

# **THE CARRIER WAVE**



## **PHANTOM FLYERS R/C CLUB**



**AMA #393 SAINT CHARLES, MO**

**February 2022**

Newsletter of the Phantom Flyers R/C Club

<http://phantomflyersrc.com>

### **CLUB OFFICERS**

### **Contact Number**

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President - Dan Dierking	(314) 406-4949
Vice President - Don Grzina	(636) 233-0193
Secretary - Ed White	(636) 219-2255
Treasure - Jose' Espinosa	(636) 947-6067
Safety Officer - Dave Evans	(636) 448-4800
Field Manager - Don Grzina	(636) 233-0193
Chief Flight Instructor - TBD	
Activities Chairperson - Ed White	

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### **Send Membership Renewals to:**

Ed White

10 Wolf Ridge Ct

St Charles, MO 63303

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### **Board of Directors:**

#### **Work**

#### **Home**

Ed White	Retired (B+)	(636) 219-2255
Dan Sundman	(314) 749-4029	(314) 749-4029
Mitch Galatioto	Retired (B+)	(636) 734-6322
Dave Evans	Retired	(636) 448-4800

## Minutes of the Phantom Flyers RC Club meeting on 17 January 2022

The January club meeting was held via Zoom and opened at 7:01 PM. Club President Dan Dierking chaired the meeting. Eight club members were present. New('ish) members Dick Olds and Bill Reape introduced themselves. Welcome to the club!

Tech Session: Ed White presented the reasons for and an approach to adjusting Electronic Speed Controllers (ESC) for RC. This will be included in the next Carrier Wave.

Secretary's Report - A motion was made and passed to accept the minutes of the December 2021 meeting as published in the January Carrier Wave. A question was raised about having the club roster on the website. The new website is not yet set up with the roster and the password protection and we're working on it. We'll let the club know as soon as we get this resolved.

Treasurer's Report - The Treasurer was not present. Best theory at this time is he was having a nap.

Safety Officer's Report - Safety Officer Dave Evans discussed some information presented by the club he belongs to in Mesa. The strong recommendation is that in case of injury, it is safer to call an ambulance than to try to take yourself to the hospital. Also be sure you understand your health insurance coverage. It is possible that if you walk to an ambulance, your insurance company may conclude that you did not really need an ambulance and may be unwilling to pay for the ambulance. No other safety issues were raised.

Field Manager's Report - It is assumed that the field is covered in snow and has not moved recently.

Activities Chair Report - The traditional New Year's Day Snow Fly was postponed due to weather. We'll try again for a nice Saturday, if such a thing ever occurs before the Vernal Equinox. The first officially scheduled event is a tailgate swap meet at the field on April 30. Harold Weaver mentioned that indoor flying is sponsored by the Whirlybirds (but fixed wing aircraft are allowed). The next opportunity is Feb 11. Location is Rockwood Valley Middle School, 1220 Babler Park Drive, Glencoe, MO 63038. Cost is \$15.

GSLMA Report - The most recent meeting minutes are in the January Carrier Wave. There are plans for the rocket club to get a pavilion.

Old Business - We are continuing the search for an affordable option for a zero-turn mower to replace the now permanently stationary green mower.

Ed White presented a summary of the results of the January 4 FAA Safety Review Management Panel (SRMP) meeting. The meeting went very well. This was the next major step in the process of our getting approval to fly higher than 400 feet. Next steps are the draft and final versions of the SRMP report and then the writing of a Letter of Agreement (LOA) between us and the Lambert Air Traffic Control Authority. Nothing is truly final until the LOA is completed and signed, and this may take a few months yet. Hopefully it can be in place by the time the weather turns nice in the spring. In the meantime we are authorized to fly without notifying the airport but are limited to 400 feet AGL (Above Ground Level). It should be noted that one of the major considerations in the SRMP was that this club has a 65 year long history of operation with zero known instances of any of our planes interfering in any way with full scale aircraft. Fundamentally the way this happens is by watching for full scale aircraft. We can see them before they can see us. Spotting for a flying pilot is the responsibility of EVERYONE else at the field at that moment.

New Business - Don Grzina suggested that possibly one way to increase club attendance at meetings (beyond would someone please wake Jose up?) would be to offer an incentive of raffling or otherwise distributing a \$10 Gift Card for Mark Twain and that he would donate a Gift Card for the February Meeting.

The meeting was adjourned at 8:32 PM (would somebody please explain the definition of the word concise to the club secretary?).

Ed White  
Secretary

[https://www.faa.gov/uas/recreational\\_fliers/knowledge\\_test\\_updates/](https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/)

<https://dronetrust.com/faa-trust/>

### **Minutes of the Phantom Flyers RC Club Special Meeting on 31 January 2022**

The special club meeting was held via Zoom and opened at 7:02 PM. Club President Dan Dierking chaired the meeting. Twelve club members were present.

The purpose of the meeting was to review the recommended options for a replacement mower. The Special meeting was called in order to get an answer on an Exmark used mower.

A number of new mowers were considered by the committee. Used mowers are rather more limited in availability. I stated my review of the zero-turn mower market. I was rather surprised at the number of manufacturers, some I had heard of such as Exmark, John Deere, Toro, Cub Cadet. And others I had never heard of. But each of these seems to have a very dense product line such that they have a model at whatever price you are willing to spend. None of them actually specify a dividing line where residential grade stops and commercial grade starts. There is a near continuous spectrum of choices. This makes it very difficult to know what you are looking at unless you are very experienced. For reference, I looked for a price on a new Exmark of the same size and model as we have now. The nearest equivalent I found had an MSRP of \$13,097 for a 2021. Prices were not yet available for 2022 models.

The most reasonably priced new mower the committee found was a 2021 Simplicity Courier XT2, 52" cut (same as we have now) with a 24 Hp Briggs and Stratton engine for \$5200. Our Exmark has a Kohler engine which is generally regarded as better engine.

There was a discussion of the desirability of having a suspension system rather than the rigid system we have now. Although this is certainly desirable, it does significantly increase cost. I also looked into this and found that Exmark mowers can be retrofitted with a suspension system for the seat. Cost varies from around \$1500 for their best seat to \$500 for an Exmark spring system. A no name aftermarket seat suspension retrofit may be available for under \$200 on Amazon.

The best used option identified is a same model Exmark as we now have, although it has a smaller 48" cut for sale by a cousin of Dan Dierking's girlfriend. The mower has approximately 1000 hours on the clock but had a new engine (22.5 Hp Kohler) installed by an Exmark dealer in the spring/summer of 2020. Dan, Don Grzina and Ed White traveled to New Athens, IL to look at the mower. Don gave it a test drive. It appeared to be in good shape with no concerns. The seller has offered to take \$3000 for it, and to deliver it to our field.

The Board of Directors reviewed this option and has unanimously recommended that we purchase this mower. The primary reasons are cost and what we feel the club can safely afford at this time. As of the time of the meeting we have approximately \$1800 in donations of the \$5000 goal of the GoFundMe. Also, this year we will need to renew our field lease and that process has begun but an increase in the field lease cost is possible. Having the same make/model as we now operate is considered a plus, but not a major discriminator.

A motion was made and seconded to purchase the used Exmark mower for \$3000. A vote was taken of the members present. There were 11 votes in favor and 1 opposed. The member who voted against expressed the opinion that we had not given sufficient time for the fund-raising effort to bring all available funds and that we still had time to continue to pursue other options. The 11 votes in favor were asked if they wished

to reconsider their vote in light of the points raised by the opposing voter. None of the 11 wished to change their vote. The motion was passed. The club will purchase the used Exmark.

Ed White  
Secretary

## How to set throttle on an Electric

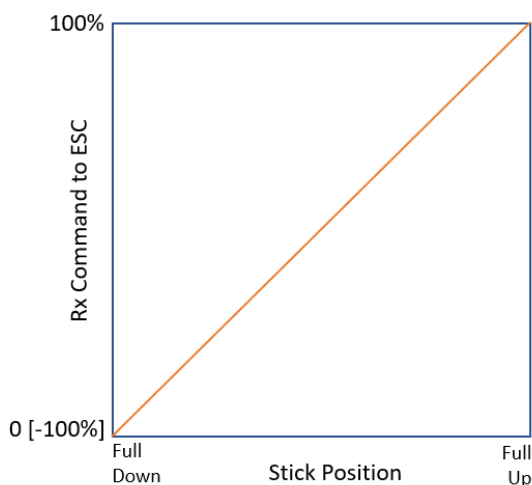
**Why do we need to do this?** Modern systems may overload and burn out an ESC if maximum amps are not limited and we want to use the full stick motion range

- A. Set the low throttle such that the motor is off at full down stick and provides reliable arming; and starts up just a little above full down stick
- B. Limit the maximum amps at full throttle stick to a level within the ESC current rating

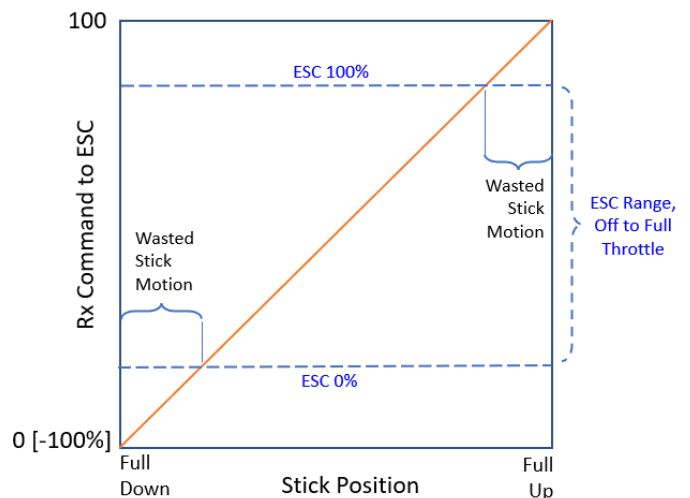
Steps: **Caution!** Either perform these steps with the prop removed or the plane restrained

1. If you can, program the ESC to fixed limits of approx. 10-20% to 80-90%
2. Call up throttle limits and set the low limit starting at -100%. Slowly increase the lower limit until the motor starts to run, then decrease the limit several % below where the motor stops
3. To set the upper throttle limit you will need an ammeter
4. Reduce the upper limit such that at full stick the amps are at or below the rated maximum of the ESC

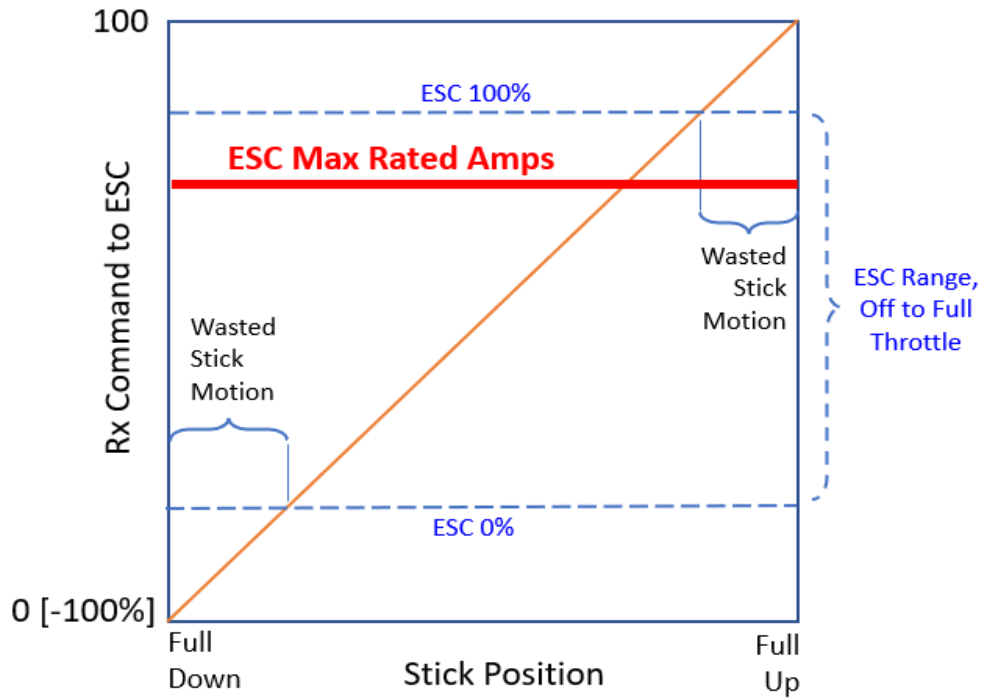
**Default Throttle**



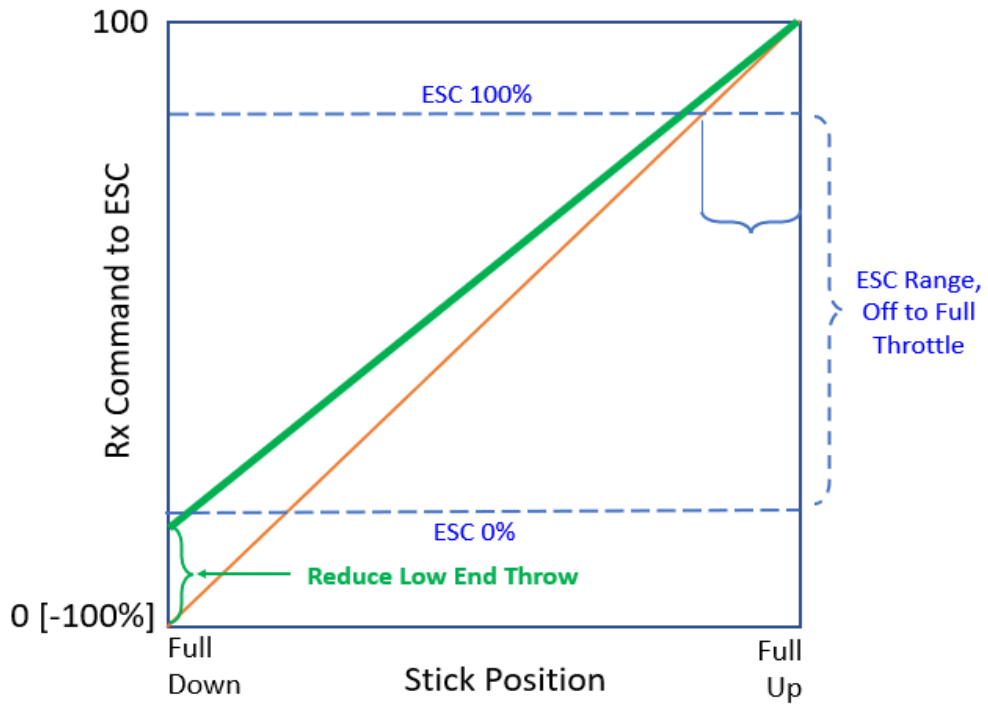
**Wasted Stick Motion During Landing**



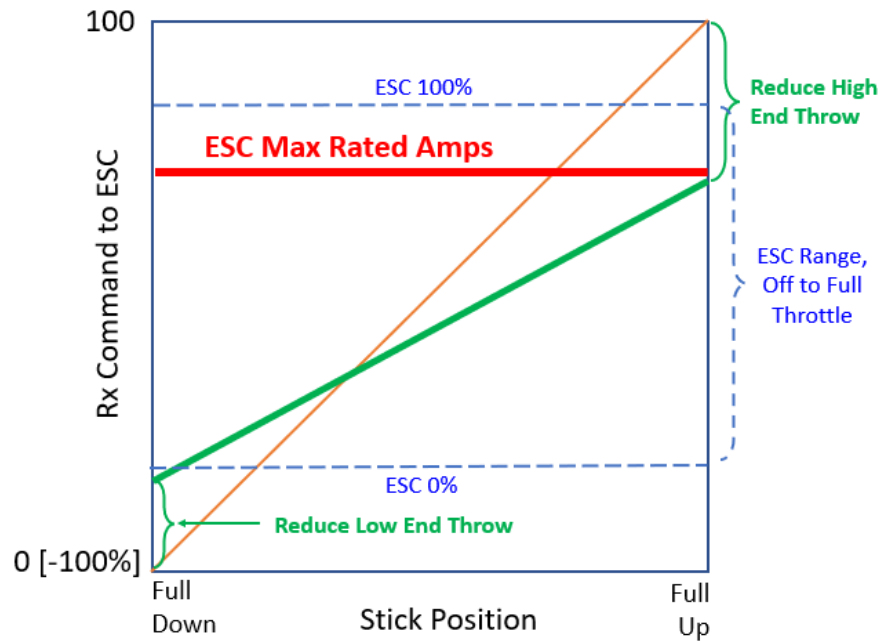
## Full Throttle May Over Load ESC



## Adjust Low End to Remove Wasted Stick Travel



## Adjust High End to Keep Amps Below Maximum



## How to measure current? (If your ESC doesn't tell you)



**Watt Meter**

Advantage: Reads Amps, Volts and Watts simultaneously. Also Amp-Hr (Ah), Watt-hours (Wh), Peak Amps (Ap), Minimum Volts (Vm),  
Disadvantage: Usually you must install connectors and have adapters  
This one is \$15-20 on Amazon



**Digital Clamp-on Meter**

Advantages: No connectors needed, is a general purpose Digital MultiMeter (DMM)  
Disadvantage: Reads one thing at a time and does not read watts (you can just multiply amps x ~4 volts per cell)  
This one is \$30-40 on Amazon  
**Note: Must measure DC Current.** Cheaper meters measure AC current only. (TRMS is preferred)

## Volts, Amps, Watts and Degrees

- We need to consider 4 parameters:
  - Volts, Amps, Watts and Temperature**
- Volts are usually expressed in battery S number
- Watts (Power) = Volts x Amps (current)
- Temperature results from **Power** and **Time**
  - Limits are often stated as Continuous or Burst
  - If near to temperature limits, air cooling helps A LOT
- ESC components are limited by voltage, current and Temperature
- Motors, ESC's and Batteries are all weakened, damaged or even destroyed by high temperature

## Volts, Amps, Watts and Degrees

- Motors are limited primarily by **Watts**
  - For a given motor, increase in battery pack S number results in higher voltage AND higher amps
  - So maximum watts (volts x amps) can be rapidly exceeded
  - In reality the limit is on temperature (90-100C), so continuous and burst limits and cooling are all important
  - High temperature in a motor (90 – 100 deg C) can demagnetize the rare earth magnets causing very high currents and low motor output
- ESC's are limited by volts/current of critical components
  - High temperature reduces the capability of these components
  - High temperature in an ESC (80 – 90 deg C) will cause electrical components capabilities to degrade and have shortened lives



# Volts, Amps, Watts and Degrees

- Batteries are also limited by temperature
  - Batteries will have shortened life with repeated high temperature operation
  - Voltage is pretty much set by S
  - So power is proportional to amps
  - Battery maximum amps is expressed in C numbers
  - Max Amps = C x pack voltage (approximately 4 volts per cell)

## Winter Building Season

Looks like club member Bill Reape, has also been busy getting ready for the 2022 flying season.

He writes:

'I read on your December email at the bottom to send pictures of new builds. It's almost ready to fly so I thought hey I need to send a picture. Hope You are doing well. Here's a picture of my 2022 build. Now I have a plane for 2-meter fun fly's. Take care, see you at the field this year.'

Looking great Bill! Thanks for the submission!



Club member, Jose shared his progress on a 3D printed 2M sailplane.

Thanks Jose!



**G.S.L.M.A.**  
**Treasurer's Report for January 31, 2022**

Beginning balance at 12/31/2021	28,408.09
Total Permit Check Deposits for 1/1 to 1/31/2022	1,689.00
Permits {and Donations} – {\$432.00}	
PayPal – Permits {and donations} – {\$128.21}	410.21
Special Deposit 1/10	22.17

**Debits for 1/1/2022 to 1/31/2022**

Auto Pay - Web Hosting Fee –	4.00
Debit Card – Badge Holders 22.17 and 19.20	41.37
Bank - Statement Fee	<u>5.00</u>
Total - Net	50.37

Ending Bank balance as of 1/31/2022	<u>30,479.10</u>
Checks held for deposit	380.00
PayPal received for unprocessed permits	75.00
Total Funds available	<u>30,784.10</u>

Prepays: NONE

Payables: \$360 - Meeting Room Rent at Kirkwood thru December 2022; \$ \$208.36 R&R 2 units through January 31

Pierce and Tham permits paid awaiting applications \$75.00

Reminder notice: Bank Statements are sent directly from the Bank to a third party for independent review.

30 permits for January: YTD 75 donations totaling \$1,478.29;  
YTD donations range from \$3 to \$116; Average \$20.25  
Permits comparison next page.

Month	Permit	Year	Permit	Year	Permit	Year
Issued	20	22	20	21	20	20
	MO	YTD	MO	YTD	MO	YTD
Oct	7	7	7	7	5	5
Nov	27	34	53	60	46	51
Dec	85	119	34	94	19	70
Jan	30	149	31	125	39	109
Feb			20	145	21	130
Mar			19	164	18	148
Apr			15	179	2	150
May			16	195	7	157
June			12	207	23	180
July			2	209	5	185
Aug			5	214	15	200
Sep			1	215	10	210
Total YR		149		<u>215</u>		<u>210</u>

2022 Permit	CL Only	FF Only	RC Only	Rocketry Only	Drone Only	Combo	Not Reported	Total
Oct			3		3	1		7
Nov			20		4	3		27
Dec	6		51	5	5	18		85
Jan (next yr)	4		18	2	2	4		30
Feb								
Mar								
Apr								
May								
June								
July								
Aug								
Sep								
Total '22	10	0	92	7	14	26		149
2021	7	0	131	8	18	46		215

EXPERIENCE	Beginner	Intermediate	Expert	blank	Total	Youth
2022 Permit YTD	30	95	24		149	4
2021 Full YR	44	131	40		215	11

David Whitney –Treasurer, GSLMA

Greetings!

Attached is the GSLMA January 31, 2022 Treasurer's Report.

Reminder: Bank Statements are mailed directly to a third party; in this case Lance Thompson.

Ongoing procedural note: There are a mixture of PayPal deposits - some deposits GSLMA receives full value; others a PayPal fee is deducted.

To avoid paying a PayPal bank deposit fee, I select the 1-3 days delay option for funds transferred to the bank. (Update January 2: Close to month end I will be using the deposit now function to reduce monthly cutoff issues between permits issued and payments received. This service is about 50 cents per transaction.)

This month there are no prepaids; Payables - \$360 for the Kirkwood room rent and \$208 for the January porta potties,

Note the special deposit of \$22.17 as previously documented.

The remaining permit holders from 2021 now have expired flying permits and expired flying privileges at Buder. Please encourage your members to renew.

Thanks,

David Whitney

GSLMA Treasurer

# **Phantom Flyers RC CLUB**

(Be sure to explore our website: [phantomflyersrc.com](http://phantomflyersrc.com))

2022 **MEMBERSHIP APPLICATION**

- Regular \$150/year x  yr(s) =
- Family (IRS Dependents) \$155/year x  yr(s) =
- Non-Participant (Non flying) \$15/year x  yr(s) =
- Anonymous Donations Welcome

Note: All new applications received after 1 July of this year will receive next year's dues free

\*\*\*\* Late Renewal Fee \*\*\*\* \$15

(Late fee required if member has not paid by 31 Dec)

Total Amount Due =

Make checks payable to:  
**Phantom Flyers RC Club, Inc.**

	<u>Eligible Member</u>	<u>Additional Family Member</u>
Member Name (/Nickname)	<input type="text"/>	<input type="text"/>
AMA Number	<input type="text"/>	<input type="text"/>
Primary Phone (home/cell)	<input type="text"/>	<input type="text"/>
Secondary Phone (work/cell)	<input type="text"/>	<input type="text"/>
Street	<input type="text"/>	<input type="text"/>
City, State, Zip	<input type="text"/>	<input type="text"/>
Spouse's Name	<input type="text"/>	<input type="text"/>
Primary E-Mail Address	<input type="text"/>	<input type="text"/>
Can Mow Flying Field? (Yes/No)	<input type="text"/>	<input type="text"/>

**My signature below signifies that:**

*I have read, understood and will abide by the Phantom Flyers RC Safety and Field Use Rules.*

*I understand that my participation in this activity is purely voluntary and I agree to hold Phantom Flyers RC Club, Inc. harmless for any and all liability for any injuries including death, which I might sustain while participating in this activity.*

Signature:  Date:

**Submit form and membership dues to:**  
 Ed White  
 10 Wolf Ridge Ct.  
 St Charles, MO 63303  
 Please send S.A.S.E. if you want your membership card mailed

<i>For Club Administrative Use Only</i>	Dues Received _____ Date	Current AMA Received/Shown _____ Date
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<http://phantomflyersrc.com/>

<https://www.facebook.com/Phantom-Flyers-RC-Club-139791882811519/>

Check there for the back issues of the Carrier Wave Newsletter, mowing schedule, event calendar and club roster/contact information (handy for mowing).

Articles, pictures and tech notes for publishing in the Carrier Wave are always appreciated. Let us know what you are building, repairing or flying!

Send them to:

[kevcx@charter.net](mailto:kevcx@charter.net)