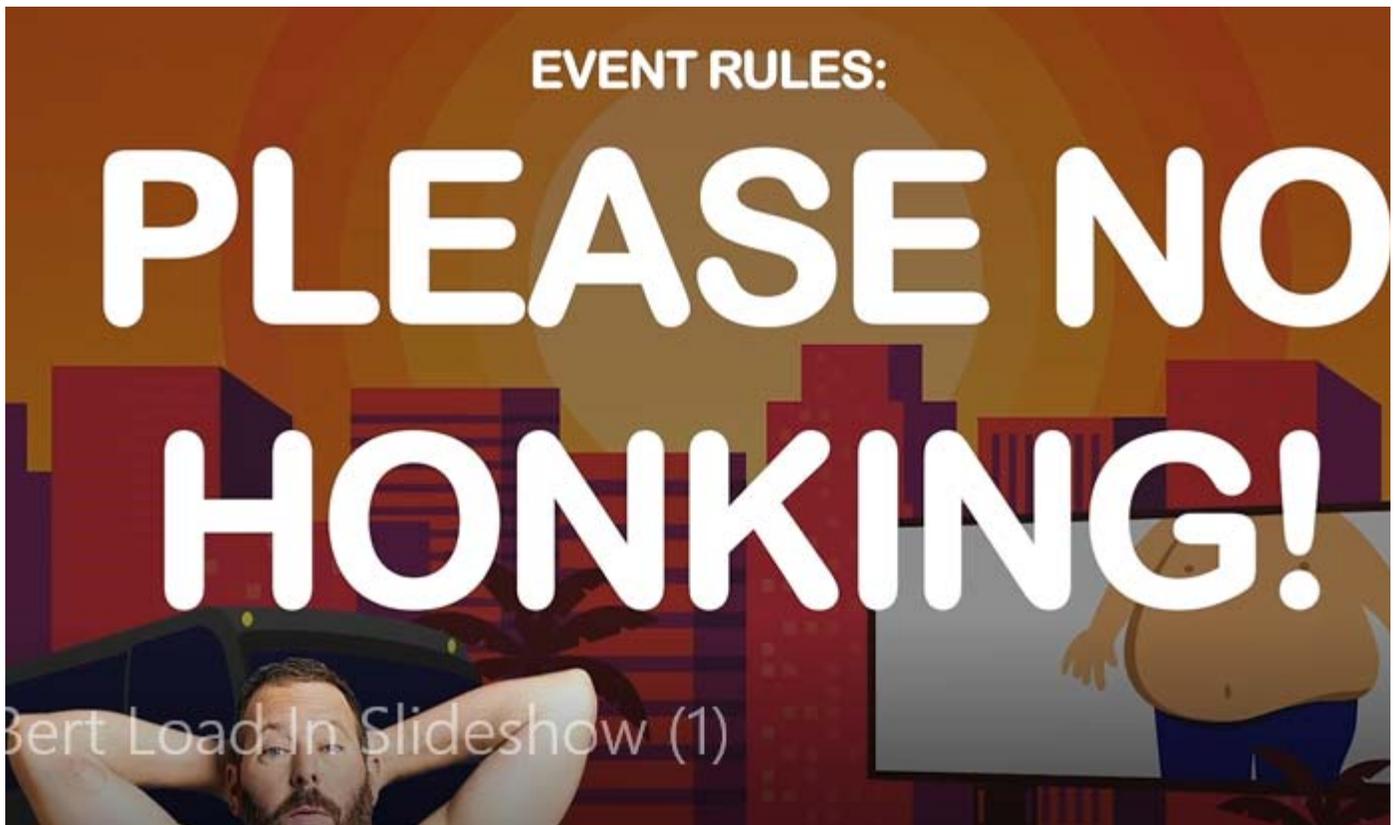


We may need to make them a bit more dramatic to make sure they have desired impact.

We will also add a more direct warning into our "know before you go emails"

And on the digital ticket people get when they buy a ticket online.

Additionally, tonight's comedian is actually opposed to honking and wants more traditional feedback from the audience so he asked us to put this up on the screens preshow as well



As far as sound from the concerts, I find that a challenging claim considering there is no PA system and I can walk in the concessions area (near her home) and not hear the show at all.

But I'll check it out during the next music event later this week.

Sincerely

Adam

Adam Troy Epstein

CEO | Innovation Arts & Entertainment

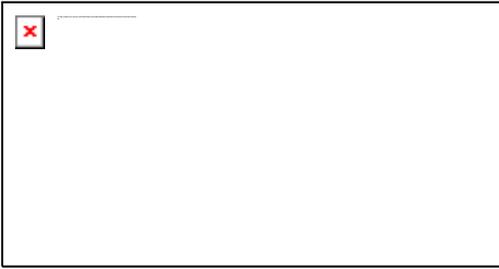
Phone: [\(312\) 274-1800 x226](tel:3122741800x226)

Cell: [\(773\) 580-8930](tel:7735808930)

The Garland Building

[111 N Wabash Suite 919 | Chicago, IL | 60602](https://www.google.com/maps/place/111+N+Wabash+Suite+919+Chicago,+IL+60602)

Email: Adam@InnovationAE.com



On Aug 17, 2020, at 10:49 AM, Williams, Kathleen <kwilliams@yarmouth.ma.us> wrote:

Hi Adam,

I just spoke with a Maryellen Doherty of 28 Niagra Lane which abuts the drive-in property. She expressed concerns for herself and her neighbors regarding the amount of noise from the concerts and the horn honking with the comedians. She had no issues with noise from the movies. She indicated her neighbors were getting together a petition to give to the Selectmen. She noted that the concerts sound louder to her than the Countryfest from last summer (perhaps due to the orientation of the stage which are 180 degrees different). Anything that can be done to stop the horn honking and to decrease the noise from the concerts would be very helpful and much appreciated.

Thanks,
Kathy

Kathy Williams, PE
Yarmouth Town Planner
1146 Route 28
South Yarmouth, MA 02664-4492
(508) 398-2231 Ext 1276
kwilliams@yarmouth.ma.us

Williams, Kathleen

From: Florio, Mary Alice
Sent: Wednesday, August 19, 2020 2:12 PM
To: Williams, Kathleen
Subject: FW: Concerts

FYI – Sent to BOS

From: Nancy Mara [mailto:librarianmara@gmail.com]
Sent: Saturday, August 15, 2020 9:30 PM
To: Selectmen <Selectmen@yarmouth.ma.us>
Subject: Concerts

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I would like to invite you to spend an evening in my home with the windows rattling and the tv volume turned up. I have five of these concerts to enjoy this week. 8 to 11. Lots of cheering. Happy times. How did the town get rooked into this! Huge change from movies.

Williams, Kathleen

From: Florio, Mary Alice
Sent: Tuesday, August 18, 2020 10:27 AM
To: Selectmen; Knapik, Daniel; Williams, Kathleen
Subject: Drive-In Complaint

Good morning.

I received a complaint regarding the Drive-In a few minutes ago from Mr. Raymond Dewey of 37 Pawnee Road. He is very "disturbed" regarding the noise coming from the Drive-In. They tried to serve alcohol when it was not supposed to be allowed. They are now using "amplified sound" which he states is not supposed to be allowed. He wants accountability.

He wanted to make sure that the Selectmen receive this message. He did not leave a call back number.

MaryAlice Florio
Executive Assistant to Town Administrator
Town of Yarmouth
1146 Route 28
South Yarmouth, MA 02664
508-398-2231
mflorio@yarmouth.ma.us



Williams, Kathleen

From: Florio, Mary Alice
Sent: Wednesday, August 19, 2020 2:13 PM
To: Williams, Kathleen
Subject: FW: Yarmouth Drive In Too Loud

FYI – Sent to BOS

From: Guitar Man [mailto:umybossa@yahoo.com]
Sent: Sunday, August 16, 2020 11:20 AM
To: Selectmen <Selectmen@yarmouth.ma.us>
Subject: Yarmouth Drive In Too Loud

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Dear Selectmen,

I live on Pamet Rd.

A drive in was a good idea, a concert site bad idea. Last night required coming in the house and shutting all the windows in the direction of the concert.

One persons profit shouldn't come at the expense of taxpayers living nearby.

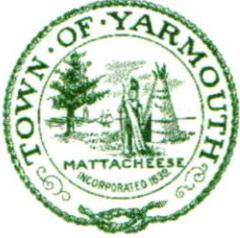
Looking at the schedule for the drive in I see one movie and ten concerts. I don't know if to get permission the movie aspect was spun but it appears to be a concert site more than a movie destination.

I'd would imagine others are complaining as well.

When proposed I thought this was going to be mainly a Drive in, but given the amount of concerts, this seems like a bait and switch.

Please make the Yarmouth Drive In a drive in again.

Thanks
Robert Flynn
Pamet Rd



TOWN OF YARMOUTH

1146 ROUTE 28, SOUTH YARMOUTH, MASSACHUSETTS 02664-4492
Telephone (508) 398-2231, Ext. 1277, Fax (508) 398-2365

Department of
Community
Development

TO: Board of Selectmen

FROM: Peter Q. Smith, Chairman PQS
Community and Economic Development Committee

SUBJECT: Drive-In Site Entertainment License Extension Request

DATE: August 7, 2020

The Community and Economic Development Committee (CEDC) is in support of the request to extend the entertainment license for Drive-In site through October.

A goal of the committee is to promote shoulder season activity in Yarmouth to extend the tourism season, which is vital to many Yarmouth businesses. With this in mind, the committee is in full support of the request to extend entertainment operations at the Drive-In site through October. The availability of entertainment options will be critical for the Town's ability to continue to attract visitors into the fall season.

On the topic of alcohol service at the site, the CEDC defers to the Selectmen as they are the Licensing authority. Thank you for the opportunity to comment on this project.

Williams, Kathleen

From: Adam Epstein <adam@innovationae.com>
Sent: Wednesday, August 19, 2020 4:16 PM
To: Williams, Kathleen
Subject: Event Sales
Attachments: Yarmouth Drive-In Movies Sales Reports.pdf; Google Analytics Yarmouth Drive In traffic July 1-Aug 17 Top Cities.pdf; Yarmouth Drive-In Past Future Live Events Sales Reports.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

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Hi Kathy

I just wanted to share some interesting data we have found about our guests at the Yarmouth Drive In. I have attached two sales summaries and a review of our website traffic.

The Yarmouth Drive in Movies Sales Report is a detailed enumeration of the individual sales results from the 26 movies we've shown to date, and our five most popular regions for drawing customers for the films. As you can tell 41% of our audience is local to Yarmouth.

The Yarmouth Drive In Live Past Future Events Sales Report is a detailed enumeration of each events' sales for shows past and future. The data clearly shows that not only are live events very popular, drawing over 10,000 people in over 4000 cars coming to Yarmouth from outside the Town borders, but that they are prepared to spend money here.

One thing that needs to be said, in both the film and live event business, the content owners (film studios, comedians, or bands) each are paid over 50% of the cumulative ticket sales revenue, which is why it is very important to have ancillary income streams to ensure we can pay our bills even when the shows gross hundreds of thousands of dollars; especially when we're trying to recover the \$500,000 we invested in building the DriveIn site.

Additionally, the Google Analytics data from the website traffic to www.yarmouthDriveIn.com is enlightening, to say the least; but heavily reinforces the conclusion that people are looking to us from all over eastern Massachusetts. It is amazing to see how much of our website visitors are from outside the town of Yarmouth. Clearly we have been very successful at promoting both the Town, and our business, and creating enthusiasm around both. This is only positive, and a true economic driver for the Town, if we can afford to continue.

I hope the Selectmen find this information valuable.

Sincerely

Adam

PS I will provide you with some info on the line array sound system technology to help you understand how pros manage and contain sound bleed within an amphitheater site similar to the DriveIn location.

Adam Troy Epstein

CEO | Innovation Arts & Entertainment

Phone: [\(312\) 274-1800 x226](tel:(312)274-1800x226)

Cell: [\(773\) 580-8930](tel:(773)580-8930)

The Garland Building

[111 N Wabash Suite 919 | Chicago, IL | 60602](#)

Email: Adam@InnovationAE.com

Location

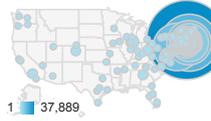
ALL » COUNTRY: United States

Jul 1, 2020 - Aug 17, 2020

All Users
99.02% Users

Map Overlay

Summary



City	Acquisition			Behavior			Conversions eCommerce		
	Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Transactions	Revenue	Ecommerce Conversion Rate
	210,791 % of Total: 99.02% (212,878)	209,147 % of Total: 99.05% (211,162)	317,973 % of Total: 99.22% (320,457)	4.50% Avg for View: 4.52% (-0.37%)	5.03 Avg for View: 5.02 (0.23%)	00:01:28 Avg for View: 00:01:28 (0.33%)	7,612 % of Total: 99.79% (7,628)	\$593,300.90 % of Total: 99.73% (\$594,923.81)	2.39% Avg for View: 2.38% (0.57%)
1. Boston	37,889 (16.35%)	33,252 (15.90%)	51,067 (16.06%)	4.45%	5.51	00:01:44	2,011 (26.42%)	\$104,693.25 (17.65%)	3.94%
2. Yarmouth	18,763 (8.10%)	16,466 (7.87%)	30,693 (9.65%)	6.13%	5.55	00:01:51	698 (9.17%)	\$40,963.72 (6.90%)	2.27%
3. New York	13,822 (5.97%)	11,841 (5.66%)	17,920 (5.64%)	4.21%	5.54	00:01:38	513 (6.74%)	\$36,211.43 (6.10%)	2.86%
4. Barnstable	12,209 (5.27%)	11,078 (5.30%)	18,451 (5.80%)	6.17%	5.37	00:01:35	408 (5.36%)	\$33,845.70 (5.70%)	2.21%
5. Dennis	8,724 (3.77%)	7,388 (3.53%)	13,082 (4.11%)	4.03%	5.59	00:01:43	282 (3.70%)	\$22,548.34 (3.80%)	2.16%
6. Providence	5,880 (2.54%)	5,112 (2.44%)	8,068 (2.54%)	4.85%	5.74	00:01:48	304 (3.99%)	\$15,074.16 (2.54%)	3.77%
7. Plymouth	4,305 (1.86%)	4,004 (1.91%)	5,947 (1.87%)	5.58%	4.87	00:01:21	125 (1.64%)	\$12,215.66 (2.06%)	2.10%
8. Falmouth	4,148 (1.79%)	3,823 (1.83%)	5,974 (1.88%)	5.64%	5.10	00:01:24	123 (1.62%)	\$12,093.55 (2.04%)	2.06%
9. Brewster	3,940 (1.70%)	3,575 (1.71%)	5,647 (1.78%)	4.96%	5.39	00:01:36	123 (1.62%)	\$10,350.72 (1.74%)	2.18%
10. Sandwich	3,726 (1.61%)	3,376 (1.61%)	5,533 (1.74%)	5.37%	5.40	00:01:36	117 (1.54%)	\$10,369.90 (1.75%)	2.11%
11. (not set)	3,631 (1.57%)	3,537 (1.69%)	3,765 (1.18%)	9.93%	2.93	00:00:19	20 (0.26%)	\$1,798.50 (0.30%)	0.53%
12. Hartford	3,015 (1.30%)	2,540 (1.21%)	3,620 (1.14%)	3.29%	5.48	00:01:42	106 (1.39%)	\$5,965.27 (1.01%)	2.93%
13. Mashpee	2,656 (1.15%)	2,428 (1.16%)	3,852 (1.21%)	5.63%	5.38	00:01:33	75 (0.99%)	\$6,446.40 (1.09%)	1.95%
14. Brockton	2,598 (1.12%)	2,435 (1.16%)	3,259 (1.02%)	4.27%	4.25	00:01:03	40 (0.53%)	\$4,498.94 (0.76%)	1.23%
15. Harwich	2,576 (1.11%)	2,176 (1.04%)	3,920 (1.23%)	6.53%	5.33	00:01:40	89 (1.17%)	\$5,922.85 (1.00%)	2.27%
16. Bourne	2,072 (0.89%)	1,914 (0.92%)	2,962 (0.93%)	4.32%	5.24	00:01:27	68 (0.89%)	\$6,018.40 (1.01%)	2.30%
17. Quincy	1,818 (0.78%)	1,678 (0.80%)	2,317 (0.73%)	3.54%	4.21	00:01:03	41 (0.54%)	\$4,825.50 (0.81%)	1.77%
18. Wareham	1,753 (0.76%)	1,643 (0.79%)	2,404 (0.76%)	5.45%	5.07	00:01:24	33 (0.43%)	\$3,225.00 (0.54%)	1.37%
19. Weymouth	1,744 (0.75%)	1,643 (0.79%)	2,234 (0.70%)	3.45%	4.51	00:01:01	35 (0.46%)	\$4,994.00 (0.84%)	1.57%
20. Attleboro	1,646 (0.71%)	1,540 (0.74%)	2,056 (0.65%)	3.16%	4.38	00:01:05	38 (0.50%)	\$4,256.41 (0.72%)	1.85%
21. New Bedford	1,583 (0.68%)	1,499 (0.72%)	2,122 (0.67%)	5.84%	5.04	00:01:23	47 (0.62%)	\$5,794.87 (0.98%)	2.21%
22. Malden	1,474	1,390	1,855	3.29%	3.71	00:00:50	20	\$2,314.88	1.08%

23. Worcester	1,460 (0.63%)	1,387 (0.66%)	1,857 (0.58%)	2.69%	3.71	00:00:50	13 (0.17%)	\$1,785.31 (0.30%)	0.70%
24. Marshfield	1,299 (0.56%)	1,210 (0.58%)	1,713 (0.54%)	6.25%	4.52	00:01:21	52 (0.68%)	\$7,007.25 (1.18%)	3.04%
25. Eastham	1,274 (0.55%)	1,180 (0.56%)	1,722 (0.54%)	5.11%	4.91	00:01:22	32 (0.42%)	\$3,760.00 (0.63%)	1.86%

Rows 1 - 25 of 3773

YARMOUTH DRIVE-IN CUSTOMER REPORT



KEY SALES METRICS

YARMOUTH DRIVE-IN MOVIES - SALES BY TOP FIVE COUNTIES

BARNSTABLE	MIDDLESEX	PLYMOUTH	NORFOLK	SUFFOLK
41%	12%	9%	8%	4%
921 Cars	254 Cars	199 Cars	177 Cars	93 Cars
\$17,143	\$4,696	\$3,692	\$3,284	\$1,636

YARMOUTH DRIVE-IN MOVIES - SALES BY MOVIE

Date	Title	Cars Sold	Gross Revenue
Sunday, July 12, 2020	Jurassic Park	374	\$8,720.00
Monday, July 13, 2020	Men In Black	18	\$396.00
Monday, July 13, 2020	Ferris Buellers Day Off	81	\$1,881.00
Tuesday, July 14, 2020	Grease	78	\$1,950.00
Tuesday, July 14, 2020	Spaceballs	55	\$1,357.00
Wednesday, July 15, 2020	Field of Dreams	38	\$950.00
Wednesday, July 15, 2020	Honey, I Shrank the Kids	71	\$1,559.00
Thursday, July 16, 2020	Wayne's World	37	\$853.00
Thursday, July 16, 2020	Shrek	126	\$2,862.00
Friday, July 17, 2020	Dirty Dancing	136	\$3,238.00
Friday, July 17, 2020	Finding Nemo	91	\$2,185.00
Saturday, July 18, 2020	Raiders of the Lost Ark	155	\$3,785.00
Saturday, July 18, 2020	Cars	115	\$2,677.00
Wednesday, July 22, 2020	Marvel's Black Panther	97	\$2,335.00
Thursday, July 23, 2020	Iron Man	69	\$1,509.00
Saturday, July 25, 2020	Star Wars: The Force Awakens	96	\$2,292.00
Sunday, July 26, 2020	The Avengers	92	\$2,150.00
Wednesday, July 29, 2020	Jaws & Jaws 2	261	\$6,147.00
Thursday, July 30, 2020	Back To The Future	113	\$2,627.00
Sunday, August 2, 2020	Jurassic World	112	\$2,646.00
Saturday, August 8, 2020	E.T. the Extra-Terrestrial	70	\$1,480.00
Sunday, August 9, 2020	Despicable Me	75	\$1,569.00
Friday, August 14, 2020	Jaws & Jaws 2	208	\$4,930.00
TOTALS		2,568	\$60,098.00



YARMOUTH DRIVE-IN CUSTOMER REPORT

YARMOUTH DRIVE-IN PAST LIVE EVENTS - TOP FIVE COUNTIES

BARNSTABLE	PLYMOUTH	MIDDLESEX	NORFOLK	SUFFOLK
21%	14%	12%	9%	8%
643 Cars	418 Cars	367 Cars	273 Cars	246 Cars

YARMOUTH DRIVE-IN LIVE EVENTS

Date	Title	Cars Sold
Friday, July 31, 2020	Iliza: The Forever Tour	419
Saturday, August 1, 2020	Ripe	459
Thursday, August 6, 2020	Livingston Taylor	88
Friday, August 7, 2020	The Ghost Of Paul Revere	78
Monday, August 10, 2020	Lenny Clarke	127
Thursday, August 13, 2020	Pigeons Playing Ping Pong	311
Saturday, August 15, 2020	Dalton and the Sheriffs	201
Sunday, August 16, 2020	Gutfeld Live	446
Monday, August 17, 2020	Bert Kreischer	439
Tuesday, August 18, 2020	Bert Kreischer	449
PAST TOTALS		3,017

YARMOUTH DRIVE-IN UPCOMING LIVE EVENTS - TOP FIVE COUNTIES

BARNSTABLE	PLYMOUTH	MIDDLESEX	NORFOLK	SUFFOLK
26%	13%	13%	10%	8%
540 Cars	264 Cars	263 Cars	201 Cars	168 Cars

YARMOUTH DRIVE-IN LIVE EVENTS

Thursday, August 20, 2020	The Allman Betts Band	167
Friday, August 21, 2020	An Evening With Grace Potter	317
Saturday, August 22, 2020	Sal Vulcano	434
Monday, August 24, 2020	Lenny Clarke & Friends: Boston's Best Comedy	70
Thursday, August 27, 2020	Mt. Joy	284
Friday, August 28, 2020	Yacht Rock Revue	119
Saturday, August 29, 2020	Nikki Glaser	160
Sunday, August 30, 2020	The Lemonheads	68
Thursday, September 3, 2020	Martin Sexton	47
Friday, September 4, 2020	The Marcus King Trio	215
Saturday, September 5, 2020	Ripe	137
Sunday, September 6, 2020	Pink Talking Fish	240
Friday, September 11, 2020	Goose	193
Saturday, September 12, 2020	Goose	418
Tuesday, September 15, 2020	Blackberry Smoke	41
UPCOMING TOTALS		2,910

GRAND TOTAL	5,927
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VINEYARD GAZETTE



Three-day music festival was declared a success this week. *Jeanna Shepard*

Amid Glowing Reviews, Selectmen Back Second Summer Music Festival

Holly Pretsky *Wednesday, September 4, 2019 - 2:20pm*

Tisbury selectmen voted unanimously this week to host a second Beach Road Weekend after the three-day summer concert drew glowing reviews from townspeople and business owners.

Organized by concert promoter Adam Epstein of Innovation Arts and Entertainment, the three-day music festival was held at Veterans Memorial Park in early August.

About two dozen people attended the selectmen's meeting in the Katharine Cornell Theatre Tuesday to express support for the event.

First responders commended the effective planning and management.

"They were very cooperative throughout the whole planning process," said fire chief

John Schilling. “We had a really solid communications plan.”

Tisbury police Sgt. Bill Brigham said there were no arrests, and only three people were taken into protective custody for intoxication.

“By all accounts the weekend was a success,” the sergeant said. He said in the future, police would install more temporary light towers and work to improve parking for people with handicaps.

EMS Coordinator Tracey Jones said many people visited the first aid tent, but there were no major medical issues. She said next year they would work to provide more resources for people who needed to change children’s diapers.

Town department of public works director Kirk Metell said patches of grass were affected during the cleanup.

“The field did take a little bit of damage because the rain was a little early,” Mr. Metell said. “They drove machinery over an unprotected area because they were in a hurry to get material off the field.” He said the event organizers were in the process of hiring Island contractors to make repairs.

The concert will contribute a modest sum of money to town coffers — about \$40,000 net of direct costs, according to an accounting by town administrator John (Jay) Grande.

Mr. Grande said Innovation Arts paid the town a total of \$98,000. That included a \$40,000 fee for use of the park, \$33,000 to pay town employees and first responders who worked on the event, and a \$25,000 damages deposit.

He said to date, \$31,000 was needed for payroll. The town will keep the damages deposit until facilities are fully inspected, Mr. Grande said.

About 5,000 people attended the festival on Saturday and 6,000 on Sunday, according to organizers. After the festival ended, Mr. Epstein sent a letter to selectmen seeking permission to host a second festival at the park next summer.

Seth Gambino, a Tisbury business owner who lives near the park, was the lone critic to speak.

“It was two weeks of living in a construction zone,” Mr. Gambino told the selectmen. “During the event, things actually shook off our shelves.”

But others, including a musician who performed in the festival, business owners, other abutters and music enthusiasts said the concert was an exciting milestone for the town.

Rachel Baumrin said she usually has to travel off-Island to see big bands and she was thankful to be able to sleep in her own bed after going to a large concert.

“We’ve lost so many music venues on this Island,” she said.

Tisbury resident Holly Mackenzie lauded the atmosphere.

“I thought it was just so wonderful that there were families there,” she said.

Laura Beckman of Island Puff and Pass on Main street said the concert brought some life to the town.

“It did contribute to record sales at Island Puff and Pass,” she added.

“I’ve been involved with a lot of festivals over the years,” said Island musician Sean McMahon who said he was speaking on behalf of many other musicians who performed at the festival. “It was like a miracle that this festival happened as well as it did.”

In other business Tuesday, selectmen appointed seven people to the new town natural resources committee. Thomas Robinson, Amandine Hall, Sally Rizzo, Jeff Canha, Bill Sweeney, John Kollett and David Hearn will join James Hale, Michael Baptiste, James Tilton and Matthew Hobart, who were appointed last month.

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Music fest turns into love fest

After hearing praise for Beach Road Weekend, Tisbury selectmen welcome festival back for a second year.

By **George Brennan** - September 4, 2019



Holly MacKenzie of Tisbury was one of the many people speaking out in favor of Beach Road Weekend at selectmen Tuesday. "It was a wonderful event to attend," she said. - George Brennan

Beach Road Weekend, the encore, was officially approved Tuesday night.

After hearing a review from town department heads and input from more than a dozen people who used words like "awesome" and "fabulous" repeatedly, the Tisbury board of selectmen voted unanimously to approve a festival

for next summer, with the date of the event up for negotiation.

Adam Epstein, CEO of Innovation Arts & Entertainment and promoter of Beach Road Weekend, was not at the board's meeting, and could not immediately be reached for comment. The three-day festival featured an outdoor showing of "Jaws" with the Cape Cod Symphony playing the score, and two days of concerts headlined by John Fogerty and Phil Lesh and Friends.

The crowd at Katharine Cornell Theater Tuesday was gushing about the August 9-11 festival at Veterans Memorial Park. The only blemish was the final condition of the field, but that damage was caused as a result of rain after the concerts, Kirk Metell, the town's director of public works, said. Epstein paid to have top soil and grass seed spread, Metell said.

The town received \$40,000 for the park rental and Epstein has paid for \$31,000 of an anticipated \$33,000 in bills to pay town employees like police and fire, town administrator Jay Grande said. The town is still holding the \$25,000 deposit Epstein put up for the field to make sure there are no unpaid bills, Grande said.

"By all accounts, the weekend was a success," Tisbury Police Sgt. Bill Brigham said. "There were zero arrests during the concert." Three people were taken into protective custody for public drunkenness, but only one of them was ever in the concert venue, Brigham said.

Brigham did suggest a need for more portable lighting in the future, and the need to set aside more handicapped parking spaces closer to the venue. "Overall it was a success. Everybody was happy. Patrons were happy. It really went without a hitch."

Fire Chief John Schilling and EMS Coordinator Tracey Jones agreed. Jones got a chuckle when she said the First Aid tent had to double as a changing station for babies.

Teresa Kruszewski, who owns a gallery on Beach Road Extension, was one of several business owners who mentioned an uptick in sales. Kruszewski suggested making Lagoon Pond Road one-way during the event, and not allowing parking on Beach Road Extension, to turn it into a pedestrian mall. The police presence worked so well at Five Corners, she said, the town should consider making it permanent in the summer.

"I love the business and foot traffic," she said. "It was one of my best weekends as a business owner, so thank you."

Bobby Breth, owner of Bobby B's Pizza, said he also had a good weekend of sales, but it was the atmosphere that most impressed him and his staff. "They said the customers were so polite all day," he said. "It was amazing. There was no trouble. There were no riots. They were happy. They came with that attitude and when they left on the boat at night, they were very gracious."

Laura Beckham of Island Puff n' Pass reported a record weekend of business. "It was such a great cultural event for Vineyard Haven, which seems like nothing ever happens in this town," she said. "It was so fun to have so many people brought into our town. What a great location to have it in — right near the ferries. It was really easy for people who didn't live here to get here."

J.B. Blau, an Island restaurant owner who was the beer and wine vendor, praised coordination between vendors, the police, and security for the lack of problems with serving alcohol. "On Sunday we probably served perhaps more people than have ever been served in one spot on Martha's Vineyard in one day. To hear that there were no arrests or problems speaks highly for everyone involved in this operation — from the bartenders to the police to everyone in between."

Then he also got some laughs. "I just wanted to say thank you to everyone, particularly Island Puff n' Pass for everyone being so relaxed," Blau said.

Steve May, a resident of Causeway Street, which backs up to the park, said he was concerned ahead of the festival. "I think everyone did a perfect job managing all the traffic in and out of there ... I would totally support doing this again."

Melissa Clay, who worked the event, called it an exciting and amazing experience. "This should always be a part of Martha's Vineyard going forward," she said.

David Smith concurred. "It should come back. If anything, Vineyard Haven just needs to say yes to more things like this," he said.

Sean McMahon of West Tisbury, one of the local musicians who got to perform on the Vineyard stage in between the featured acts, praised Epstein. "I've been to a lot of festivals over the years. Usually it takes a lot longer to make something happen ... It's really amazing. It's a miracle that this festival happened as well as it did."

"I get the gist," selectmen chair Melinda Loberg said. "You liked it."

It was selectman Jeff Kristal who urged his colleagues to act now so Epstein could begin securing acts for next summer. "Here's a guy who [lost] a ton of money and he still wants to come back," Kristal said.

While it was mostly a love fest, Seth Gambino, an unsuccessful candidate for selectman who was a vocal opponent of the festival, criticized Beach Road Weekend. Gambino cited the noise, vibrations, and suggested a tax abatement for abutters. "Do what you will, but when you can't go into your own home and lock the doors and find peace, that's going too far," he said.

In other business, selectmen picked the final seven members of an 11-member natural resources committee. The committee combines other town boards like waterways, harborfront, and shellfish committees, which were disbanded.

Selectmen considered 12 people, letting those who were there provide some background on why they wanted to be on the committee, before choosing seven members. Tom Robinson, Amandine Hall, and David Hearn were selected unanimously. Sally Rizzo, Bill Sweeney, Jeff Canha, and John Kollett received two votes.

The natural resources committee will work with harbormaster John Crocker and shellfish constable Danielle Ewart to consider how to manage the harbor, Lake Tashmoo, and Lagoon Pond. Their first task will be to consider whether to push for a natural resources officer to oversee the fledgling department.

Loberg praised the talent that was available for the new committee. She said the process has been deliberate on purpose. “We will do everything we can in town to support this group. Having a natural resources department is a new thing for the Island. We really want it to succeed,” she said.

The board delayed action, once again, on a regional agreement on sheriff's communications equipment. Town administrator Jay Grande was scheduled to meet with other administrators from across the Island Wednesday, and the board will vote on a final recommendation next Tuesday after Grande can consult with Police Chief Mark Saloio and Schilling.

Selectmen did approve the mission statement for the town's energy committee, after a couple of tweaks that added selectman Jim Rogers' suggestion that the committee review operations and maintenance of energy projects like the leased solar array on the town's capped landfill.

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Line Arrays Explained

The Science And The Magic

• [PA / Live Sound](#)

By David Mellor

Published March 2006



JBL Vertec line array. Photo courtesy of Harman Pro.

If you've been to a biggish gig or a festival in recent years, you've had the pleasure of hearing line arrays of loudspeakers in action. But why are line arrays the current 'best practice' in large-scale PA, how did they evolve, and will they ever filter down to more modest gig venues?

Here's a chance to show off what you know about live sound engineering. Simply complete the following sentence: The function of a PA system is to...

That wasn't hard, was it? But in case you're struggling, the function of a PA system is to deliver your sound to the audience, and deliver it well. It's as easy as that. But hang on, it doesn't seem to be all *that* easy, does it? Whenever have you experienced perfect sound as an audience member? And when have you ever felt that your band's sound has been delivered to the audience as well as it should have been? There must be additional criteria that need to be fulfilled to achieve satisfaction. And yes, there are. Three...

- Adequate level, in relation to purpose (clearly, heavy rock music needs to be louder than a classical guitarist).
- Low distortion, low noise and a flat frequency response.
- Adequate clarity, in relation to purpose (speech requires near-100 percent intelligibility; all the words in a theatre musical must be easily understood; other forms of music may not need to be absolutely crystal clear).

Achieving adequate level is never a problem. It hasn't been a problem since the 1970s, when PA systems as we know them today had fully matured. All you need is a recognition of how many



In this article...

- [Introduction](#)
- [Predicting Loudspeaker Behaviour With MAPP](#)
- [Cover The Audience, Not The Walls](#)
- [Directivity Theory](#)
- [Deploying The Line Array](#)
- [The Column Loudspeaker](#)
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watts you require for a particular venue, usually calculated by rule-of-thumb and reference to past experience, and the budget to hire enough amplifiers and loudspeakers. Achieving low distortion, low noise and a flat frequency response hasn't quite been fully solved, although if the noise level of your PA is audible to the audience there's a fault somewhere in the system: power amplifiers in general have a better signal-to-noise ratio than just about anything else you'll find in the whole of sound engineering. The frequency response of PA loudspeakers, however, leaves a lot to be desired, and it is definitely true to say that the only thing that produces more distortion than a loudspeaker is the lead guitarist's screaming Marshall on overdrive. But even though not all is yet perfect regarding the above points, most people find the sound quality of a decent PA system acceptable. And the typical sound of a PA has almost defined people's expectations of what a PA should sound like. A circular argument, perhaps, but there's a lot of truth in it.

There's still one point left unanswered: that of clarity. It is possible for a PA system to be capable of detailed, analytical clarity within itself. But when deployed in a real-life concert scenario it sounds anything but clear. You must have experienced it yourself many times as an audience member — that fuzzy mush of sound that clogs up your ears, but you can't really resolve it into music. Clarity, therefore, is the last unconquered frontier of PA. It is the last major problem that remains difficult to solve.

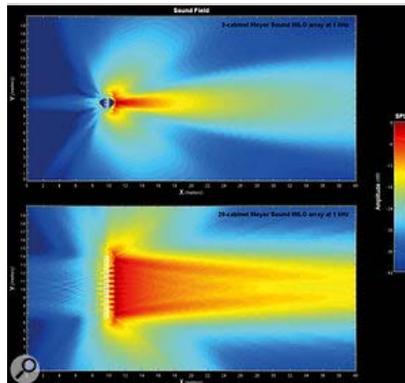
At this point I need to return to one of the requirements of PA that I previously said had been solved: that the PA system should be loud enough. There's no difficulty in making it loud enough, providing you have the budget — but it has to be loud enough for all members of the audience, and that's a problem that isn't necessarily solved just by spending a lot of money.

There are two scenarios here: one where the audience are seated, the other where they are standing and free to move. If the audience are free to move, it is acceptable to have different levels in different parts of the venue. Those who like it loud will gravitate towards the loudspeakers. Those who perhaps want to chat during the show will move further away. However, if the audience is entirely seated it suddenly becomes much more difficult. You don't want to deafen the front rows of the audience while leaving those at the back struggling to hear. If only certain members of the audience are delivered a level that is adequate, without being too quiet or too loud, the PA has not fully met its purpose. Let me therefore refine the requirements of PA into this simple statement: all of the audience should enjoy high-quality sound that is loud enough and clear enough.

Predicting Loudspeaker Behaviour With *MAPP*

MAPP Online is the *Multipurpose Acoustical Modeling Program* developed by loudspeaker manufacturer Meyer Sound to model the sound fields developed by its products in a variety of configurations. A sound designer is able to enter data into *MAPP Online*, including individual loudspeakers and arrays, then click the 'predict' button and get a graphical display of the expected coverage. Meyer Sound claim that *MAPP* will allow the user to:

- Plan an entire portable or fixed loudspeaker system and determine delay settings for fill loudspeakers.
- See interactions among loudspeakers and minimise destructive interference.
- Place microphones anywhere in the soundfield and predict the frequency response, impulse response and sound pressure at the microphone position.
- Refine system design to provide the best coverage of the intended audience area.
- Use a virtual equaliser to pre-determine the correct settings for best system response.



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- Gain load information about the array, to determine rigging capacities.

Clearly, a system such as this, that is accurate in its predictions, is a tremendous tool for the sound designer. *MAPP Online* will run on Windows, Macintosh or Unix computers, and data that the user enters is sent to Meyer Sound's servers, where the analysis and prediction is made, then delivered back to your desktop. The example shown is a composite of two predictions made for arrays of Meyer Sound MILO cabinets, one with just three loudspeakers, the other with 20, both at 1kHz. It is clearly possible to see how much more directional, and how much louder, the larger array is. You can also clearly see the 'side lobes' that develop — an unfortunate by-product of all line arrays that the sound designer must take into account.

Cover The Audience, Not The Walls

A paramount rule of PA is to direct the sound towards the audience and not elsewhere. But how often do you see this rule flouted? The best and most classic example of this *not* being done was in several London Underground stations, some years ago. At the time, the tube network was decaying and falling into disrepair, so several stations were refurbished with bright, modern designs. Along with the visual aspects, these stations were given new sound systems too. Some bright spark designer decided that the loudspeakers should be mounted in cylinders (cylinder = tube, get it?) and several should be mounted at intervals along the platform, parallel to the platform and just above waiting passengers' heads. The result was that from any point on the platform, you could hear every loudspeaker, with delays increasing with distance. It was, indeed, possible to stand as close to a speaker as you could and still not understand what was being said! This state of affairs wasn't allowed to continue for long, and now the speakers point as they should — down at the passengers on the platform.

So the most important thing is to point the loudspeakers at the people in the most direct way possible. At the same time, consider how much sound is being 'sprayed' onto the walls and ceiling. The audience will absorb much of the sound energy that strikes them, meaning that it won't be reflected to bounce around the auditorium and cause confusion. But the walls and ceiling are very likely to be reflective, so the more sound that goes in these directions, the more mush-inducing reflections will be created.

In a situation where the information content of speech is of primary importance, the classic solution to intelligibility is to use many small loudspeakers and have them close to the people — obviously, pointing at them and not at reflective surfaces. This works extremely well and the information content gets through clearly. But this solution is not acceptable for a musical performance. The reason for this is that we expect a performance to take place on a stage. We watch the performers on the stage, and we expect the sound to come from the stage too. If the sound were coming from a small speaker mounted at just a couple of metres distance, up and to the side, that would cause a conflict between the visual and the auditory. Everything might be clear and intelligible, but we wouldn't enjoy the performance.

So the multiple small speaker solution doesn't work for performance. We need the sound to seem as much as possible as though it comes from the stage, and for this you can't do better than actually having loudspeakers at the sides of the stage, like a great big stereo system. However, there are still potential problems...

The first problem has been mentioned already and has to do with directivity. Loudspeakers naturally have a characteristic directional response — almost omnidirectional at low frequencies, tightening to a focused beam at high frequencies. Put another way, anyone sitting directly in front of a loudspeaker will experience a reasonably flat frequency response, but people sitting further and further to the side will hear less and less high frequencies, so the sound will be increasingly dull. So the 'big stereo system' style of PA suffers in that it sprays the walls and ceiling with low-frequency and low-mid energy that reflects into a confusion of reverberation, and only select members of the audience receive sound with a good balance of frequencies.

A second problem stems from the lack of directional control. Because much of the sound is spread widely, beyond the width of the audience, energy is lost. The more sound spreads out, the more thinly its energy is spread, and



The EAW CLA37 column loudspeaker uses seven 3-inch drive units to achieve a coverage of 120 degrees horizontal x 30 degrees vertical, thus controlling the vertical dispersion tightly. It is suitable for speech reinforcement in large reverberant

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therefore the more level is lost with distance. This is an important point. The reason a sound source becomes apparently quieter as it becomes more distant is primarily because its energy is spread out. Yes, some level is lost through absorption in the air, but not much. It's distance that's the killer. An audience member sitting a long way from the loudspeakers will experience a distant and therefore quiet sound, while audience members close to the speakers are getting their heads blasted off!

environments if several or many units are distributed amongst the listeners.

Let's think in terms of light. Take a torch bulb. Intrinsicly it emits light almost equally in all directions, so by itself it isn't much use for finding your way in the dark. But put a reflector behind it and a lens in front of it, so that its energy is concentrated into a beam, and you will notice immediately that it is now usefully bright. You'll also notice that the beam extends into the distance. So not only do you see the immediate area in front of your feet, but the area beyond where you direct the beam. The area of coverage is less, but you can now see where you're going. If the same could be done with loudspeakers, there would be two benefits: one, that the sound is focused on the audience and away from reflecting surfaces; and two, that the sound retains its level as it travels. So the audience members at the back are served as well as those at the front, and the difference in level between front and back is much less.

Directivity Theory

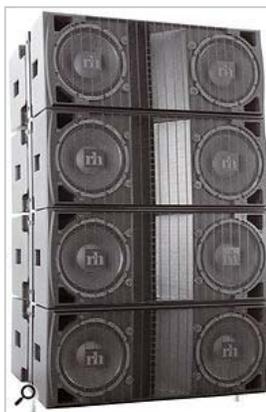
If you understand the theory behind the directional characteristics of sound sources, you'll be in a good position to understand PA loudspeakers and get the best out of them. There are two extremes of directionality, between which there are other interesting cases. One extreme is the point source, which is a source of sound that has zero size. OK, there's no such thing as zero size, but in practice if a sound source is dimensionally smaller than the wavelength of sound it is emitting, it has the characteristics of a point source. The low-frequency output of a small loudspeaker would be a real-life example.

A point source emits sound equally in all directions. There you have it: all you need to know about the point source! Well, not quite all... but you'll need a little imagination. Imagine this very small point source pulsating outwards momentarily, just once. A sphere of high pressure leaves its surface and radiates outwards, becoming larger and larger. The point source has put a certain amount of energy into this pulse, and that same amount of energy over time has to cover a larger and larger area, the surface area of that continuously expanding sphere. I could at this point bore you to tears with detailed calculations concerning the surface area of a sphere, energy density and stuff like that, but instead I will cut directly to the chase and say this: for a point source, sound pressure decreases by 6dB for every doubling of distance. We call this the inverse square law.

One mistake or over-simplification is that it is commonly said that all sound obeys the inverse square law. This is not so. Only sound from a point source obeys the inverse square law. Any sound source that is not omnidirectional does not obey the inverse square law. (If you get so far away from it that visually it recedes to a point, from your point of observation it will appear to obey the inverse square law, but in practical terms this is not relevant to PA).

From this we can derive two interesting facts. The maximum rate at which sound level can decrease with distance is 6dB per doubling of distance. The only way sound can decay at a faster rate than that is if you actively do something to block it. Also, sound sources that are directional decay at a rate that is less than 6dB per doubling of distance.

It's interesting to consider the opposite extreme. Would it be possible to have a sound source, the level from which does not decay at all with increasing distance? Amazingly, the answer is yes. It is possible to have a sound source that is so focused that it will cover an amazing distance with hardly any reduction in level. You want an example? I'll give you two examples: an old-fashioned ship's speaking tube, and a tin-can telephone. We call this kind of sound source a plane source. In both cases, the sound energy isn't just focused, it is constrained to travel within an enclosed medium so that it cannot spread out at all. And since it cannot spread, no level is lost. (In practice, a little level is lost, but nothing's perfect.) You can see that this is not a practical way of delivering your sound to the audience, so we will leave it as a curiosity, but a curiosity that demonstrates a useful principle.



A four-module array of Renkus-Heinz STLA/9 cabinets.

The next type of sound source is the whole purpose of this article, and is the salvation of PA as we know it. We call this type of source — fanfare of trumpets — the line source. To understand it, let's go back to the point source for a moment. I said that the point source (which is omnidirectional) needs to be small in comparison with the wavelength of sound that it is emitting. The converse is true too: when a sound source is larger than the wavelength it is emitting, it becomes more directional. And the larger it is, the more tightly directional it is. So a really large sound source would be tightly directional. This is what we want: a source that can be focused and directed to cover the audience, but not wasted on other areas of the auditorium.

But imagine you're a loudspeaker looking out from the stage to the audience. The audience in front of you are spread widely from left to right, but from top to bottom — in perspective, from the rear rows to the front — there is only a narrow spread. You can see the problem. If you made a large loudspeaker that focused the sound tightly enough to direct sound accurately in the vertical dimension, it wouldn't cover the full width of the audience. And vice versa: if it covered the full width, you'd end up covering the ceiling as well, and we know that's a bad thing.

The solution is to devise a loudspeaker that is tightly focused in the vertical dimension but spreads sound widely in the horizontal dimension. To do this, the speaker needs to be large vertically, but small horizontally. Like a column, in fact. And here we have it (bigger fanfare of trumpets): the column loudspeaker! Did I say 'column loudspeaker'? Sorry, I must use the more up-to-date and exciting terminology: line array. They are both examples of the line source.

Deploying The Line Array

Clearly, you're not going to have a full-scale line-array system in the back of your band's Transit van. In fact, playing through a line array for the first time may mark your transition from wannabe band to successful band. But there will come a time, hopefully, when you are called upon to have an influence in the specification of your touring PA system. At first, the line array looks intimidating. All those cabinets, all that cable. Who's going to go up there and string the whole thing together? The answer is nobody, because the system is assembled at stage level and the whole thing hoisted up. The motorised hoists even have remote controls so that no-one has to shout instructions or converse through an intercom. A line array can actually be set up by as few as two or three people. Any kind of flying, however, involves considerable responsibility, and manufacturers are keen to use the words risk, damage, injury and death frequently in their operators' manuals. Apparently, the most dangerous part of the rigging process is when the equipment is at stage level. As it rises into the air, providing everything is done correctly and the equipment is in good condition, it flies out of the danger zone.

Setting up a conventional PA system on stage involves a certain amount of use of of rules-of-thumb. The line array is far too big a thing to set up in the same way, and once it's set up you don't really want to have to move it, so you need to be sure that the positioning is right, the height is right, the horizontal angling is right, and — most of all it — that the array takes up the optimum J-shaped curve to distribute sound evenly to the front and back of the audience, and everyone in between. To make this possible, manufacturers commonly provide software that can be used to calculate all the necessary parameters, examples of which are shown on the following two pages. Meyer Sound are good enough also to advise equipping yourself with binoculars, laser measuring tool, pedometer, laser inclinometer and a self-levelling, four-way laser. That should really be a last resort, as any decent venue should have a set of plans with accurate measurements!

The Column Loudspeaker

I often think that one of the best lessons of the past is not to go there again. However, the column loudspeaker has as important a place in the history of PA as the electric guitar does in rock music. Yes, really. One day there might be people who make a living as historians of PA, and they'll be able to tell us exactly how the column loudspeaker came to be developed. Until then, my guess is that it developed by chance and was found to work effectively. It seems like a natural development for a 1960s band to have speakers at either side of the stage for the vocals. Then they decide they want to be louder and need speakers with multiple drive units. But speakers that are wider take up more stage area, so they choose speakers that are taller. The typical pub band of the 1960s would therefore have a pair of column loudspeakers, for vocals, that typically would contain four 10-inch or 12-inch drive units, sometimes topped off with a small horn (for example, the WEM Vendetta). Although they might seem primitive now, in fact they worked surprisingly well. The small horizontal dimension meant that the full width of the audience was covered, while the large vertical dimension ensured that the sound was

'beamed' to the back of the room. However, the next generation of bands working at a higher level of the business moved on to 'bins and horns'. (A horn loudspeaker is the most efficient way of converting amplifier power to sound. A 'bin' is a bass loudspeaker, which is commonly in the design of a folded horn. 'Bin and horn' systems of adequate physical size can sound very good, but their directionality is not necessarily well controlled.) Small bands followed suit with similar but scaled-down systems, and the column loudspeaker was forgotten. Small column loudspeakers, however, continued very successfully in speech PA, such as for places of worship, where intelligibility is all-important (see the photo below). The 'bin and horn' system amounted to nothing more than the 'big stereo' commented on earlier, and directional control was lacking.

The next real development in PA technology was the centre cluster, much used in musical theatre. The centre cluster relies on another directional technology known as the constant directivity horn. The idea here is to combine multiple full-range loudspeakers, each of which is designed to have a consistent directional pattern over a wide range of frequencies. Horn loudspeakers can be designed to do this reasonably well. These full-range loudspeakers are arrayed together into a part of a sphere and mounted high up to cover the whole of the audience. Each member of the audience is delivered sound through only one full-range loudspeaker (apart, of course, from people sitting exactly on the dividing line between the coverage of two loudspeakers).

The centre cluster is outstanding for its intelligibility. It fulfils the criterion of directing sound only at the audience, and has the additional benefit that it forms a single sound source, therefore there is no possibility of hearing delayed sound from another loudspeaker somewhere else in the auditorium — at least, in a pure centre-cluster system. But there are two problems: the first is that ideally the centre cluster would be designed first, and then the auditorium designed around it! The second is that if each audience member is delivered sound (apart from the exception noted) by only one loudspeaker, plainly there is going to be a limit to how loud the sound can be. There will always be a role for centre clusters but, as we shall see, there are more flexible (literally) forms of loudspeaker distribution.

The Line Array

Although the column loudspeaker was effective in its context, it suffered from a lack of scale and a lack of science, each equally important. So to scale up a column loudspeaker to auditorium proportions took the best part of three decades. Still, we got there in the end. Here comes the science...

Going back to the point source, we find that level drops by 6dB for every doubling of distance. With the plane source, the level doesn't drop at all. So is there an in-between condition where the sound level drops by, say, 3dB? Yes there is, and it is the line source, which in theory can produce a cylindrical wave, as opposed to the spherical wave of the point source. A genuine cylindrical wave will have 360-degree dispersion in the horizontal dimension and zero dispersion in the vertical dimension. Any real-life source is going to be an approximation of this, but if someone offered you approximately £100, you would accept £75, wouldn't you?

Earlier, I said that to achieve directionality a sound source needs to be larger than the wavelength it is producing. To achieve focus, or near-zero dispersion, which is a more stringent requirement, it needs to be somewhere approaching four times the wavelength. The wavelengths of audible sound extend all the way to 17 metres (20Hz) and beyond. But taking a reasonable lowish frequency of 170Hz with a wavelength of two metres (taking 340 metres per second as a nice round figure for the speed of sound), a line source eight metres high will be necessary. Quite tall! But at least we have a notion with some science behind it.

The next question is: how exactly do you make a loudspeaker that is several metres high? Currently, the way to do it is to stack multiple loudspeakers on top of each other. But instead of stacking 10-inch or 12-inch loudspeakers featuring identical drive units with poor HF response, as they did in the 1960s, each loudspeaker consists of LF and HF drive units and covers the full audio range (down to a reasonably low frequency). Also, rather than making one very tall cabinet, the modern line array consists of multiple small cabinets. The benefit of multiple cabinets is that you can assemble a line array that is as big or small as you like, or can fit in, or can budget for. You can also manipulate the shape of the array, which, as we shall see shortly, has significant benefits. Time for more science...

Since the line array is not actually one single tall-but-narrow drive unit, but is made up from discrete loudspeaker cabinets, one has to ask whether the individual units will couple together



A Meyer Sound 12-cabinet MICA array.

as though they were a genuine line source? The answer is yes, they will, but only where the drive units are separated by less than half a wavelength. This is easy for the lower frequencies, but more difficult to achieve as the wavelength shortens. As a benchmark, the wavelength at 400Hz is around 85 centimetres. So to couple at 400Hz the cabinets have to be less than 42.5 centimetres high. OK, that's doable, but we are not even halfway up the audio band here.

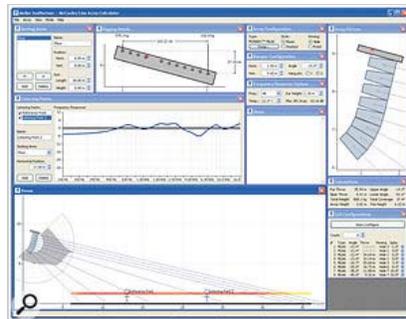
Still, at least we know the criteria to aim for. The longer the array is, the more tightly directional it will be in the vertical dimension, and for individual cabinets to couple well into the array, they have to be small vertically. The better both of these criteria can be achieved, the more controllable the beam of sound from the array will be. A good point is made by Ralph Heinz of PA manufacturers Renkus-Heinz: "The answer to the question of whether a line array is a line source is 'almost never'." Heinz's comment demonstrates that a theoretically perfect line source is virtually impossible to achieve. Only the best line arrays will come close.

Waveguide

I wouldn't be surprised if some of the readers out there are microwave engineers concerned with the efficient transmission and reception of microwave signals, *SOS* readers tending towards the technical. To you guys and girls, I'd like to say thanks — you gave us all the technology we need to make great-sounding line arrays. Seriously, a lot of loudspeaker technology does borrow from microwave technology, as the wavelengths of microwaves and sound waves are comparable. I have said already that to couple together into a line source, or at least a close approximation of a line source, individual sound sources must be no further apart than half a wavelength. You can turn this around and say that the closer together the individual sound sources are, the higher up the frequency spectrum line-source behaviour will be maintained. So each individual cabinet must be as short as possible in the vertical dimension. For preference, the height of the cabinet should be no more than the diameter of the low-frequency drive unit plus the thickness of the cabinet walls. However, to achieve a high sound level, clearly the low-frequency drive units will have to be reasonably large. In the Meyer Sound M3D, for example, 15-inch (38cm) drive units are employed on either side of the high-frequency unit. Since 38cm is half a wavelength at around 450Hz, an array of M3D cabinets will approximate to a line source up to around this frequency. Above 450Hz, the directional characteristics will begin to depart from the ideal cylindrical wave, although not immediately.

So what happens above 450Hz in the case of the M3D? At 580Hz the signal is crossed over from the low-frequency drive units to a specially designed high-frequency driver. What is special about the design? Well, to make the whole concept of the line array viable, each individual cabinet has to be a line source in its own right, or at least approximate a line source as closely as possible. For this, the high-frequency drive unit needs very sophisticated design to produce the required wavefront that diverges hardly at all in the vertical dimension. There are several possible techniques for doing this — some practical, some not.

One possibility is the ribbon drive unit, which basically has a long, thin diaphragm up to around 15cm high. Incorporated into line-array cabinets, the ribbon driver will display at least reasonable line-source behaviour above around 4.5kHz, but below that point adjacent units will be more than half a wavelength apart and therefore will not couple correctly. For good coupling at higher frequencies, the high-frequency driver should radiate over at least 80 percent of the height of the cabinet. Ribbon drivers, in any case, are rather low on output when compared to more conventional compression drive units. A horn with compression driver would be another possible choice, but for a horn to have a suitable direction pattern and a mouth area covering 80 percent of the height of a typical enclosure it would need to be inconveniently long. A reflector can also be used to focus sound, as in the Nexo GEO system. However, it seems that the current favourite technique is the acoustic lens.



Many manufacturers of line array systems provide software for calculating optimum configuration and placement, which clearly will depend on each individual venue. Here we can see a calculator from McCauley that's particularly striking in its visualisation. You can enter the type of cabinet and quantity to be deployed, and the dimensions of the area to be covered. The software instantly shows the necessary angling of the cabinets (top right) with rigging information (top centre-left). In the lower-left panel, on the left we can see the line array surrounded by a graphic showing the vertical dispersion pattern. Listening points can be selected and the frequency response at those points will be displayed in the panel at centre left.

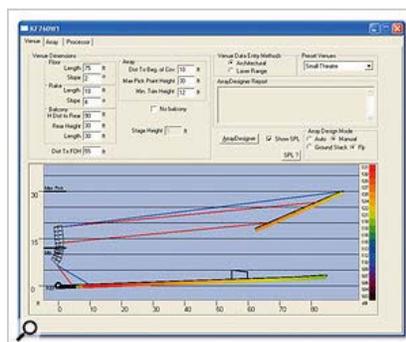
It's worth thinking for a moment about how an acoustic lens could be created. A lens for light works by slowing down light rays in a transparent medium of higher refractive index than air — i.e. glass. This could be done for sound. Simply form a suitable medium into a lens shape and situate it in front of the drive unit. Sounds too simple to work? No, not at all, and this technique is indeed employed by Electro-Voice and McCauley. The lens is made out of foam, which acts as an 'obstacle array' around which the sound wave has to pass, thus slowing it down. The foam doesn't have to have the conventional lens shape, as it can be of variable density, which provides the 'shaping'. Foam does have its limitations, as you would expect. At high frequencies it will absorb sound rather than slow it down, and at low frequencies it will have no effect. Nevertheless, the fact that it is used for some current line-array systems demonstrates that it is a viable solution to the problem.

The other way of producing an acoustic lens is the path-length refractor. This uses metal plates to direct sound through channels. The channels have varying lengths and therefore sound can be slowed down by varying amounts of time. With appropriate design, this can form a perfectly viable lens that works over a reasonably wide range of frequencies. Obviously, since there are four different techniques currently in popular use in this application, the ultimate solution hasn't quite been found yet.

Intensity Shading & Divergence Shading

We've covered a lot of technical material so far, and it's worth going back for a moment to the purpose of the line array, which is to deliver sound to the entire audience, at pretty much the same level, all the way from the front to the back. It does that by focusing the sound vertically while allowing it to spread out horizontally. Even though a well-designed line array can achieve that reasonably successfully, it will remain the case that the front of the audience receives a higher sound-pressure level than the rear of the audience — which, of course conflicts with our requirement. The solution to this is intuitive: simply reduce the output of the lower section of the array. This is known as intensity shading. The front rows of the audience are much closer to the lower cabinets than they are to the upper cabinets of the array, therefore reducing the level from the lower cabinets will deliver a lower sound-pressure level to the front of the audience. However, there is a problem here: the front rows will still hear sound coming from the upper cabinets of the array, and they will hear it clearly because these cabinets are louder. But sound from the higher cabinets will be delayed with respect to the lower cabinets, and that will create an interference pattern and an uneven distribution. This problem could be tackled with equalisation and delay, but that would destroy the elegant concept that the line array is.

The alternative to intensity shading is simple and obvious, and you would probably do it by instinct anyway. When a line array is flown, it will take you precisely two seconds to observe that the front rows of the audience are almost underneath the array, whereas the rear rows are much more on the same level as the top of the array. So it seems appropriate to curve the lower section of the array so that it points down at the front of the audience. You have just created the familiar 'J' shape of the practical line array (see screen above). You have also implemented divergence shading. Simply by angling the cabinets apart more, you have required the sound they produce to cover a wider angle, therefore its intensity will be reduced at the listening position. Ideally this requires a more divergent cabinet for the curved part of the J, which manufacturers solve by designing specific long-throw and front-fill cabinets.



This EAW calculator superficially doesn't look as polished as the McCauley one, but it offers presets for different types of venue. This example shows a small theatre with a balcony, which is also covered by the line array. The software shows, by colour coding, the levels that can be achieved in different sections of the venue.

Line Arrays For The Giggling Band

If line arrays are good for top touring acts, surely they're good enough for the small gigging band too? In my view, it can only be a matter of time before manufacturers of small PA systems (many of whom make large-scale systems too) bring the line array into the small pub and club venue. There is a vacuum at the moment that desperately needs to be filled. Oddly enough, since a large-scale line array is composed of multiple small cabinets, there is absolutely no reason why you couldn't stand one on stage and stack it all the way to the ceiling, taking safety precautions of course. The limitation on small-scale deployment of line-arrays is actually ceiling height. In a large auditorium, the line array is hoisted high over the audience, so that the lower

section of the J-shape points down at the front rows, while the upper cabinets point roughly horizontally at the rear of the audience. Raising the array like this reduces the difference in distance between front and rear, thus reducing the level difference due to distance. In a small venue, the line array would fire into the audience as much as it fires over their heads. Although the approximation to a cylindrical wave it produces would be advantageous, the loss of the downward perspective severely limits this advantage. And, of course, in a small venue the audience bunch up around the stage, so the front rows are very much closer to the loudspeakers than the people at the rear.

Contacts

- www.eaw.com
- www.electrovoice.com
- www.jblpro.com
- www.meyersound.com
- www.mccauley.com
- www.nexo.fr
- www.renkus-heinz.co

By now, you should be realising that there's a awful lot to know about line-array technology. There simply isn't room to cover it all here, plus the top manufacturers are constantly researching new developments, particularly with regard to focusing and steering of arrays. Although we wait for line-array technology to re-emerge as a major force at the gigging band level, my expectation is that it will. Although line arrays need to be large to work at their best, in respect of directional characteristics, there is no reason why smaller bands should not take advantage of the technology. Indeed JBL have scaled down that contained in their large-scale Vertec series (shown at the start of this article) into the new VRX932LA, designed for smaller venues. Each cabinet contains a 12-inch LF drive unit and an HF horn, designed for arrayability. Practical array sizes start at just two or three cabinets, and JBL advise up to six for optimum control over dispersion. A six-cabinet array would have to be flown, just like a full-scale line array, but JBL have cleverly provided the option of mounting two cabinets on a tripod stand, or on a pole on top of the SRX718S subwoofer.

An understanding of the directional properties and coverage of loudspeakers and arrays can only benefit the successful delivery of sound to the audience. Great sound should not only be the province of the large-scale auditorium PA, but should be available to all, at a reasonable price.

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- Re: Can SPL in speakers be controlled??**
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[Recording: Gear & Techniques](#) Mon Aug 24, 2020 7:28 pm
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Department of
Community
Development

Jim Saben, Chairman
Drive In Site Utilization Committee
Yarmouth Town Hall
1146 Route 28
South Yarmouth, MA 0266

Dear Mr. Saben:

I am writing in regards to your previously submitted application (\$1.5 million for Construction of Riverwalk Park and Boardwalk Loop) for Yarmouth Community Preservation Act Funds, which was postponed from consideration during our deliberations for the FY21 Annual Town Meeting.

With a Special Town Meeting tentatively scheduled for November and COVID-19 Restrictions still very much in place, the Yarmouth Community Preservation Committee is considering whether to move forward with considering previously postponed applications at this time, or whether to hold off until the Annual Town Meeting (scheduled for April 27, 2021).

To that end, and understanding the various ramifications of the COVID-19 Pandemic, we are requesting that you provide the Committee with an update on your application. Please describe the current status of your project as well as how your budget or timelines may have changed since your original application. Please be sure to note whether and how the impact a delay in consideration of your requested funding will impact your project.

Please provide your update and any supporting information electronically by Friday, September 4th. Questions and responses may be directed to Karen Greene, Director of Community Development at: kgreene@yarmouth.ma.us.

Sincerely,

Gary Ellis, Chairman
Yarmouth Community Preservation Committee

Cc: Community Preservation Committee

On xx, on a motion by xx, seconded by xx, the committee voted xx to approve the minutes.

Town of Yarmouth

MEETING MINUTES OF THE DRIVE-IN SITE UTILIZATION COMMITTEE MEETING OF August 4, 2020

The Yarmouth Drive-In Site Utilization Committee (DISUC) held a Business Meeting at **4:00** p.m. on Tuesday, August 4, 2020 via a Virtual Meeting pursuant to Governor Baker's March 12, 2020 Order Suspending Certain Provisions of the Open Meeting Law in response to the COVID-19 pandemic.

Committee Members Present: Tom Roche, Jack McCormack, Bud Nugent, and David Reid

Members Absent: Jim Saben, Peter Slovak and Rich Bilski

Staff: Kathy Williams, Town Planner; and Karen Greene, Director of Community Development

1. **Meeting Opening**: Vice Chairman Tom Roche opened the virtual meeting at 4:01 PM. A roll call was conducted to establish quorum.
2. **Discussion on Reconsideration of a Marina at the Drive-In Property**: To follow up on comments made by Board of Selectmen members at their July 14th, 2020 meeting, the Town Administrator suggested that the Drive-In Site Utilization Committee (DISUC) re-evaluate the concept of a marina on the former drive-in property. The DISUC reviewed the attached July 30, 2020 Memo from Kathy Williams, Town Planner, that provided an overview of the feasibility analysis completed in 2013 including the full Marina Economic Analysis and other issues as outlined below:
 - **High Cost of Construction With No Return on Investment**: The Marina Economic Analysis completed in 2013 by Applied Technology & Management (ATM) provided estimated construction costs of \$10.34 Million for the preferred Base Case, and \$9.8 Million for a two-phase Modified Case designed to reduce costs and maximize revenue. Both scenarios projected estimated annual deficits, with over \$500,000 per year in the Base Case and a minimum of \$100,000 per year in the Modified Case. Construction costs would be further increased to include state wage rates and account for annual construction inflation. Even if demand for a Marina has increased, the revenues would need to have increased substantially to recoup these additional costs and generate a profit.
 - **Configuration of the River**: The volume of boat traffic from an existing marina, in conjunction with the shallow depth and narrow pinch points along the River, do not provide an ideal conduit to Nantucket Sound. Dredging of the River was recommended by ATM which was not included in the construction estimates, further adding to the costs for a Marina.
 - **Difficulty of Obtaining Environmental Permitting**: The environmental permitting required for a Marina was considerable and challenging with staff estimating a 50-60% chance of obtaining all the permits required for the project. The legislative relief provided for the project for saltmarsh impacts was important, but limited, leaving many critical evaluation criteria remaining.
 - **Progress on the Riverwalk Park, Boardwalk and Event Space proposal**: The DISUC has worked with Staff for over five years to identify uses, develop and vet design concepts, garner public input and support, and secure \$3.2 Million in funding for the Riverwalk Park, Boardwalk and Event Space concept. Any diversion of the Town's

On xx, on a motion by xx, seconded by xx, the committee voted xx to approve the minutes.

attention toward a Marina concept, at this late date, would negatively impact the project schedule and the commitment of the Town to the currently approved projects.

After a brief discussion noting the items above, the DISUC voted as follows:

VOTE: On a motion by Bud Nugent, and seconded by Jack McCormack, the DISUC voted unanimously (4-0) to not recommend pursuing a Marina and to move forward with the existing plan for a Riverwalk Park, Boardwalk and Event Space with Tom Roche, Bud Nugent, Jack McCormack and David Reid voting in favor.

3. **Innovation Arts & Entertainment (iAE) Amended Proposal for the Drive-In Site:** The DISUC briefly discuss the attached application materials for proposed amendments to the current use of the Drive-In Site by iAE to extend into the fall season and to allow for sale of alcohol on certain days. The Committee noted that fewer movies were being shown than originally anticipated, with more concerts and comedy shows. The DISUC decided to not provide any comments for consideration by the Board of Selectmen for the August 11th Hearing.
4. **Meeting Minutes:**
 - a. **June 16, 2020:** On a motion by David Reid, and seconded by Jack McCormack, the DISUC voted (4-0) to approve the meeting minutes of June 16, 2020 with Tom Roche, Bud Nugent, Jack McCormack and David Reid voting in favor.
5. **Adjournment:** VOTE: On a motion by Jack McCormack, seconded by David Reid, the DISUC voted unanimously (4-0) to adjourn at 4:27 PM.

ATTACHMENTS:

- 08/04/20 DISUC Agenda
- July 30, 2020 Memo from Kathy Williams, Town Planner regarding re-evaluation of a Marina at the Drive-In Property with the following attachments:
 - October 3, 2013 Memo from Peter Johnson-Staub, former Assistant Town Administrator
 - ATM Marina Economic Analysis, October 2013
 - Proposed Marina Plan
 - October 8, 2013 Board of Selectmen Workshop Minutes
 - September 17, 2015 e-mail from Karl von Hone, Director of Natural Resources
 - August 3, 2020 e-mail from Heather McElroy, Natural Resources Manager at the Cape Cod Commission
- Special Entertainment Amendment and Special Alcohol License Hearing materials for iAE (Yarmouth Events LLC) at the drive-in property, including a July 28, 2020 e-mail from Bruce Murphy, Health Director.
- Draft Minutes: June 16, 2020